GROUP 55A

HEATER, AIR CONDITIONING AND VENTILATION

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

⚠ WARNING

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

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

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GENERAL INFORMATION

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The heater and cooling units are combined in a single unit, which, with the mode film damper and flow rate control valve in the heater unit, reduces ventilation resistance, increases fan power, and decreases noise.

Item	Specification
Heater control assembly	Dial type
Compressor mode	MSC105CA
Compressor type	Scroll type
Refrigerant and quantity g (oz)	R-134a (HFC-134a), 590 –630 (20.80 –22.22)

SAFETY PRECAUTIONS

⚠ ***WARNING***

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

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

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

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

⚠ ***WARNING***

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

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

1. Should any liquid refrigerant get into 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***

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

⚠ **CAUTION**

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

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

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

OPERATION

CONDENSER FAN AND RADIATOR FAN CONTROL

The PCM judges the required revolution speed of radiator fan motor and condenser fan motor using the input signals transmitted from A/C switch, output shaft speed sensor and engine coolant temperature sensor. The PCM activates the fan control relays to drive the radiator fan motor and condenser fan motor.

COMPRESSOR CONTROL

When operating the A/C switch

- The air thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 3° C (37.4° 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 A/C 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 A/C 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 components marked by * communicate with the PCM. If the air thermo sensor detects a temperature of 3 °C (37.4 °F), the A/C-ECU will turn off the A/C compressor clutch relay.*
Blower switch		ON	
A/C switch, mode selection dial defroster, defroster/foot position or temperature control MAX A/C		ON	
Air thermo sensor		*	
Pressure detected by A/C pressure sensor	2.94 MPa (427psi) or less (If the refrigerant pressure exceeds 2.94 MPa (427psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 2.35 MP (341psi) a or less.)	ON	
	0.19 MPa (27psi) or more (If the refrigerant pressure falls short of 0.19 MPa (27psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 0.22 MPa (32psi) or more.)		
A/C compressor clutch relay driving transistor (within powertrain control module)		ON	

SERVICE PRECAUTIONS

CAUTION LABELS

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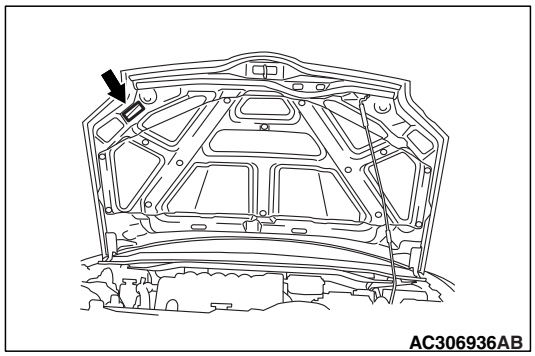
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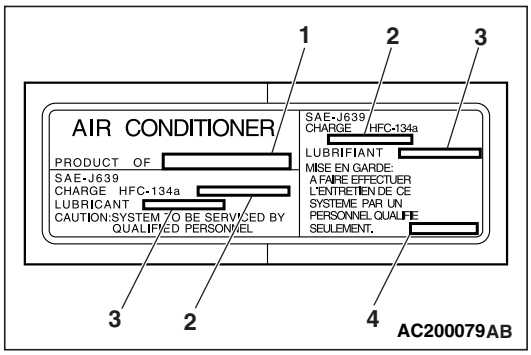
The refrigerant gas caution label must be affixed in the location shown in the figure on the left. Follow the instructions on the label when servicing.



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No.	Contents
1	Name of A/C manufacturer
2	Amount of refrigerant
3	Name of compressor oil
4	Parts number

MANUAL A/C DIAGNOSIS

INTRODUCTION TO HEATER, A/C AND VENTILATION DIAGNOSIS

M1552012200333

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

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

HEATER, A/C AND VENTILATION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1552009600386

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

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

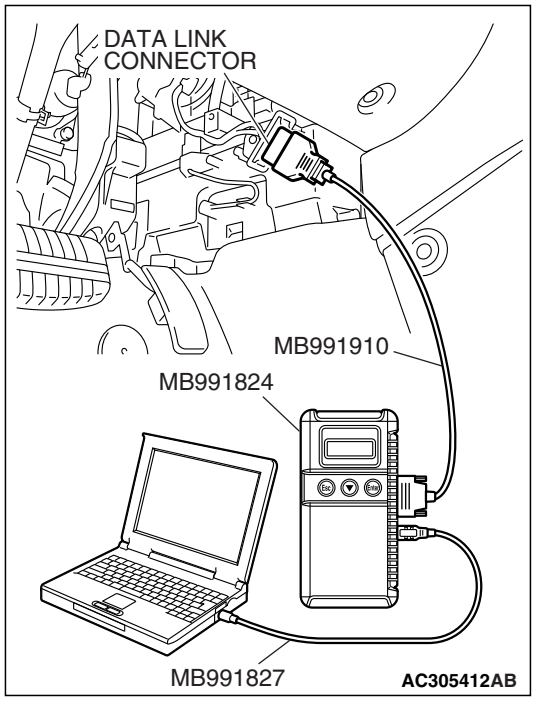
DIAGNOSTIC FUNCTION

M1552019800314

HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-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.

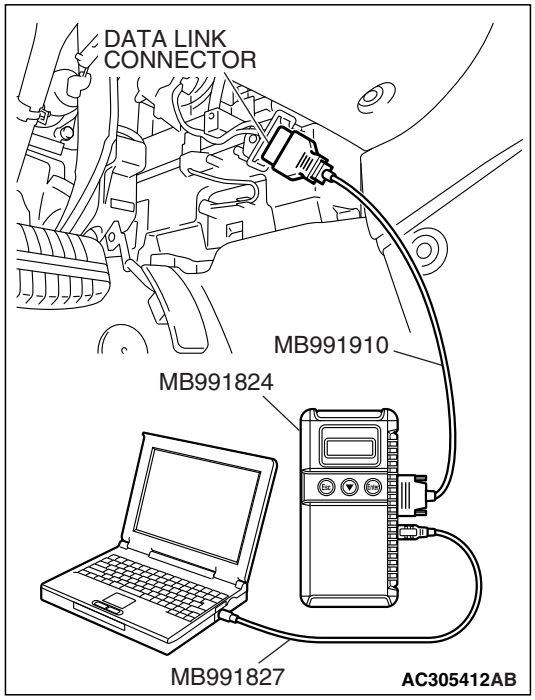
   NOTE: When the special tool MB991824 is energized, the special tool MB991824 indicator light will be illuminated in a green color.
7. Start the M.U.T.-III system on the personal computer.

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 Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-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.

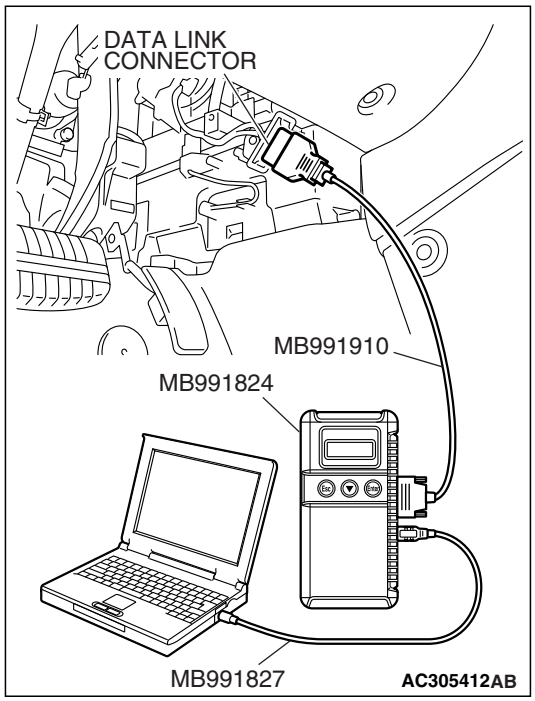
NOTE: If the battery voltage is low, diagnostic trouble codes will not be output. Check the battery if scan tool MB991958 does not display.

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 "Air Conditioner" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Select "Diagnostic Trouble Code" to read the DTC.
8. If a DTC is set, it is shown.
9. Choose "Erase DTC" to erase the DTC.

HOW TO READ DATA LIST

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

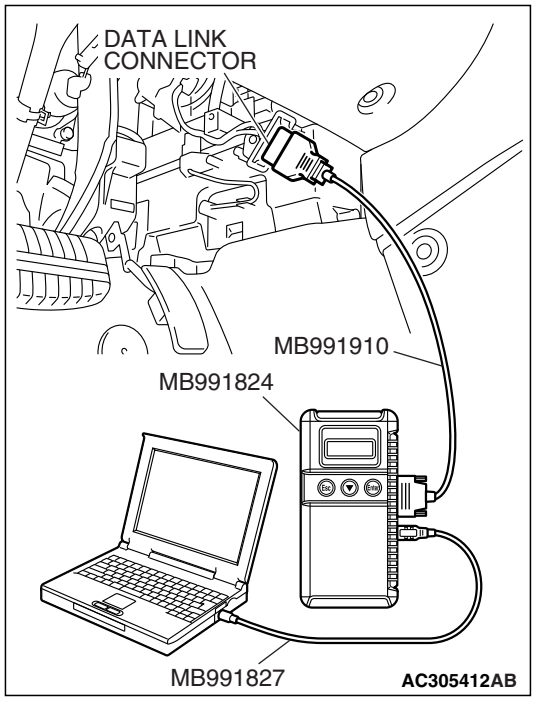
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 "Air Conditioner" 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 Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

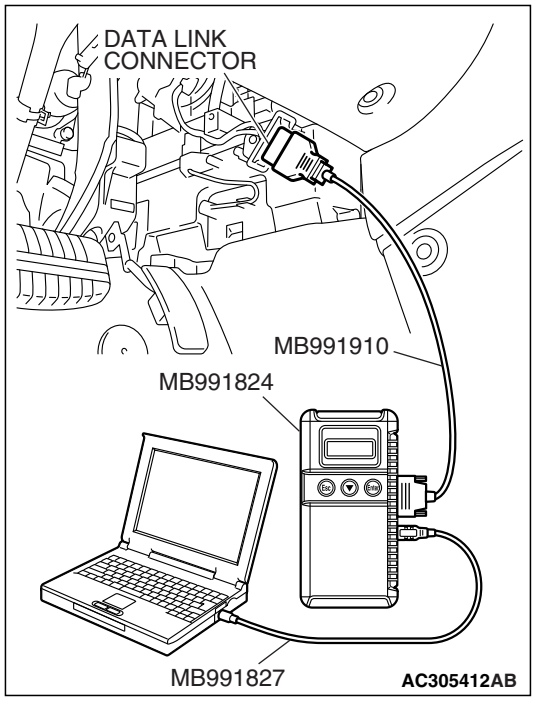
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 "Air Conditioner" 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.

HOW TO DIAGNOSE THE CAN BUS LINE

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-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 scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle whose CAN bus lines will be diagnosed.
   - If they matches, go to step 8.
   - If not, go to step 5.
5. Select "view vehicle information" button.
6. When the vehicle information is displayed, confirm again that it matches the vehicle which is diagnosed CAN bus line.
   - If they match, go to step 8.
   - If not, go to step 5.
7. Press the "OK" button.
8. When the options are displayed, choose the options (mark the check) and then select "OK".

DIAGNOSTIC TROUBLE CODE CHART

M1554004901228

⚠ CAUTION

During diagnosis, a DTC code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion of repairs, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
B1011	Ambient air temperature sensor system (short circuit)	P.55A-11
B1012	Ambient air temperature sensor system (open circuit)	P.55A-11
B1021	Air thermo sensor system (short circuit)	P.55A-18
B1022	Air thermo sensor system (open circuit)	P.55A-18
B1041	Air mixing damper control motor and potentiometer (potentiometer system shorted to its power supply)	P.55A-25
B1042	Air mixing damper control motor and potentiometer (potentiometer system shorted to its ground)	P.55A-25
B1045	Air mixing damper control motor and potentiometer (activating system failure)	P.55A-31
B1061	Mode selection damper control motor and potentiometer (potentiometer system shorted to its power supply)	P.55A-37
B1062	Mode selection damper control motor and potentiometer (potentiometer system shorted to its ground)	P.55A-37
B1065	Mode selection damper control motor and potentiometer (activating system failure)	P.55A-44
U1073	Bus off	P.55A-49
U1100*	Powertrain control module time-out (related to engine)	P.55A-51
U1111*	Multi-center display unit (middle grade type) time-out	P.55A-54
U1120	Failure information on powertrain control module (related to engine)	P.55A-58

*NOTE: *: When the DTC relating to the CAN communication error are output, make sure of the vehicle equipment. When the vehicle is not equipped with the system the A/C-ECU communicates to, the DTC is always output. This is not abnormal.*

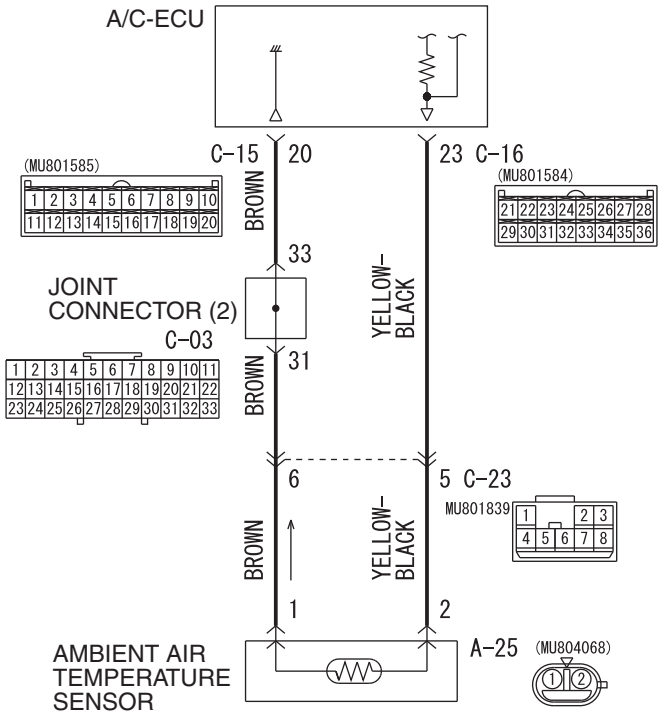
DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1011, B1012: Ambient Air Temperature Sensor System

⚠ CAUTION

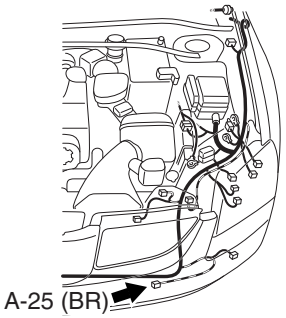
If DTC B1011 or B1012 has been set, multi-display related DTC U1130 is also set. After B1011 or B1012 has been diagnosed, don't forget to erase DTC U1130.

Ambient Air Temperature Sensor Circuit



AC901243
W4P55M11A

CONNECTOR: A-25



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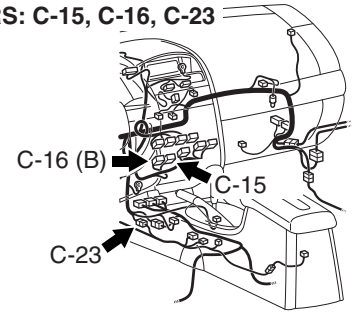
CONNECTORS: C-15, C-16, C-23



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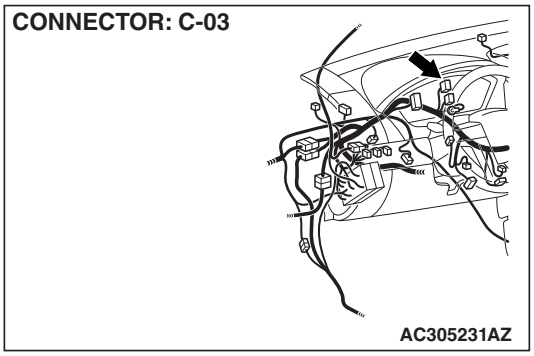
TSB Revision



DTC SET CONDITION

- DTC B1011 is set if there is a short circuit in the ambient air temperature sensor input circuit.
- DTC B1012 is set if there is a defective connector connection, or if there is an open circuit in the harness.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the ambient air temperature sensor, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1011 or B1012 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the ambient air temperature sensor. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

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

DIAGNOSIS

Required Special Tools:

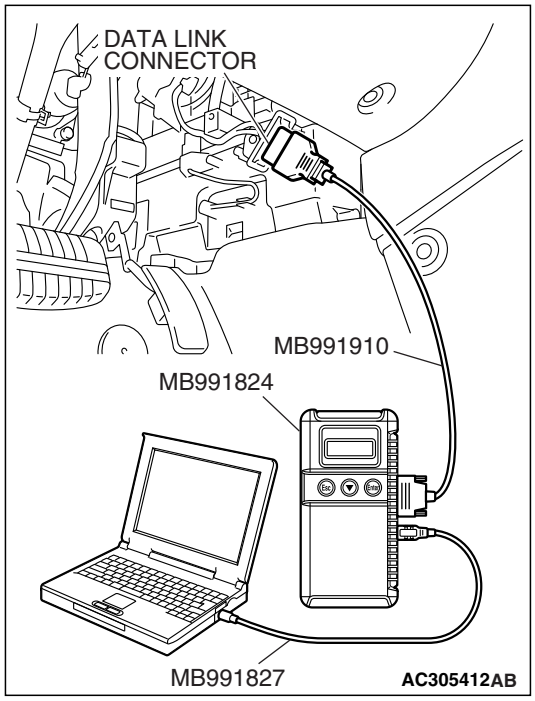
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 8.

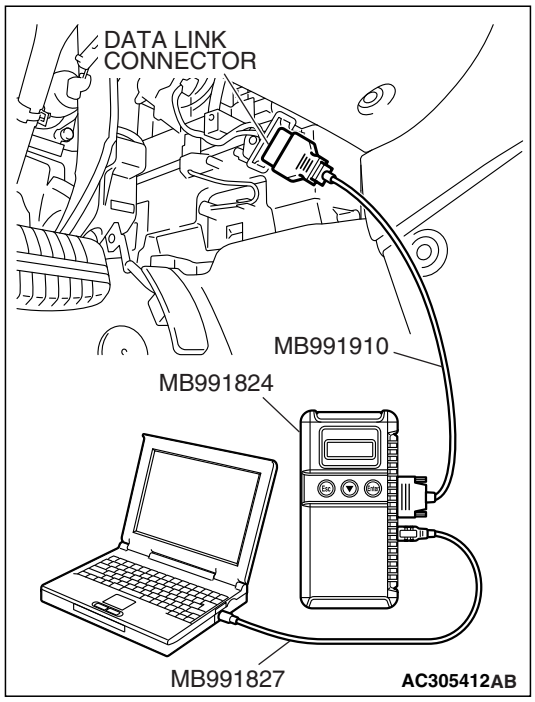


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



STEP 3. 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.

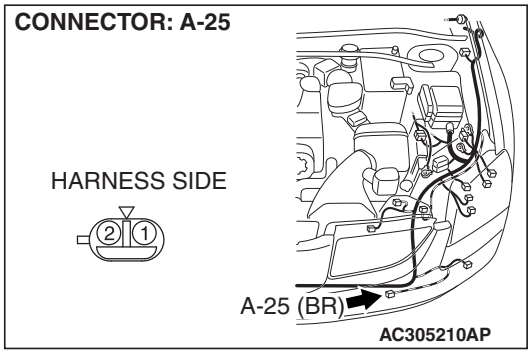
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 02: Ambient air temperature sensor.
  - Check that the ambient temperature matches the displayed value on the scan tool.

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?

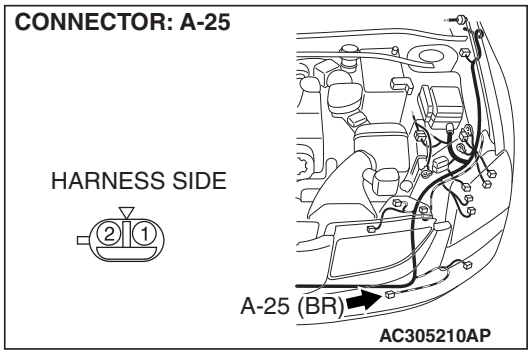
YES : Replace the A/C-ECU. Then go to Step 8.
NO : Go to Step 4.



STEP 4. Check ambient air temperature sensor connector A-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ambient air temperature sensor connector A-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 8.

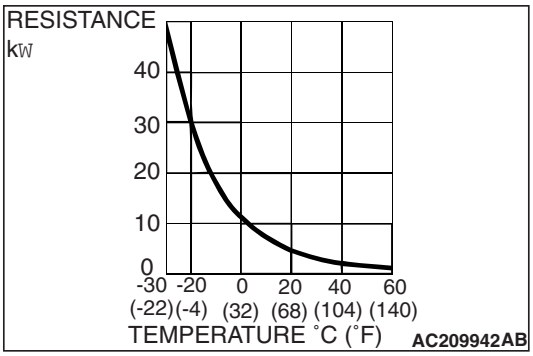


STEP 5. Check the ambient air temperature sensor.

(1) Disconnect ambient air temperature sensor connector A-25.

⚠ CAUTION

The ambient air temperature sensor should be checked without removing it. If the sensor is removed, it is no longer serviceable.



(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 6.

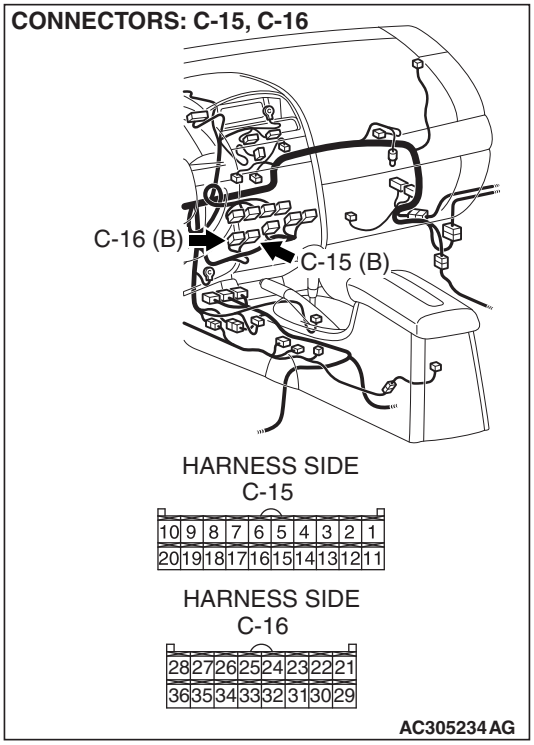
NO : Replace the ambient air temperature sensor. Then go to Step 8.

STEP 6. Check A/C-ECU connectors C-15 and C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

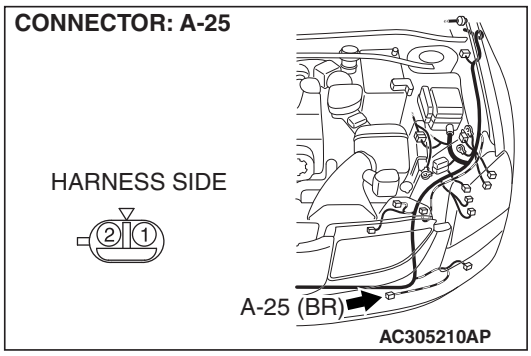
Q: Are A/C-ECU connectors C-15 and C-16 in good condition?

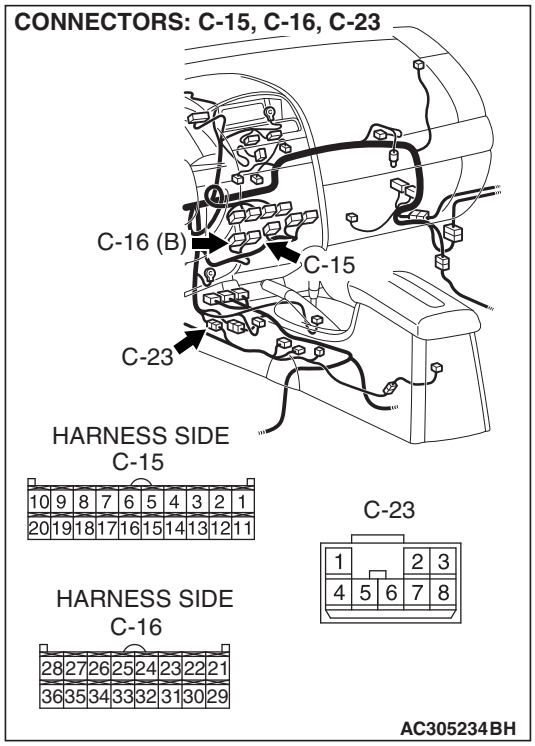
YES : Go to Step 7.

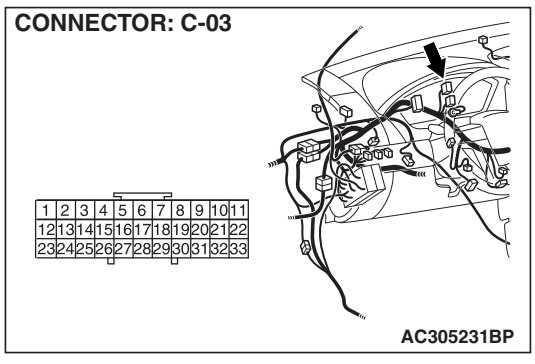
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 8.



STEP 7. Check the wiring harness between A/C-ECU connector C-15 (terminal 20), C-16 (terminal 23) and ambient air temperature sensor connector A-25 (terminals 1 and 2).







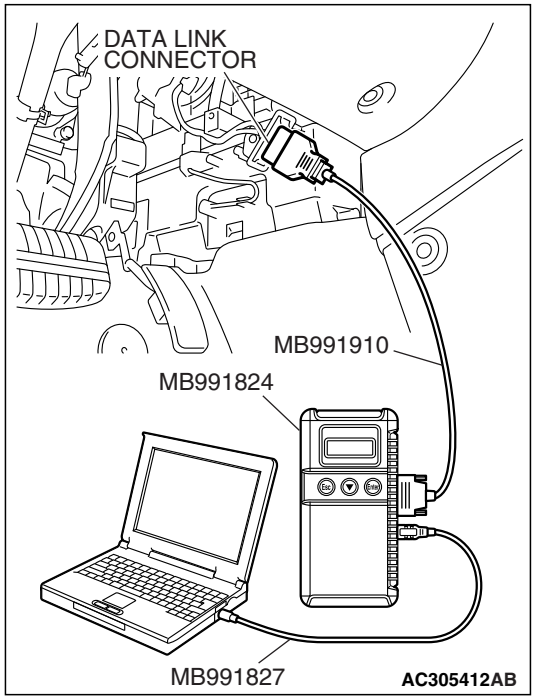
NOTE: Also check intermediate connector C-23 and joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or joint connector C-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the sensor signal line and ground line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connector C-15 (terminal 20), C-16 (terminal 23) and ambient air temperature sensor connector A-25 (terminals 1 and 2) in good condition?

YES : Replace the A/C-ECU. Then go to Step 8.
NO : Repair the wiring harness. Then go to Step 8.

TSB Revision



STEP 8. Recheck for diagnostic trouble code.

Check again if the DTC is set.

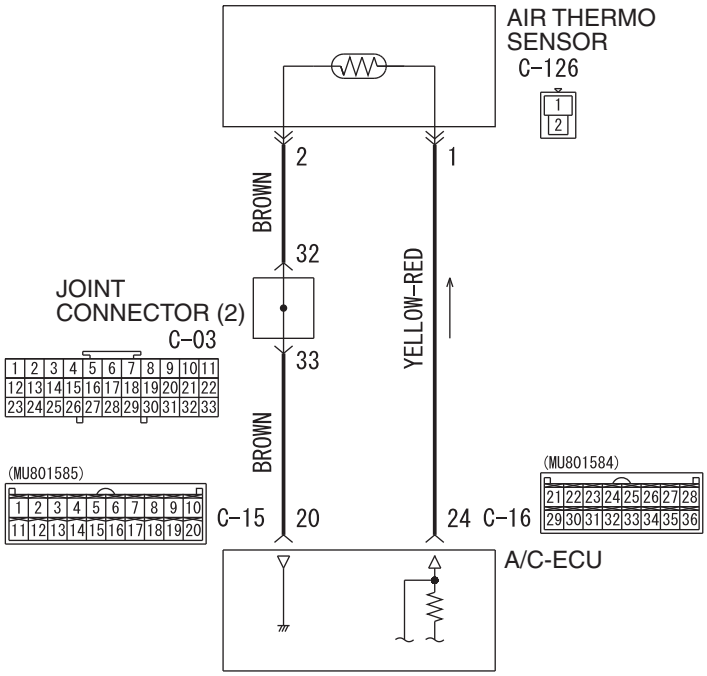
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

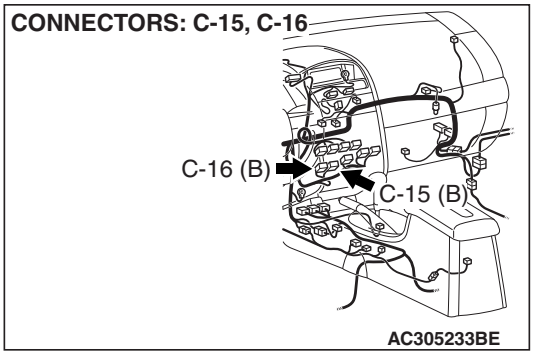
Q: Is the check result satisfactory?

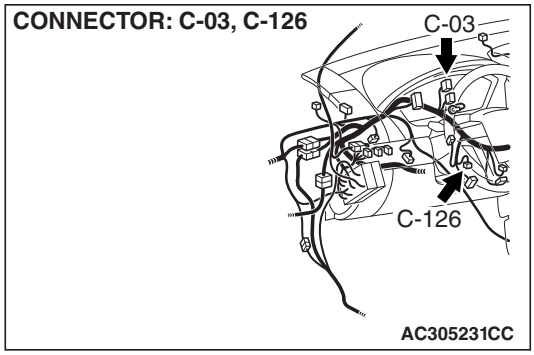
YES : The procedure is complete.
NO : Return to Step 1.

DTC B1021, B1022: Air Thermo Sensor System

Air Thermo Sensor Circuit







DTC SET CONDITION

- DTC B1021 is set if there is a short circuit in the air thermo sensor input circuit.
- DTC B1022 is set if there is a defective connector connection, or if there is an open circuit in the harness.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the air thermo sensor, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1021 or B1022 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the air thermo sensor. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

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:

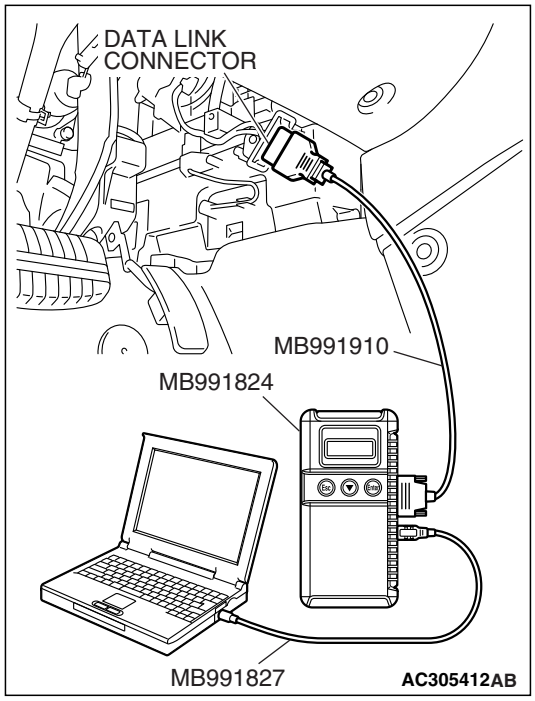
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 7.

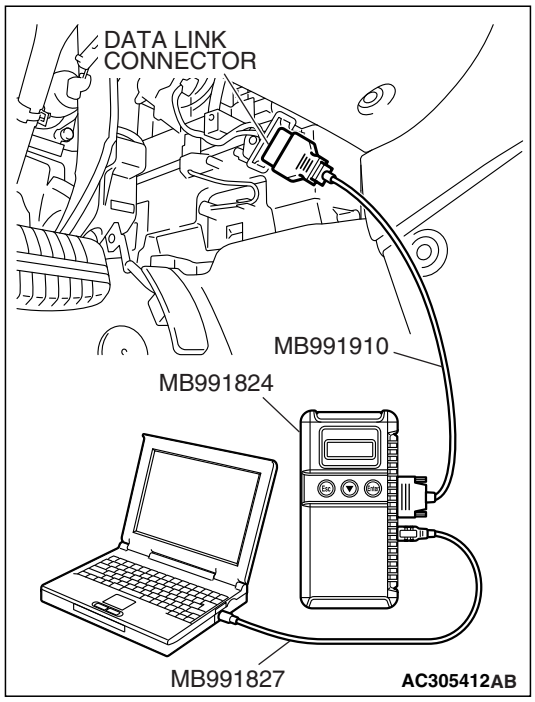


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



STEP 3. 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 03: air thermo sensor.
  - Check that the passenger room temperature matches the displayed value on the scan tool while the engine is cold.

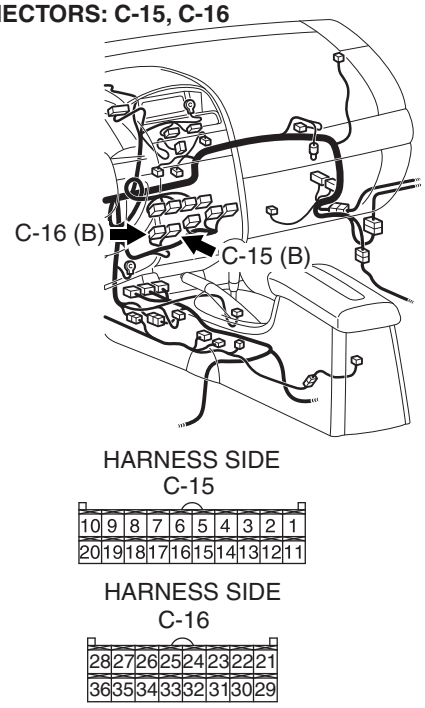
NOTE: When this DTC is set and the system is fail-safe status, the value of service data displays -6 °C.

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

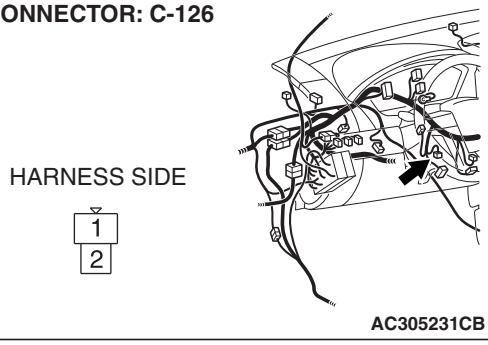
Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 7.
NO : Go to Step 4.

CONNECTORS: C-15, C-16



CONNECTOR: C-126



STEP 4. Check A/C-ECU connectors C-15, C-16 and air thermo sensor connector C-126 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

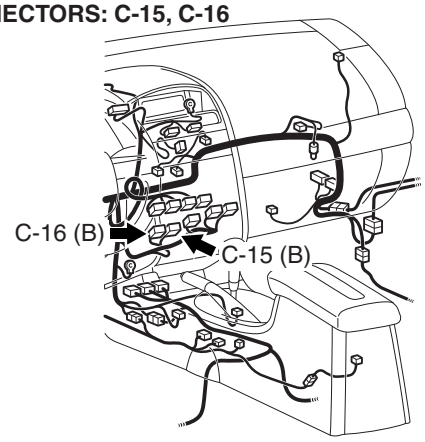
Q: Are A/C-ECU connectors C-15, C-16 and air thermo sensor connector C-126 in good condition?

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 7.

STEP 5. Check the wiring harness between A/C-ECU connector C-15 (terminal 20), C-16 (terminal 24) and air thermo sensor connector C-126 (terminals 2 and 1).

CONNECTORS: C-15, C-16



HARNESS SIDE
C-15

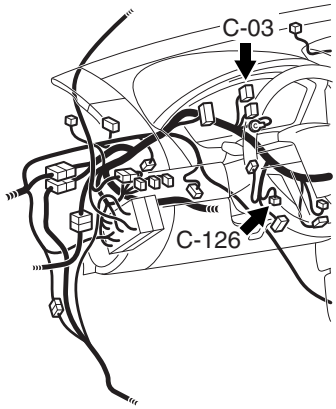
10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

HARNESS SIDE
C-16

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

AC305234 AG

CONNECTORS: C-03, C-126



C-03

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

HARNESS SIDE
C-126

1
2

AC305232AP

NOTE: Also check joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

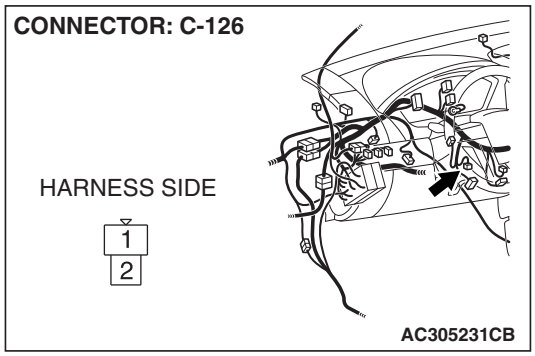
- Check the sensor signal line and ground line for open and short circuit.

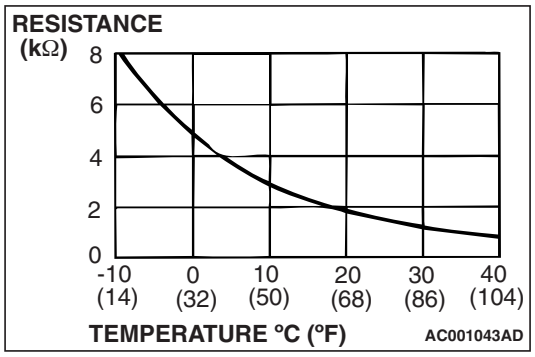
Q: Is the wiring harness between A/C-ECU connector C-15 (terminal 20), C-16 (terminal 24) and air thermo sensor connector C-126 (terminals 2 and 1) in good condition?

YES : Go to Step 6.
NO : Repair the wiring harness. Then go to Step 7.

STEP 6. Check the air thermo sensor.

(1) Disconnect the air thermo sensor connector C-126.



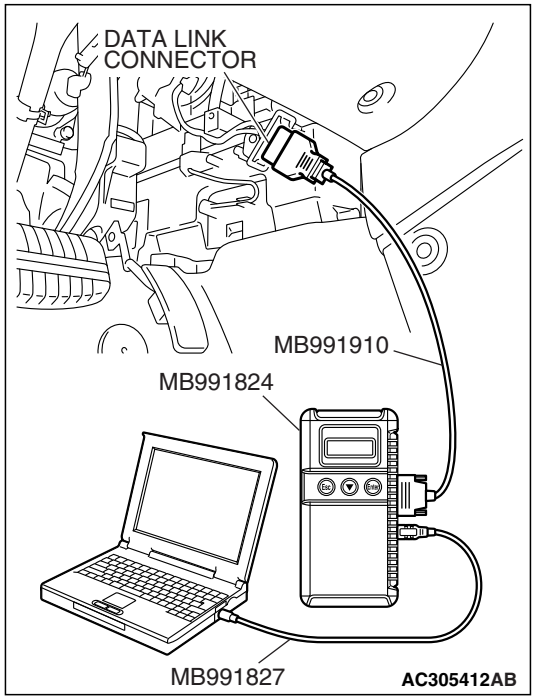


(2) Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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 7.
NO : Replace the air thermo sensor. Then go to Step 7.



STEP 7. Recheck for diagnostic trouble code.

Check again if the DTC is set.

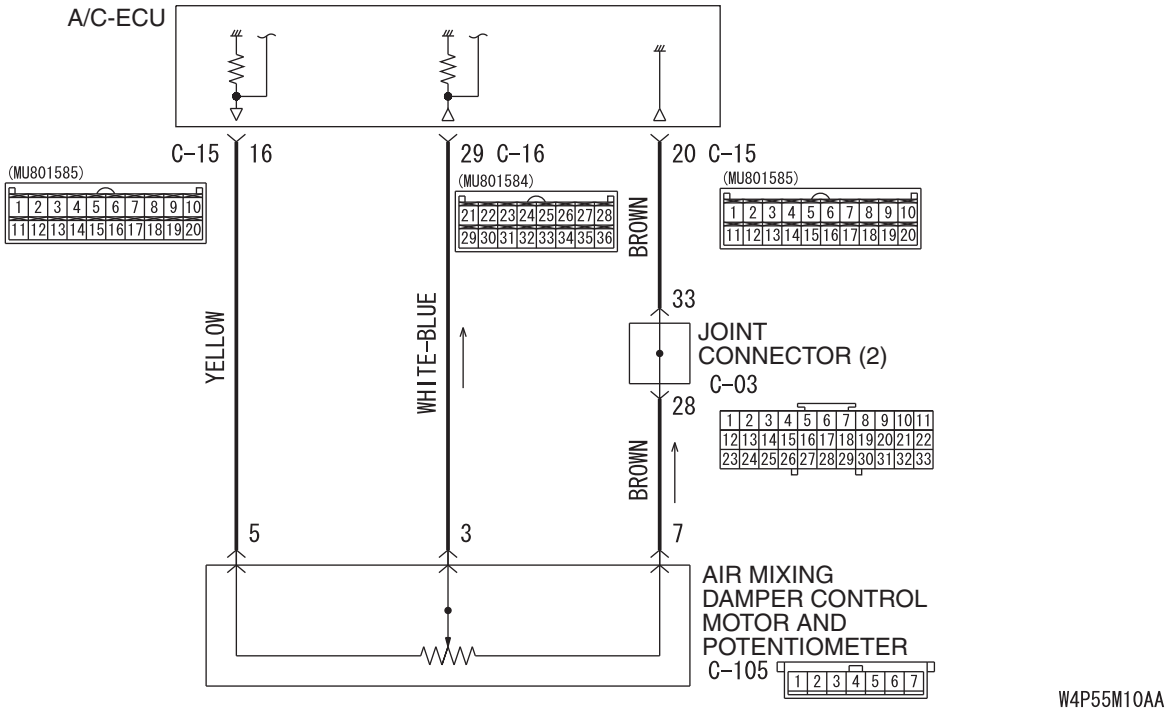
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

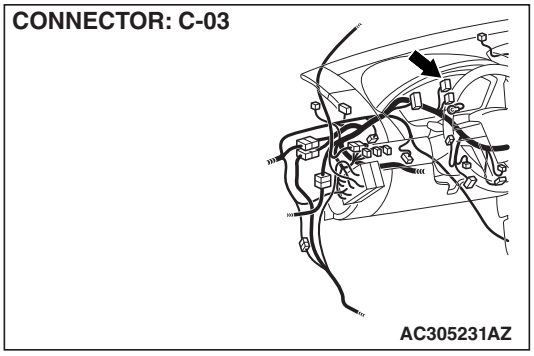
Q: Is the check result satisfactory?

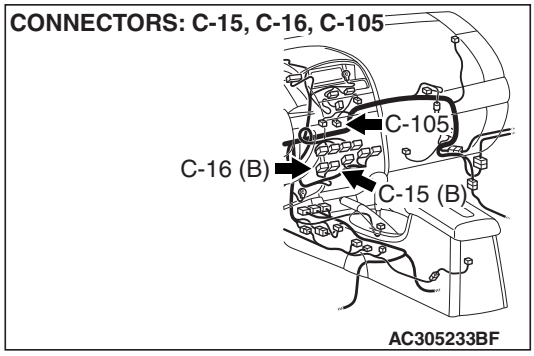
YES : The procedure is complete.
NO : Return to Step 1.

DTC B1041, B1042: Air Mixing Damper Control Motor and Potentiometer (Potentiometer system)

Air Mixing Damper Control Motor Potentiometer Circuit







DTC SET CONDITION

- DTC B1041 or B1042 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 ground circuit.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the air mixing damper control motor and potentiometer, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1041 or B1042 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the air mixing damper control motor and potentiometer. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

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

TSB Revision

DIAGNOSIS

Required Special Tools:

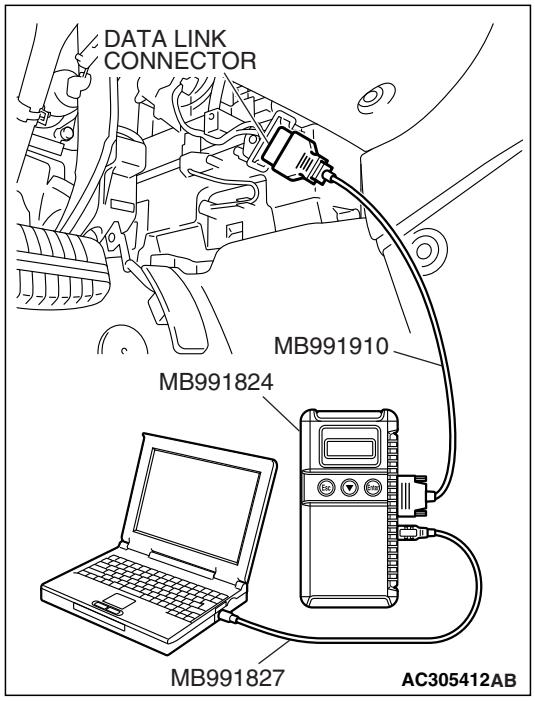
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 7.

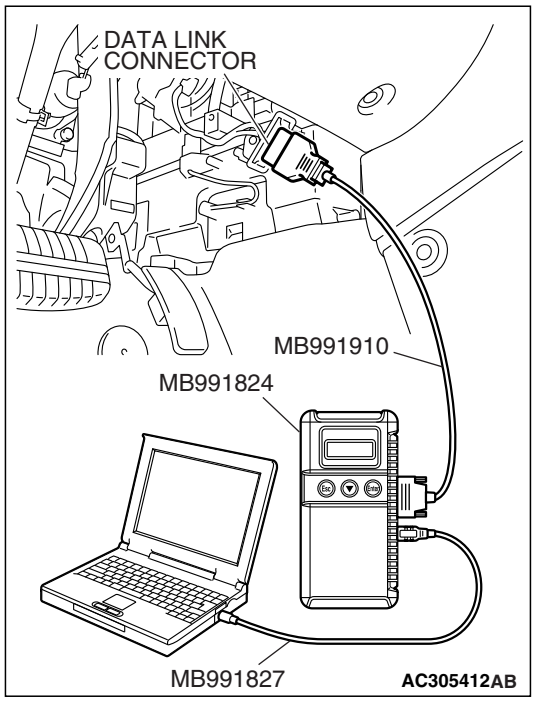


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



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

⚠ CAUTION

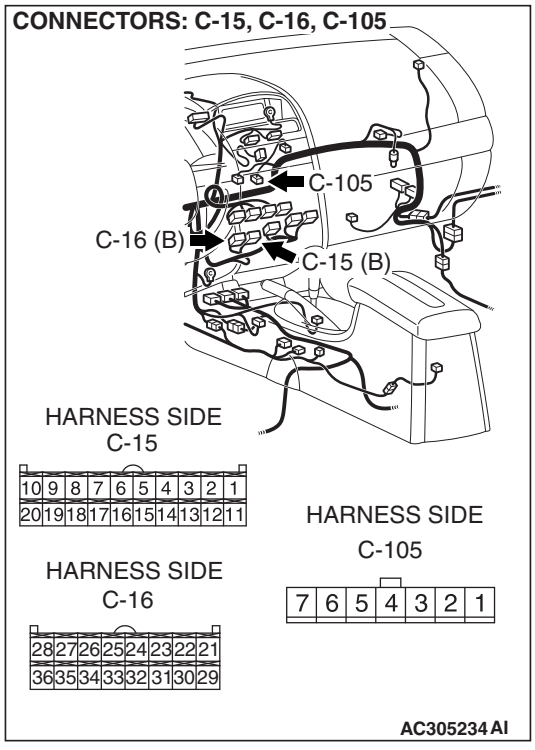
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(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 10: 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 7.
NO : Go to Step 4.

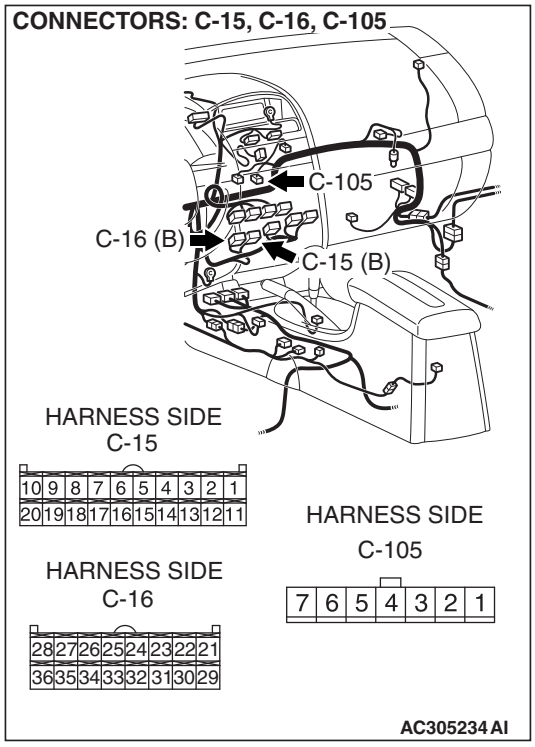


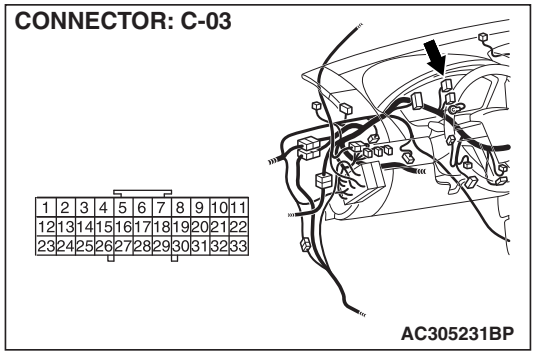
STEP 4. Check A/C-ECU connectors C-15, C-16 and air mixing damper control motor and potentiometer connector C-105 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connectors C-15, C-16 and air mixing damper control motor and potentiometer connector C-105 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 7.

STEP 5. Check the wiring harness between A/C-ECU connectors C-15 (terminals 16 and 20), C-16 (terminal 29) and air mixing damper control motor and potentiometer connector C-105 (terminals 5, 7 and 3).



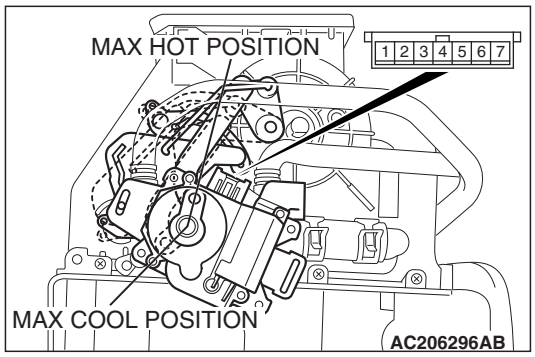


NOTE: Also check joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the A/C-ECU signal line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connectors C-15 (terminals 16 and 20), C-16 (terminal 29) and air mixing damper control motor and potentiometer connector C-105 (terminals 5, 7 and 3) in good condition?

YES : Go to Step 6.
NO : Repair the wiring harness. Then go to Step 7.



STEP 6. Check the air mixing damper control motor and potentiometer.

⚠ CAUTION

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

(1) 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 2 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 2 to the negative battery terminal	The lever moves from the MAX HOT position to the MAX COOL position

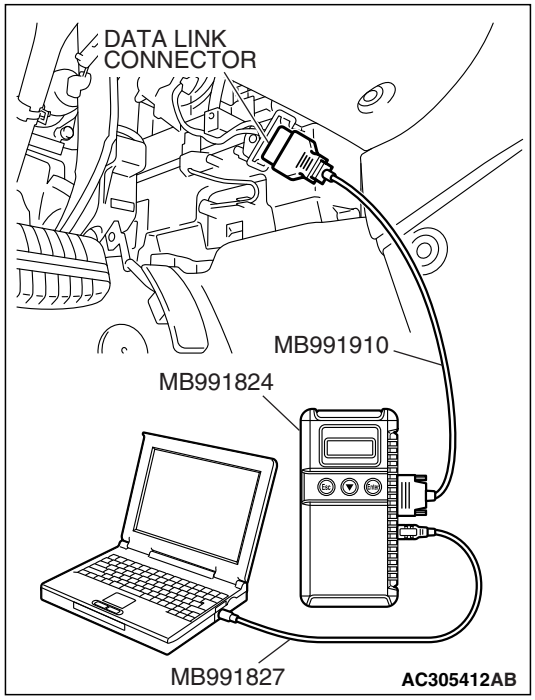
(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

Standard value: 1.7 (MAX HOT) –5.0 (MAX COOL) kΩ

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

YES : Repair the A/C-ECU. Go to Step 7.

NO : Replace the air mixing damper control motor and potentiometer. Then go to Step 7.



STEP 7. Recheck for diagnostic trouble code.

Check again if the DTC is set.

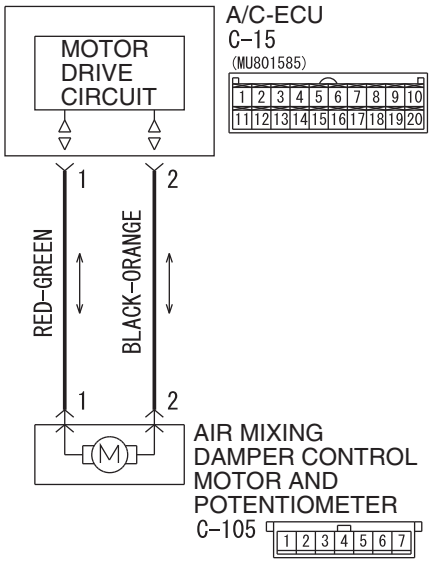
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC B1045: Air mixing damper control motor and potentiometer (activating system failure)

Air Mixing Control Motor Circuit



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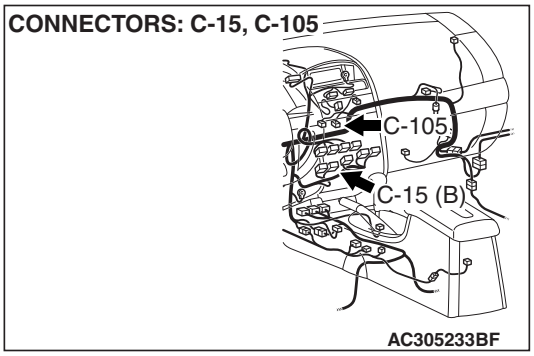


DTC SET CONDITION

- If the air mixing damper control motor does not work normally, DTC No.B1045 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the air mixing damper control motor and potentiometer, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1045 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the air mixing damper control motor and potentiometer. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

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:

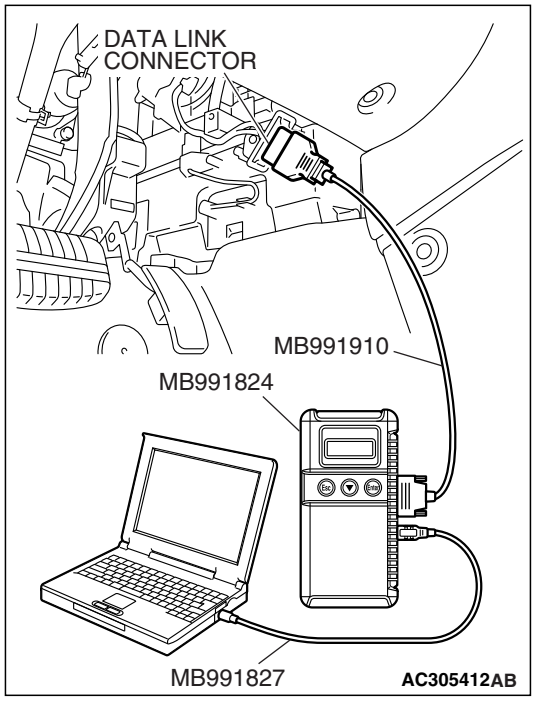
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 7.

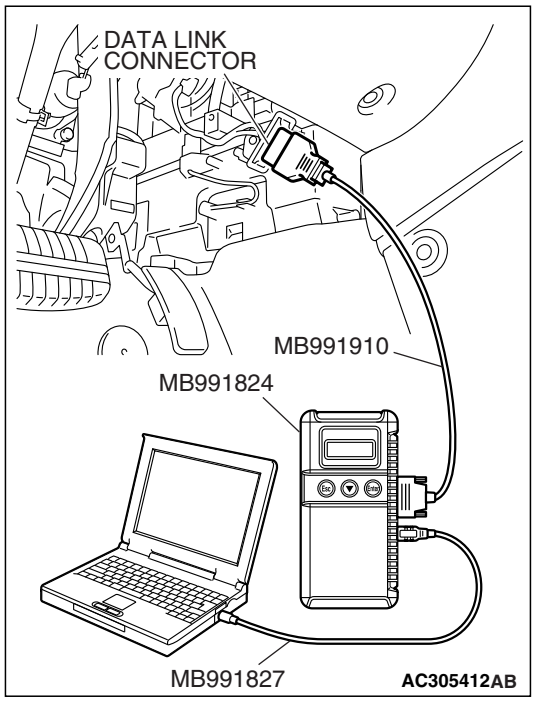


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



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

⚠ CAUTION

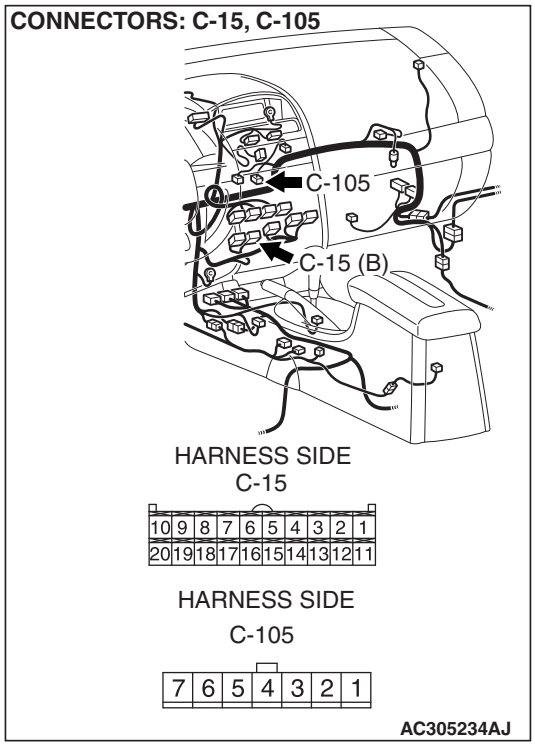
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(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 10: air mix damper motor (MAX COOL position)
Item 11: air mix damper motor (middle position)
Item 12: 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?

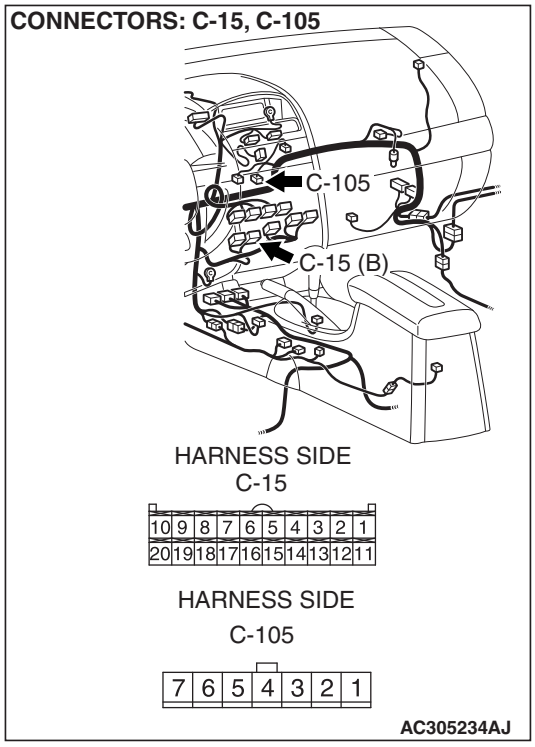
YES : Replace the A/C-ECU. Then go to Step 7.
NO : Go to Step 4.



STEP 4. Check A/C-ECU connector C-15 and air mixing damper control motor and potentiometer connector C-105 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connector C-15 and air mixing damper control motor and potentiometer connector C-105 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 7.



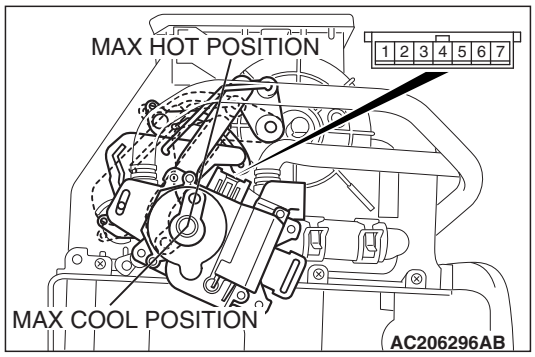
STEP 5. Check the wiring harness between A/C-ECU connector C-15 (terminals 1 and 2) and air mixing damper control motor and potentiometer connector C-105 (terminals 1 and 2).

- Check the A/C-ECU signal line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connector C-15 (terminals 1 and 2) and air mixing damper control motor and potentiometer connector C-105 (terminals 1 and 2) in good condition?

YES : Go to Step 6.

NO : Repair the wiring harness. Then go to Step 7.



STEP 6. 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.

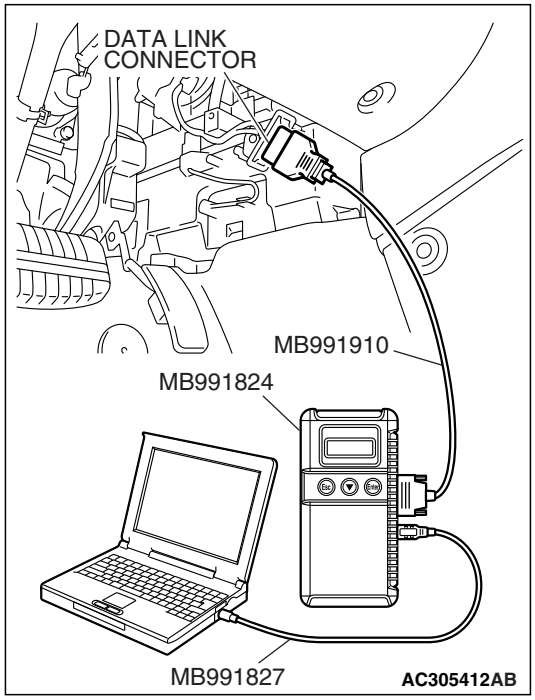
Check the air mix damper control motor by the following procedures.

Lever position	Battery connection	Lever operation
At the MAX COOL position	• Connect terminal 2 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 2 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 : Repair the A/C-ECU. Then go to Step 7.

NO : Replace the air mixing damper control motor and potentiometer. Then go to Step 7.



STEP 7. Recheck for diagnostic trouble code.

Check again if the DTC is set.

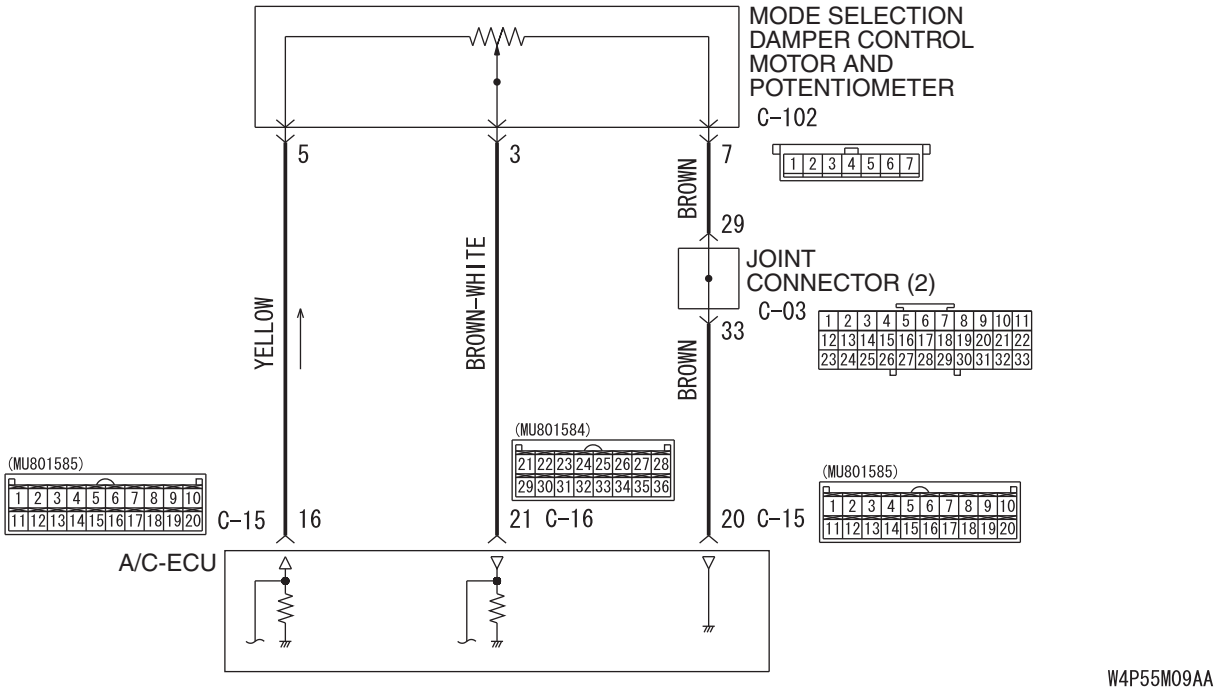
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

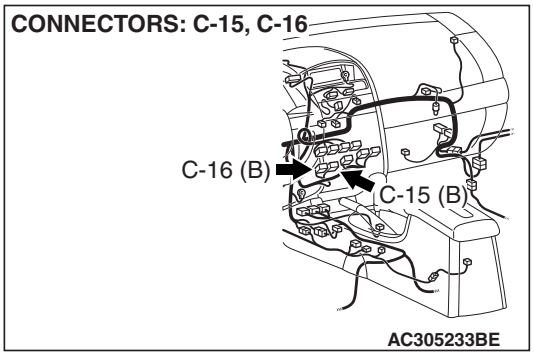
Q: Is the check result satisfactory?

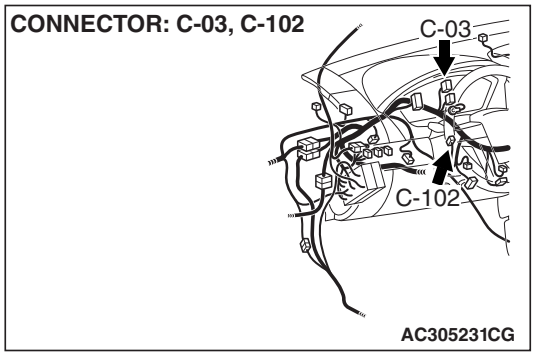
YES : The procedure is complete.
NO : Return to Step 1.

DTC B1061, B1062: Mode Selection Damper Control Motor and Potentiometer

Mode Selection Damper Control Motor Potentiometer Circuit







DTC SET CONDITION

- DTC B1061 or B1062 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.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the mode selection damper control motor and potentiometer, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1061 or B1062 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the mode selection damper control motor and potentiometer. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

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

TSB Revision

DIAGNOSIS

Required Special Tools:

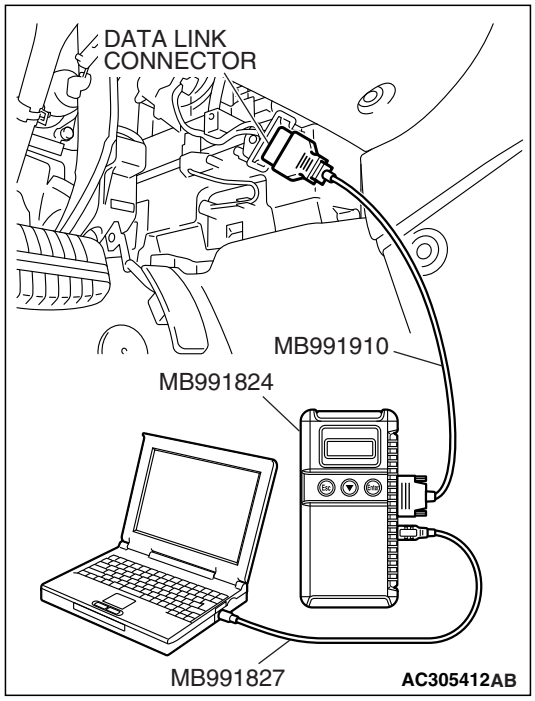
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 7.

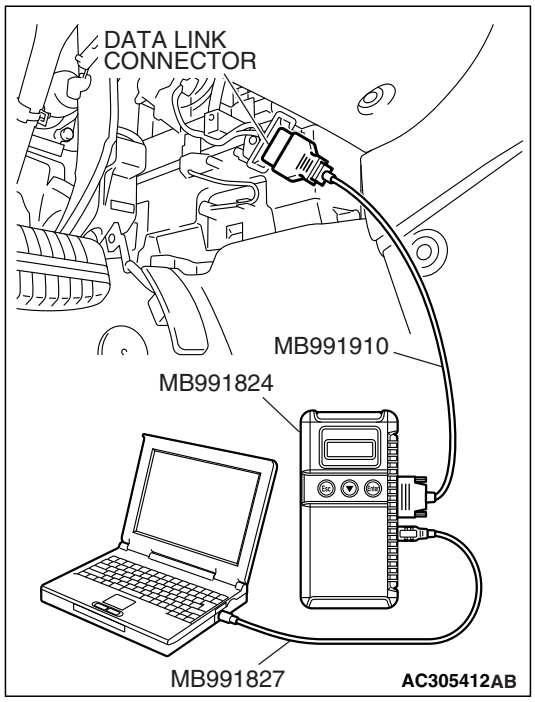


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



STEP 3. 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.

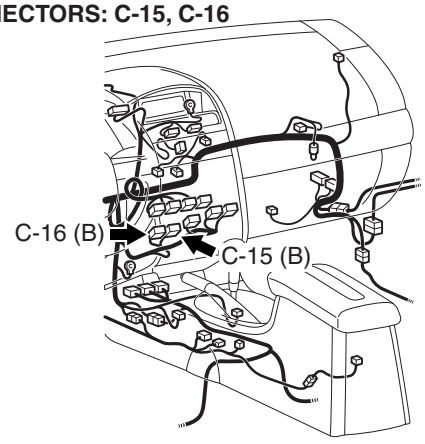
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 12: Air outlet c/o potentiometer.
  - Check that the set position of the heater control matches the displayed position on the scan tool.

(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 7.
NO : Go to Step 4.

CONNECTORS: C-15, C-16



HARNESS SIDE
C-15

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

HARNESS SIDE
C-16

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

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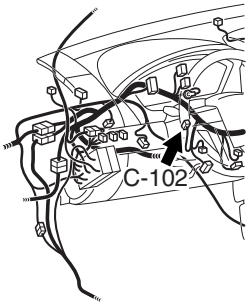
CONNECTOR: C-102



HARNESS SIDE

7	6	5	4	3	2	1

AC305231CD

STEP 4. Check A/C-ECU connectors C-15, C-16 and mode selection damper control motor and potentiometer connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

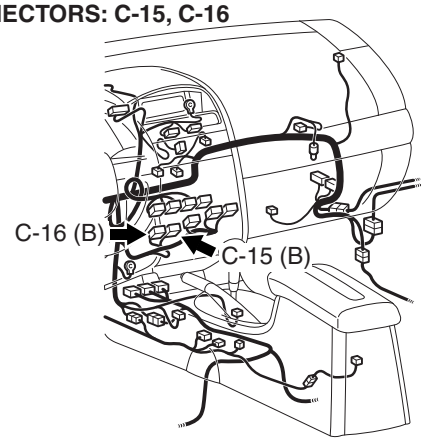
Q: Are A/C-ECU connectors C-15, C-16 and mode selection damper control motor and potentiometer connector C-102 in good condition?

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 7.

STEP 5. Check the wiring harness between A/C-ECU connectors C-15 (terminals 16 and 20), C-16 (terminal 21) and mode selection damper control motor and potentiometer connector C-102 (terminals 5, 7 and 3).

CONNECTORS: C-15, C-16



HARNESS SIDE
C-15

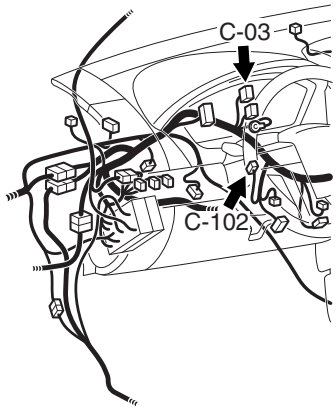
10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

HARNESS SIDE
C-16

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

AC305234 AG

CONNECTORS: C-03, C-102



C-03

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

HARNESS SIDE
C-102

7	6	5	4	3	2	1

AC305232AR

NOTE: Also check joint connectors C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

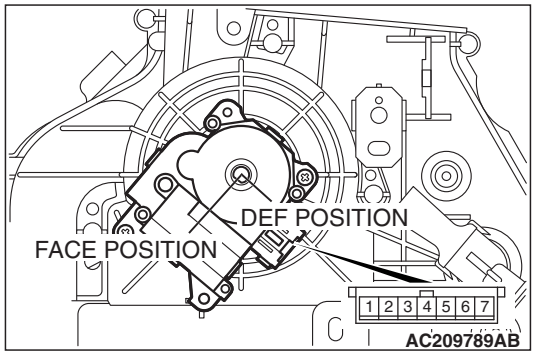
- Check the A/C-ECU signal line for open and short circuit.

Q: Are the wiring harnesses between A/C-ECU connector C-15 (terminals 16 and 20), C-16 (terminal 21) and mode selection damper control motor and potentiometer connector C-102 (terminals 5, 7 and 3) in good condition?

YES : Go to Step 6.
NO : Repair the wiring harness. Then go to Step 7.

STEP 6. Check the mode selection damper control motor and potentiometer.

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



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

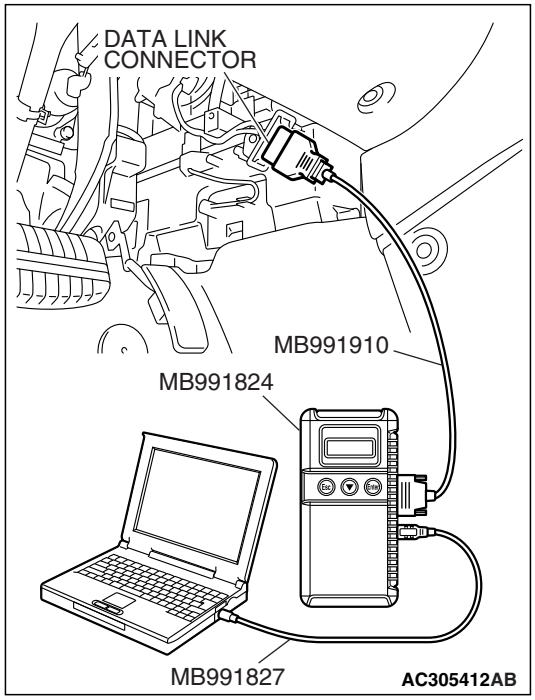
Lever position	Battery connection	Lever operation
At the FACE position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the DEF position
At the DEF position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the DEF position to the FACE position

(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the mode selection damper control motor is running. The resistances should change gradually within the standard value.

Standard value: 0.8 (DEF) –4.8 (FACE) kΩ

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

YES : Repair the A/C-ECU. Then go to Step 7.
NO : Replace the mode selection damper control motor and potentiometer. Then go to Step 7.



STEP 7. Recheck for diagnostic trouble code.

Check again if the DTC is set.

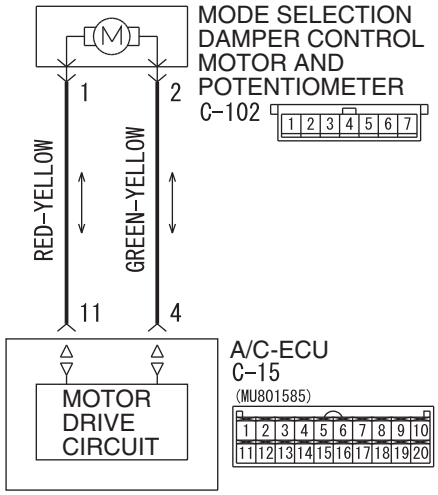
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC B1065: Mode Selection Damper Control Motor and Potentiometer

Mode Selection Damper Control Motor Circuit



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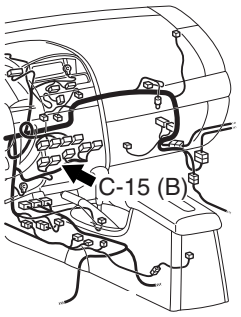
CONNECTOR: C-15



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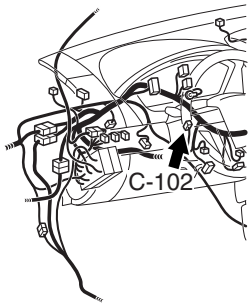
CONNECTOR: C-102



AC305231CF

DTC SET CONDITION

- If the air mixing damper control motor does not work normally, DTC B1065 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the mode selection damper control motor and potentiometer, or connector(s) or wiring between them may be defective.

Past trouble

- If DTC B1065 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the mode selection damper control motor and potentiometer. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

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

TSB Revision

DIAGNOSIS

Required Special Tools:

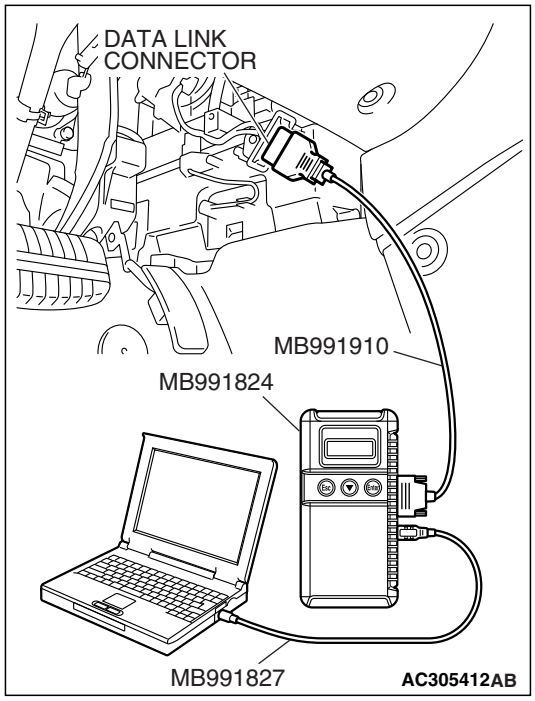
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-13). Then go to Step 7.

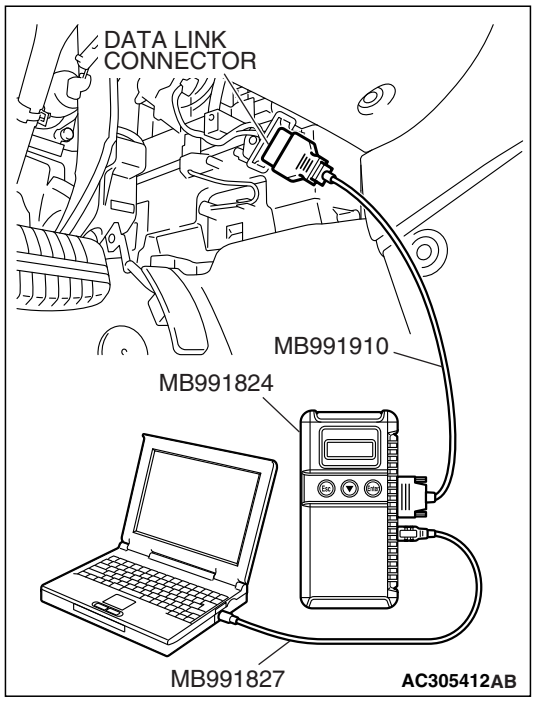


STEP 2. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

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.00-14.
NO : Go to Step 3.



STEP 3. 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.

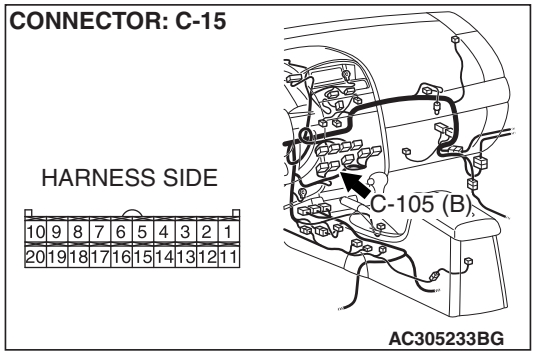
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
Item 13: air mix damper motor (FACE position)
Item 14: air mix damper motor (FOOT/FACE position)
Item 15: air mix damper motor (FOOT position)
Item 16: air mix damper motor (DEF/FOOT position)
Item 17: air mix damper motor (DEF position)
- Check that the mode selection damper control motor operates.

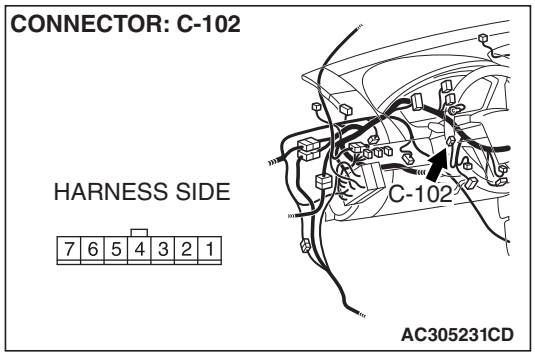
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 7.
NO : Go to Step 4.

STEP 4. Check A/C-ECU connector C-15 and mode selection damper control motor and potentiometer connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.





Q: Are A/C-ECU connector C-15 and mode selection damper control motor and potentiometer connector C-102 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 7.

TSB Revision

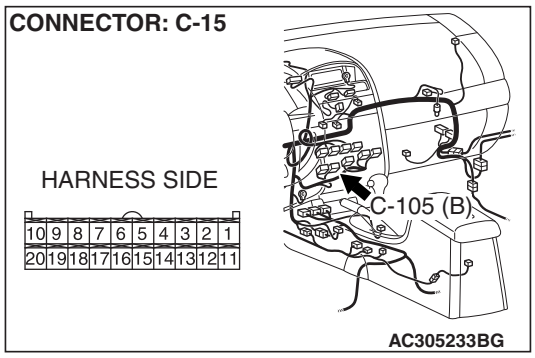
STEP 5. Check the wiring harness between A/C-ECU connector C-15 (terminals 11 and 4) and mode selection damper control motor and potentiometer connector C-102 (terminals 1 and 2).

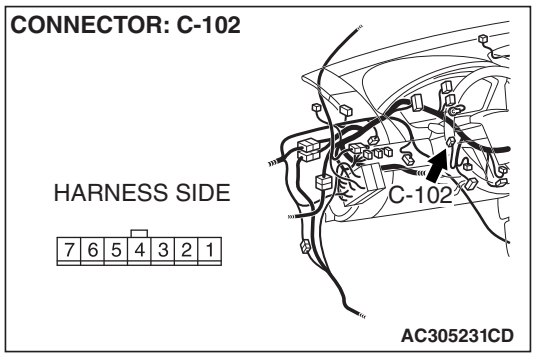
- Check the A/C-ECU signal line for open and short circuit.

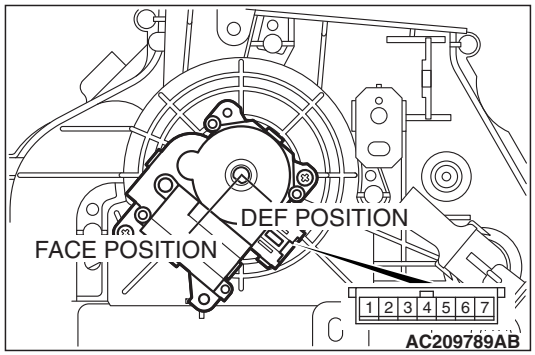
Q: Are the wiring harnesses between A/C-ECU connector C-15 (terminals 11 and 4) and mode selection damper control motor and potentiometer connector C-102 (terminals 1 and 2) in good condition?

YES : Go to Step 6.

NO : Repair the wiring harness. Then go to Step 7.







STEP 6. Check the mode selection damper control motor.

⚠ CAUTION

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

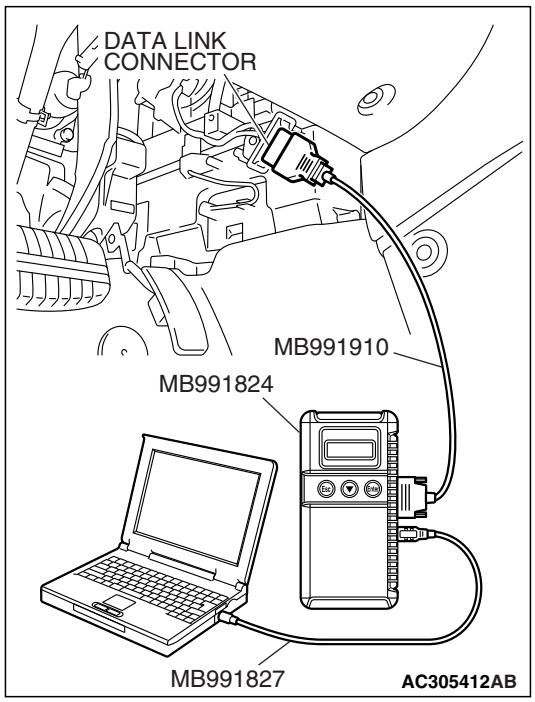
Check the mode selection damper control motor by the following procedures.

Lever position	Battery connection	Lever operation
At the FACE position	• Connect terminal 2 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 2 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 7.

NO : Replace the mode selection damper control motor and potentiometer. Then go to Step 7.



STEP 7. 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 : Repair the A/C-ECU. The procedure is complete.
NO : Return to Step 1.

DTC U1073: Bus Off

⚠ CAUTION
If DTC U1073 is set in the A/C-ECU, diagnose the CAN main bus line.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

DTC U1073 will be stored when the A/C-ECU ceases CAN communication (bus off) and then resumes the communication when the ignition switch is turned to the "LOCK" (OFF) position.

TECHNICAL DESCRIPTION (COMMENT)

The wiring harness wire or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector, or the A/C-ECU may be defective.

TROUBLESHOOTING HINTS

- Defective connector(s) or wiring harness
- Malfunction of the A/C-ECU

DIAGNOSIS

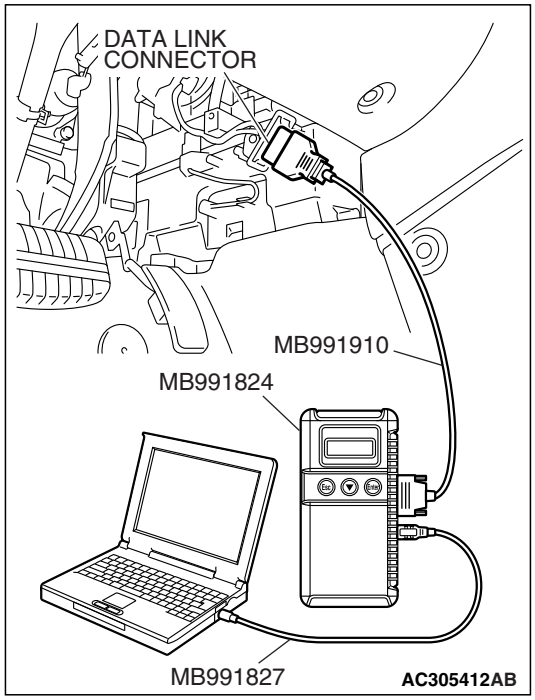
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

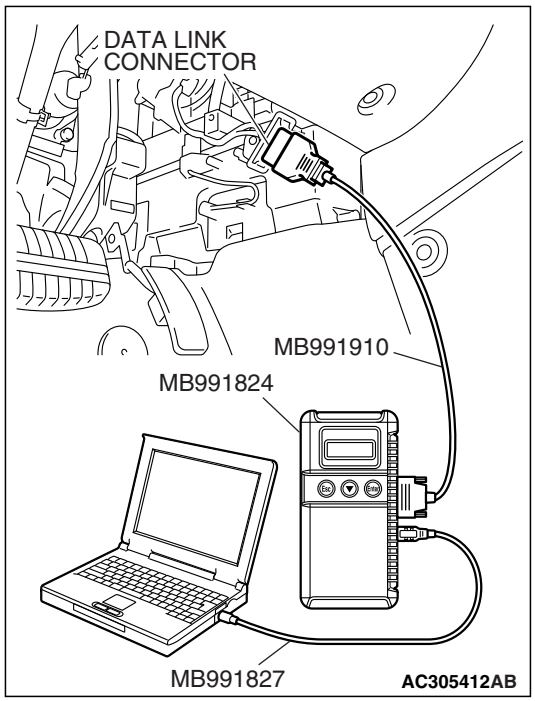


(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the can bus lines P.54C-5).

STEP 2. 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 : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.)
NO : Replace the A/C-ECU. On completion, check that the DTC is not reset.

TSB Revision

DTC U1100: Powertrain Control Module Time-out (Related to Engine)

⚠ CAUTION
If DTC U1100 is set in the A/C-ECU, diagnose the CAN main bus line.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the communication circuit is normal.

*NOTE: *: When the DTC relating to the CAN communication error are output, make sure of the vehicle equipment. When the vehicle is not equipped with the system the A/C-ECU communicates to, the DTC is always output. This is not abnormal.*

TROUBLE JUDGMENT

The A/C-ECU receives engine control system-related signal from the powertrain control module. If the ECU cannot receive the signal, DTC U1100 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- Connector(s) or wiring harness in the CAN bus lines between the powertrain control module and the A/C-ECU, the power supply system to the powertrain control module, the powertrain control module itself, or the A/C-ECU may be defective.

Past trouble

- If DTC U1100 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the A/C-ECU and the powertrain control module, and the power supply system to the powertrain control module. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

NOTE: For a past trouble, you cannot find it by the scan tool CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, Explanation about the scan too CAN bus diagnostics P.54C-6).

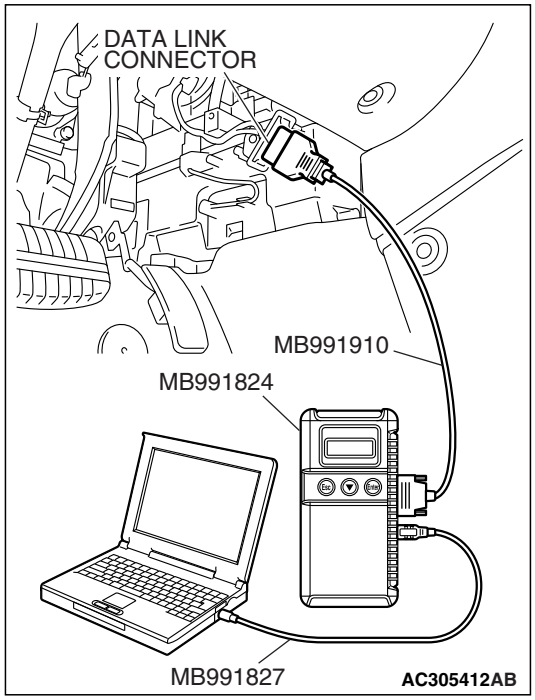
TROUBLESHOOTING HINTS

- Powertrain control module failed
- Malfunction of the A/C-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

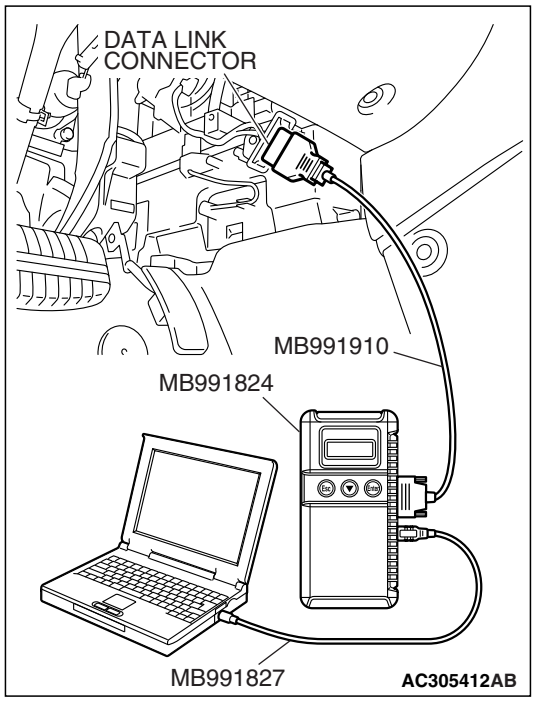
⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the can bus lines P.54C-5).



STEP 2. Using scan tool MB991958 read the powertrain control module diagnostic trouble code.

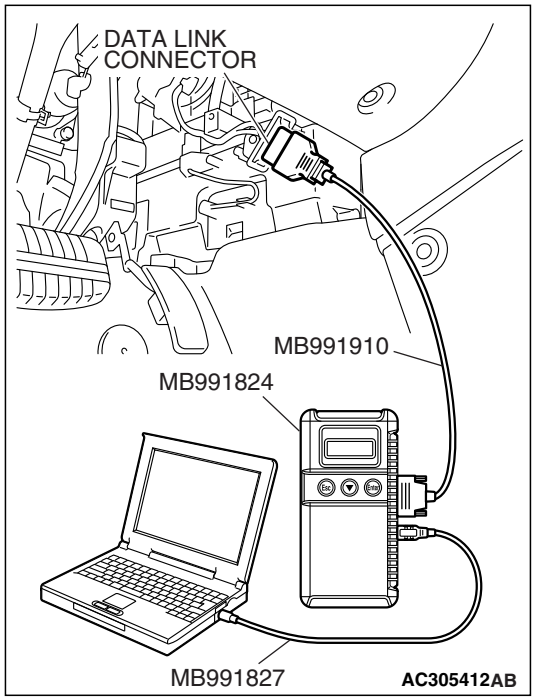
Check whether an engine and automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Diagnose the powertrain control module (Refer to GROUP 13A, Diagnostic Trouble Code P.13A-46 <2.4L> or GROUP 13B, Diagnostic Trouble Code P.13B-46 <3.8L>).
NO : Go to Step 3.

TSB Revision



STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.

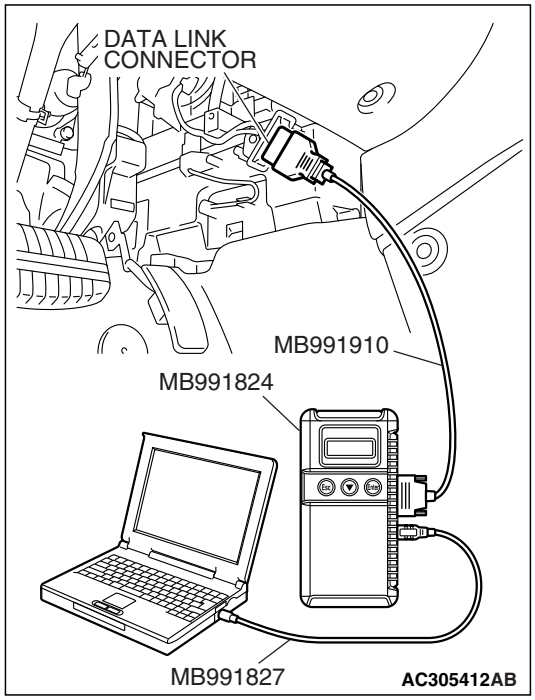
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- ETACS-ECU
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Go to Step 5.
NO : Go to Step 4.

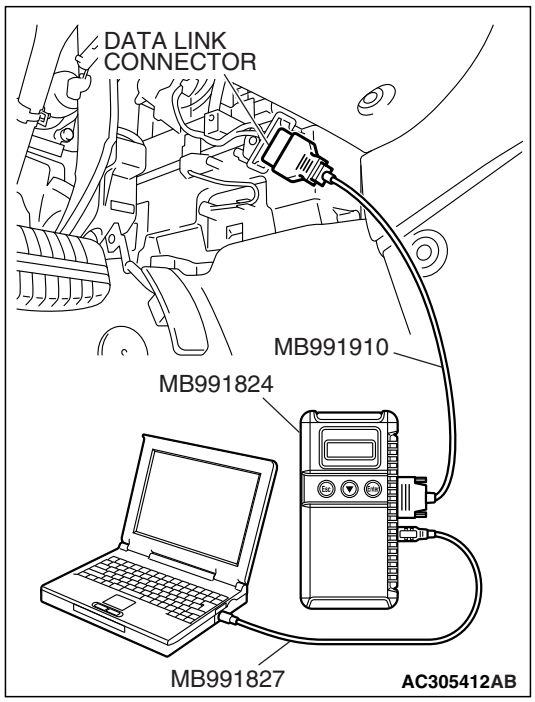


STEP 4. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the powertrain control module and the A/C-ECU (Refer to GROUP 00E, Harness Connector Inspection P.00E-2.)
NO : Replace the powertrain control module. On completion, check that the DTC is not reset.



STEP 5. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the powertrain control module and the A/C-ECU (Refer to GROUP 00E, Harness Connector Inspection P.00E-2.)

NO : Replace the A/C-ECU. On completion, check that the DTC is not reset.

DTC U1111: Multi-Center Display Unit (Middle Grade Type) Time-out

⚠ CAUTION
If DTC U1111 is set in the A/C-ECU, diagnose the CAN main bus line.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the communication circuit is normal.

*NOTE: *: When the DTC relating to the CAN communication error are output, make sure of the vehicle equipment. When the vehicle is not equipped with the system the A/C-ECU communicates to, the DTC is always output. This is not abnormal.*

TROUBLE JUDGMENT

The A/C-ECU receives signals from the multi-center display unit (middle grade type). If the ECU cannot receive the signal related to the multi-center display unit, DTC U1111 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- Connector(s) or wiring harness in the CAN bus lines between the A/C-ECU and the middle-grade multi-center display unit, the power supply system to the display unit, the display unit itself, or the A/C-ECU may be defective.

Past trouble

- When DTC U1111 is set as a past trouble, carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the A/C-ECU and the middle-grade multi-center display unit, the power supply system to the display unit. If the connectors and wiring are normal, and obviously the ECU or the middle-grade multi-center display is the cause of the trouble, replace the ECU or the middle-grade multi-center display. If in doubt, do not replace the ECU or the display unit.

  NOTE: For a past trouble, you cannot find it by the scan too CAN bus diagnostics even if there is a failure in the CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C –Explanation about the scan too CAN bus diagnostics P.54C-6).

TSB Revision

TROUBLESHOOTING HINTS

- Malfunction of middle-grade multi-center display unit
- Malfunction of the A/C-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

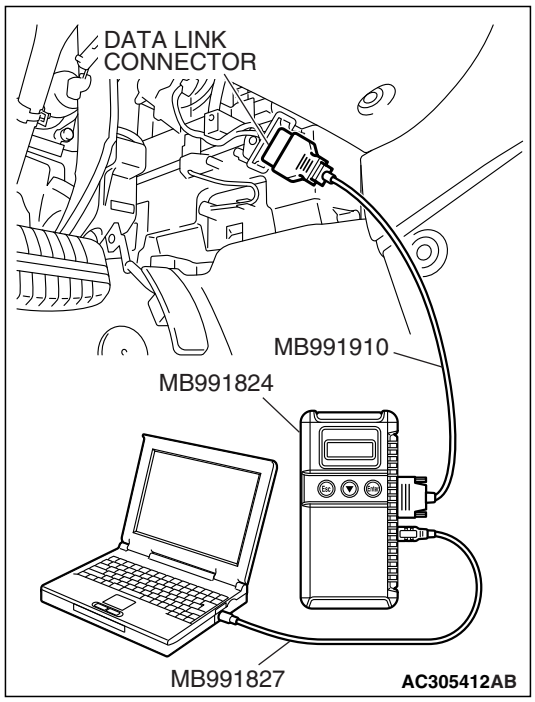
⚠ CAUTION

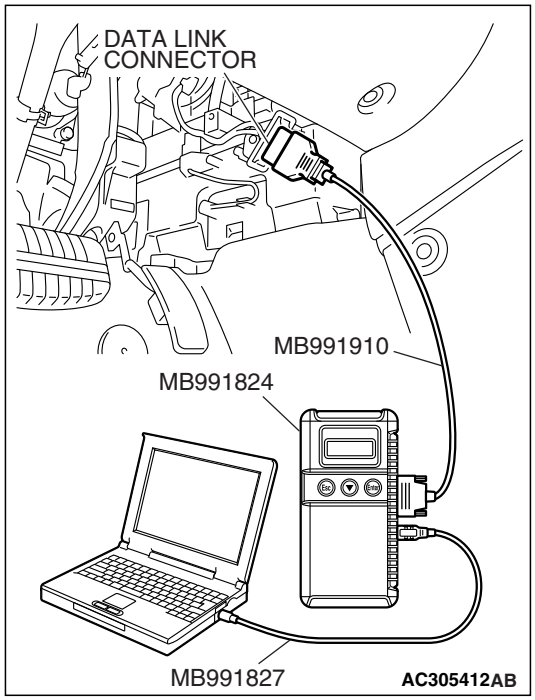
To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-13).





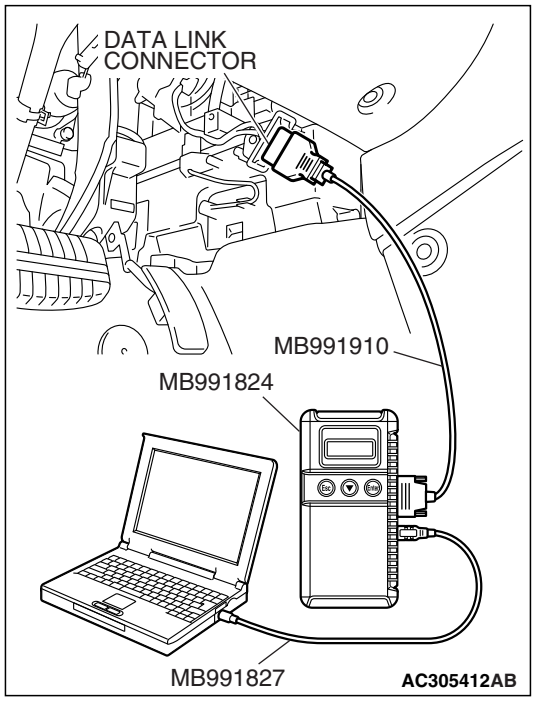
STEP 2. Using scan tool MB991958, read the powertrain control module diagnostic trouble code.

Check that the middle-grade multi-center display unit sets a DTC.

(1) Turn the ignition switch to the "ON" position.
(2) Check for the DTC related to the middle-grade multi-center display unit.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Go to Step 3.
NO : Refer to GROUP 54A, Middle-grade multi-center display unit –Diagnosis P.54A-328.



STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.

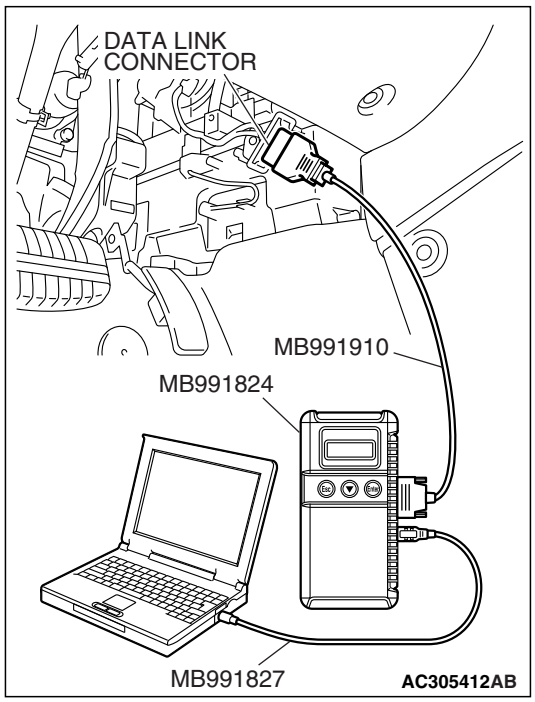
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- ETACS-ECU
  DTC indicating a time-out error of middle-grade multi-center display unit

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Go to Step 5.
NO : Go to Step 4.



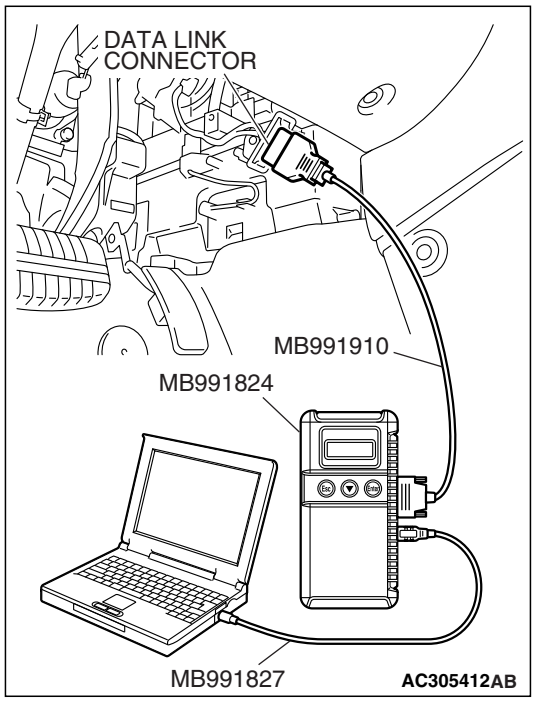
STEP 4. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the middle-grade multi-center display unit and the A/C-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14).

NO : Replace the middle-grade multi-center display unit. On completion, check that the DTC is not reset.



STEP 5. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the middle-grade multi-center display unit and the A/C-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14).

NO : Replace the A/C-ECU. On completion, check that the DTC is not reset.

DTC U1120: Failure Information on Powertrain Control Module (Related to Engine)

⚠ CAUTION
If DTC U1120 is set in the A/C-ECU, diagnose the CAN main bus line.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the communication circuit is normal.

⚠ CAUTION
The engine control system- related DTC may be set when DTC U1120 is set. (For details refer to GROUP 00, Intersystem Affiliated DTC Reference Table P.00-17.) Diagnose the engine control system first when the engine control system- related DTC is set.

TROUBLE JUDGMENT

The A/C-ECU receives engine control system-related signal from the powertrain control module by the CAN bus lines. If a fail-safe related data is contained in the signal from the powertrain control module, DTC U1120 will be stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The wiring harness wire or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector, the powertrain control module, or the A/C-ECU may be defective.

Past trouble

- If DTC U1120 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the A/C-ECU and the powertrain control module, and the power supply system to the powertrain control module. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

  NOTE: For a past trouble, you cannot find it by the scan tool CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C –Explanation about the scan tool CAN bus diagnostics P.54C-6).

TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU.
- Malfunction of the powertrain control module.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

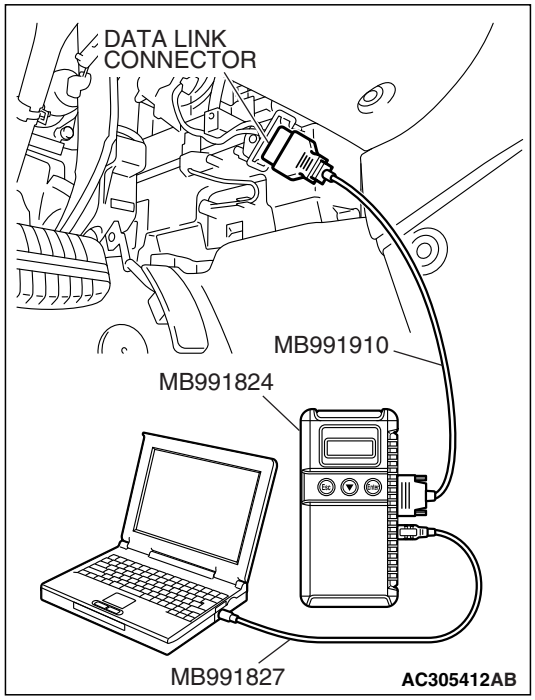
⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-13).



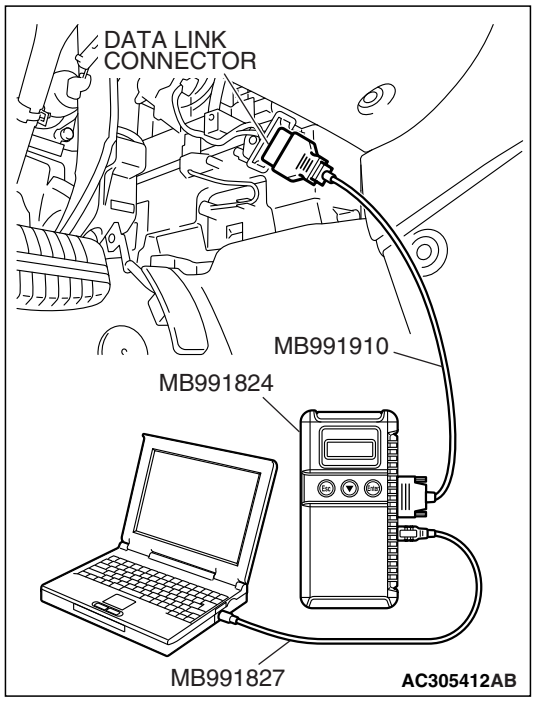
STEP 2. Using scan tool MB991958, read the powertrain control module diagnostic trouble code.

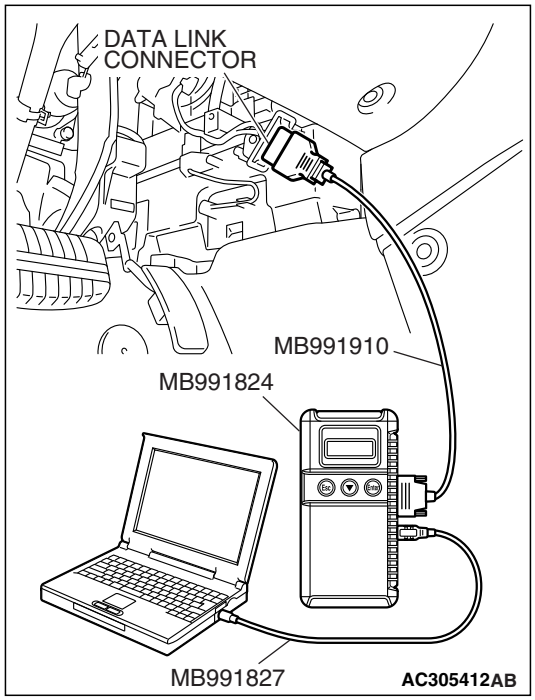
Check whether any engine or automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Refer to GROUP 13A, Diagnostic Trouble Code P.13A-46 <2.4L> or GROUP 13B, Diagnostic Trouble Code P.13B-46 <3.8L>.
NO : Go to Step 3.





STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.

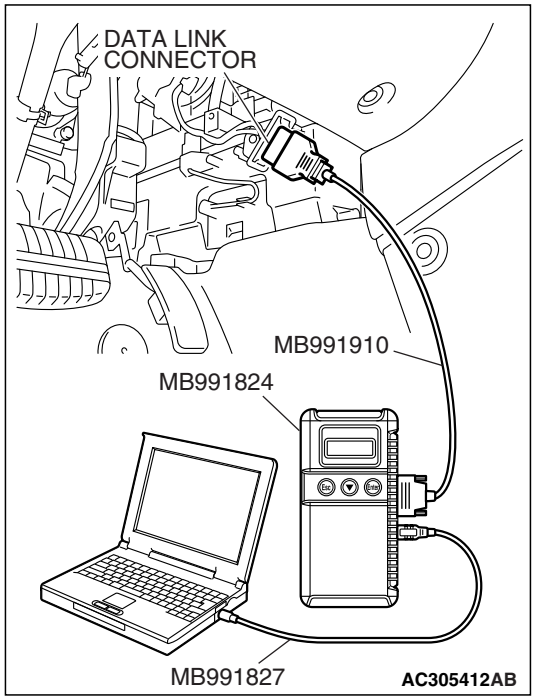
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- ETACS
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- Multi-center display unit (middle grade type)
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Go to Step 5.
NO : Go to Step 4.

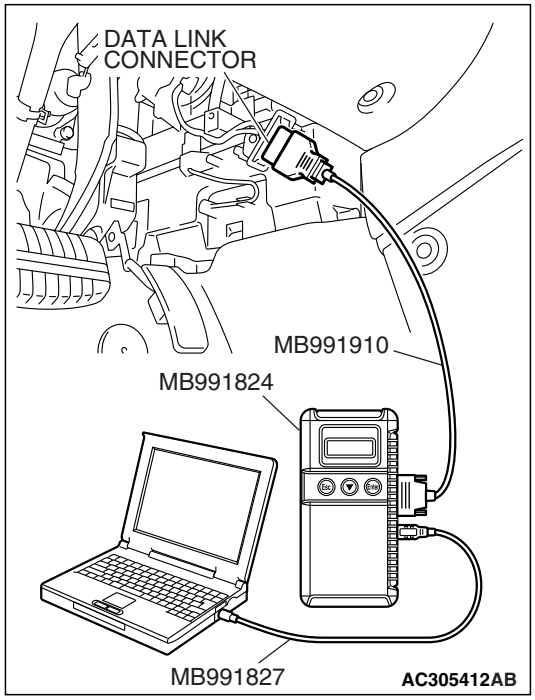


STEP 4. Recheck for diagnostic trouble code.

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

Q: Is the check result satisfactory?

YES : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14).
NO : Replace the powertrain control module. On completion, check that the DTC is not reset.



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

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

(2) Check if the DTC is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the powertrain control module and the A/C-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.)

NO : Replace the A/C-ECU. On completion, check that the DTC is not reset.

SYMPTOM CHART

M1552009900741

⚠ CAUTION

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

Symptom	Inspection procedure	Reference page
When the ignition switch is "ON", the A/C does not operate.	1.	P.55A-63
When the air outlet changeover control knob is moved to DEFROSTER or DEFROSTER/FOOT position, the A/C or the inside/outside air changeover damper motor does not operate.	2.	P.55A-64
Outside/Inside air changeover is not possible.	3.	P.55A-65
When the A/C is operating, temperature inside the passenger compartment does not decrease (cool air is not emitted).	4.	P.55A-71
Blower fan and motor do not turn.	5.	P.55A-89
Blower air amount cannot be changed.	6.	P.55A-101
The A/C indicator flashes.	7.	P.55A-106
Defogger function does not operate.	8.	P.55A-114
Defogger timer function does not operate.	9.	P.55A-126
Malfunction of the A/C-ECU power supply system.	10.	P.55A-127
Condenser fan does not operate.	11.	REFER TO GROUP 14 – SYMPTOM CHART P.14-3

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: When the Ignition Switch is "ON", the A/C does not Operate.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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

(1) Turn the ignition switch to the "ON" position.
(2) Turn the blower speed selection dial to the blower operating position.

Q: Does the blower motor operate when the speed selection dial is turned to the blower operating position?

YES : Refer to Inspection procedure 4 "When the A/C is operating, temperature inside the passenger compartment does not decrease (cool air not emitted) P.55A-71."

NO : Refer to Inspection procedure 5 "Blower fan and motor do not turn P.55A-89."

INSPECTION PROCEDURE 2: When the Air Outlet Changeover Control Knob is Moved to DEFROSTER or DEFROSTER/FOOT Position, the A/C or the Outside/Inside Air Selection Damper Control Motor does not operate.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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

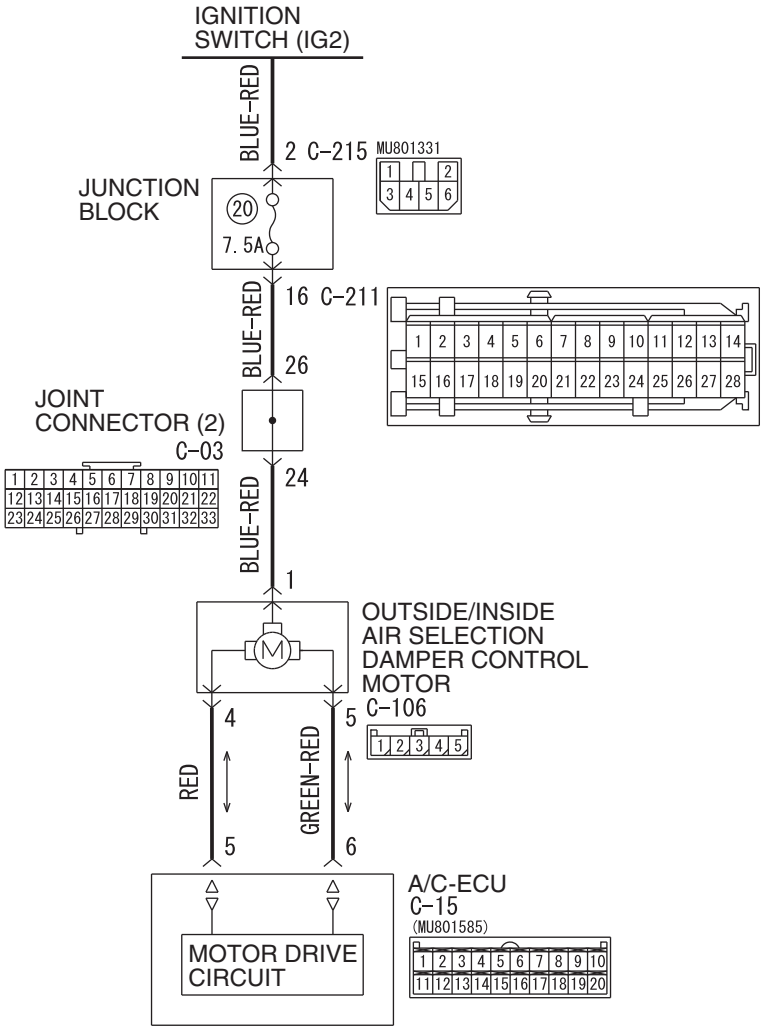
(1) Turn the ignition switch to the "ON" position.
(2) Outside/inside air selection damper control motor switch: This is used to switch from the inside air to outside air or vice versa.
(3) Check to see that the outside/inside air selection damper control motor operates normally.

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

YES : Replace the A/C-ECU.
NO : Refer to Inspection procedure 3, "Inside/outside air changeover is not possible P.55A-65."

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

Outside/Inside air selection Motor Circuit



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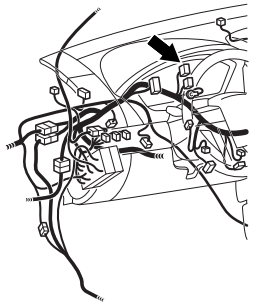
CONNECTOR: C-03



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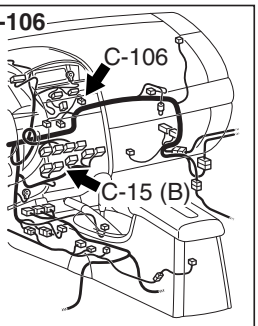
CONNECTORS: C-15, C-106



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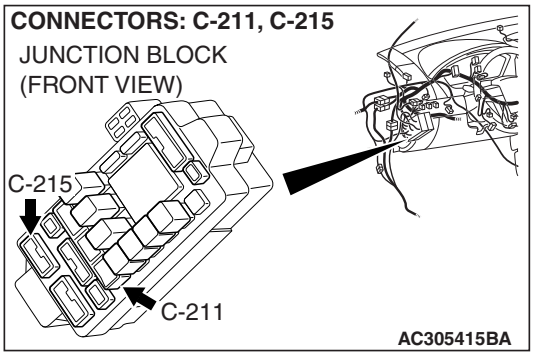


CIRCUIT OPERATION

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

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

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

YES : Go to Step 2.

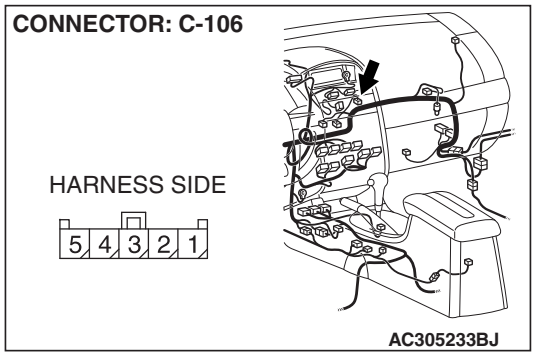
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55A-127."

STEP 2. Check outside/inside air selection damper control motor connector C-106 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

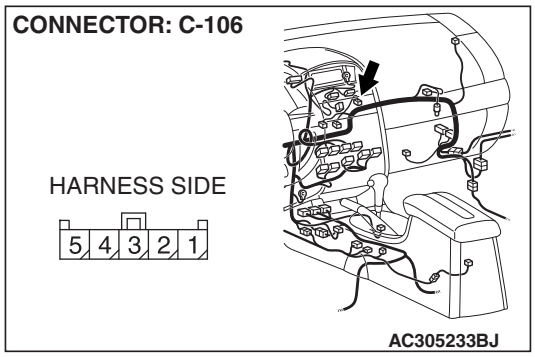
Q: Is outside/inside air selection damper control motor connector C-106 in good condition?

YES : Go to Step 3.

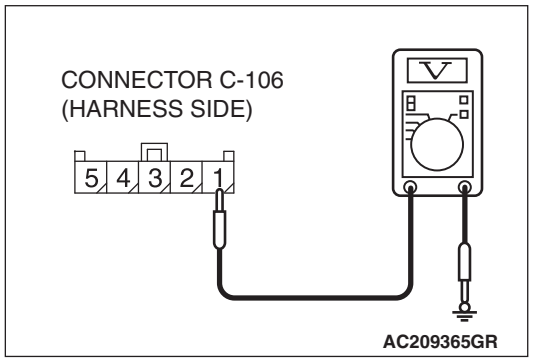
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the outside/inside air selection damper control motor works normally.



STEP 3. Measure the voltage at outside/inside air selection damper control motor connector C-106.



(1) Disconnect outside/inside air selection damper control motor connector C-106, and measure the voltage at the harness side.
(2) Turn the ignition switch to the "ON" position.

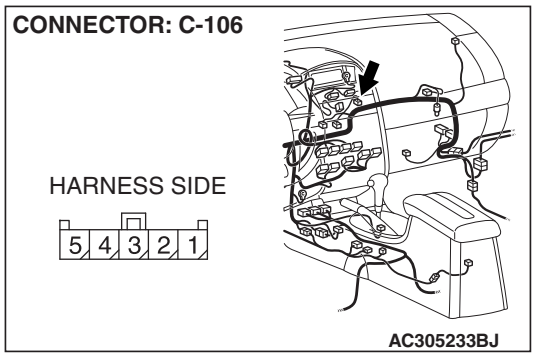


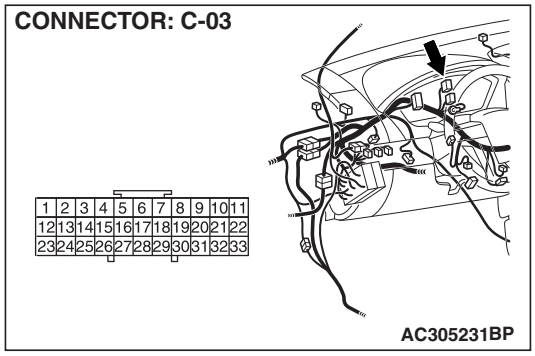
(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

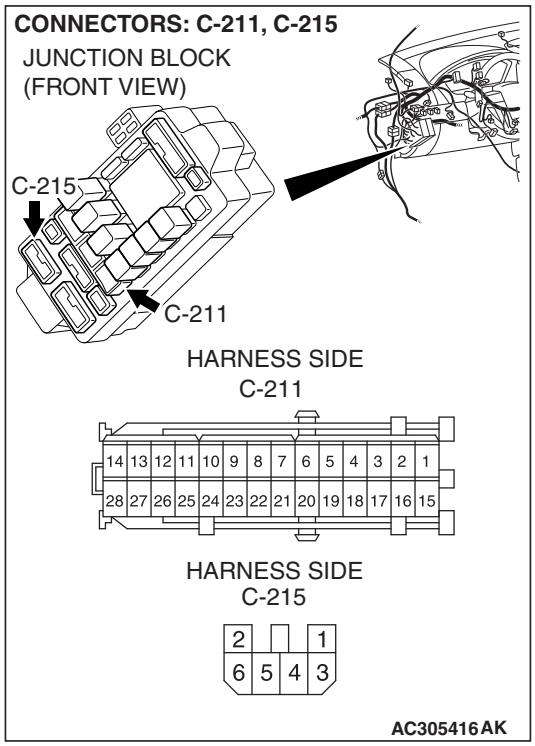
Q: Does the measured voltage correspond with this range?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check the wiring harness between outside/inside air selection damper control motor connector C-106 (terminal 1) and the ignition switch (IG2).







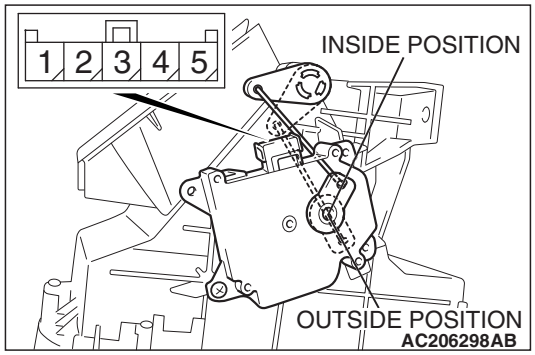
NOTE: Also check joint connector C-03, junction block connectors C-211 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-03, junction block connector C-211 or C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the motor power supply line for open circuit.

Q: Is the wiring harness between outside/inside air selection damper control motor connector C-106 (terminal 1) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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



STEP 5. Check the outside/inside air selection damper control motor.

⚠ CAUTION

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

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

Lever position	Battery connection	Lever operation
At the outside position	• Connect terminal 1 to the positive battery terminal • Connect terminal 5 to the negative battery terminal	The lever moves from the outside position to the inside position
At the inside position	• Connect terminal 1 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	The lever moves from the inside position to the outside position

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

YES : Go to Step 6.

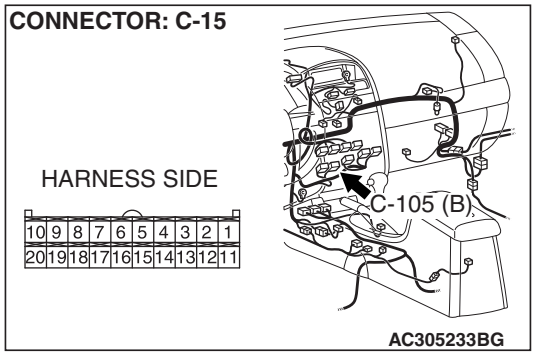
NO : Replace the outside/inside air selection damper control motor. Check that the outside/inside air selection damper control motor works normally.

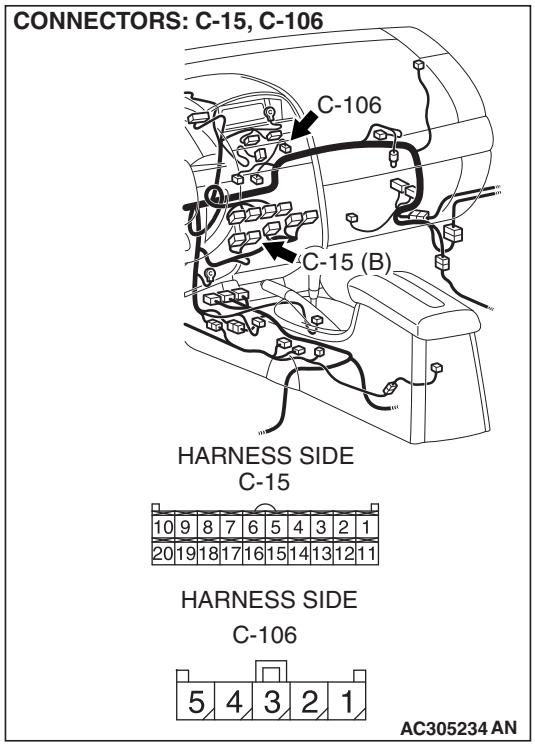
STEP 6. Check A/C-ECU connector C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-15 in good condition?

YES : Go to Step 7.

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





STEP 7. Check the wiring harness between outside/inside air selection damper control motor connector C-106 (terminals 4 and 5) and A/C-ECU C-15 (terminals 5 and 6).

- Check the motor power supply line for open circuit.

Q: Are the wiring harness between outside/inside air selection damper control motor connector C-106 (terminals 4 and 5) and A/C-ECU C-15 (terminals 5 and 6) in good condition?

YES : Go to Step 8.

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

STEP 8. Retest the system.

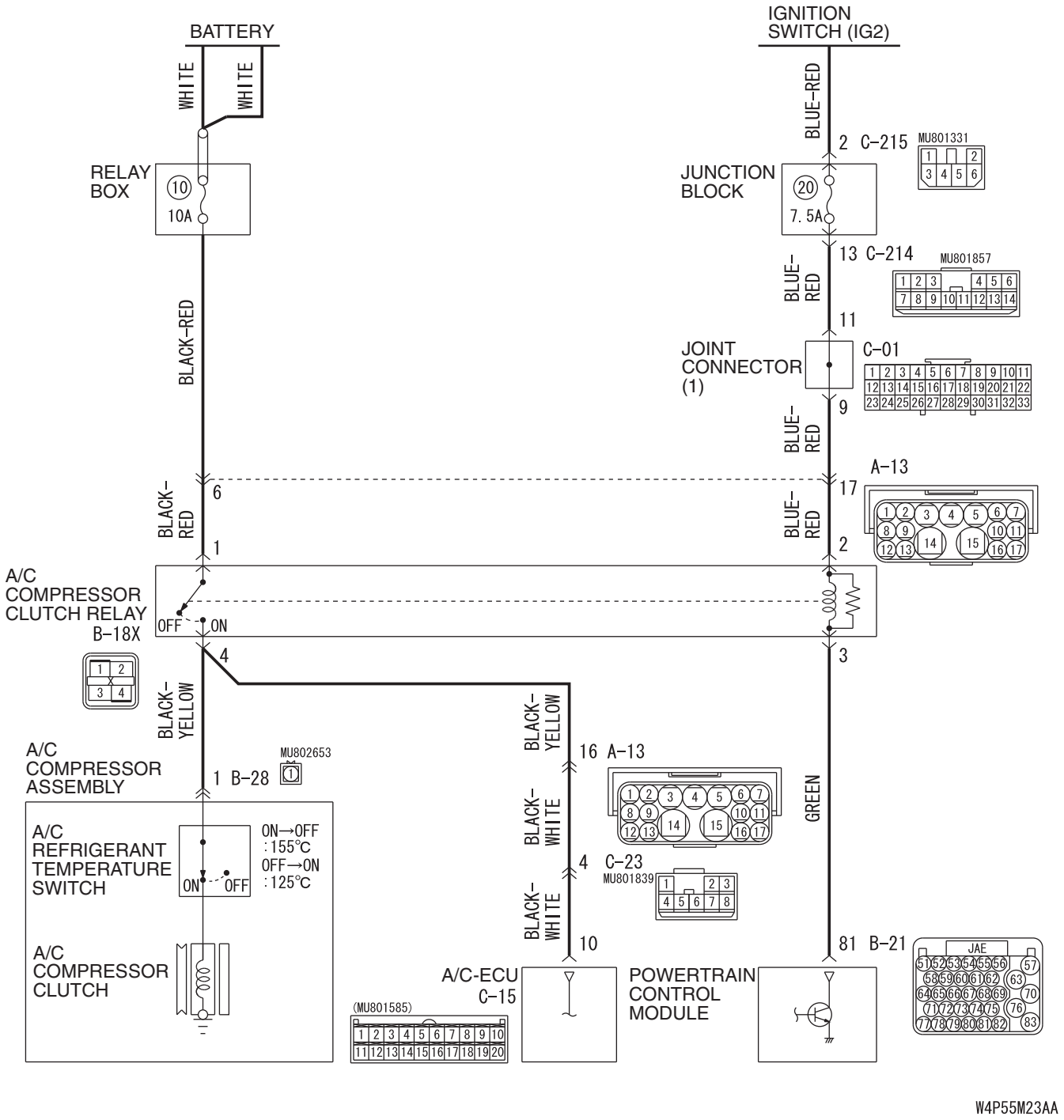
Q: Does a malfunction take place again?

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

NO : 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.00-14.

INSPECTION PROCEDURE 4: When the A/C is Operating, Temperature Inside the Passenger Compartment does not Decrease (Cool Air is not Emitted).

A/C Compressor Circuit



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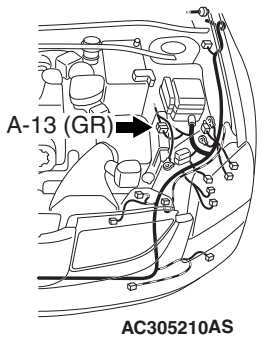
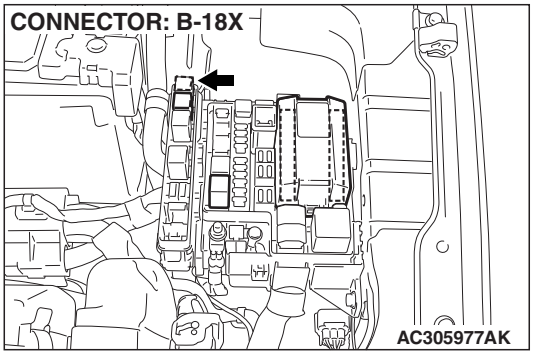
CONNECTOR: A-13



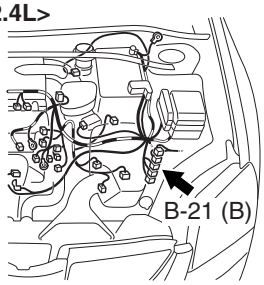
AC305210AS

CONNECTOR: B-18X



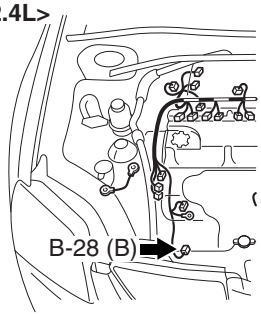
AC305977AK

CONNECTOR: B-21 <2.4L>



AC305216AB

CONNECTOR: B-28 <2.4L>



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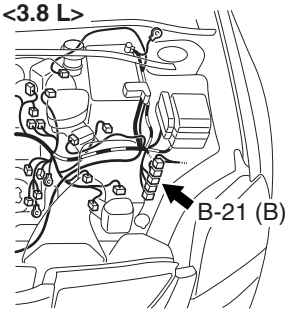
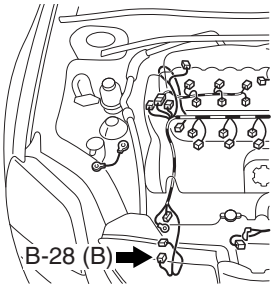
CONNECTOR: B-21 <3.8 L>



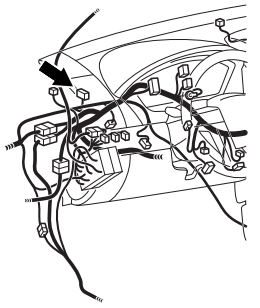
AC305229AC

CONNECTOR: B-28 <3.8 L>



AC305218AC

CONNECTOR: C-01



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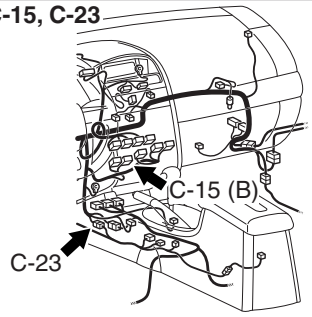
CONNECTORS: C-15, C-23



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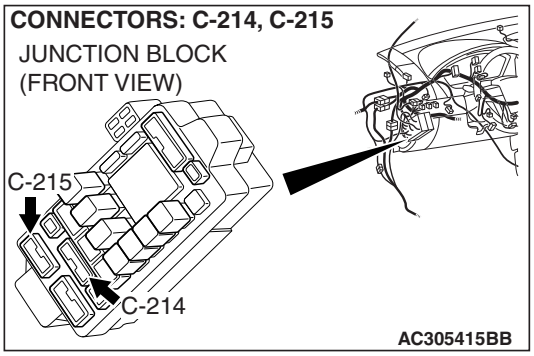


TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- Improper amount of refrigerant
- Malfunction of the air thermo sensor
- Malfunction of the ambient air temperature sensor
- Malfunction of the A/C pressure sensor
- Malfunction of the A/C compressor relay
- Malfunction of the A/C refrigerant temperature switch
- Malfunction of the A/C compressor clutch
- Malfunction of the A/C-ECU
- Malfunction of the PCM
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Check the 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 2.
NO : Refer to Inspection procedure 10, "Malfunction of the A/C-ECU power supply system P.55A-127."

STEP 2. Check the blower motor operation.

Q: Does the blower motor work normally?

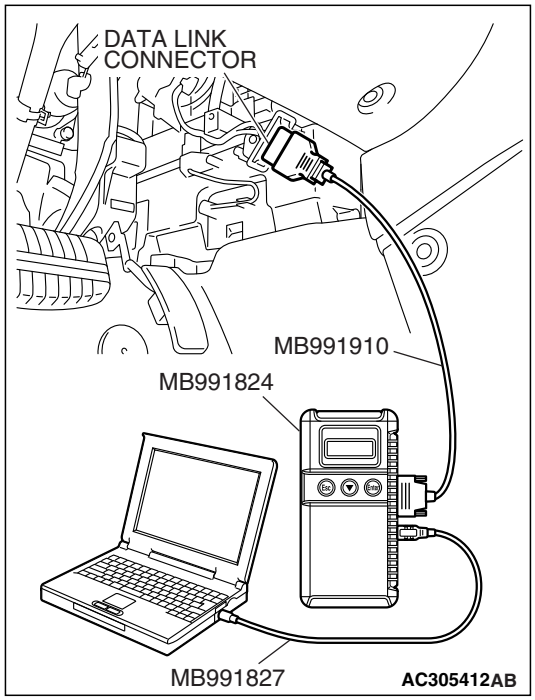
YES : Go to Step 3.
NO : Refer to Inspection procedure 5, "Front blower fan and motor do not turn P.55A-89."

STEP 3. Check the A/C compressor.

Check the A/C compressor for compressor oil leaks.

Q: Is the check result satisfactory?

YES : Go to Step 4.
NO : Replace the A/C compressor or the expansion valve.

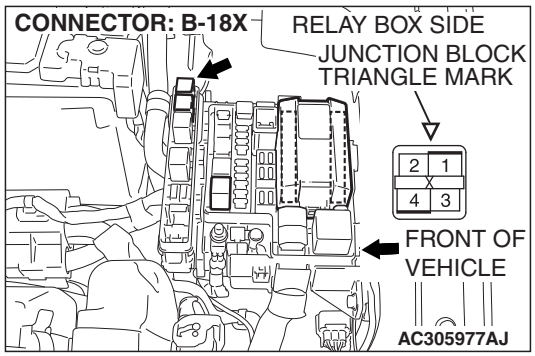


STEP 4. Using scan tool MB991958, read the A/C diagnostic trouble code.

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?

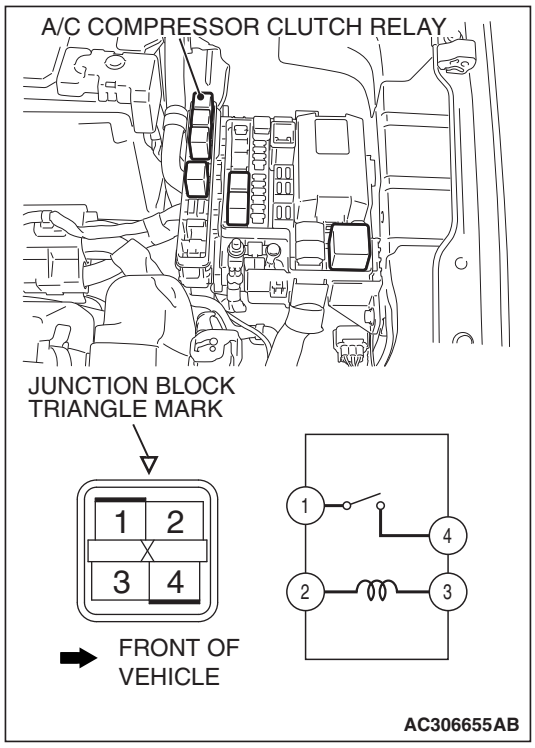
YES : Go to Step 5.
NO : Refer to DIAGNOSTIC TROUBLE CODE CHART P.55A-10.



STEP 5. Check A/C compressor clutch relay connector B-18X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C compressor clutch relay connector B-18X in good condition?

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



STEP 6. Check the A/C compressor clutch relay continuity.
Follow the table below to check the A/C compressor clutch relay for continuity.

Battery voltage	Tester connection	Specified condition
Not applied	1 –4	Open circuit
• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	1 –4	Less than 2 ohms

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

YES : Go to Step 7.

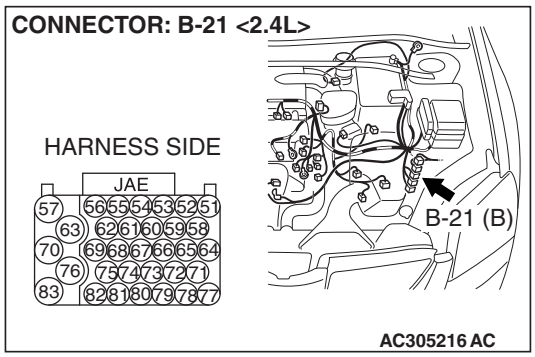
NO : Replace the A/C compressor clutch relay. Check that the A/C works normally.

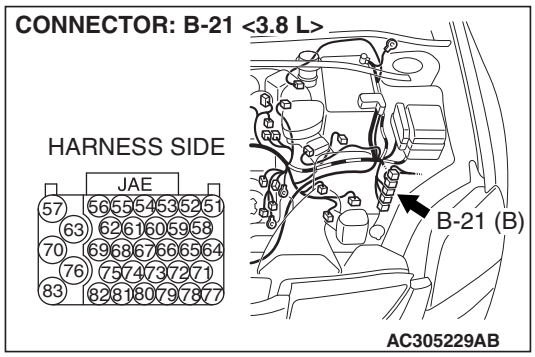
STEP 7. Check powertrain control module connector B-21 and A/C compressor assembly B-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

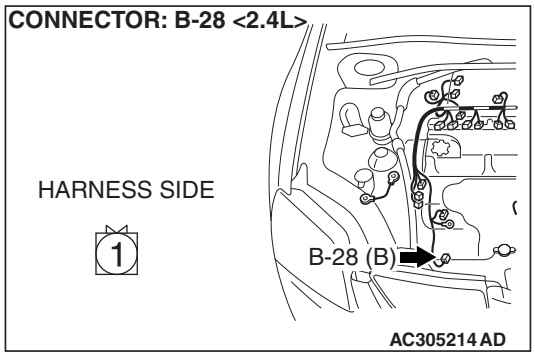
Q: Are powertrain control module connector B-21 and A/C compressor assembly B-28 in good condition?

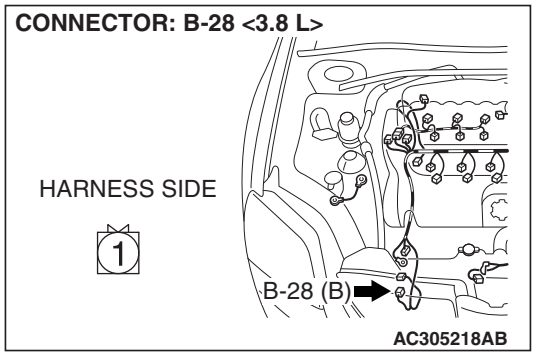
YES : Go to Step 8.

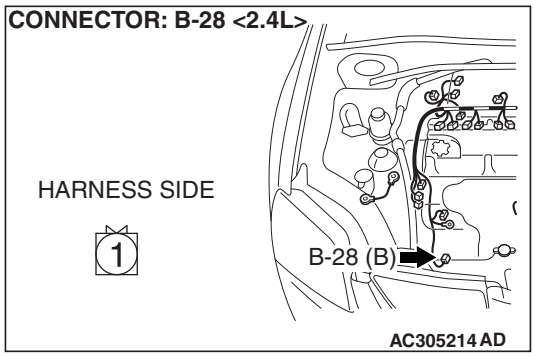
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the A/C works normally.

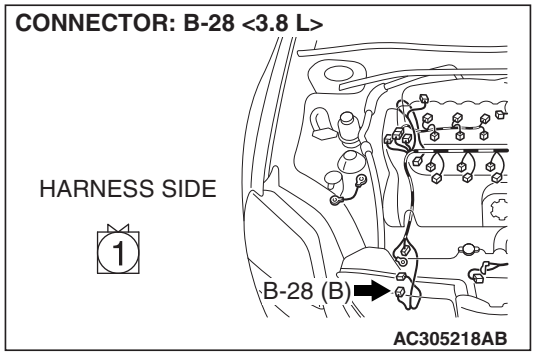






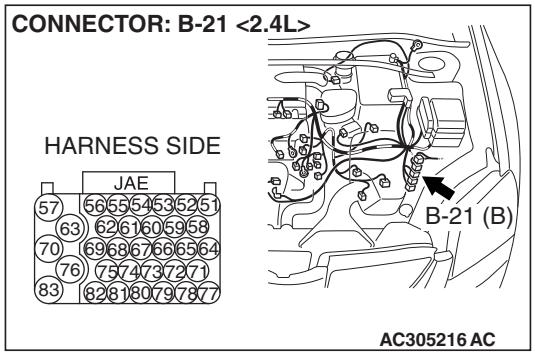


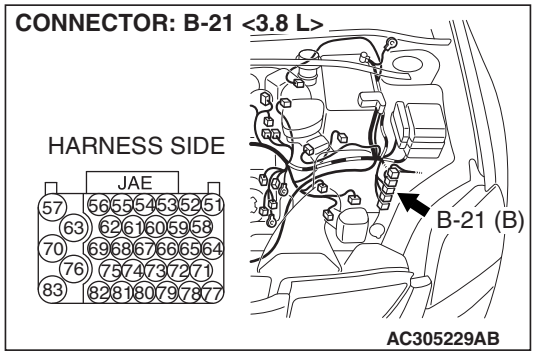




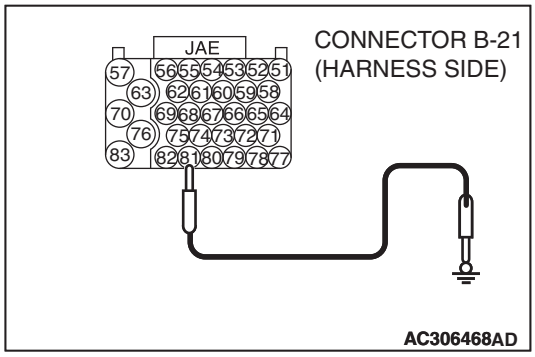
STEP 8. Measure the voltage at A/C compressor assembly connector B-28.

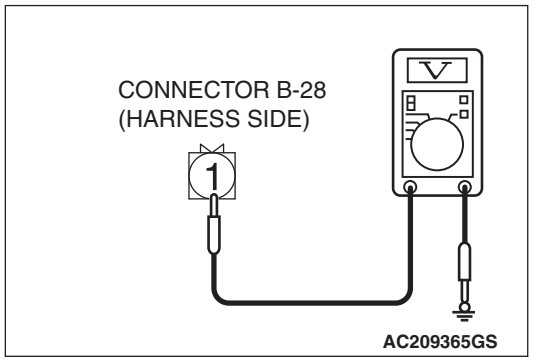
(1) Disconnect A/C compressor assembly connector B-28 and measure the voltage at the relay box side.





(2) Disconnect powertrain control module connector B-21 and ground harness side terminal No.81.
(3) Turn the ignition switch to the "ON" position.





(4) A/C compressor assembly connector B-28 terminal 1 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

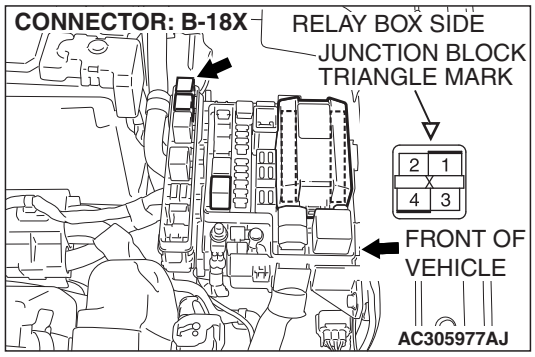
Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 15.
NO : Go to Step 9.

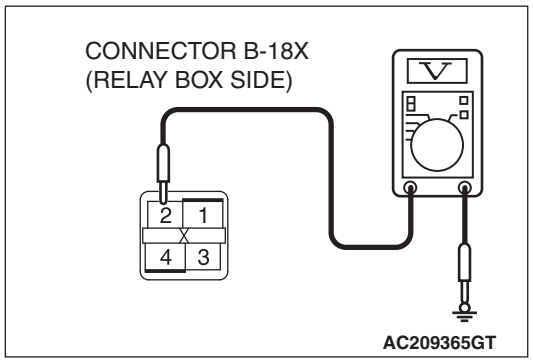
STEP 9. Measure the voltage at A/C compressor clutch relay connector B-18X.

⚠ CAUTION

The top and bottom of the A/C compressor connector are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.



(1) Disconnect A/C compressor connector B-18X and measure the voltage at the relay box side.
(2) Turn the ignition switch to the "ON" position.

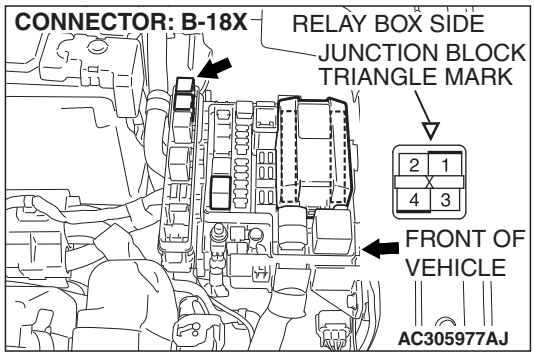


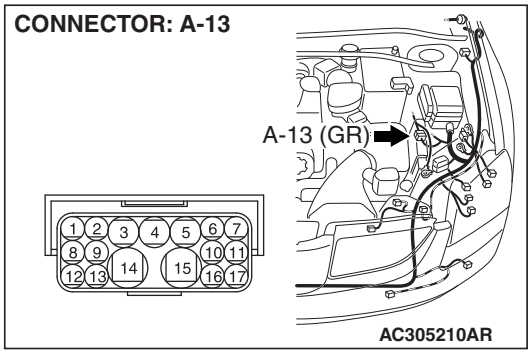
(3) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

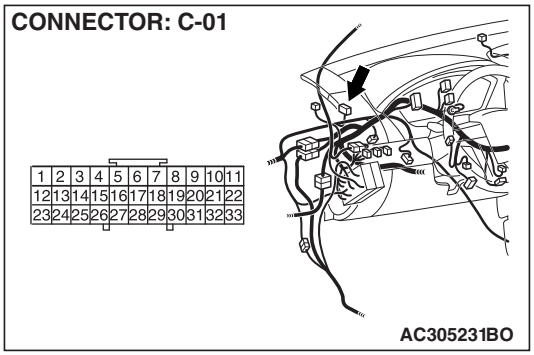
Q: Is the measured voltage approx. 12 volts?

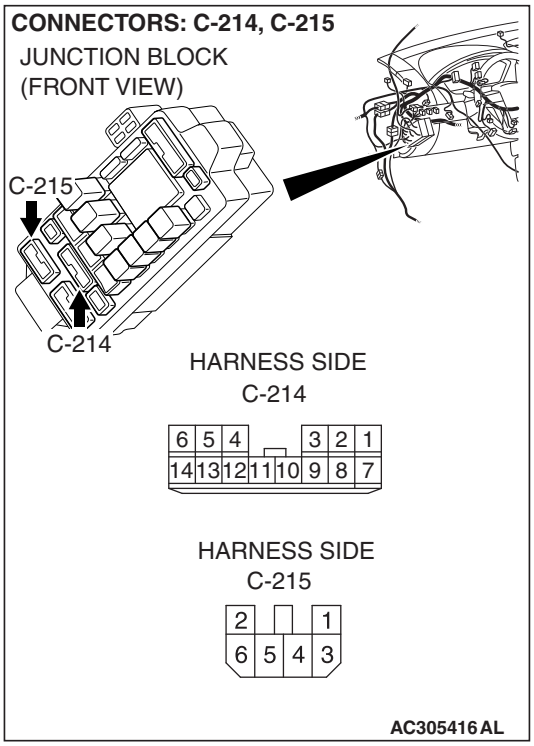
YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between A/C compressor clutch relay connector B-18X (terminal 2) and the ignition switch (IG2).









NOTE: Also check intermediate connector A-13, joint connector C-01, junction block connectors C-214 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-13, joint connector C-01, junction block connector C-214 or C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the A/C compressor relay power supply line for open circuit.

Q: Is the wiring harness between A/C compressor clutch relay connector B-18X (terminal 2) and the ignition switch (IG2) in good condition?

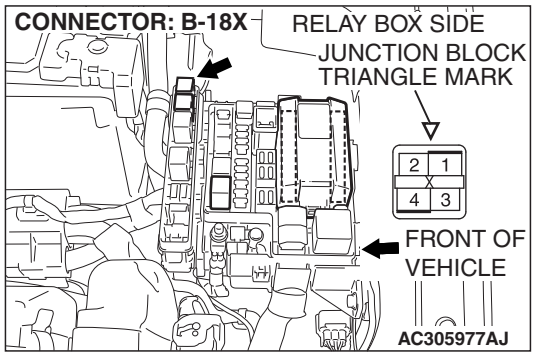
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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

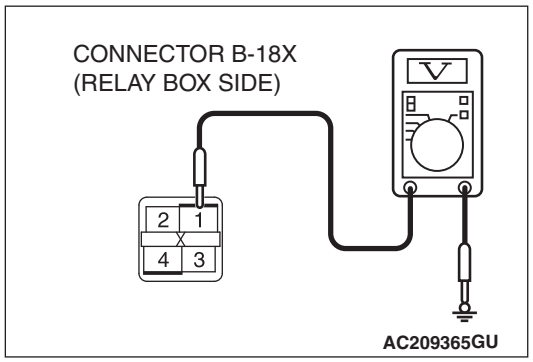
STEP 11. Measure the voltage at A/C compressor clutch relay connector B-18X.

⚠ CAUTION

The top and bottom of the A/C compressor connector are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.



(1) Disconnect A/C compressor connector B-18X and measure the voltage at the wiring harness side.

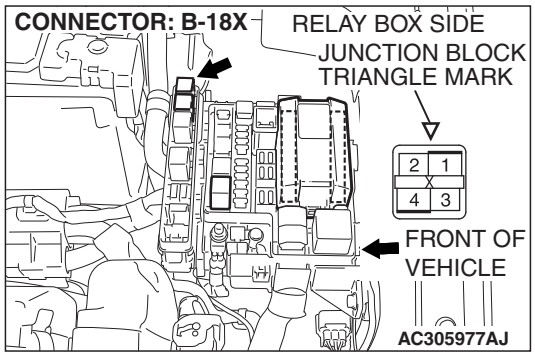


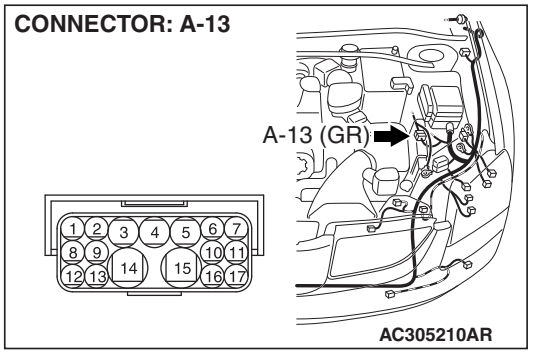
(2) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 13.
NO : Go to Step 12.

STEP 12. Check the wiring harness between A/C compressor clutch relay connector B-18X (terminal 1) and the battery.





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

- Check the A/C compressor relay power supply line for open circuit.

Q: Is the wiring harness between A/C compressor clutch relay connector B-18X (terminal 1) 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.00-14.

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

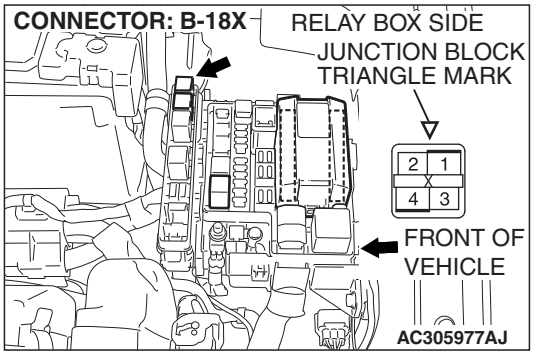
STEP 13. Check the wiring harness between A/C compressor clutch relay connector B-18X (terminal 4) and A/C compressor assembly connector B-28 (terminal 1).

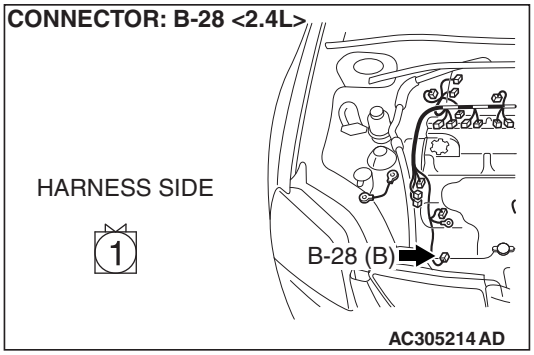
- Check the A/C compressor relay power supply line for open circuit.

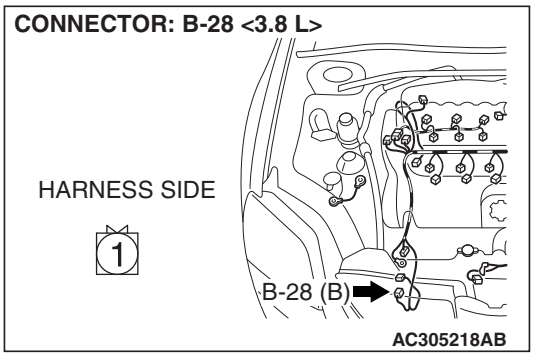
Q: Is the wiring harness between A/C compressor clutch relay connector B-18X (terminal 4) and A/C compressor connector B-28 (terminal 1) in good condition?

YES : Go to Step 14.

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







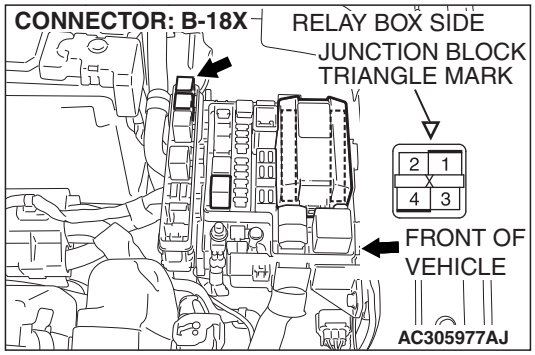
STEP 14. Check the wiring harness between powertrain control module connector B-21 (terminal 81) and A/C compressor clutch relay connector B-18X (terminal 3).

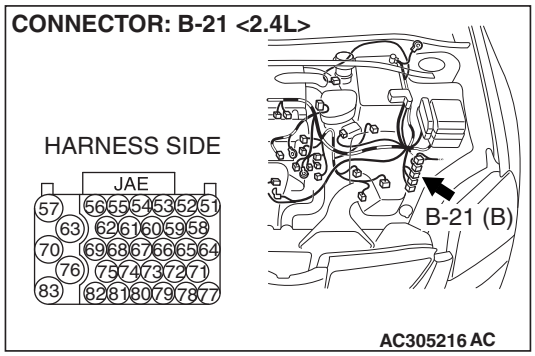
- Check the A/C compressor relay power supply line for open circuit.

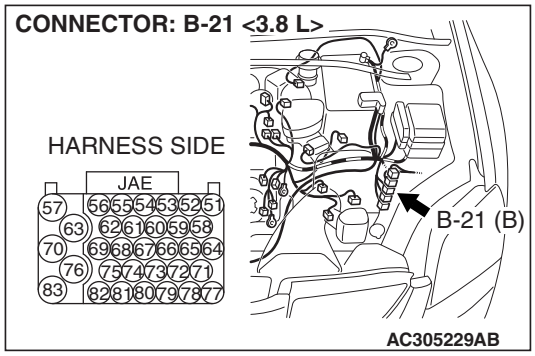
Q: Is the wiring harness between powertrain control module connector B-21 (terminal 81) and A/C compressor clutch relay connector B-18X (terminal 3) in good condition?

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.00-14.

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





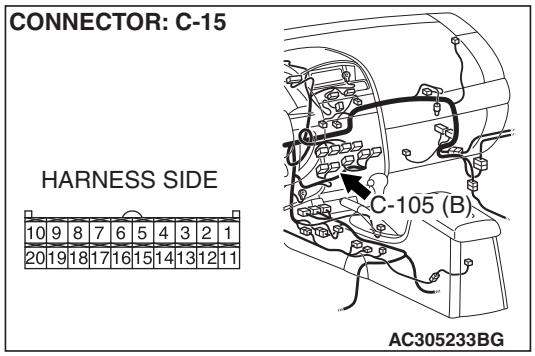


STEP 15. Check A/C-ECU connector C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-15 in good condition?

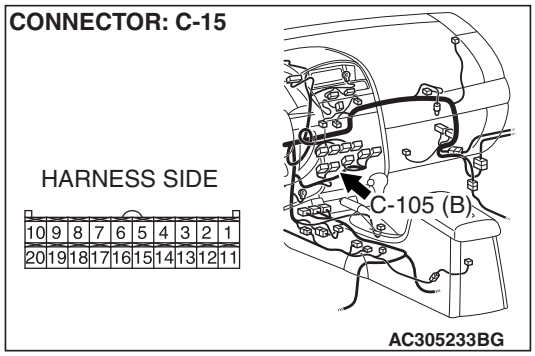
YES : Go to Step 16.

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

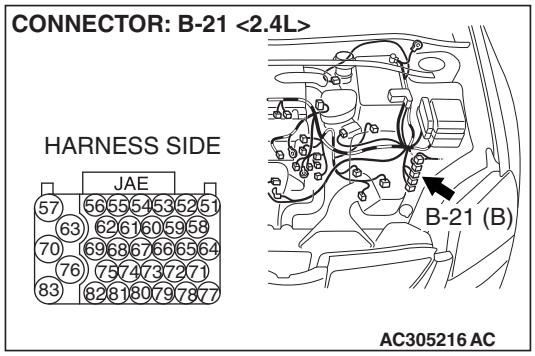


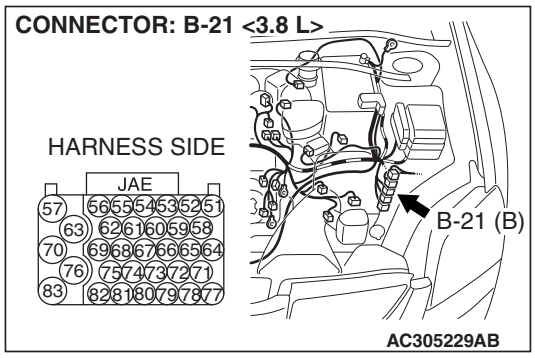
STEP 16. Measure the voltage at A/C-ECU connector C-15.

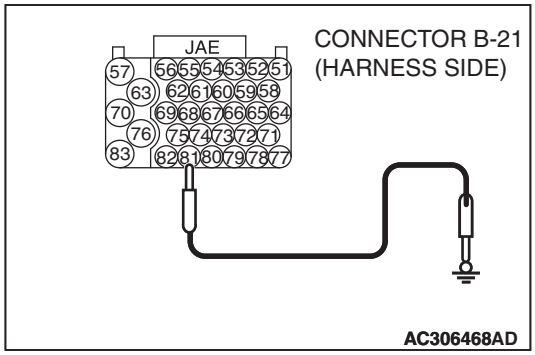
(1) Disconnect A/C-ECU connector C-15 and measure the voltage at the relay box side.

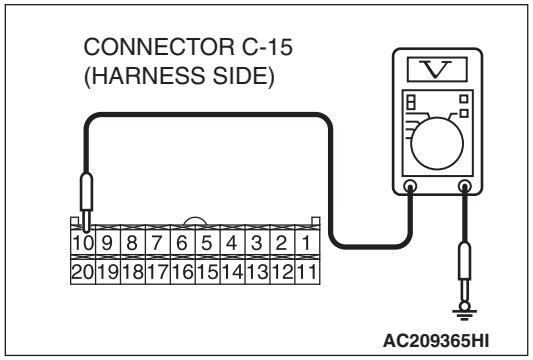


(2) Disconnect powertrain control module connector B-21 and ground harness side terminal No.81.
(3) Turn the ignition switch to the "ON" position.









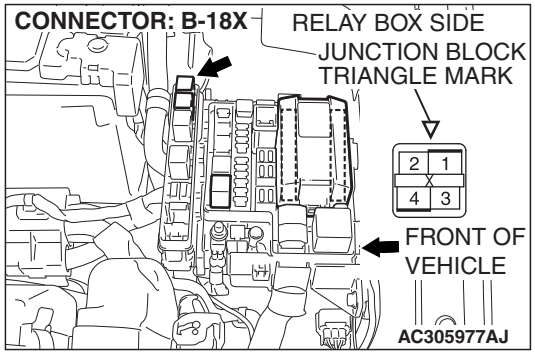
(4) Measure the voltage between A/C-ECU connector C-15 terminal No.10 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

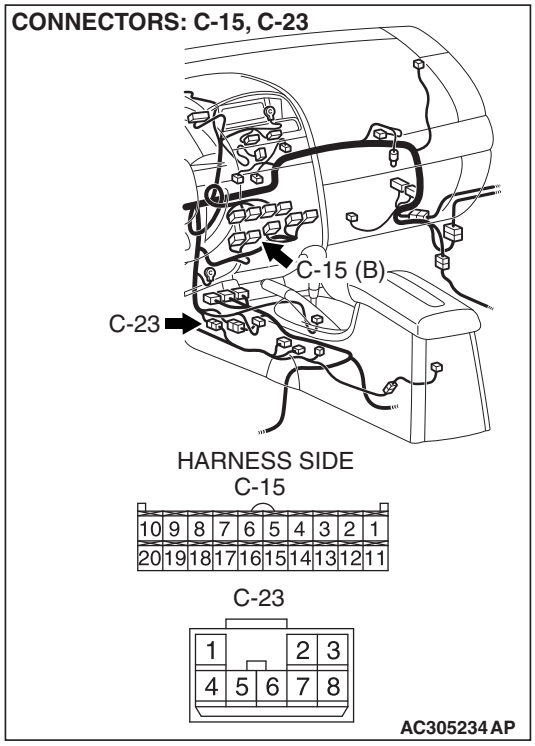
Q: Does the measured voltage correspond with this range?

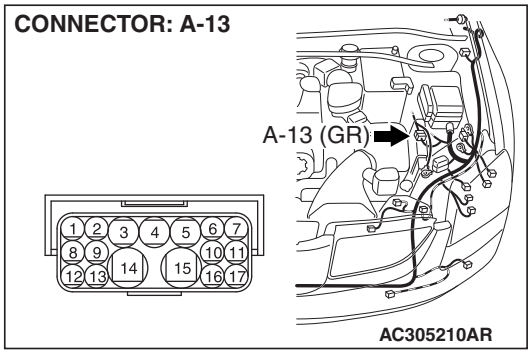
YES : Go to Step 18.

NO : Go to Step 17.

STEP 17. Check the wiring harness between A/C compressor clutch relay connector B-18X (terminal 4) and A/C-ECU connector C-15 (terminal 10).







NOTE: Also check intermediate connectors A-13 and C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-13 or C-23 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the A/C compressor relay power supply line for open circuit.

Q: Is the wiring harness between A/C compressor clutch relay connector B-18X (terminal 4) and A/C-ECU connector C-15 (terminal 10) 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.00-14.

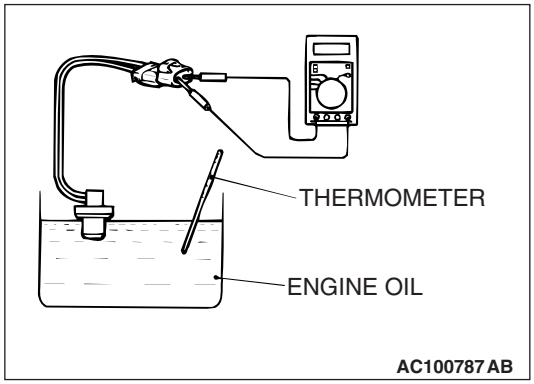
NO : Repair the wiring harness. Check that the A/C works normally.

STEP 18. Check the refrigerant temperature switch.

⚠ CAUTION

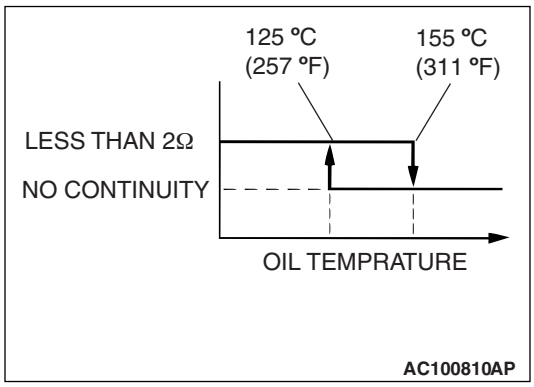
Do not heat more than necessary.

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



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

Standard value:



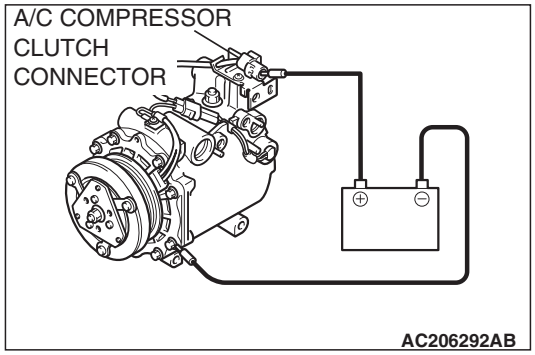
Item	Temperature
Less than 2 ohms	Slightly below 125° C (257° F)
No continuity	155° C (311° F) or more

NOTE: When the oil temperature is 155 °C (311 °F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 125 °C (257 °F) or less.

Q: Is the refrigerant temperature switch operating properly?

YES : Go to Step 19.

NO : Replace the refrigerant temperature switch. Check that the A/C works normally.



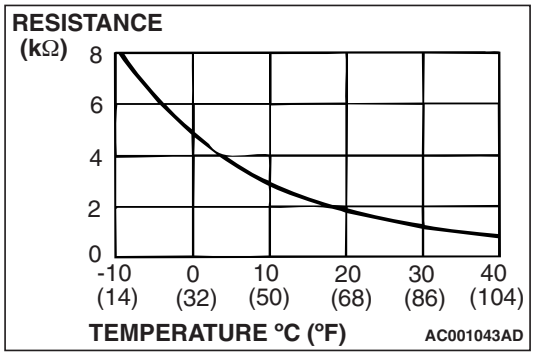
STEP 19. Check the A/C compressor clutch operation.

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

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

YES : Go to Step 20.

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



STEP 20. Check the air thermo sensor.

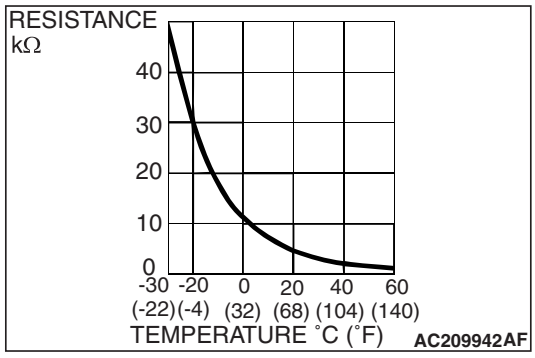
Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

Q: Is the air thermo sensor in good condition?

YES : Go to Step 21.

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



STEP 21. Check the ambient air temperature sensor.

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 22.

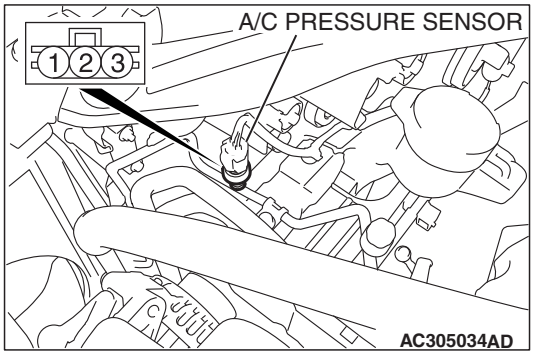
NO : Replace the ambient air temperature sensor. Check that the A/C works normally.

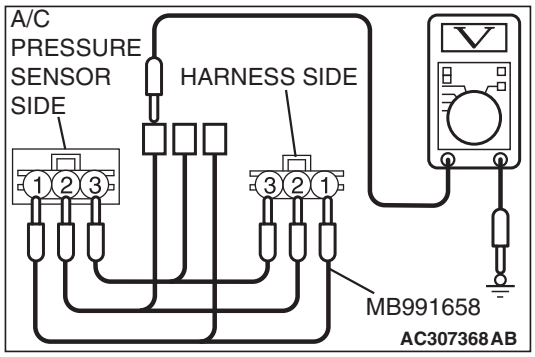
STEP 22. Check the A/C pressure sensor operation.

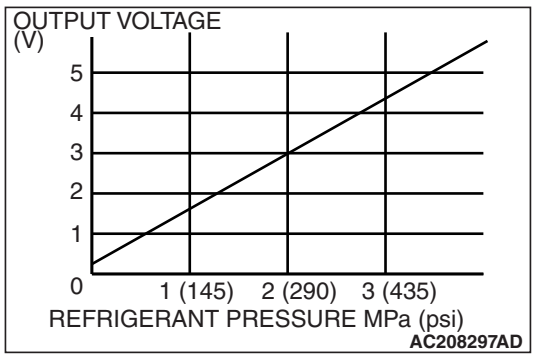
(1) Assemble a gauge manifold on the high pressure service valve.

(2) Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.

(3) Turn ON the engine and then turn ON the A/C switch.







(4) At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 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 23.

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

STEP 23. Check the refrigerant level.

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

Q: Is the refrigerant level correct?

YES : Go to Step 24.

NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-145). Check that the A/C works normally.

STEP 24. Replace the A/C-ECU.

Q: Does the A/C operate normally?

YES : The procedure is complete.

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

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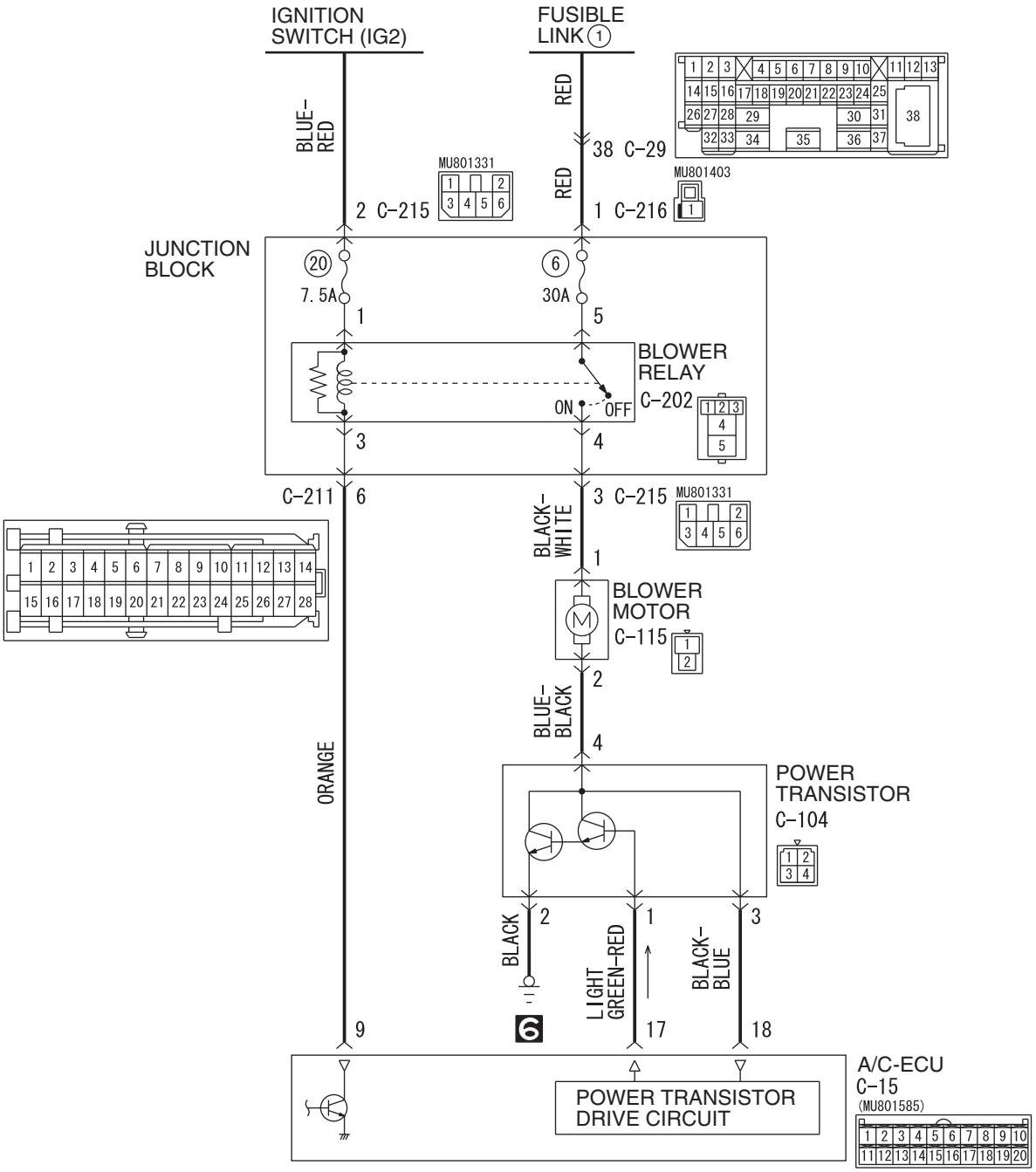
INSPECTION PROCEDURE 5: Front Blower Fan and Motor do not Turn.

Blower Motor Circuit



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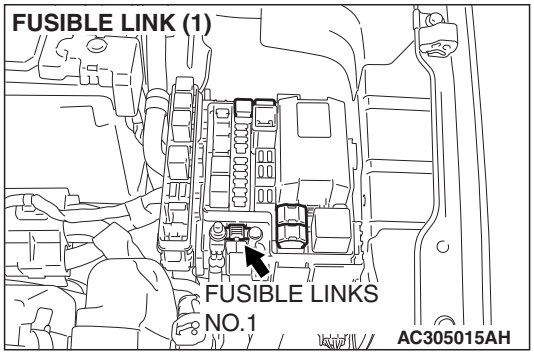
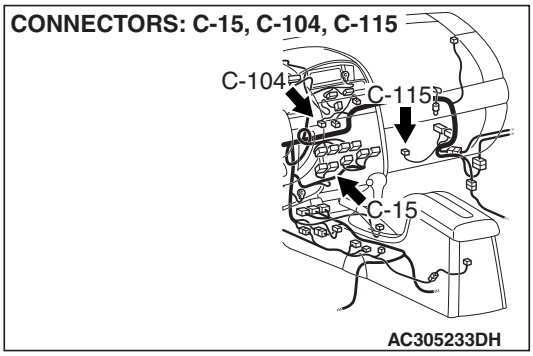
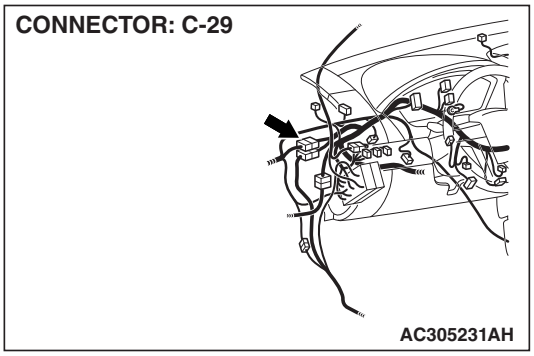
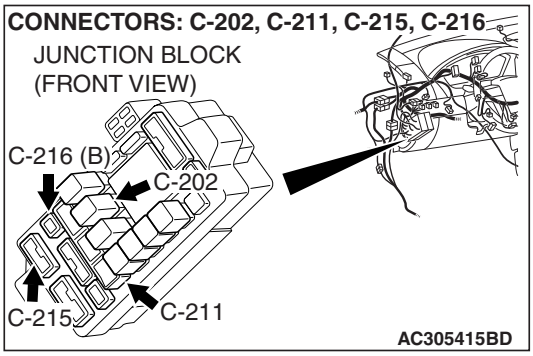








CIRCUIT OPERATION

If the blower motor does not operate, the blower relay system is suspected.

TROUBLESHOOTING HINTS

- Malfunction of the front blower relay
- Malfunction of the power transistor
- Malfunction of the front blower motor
- Malfunction of the A/C-ECU
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

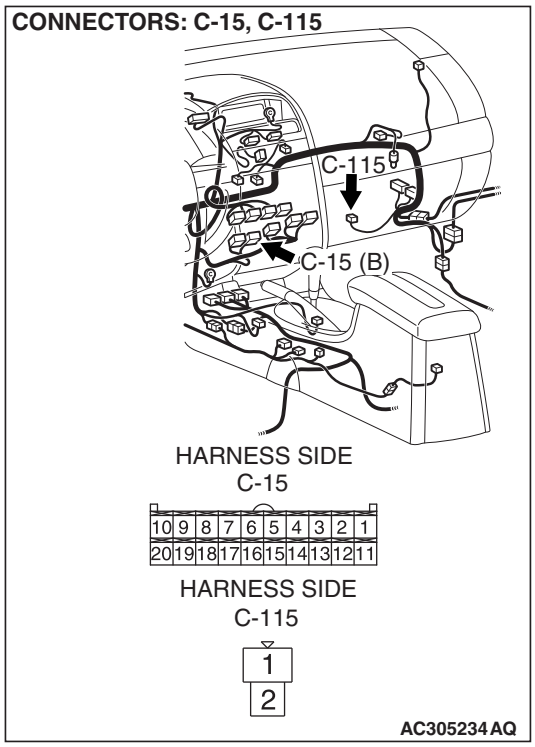
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check blower motor connector C-115 and A/C-ECU connector C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

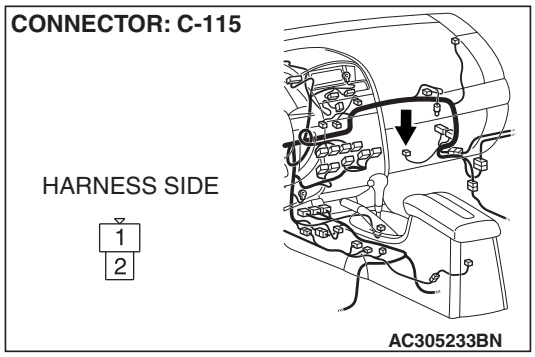
Q: Are blower motor connector C-115 and A/C-ECU connector C-15 in good condition?

YES : Go to Step 2.

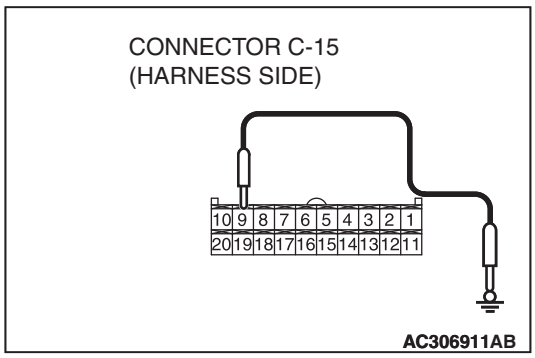
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.The blower motor should operate normally.



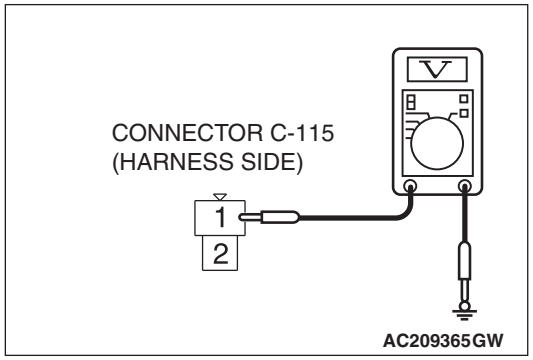
STEP 2. Measure the voltage at blower motor connector C-115.



(1) Disconnect blower motor connector C-115, and measure the voltage at the wiring harness side.



(2) Disconnect A/C-ECU connector C-15 and ground harness side terminal No.9.
(3) Turn the ignition switch to the "ON" position.

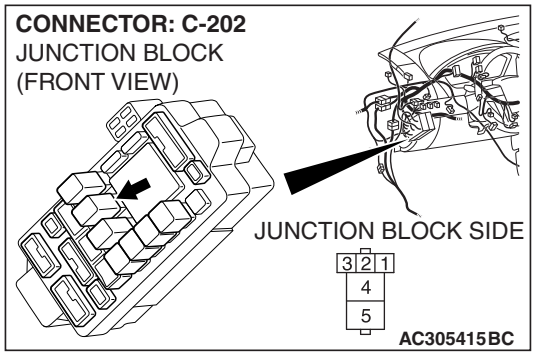


(4) Measure the voltage between terminal 1 and ground.
- The measured value should be approx. 12 volts (battery positive voltage).

Q: Is the measured voltage approx. 12 volts?

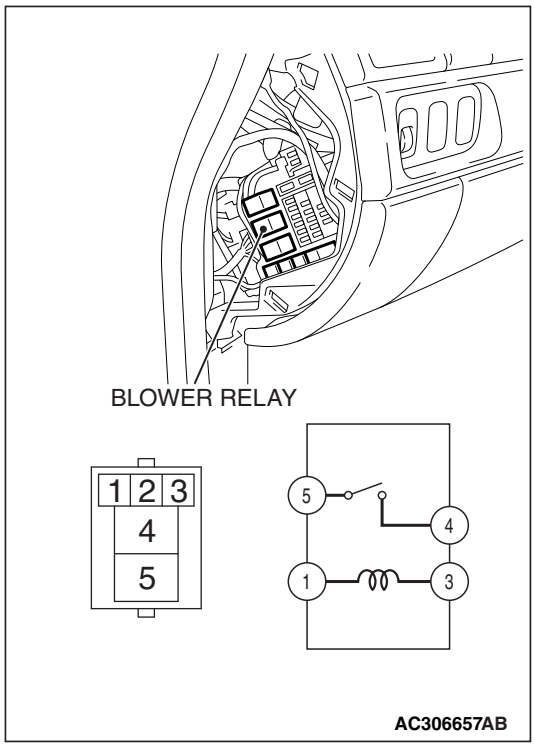
YES : Go to Step 11.
NO : Go to Step 3.

STEP 3. Check blower relay connector C-202 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is blower relay connector C-202 in good condition?

YES : Go to Step 4.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.The blower motor should operate normally.



STEP 4. Check the blower relay continuity.

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

Battery voltage	Tester connection	Specified condition
Not applied	4 –5	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	4 –5	Less than 2 ohms

Q: Is the blower relay continuity in good condition?

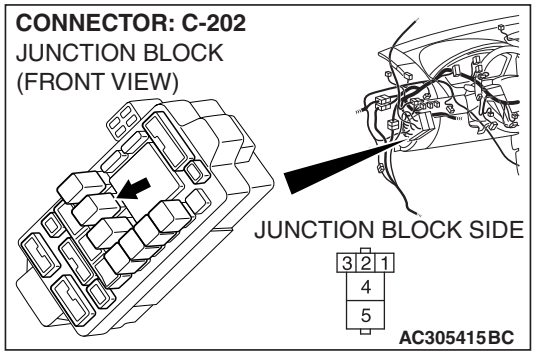
YES : Go to Step 5.

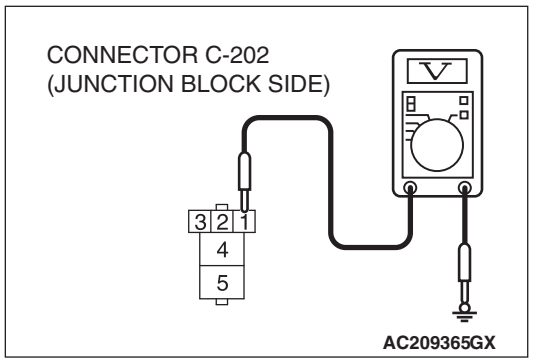
NO : Replace the blower relay. The blower motor should operate normally.

STEP 5. Measure the voltage at blower relay connector C-202.

(1) Disconnect blower relay connector C-202, and measure the voltage at the junction block side.

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





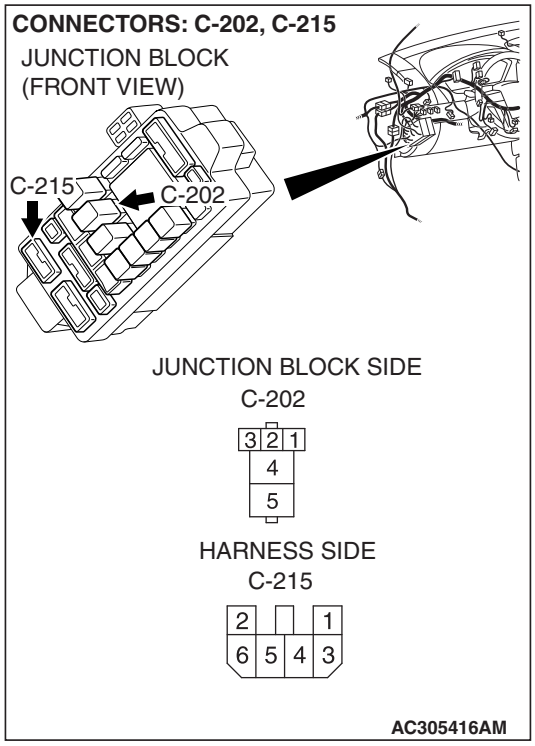
(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check the wiring harness between blower relay connector C-202 (terminal 1) and the ignition switch (IG2).



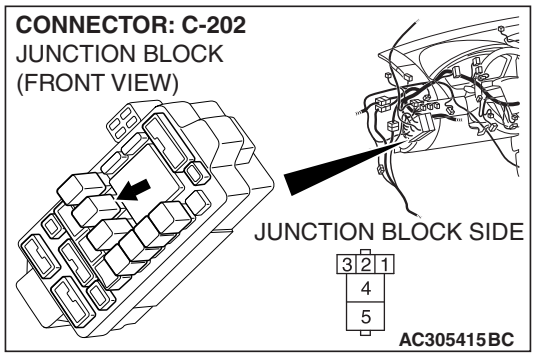
NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the relay power supply line for open circuit.

Q: Is the wiring harness between blower relay connector C-202 (terminal 1) and the ignition switch (IG2) in good condition?

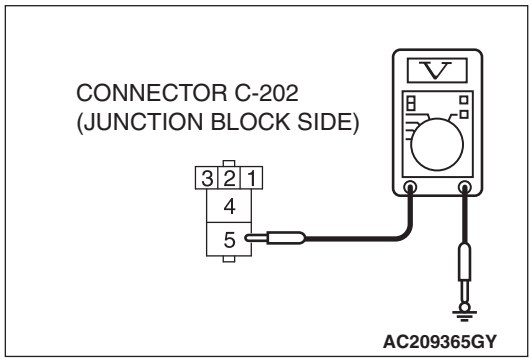
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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



STEP 7. Measure the voltage at blower relay connector C-202.

(1) Disconnect blower relay connector C-202, and measure the voltage at the junction block side.

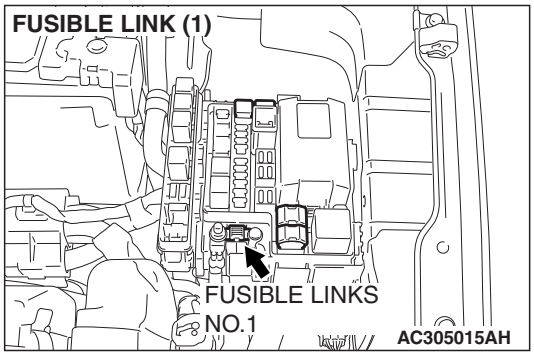


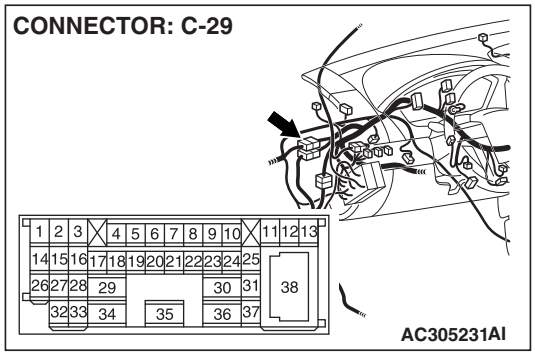
(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

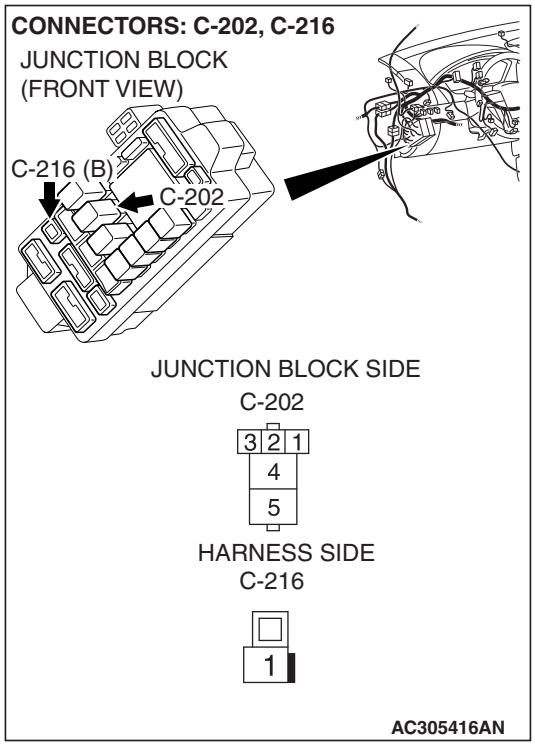
Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check the wiring harness between blower relay connector C-202 (terminal 5) and fusible link (1).







NOTE: Also check intermediate connector C-29 and junction block connector C-216 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29, junction block connector C-216 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

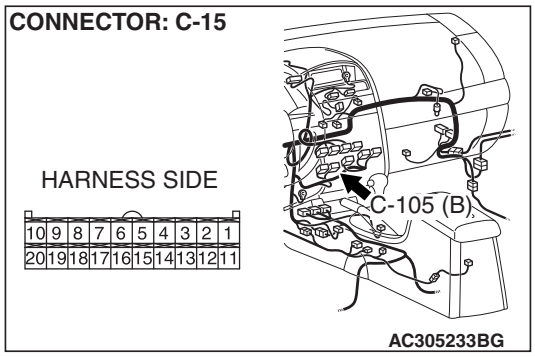
- Check the blower relay power supply open circuit.

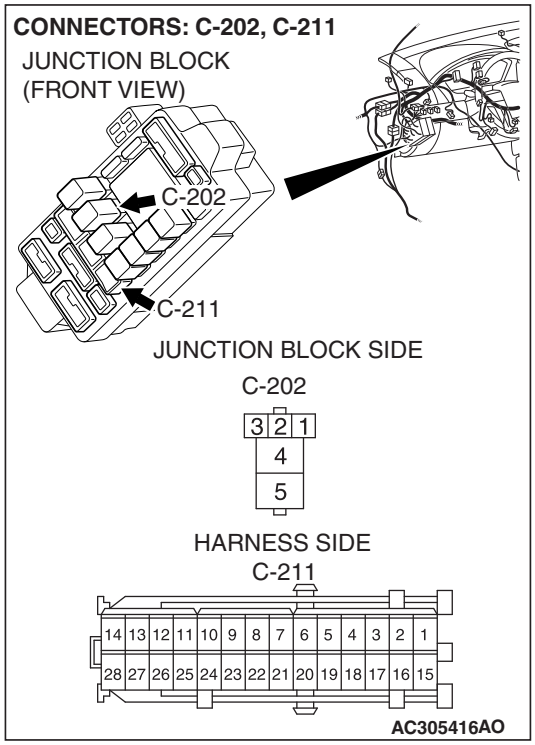
Q: Is the wiring harness between blower relay connector C-202 (terminal 5) and fusible link (1) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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

STEP 9. Check the wiring harness between blower relay connector C-202 (terminal 3) and A/C-ECU connector C-15 (terminal 9).





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

- Check the blower relay power supply line for open circuit.

Q: Is the wiring harness between blower relay connector C-202 (terminal 3) and A/C-ECU connector C-15 (terminal 9) in good condition?

YES : Go to Step 10.

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

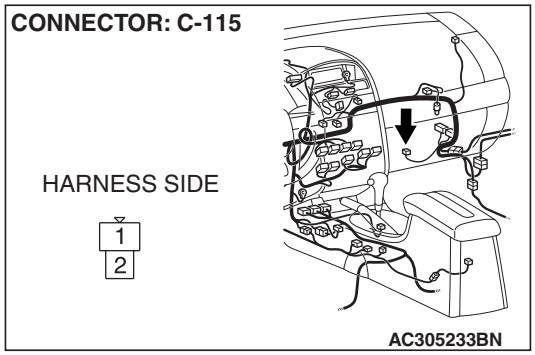
STEP 10. Check the wiring harness between blower motor connector C-115 (terminal 1) and blower relay connector C-202 (terminal 4).

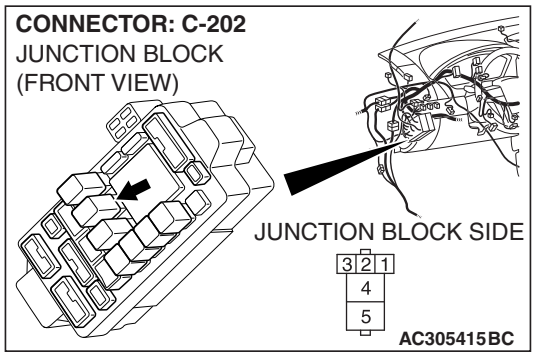
- Check the blower relay ground line for open circuit.

Q: Is the wiring harness between blower motor connector C-115 (terminal 1) and blower relay connector C-202 (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.00-14.

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





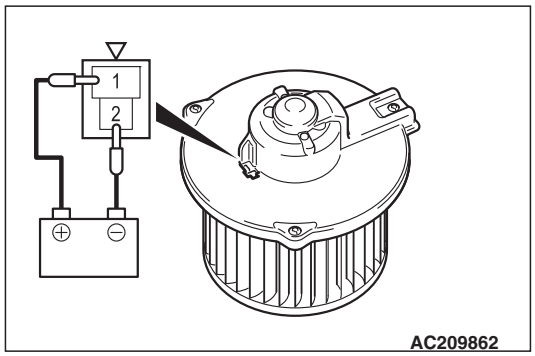
STEP 11. Check the blower fan and motor operation.

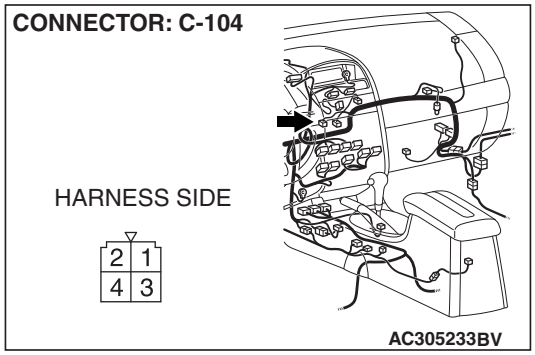
When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

Q: Is there any abnormal noise?

YES : Go to Step 12.

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



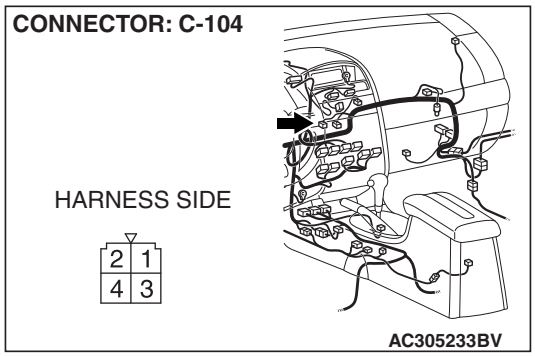


STEP 12. Check blower power transistor connector C-104 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power transistor connector C-104 in good condition?

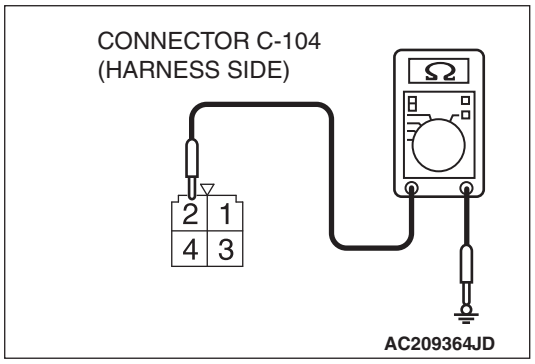
YES : Go to Step 13.

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



STEP 13. Measure the resistance at power transistor connector C-104.

(1) Disconnect power transistor connector C-104, and measure the resistance at the wiring harness side.



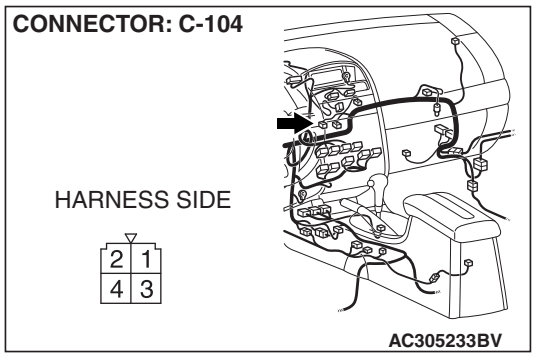
(2) Measure the resistance value between terminal 2 and ground.

- The measured value should be 2 ohms or less.

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

YES : Go to Step 15.

NO : Go to Step 14.



STEP 14. Check the wiring harness between power transistor connector C-104 (terminal 2) and ground.

- Check the power transistor ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-104 (terminal 2) 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.00-14.

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

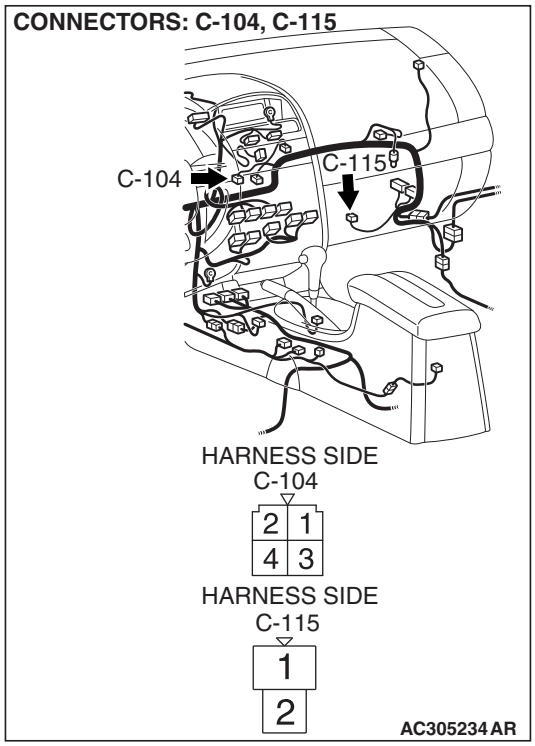
STEP 15. Check the wiring harness between power transistor connector C-104 (terminal 4) and blower motor connector C-115 (terminal 2).

- Check the power transistor switch ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-104 (terminal 4) and blower motor connector C-115 (terminal 2) in good condition?

YES : Go to Step 16.

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



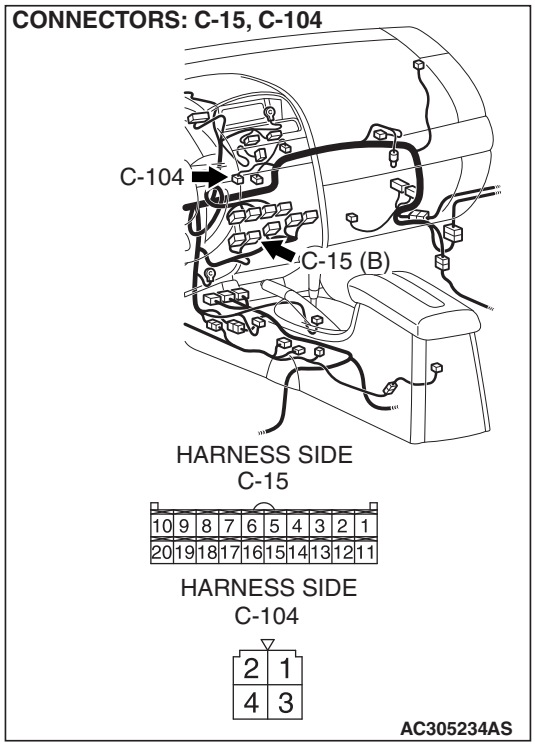
STEP 16. Check the wiring harness between power transistor connector C-104 (terminals 1 and 3) and A/C-ECU connector C-15 (terminals 17 and 18).

- Check the power transistor switch ground line for open circuit.

Q: Are the wiring harness between power transistor connector C-104 (terminals 1 and 3) and A/C-ECU connector C-15 (terminals 17 and 18) in good condition?

YES : Go to Step 17.

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



STEP 17. Replace the power transistor.

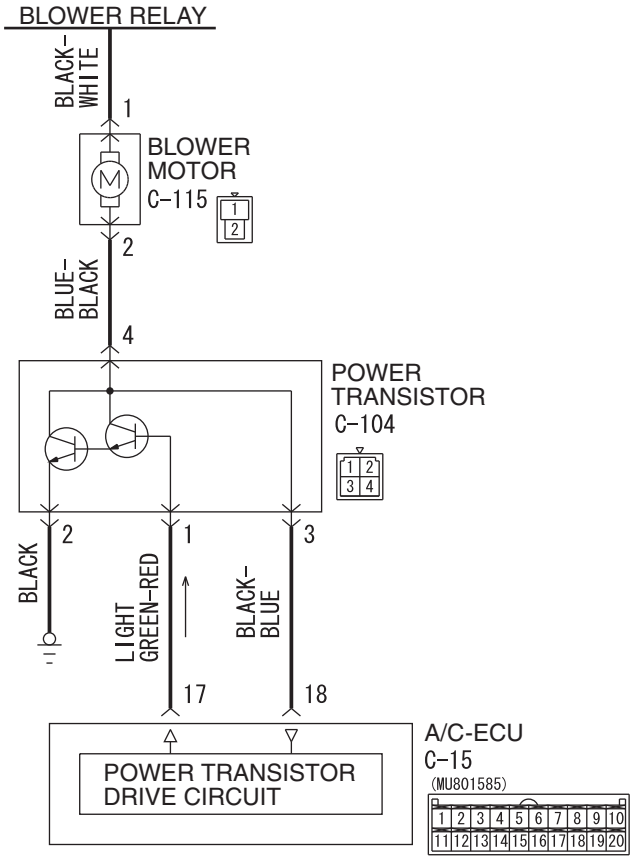
Q: Does the blower motor operate normally?

YES : No action is necessary and testing is complete.

NO : Replace the A/C-ECU. Check that the A/C works normally.

INSPECTION PROCEDURE 6: Front Blower Air Amount cannot be Changed.

Blower Motor Circuit



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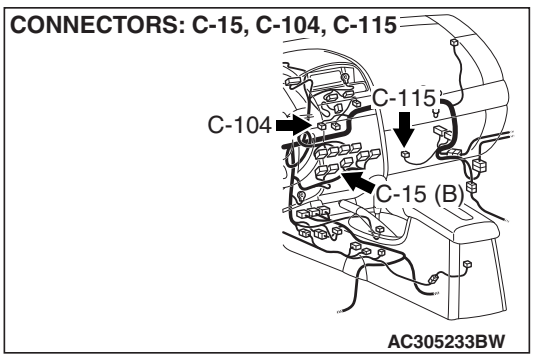

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CIRCUIT OPERATION

If the blower motor speed cannot be changed, the power transistor circuit is suspected.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

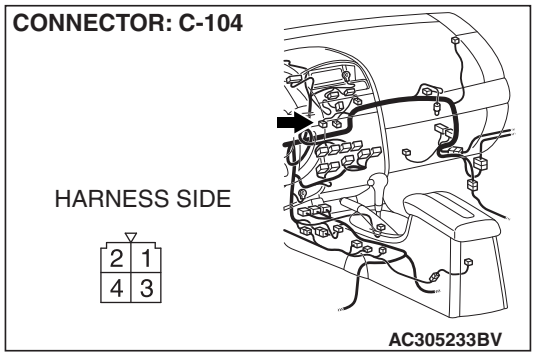
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check blower power transistor connector C-104 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power transistor connector C-104 in good condition?

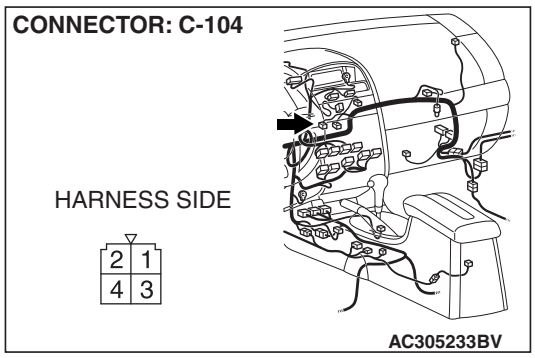
YES : Go to Step 2.

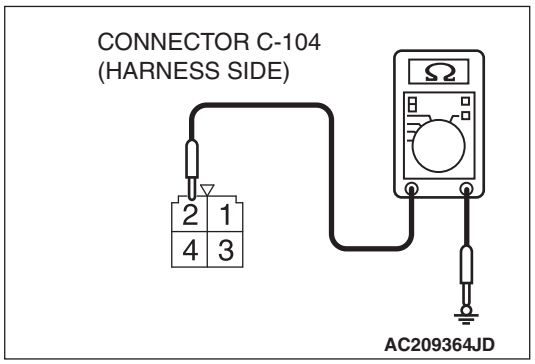
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.The blower motor should operate normally.



STEP 2. Measure the resistance at power transistor connector C-104.

(1) Disconnect power transistor connector C-104, and measure the resistance at the wiring harness side.





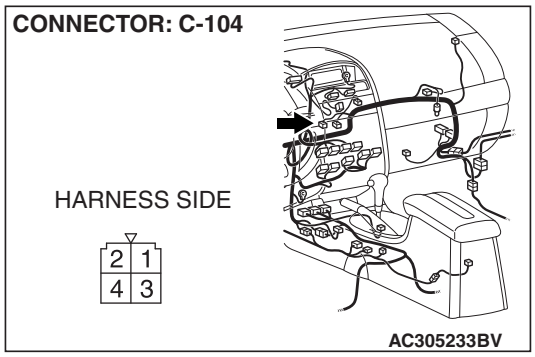
(2) Measure the resistance value between terminal 2 and ground.

- The measured value should be 2 ohms or less.

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

YES : Go to Step 4.

NO : Go to Step 3.



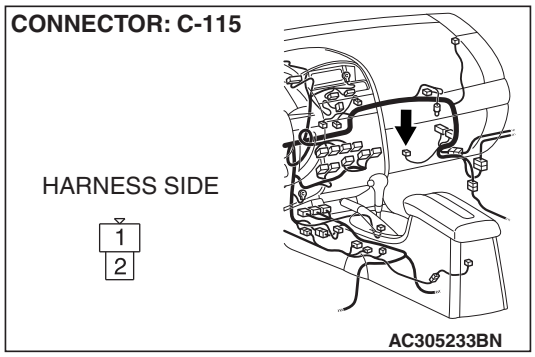
STEP 3. Check the wiring harness between power transistor connector C-104 (terminal 2) and ground.

- Check the power transistor ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-104 (terminal 2) and ground in good condition?

YES : The blower motor should operate normally.

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

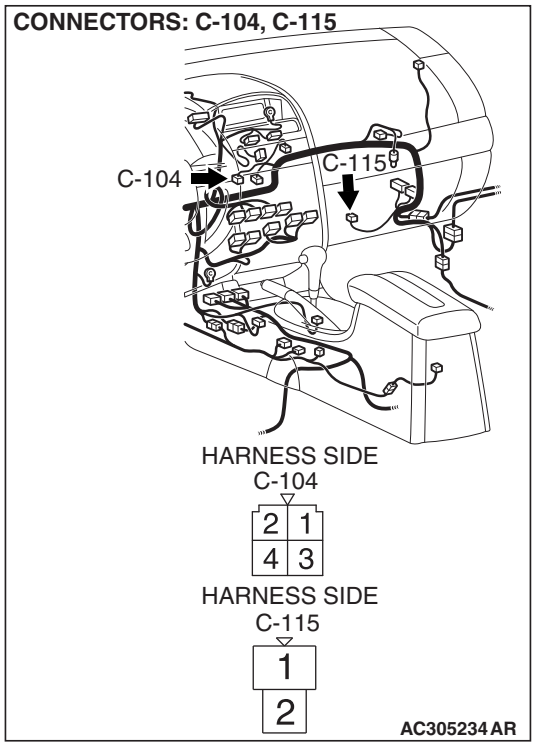


STEP 4. Check blower motor connector C-115 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower motor connector C-115 in good condition?

YES : Go to Step 5.

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



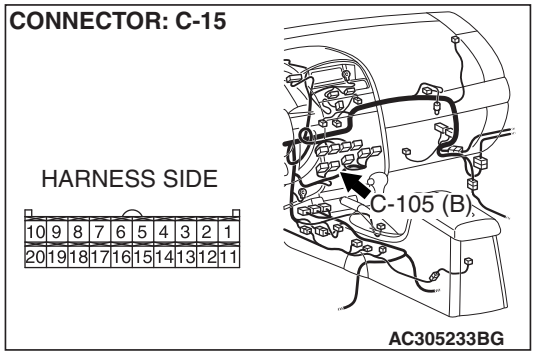
STEP 5. Check the wiring harness between power transistor connector C-104 (terminal 4) and blower motor connector C-115 (terminal 2).

- Check the blower motor ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-104 (terminal 4) and blower motor connector C-115 (terminal 2) in good condition?

YES : Go to Step 6.

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

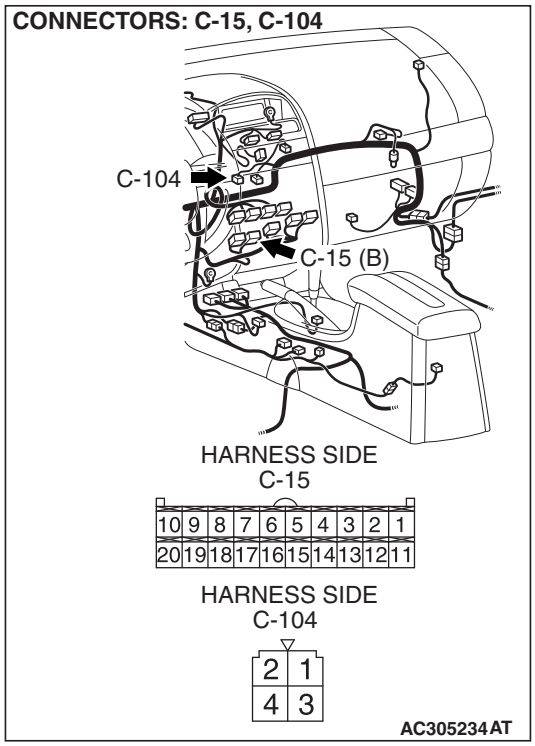


STEP 6. Check A/C-ECU connector C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-15 in good condition?

YES : Go to Step 7.

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



STEP 7. Check the wiring harness between power transistor connector C-104 (terminals 1 and 3) and A/C-ECU connector C-15 (terminals 17 and 18).

- Check the blower motor ground line for open circuit.

Q: Are the wiring harness between power transistor connector C-104 (terminals 1 and 3) and A/C-ECU connector C-15 (terminals 17 and 18) in good condition?

YES : Go to Step 8.

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

STEP 8. Replace the power transistor.

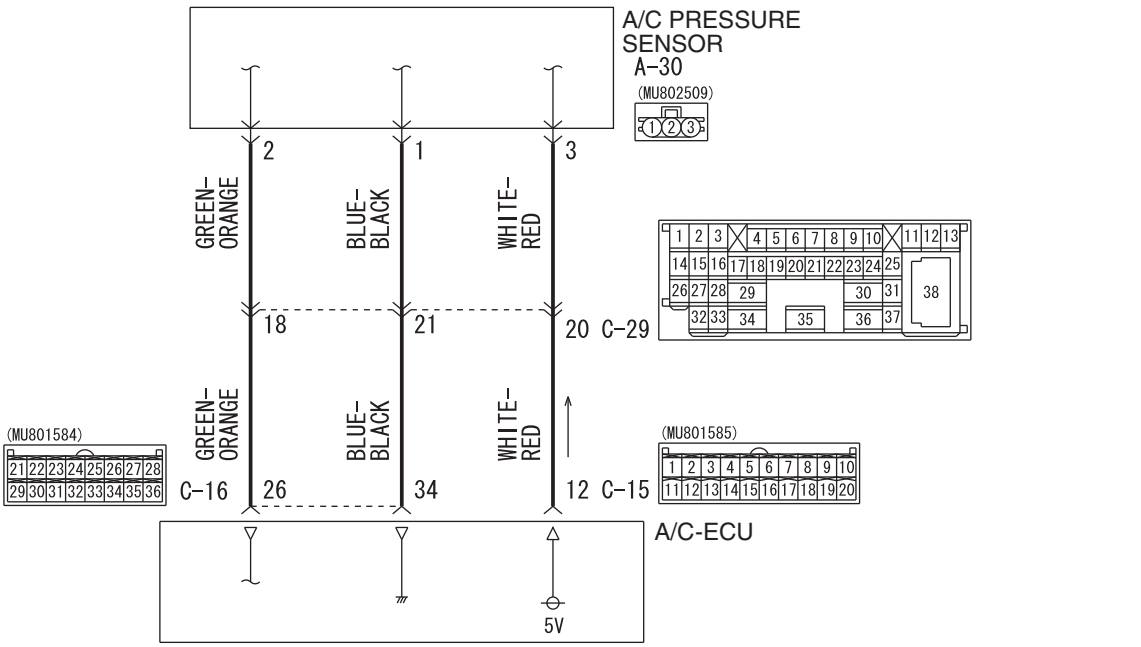
Q: Does the blower motor operate normally?

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.00-14.

NO : Replace the A/C-ECU. Check that the A/C works normally.

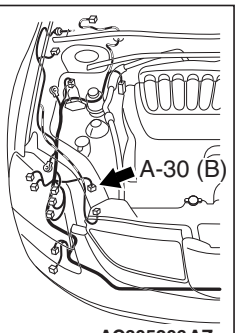
INSPECTION PROCEDURE 7: The A/C Indicator Flashes.

A/C Pressure Sensor Circuit



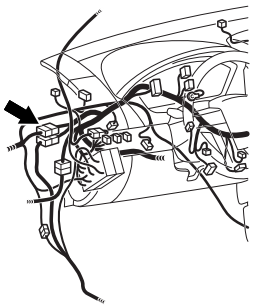
WP55M12AA

CONNECTOR: A-30



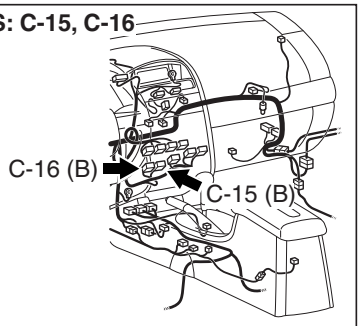
AC305206AZ

CONNECTOR: C-29



AC305231AH

CONNECTORS: C-15, C-16



AC305233BE

TECHNICAL DESCRIPTION (COMMENT)

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

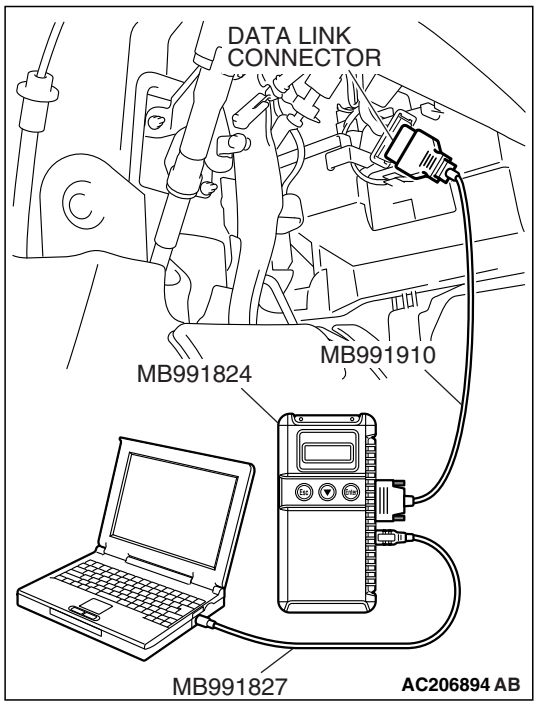
- Malfunction of the A/C pressure sensor
- Malfunction of the ambient air temperature sensor
- Malfunction of the A/C-ECU

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



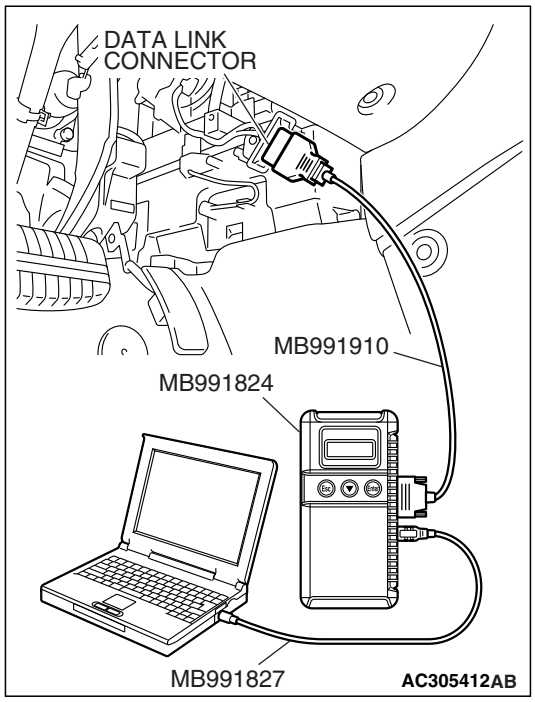
STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

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 : Go to Step 2.
NO : Refer to DIAGNOSTIC TROUBLE CODE CHART P.55A-10.



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

⚠ CAUTION

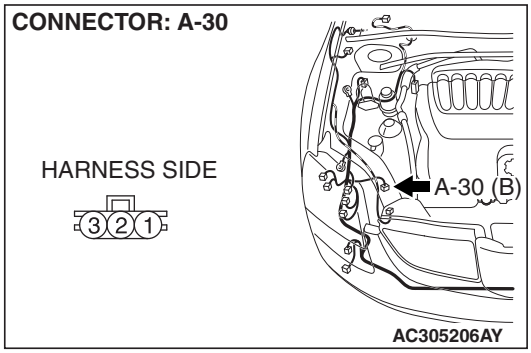
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

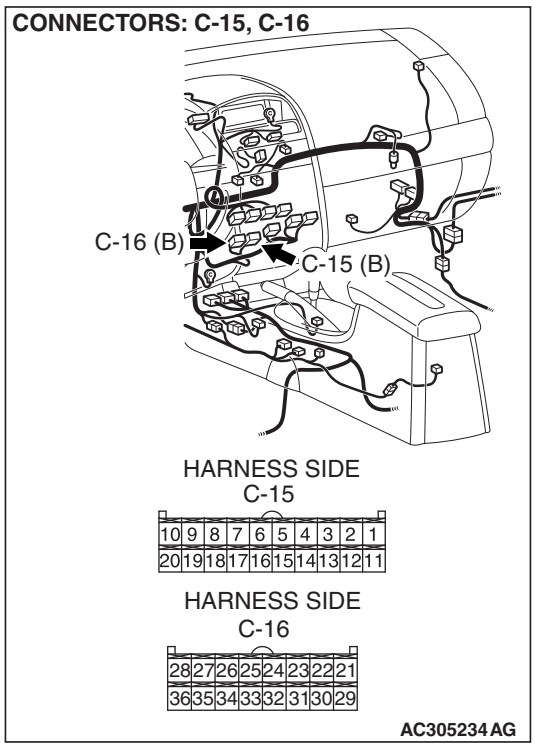
(1) Connect scan tool MB991958 to the data link connector.
(2) Assemble a manifold gauge onto the high pressure service valve.
(3) Turn ON the engine and then turn ON the A/C switch.
(4) Set scan tool MB991958 to the data reading mode.
- Item 04: A/C pressure sensor.
  - Check that the refrigerant pressure matches the displayed value on the scan tool.

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

Q: Is the sensor within the specified range?

YES : Go to Step 7.
NO : Go to Step 3.





STEP 3. Check A/C pressure sensor connector A-30 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C pressure sensor connector A-30 in good condition?

YES : Go to Step 4.

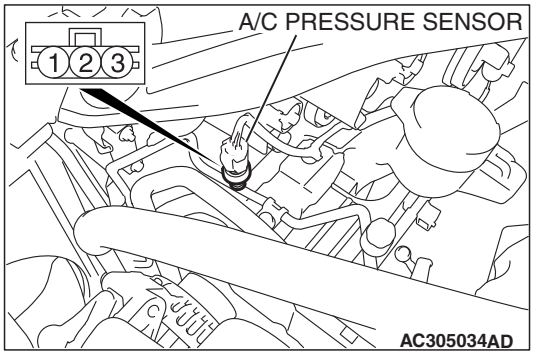
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the A/C works normally.

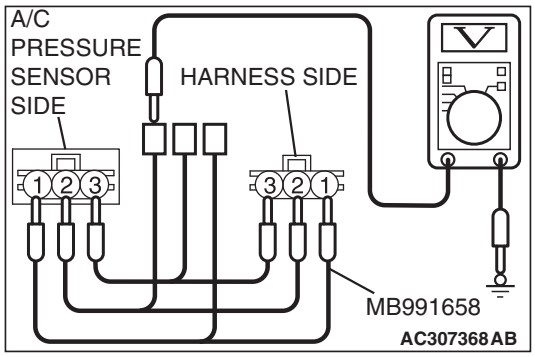
STEP 4. Check the A/C pressure sensor.

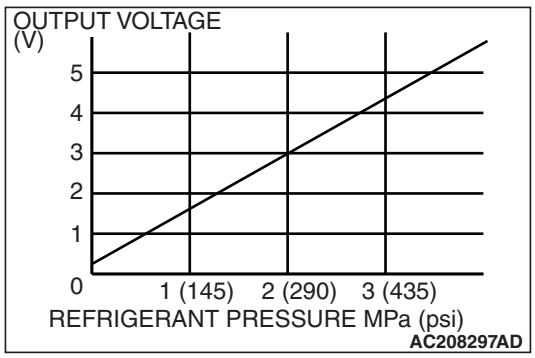
(1) Assemble a gauge manifold on the high pressure service valve.

(2) Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.

(3) Turn ON the engine and then turn ON the A/C switch.







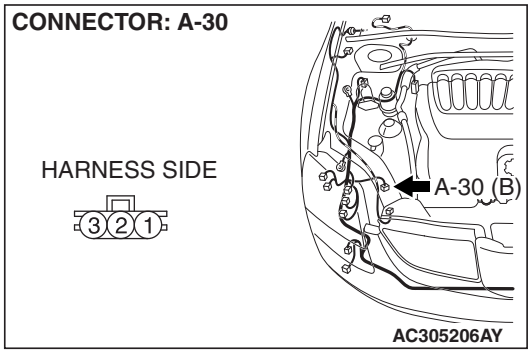
(4) At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 reflects the specifications of the figure.

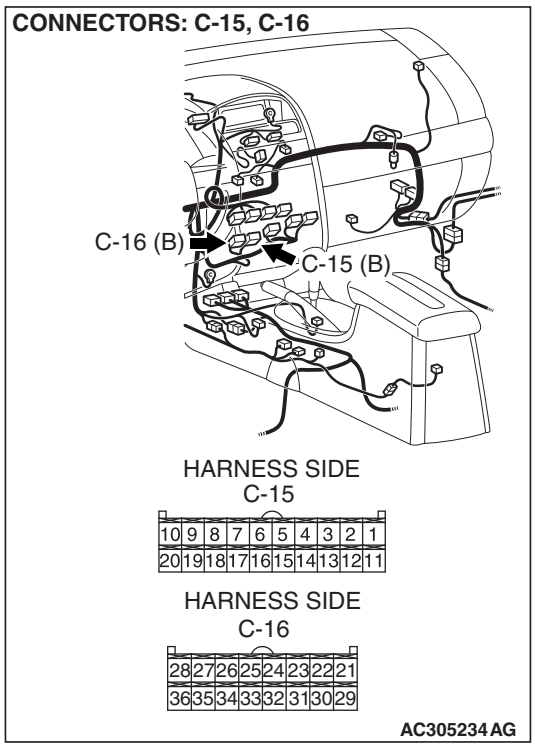
NOTE: The allowance shall be defined as ±5%.

Q: Is the A/C pressure sensor in good condition?

YES : Go to Step 5.

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





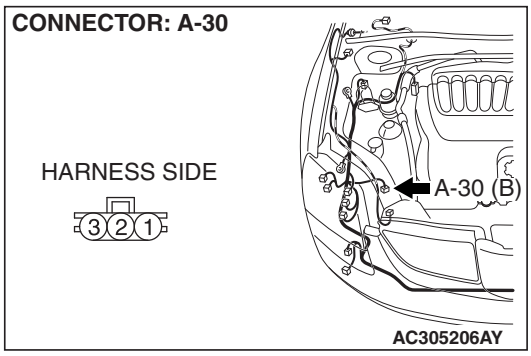
STEP 5. Check A/C-ECU C-15 and C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

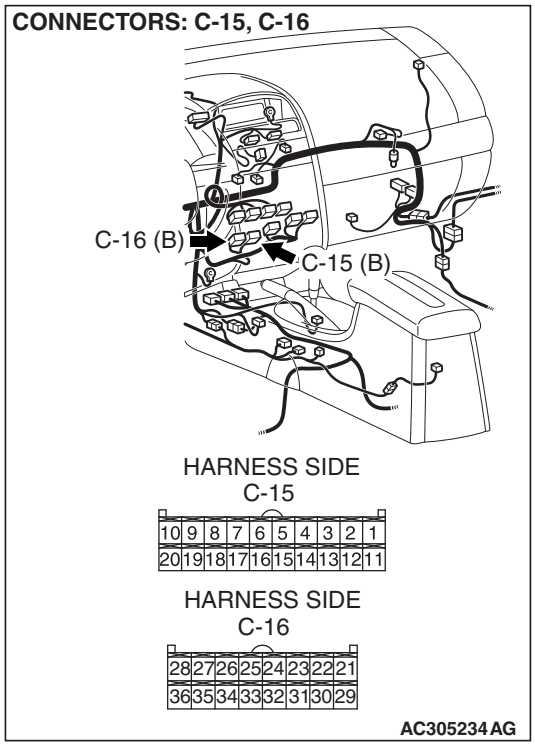
Q: Are A/C-ECU C-15 and C-16 in good condition?

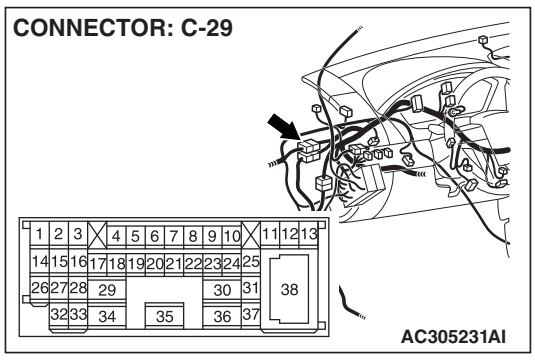
YES : Go to Step 6.

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

STEP 6. Check the wiring harness between A/C-ECU connector C-15 (terminal 12), C-16 (terminals 34 and 26) and A/C pressure sensor connector A-30 (terminals 3, 1 and 2).







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

- Check the A/C-ECU signal line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-15 (terminal 12), C-16 (terminals 34 and 26) and A/C pressure sensor connector A-30 (terminals 3, 1 and 2) in good condition?

YES : Repair the A/C-ECU. Check that the A/C works normally.

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

TSB Revision

STEP 7. Check the refrigerant level.

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

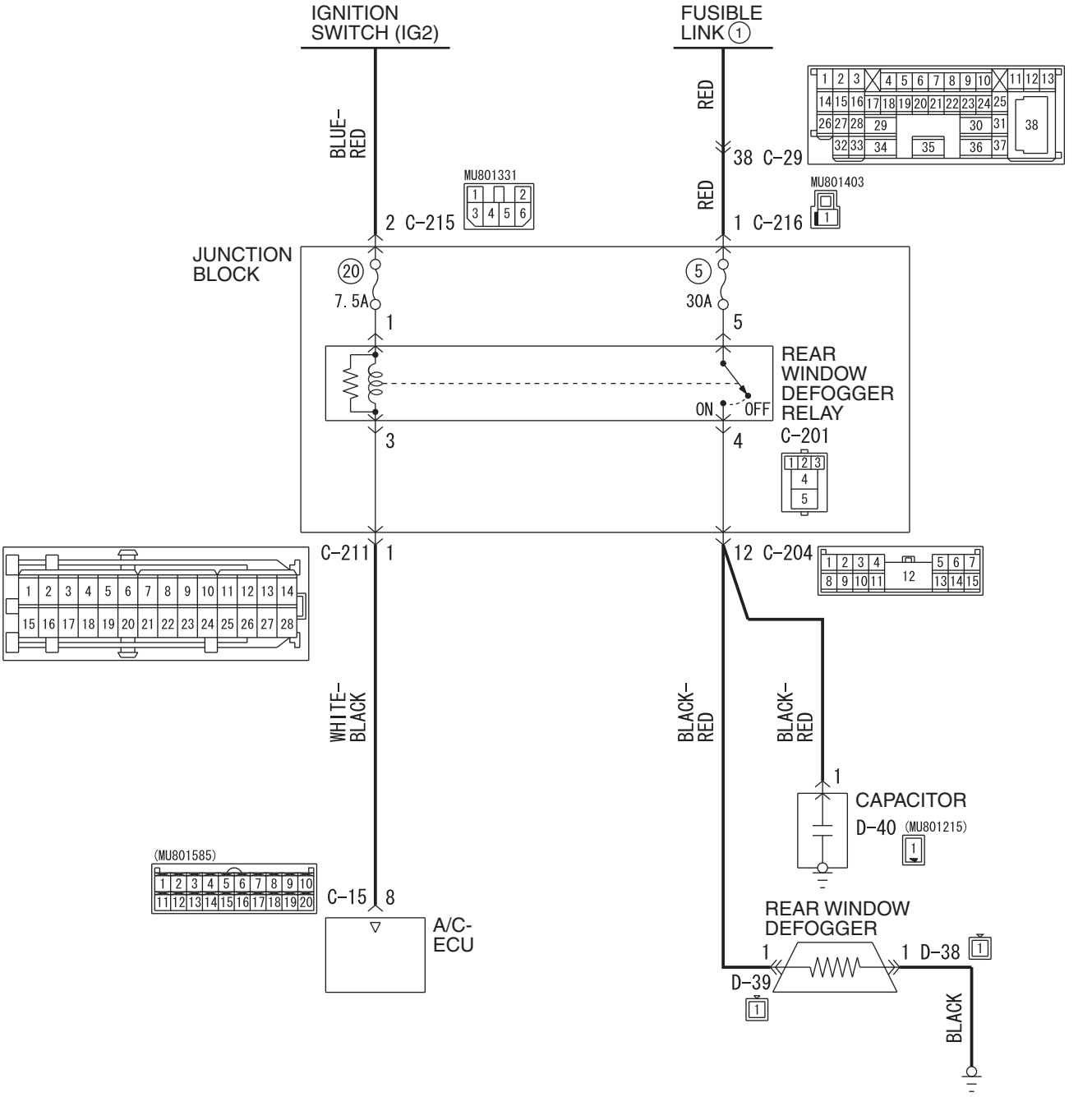
Q: Is the refrigerant level correct?

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

NO : Correct the refrigerant level (Refer to On-vehicle ServiceP.55A-145). Check that the A/C works normally.

INSPECTION PROCEDURE 8: Defogger Function Does Not Operate.

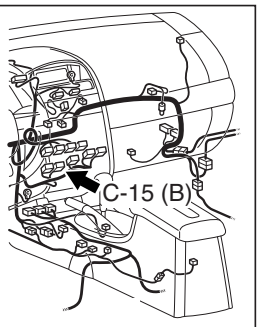
Rear Window Defogger Circuit



AC901280
W6P55M030A

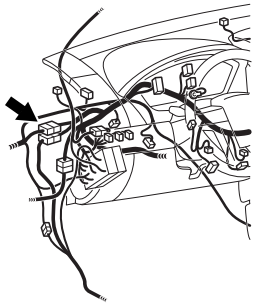
TSB Revision

CONNECTOR: C-15



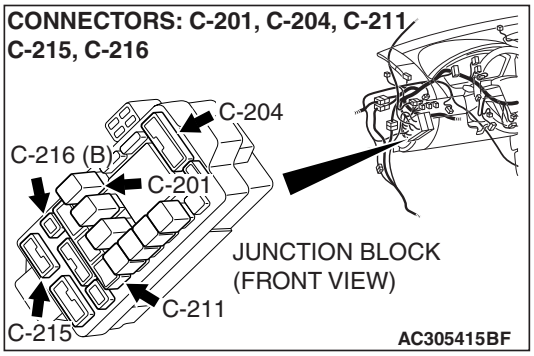
AC305233BI

CONNECTOR: C-29



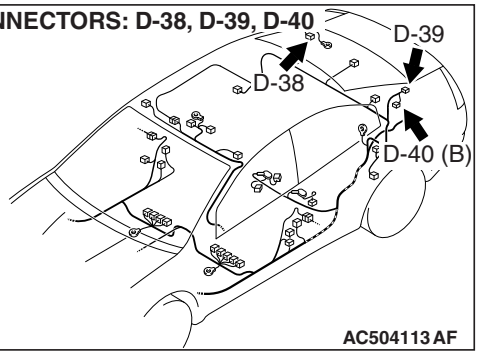
AC305231CH

CONNECTORS: C-201, C-204, C-211
C-215, C-216



AC305415BF

CONNECTORS: D-38, D-39, D-40



AC504113AF

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

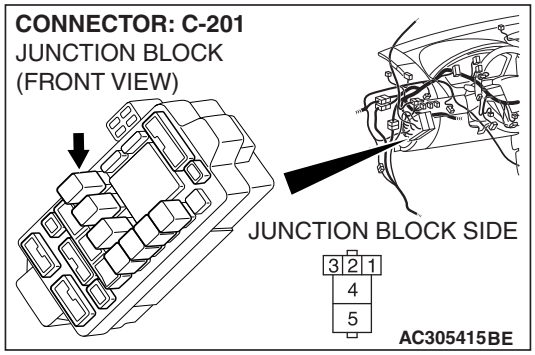
- MB991223: Harness Set
- MB992006: Extra Fine Probe

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.55A-127."

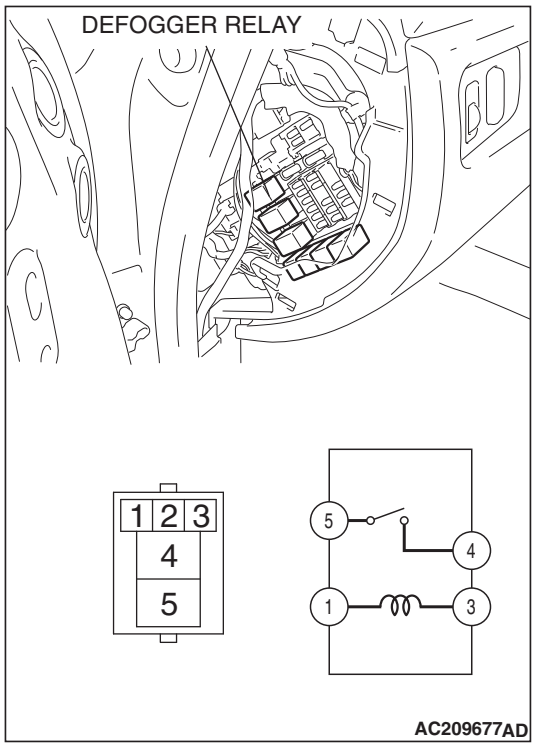


STEP 2. Check rear window defogger relay connector C-201 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger relay connector C-201 in good condition?

YES : Go to Step 3.

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



STEP 3. Check the rear window defogger relay continuity.

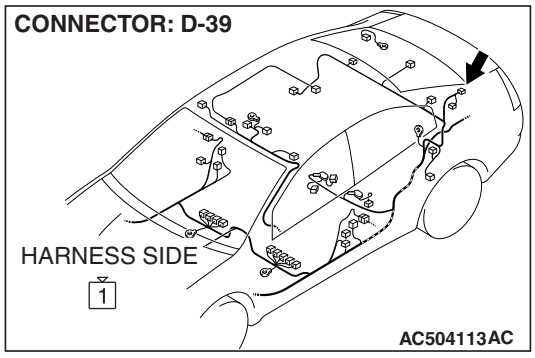
Follow the table below to check the rear window defogger relay for continuity.

Battery voltage	Connect tester between	Specified condition
Not applied	4 –5	Open Circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	4 –5	Less than 2 ohms

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

YES : Go to Step 4.

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



STEP 4. Check rear window defogger connector D-39 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

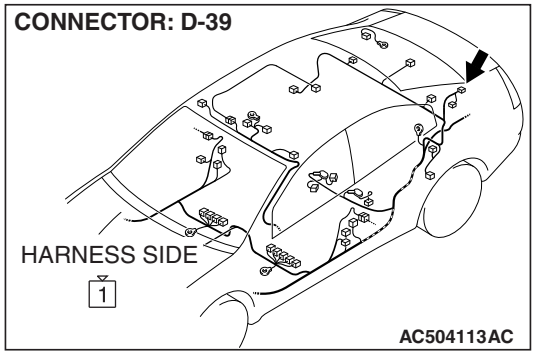
Q: Is rear window defogger connector D-39 in good condition?

YES : Go to Step 5.

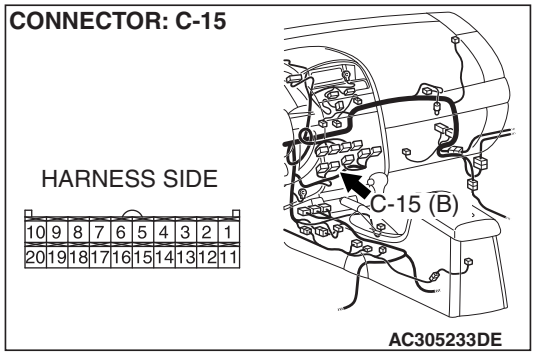
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The defogger system should work normally.

TSB Revision

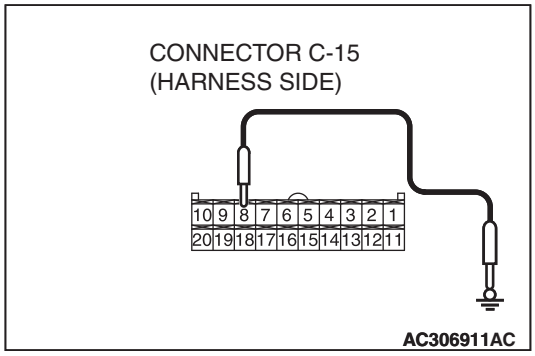
STEP 5. Measure the voltage at rear window defogger connector D-39.

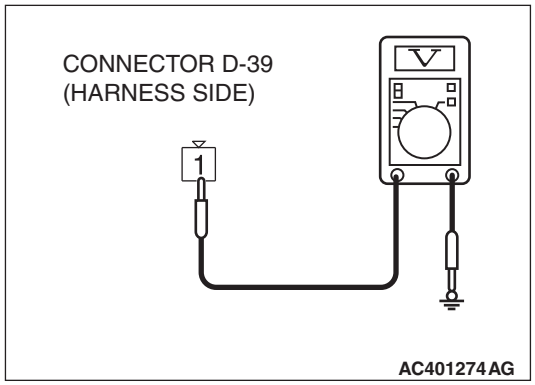


(1) Disconnect rear window defogger connector D-39, and measure the voltage at the harness side.



(2) Disconnect A/C-ECU connector C-15 and ground harness side terminal No.8.
(3) Turn the ignition switch to the "ON" position.



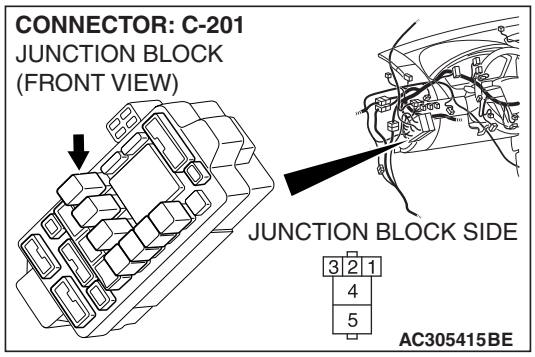


(4) Measure the voltage between rear window defogger connector D-39 terminal No.1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

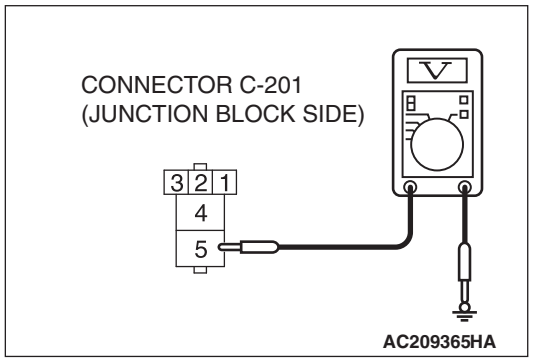
Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 13.
NO : Go to Step 6.

STEP 6. Measure the voltage at rear window defogger relay connector C-201.



(1) Disconnect rear window defogger relay connector C-201, and measure the voltage at the junction block side.

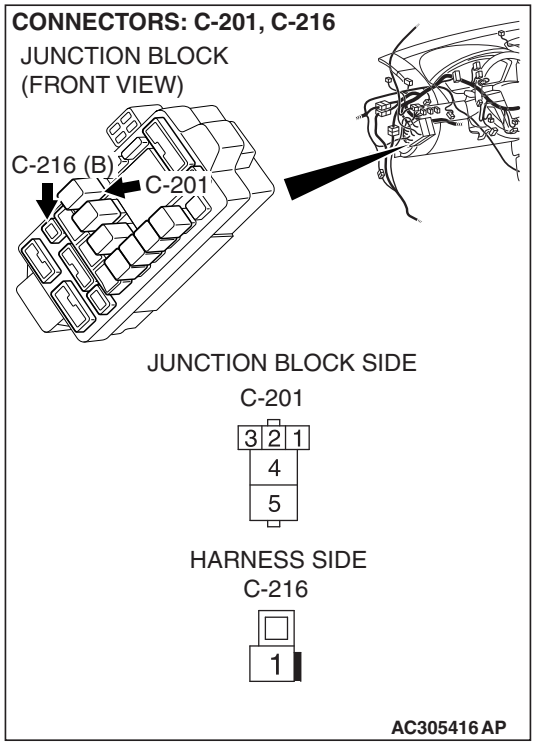


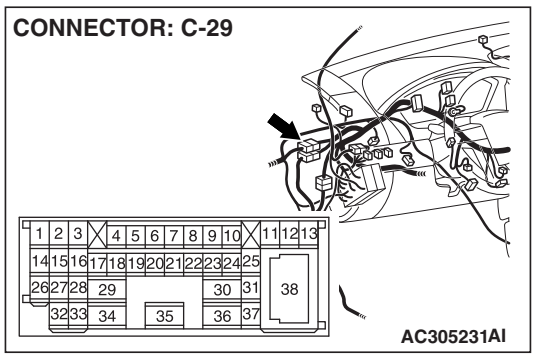
(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approx. 12 volts?

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

STEP 7. Check the wiring harness between rear window defogger relay connector C-201 (terminal 5) and the fusible link (1).





NOTE: Also check intermediate connector C-29 and junction block connector C-216 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 and junction block connector C-216 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the defogger relay power supply line for open circuit.

Q: Is the wiring harness between rear window defogger relay connector C-201(terminal 5) and the fusible link (1) in good condition?

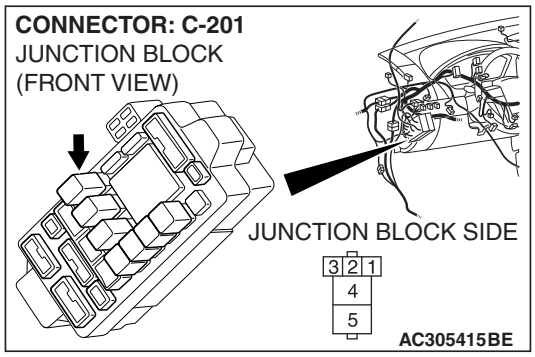
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

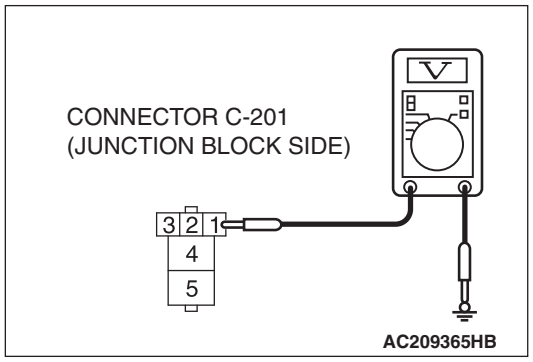
NO : Repair the wiring harness. Check that the defogger system works normally.

STEP 8. Measure the voltage at rear window defogger relay connector C-201.

(1) Disconnect rear window defogger relay connector C-201, and measure the voltage at the junction block side.

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





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

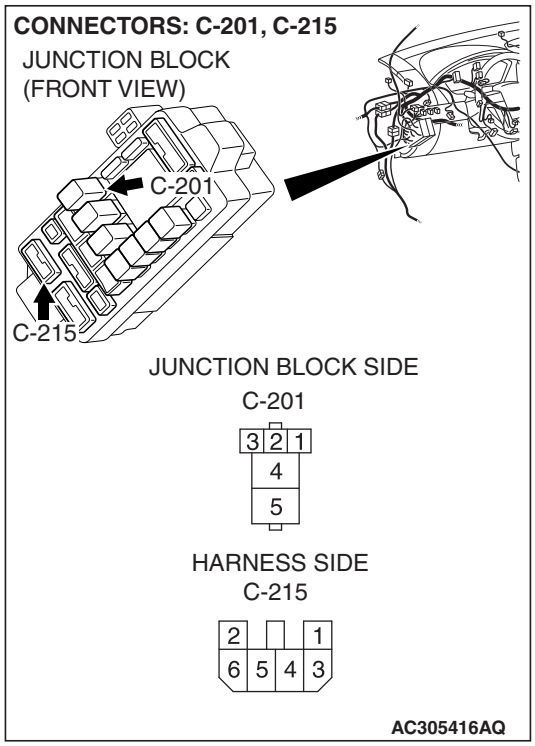
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check the wiring harness between rear window defogger relay connector C-201 (terminal 1) and ignition switch (IG2).



NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the defogger relay power supply line for open circuit.

Q: Is the wiring harness between rear window defogger relay connector C-201 (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.00-14.

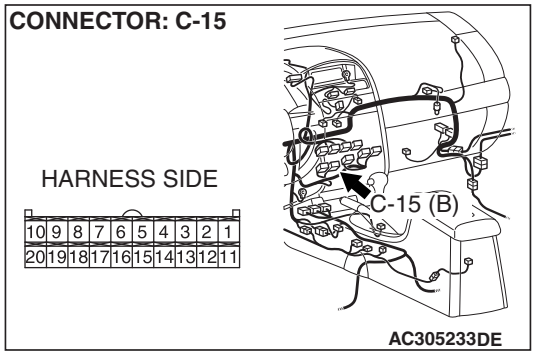
NO : Repair the wiring harness. Check that the defogger system works normally.

STEP 10. Check A/C-ECU connector C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

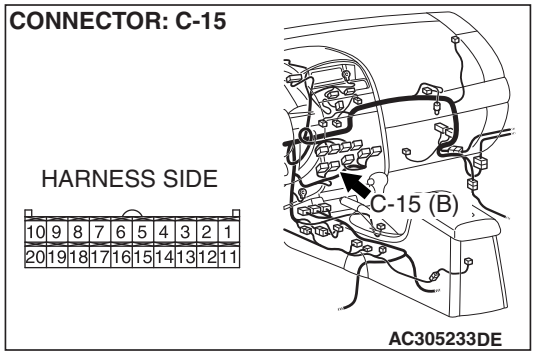
Q: Is A/C-ECU connector C-15 in good condition?

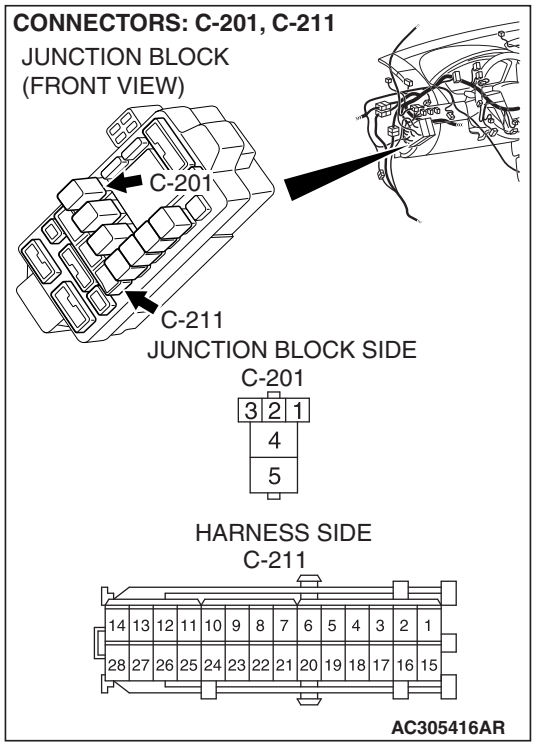
YES : Go to Step 11.

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



STEP 11. Check the wiring harness between rear window defogger relay connector C-201 (terminal 3) and A/C-ECU connector C-15 (terminal 8).





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

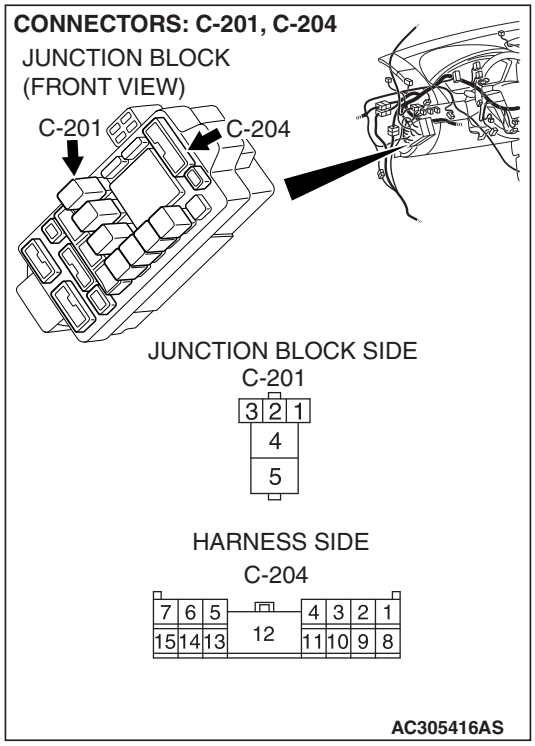
- Check the defogger relay power supply line for open circuit.

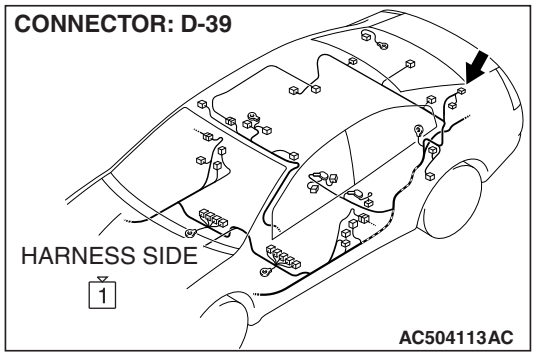
Q: Is the wiring harness between rear window defogger relay connector C-201 (terminal 3) and A/C-ECU connector C-15 (terminal 8) in good condition?

YES : Go to Step 12.

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

STEP 12. Check the wiring harness between rear window defogger relay connector C-201 (terminal 4) and rear window defogger connector D-39 (terminal 1).





NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

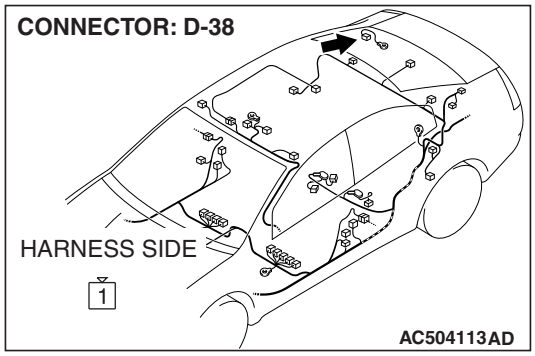
- Check the defogger relay ground line for open circuit.

Q: Is the wiring harness between rear window defogger relay connector C-201 (terminal 4) and rear window defogger connector D-39 (terminal 1) 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.00-14.

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

STEP 13. Check rear window defogger connector D-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

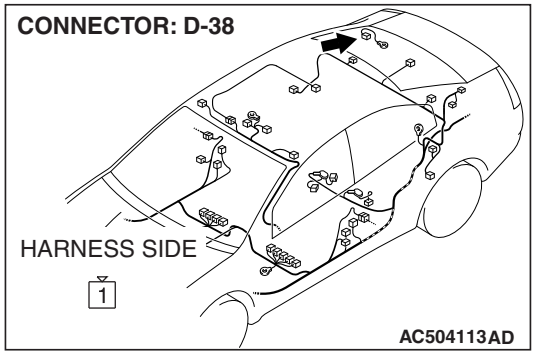


Q: Are rear window defogger connector D-38 in good condition?

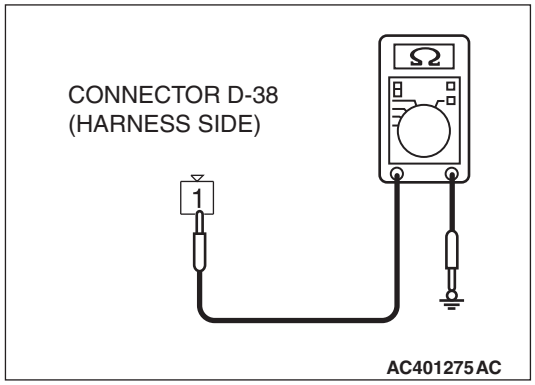
YES : Go to Step 14.

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

STEP 14. Measure the resistance at rear window rear window defogger connector D-38.



(1) Disconnect rear window defogger connector D-38, and measure at the wiring harness side.

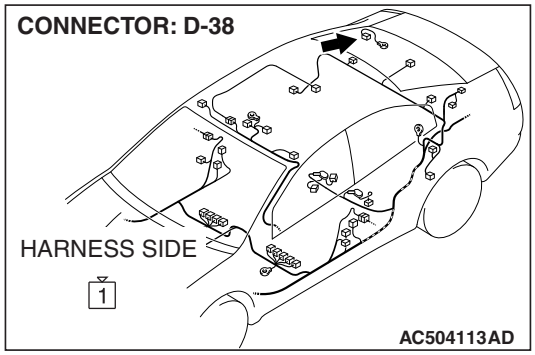


(2) Measure the resistance between terminal 1 and ground.
- The measured value should be 2 ohms or less.

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

YES : Go to Step 16.
NO : Go to Step 15.

STEP 15. Check the wiring harness between rear window defogger connector D-38 (terminal 1) and the ground.

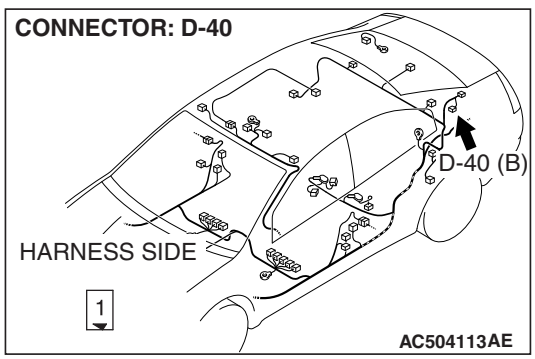


- Check the defogger relay ground line for open circuit.

Q: Is the wiring harness between rear window defogger connector D-38 (terminal 1) and the ground in good condition?

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

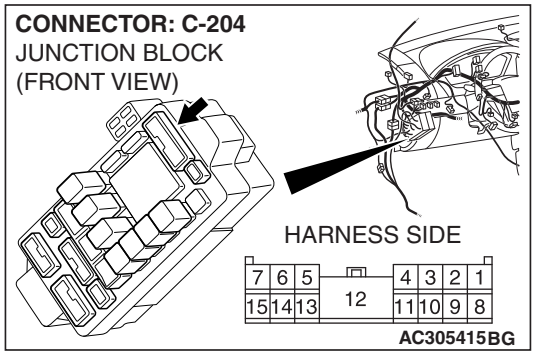
STEP 16. Check capacitor connector D-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

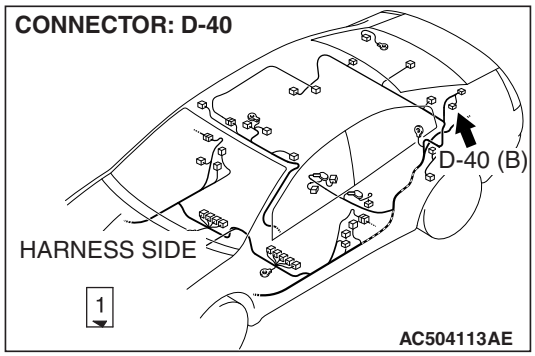


Q: Is capacitor connector D-40 in good condition?

YES : Go to Step 17.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the defogger system works normally.

TSB Revision





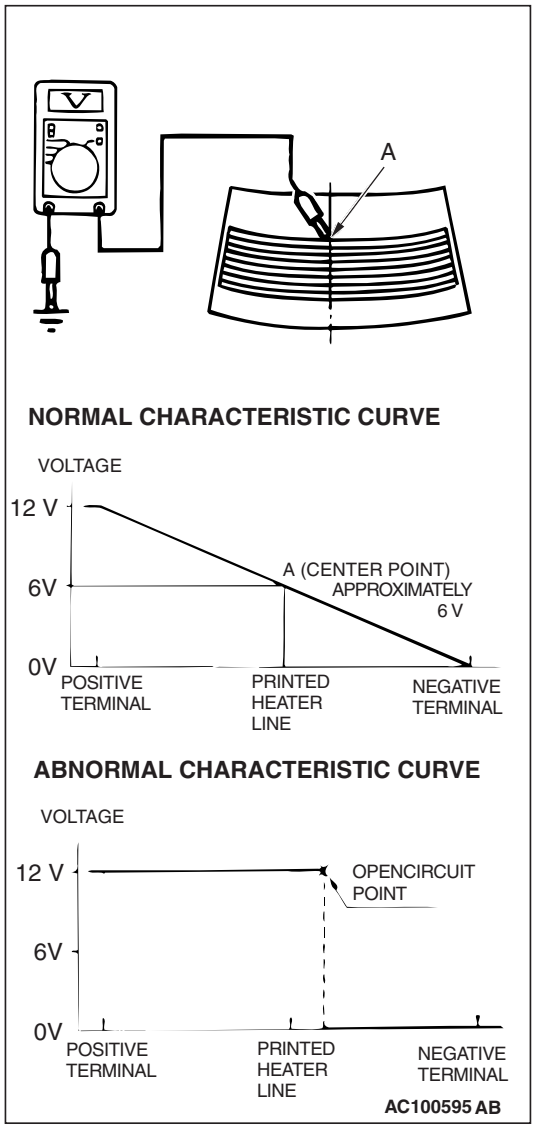
STEP 17. Check the wiring harness between capacitor connector D-40 (terminal 1) and junction block connector C-204 (terminal 12).

- Check the defogger relay ground line for open circuit.

Q: Is the wiring harness between capacitor connector D-40 (terminal 1) and junction block connector C-204 (terminal 12) in good condition?

YES : Go to Step 18.

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



STEP 18. Check the rear window defogger.

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

Q: Does the defogger work normally?

YES : Replace the A/C-ECU. Check that the defogger system works normally.
NO : Repair the defogger.

INSPECTION PROCEDURE 9: Defogger Timer Function does not Operate.

CIRCUIT OPERATION

Turn ON the defogger switch. If the defogger does not shut off after about 16 minutes then the defogger timer is malfunctioning.

TROUBLESHOOTING HINT

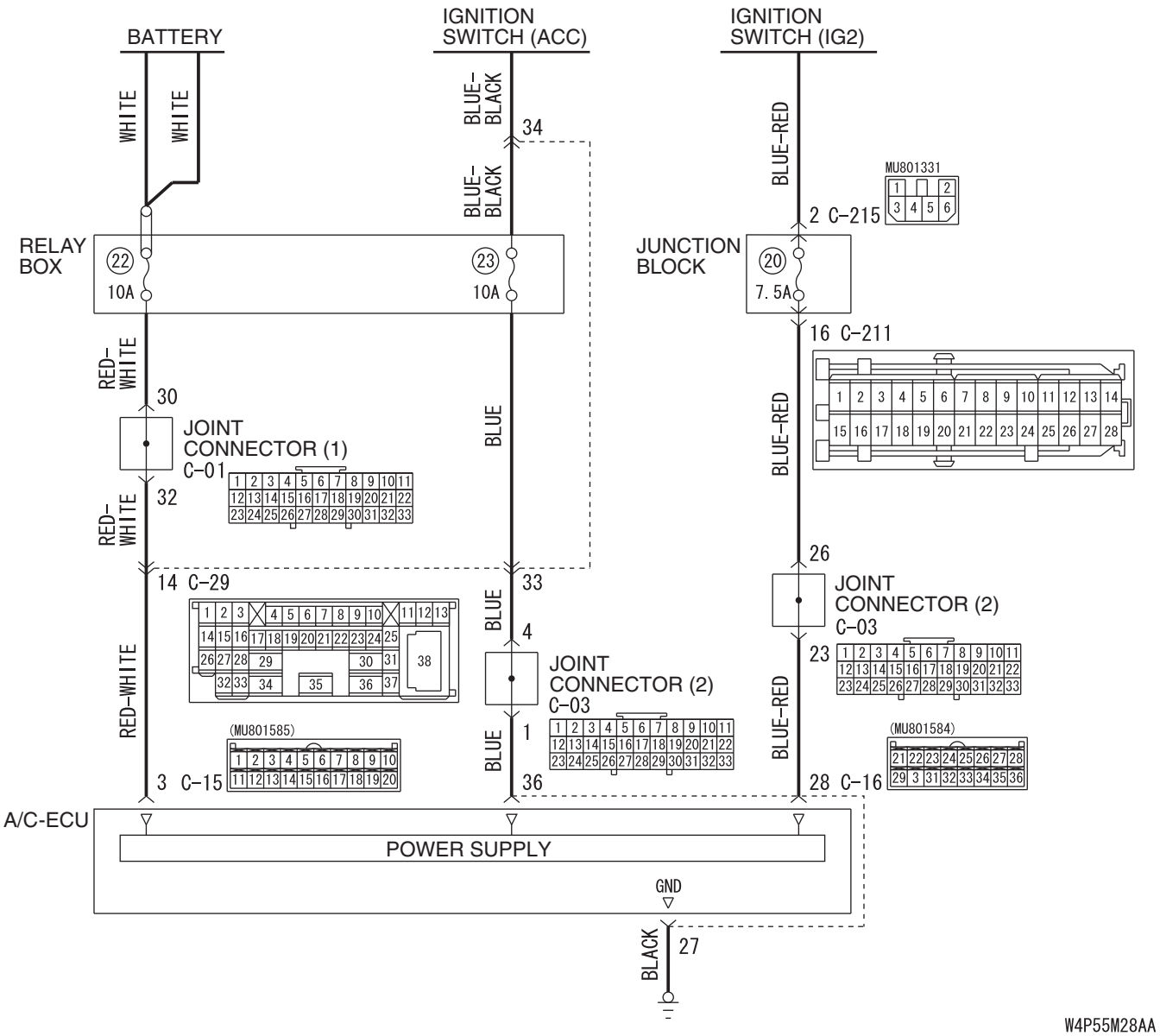
- Malfunction of the A/C-ECU
- Malfunction of the defogger timer

DIAGNOSIS

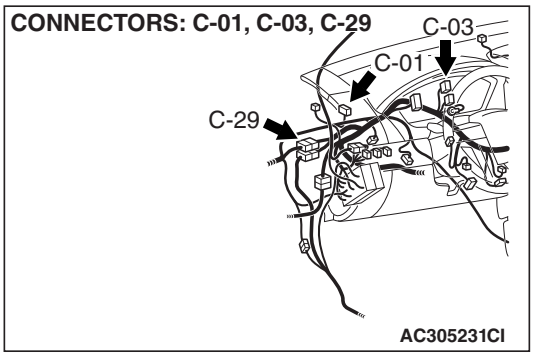
Replace the A/C-ECU.

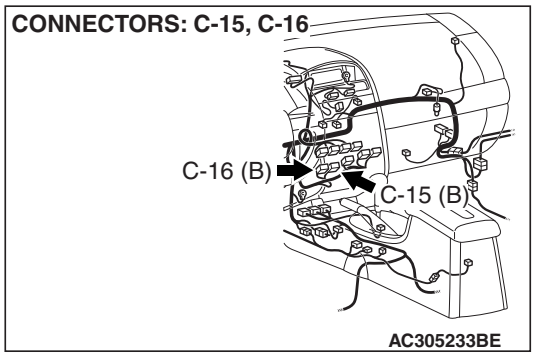
INSPECTION PROCEDURE 10: Malfunction of the A/C-ECU Power Supply System.

A/C-ECU Power Supply Circuit

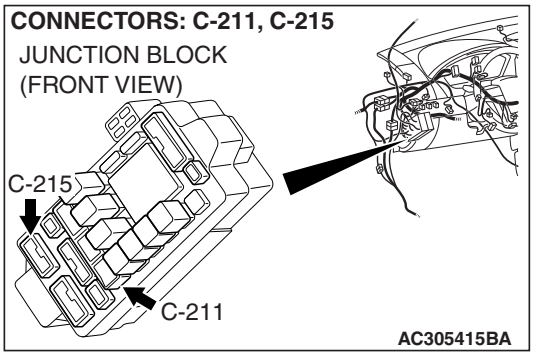


W4P55M28AA





TSB Revision



TECHNICAL DESCRIPTION (COMMENT)

The A/C-ECU power system may be defective if the air conditioner, 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:

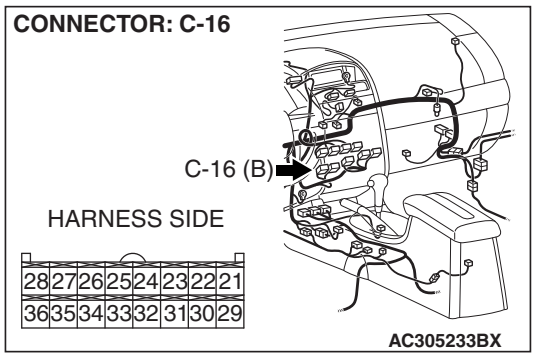
- MB991223: Harness Set
- MB992006: Extra Fine Probe

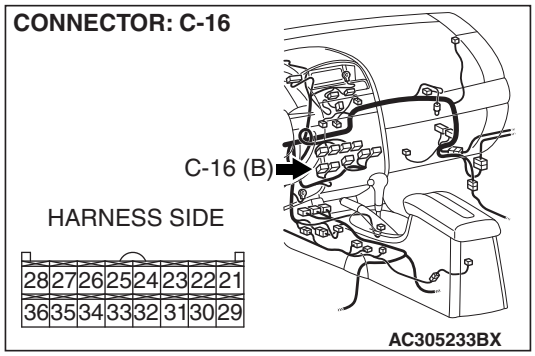
STEP 1. Check A/C-ECU connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-16 in good condition?

YES : Go to Step 2.

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

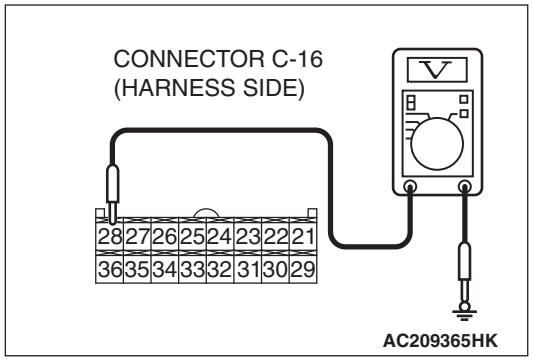




STEP 2. Measure the voltage at A/C-ECU connector C-16.

(1) Disconnect A/C-ECU connector C-16 and measure the voltage at the harness side.

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



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

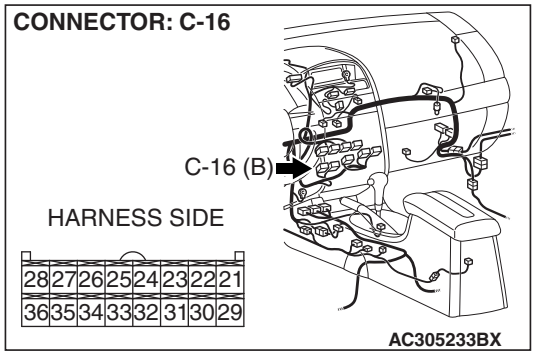
- The measured value should be approximately 12 volts (battery positive voltage).

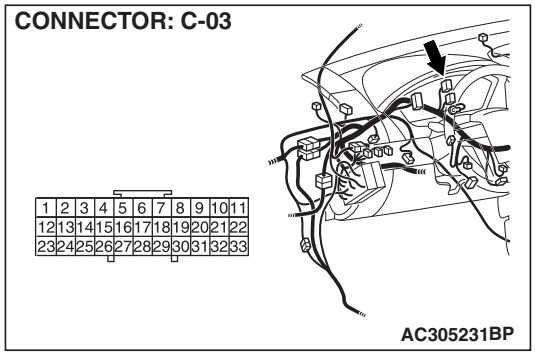
Q: Is the measured voltage approx. 12 volts?

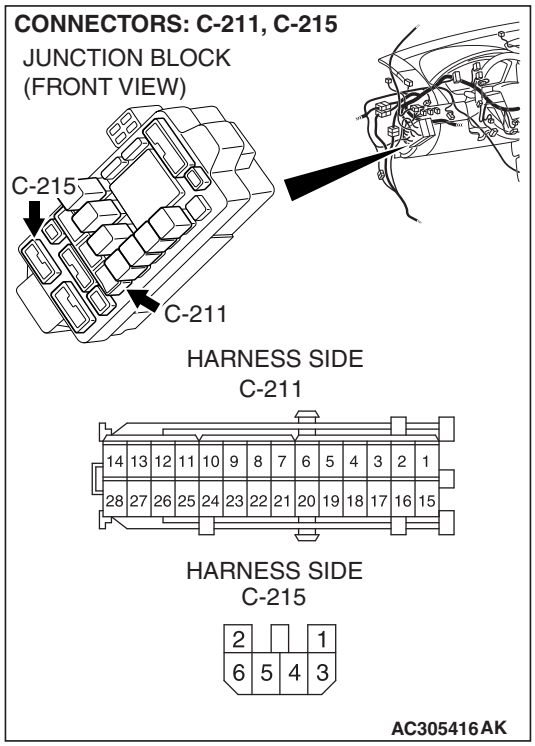
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between A/C-ECU connector C-16 (terminal 28) and the ignition switch (IG2).







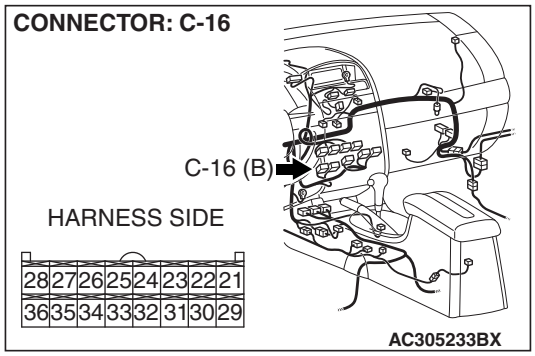
NOTE: Also check joint connector C-03, junction block connectors C-211 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03, junction block connector C-211 or C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the A/C-ECU power supply line for open circuit.

Q: Is the wiring harness between A/C-ECU connector C-16 (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.00-14.

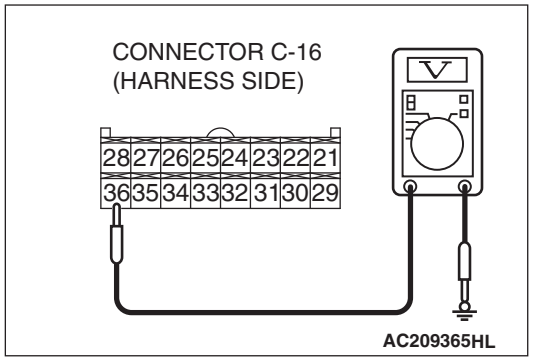
NO : Repair the wiring harness. Check that the A/C works normally.



STEP 4. Measure the voltage at A/C-ECU connector C-16.

(1) Disconnect A/C-ECU connector C-16 and measure the voltage at the harness side.

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



(3) Measure the voltage between terminal 36 and ground.

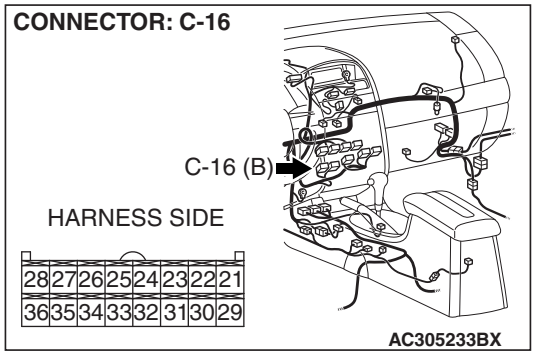
- The measured value should be approximately 12 volts (battery positive voltage).

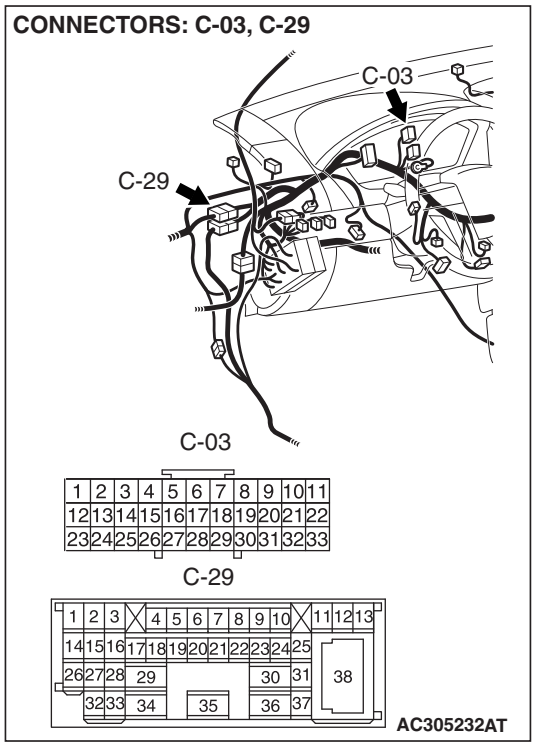
Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between A/C-ECU connector C-16 (terminal 36) and the ignition switch (ACC).





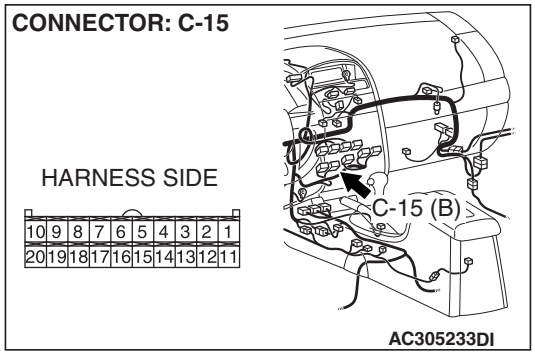
NOTE: Also check joint connector C-03 and intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 or intermediate connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the A/C-ECU power supply line for open circuit.

Q: Is the wiring harness between A/C-ECU connector C-16 (terminal 36) and the ignition switch (ACC) in good condition?

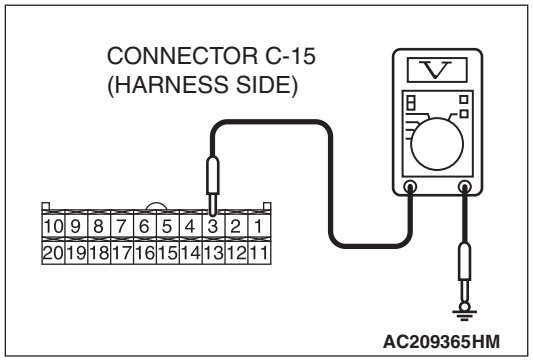
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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



STEP 6. Measure the voltage at A/C-ECU connector C-15.

(1) Disconnect A/C-ECU connector C-15 and measure the voltage at the harness side.



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

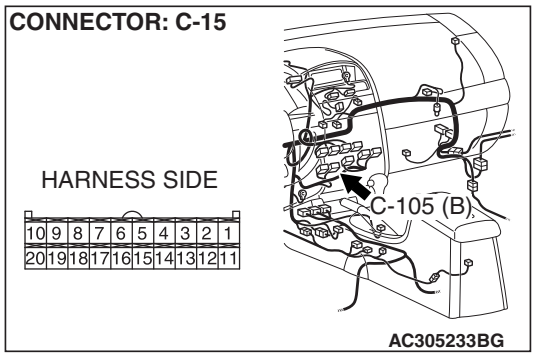
- The measured value should be approximately 12 volts (battery positive voltage).

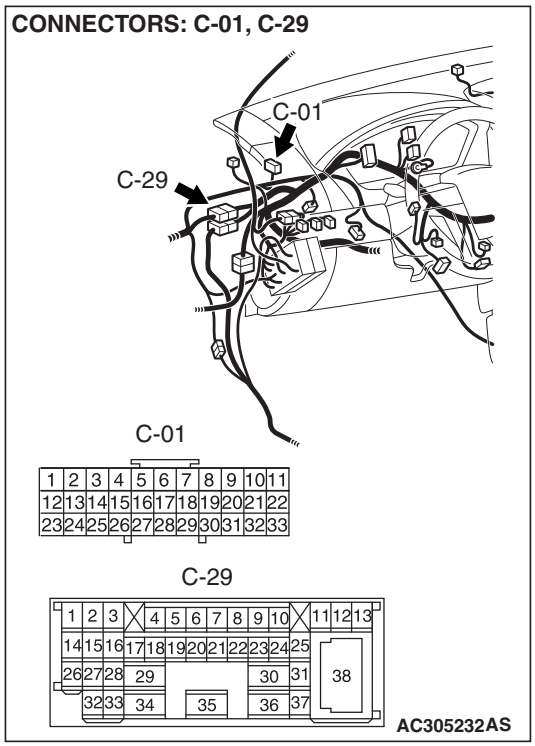
Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the wiring harness between A/C-ECU connector C-15 (terminal 3) and the battery.





NOTE: Also check joint connector C-01 and intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 or intermediate connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

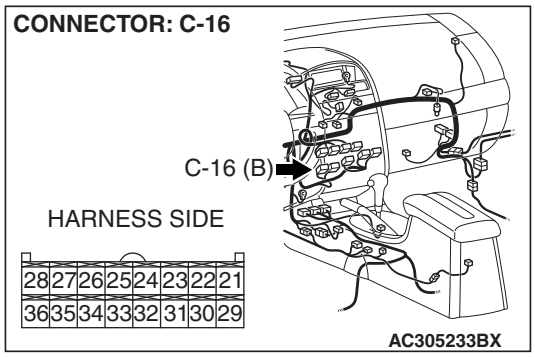
- Check the A/C-ECU power supply line for open circuit.

Q: Is the wiring harness between A/C-ECU connector C-15 (terminal 3) and the battery in good condition?

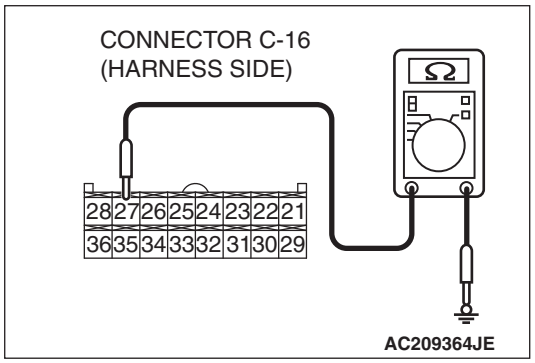
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-14.

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

STEP 8. Measure the resistance at A/C-ECU connector C-16.



(1) Disconnect A/C-ECU connector C-16, and measure at the wiring harness side.



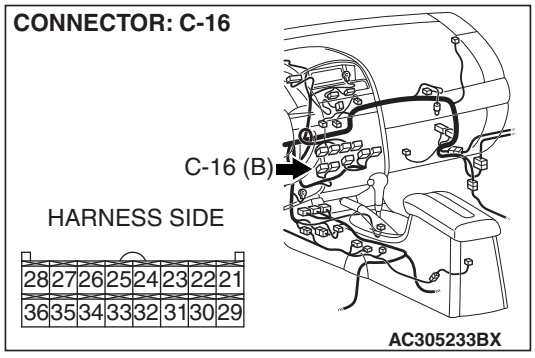
(2) Measure the resistance between terminal 27 and ground.
- The measured value should be 2 ohms or less.

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

YES : Replace the A/C-ECU, and check that the A/C works normally.

NO : Go to Step 9.

STEP 9. Check the wiring harness between A/C-ECU connector C-16 (terminal 27) and the ground.



- Check the A/C-ECU power supply line for open circuit.

Q: Is the wiring harness between A/C-ECU connector C-16 (terminal 27) 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.00-14. check that the A/C works normally.

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

DATA LIST REFERENCE TABLE

M1554005100136

M.U.T.-III scan tool display	Item No.	Inspection item	Inspection requirement		Normal value
Ambient air temperature sensor	02	Ambient air temperature sensor	Ignition switch: ON		Outside air temperature and temperature displayed on the scan tool are identical.
Air thermo sensor	03	Air thermo sensor	Ignition switch: ON		The temperature measured behind the evaporator matches the displayed value on the scan tool while the engine is cold.
Pressure sensor	04	A/C pressure sensor	Ignition switch: ON		Measured refrigerant pressure is nearly equal to the value shown on the scan tool.
Heater water temperature sensor	05	Engine coolant temperature sensor (Data received by CAN Communication)	Ignition switch: ON		Engine coolant temperature and temperature displayed on the scan tool are identical.
Air mix potentiometer	10	Air mixing damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				MAX. HOT	Approx. 100
				MAX. COOL	Approx. 0
Air mix potentiometer (Target)	11	Target value for air mixing damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				MAX. HOT	Approx. 100
				MAX. COOL	Approx. 0
Air outlet c/o potentiometer	12	Mode selection damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				FACE	Approx. 100
				FOOT	Approx. 75
				FOOT/DEF.	Approx. 50
				DEF.	Approx. 0
Air outlet c/o potentiometer (target)	13	Target value for mode selection damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				FACE	Approx. 100
				FOOT	Approx. 75
				FOOT/DEF.	Approx. 50
				DEF.	Approx. 0

M.U.T.-III scan tool display	Item No.	Inspection item	Inspection requirement		Normal value
In/out air changeover damper motor	15	Outside/inside air selection damper control motor	Ignition switch: ON	Damper set position	Damper position
				Fresh air position	FRESH
				Air recirculation position	RECIRC
Blower fan	20	Blower motor	Ignition switch: ON		The actual air volume (blower motor speed) corresponds to the air volume shown on the scan tool.
Blower fan (Target)	21	Target value for blower motor	Ignition switch: ON		The air volume set by the heater control corresponds to the value shown on the scan tool.
Air conditioning switch	30	Air conditioning switch	Ignition switch: ON	Air conditioning switch: ON	Scan tool indication: ON
				Air conditioning switch: OFF	Scan tool indication: OFF
Rear defogger switch	34	Rear window defogger switch	Ignition switch: ON	Rear window defogger switch: ON	Scan tool indication: ON
				Rear window defogger switch: OFF	Scan tool indication: OFF
Low pressure judgment	40	Refrigerant pressure	Ignition switch: ON		The scan tool indication is normal
Refrigerant leak	41	Refrigerant leak	Ignition switch: ON		The scan tool indication is normal

ACTUATOR TEST REFERENCE

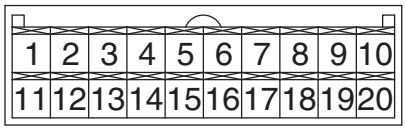
M1554005200133

M.U.T.-III scan tool display	Item No.	Inspection item	Drive content
Blower fan: OFF	01	Blower motor	OFF
Blower fan: 8 step	02		Middle speed
Blower fan: 16 step	03		High speed
Air mix damper motor: 0%	10	Air mixing damper control motor	Opening degree: approx. 0% (Max cool)
Air mix damper motor: 50%	11		Opening degree: approx. 50%
Air mix damper motor: 100%	12		Opening degree: approx. 100% (Max hot)
Air outlet c/o damper: FACE	13	Mode selection damper control motor	FACE
Air outlet c/o damper: Bi_ Level	14		FOOT/FACE
Air outlet c/o damper: FOOT	15		FOOT
Air outlet c/o damper: DEF/FOOT	16		DEF/FOOT
Air outlet c/o damper: DEF	17		DEF
In/out changeover damper: Recirc	30	Outside/inside air selection damper control motor	Inside
In/out changeover damper: Fresh	31		Outside
Rear defogger switch: OFF	40	Rear window defogger switch	Rear window defogger: OFF
Rear defogger switch: ON	41		Rear window defogger: ON
Idle up request: OFF	50	Idle up operation	Idle up: OFF
Idle up request: low load	51		Idle up: low load
Idle up request: high load	52		Idle up: high load
Condenser: 0%	09	Condenser fan	OFF
Condenser: 50%	0A		Middle speed
Condenser: 100%	0B		High speed

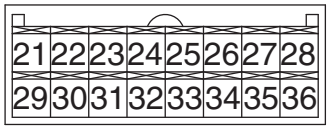
CHECK AT A/C-ECU TERMINAL

M1552010302299

C-15



C-16



AC210339AB

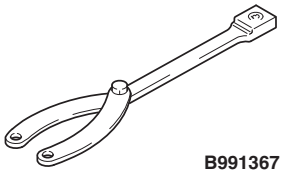
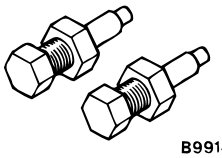
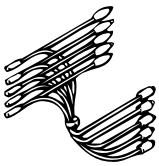
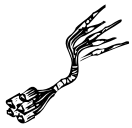
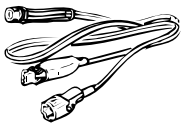
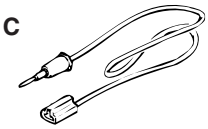
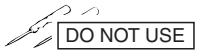
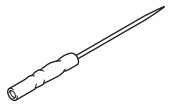
Terminal No.	Check item	Checking requirements	Normal condition
1	Air mixing damper control motor	When the air mix damper is moved to the MAX. COOL position.	10 V
		When the air mix damper is moved to the MAX. HOT position.	0.5 V
2	Air mixing damper control motor	When the air mix damper is moved to the MAX. COOL position.	0.5 V
		When the air mix damper is moved to the MAX. HOT position.	10 V
3	Back-up power supply	Always	Battery positive voltage
4	Mode selection damper control motor (DEF)	When the damper is moved to the FACE position.	0.5 V
		When the damper is moved to the DEF position.	10 V
5	Outside/inside air selection damper control motor (outside)	When the damper flap is moving to the air recirculation position.	0.5 V
		When the damper flap is moving to the outside air position.	1 V or less (when the motor is stopped)
6	Outside/inside air selection damper control motor (inside)	When the damper flap is moving to the air recirculation position.	1 V or less (when the motor is stopped)
		When the damper flap is moving to the outside air position.	0.5 V
7	–	–	–
8	Rear window defogger relay	Ignition switch: ON	Battery positive voltage
9	Blower relay	Ignition switch: ON	Battery positive voltage
10	A/C compressor relay	A/C compressor relay: ON	Battery positive voltage
11	Mode selection damper control motor (FACE)	When the damper is moved to the FACE position.	10 V
		When the damper is moved to the DEF position.	0.5 V

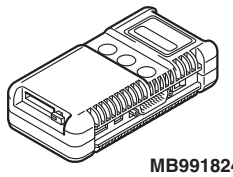
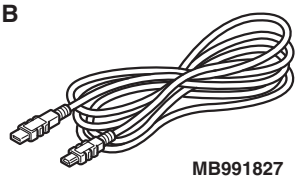
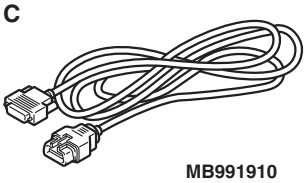
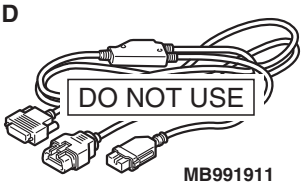
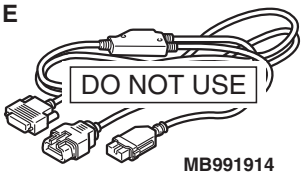
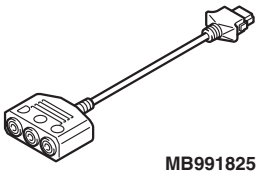
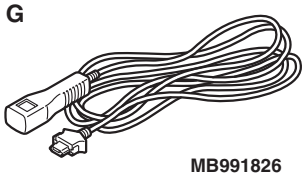
TSB Revision

Terminal No.	Check item	Checking requirements	Normal condition
12	A/C pressure sensor	Ignition switch: ON	5 V
13 –15	–	–	–
16	Potentiometer power supply	Ignition switch: ON	5 V
17	Power transistor (BASE)	When the blower speed selection dial shows Maximum air volume.	1 V
18	Power transistor (COLLECTOR)	When the blower speed selection dial shows Maximum air volume.	7.5 V
19	–	–	–
20	Sensors and potentiometers ground	Always	1 V or less
21	Mode selection damper control motor potentiometer input	When the damper has moved to the DEF position.	0.7 –1.3 V
22	–	–	–
23	Ambient air temperature sensor input	When sensor temperature is 25° C (77° F) [4 kΩ]	1.9 V
24	–	–	–
25	Air thermo sensor input	When sensor temperature is 25° C (77° F) [1.5 kΩ]	2.2 V
26	A/C pressure sensor	at 2.6 MPa	3.9 V
27	Ground	Always	1 V or less
28	Power supply to the ignition switch (IG2)	Ignition switch: ON	Battery positive voltage
29	Air mixing damper control motor potentiometer input	When the damper door has moved to the MAX. HOT position.	0.7 –1.3 V
30	Illumination ground	Always	1 V or less
31	ILL power supply	Lighting switch: ON	Battery positive voltage
32, 33	–	–	–
34	A/C pressure sensor ground	Always	1 V or less
36	Power supply to the ignition switch (ACC)	Ignition switch: ON	Battery positive voltage

SPECIAL TOOLS

M1552000600732

Tool	Tool number and name	Supersession	Application
 B991367	MB991367 Special spanner	MB991367-01	Armature mounting nut of compressor removal and installation
 B991386	MB991386 Pin	MIT217213	Armature mounting nut of compressor removal and installation
 MB991658	MB991658 Test harness set	Tool not available	Inspection of throttle position sensor
A  B  C  D  DO NOT USE 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	Making voltage and resistance measurement during troubleshooting A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006 Extra fine probe	General service tool	Making voltage and resistance measurement during troubleshooting

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 M.U.T.-III Sub Assembly A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III main harness C (Chrysler models only) F: M.U.T.-III measurement adapter G: M.U.T.-III Trigger Harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.** Checking diagnostic trouble codes

ON-VEHICLE SERVICE

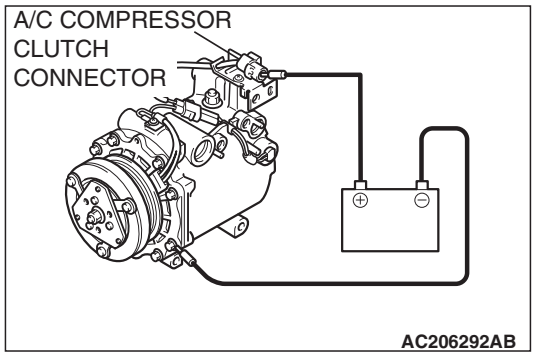
REFRIGERANT LEVEL TEST

M1552008400408

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

A/C COMPRESSOR CLUTCH TEST

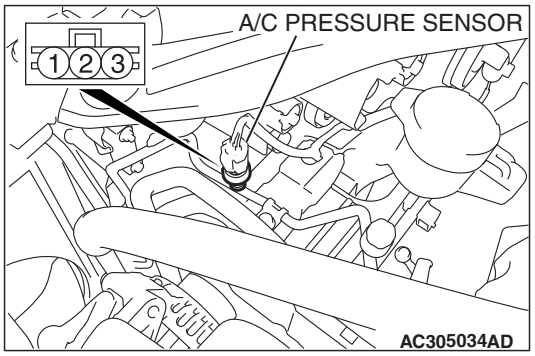
M1552019900032

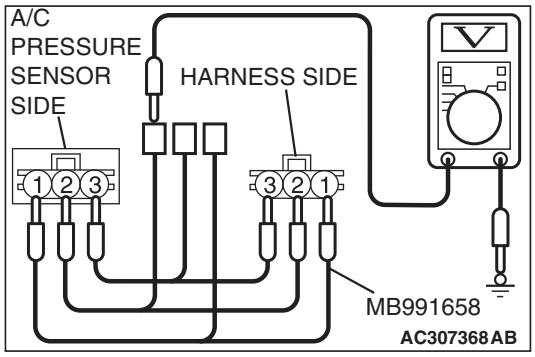


1. Disconnect the A/C compressor clutch connector to the A/C compressor clutch.
2. Connect positive battery voltage directly to the connector for the A/C compressor clutch.
3. If the A/C compressor clutch is normal, there will be a "click." If the pulley and armature do not make contact ("no click"), there is a malfunction.

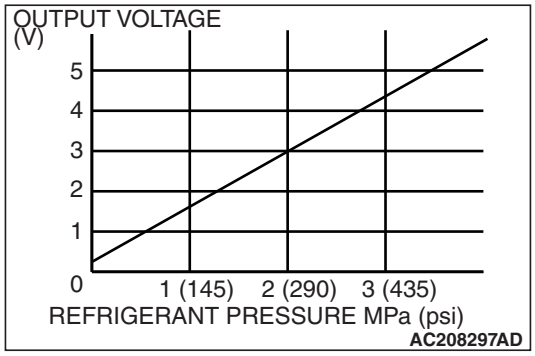
SIMPLE INSPECTION OF THE A/C PRESSURE SENSOR

M1552014700118





1. Assemble a gauge manifold on the high pressure service valve.
2. Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.
3. Turn ON the engine and then turn ON the air conditioner switch.



4. At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 reflects the specifications of the figure.

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

COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001000357

Refer to GROUP 00, Maintenance Service –Drive Belts P.00-49.

CHARGING

M1552001200403

Use the refrigerant recovery station to charge the refrigerant.

METHOD BY USING REFRIGERANT RECOVERY AND RECYCLING UNIT

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

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

DISCHARGING SYSTEM

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

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

REFILLING OF OIL IN THE A/C SYSTEM

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

When a compressor is installed at the factory, it contains 140 cm^3 (4.7 fl.oz) of refrigerant oil. While the A/C system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.

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

Compressor oil: SUN PAG 56

Quantity:

Evaporator: 60 cm^3 (2.0 fl.oz)

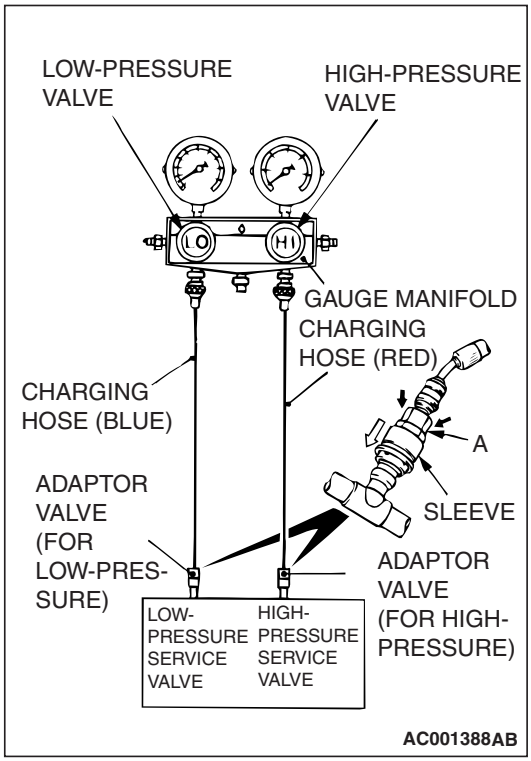
Condenser: 15 cm^3 (0.5 fl.oz)

Suction hose: 10 cm^3 (0.3 fl.oz)

PERFORMANCE TEST

M1552001400526

The vehicles to be tested should be parked out of direct sunlight.



1. Close the high and low-pressure valve of the gauge manifold.
2. Connect the charging hose (blue) to the low-pressure valve and connect the charging hose (red) to the high-pressure valve of the gauge manifold.
3. Install the quick joint (for low-pressure) to the charging hose (blue), and connect the quick joint (for high-pressure) to the charging hose (red).

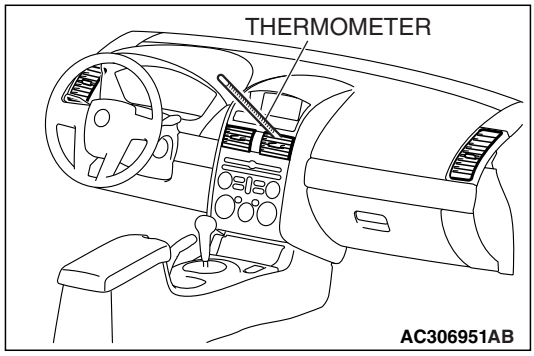
⚠ CAUTION

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

4. Connect the quick joint (for low-pressure) to the low-pressure service valve and connect the quick joint (for high-pressure) to the high-pressure service valve.

   NOTE: The high-pressure service valve is on the A/C pipe and the low-pressure service valve is on the suction hose.
5. Start the engine.
6. Set the A/C controls as follows:
   - A/C switch: A/C –ON position
   - Mode selection: FACE position
   - Temperature control: MAXIMUM COOLING position
   - Air selection: RECIRCULATION position
   - Blower switch: Maximum air volume
7. Adjust engine speed to 1,500 r/min with A/C clutch engaged.
8. Engine should be warmed up with doors and windows closed.
9. Insert a thermometer in the center air outlet and operate the engine for 20 minutes.

   NOTE: If the A/C clutch cycles, take the reading before the clutch disengages.
10. Note the discharge air temperature.



PERFORMANCE TEMPERATURE CHART

Garage ambient air temperature °C (°F)	**20 (68)**	**25 (77)**	**30 (86)**	**35 (95)**
Discharge air temperature °C (°F)	1 (34) –6 (43)			
Compressor high pressure kPa (psi)	1275 (185) –1863 (270)			
Compressor low pressure kPa (psi)	49 (7.1) –294 (42.7)			

TSB Revision

REFRIGERANT LEAK REPAIR PROCEDURE

M1552001500299

LOST CHARGE

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

1. Evacuate the system. (Refer to P.55A-143).
2. Charge the system with approximately 0.453 kg (1 pound) of refrigerant.
3. Check for leaks.
4. Discharge the system.
5. Repair leaks.

⚠ CAUTION

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

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

LOW CHARGE

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

COMPRESSOR NOISE CHECK

You must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions.
Noises that develop during A/C operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or generator).
Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged.
Drive belts are speed-sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting of connection in the refrigeration system. Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly.
Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing. A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.
Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm (3.1 inches) from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.
On standard plumbing fittings with O-rings, these O-rings are not reusable.

M1552008700294

ADJUSTMENT

1. Select a quiet area for testing. Duplicate conditions as much as possible. Switch the compressor on and off several times to clearly identify compressor noise. To duplicate high ambient conditions (high head pressure), restrict air flow through the condenser. Install a manifold gauge set to make sure discharge pressure doesn't exceed 2,070 kPa (300.2 psi).
2. Tighten all compressor mounting bolts, clutch mounting bolt, and compressor drive belt. Check to assure clutch coil is tight (no rotation or wobble).
3. Check refrigerant hoses for rubbing or interference that can cause unusual noises.
4. Check refrigerant charge. (Refer to P.55A-143).
5. Recheck compressor noise as in Step 1.
6. If noise still exists, loosen compressor mounting bolts and retighten. Repeat Step 1.
7. If noise continues, replace compressor and repeat from Step 1.

POWER RELAY CHECK

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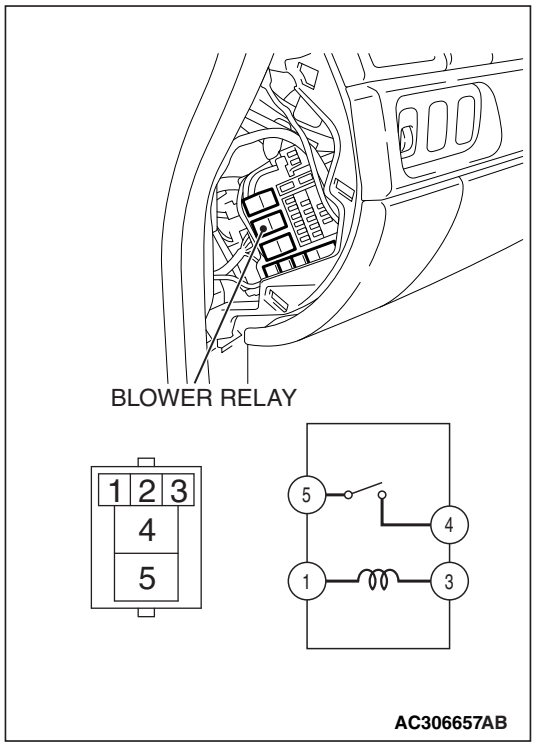
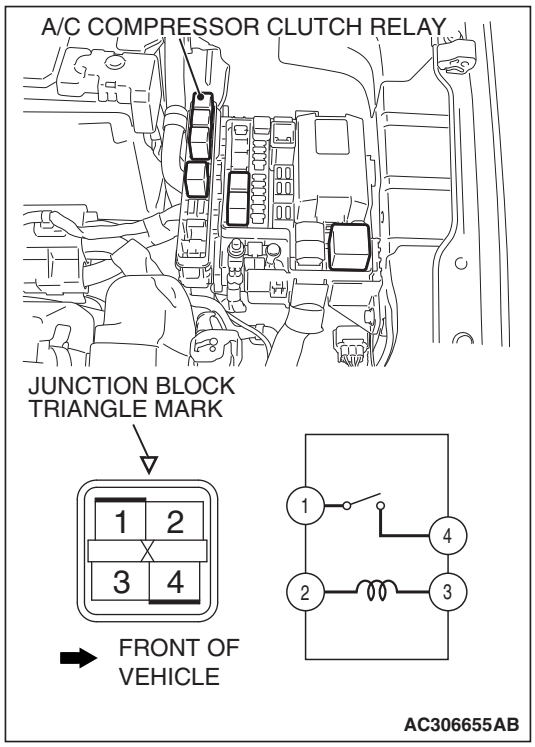
BLOWER RELAY CONTINUITY CHECK



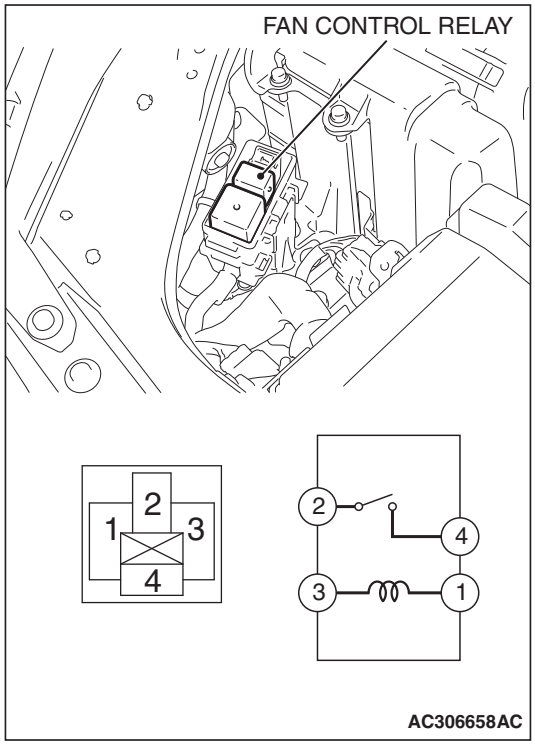
Battery voltage	Tester connection	Specified condition
Not applied	4 –5	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	4 –5	Less than 2 ohms

A/C COMPRESSOR CLUTCH RELAY CONTINUITY CHECK



Battery voltage	Tester connection	Specified condition
Not applied	1 –4	Open circuit
• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	1 –4	Less than 2 ohms

FAN CONTROL RELAY CONTINUITY CHECK



Battery voltage	Tester connection	Specified condition
Not applied	2 –4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	2 –4	Less than 2 ohms

IDLE-UP OPERATION CHECK

M1552001601727

<2.4 L engine>

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: 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 –Idle Speed Check P.11A-12.

   Standard value: 700 ± 100 r/min
3. Turn on the air conditioning switch and the blower speed selection dial. Engine idling speed should be within the standard value:

   Standard value: 700 ± 100 r/min

   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. (Refer to GROUP 11A, On-vehicle Service –Idle Speed Check P.11A-12)

<3.8 L engine>

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: 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 11E, On-vehicle Service –Idle Speed Check P.11E-15.

   Standard value: 680 ± 100 r/min
3. Turn on the air conditioning switch and the blower speed selection dial. Engine idling speed should be within the standard value:

   Standard value: 680 ± 100 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. (Refer to GROUP 11E, On-vehicle Service –Idle Speed Check P.11E-15)

HEATER CONTROL ASSEMBLY AND A/C SWITCH

REMOVAL AND INSTALLATION

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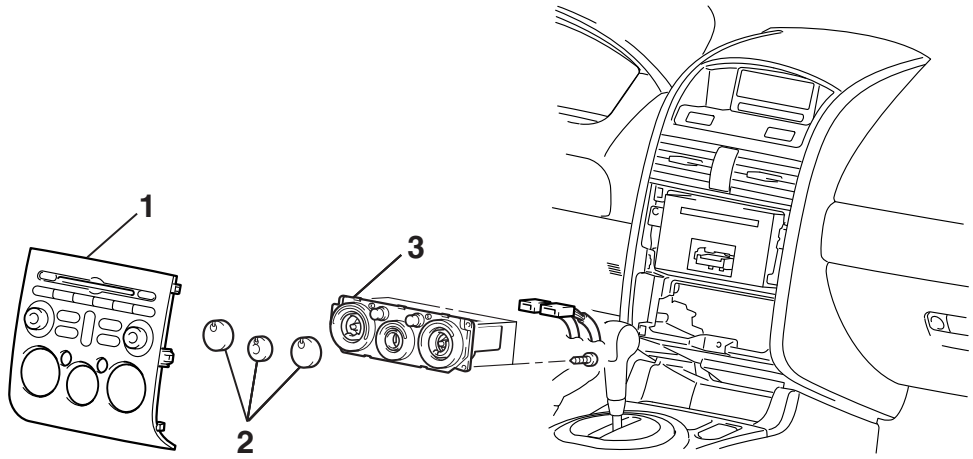


AC306801AD

REMOVAL STEPS
1. CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-15)

REMOVAL STEPS (Continued)
2. KNOB
3. HEATER CONTROL (A/C-ECU)

HEATER UNIT, HEATER CORE, BLOWER ASSEMBLY AND EVAPORATOR UNIT

REMOVAL AND INSTALLATION

M1552021400034

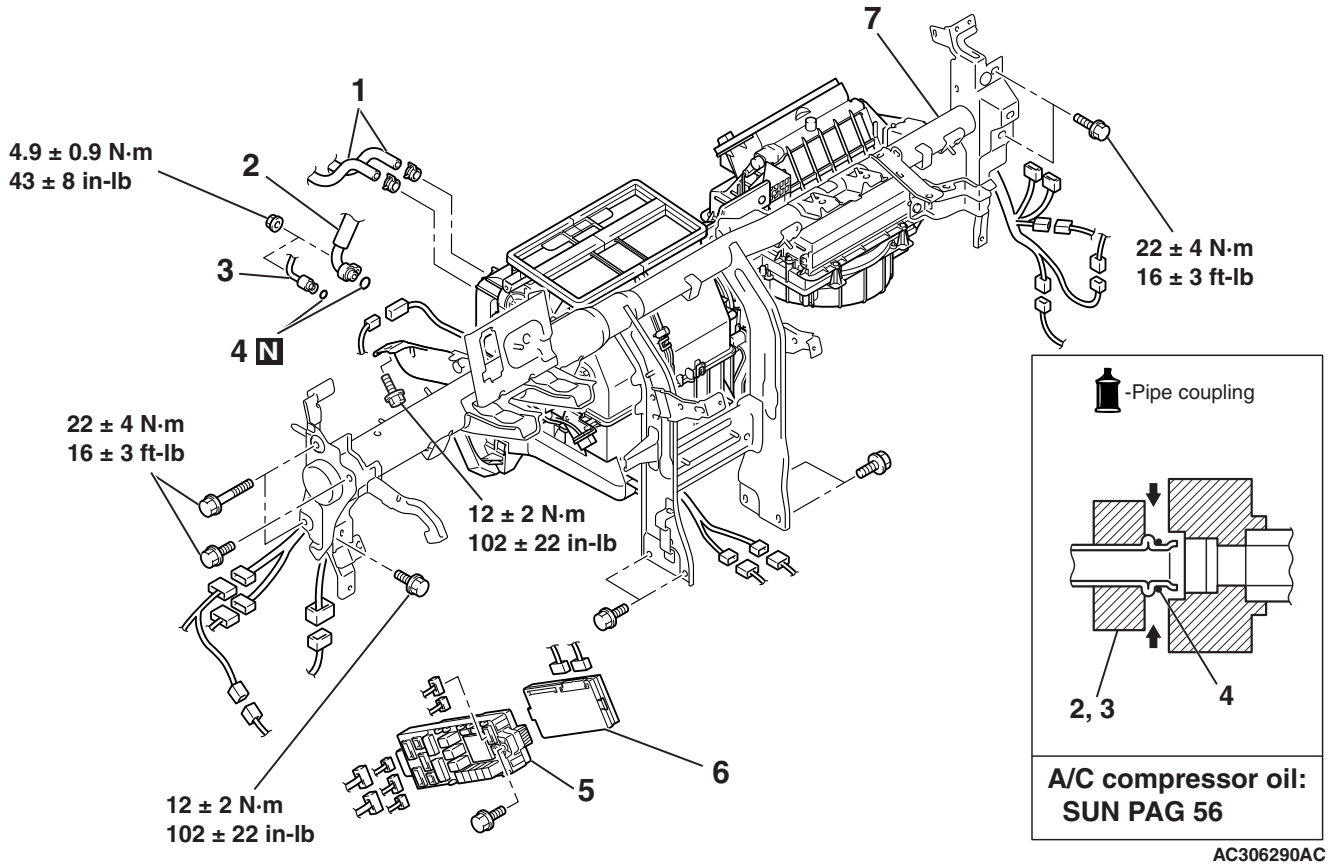
⚠ ***WARNING***

- ***Before removing the front seat assembly, refer to GROUP 52B, Service Precautions P.52B-26 and Air Bag Module and Clock Spring P.52B-435.***
- ***When removing and installing the front passenger seat, be sure to carry out accuracy check occupant classification sensor after the seat has been installed in the vehicle. (Refer to GROUP 52B, On-Vehicle Service P.52B-422.)***

Pre-removal and Post-installation Operation

- Refrigerant draining and Refilling (Refer to Charging and Discharging P.55A-143).
- Engine coolant Draining and Refilling (Refer to GROUP 00, Engine coolant P.00-54).
- Instrument Panel Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-15).
- Steering Column Shaft Assembly Removal and Installation (Refer to GROUP 37, Steering ShaftP.37-30).
- Floor Console Removal and Installation (Refer to GROUP 52A, Floor Console P.52A-21).
- Front Seat Assembly Removal and Installation (Refer to GROUP 52A, Front Seat P.52A-33).

² Strut Tower Bar (Refer to GROUP 42, Removal And InstallationP.42-14.)



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REMOVAL STEPS
- BATTERY
- AIR CLEANER BODY (REFER TO GROUP 15, AIR CLEANER P.15-4.)

1. HEATER HOSE CONNECTION
<<A>> 2. SUCTION PIPE CONNECTION
<<A>> 3. LIQUID PIPE CONNECTION

REMOVAL STEPS (Continued)
4. O-RING
- REAR HEATER DUCT A AND B (REFER TO P.55A-169.)

5. JUNCTION BLOCK
6. ETACS-ECU
<<B>> 7. HEATER UNIT AND DECK CROSSMEMBER ASSEMBLY

REMOVAL SERVICE POINTS

<<A>> SUCTION PIPE AND LIQUID PIPE DISCONNECTION

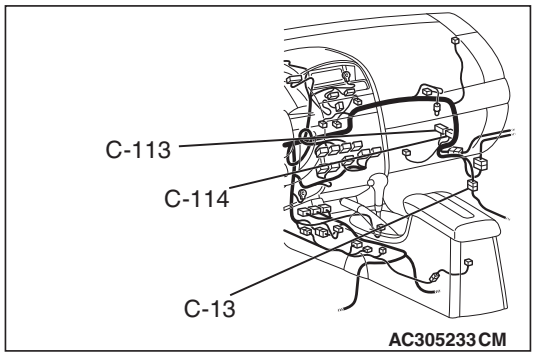
⚠ **CAUTION**

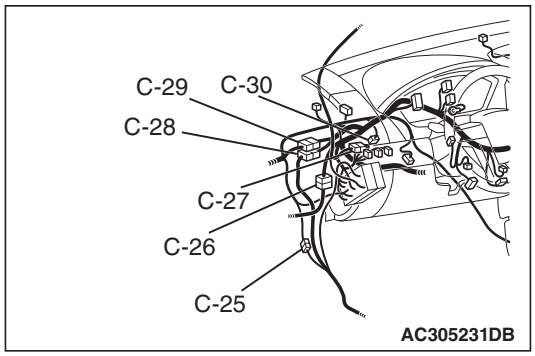
As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

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

<<B>> HEATER UNIT AND DECK CROSSMEMBER ASSEMBLY REMOVAL

Disconnect the following connectors to gain access to the front deck crossmember.

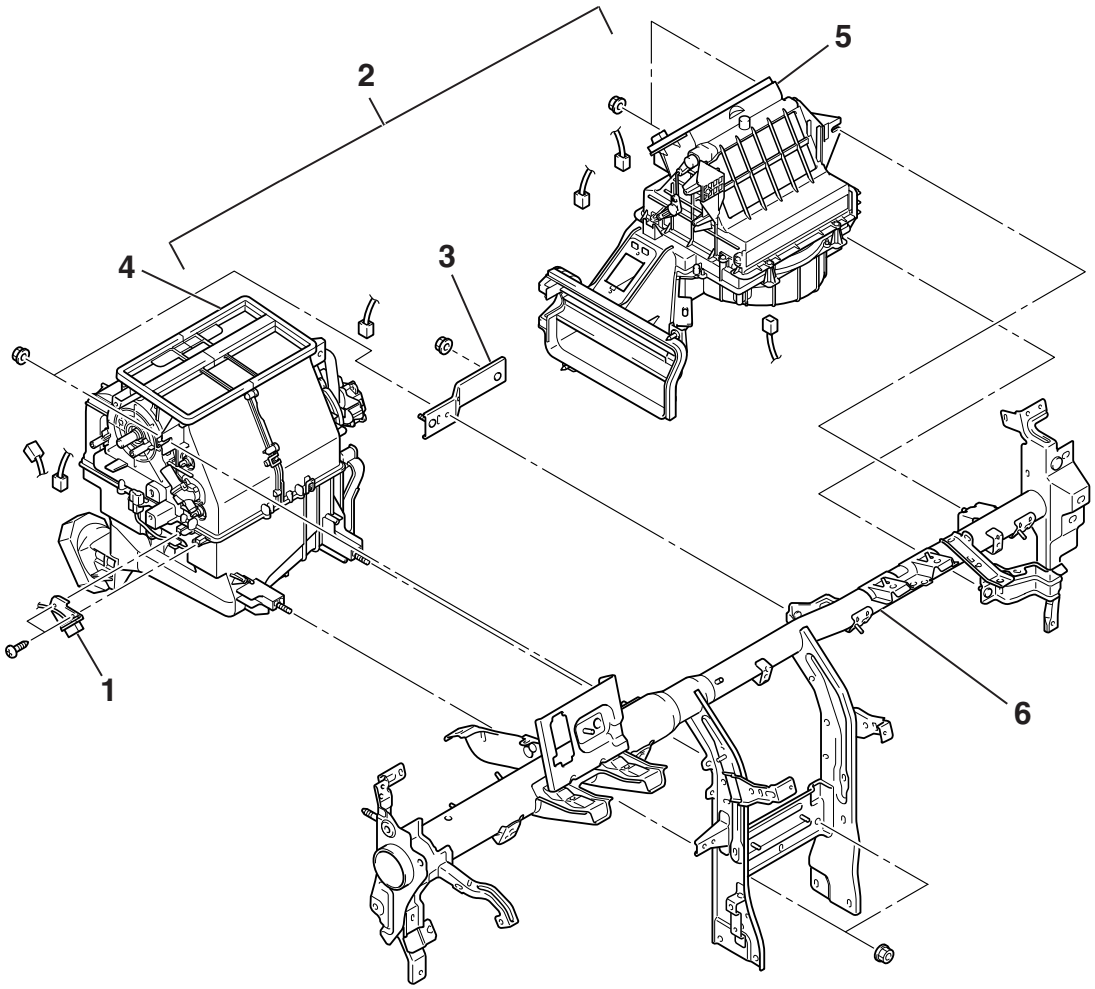




Connector number	Connector name
C-13	INSTRUMENT PANEL WIRING HARNESS AND FLOOR WIRING HARNESS COMBINATION
C-113	AUDIO AMPLIFIER
C-114	AUDIO AMPLIFIER
C-25	FRONT WIRING HARNESS AND FLOOR WIRING HARNESS COMBINATION
C-26	INSTRUMENT PANEL WIRING HARNESS AND FRONT DOOR WIRING HARNESS (LH) COMBINATION
C-27	INSTRUMENT PANEL WIRING HARNESS AND ROOF WIRING HARNESS COMBINATION
C-28	INSTRUMENT PANEL WIRING HARNESS AND FLOOR WIRING HARNESS COMBINATION
C-29	INSTRUMENT PANEL WIRING HARNESS AND FRONT WIRING HARNESS COMBINATION
C-30	STOPLIGHT SWITCH

REMOVAL AND INSTALLATION

M1552011600316



AC306304AB

REMOVAL STEPS

1. DATA LINK CONNECTOR BRACKET
2. HEATER UNIT AND BLOWER ASSEMBLY
3. PLATE BRACKET

REMOVAL STEPS (Continued)

4. HEATER UNIT
5. BLOWER ASSEMBLY
6. DECK CROSSMEMBER ASSEMBLY

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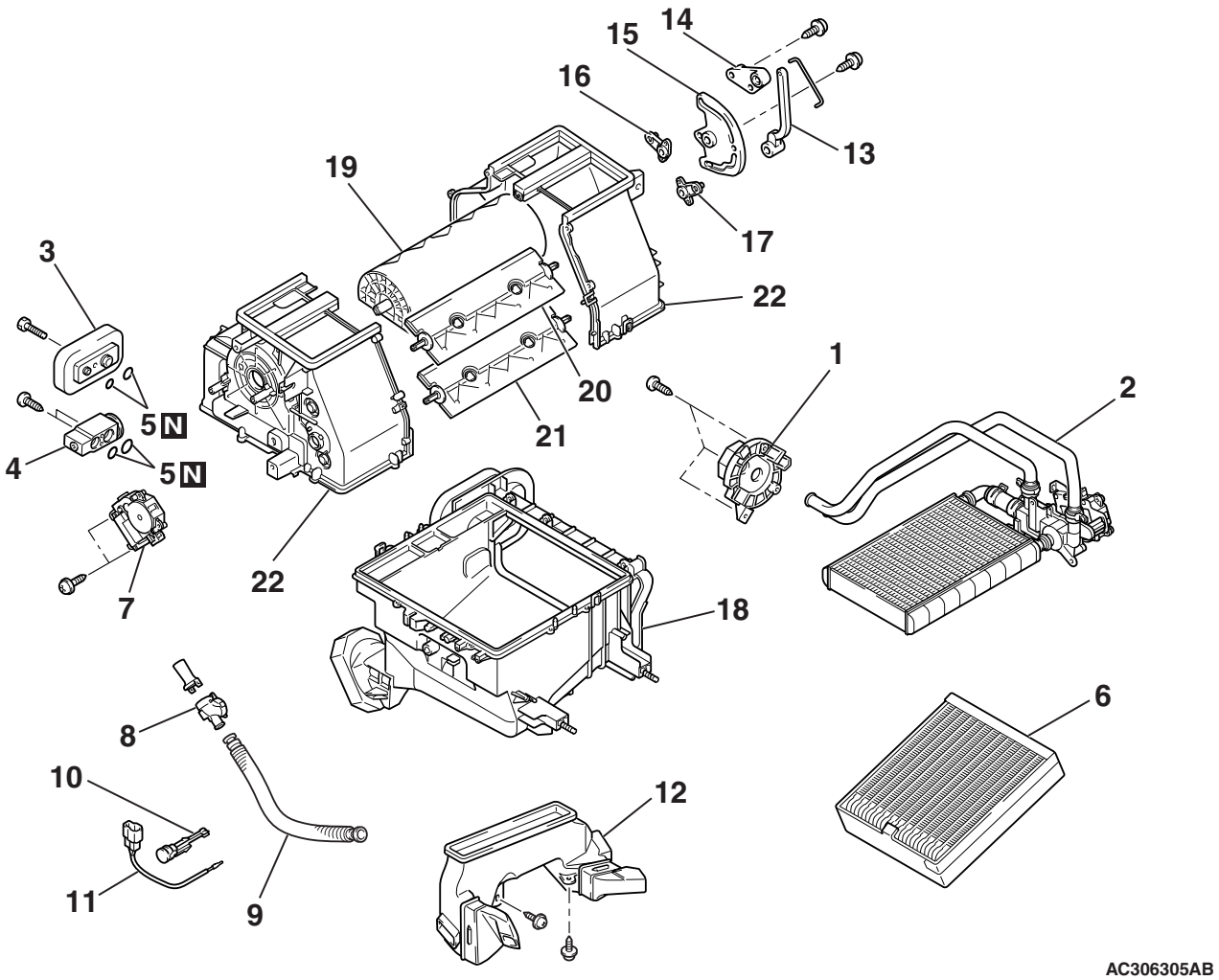
DISASSEMBLY AND ASSEMBLY

M1551005400365



AC306305AB

DISASSEMBLY STEPS

1. PACKING
2. HEATER CORE ASSEMBLY
3. EXPANSION VALVE JOINT
4. EXPANSION VALVE
5. O-RING
6. EVAPORATOR
7. MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER
8. ASPIRATOR
9. ASPIRATOR HOSE
10. AIR THERMO SENSOR CLIP

DISASSEMBLY STEPS

11. AIR THERMO SENSOR
12. FOOT DUCT
13. LEVER A
14. LEVER B
15. LEVER C
16. LEVER D
17. LEVER E
18. HEATER CASE LOWER
19. MODE SELECTION DAMPER
20. MAX A/C DAMPER
21. AIR MIXING DAMPER
22. HEATER CASE UPPER

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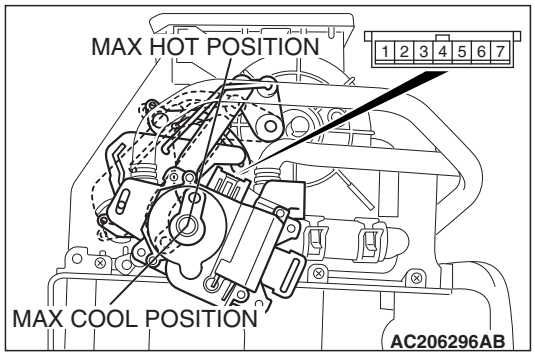
INSPECTION

M1552014304714

AIR MIXING DAMPER CONTROL MOTOR CHECK



⚠ CAUTION

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

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

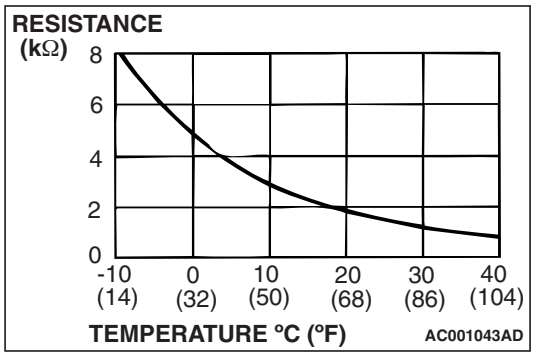
Lever position	Battery connection	Lever operation
At the MAX COOL position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the MAX COOL position to the MAX HOT position
At the MAX HOT position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the MAX HOT position to the MAX COOL position

POTENTIOMETER CHECK

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

Standard value: 1.7 (MAX HOT) –5.0 (MAX COOL) kΩ

AIR THERMO SENSOR INSPECTION

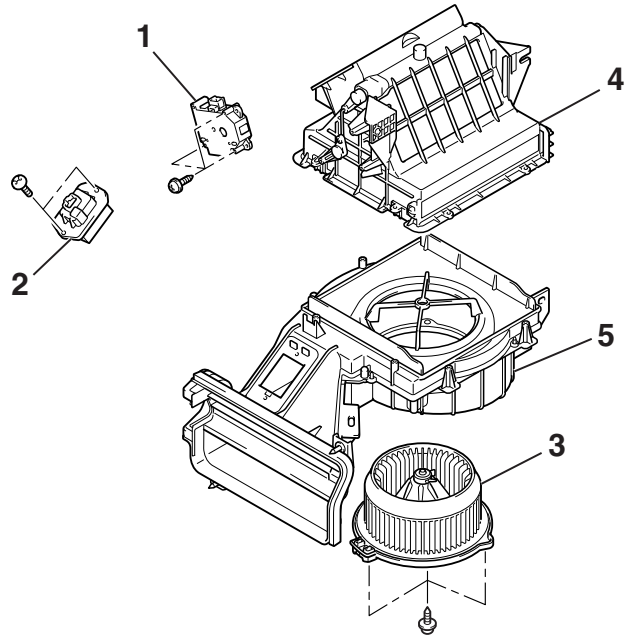


Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

BLOWER ASSEMBLY DISASSEMBLY AND ASSEMBLY

M1551005500384



AC306324AB

DISASSEMBLY STEPS

1. OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR
2. POWER TRANSISTOR
3. BLOWER MOTOR
4. BLOWER CASE UPPER
5. BLOWER CASE LOWER

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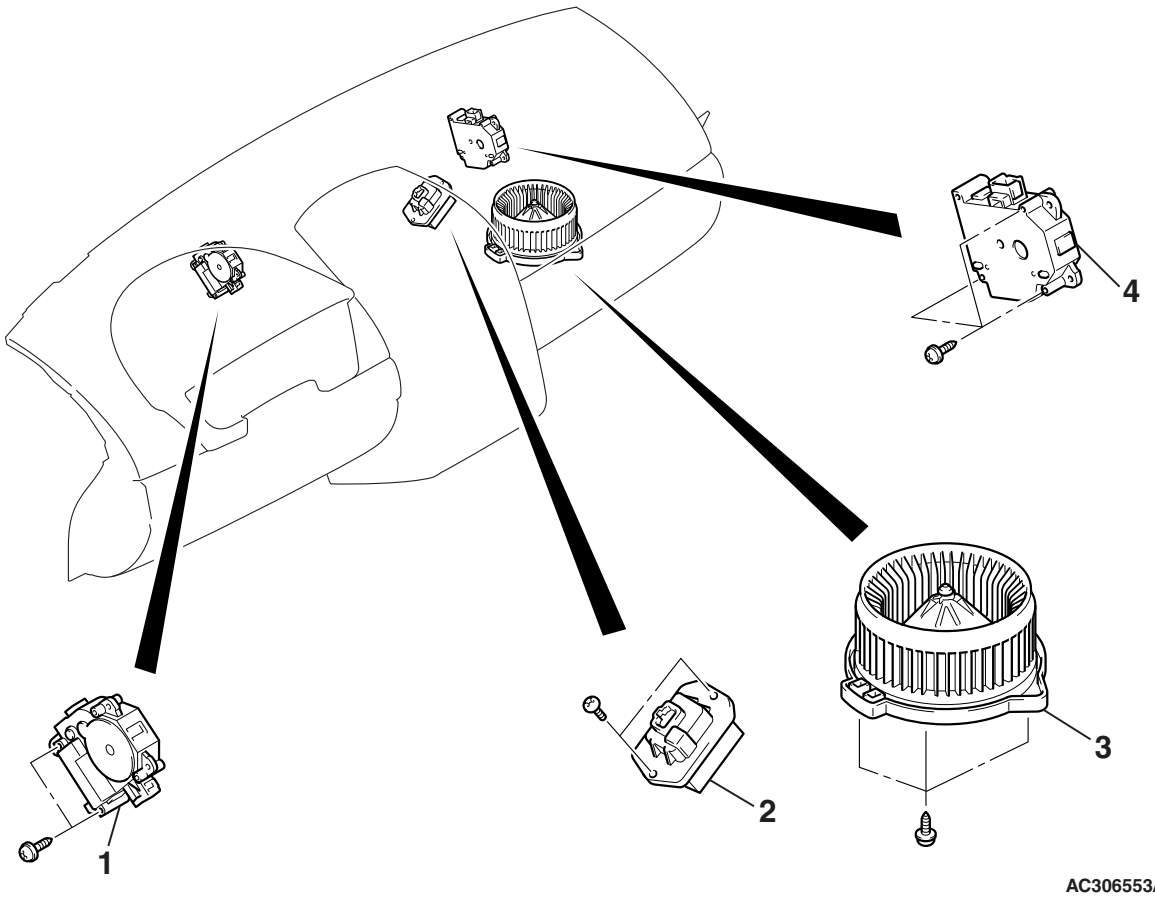
MOTORS AND TRANSISTOR

REMOVAL AND INSTALLATION

M1551006900169



AC306553AB

MODE SELECTION DAMPER CONTROL MOTOR REMOVAL STEP

1. MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIONMETER

POWER TRANSISTOR REMOVAL STEP

- GLOVE BOX ASSEMBLY, INSTRUMENT CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-15).

2. POWER TRANSISTOR

BLOWER MOTOR REMOVAL STEP

3. BLOWER MOTOR

OUTSIDE/INSIDE AIR SELECTION DAMPER MOTOR REMOVAL STEP

- GLOVE BOX ASSEMBLY, INSTRUMENT CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-15).

4. OUTSIDE/INSIDE AIR SELECTION DAMPER MOTOR

INSPECTION

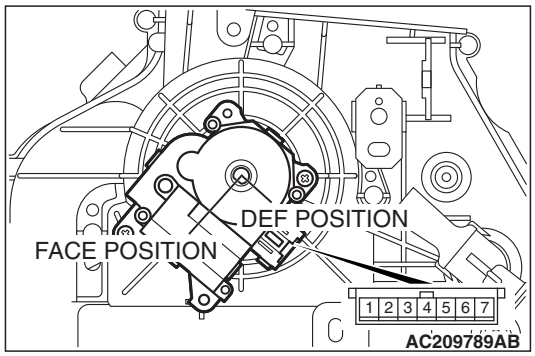
M1551006300792

MODE SELECTION DAMPER CONTROL MOTOR CHECK

⚠ CAUTION

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

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



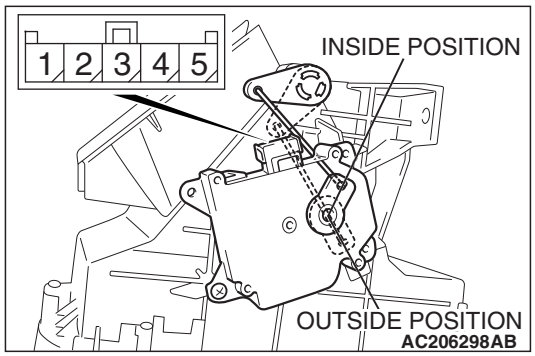
Lever position	Battery connection	Lever operation
At the FACE position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the DEF position
At the DEF position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the DEF position to the FACE position

POTENTIOMETER CHECK

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

Standard value: 0.8 (DEF) –4.8 (FACE) kΩ

OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR CHECK



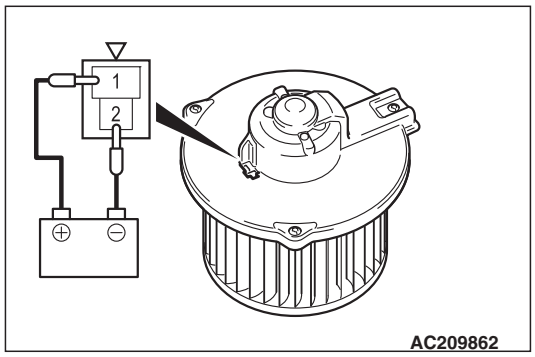
⚠ CAUTION

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

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

Lever position	Battery connection	Lever operation
At the inside position	• Connect terminal 1 to the positive battery terminal • Connect terminal 5 to the negative battery terminal	The lever moves from the outside position to the inside position
At the outside position	• Connect terminal 1 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	The lever moves from the inside position to the outside position

BLOWER FAN AND MOTOR CHECK

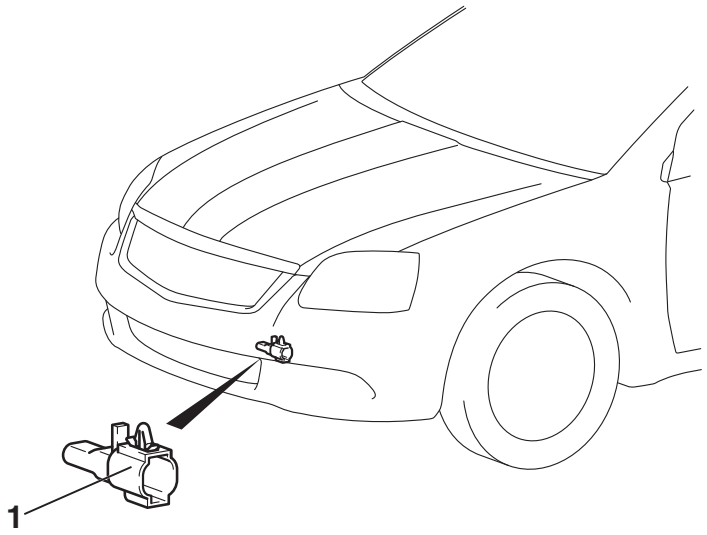


When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

AMBIENT TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

M1554003400733



AC708904AC

REMOVAL STEPS

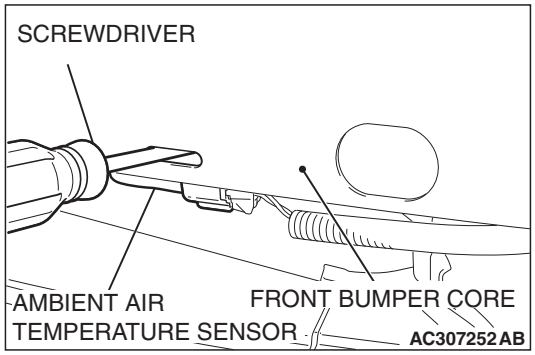
- FRONT BUMPER ASSEMBLY AND FRONT BUMPER CORE (REFER TO GROUP 51, FRONT BUMPER ASSEMBLY P.51-2).

<<A>> 1. AMBIENT AIR TEMPERATURE SENSOR

REMOVAL SERVICE POINT

<<A>> AMBIENT AIR TEMPERATURE SENSOR REMOVAL

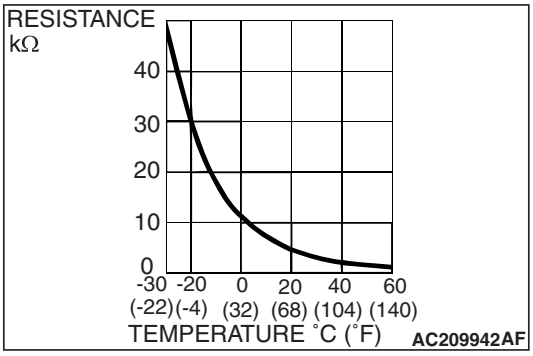
Insert a screwdriver into the mounting hole of the front bumper core to release the clip, and remove the ambient air temperature sensor.



INSPECTION

M1551006300349

AMBIENT AIR TEMPERATURE SENSOR CHECK



⚠ CAUTION

The ambient air temperature sensor should be checked with removing it. If the sensor is removed, it is no longer serviceable.

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

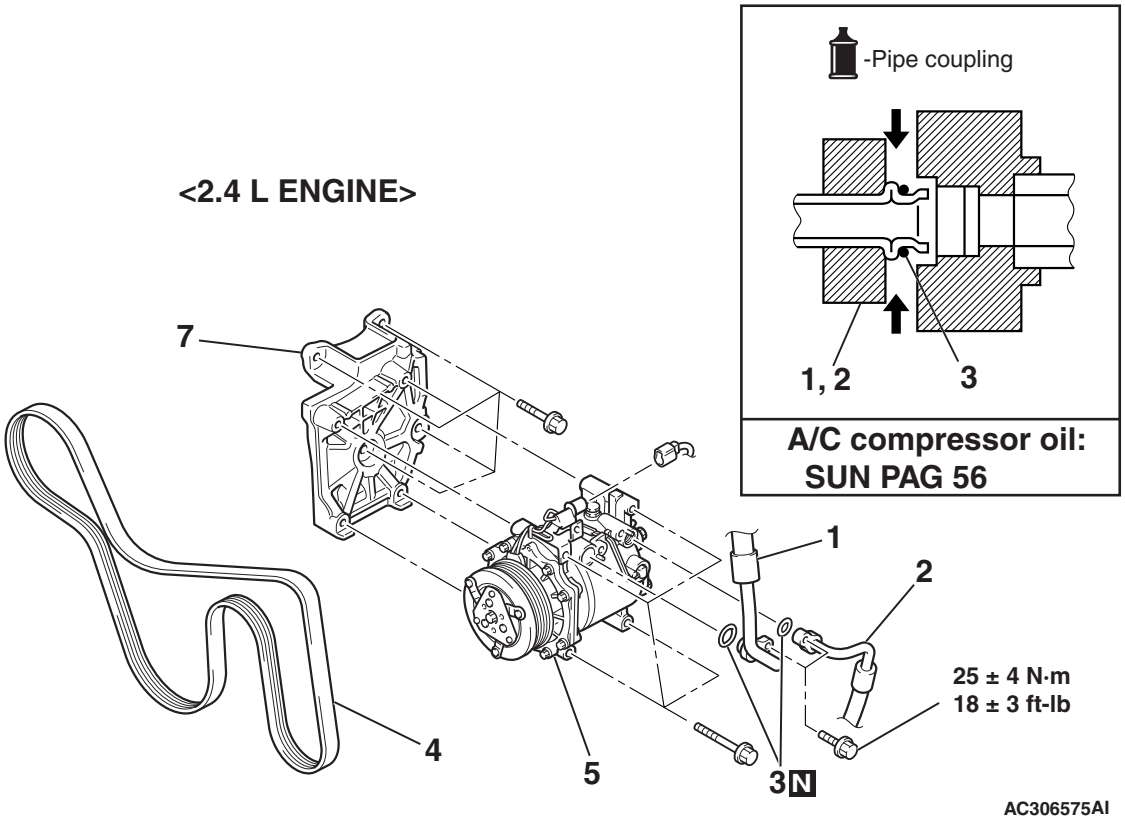
NOTE: The temperature should be within the shown range.

COMPRESSOR ASSEMBLY AND TENSION PULLEY

REMOVAL AND INSTALLATION

M1552004100698

Pre-removal Operation	Post-installation Operation
• Refrigerant Discharging (Refer to P.55A-143). • Front Bumper Under Cover (Refer to GROUP 51, FRONT BUMPERP.51-2). • Front Under Cover RH (Refer to GROUP 51, UNDER COVER P.51-10).	• Drive Belt Tension Adjustment (Refer to GROUP 00, Maintenance Service –Drive Belt P.00-49). • Refrigerant Charging (Refer to P.55A-143). • Front Bumper Under Cover (Refer to GROUP 51, FRONT BUMPERP.51-2). • Front Under Cover RH (Refer to GROUP 51, UNDER COVER P.51-10).



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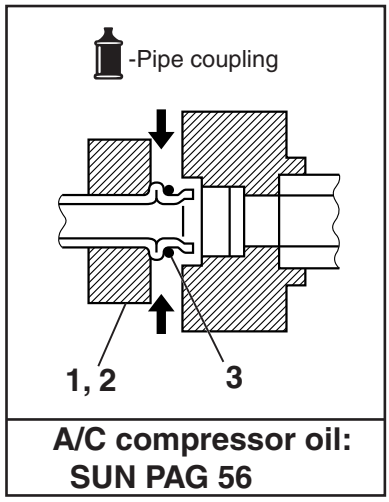

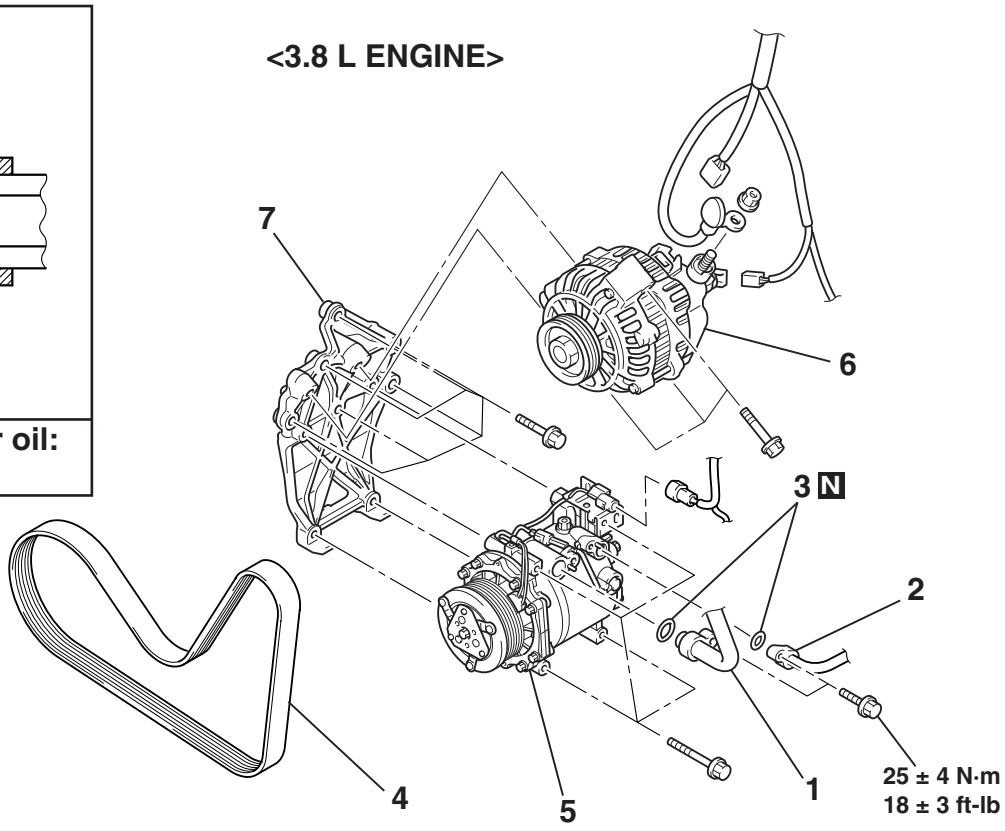

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REMOVAL STEPS

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

REMOVAL STEPS (Continued)

<<B>> >>A<< 4. DRIVE BELT
5. A/C COMPRESSOR ASSEMBLY
6. GENERATOR
7. A/C COMPRESSOR BRACKET

REMOVAL SERVICE POINTS

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

⚠ CAUTION

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

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

<<B>> COMPRESSOR REMOVAL

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

INSTALLATION SERVICE POINT

>>A<< COMPRESSOR INSTALLATION

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

1. Measure the amount [X cm^3 (X fl.oz) of oil within the removed compressor.
2. Drain (from the new compressor) the amount of oil calculated according to the following formula, and then install the new compressor.

   New compressor oil amount = 140cm^3 (4.7 fl.oz)

   140 cm^3 –X cm^3 = Y cm^3 (4.7 fl.oz. –X fl.oz. = Y fl.oz)

NOTE: Y cm^3 (Y fl.oz) indicates the amount of oil in the refrigerant line, the condenser, the evaporator, etc.

NOTE: When replacing the following parts at the same times as the compressor, subtract the rated oil amount of each part from Y cm^3 (Y fl.oz) and discharge from the new compressor.

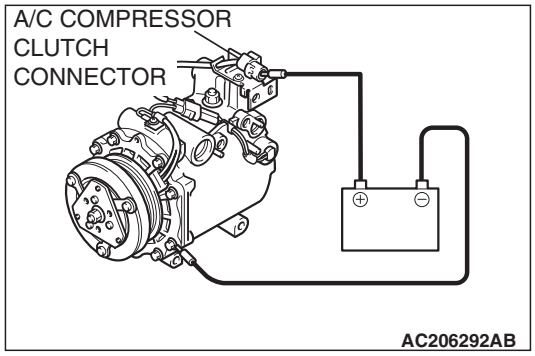
Quantity:

Evaporator: 60 cm^3 (2.0 fl.oz)
Condenser: 15 cm^3 (0.5 fl.oz)
Suction hose: 10 cm^3 (0.3 fl.oz)
Receiver: 10 cm^3 (0.3 fl.oz)

INSPECTION

M1552014301083

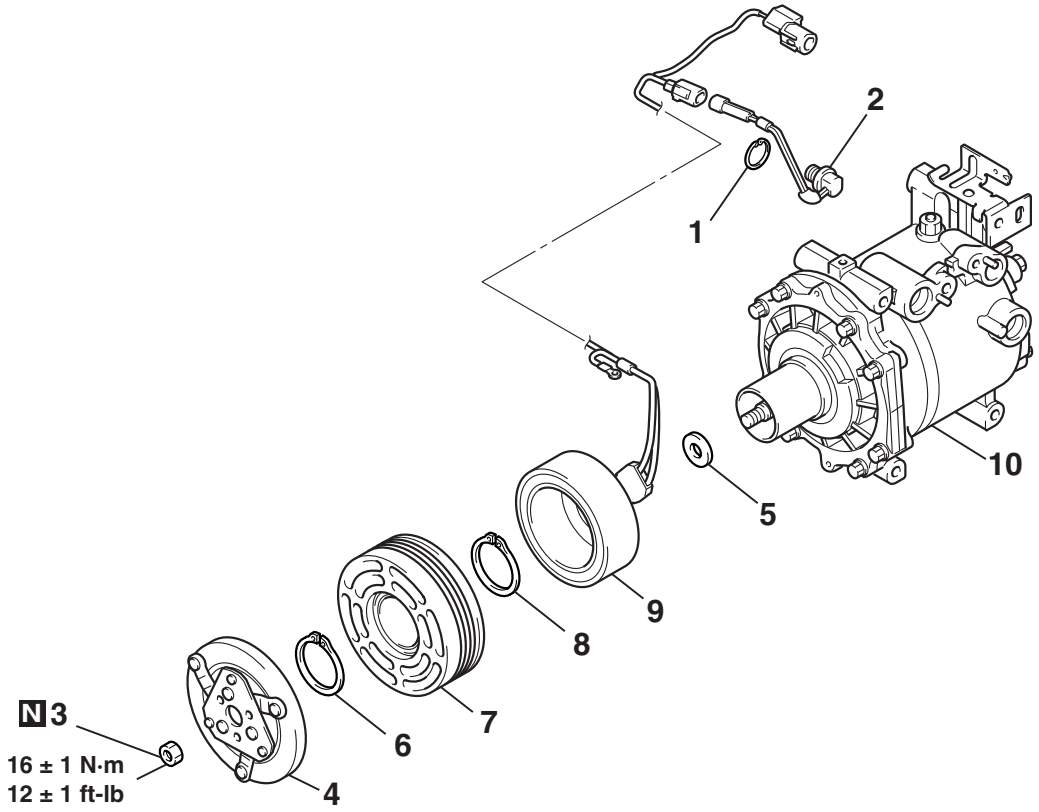
COMPRESSOR A/C COMPRESSOR CLUTCH OPERATION CHECK



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

DISASSEMBLY AND ASSEMBLY

M1552004602246



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COOLING TEMPERATURE SWITCH DISASSEMBLY STEPS

1. SNAP RING
2. REFRIGERANT TEMPERATURE SWITCH

A/C COMPRESSOR CLUTCH DISASSEMBLY

>>D<< • AIR GAP ADJUSTMENT
<<A>> >>C<< 3. SELF-LOCKING NUT
4. ARMATURE
5. SHIM

A/C COMPRESSOR CLUTCH DISASSEMBLY (Continued)

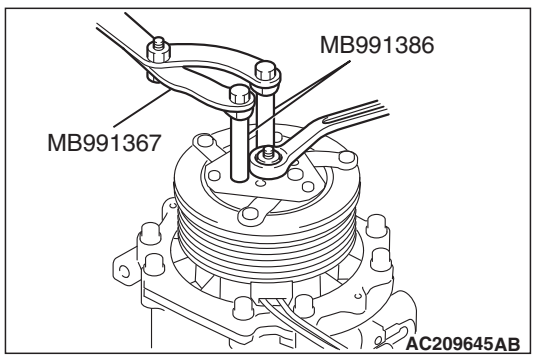
>>B<< 6. SNAP RING
7. ROTOR
8. SNAP RING
>>A<< 9. FIELD CORE
10. A/C COMPRESSOR

Required Special Tools:

- MB991367: Special Spanner
- MB991386: Pin

DISASSEMBLY SERVICE POINT

<<A>> SELF-LOCKING NUT REMOVAL



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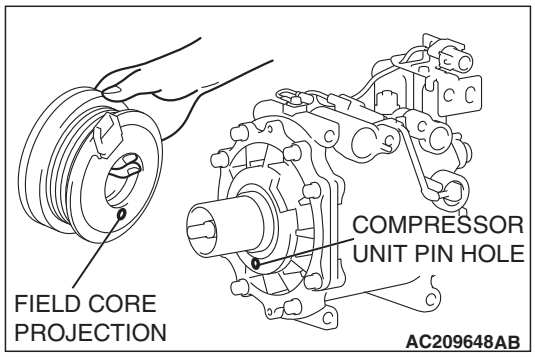
ASSEMBLY SERVICE POINTS

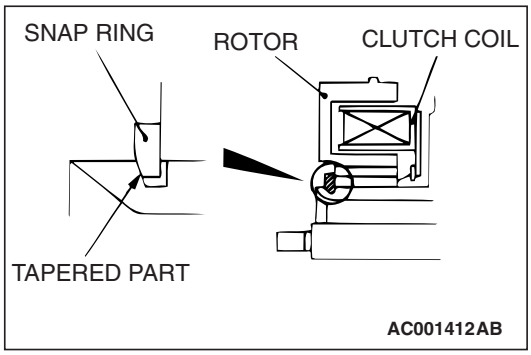
>>A<< FIELD CORE ATTACHMENT

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



>>B<< SNAP RING INSTALLATION

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



>>C<< SELF-LOCKING NUT INSTALLATION

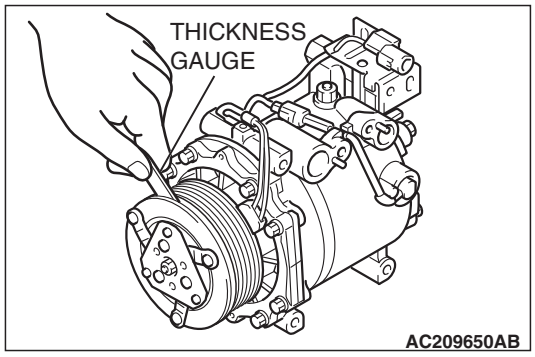
Using a special tool, as when removing the nut, secure the armature and tighten the self-locking nut.

>>D<< AIR GAP ADJUSTMENT

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

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

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



INSPECTION

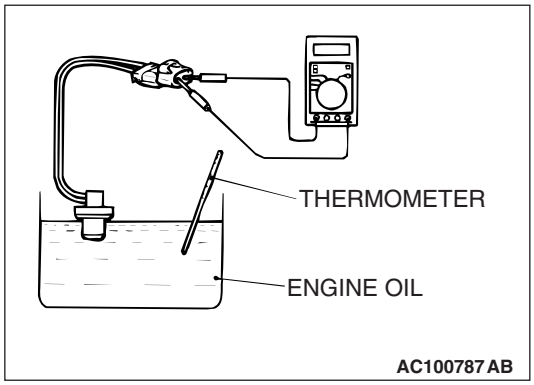
M1552014301094

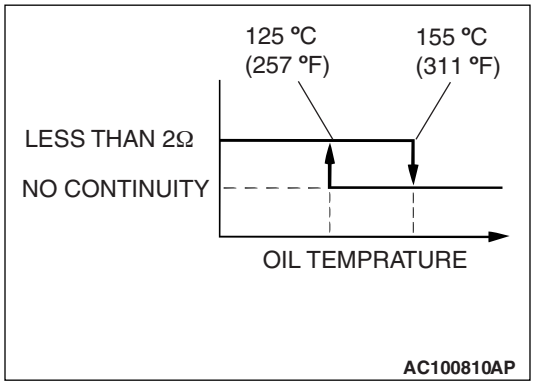
COOLING TEMPRATURE SWITCH

⚠ CAUTION

Do not heat more than necessary.

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





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

Standard value:

Item	Temperature
Less than 2 ohms	Slightly below 125° C (257° F)
No continuity	155° C (311° F) or more

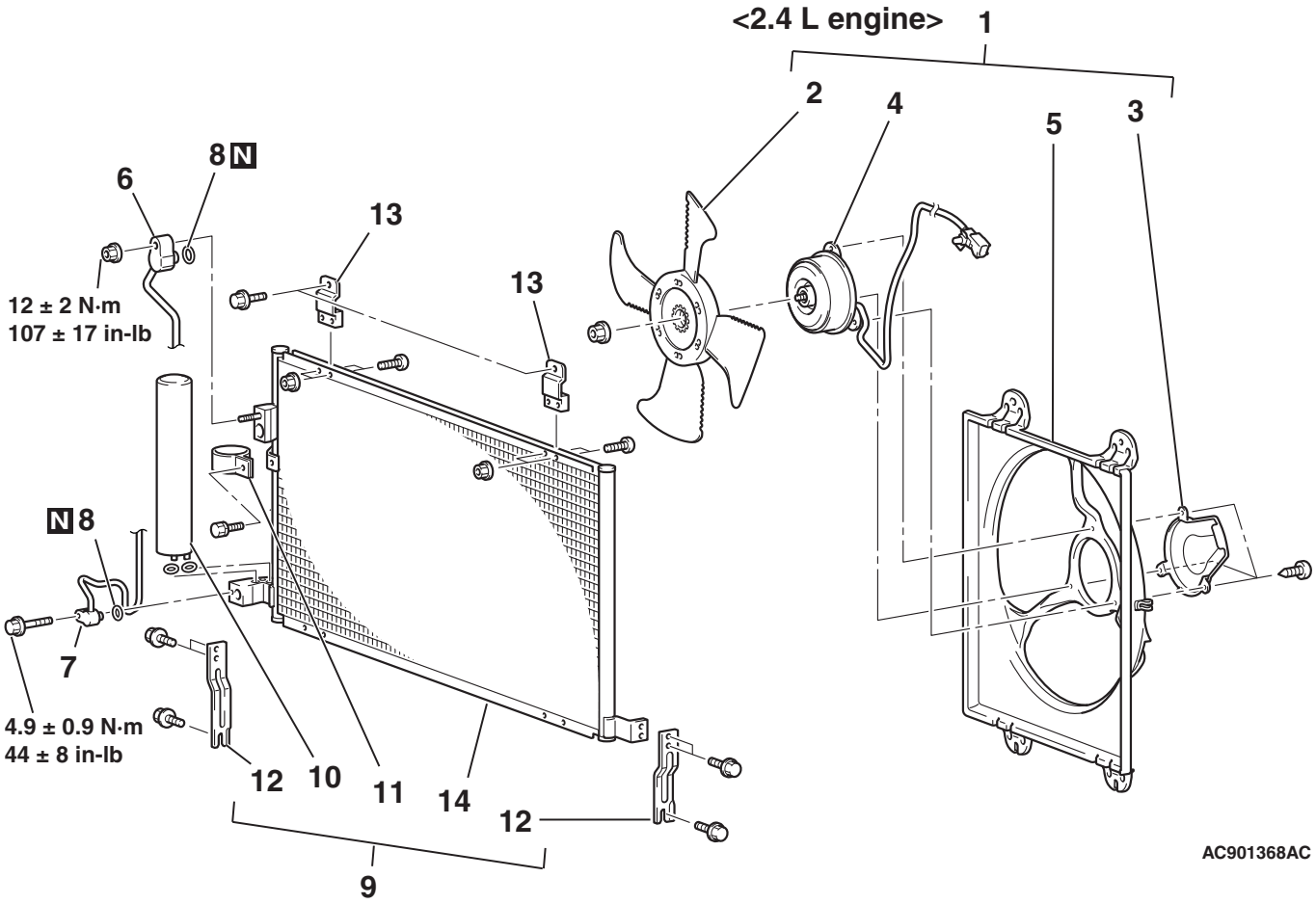
NOTE: When the oil temperature is 155°C (311°F) or more and there is no continuity, the resistance will not be 2Ωor lower until the oil temperature reduces to 125°C (257°F) or less.

CONDENSER AND CONDENSER FAN MOTOR

REMOVAL AND INSTALLATION

M1552006700812

Pre-removal and Post-installation Operation
- Refrigerant Draining and Refilling (Refer to P.55A-143).
- Air Duct Removal and Installation (Refer to GROUP 15, Air Cleaner P.15-4).
- Radiator Grilles Removal and Installation (Refer to GROUP 51, Radiator Grilles P.51-5).
- Front End Structure Bar Removal and Installation (Refer to GROUP 14, Radiator P.14-11).



CONDENSER FAN MOTOR REMOVAL STEPS
1. CONDENSER FAN ASSEMBLY <<A>>
2. FAN <<A>>
3. COVER
4. MOTOR
5. SHROUD
- RADIATOR GRILLES
- FRONT END STRUCTURE BAR

CONDENSER REMOVAL STEPS
6. FLEXIBLE DISCHARGE HOSE CONNECTION
7. LIQUID PIPE A CONNECTION
8. O-RING
- FRONT UNDER COVER
9. CONDENSER ASSEMBLY
10. RECEIVER
11. O-RING
12. CLAMP
13. UNDER BRACKET
14. UPPER BRACKET
>>A<< 15. CONDENSER

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REMOVAL SERVICE POINT

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

⚠ CAUTION

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

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

INSTALLATION SERVICE POINT

>>A<< CONDENSER INSTALLATION

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

Compressor oil: SUN PAG 56

Quantity: 15 cm^3 (0.5 fl.oz)

INSPECTION

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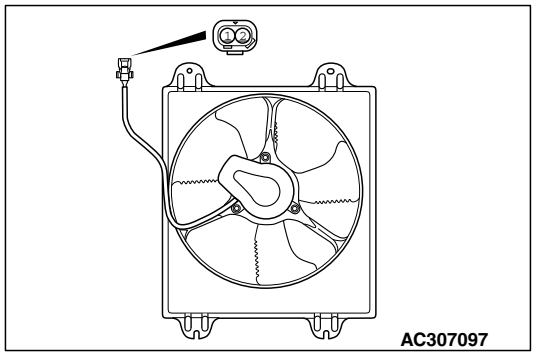
CONDENSER FAN MOTOR CHECK



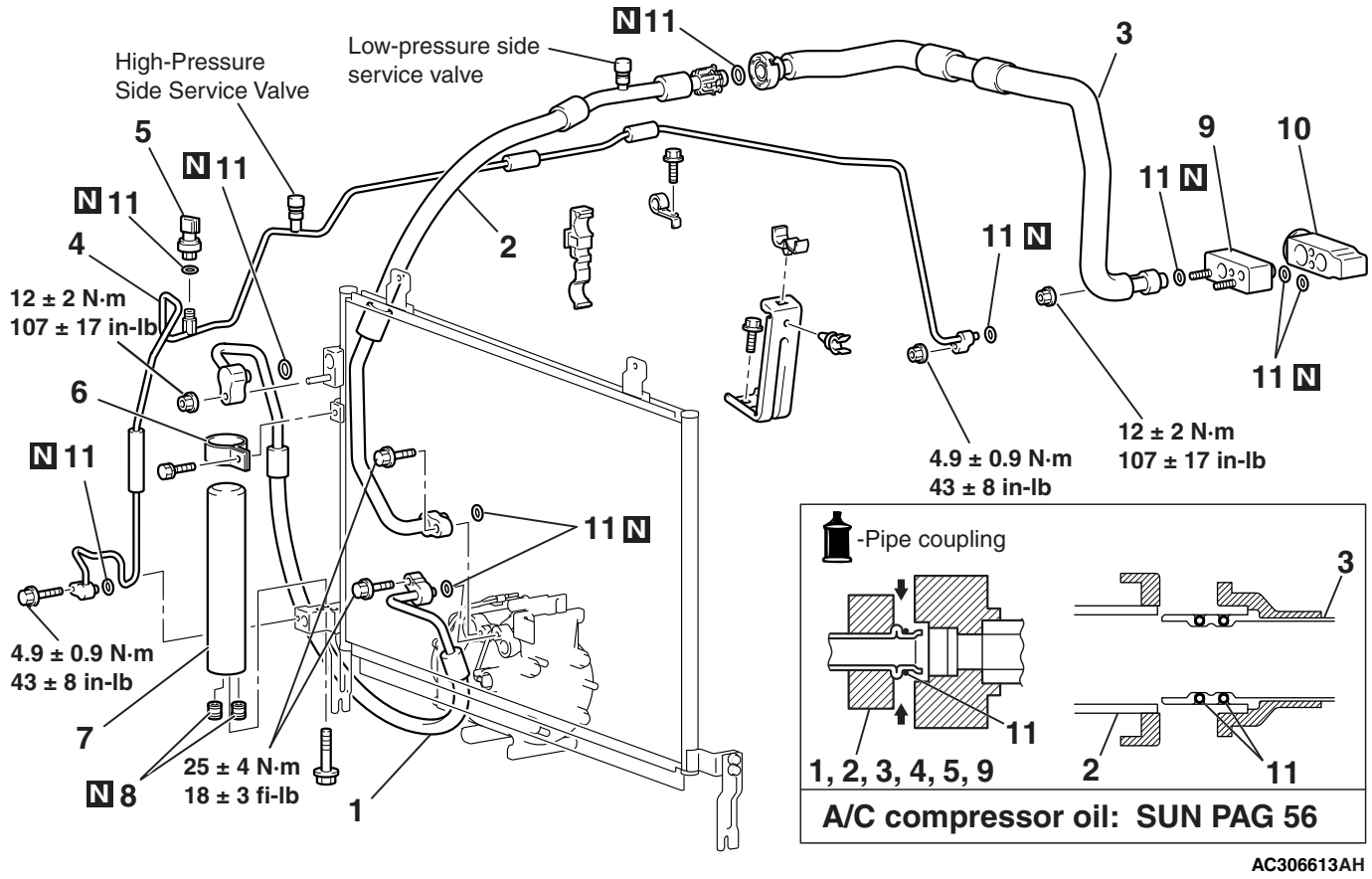
Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal 2 and terminal 1 grounded.

REFRIGERANT LINE

REMOVAL AND INSTALLATION

M1552006402464

Pre-removal and Post-installation Operation
- Refrigerant Draining and Refilling (Refer to Charging and Discharging P.55A-143).
- Radiator Grille Removal and Installation (Refer to GROUP 51, Radiator Grilles P.51-5).



			REMOVAL STEPS
<<A>>		1.	FLEXIBLE DISCHARGE HOSE
<<A>>	>>A<<	2.	FLEXIBLE SUCTION HOSE
<<B>>	>>A<<	3.	SUCTION PIPE
<<A>>		4.	LIQUID PIPE
<<A>>		5.	A/C PRESSURE SENSOR
		6.	CLAMP

	REMOVAL STEPS (Continued)
<<A>>	7. RECEIVER
	8. RECEIVER JOINT
	9. EXPANSION VALVE JOINT
<<A>>	10. EXPANSION VALVE
	11. O-RING

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REMOVAL SERVICE POINT

<<A>> HOSE/PIPE DISCONNECTION

⚠ CAUTION

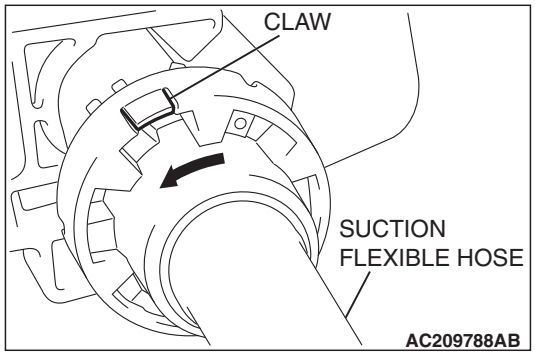
As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

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

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

⚠ CAUTION

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



To disconnect the suction hose from the suction flexible hose, lift the lug on the suction pipe and twist the suction flexible hose union counterclockwise.

Plug the hose nipple to prevent entry of dust and dirt.

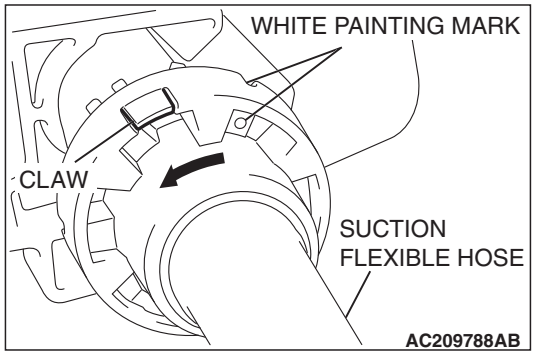
INSTALLATION SERVICE POINT

>>A<< SUCTION HOSE INSTALLATION

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

   Compressor oil: SUN PAG 56

   Quantity: 10 cm^3 (0.3 fl.oz)



2. Align the white painting marks when connecting the flexible suction hose and the suction pipe.

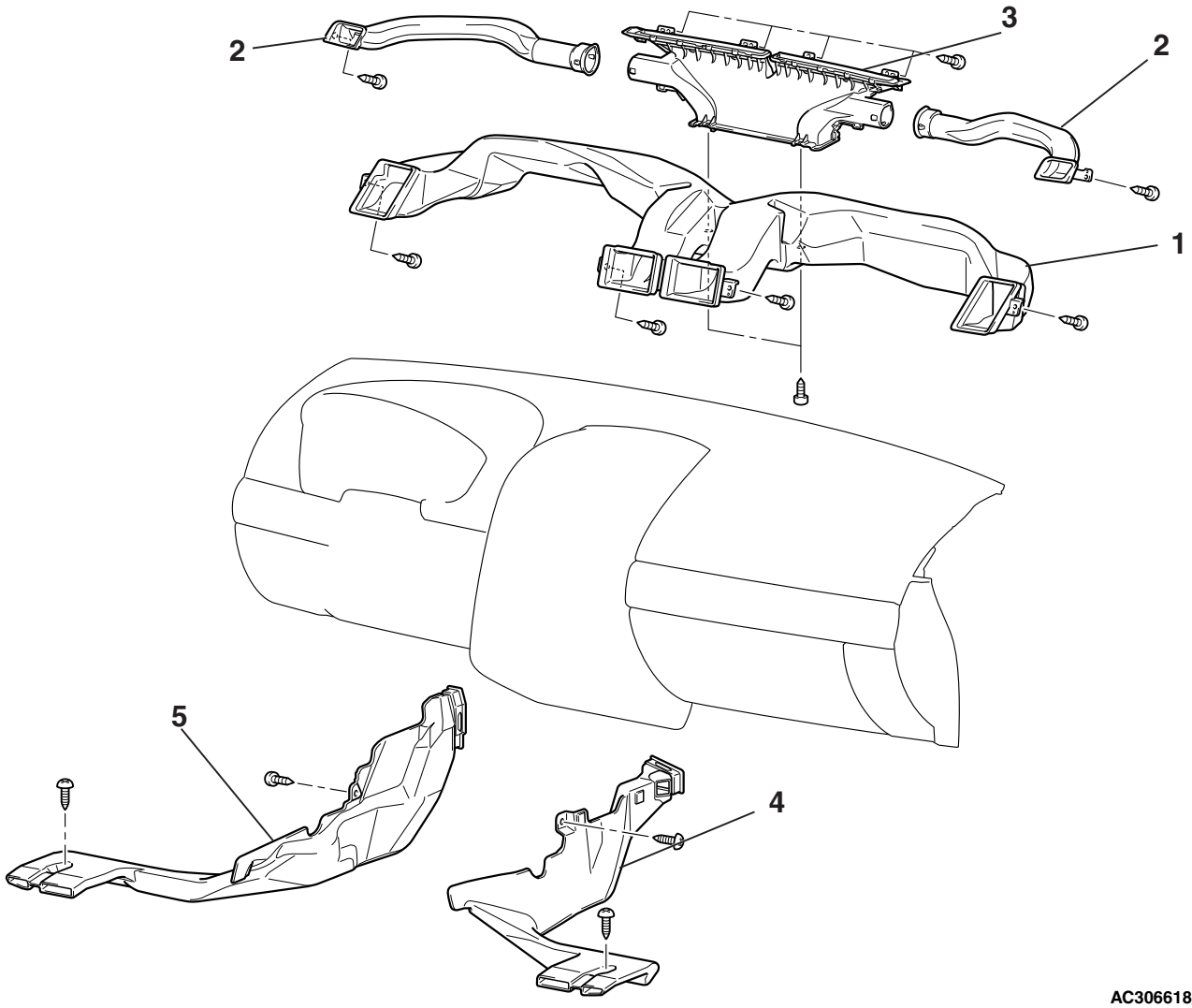
DUCTS

REMOVAL AND INSTALLATION

M1553001000275

⚠ ***WARNING***

When removing and installing the front passenger seat, be sure to carry out accuracy check occupant classification sensor after the seat has been installed in the vehicle. (Refer to GROUP 52B, On-Vehicle Service P.52B-422.)



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DEFROSTER NOZZLE AND DISTRIBUTION DUCT REMOVAL STEPS

- INSTRUMENT PANEL (REFER TO GROUP 52A P.52A-15).

1. VENTILATOR AIR DISTRIBUTION DUCT
2. SIDE DEFROSTER DUCT
3. DEFROSTER NOZZLE

FOOT DUCT AND REAR HEATER DUCT REMOVAL STEPS

- FRONT SEAT ASSEMBLY (REFER TO GROUP 52A, FRONT SEAT ASSEMBLY P.52A-33).
- FRONT SCUFF PLATE, COWL SIDE TRIM (REFER TO GROUP 52A, TRIMS P.52A-22.)
- FLOOR CARPET PEELING
- FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE ASSEMBLY P.52A-21.)
- TRUNK LID RELEASE HANDLE COVER (REFER TO GROUP 42, TRUNK LID P.42-66.)

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FOOT DUCT AND REAR HEATER DUCT REMOVAL STEPS

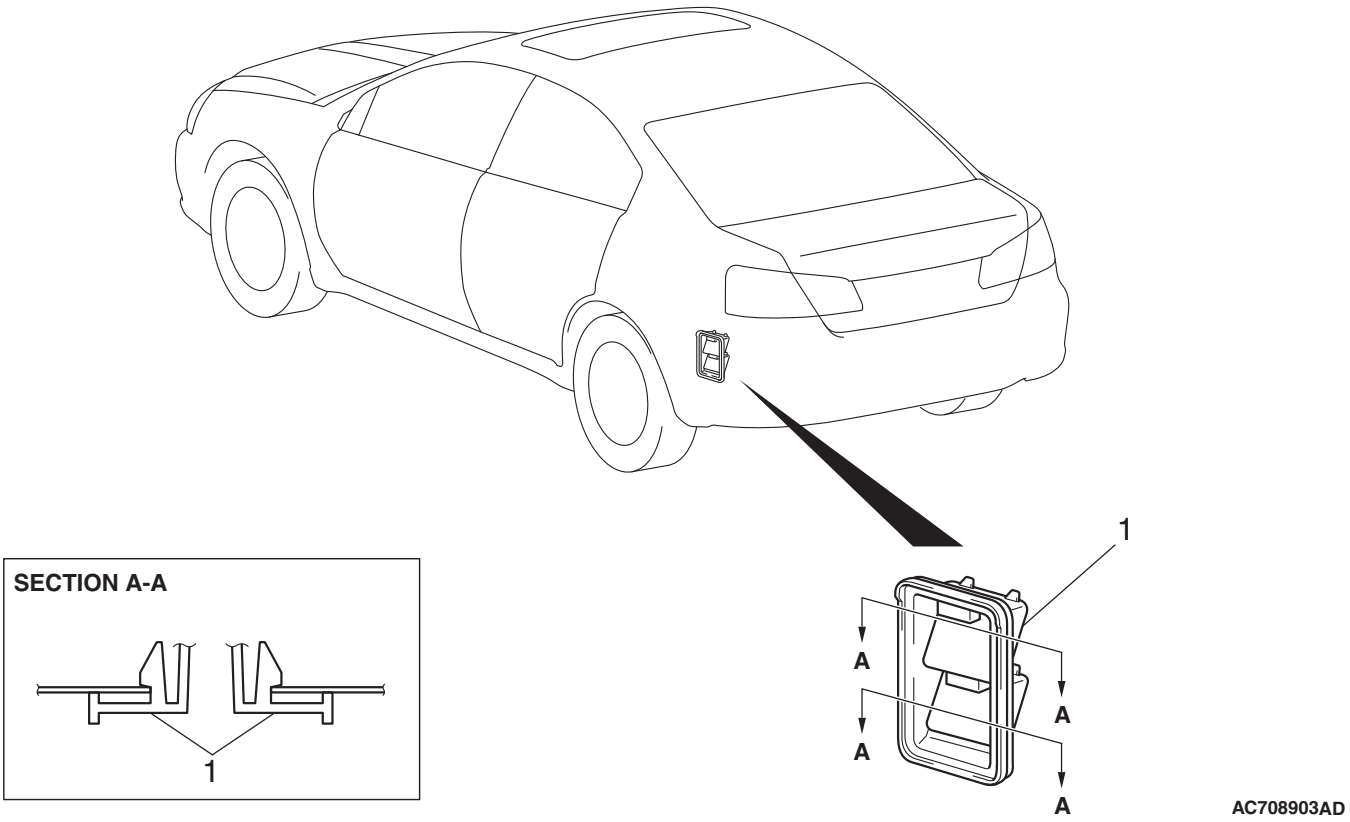
- ACCELERATOR STOPPER (REFER TO GROUP 17, ACCELERATOR CABLE AND PEDAL P.17-9.)

4. REAR HEATER DUCT A
5. REAR HEATER DUCT B

VENTILATORS

REMOVAL AND INSTALLATION

M1553001600664



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REAR VENTILATION DUCT REMOVAL STEPS

- REAR BUMPER ASSEMBLY (REFER TO GROUP 51, P.51-4).

1. REAR VENTILATION DUCT

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1552012100273

Item	Specification
Armature plate mounting bolt	16 ± 1 N· m (12 ± 1 ft-lb)
Discharge flexible hose mounting bolt (compressor side)	25 ± 4 N· m (18 ± 3 ft-lb)
Discharge flexible hose mounting nut (condenser side)	12 ± 2 N· m (107 ± 17 in-lb)
Liquid pipe mounting bolt (condenser side)	4.9 ± 0.9 N· m (44 ± 8 in-lb)
Liquid pipe mounting nut (heater unit side)	4.9 ± 0.9 N· m (43 ± 8 in-lb)
Suction flexible hose mounting bolt (compressor side)	25 ± 4 N· m (18 ± 3 ft-lb)
Suction pipe mounting nut (heater unit side)	12 ± 2 N· m (107 ± 17 in-lb)

GENERAL SPECIFICATIONS

M1552000200262

Item		Manual A/C
Heater control assembly		Dial type
A/C switch		Push-button type
Compressor model, type		MSC105CA, Scroll type
Refrigerant	Type	R134a (HFC-134a)
	Amount g (oz)	590 – 630 (20.80 – 22.22)

SERVICE SPECIFICATIONS

M1552000300719

Item		Standard value
Idle speed r/min	2.4 L	700 ± 100
	3.8 L	680 ± 100
Idle-up speed r/min	2.4 L	700 ± 100
	3.8 L	680 ± 100
Air mix damper potentiometer resistance kΩ		1.7 (MAX HOT) – 5.0 (MAX COOL)
Mode selection damper potentiometer resistance kΩ		0.8 (DEF) – 4.8 (FACE)
Air gap (A/C compressor clutch) mm (in)		0.3 – 0.5 (0.012 – 0.020)

LUBRICANTS

M1552000400329

Item	Specified lubricant	Quantity
Each connection of refrigerant line	SUN PAG 56	As required
Compressor refrigerant unit lubricant cm^3 (fl.oz)	SUN PAG 56	140 (4.7)

NOTES