

GROUP 55

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 DESCRIPTION

M1552000100878

The blower, heater, and evaporator have been integrated with the heater and A/C system to achieve greater fan power and noise reduction.

Item	Specification	
Heater control assembly	Rotary type	
Compressor mode	Except RALLIART	QS90
	RALLIART	MSC90CAS
Compressor type	Scroll type	
Refrigerant and quantity g (oz)	R-134a (HFC-134a), 480 -520 (16.9 -18.3)	

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 ECM judges the required revolution speed of radiator fan motor and condenser fan motor using the input signals transmitted from A/C switch, secondary pulley speed sensor <CVT> or vehicle speed sensor (VSS) <M/T> and engine coolant temperature sensor.

COMPRESSOR CONTROL**When operating the A/C switch**

- The fin thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 1° C (33.8° 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 fin 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	<i>NOTE: A/C compressor clutch relay is de-energized when any one switch, sensor or control unit shown on the left turns off.</i> <i>NOTE: The components marked by * communicate with the ECM. If the fin thermo sensor detects a temperature of 1° C (33.8° F), the A/C-ECU will turn off the A/C compressor clutch relay.</i>
Blower switch	ON	
A/C switch, mode selection dial defroster, defroster/foot position or temperature control MAX A/C	ON	
Fin 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 MPa (341psi) 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	

GENERAL SPECIFICATIONS

M1552000200392

Item	Standard value	
Heater control assembly	Rotary type	
A/C switch	Push-button type	
Compressor model, type	Except RALLIART	QS90, Scroll type
	RALLIART	MSC90CAS, Scroll type
Refrigerant	Type	R134a (HFC-134a)
	Amount g (oz)	480 -520 (16.9 -18.3)

SERVICE SPECIFICATIONS

M1552000300731

Item	Standard value	
Idle speed r/min	2.0L ENGINE	700 ± 100
	2.4L ENGINE	650 ± 100
Idle-up speed r/min	2.0L ENGINE	800 ± 50
	2.4L ENGINE	800 ± 50
Air gap (A/C compressor clutch) mm (in)	Except RALLIART	0.25 -0.45 (0.010 -0.017)
	RALLIART	0.3 -0.5 (0.012 -0.020)

LUBRICANTS

M1552000400631

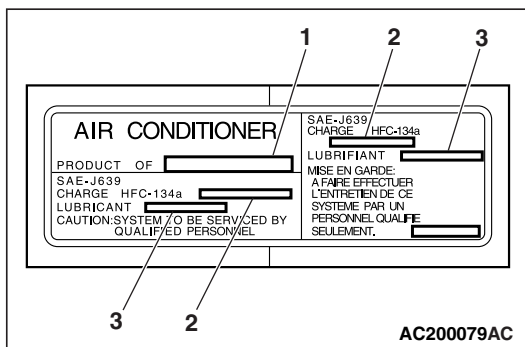
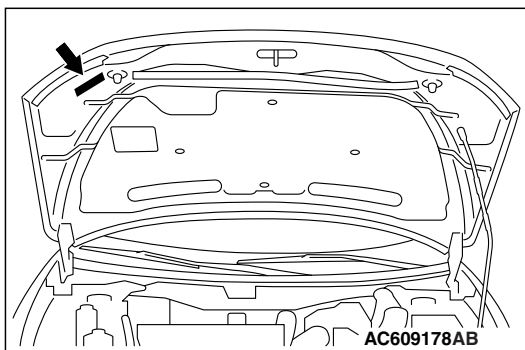
Item	Specified lubricant	Quantity
Each connection of refrigerant line	SUN PAG 56	As required
Compressor refrigerant unit lubricant cm ³ (fl.oz)	Except RALLIART	70 -90 (2.4 -3.0)
	RALLIART	80 -100 (2.7 -3.4)

SERVICE PRECAUTIONS

CAUTION LABELS

M1552017400321

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.



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

AUTO A/C DIAGNOSIS

INTRODUCTION TO HEATER, A/C AND VENTILATION DIAGNOSIS

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

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

M1552012200407

HEATER, A/C AND VENTILATION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1552009600483

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

M1552019800303

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

Required Special Tools:

- 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

CAUTION

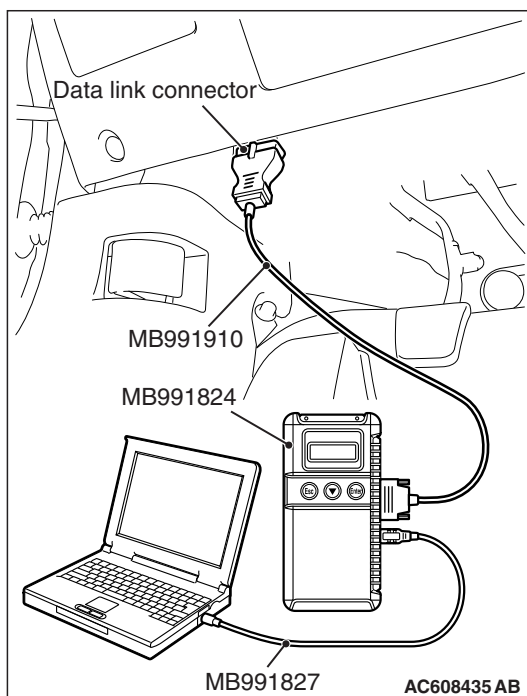
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 Tools:

- 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

CAUTION

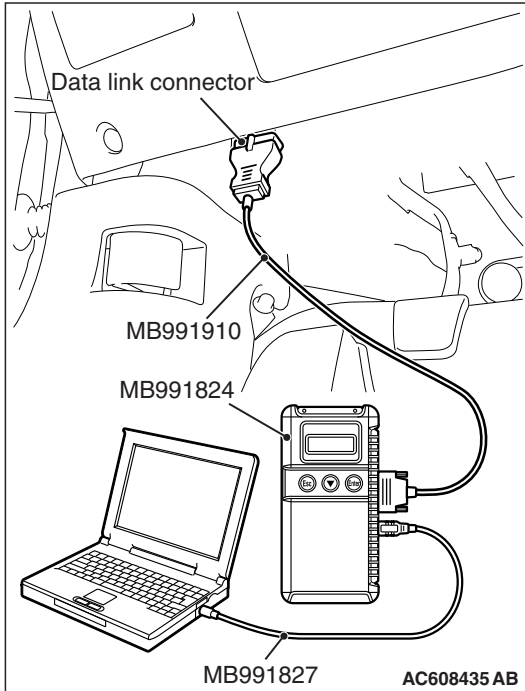
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "AUTO A/C" from "System List," and press the "OK" button.

NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.

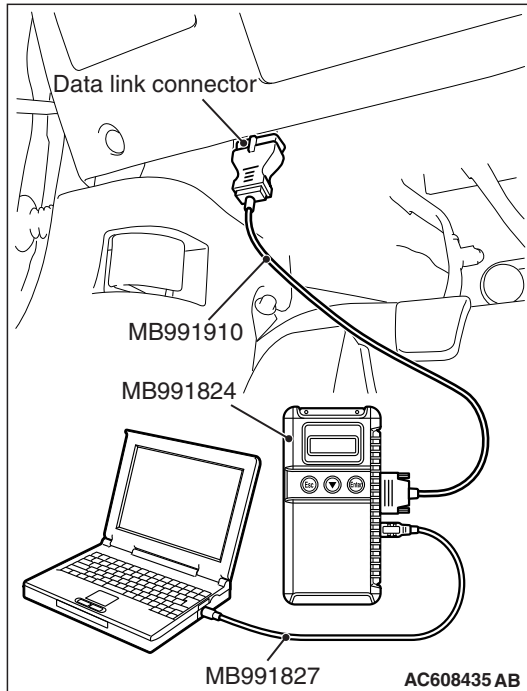
6. Select "Diagnostic Trouble Code." to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.



HOW TO DIAGNOSE THE CAN BUS LINE

Required Special Tools:

- 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

**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 match, 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".

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using the scan tool (GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

When detecting fault and storing the DTC, the ECU connected to CAN bus line obtains the data before the determination of the DTC and the data when the DTC is determined, and then stores the ECU status of that time. By analyzing the data from scan tool, the troubleshooting can be performed more efficiently. The displayed items are as shown in the table below.

Display item list

Item No.	Item name	Content item	Unit
01	Odometer	Total driving distance after the diagnostic trouble code is generated	km*
02	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
04	Current trouble accumulative time	Cumulative time for current malfunction of diagnostic trouble code	min

NOTE:

- *: If a failure occurs to both the ABS-ECU and ETACS-ECU, 0000 mile or FFFF km is displayed to the scan tool MB991958.

DIAGNOSTIC TROUBLE CODE CHART

⚠ 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, check all systems for DTC code(s). If DTC code(s) are set, erase them all.

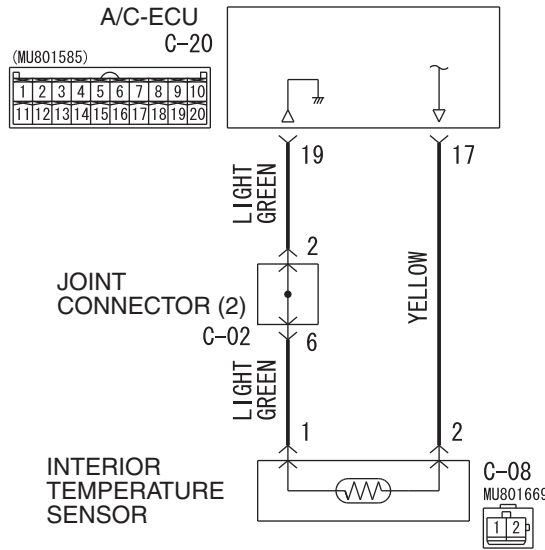
Diagnostic trouble code No.	Diagnostic item	Reference page	Service data display contents when diagnosis code is set
B10C0	Interior temperature sensor system (short circuit)	P.55-10	25° C
B10C1	Interior temperature sensor system (open circuit)	P.55-10	
B1000	Control panel communication error	P.55-13	–
B1003	Mode dial SW error	P.55-18	–
B1018	Temperature control dial SW error	P.55-21	–
B1021	Fan dial SW error	P.55-24	–
B1031	Fin thermo sensor system (short circuit)	P.55-27	Air recirculation position: Interior temperature Fresh air position: Fresh air + 10° C
B1032	Fin thermo sensor system (open circuit)	P.55-27	
B1034*	Ambient air temperature sensor system (short circuit)	P.55-30	20° C
B1035*	Ambient air temperature sensor system (open circuit)	P.55-30	
B1079	Refrigerant leaks	P.55-33	–
B2214	Control panel failure	P.55-38	–
B223B	Control panel improperly assembled	P.55-41	–
U1415	Coding not completed	P.55-44	–
U0019	Bus off (CAN1)	P.55-46	–
U0141	ETACS-ECU time-out	P.55-47	–
U0151	SRS-ECU time-out	P.55-50	–
U0154	Occupant classification-ECU time-out	P.55-52	–
U0155	Combination meter time-out	P.55-55	–
U0168	WCM time-out	P.55-58	–
U0184	Audio time-out	P.55-60	–
U0195	Satellite radio tuner time-out	P.55-63	–
U0197	Hands free module time-out	P.55-65	–

NOTE: The diagnostic trouble codes marked by * are set from the ETACS-ECU.

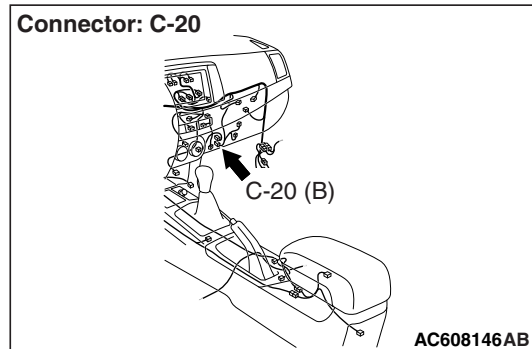
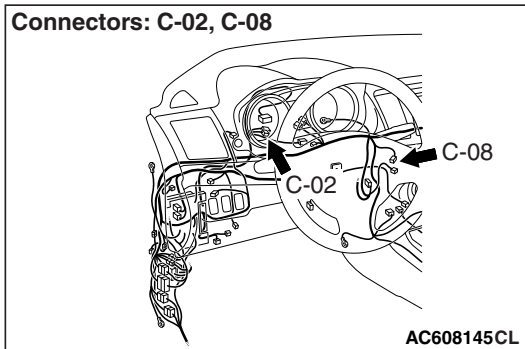
DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B10C0, B10C1: Interior Temperature Sensor System

Interior Temperature Sensor Circuit



AC807577
 W8G55M012A



DTC SET CONDITION

- DTC B10C0 is set if there is a short circuit in the interior temperature sensor input circuit.
- DTC B10C1 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 interior temperature sensor, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B10C0 or B10C1 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the interior 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 interior temperature sensor.
- Malfunction of the A/C-ECU.

DIAGNOSIS

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

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

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.

Use scan tool MB991958 to diagnose the CAN bus lines.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

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.00-13.

NO : Go to Step 3.

STEP 3. Check interior temperature sensor connector C-08 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are interior temperature sensor connector C-08 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminals 17 and 19) and interior temperature sensor connector C-08 (terminals 2 and 1).

NOTE: Also check joint connector C-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-02 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-20 (terminals 17 and 19) and interior temperature sensor connector C-08 (terminals 2 and 1) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Check the interior temperature sensor.

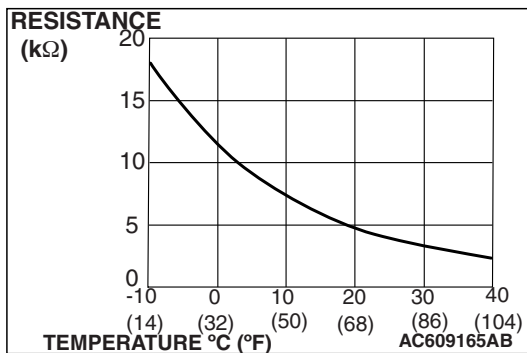
Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

Q: Is the interior temperature sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 6.

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



STEP 6. Recheck for diagnostic trouble code.

Check again if the DTC is set.

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

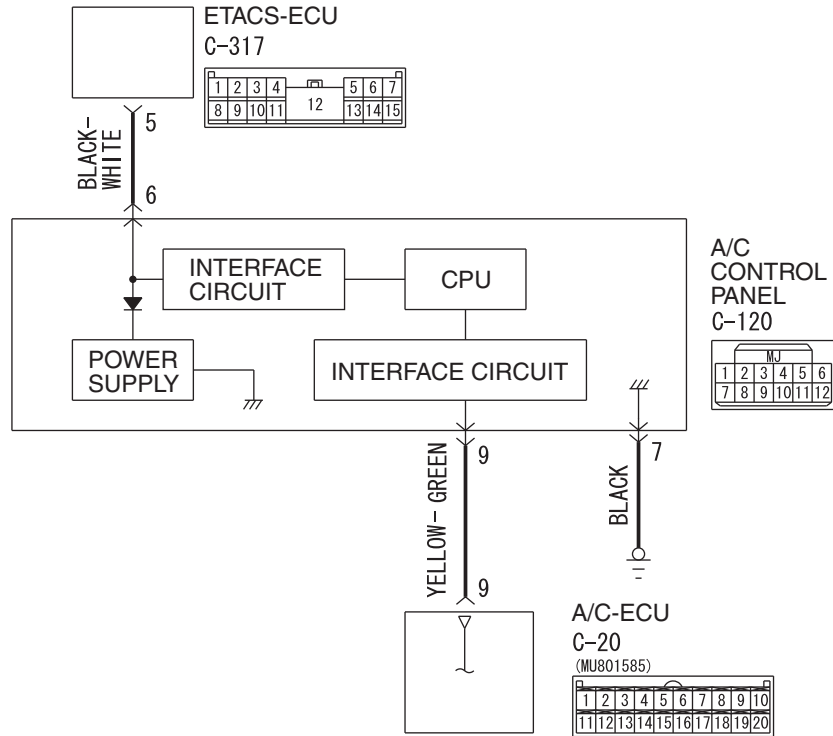
Q: Is the check result satisfactory?

YES : The procedure is complete.

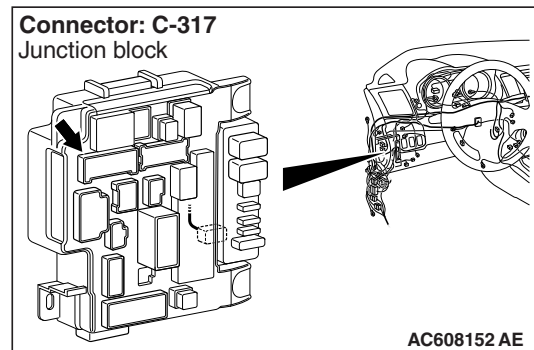
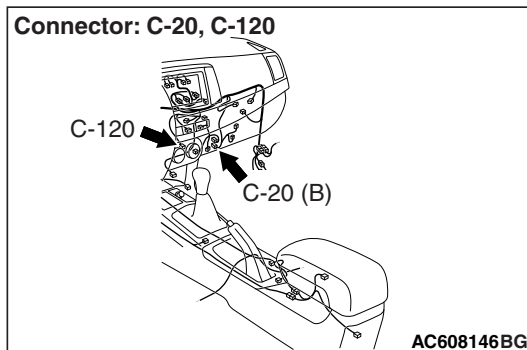
NO : Return to Step 1.

DTC B1000: Control Panel Communication Error

A/C Control Panel Circuit



AC901620
 W9S55M000A



DTC SET CONDITION

DTC B1000 will be set when the communication between A/C-ECU and A/C control panel cannot be performed.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC B1000 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS**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

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

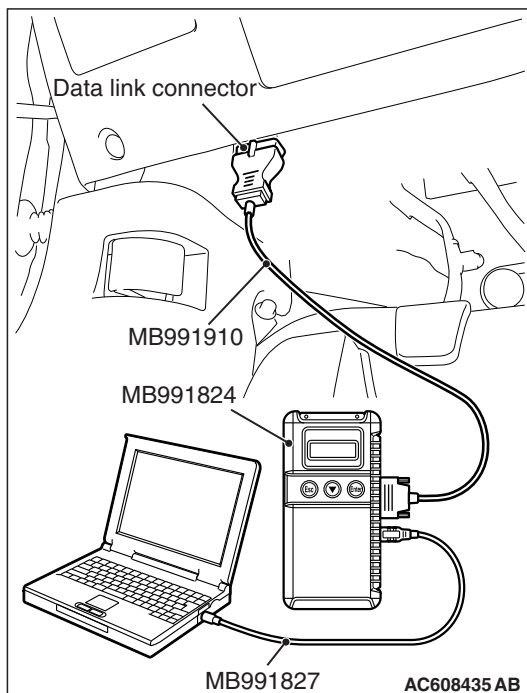
Use scan tool MB991958 to diagnose the CAN bus lines.

- (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-16](#)).



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 DTC set?

YES : Go to Step 3.

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.00-13](#).

STEP 3. Check A/C control panel connector C-120 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C control panel connector C-120 in good condition?

YES : Go to Step 4.

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

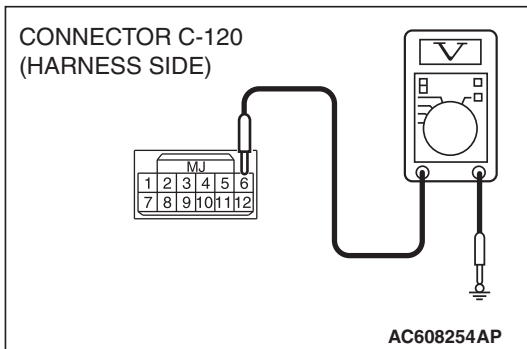
STEP 4. Measure the voltage at A/C control panel connector C-120.

- (1) Disconnect A/C control panel connector C-120, and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 6 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 6.

NO : Go to Step 5.



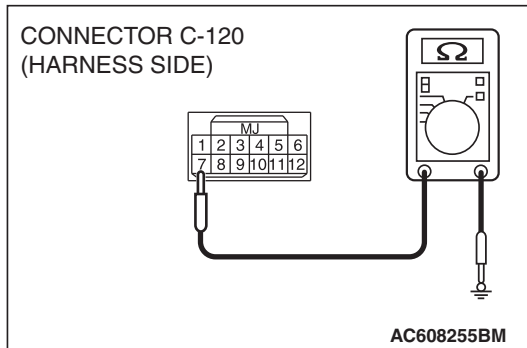
STEP 5. Check the wiring harness between A/C control panel connector C-120 (terminal 6) and ETACS-ECU connector C-317 (terminal 5).

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

Q: Is the wiring harness between A/C control panel connector C-120 (terminal 6) and ETACS-ECU connector C-317 (terminal 5) in good condition?

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

NO : Repair the wiring harness.



STEP 6. Measure the resistance at A/C control panel connector C-120.

- (1) Disconnect A/C control panel connector C-120, and measure the resistance at the wiring harness side.
- (2) Measure the resistance value between terminal 7 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 8.

NO : Go to Step 7.

STEP 7. Check the wiring harness between A/C control panel connector C-120 (terminal 7) and ground.

- Check the A/C control panel ground line for open circuit.

Q: Is the wiring harness between A/C control panel connector C-120 (terminal 7) and ground in good condition?

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

NO : Repair the wiring harness.

STEP 8. Check A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-20 in good condition?

YES : Go to Step 9.

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

STEP 9. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 10.

NO : Repair the wiring harness.

STEP 10. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 11.

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.00-13](#).

STEP 11. 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.

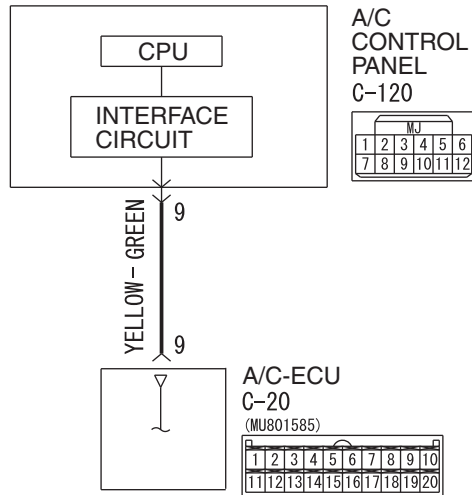
Q: Is the DTC set?

YES : Replace the A/C-ECU.

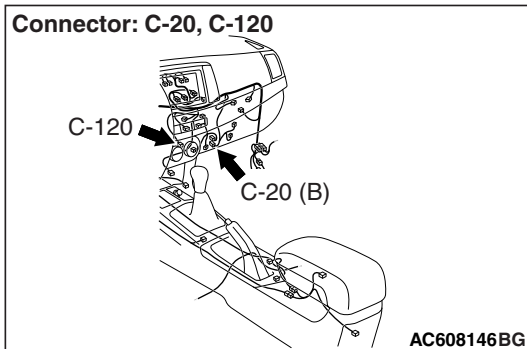
NO : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunctions [P.00-13](#).

DTC B1003: Mode Dial SW Error

A/C Control Panel Circuit



AC901621
 W8G55M001A



DTC SET CONDITION

DTC B1003 will be set when the A/C-ECU cannot receive the signal of mode selection knob.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC B1003 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS

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

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

⚠ CAUTION

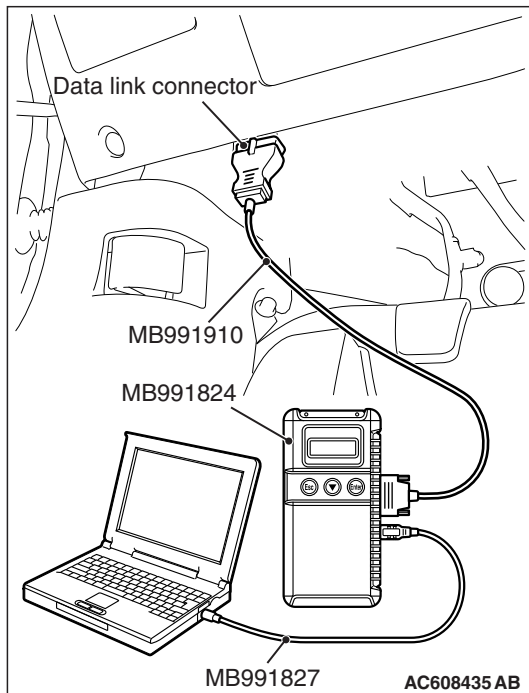
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C control panel connector C-120 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C control panel connector C-120 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 6.

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.00-13](#).

STEP 6. 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.

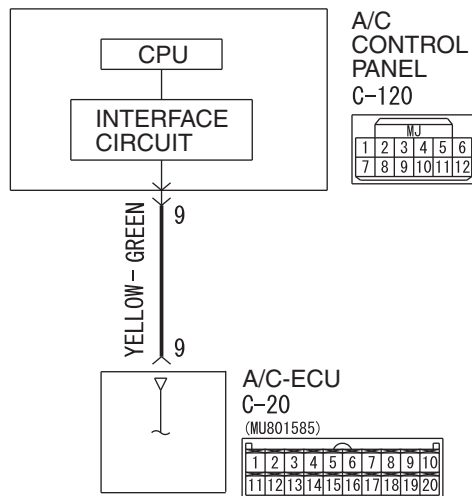
Q: Is the DTC set?

YES : Replace the A/C-ECU.

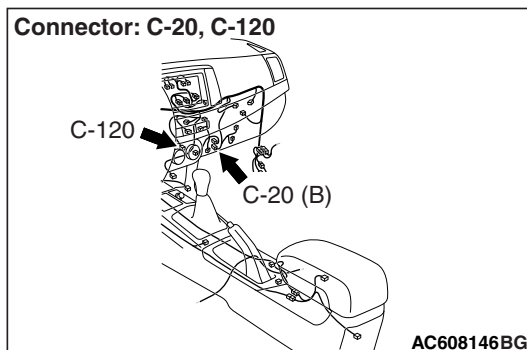
NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

DTC B1018: Temperature Control Dial SW Error

A/C Control Panel Circuit



AC901621
 W8G55M001A



DTC SET CONDITION

DTC B1018 will be set when the A/C-ECU cannot receive the signal of temperature adjustment knob.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC B1018 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS**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

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

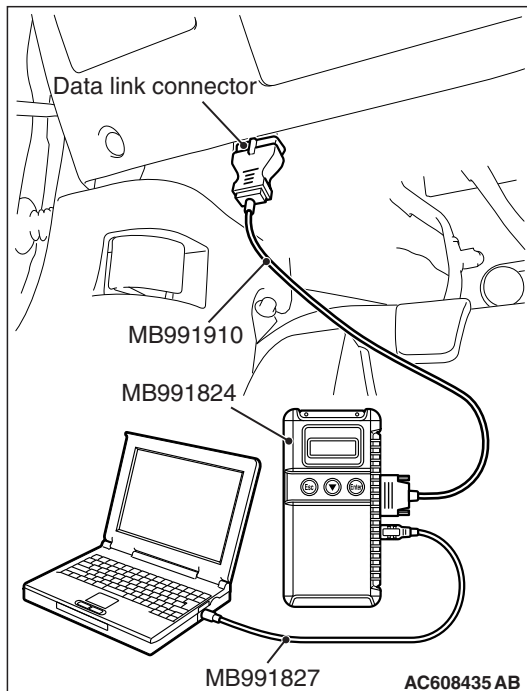
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

**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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C control panel connector C-120 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C control panel connector C-120 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 6.

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.00-13](#).

STEP 6. 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.

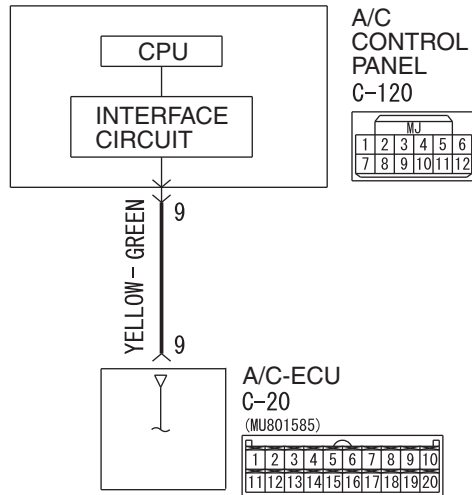
Q: Is the DTC set?

YES : Replace the A/C-ECU.

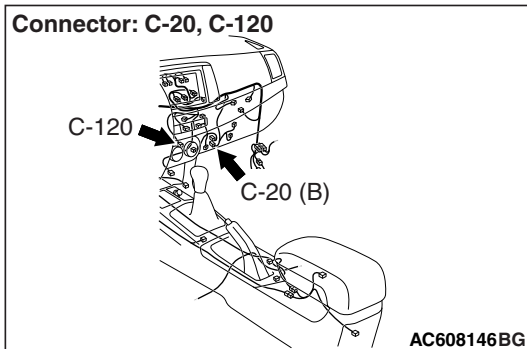
NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

DTC B1021: Fan Dial SW Error

A/C Control Panel Circuit



AC901621
 W8G55M001A



DTC SET CONDITION

DTC B1021 will be set when the A/C-ECU cannot receive the signal of blower knob.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC B1021 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS

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

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

⚠ CAUTION

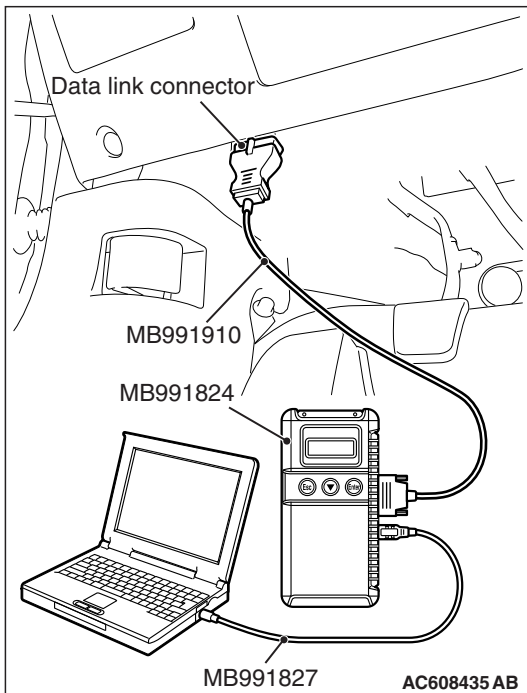
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C control panel connector C-120 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C control panel connector C-120 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 6.

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.00-13](#).

STEP 6. 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.

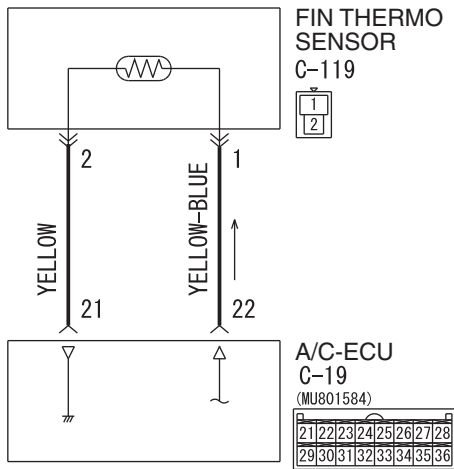
Q: Is the DTC set?

YES : Replace the A/C-ECU.

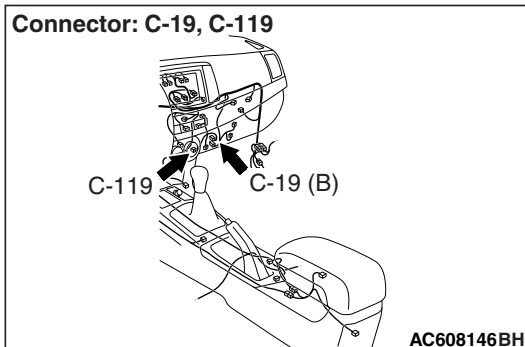
NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

DTC B1031, B1032: Fin Thermo Sensor System

FinThermo Sensor Circuit



AC807771
 W8G55M003A



DTC SET CONDITION

- DTC B1031 is set if there is a short circuit in the fin thermo sensor input circuit.
- DTC B1032 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 fin thermo sensor, or connector(s) or wiring between the two may be defective.

Past trouble

- If DTC B1031 or B1032 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the fin 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 fin thermo sensor.
- Malfunction of the A/C-ECU.

DIAGNOSIS**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

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

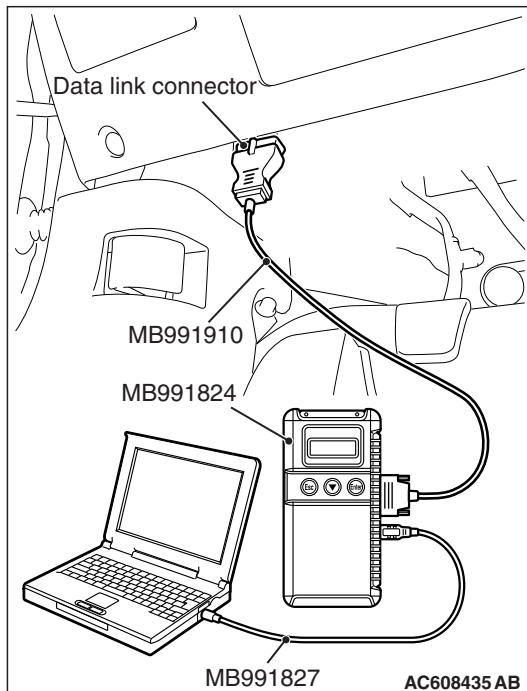
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

**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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check fin thermo sensor connector C-119 and A/C-ECU connector C-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are fin thermo sensor connector C-119 and A/C-ECU connector C-19 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-19 (terminal 22 and 21) and fin thermo sensor connector C-119 (terminals 1 and 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-19 (terminal 22 and 21) and fin thermo sensor connector C-119 (terminals 1 and 2) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Check the fin thermo sensor.

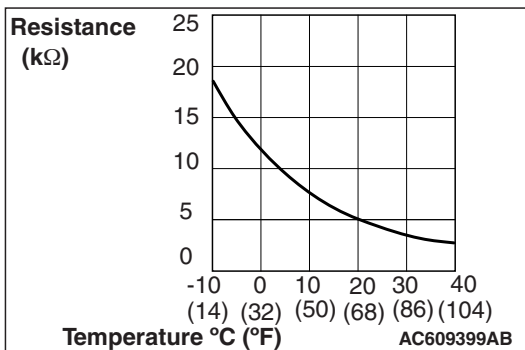
Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

Q: Is the fin thermo sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 6.

NO : Replace the fin thermo sensor. Then go to Step 6.



STEP 6. Recheck for diagnostic trouble code.

Check again if the DTC is set.

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

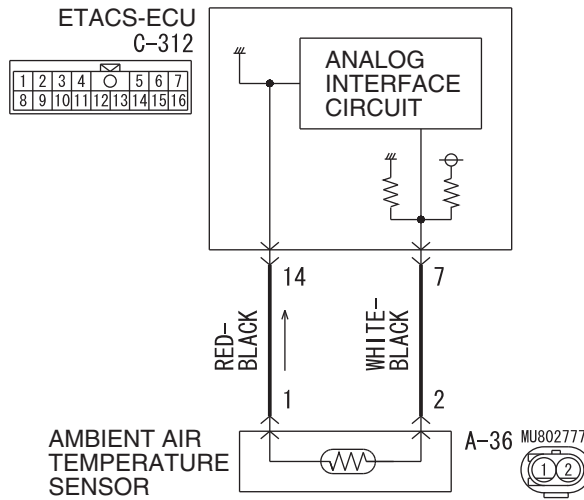
Q: Is the DTC set?

YES : Return to Step 1.

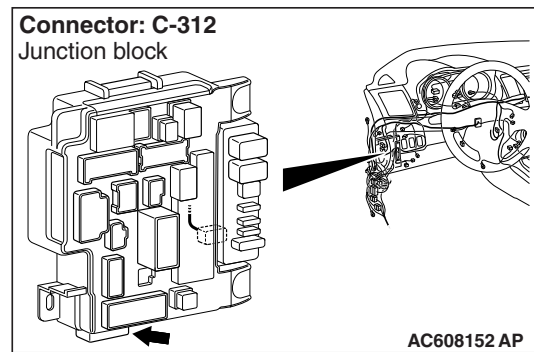
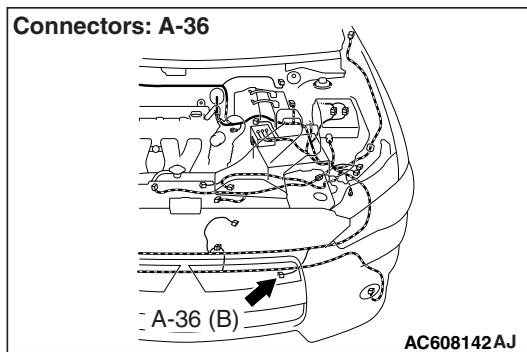
NO : The procedure is complete.

DTC B1034, B1035: Ambient air temperature Sensor System

Ambient Temperature Sensor Circuit



W8G55M004A



DTC SET CONDITION

- DTC B1034 is set if there is a short circuit in the ambient air temperature sensor input circuit.
- DTC B1035 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 B1034 or B1035 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 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

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

⚠ CAUTION

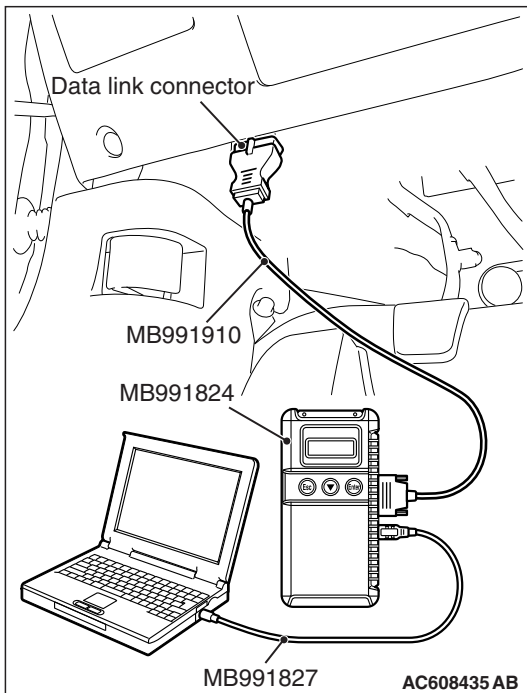
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check ambient air temperature sensor connector A-36 and ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ambient air temperature sensor connector A-36 and ETACS-ECU connector C-312 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between ambient air temperature sensor connector A-36 (terminals 2 and 1) and ETACS-ECU connector C-312 (terminals 7 and 14).

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

Q: Is the wiring harness between ambient air temperature sensor connector A-36 (terminals 2 and 1) and ETACS-ECU connector C-312 (terminals 7 and 14) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Check the ambient air temperature sensor.

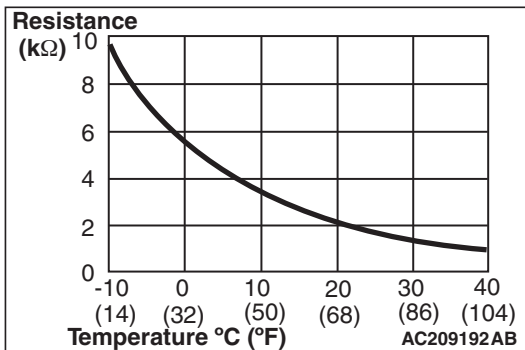
Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

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

YES : Replace the A/C-ECU. Then go to Step 6.

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



STEP 6. Recheck for diagnostic trouble code.

Check again if the DTC is set.

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

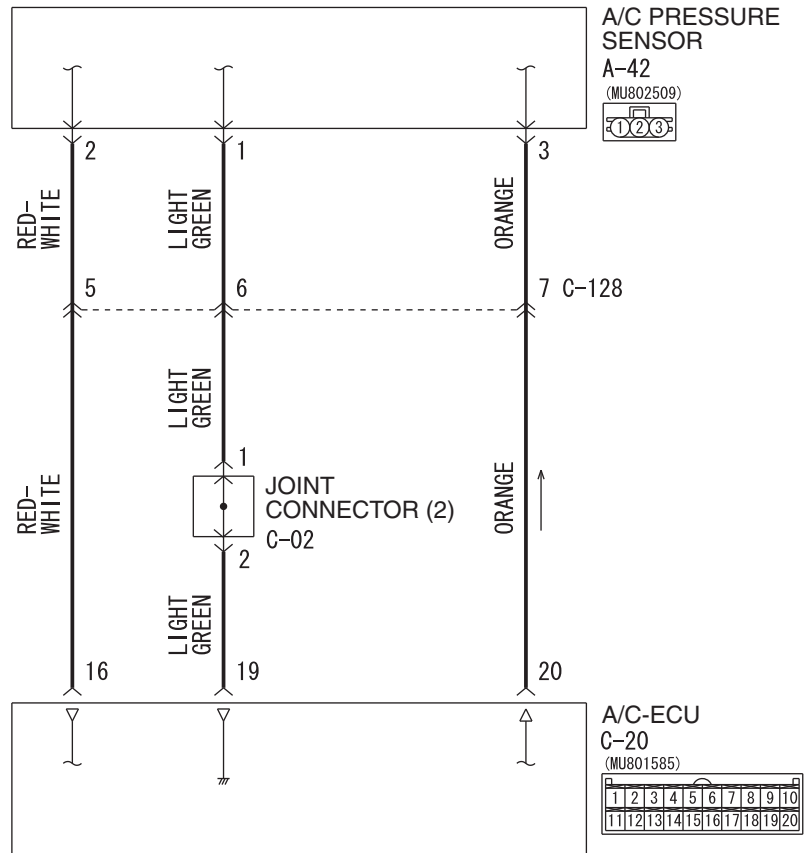
Q: Is the DTC set?

YES : Return to Step 1.

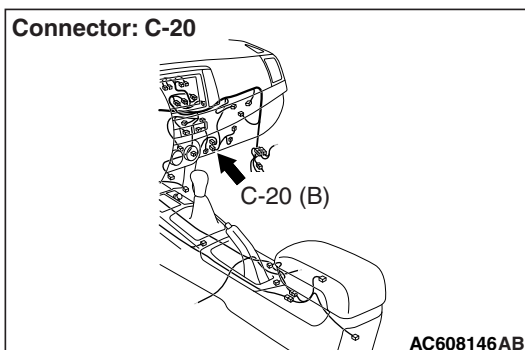
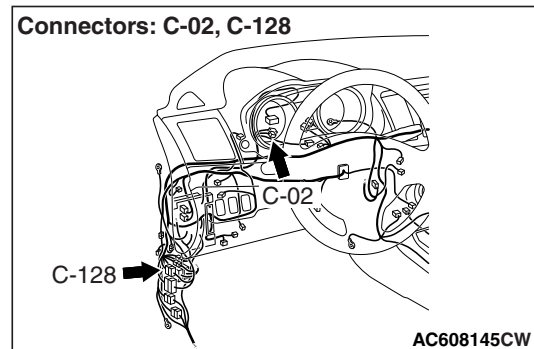
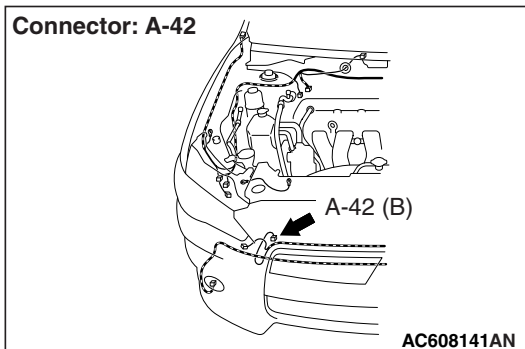
NO : The procedure is complete.

DTC B1079: Refrigerant Leaks

A/C Pressure Sensor Circuit



AC807624
 W8G55M002A



DTC SET CONDITION

DTC B1079 will be set when the A/C pressure sensor detects the refrigerant pressure of specified level or less.

NOTE: When DTC B1079 is set, the A/C indicator of A/C control panel flashes.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

- The refrigerant amount is not at the specified level, or the wiring harness or connector between the A/C-ECU and A/C pressure sensor, and the A/C-ECU itself or A/C pressure sensor itself may have failed.

Past trouble

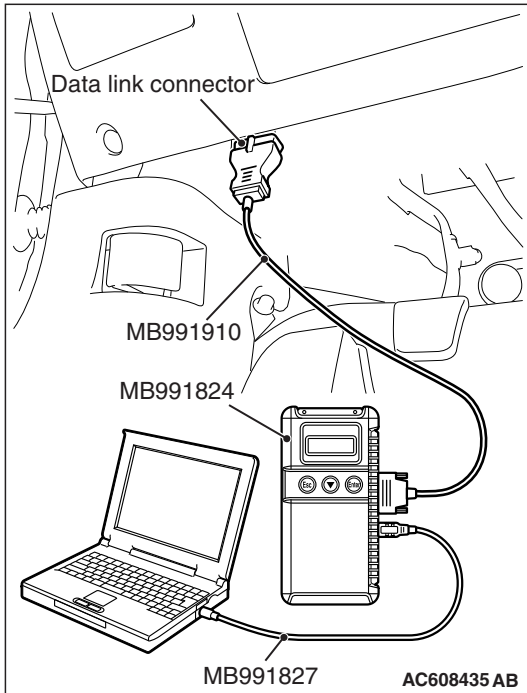
- If DTC B1079 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C pressure sensor. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

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

DIAGNOSIS**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



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

⚠ 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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C pressure sensor connector A-42 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are air A/C pressure sensor connector A-42 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminals 20, 16 and 19) and A/C pressure sensor connector A-42 (terminals 3, 2 and 1).

NOTE: Also check intermediate connectors C-128 and joint connector C-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-128 and joint connector C-02 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.

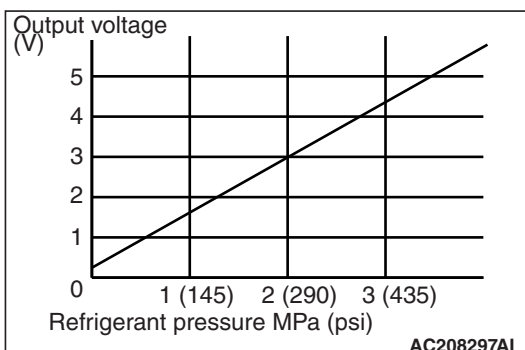
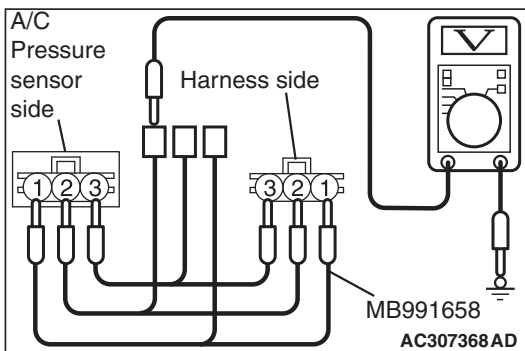
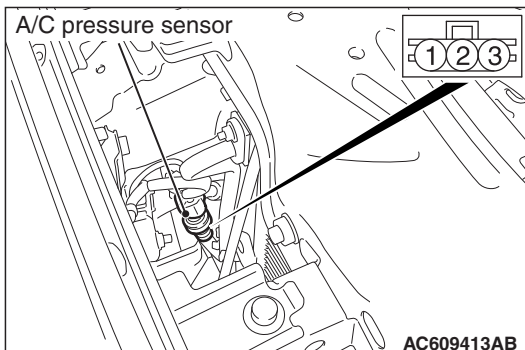
Q: Is the wiring harness between A/C-ECU connector C-20 (terminals 20, 16 and 19) and A/C pressure sensor connector A-42 (terminals 3, 2 and 1) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 $\pm 5\%$.

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

YES : Go to Step 6.

NO : Replace the A/C pressure sensor. Then go to Step 7.

STEP 6. 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 7.

NO : Correct the refrigerant level (Refer to On-vehicle Service [P.55-113](#)). 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.

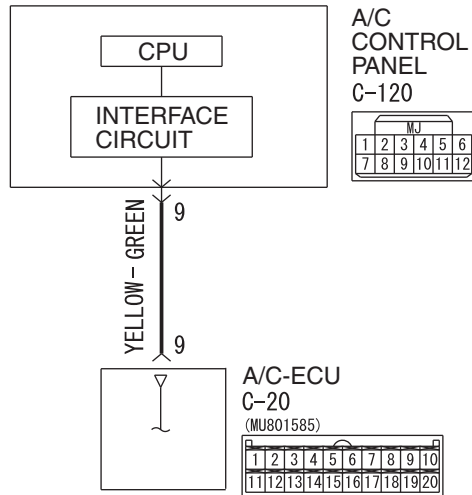
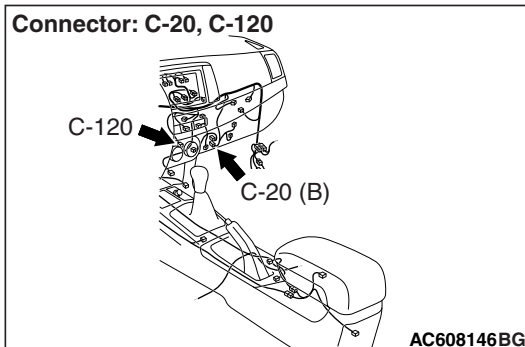
Q: Is the DTC set?

YES : Return to Step 1.

NO : The procedure is complete.

DTC B2214: Control Panel Failure

A/C Control Panel Circuit

AC901621
W8G55M001A**DTC SET CONDITION**

DTC B2214 will be set when the A/C-ECU detects the A/C control panel abnormality.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

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

Past trouble

- If DTC B2214 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS

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

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

⚠ CAUTION

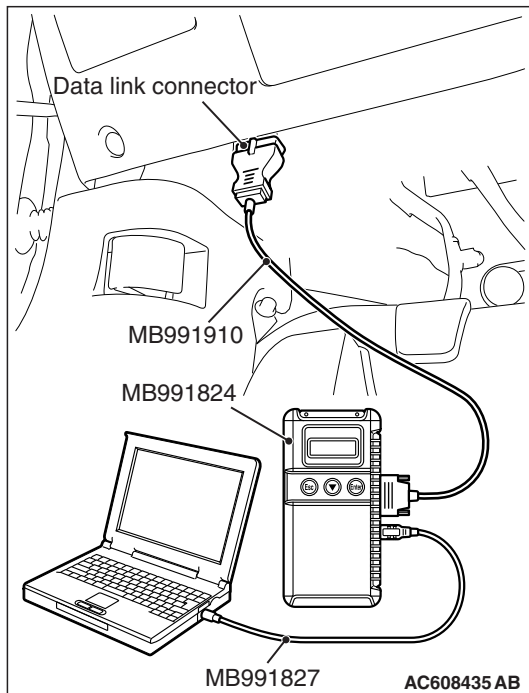
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C control panel connector C-120 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C control panel connector C-120 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 6.

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.00-13](#).

STEP 6. 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.

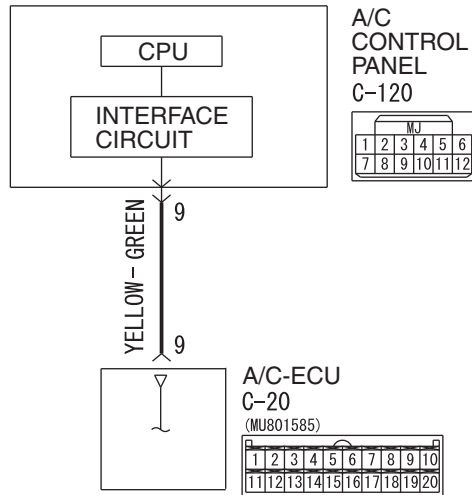
Q: Is the DTC set?

YES : Replace the A/C-ECU.

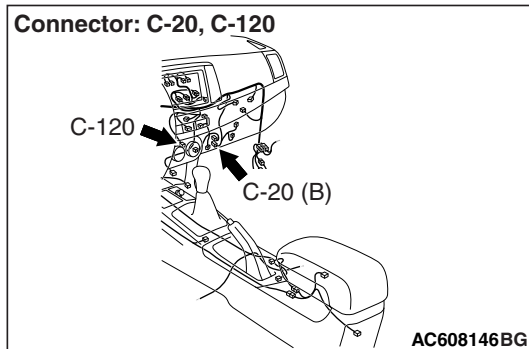
NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

DTC B223B: Control Panel Improperly Assembled

A/C Control Panel Circuit



AC901621
 W8G55M001A



DTC SET CONDITION

DTC B223B will be set when the A/C control panel sends an abnormal data, the A/C control panel for RHD is improperly assembled, or the ETACS-ECU sends incorrect vehicle information (information for RHD is sent).

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC B223B is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the A/C control panel. 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 A/C control panel.
- Malfunction of the A/C-ECU.

DIAGNOSIS**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

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

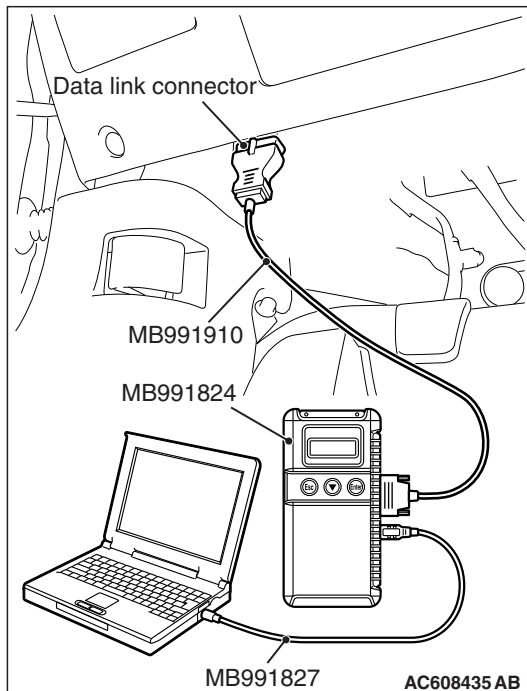
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

**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 DTC set?

YES : Go to Step 3.

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.00-13.

STEP 3. Check A/C control panel connector C-120 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C control panel connector C-120 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9).

- Check the A/C control panel signal line and ground line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 9) and A/C control panel connector C-120 (terminal 9) in good condition?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. 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 DTC set?

YES : Replace the A/C control panel. Then go to Step 6.

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.00-13](#).

STEP 6. 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 DTC set?

YES : Replace the A/C-ECU.

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.00-13](#).

DTC U1415: Coding Not Completed**CAUTION**

If DTC U222C 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

The A/C-ECU receives the vehicle information signals from the ETACS-ECU via the CAN bus lines. If incorrect global coding data is received or coding data cannot be received with the ignition switch turned ON when the coding confirmation is completed, diagnostic trouble code B222C is stored.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- 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**

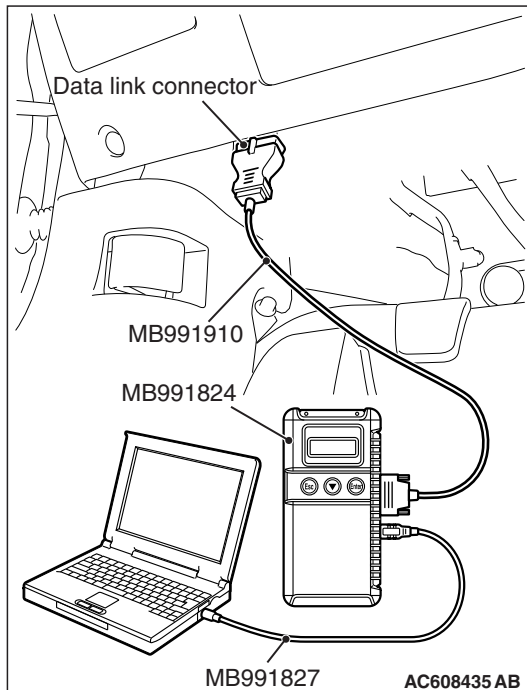
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



STEP 2. Using scan tool MB991958 read the ETACS-ECU diagnostic trouble code.

Check whether an ETACS DTC.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for the DTC related to the ETACS-ECU.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to GROUP 54A, Diagnostic Trouble Code [P.54A-674](#)).

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.

- WCM <vehicles with WCM>
B2204: Coding data unmatched
- KOS <vehicles with KOS>
B2204: Coding data unmatched

- (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 DTC set?

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 DTC set?

YES : Replace the ETACS-ECU. On completion, check that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the lines between the ETACS-ECU and the A/C-ECU (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)).

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the lines between the ETACS-ECU and the A/C-ECU (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)).

DTC U0019: Bus Off (CAN1)**⚠ CAUTION**

If DTC U0019 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 U0019 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 damaged 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**

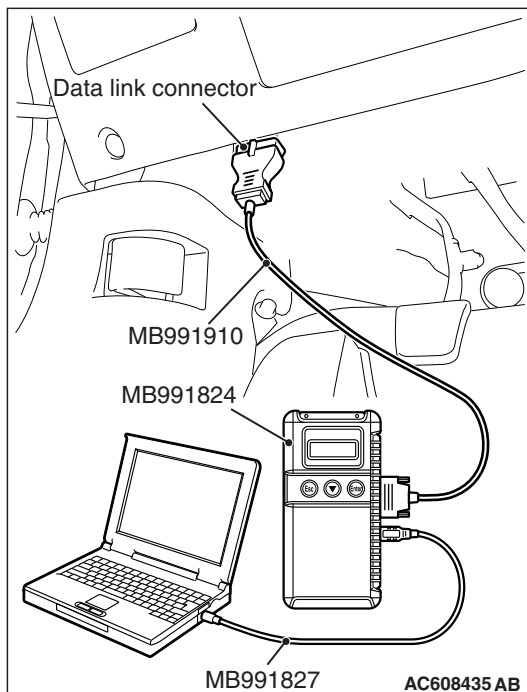
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0141: ETACS-ECU Time-out

⚠ CAUTION

If DTC U0141 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

The A/C-ECU receives air conditioning operation-related signals from the ETACS-ECU via the CAN bus lines. If the ECU cannot receive any of the air conditioning control-related signals from the ETACS-ECU, the diagnostic trouble code U0141 is stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC U0141 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 ETACS-ECU, and the power supply system to the ETACS-ECU. 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.00-13](#)) 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-16](#)).

TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU
- Malfunction of the ETACS-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**

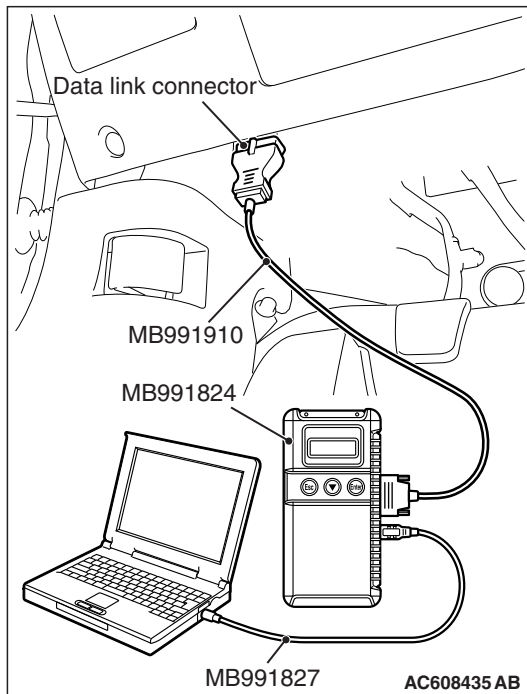
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

**STEP 2. Using scan tool MB991958 read the ETACS-ECU diagnostic trouble code.**

Check whether an ETACS-ECU DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for ETACS-ECU DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to GROUP 54A, Diagnostic Trouble Code P.54A-674).

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
- (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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the ETACS-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0151: SRS-ECU Time-out**⚠ CAUTION**

If DTC U0151 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

The A/C-ECU receives air conditioning operation-related signals from the SRS-ECU via the CAN bus lines. If any of the air conditioning control-related signals from the SRS-ECU cannot be received, the diagnostic trouble code U0151 is stored.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

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

Past trouble

- If DTC U0151 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 SRS-ECU, and the power supply system to the SRS-ECU. 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.

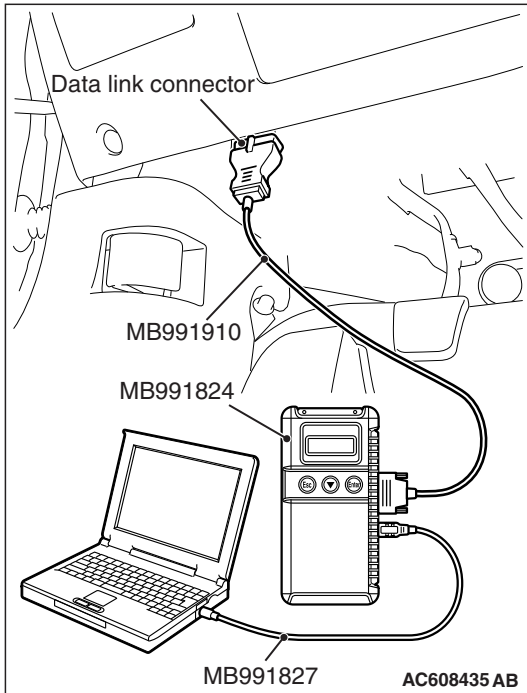
NOTE: For a past trouble, you cannot find it by the scan tool CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13) and check the CAN bus lines. You can 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-16).

TROUBLESHOOTING HINTS

- Malfunction of the SRS-ECU
- 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

STEP 2. Using scan tool MB991958 read the SRS-ECU diagnostic trouble code.

Check whether an SRS-ECU DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for SRS-ECU DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the SRS-ECU (Refer to GROUP 52B, Diagnostic Trouble Code P.52B-32).

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.

- ETACS-ECU
 DTC indicating a time-out error related to the SRS-ECU 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the SRS-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0154: Occupant classification ECU time out**⚠ CAUTION**

If DTC U0154 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

The A/C-ECU receives air conditioning operation-related signals from the SRS-ECU via the CAN bus lines. If any of the air conditioning control-related signals from the SRS-ECU cannot be received, the diagnostic trouble code U0154 is stored.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

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

Past trouble

- If DTC U0151 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 SRS-ECU, and the power supply system to the SRS-ECU. 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.00-13) 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-16).

TROUBLESHOOTING HINTS

- Malfunction of the SRS-ECU
- 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

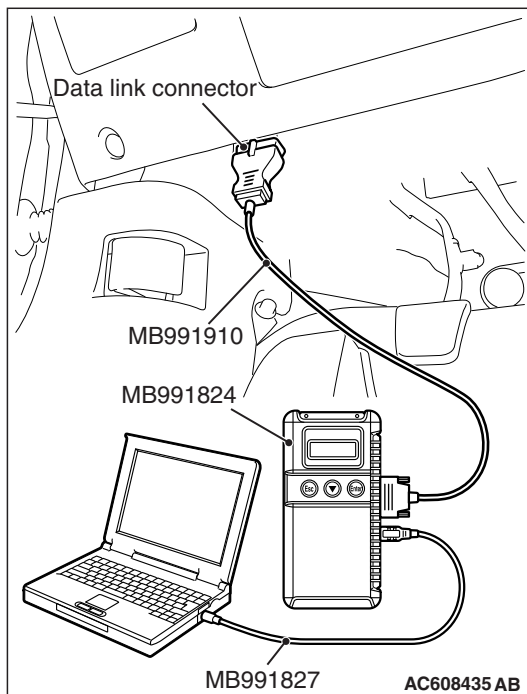
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



STEP 2. Using scan tool MB991958 read the SRS-ECU diagnostic trouble code.

Check whether an SRS-ECU DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for SRS-ECU DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the SRS-ECU (Refer to GROUP 52B, Diagnostic Trouble Code [P.52B-315](#)).

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.

- ETACS-ECU
DTC indicating a time-out error related to the SRS-ECU 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the SRS-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13](#).)

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.)

DTC U0155: Combination meter Time-out

⚠ CAUTION

If DTC U0155 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

The A/C-ECU receives the air conditioning control-related signals from the combination meter via the CAN bus lines. If any of the air conditioning control-related signals from the combination meter cannot be received, the diagnostic trouble code U0155 is stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC U0155 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 combination meter, and the power supply system to the combination meter. 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.00-13) 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-9).

TROUBLESHOOTING HINTS

- Malfunction of the combination meter
- 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**

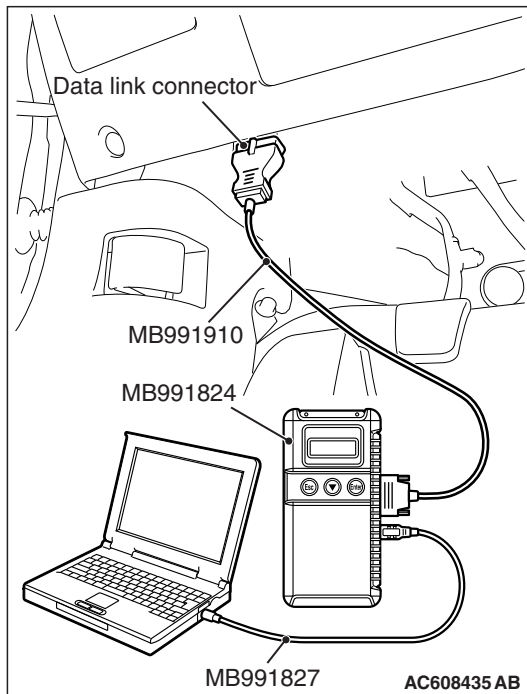
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

**STEP 2. Using scan tool MB991958 read the combination meter diagnostic trouble code.**

Check whether a combination meter DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for combination meter DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic Trouble Code P.54A-33).

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.

- ETACS-ECU
DTC indicating a time-out error related to the combination meter 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the combination meter. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0168: WCM Time-out**⚠ CAUTION**

If DTC U0168 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

The A/C-ECU or heater control unit receives the air conditioning control-related signals from the WCM-ECU via the CAN bus lines. If any of the air conditioning control-related signals from the WCM-ECU cannot be received, diagnostic trouble code U0168 is stored.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

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

Past trouble

- If DTC U0168 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 WCM-ECU, and the power supply system to the WCM-ECU. 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.

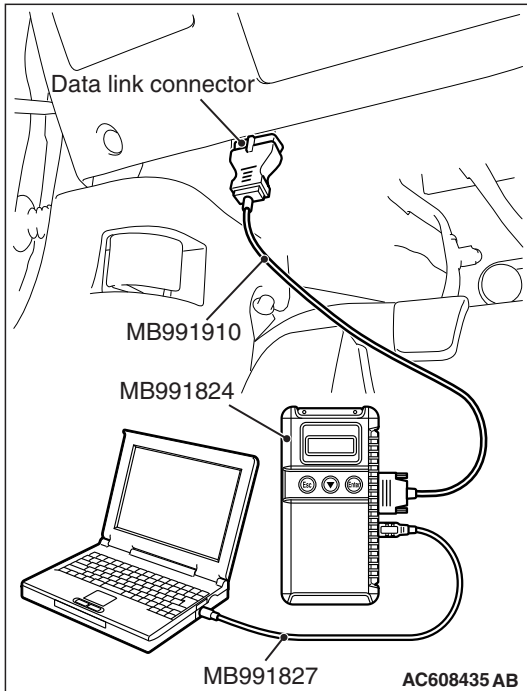
NOTE: For a past trouble, you cannot find it by the scan tool CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13) and check the CAN bus lines. You can 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-9).

TROUBLESHOOTING HINTS

- Malfunction of the WCM-ECU
- 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

STEP 2. Using scan tool MB991958 read the WCM-ECU diagnostic trouble code.

Check whether an WCM-ECU DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for WCM-ECU DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : Diagnose the WCM-ECU (Refer to GROUP 42C, Diagnostic Trouble Code P.42C-18).

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 related to the WCM-ECU 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the WCM-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0184: Audio Time-out**⚠ CAUTION**

If DTC U0184 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

The A/C-ECU receives air conditioning operation-related signals from the audio via the CAN bus lines. If any of the air conditioning control-related signals from the audio cannot be received, the diagnostic trouble code U0184 is stored.

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

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

Past trouble

- If DTC U0184 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 Audio, and the power supply system to the Audio. 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.00-13) 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-9).

TROUBLESHOOTING HINTS

- Malfunction of the Audio
- 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

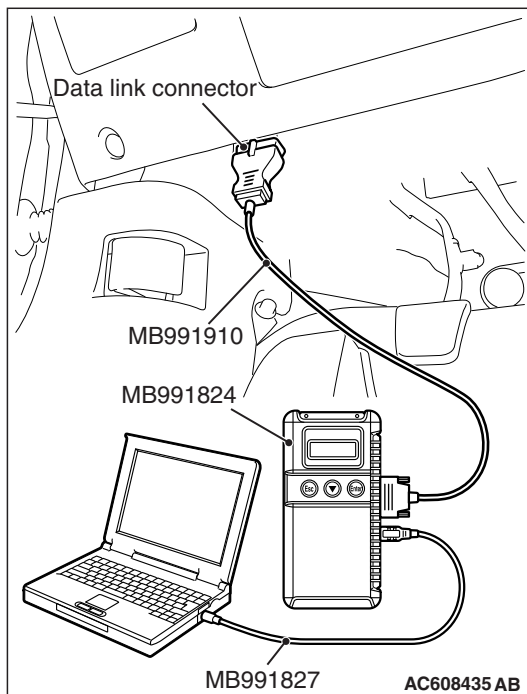
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



STEP 2. Using scan tool MB991958 read the Audio diagnostic trouble code.

Check whether an audio DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for Audio DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the Audio (Refer to GROUP 54A, Diagnostic Trouble Code [P.54A-343](#)).

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.

- ETACS-ECU

DTC indicating a time-out error related to the Audio 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the Audio. On completion, check that the DTC is not reset.

NO : 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.00-13](#).)

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13](#).)

DTC U0195: Satellite radio tuner CAN timeout

⚠ CAUTION

If DTC U0195 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

The A/C-ECU receives air conditioning operation-related signals from the satellite radio via the CAN bus lines. If any of the air conditioning control-related signals from the satellite radio cannot be received, the diagnostic trouble code U0195 is stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC U0195 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 Satellite Radio, and the power supply system to the Satellite Radio. 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.00-13) 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-9).

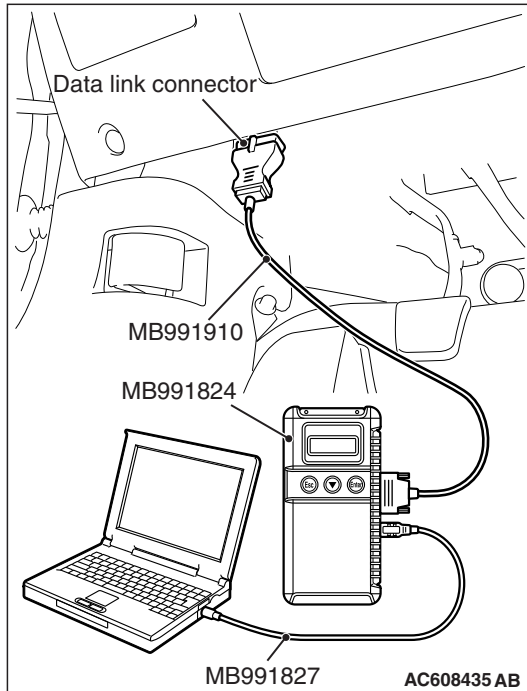
TROUBLESHOOTING HINTS

- Malfunction of the Satellite Radio
- 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).

STEP 2. Using scan tool MB991958 read the Satellite Radio diagnostic trouble code.

Check whether an satellite radio DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for Satellite Radio DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the Satellite Radio (Refer to GROUP 54A, Diagnostic Trouble Code P.54A-639).

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.

- ETACS-ECU
DTC indicating a time-out error related to the Satellite Radio 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the Satellite Radio. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

DTC U0197: Hands Free Module Time-out

 **CAUTION**

If DTC U0197 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

The A/C-ECU receives the air conditioning control-related signals from the hands-free module via the CAN bus lines. If any of the air conditioning control-related signals from the SRS-ECU cannot be received, the diagnostic trouble code U0197 is stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC U0151 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 hands free module, and the power supply system to the hands free 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.00-13) 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-9).

TROUBLESHOOTING HINTS

- Malfunction of the hands free module
- 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

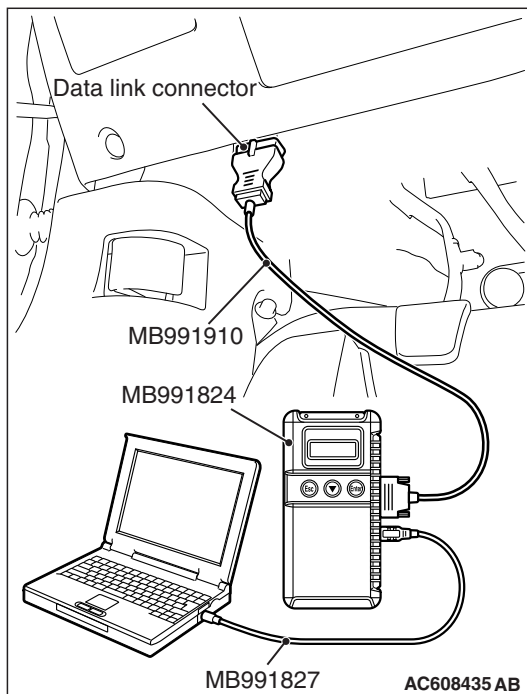
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



STEP 2. Using scan tool MB991958 read the hands free module diagnostic trouble code.

Check whether an hands free module DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for hands free module DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the hands free module (Refer to GROUP 54A, Diagnostic Trouble Code [P.54A-555](#)).

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.

- ETACS-ECU
DTC indicating a time-out error related to the hands free module 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 DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

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 DTC set?

YES : Replace the SRS-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13](#).)

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 DTC set?

YES : Replace the A/C-ECU. On completion, check that the DTC is not reset.

NO : 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.00-13.](#))

SYMPTOM CHART

M1552009900763

⚠ 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 A/C is operation, temperature inside the passenger compartment does not decrease (Cool air is not emitted).	1	P.55-69
Malfunction of the A/C power supply system.	2	P.55-71
The compressor does not work.	3	P.55-75
Blower fan and motor do not turn.	4	P.55-83
Blower air amount cannot be changed.	5	P.55-88
Outside/inside air changeover is not possible.	6	P.55-91
A/C outlet air temperature does not increase.	7	P.55-94
Air outlet vent cannot be changed.	8	P.55-96
Blower motor power supply system.	9	P.55-99

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: When the A/C is Operation, Temperature Inside the Passenger Compartment does not Decrease (Cool Air is not Emitted).

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-ECU
- Malfunction of A/C compressor

DIAGNOSIS

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

⚠ CAUTION

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

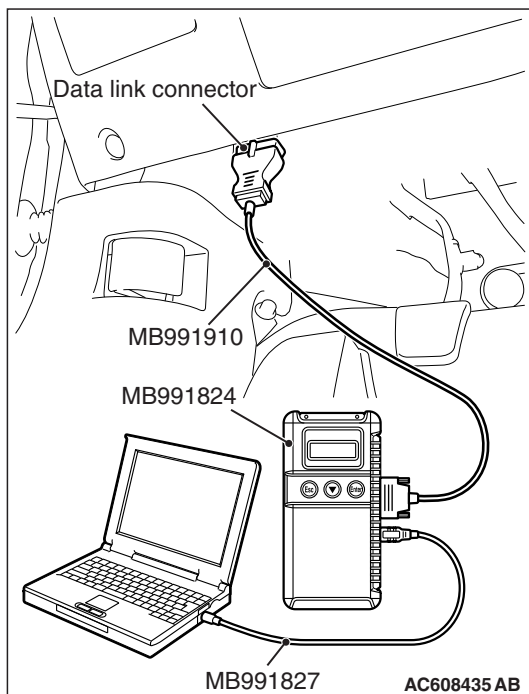
Check if an A/C-ECU DTC is set.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check if the DTC is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Refer to Diagnostic Trouble Code Chart P.55-9.

NO : Go to Step 2.



STEP 2. Check that the blower motor operation when the blower knob is moved to the "Maximum air volume" position.

- (1) Turn the ignition switch to the "ON" position.
- (2) Turn the blower knob to the "Maximum air volume" position

Q: Does the blower motor operate when the blower knob is moved to the "Maximum air volume" position?

YES : Go to Step 3.

NO : Refer to Inspection procedure 4 "Blower fan and motor do not turn [P.55-83](#)."

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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the engine running.
- (3) Check the operations of rear window defogger and outside/inside air selection damper control motor.

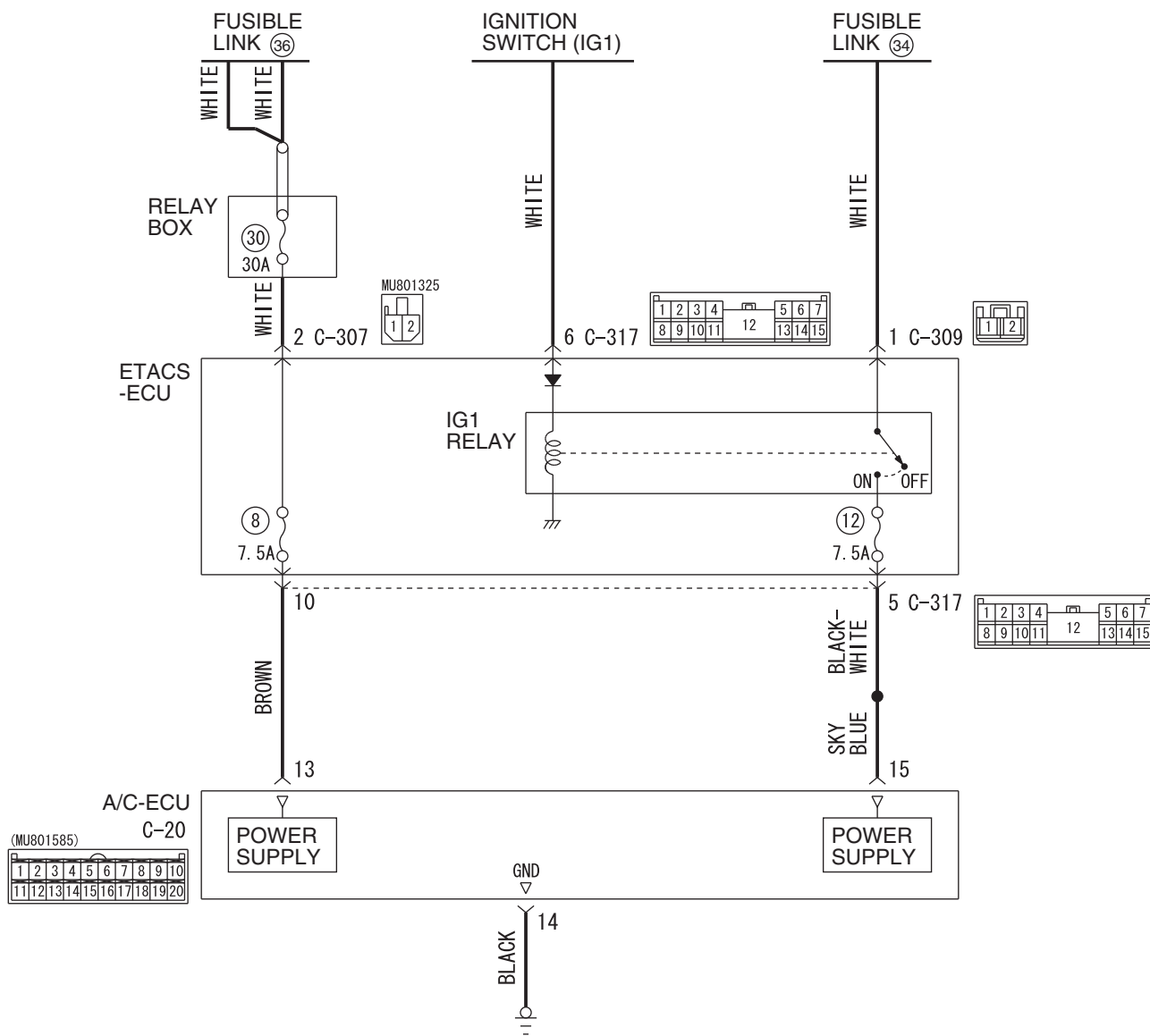
Q: Do the rear window defogger and outside/inside air selection damper control motor work normally?

YES : Refer to Inspection procedure 3 "The A/C compressor does not Work [P.55-75](#)."

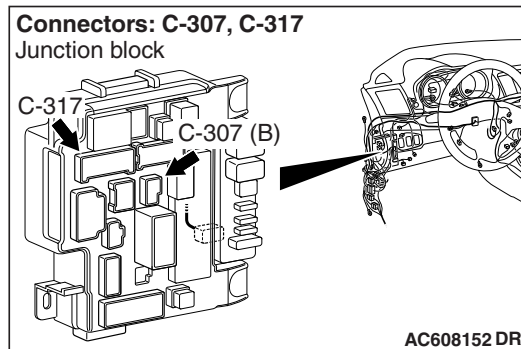
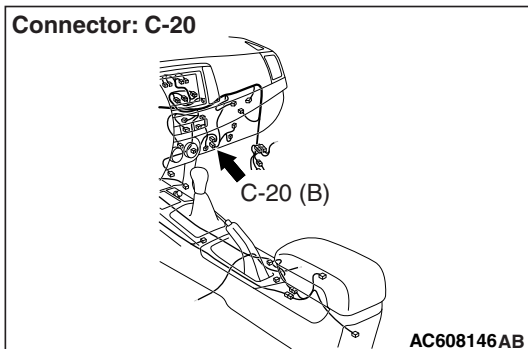
NO : Refer to Inspection procedure 2, "Malfunction of the A/C-ECU power supply system [P.55-71](#)."

INSPECTION PROCEDURE 2: Malfunction of the A/C-ECU Power Supply System.

A/C-ECU Power Supply Circuit



W8G55M011A



TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

- MB991223: Test Harness Set

STEP 1. Check A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-20 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.

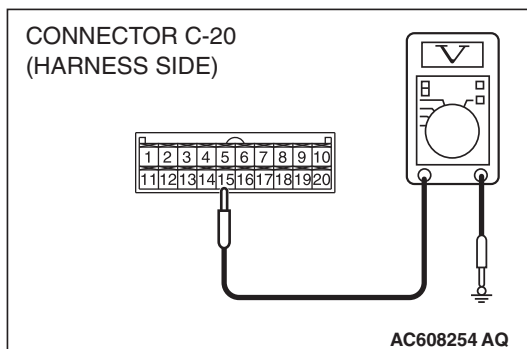
STEP 2. Measure the voltage at A/C-ECU connector C-20.

- (1) Disconnect A/C-ECU connector C-20 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 15 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 5.

NO : Go to Step 3.



STEP 3. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-317 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 15) and ETACS-ECU connector C-317 (terminal 5).

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

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 15) and ETACS-ECU connector C-317 (terminal 5) in good condition?

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

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

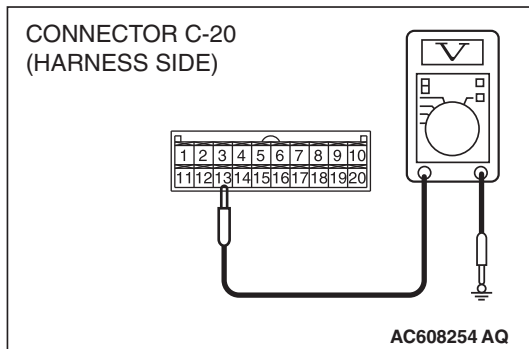
STEP 5. Measure the voltage at A/C-ECU connector C-20.

- (1) Disconnect A/C-ECU connector C-20 and measure the voltage at the harness side.
- (2) Measure the voltage between terminal 13 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 V?

YES : Go to Step 7.

NO : Go to Step 6.



STEP 6. Check the wiring harness between A/C-ECU connector C-20 (terminal 13) and the fusible link (36).

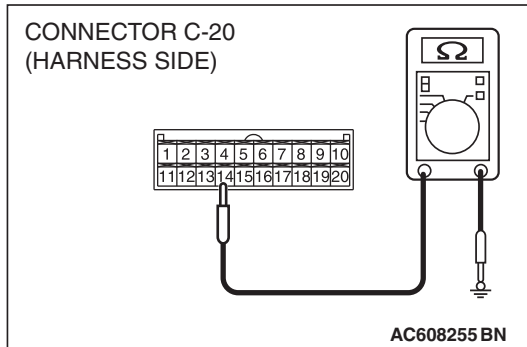
NOTE: Also check ETACS-ECU connector C-317 and C-307 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connector C-317 and C-307 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 13) and the fusible link (36) in good condition?

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

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



STEP 7. Measure the resistance at A/C-ECU connector C-20.

- (1) Disconnect A/C-ECU connector C-20, and measure at the wiring harness side.
- (2) Measure the resistance between terminal 14 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 8.

STEP 8. Check the wiring harness between A/C-ECU connector C-20 (terminal 14) and the ground.

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

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 14) and ground in good condition?

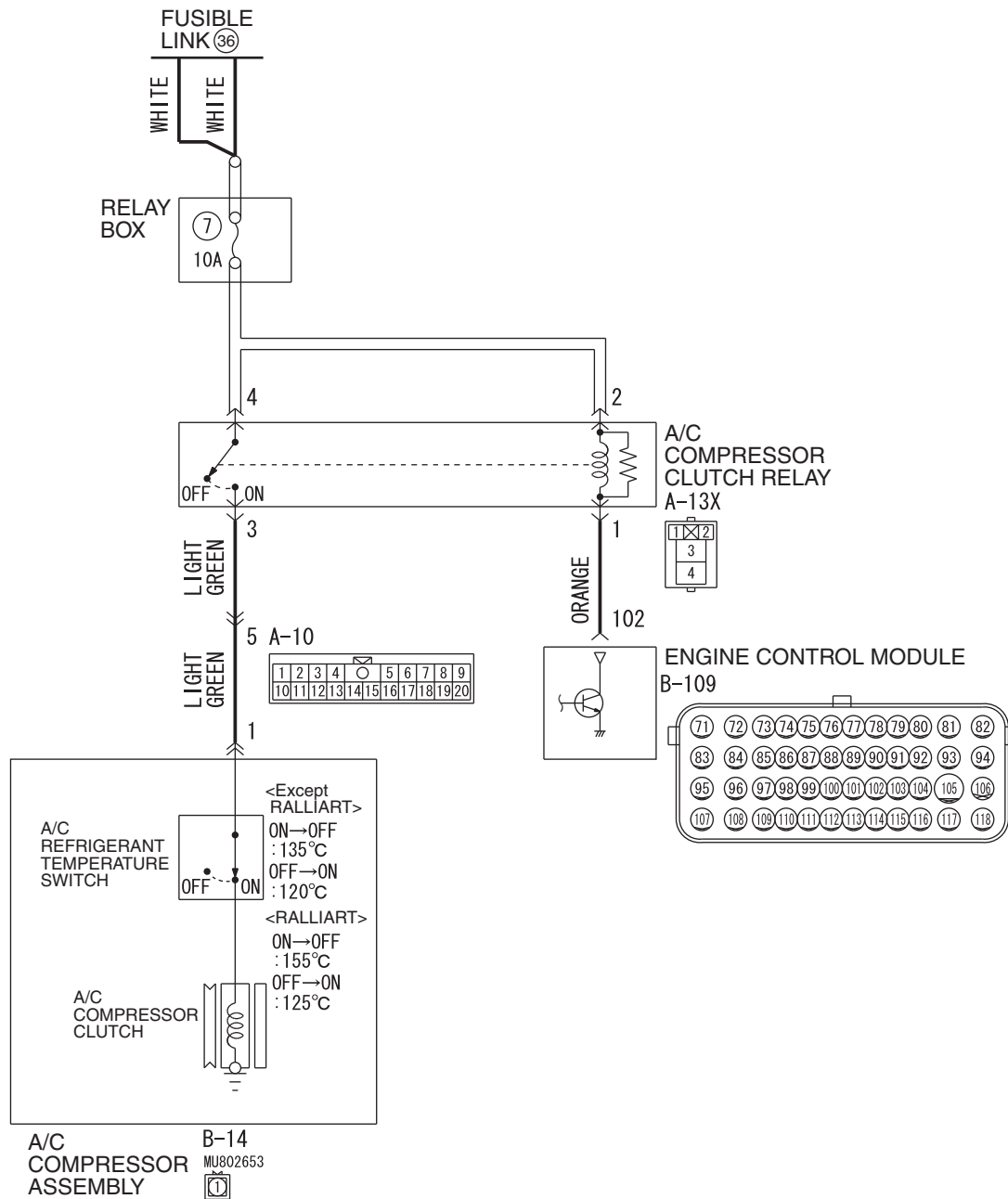
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

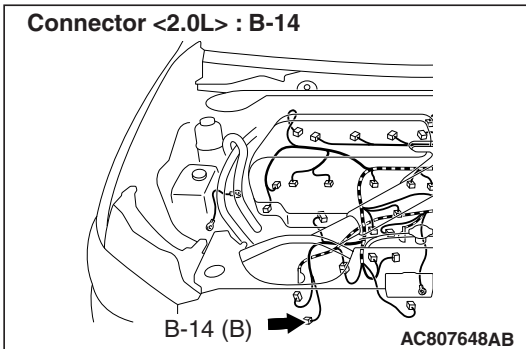
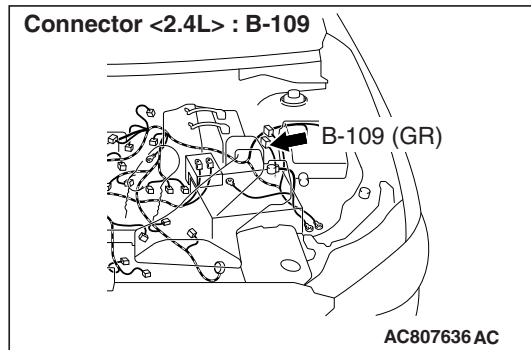
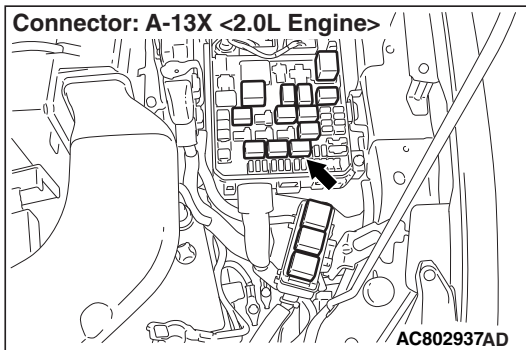
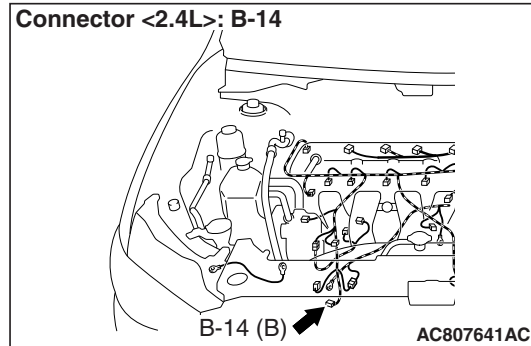
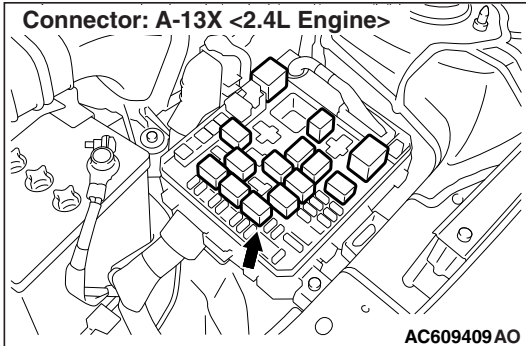
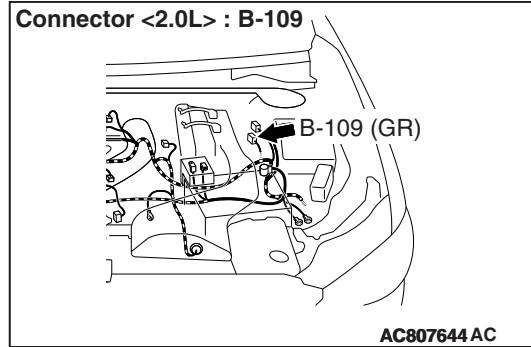
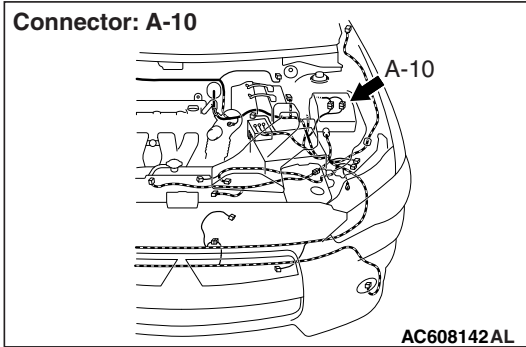
NO : Repair the wiring harness. Check that the A/C works normally.

INSPECTION PROCEDURE 3: The Compressor does not Work.

A/C Compressor Assembly Circuit



AC807944
 W8G55M009A



FUNCTION

Compressor that recovers the refrigerant, which evaporated in the evaporator and became a high-temperature and high-pressure gas, and turns it into liquid again.

PROBABLE CAUSES

- Insufficient refrigerant
- Malfunction of connector.
- Malfunction of the harness (A/C compressor circuit is open/shorted to ground)
- Malfunction of the A/C pressure sensor.
- Malfunction of the A/C compressor.
- Malfunction of the A/C compressor clutch relay.
- Malfunction of the A/C-ECU.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991658: Test Harness Set
- 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

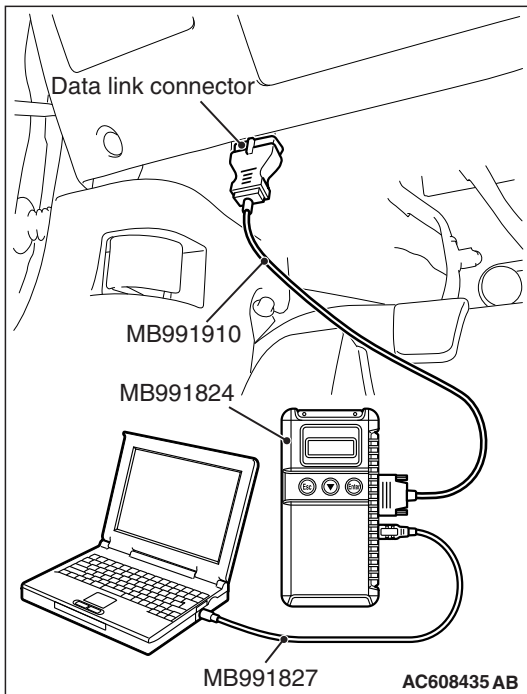
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (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-16).



STEP 2. 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 DTC set?

- YES** : Refer to Diagnostic Trouble Code Chart [P.55-9](#).
NO : Go to Step 3.

STEP 3. Check A/C compressor assembly connector B-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Is A/C compressor assembly connector B-14 in good condition?**

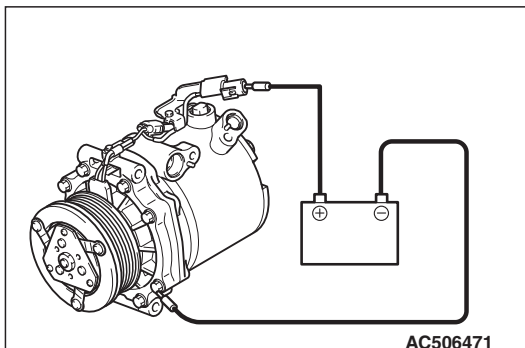
- YES** : Go to Step 4.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 4. 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?

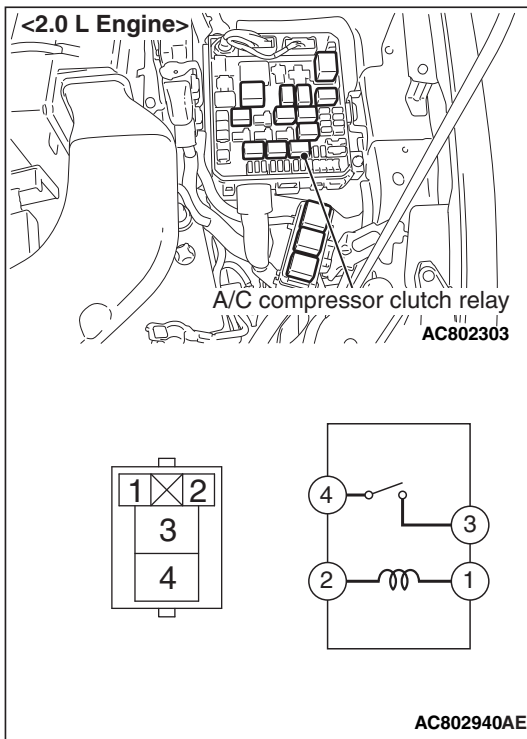
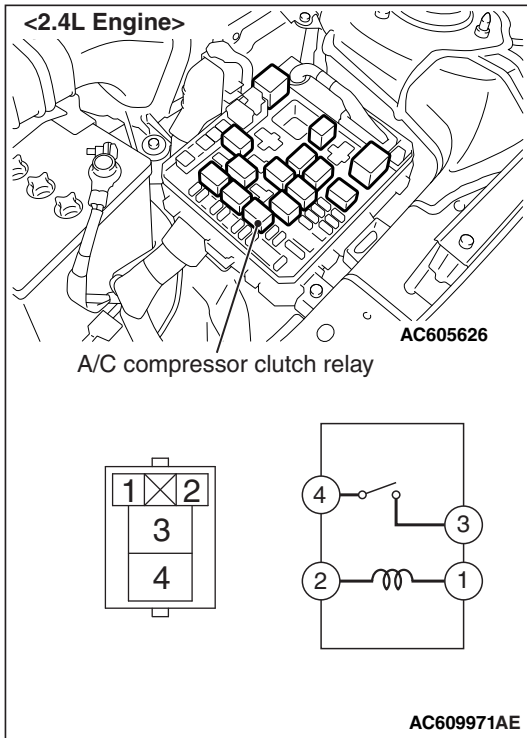
- YES** : Go to Step 5.
NO : Replace the compressor magnet clutch.

**STEP 5. Check A/C compressor clutch relay connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Is A/C compressor clutch relay connector A-13X in good condition?**

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

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	3 -4	Open circuit
<ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 1 to the negative battery terminal 	3 -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.

STEP 7. Check engine control module connector B-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is engine control module connector B-109 in good condition?

YES : Go to Step 8.

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

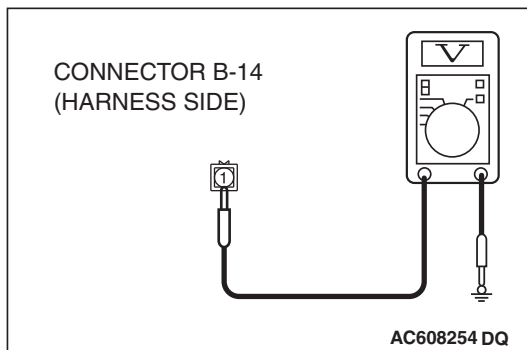
STEP 8. Measure the voltage at A/C compressor assembly connector B-14.

- (1) Disconnect A/C compressor assembly connector B-14 and measure the voltage at the wiring harness side.
- (2) Disconnect powertrain control module connector B-109 and ground harness side terminal No.102.
- (3) Turn the ignition switch to the "ON" position.
- (4) A/C compressor assembly connector B-14 terminal 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 13.

NO : Go to Step 9.



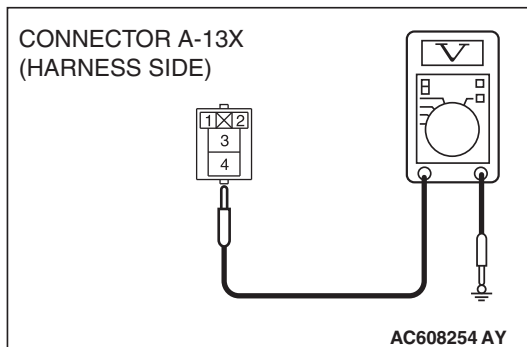
STEP 9. Measure the voltage at A/C compressor clutch relay connector A-13X.

- (1) Disconnect A/C compressor connector A-13X and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 4 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).
- (4) Measure the voltage between terminal 2 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 11.

NO : Go to Step 10.



STEP 10. Check the wiring harness between A/C compressor clutch relay connector A-13X (terminals 2 and 4) and the fusible link (36).

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

Q: Is the wiring harness between A/C compressor clutch relay connector A-13X (terminals 2 and 4) and the fusible link (36) in good condition?

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

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

STEP 11. Check the wiring harness between A/C compressor clutch relay connector A-13X (terminal 3) and A/C compressor assembly connector B-14 (terminal 1).

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

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

Q: Is the wiring harness between A/C compressor clutch relay connector A-13X (terminal 3) and A/C compressor assembly connector B-14 (terminal 1) in good condition?

YES : Go to Step 12.

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

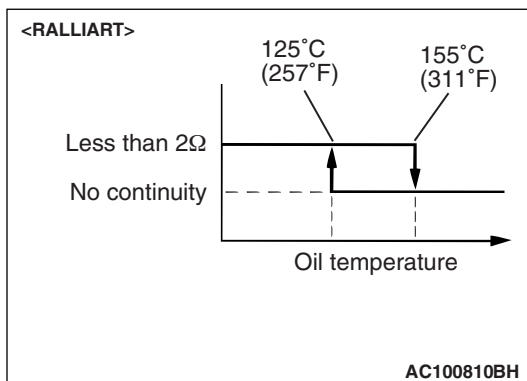
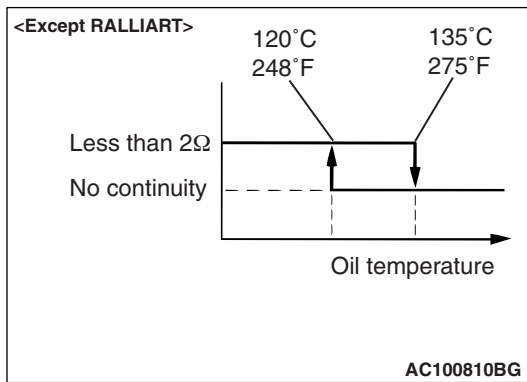
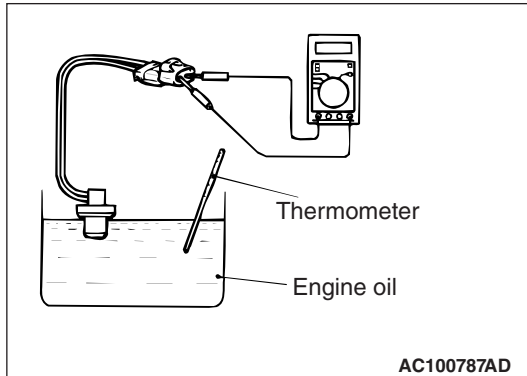
STEP 12. Check the wiring harness between powertrain control module connector B-109 (terminal 102) and A/C compressor clutch relay connector A-13X (terminal 1).

- Check the powertrain control module signal line for open or short circuit.

Q: Is the wiring harness between powertrain control module connector B-109 (terminal 102) and A/C compressor clutch relay connector A-13X (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.00-13](#).

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

**STEP 13. 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 resistance is supplied between the terminals.

Standard value <Except RALLIART>

ITEM	TEMPERATURE
Less than 2 ohms	Slightly below 120° C (248° F)
No continuity	135° C (275° F) or more

NOTE: When the oil temperature is 135° C (275° F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 120° C (248° F) or less.

Standard value <RALLIART>

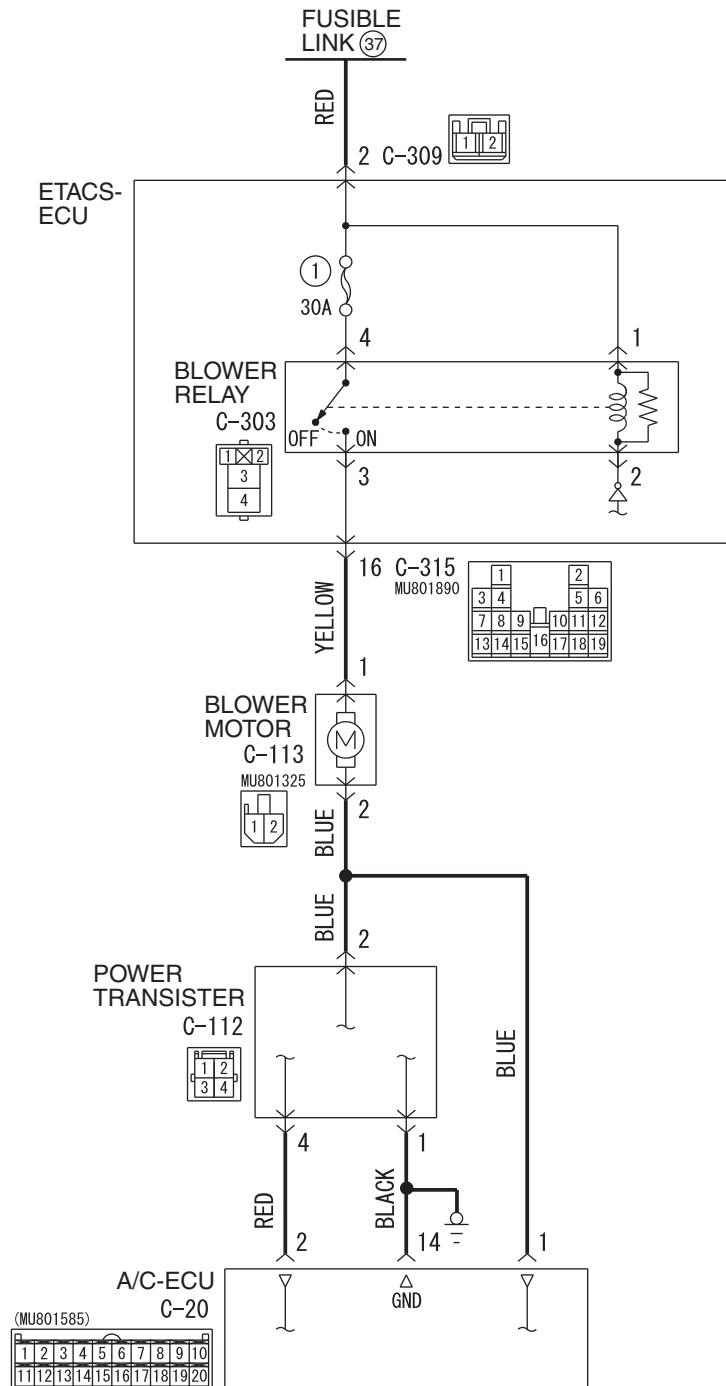
ITEM	TEMPERATURE
Less than 2 ohms	Slightly below 125° C (257° F)
No continuity	155° C (311° F) or more

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.

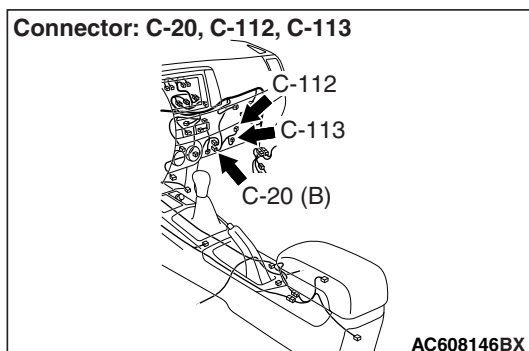
Q: Is the refrigerant temperature switch operating properly?**YES** : Go to Step 14.**NO** : Replace the refrigerant temperature switch. Check that the A/C works normally.**STEP 14. Replace the A/C-ECU.****Q: Does the A/C operate normally?****YES** : No action is necessary and testing is complete.**NO** : Replace the powertrain control module. Check that the A/C works normally.

INSPECTION PROCEDURE 4: Blower Fan and Motor do not Turn.

Blower Motor Circuit



W8G55M010A



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

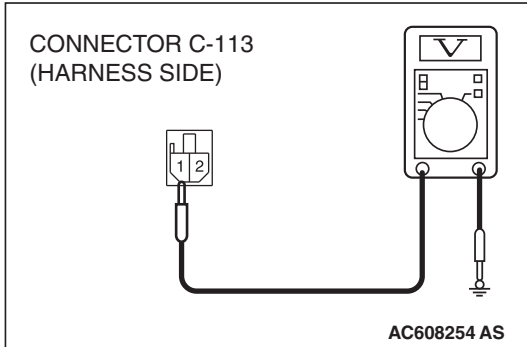
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check blower motor connector C-113 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower motor connector C-113 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-113.

- (1) Disconnect blower motor connector C-113, and measure the voltage at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the blower switch to the "Maximum air volume" position.
- (4) Measure the voltage between terminal 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 3.

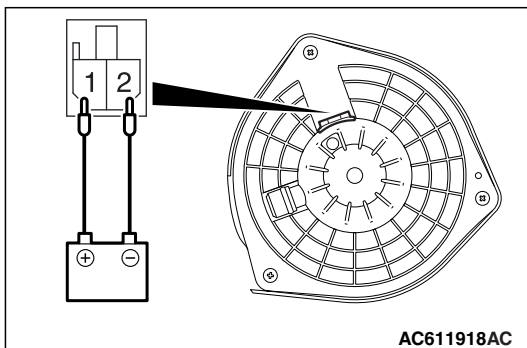
NO : Refer to Inspection procedure 9, "Blower motor power supply system P.55-99."

STEP 3. Check blower motor connector C-113 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower motor connector C-113 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 fan and motor operation.

Check that the motor turns when applying battery power between the connector terminals. Also check to see that there is no abnormal sound emitted from the motor at this time..

Q: Is there any abnormal noise?

YES : Go to Step 5.

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

STEP 5. Check A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-20 in good condition?

YES : Go to Step 6.

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

STEP 6. Check the wiring harness between A/C-ECU connector C-20 (terminal 1) and blower motor connector C-113 (terminal 2).

- Check the AC-ECU signal line for open or short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 1) and blower motor connector C-113 (terminal 2) in good condition?

YES : Go to Step 7.

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

STEP 7. Check power transistor connector C-112 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power transistor connector C-112 in good condition?

YES : Go to Step 8.

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

STEP 8. Measure the resistance at power transistor connector C-112.

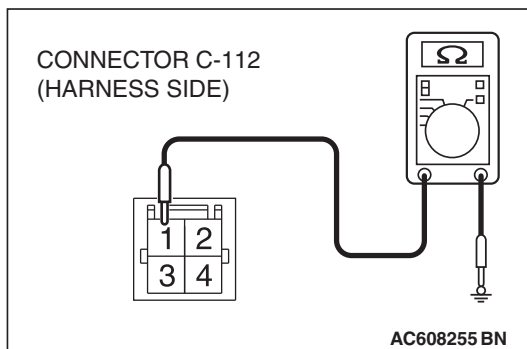
- (1) Disconnect power transistor connector C-112, and measure the resistance at the wiring harness side.
- (2) Measure the resistance value between terminal 1 and ground.

OK: The measured value should be 2 ohms or less

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

YES : Go to Step 10.

NO : Go to Step 9.



STEP 9. Check the wiring harness between power transistor connector C-112 (terminal 1) and ground.

- Check the power transistor ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-112 (terminal 1) and ground in good condition?

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

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

STEP 10. Check the wiring harness between A/C-ECU connector C-20 (terminals 1 and 2) and power transistor connector C-112 (terminals 2 and 4).

- Check the AC-ECU signal line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminals 1 and 2) and power transistor connector C-112 (terminals 2 and 4) in good condition?

YES : Go to Step 11.

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

STEP 11. Replace the power transistor and check the trouble symptom again

Check the trouble symptom again.

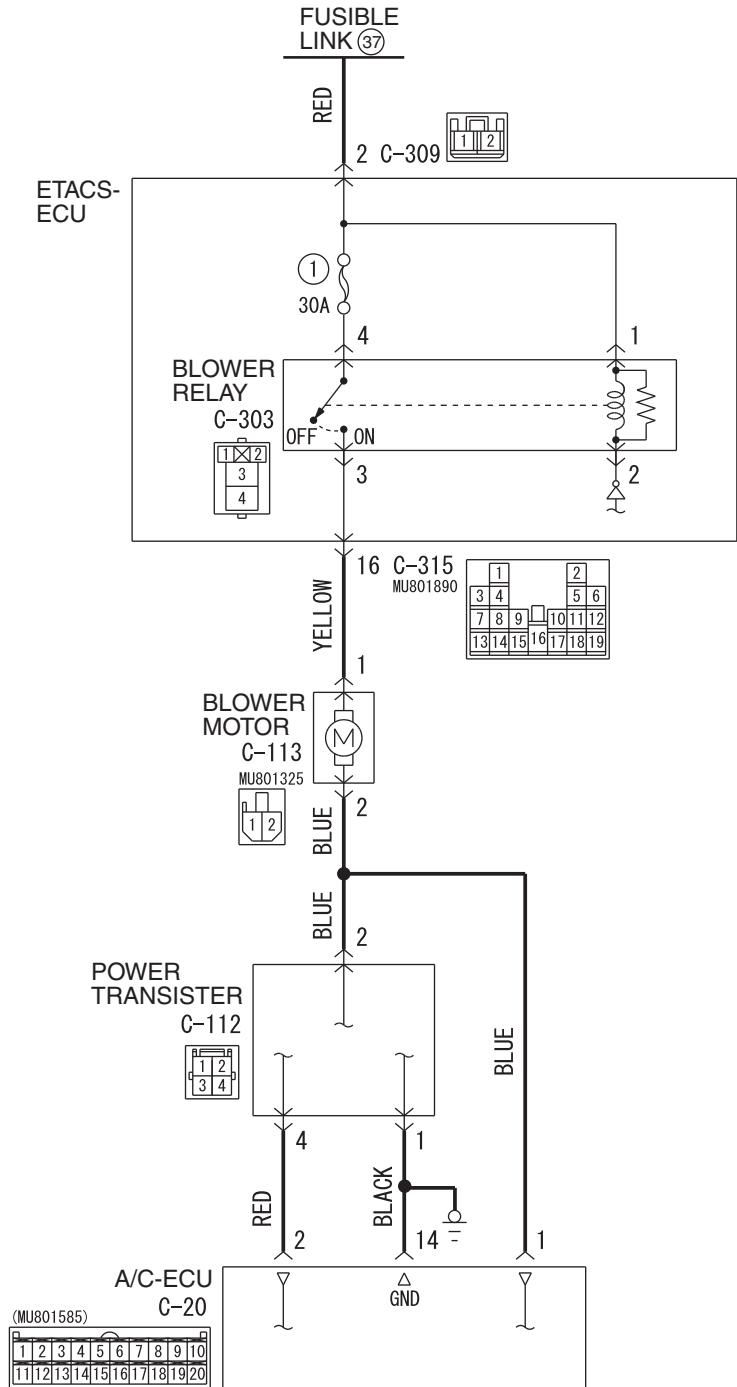
Q: Is the check result satisfactory?

YES : The procedure is complete.

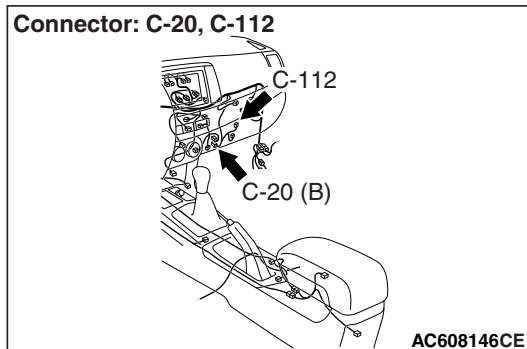
NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 5: Blower Air Amount cannot be Changed.

Blower Motor Circuit



W8G55M010A



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 A/C-ECU
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check power transistor connector C-112 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power transistor connector C-112 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-112.

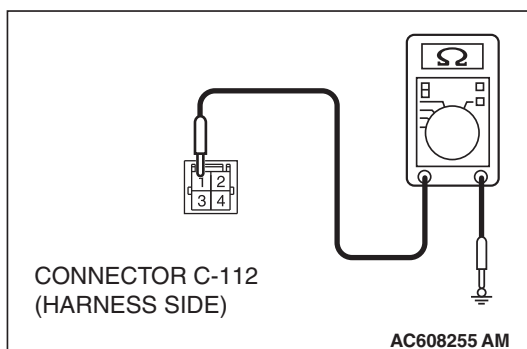
- (1) Disconnect power transistor connector C-112, and measure the resistance at the wiring harness side.
- (2) Measure the resistance value between terminal 1 and ground.

OK: 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-112 (terminal 1) and ground.

- Check the power transistor ground line for open circuit.

Q: Is the wiring harness between power transistor connector C-112 (terminal 1) and ground in good condition?

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

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

STEP 4. Check A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Is A/C-ECU connector C-20 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 A/C-ECU connector C-20 (terminals 1 and 2) and power transistor connector C-112 (terminals 2 and 4).

- Check the AC-ECU signal line for open and short circuit.

Q: Is the wiring harness between A/C-ECU connector C-20 (terminals 1 and 2) and power transistor connector C-112 (terminals 2 and 4) in good condition?

YES : Go to Step 6.

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

STEP 6. Replace the power transistor and check the trouble symptom again

Check the trouble symptom again.

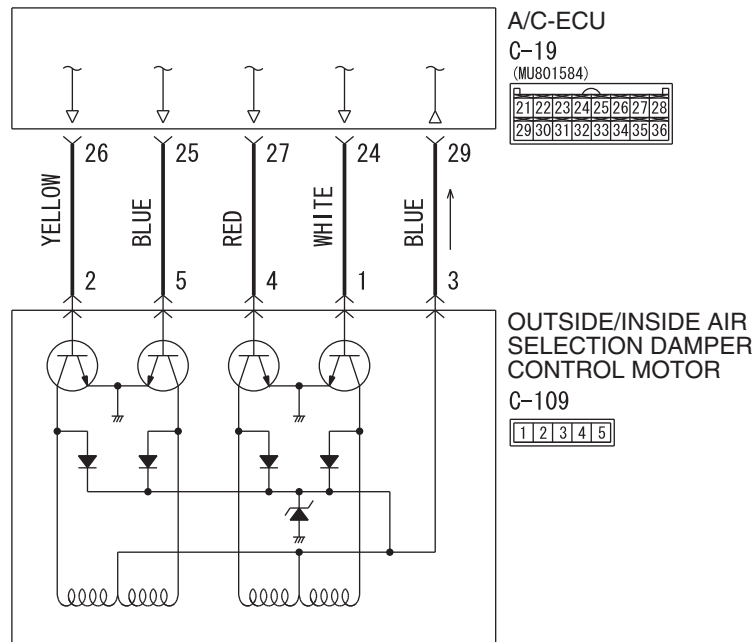
Q: Is the check result satisfactory?

YES : The procedure is complete.

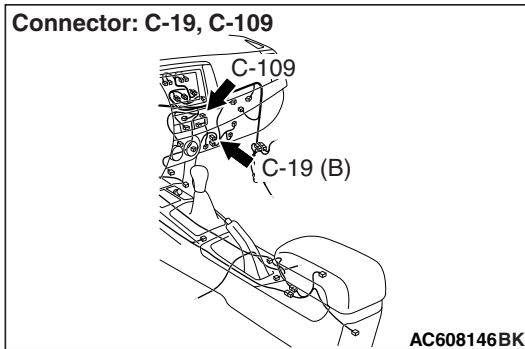
NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 6: Outside/Inside Air Changeover is not possible.

Outside/Inside Air Selection Damper Control Motor Circuit



W8G55M007A



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (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, check for diagnostic trouble code.**⚠ CAUTION**

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

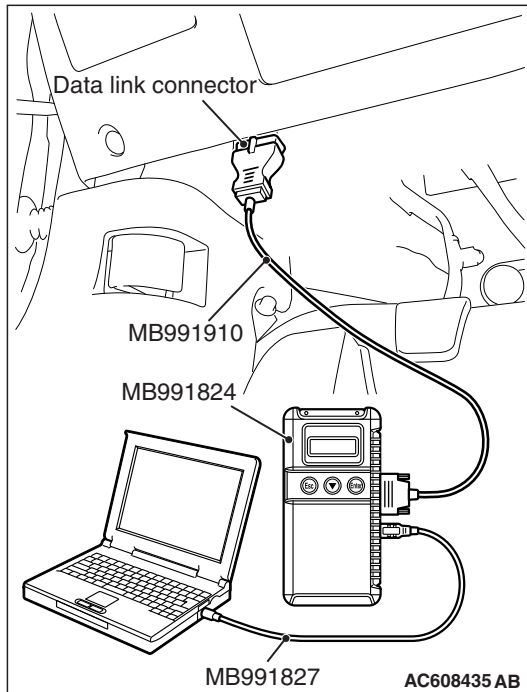
Check if an A/C-ECU DTC is set.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55-6."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check if the DTC is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Refer to DIAGNOSTIC TROUBLE CODE CHART P.55-9.

NO : Go to Step 2.

**STEP 2. Check outside/inside air selection damper control motor connector C-109 and A/C-ECU connector C-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are outside/inside air selection damper control motor connector C-109 and A/C-ECU connector C-19 in good condition?**

YES : Go to Step 3.

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

STEP 3. Check the wiring harness between A/C-ECU connector C-19 (terminals 26, 25, 27, 24 and 29) and outside/inside air selection damper control motor connector C-109 (terminals 2, 5, 4, 1 and 3).

- Check the AC-ECU signal line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connector C-19 (terminals 26, 25, 27, 24 and 29) and outside/inside air selection damper control motor connector C-109 (terminals 2, 5, 4, 1 and 3) in good condition?

YES : Go to Step 4.

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

STEP 4. Replace the outside/inside air selection damper control motor and check the trouble symptom again
Check the trouble symptom again.

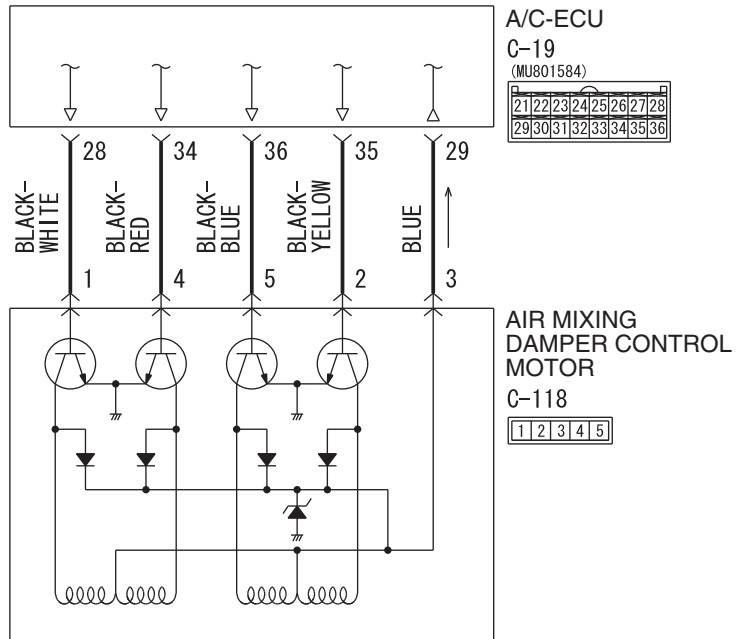
Q: Is the check result satisfactory?

YES : The procedure is complete.

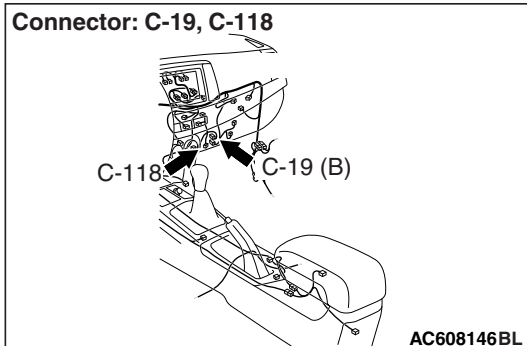
NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 7: A/C Outlet Air Temperature does not Increase

Air Mixing Damper Control Motor Circuit



W8G55M008A



CIRCUIT OPERATION

If the air outlet temperature cannot be adjusted, the air mixing damper control motor circuit may be failed.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (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, check for diagnostic trouble code.

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

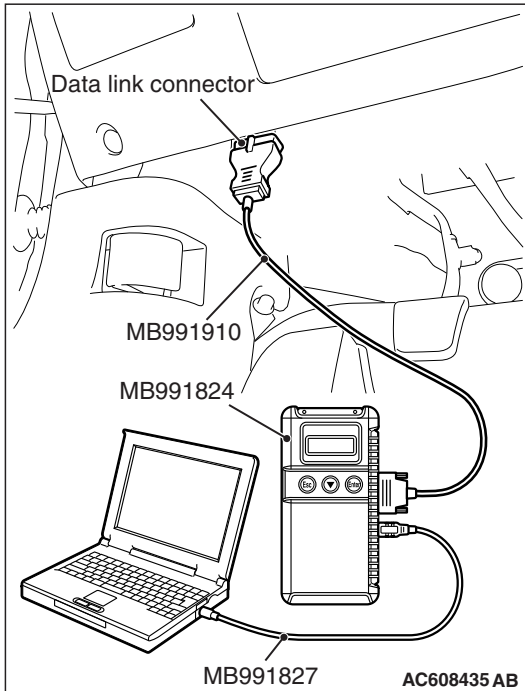
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check if the DTC is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Refer to DIAGNOSTIC TROUBLE CODE CHART

[P.55-68.](#)

NO : Go to Step 2.



STEP 2. Check air mixing damper control motor connector C-118 and A/C-ECU connector C-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are air mixing damper control motor connector C-118 and A/C-ECU connector C-19 in good condition?

YES : Go to Step 3.

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

STEP 3. Check the wiring harness between A/C-ECU connector C-19 (terminals 29, 35, 36, 34 and 28) and air mixing damper control motor connector C-118 (terminals 3, 2, 5, 4 and 1).

- Check the AC-ECU signal line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connector C-19 (terminals 29, 35, 36, 34 and 28) and air mixing damper control motor connector C-118 (terminals 3, 2, 5, 4 and 1) in good condition?

YES : Go to Step 4.

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

STEP 4. Replace the air mixing damper control motor and check the trouble symptom again

Check the trouble symptom again.

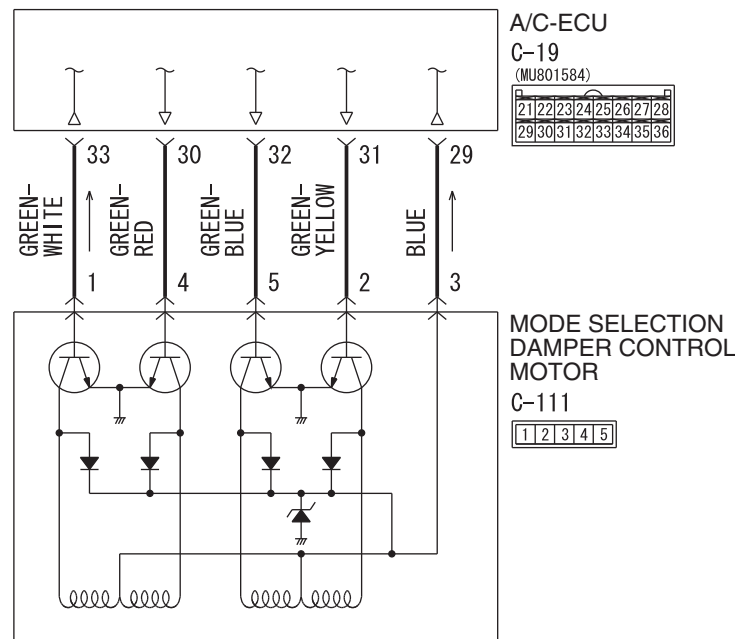
Q: Is the check result satisfactory?

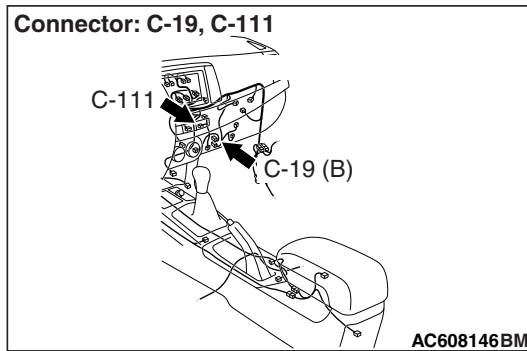
YES : The procedure is complete.

NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 8: Air Outlet Vent cannot be Changed.

Mode Selection Damper Control Motor Circuit





CIRCUIT OPERATION

If the air outlet cannot be switched, the mode selection damper control motor circuit may be failed.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (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, check for diagnostic trouble code.

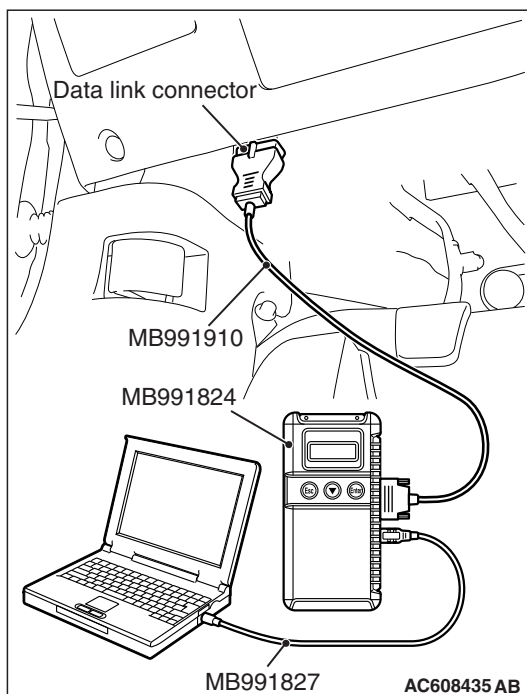
Check if an A/C-ECU DTC is set.

- (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 DTC set?

YES : Refer to DIAGNOSTIC TROUBLE CODE CHART
[P.55-9.](#)

NO : Go to Step 2.



STEP 2. Check mode selection damper control motor connector C-111 and A/C-ECU connector C-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are mode selection damper control motor connector C-111 and A/C-ECU connector C-19 in good condition?

YES : Go to Step 3.

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

STEP 3. Check the wiring harness between A/C-ECU connector C-19 (terminals 29, 31, 32, 30 and 33) and mode selection damper control motor connector C-111 (terminals 3, 2, 5, 4 and 1).

- Check the AC-ECU signal line for open and short circuit.

Q: Are the wiring harness between A/C-ECU connector C-19 (terminals 29, 31, 32, 30 and 33) and mode selection damper control motor connector C-111 (terminals 3, 2, 5, 4 and 1) in good condition?

YES : Go to Step 4.

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

STEP 4. Replace the mode selection damper control motor and check the trouble symptom again
Check the trouble symptom again.

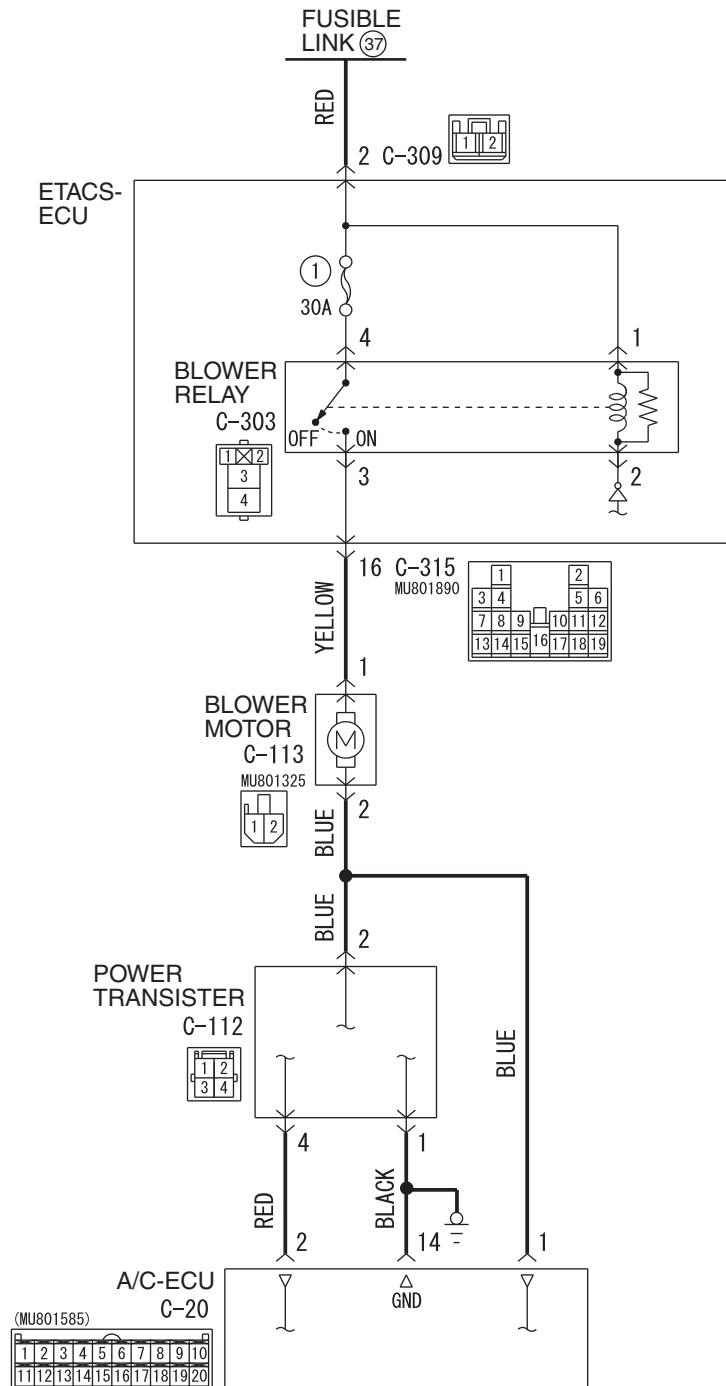
Q: Is the check result satisfactory?

YES : The procedure is complete.

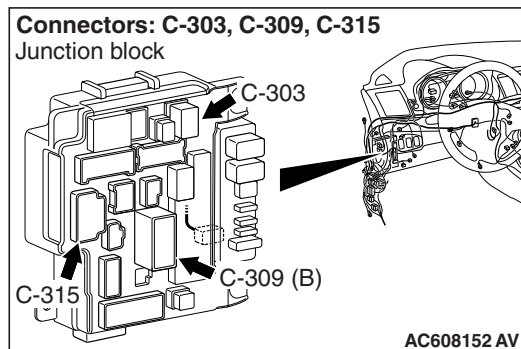
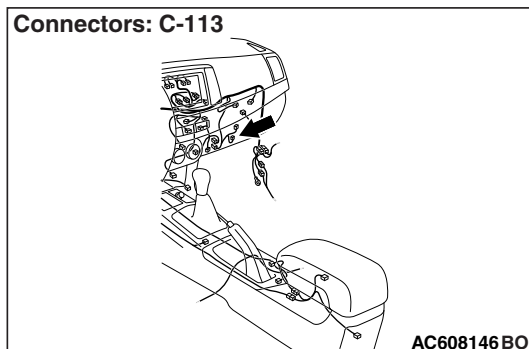
NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 9: Blower Motor power supply system.

Blower Motor Circuit



W8G55M010A



TECHNICAL DESCRIPTION (COMMENT)

If the voltage is not supplied to the blower motor, the blower relay system may be failed.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Malfunction of the blower relay
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check blower relay connector C-303 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower relay connector C-303 in good condition?

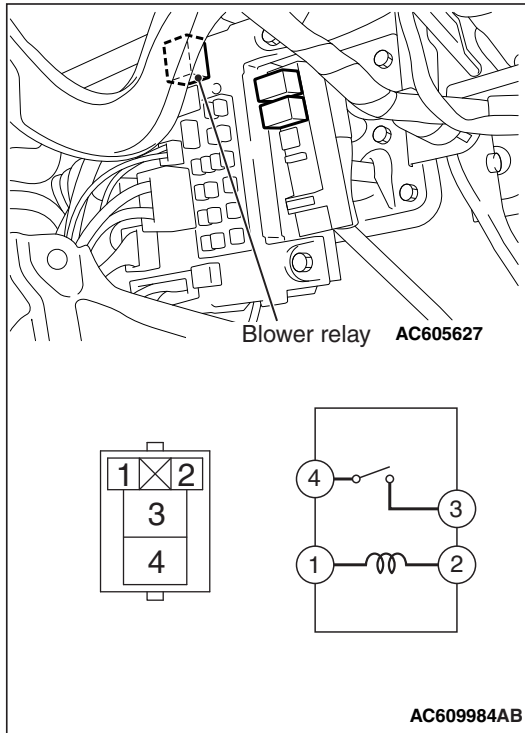
YES : Go to Step 2.

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

STEP 2. Check the blower relay continuity.

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

Battery voltage	Tester connection	Specified condition
Not applied	3 -4	Open circuit
<ul style="list-style-type: none"> Connect terminal 1 to the positive battery terminal Connect terminal 2 to the negative battery terminal 	3 -4	Less than 2 ohms



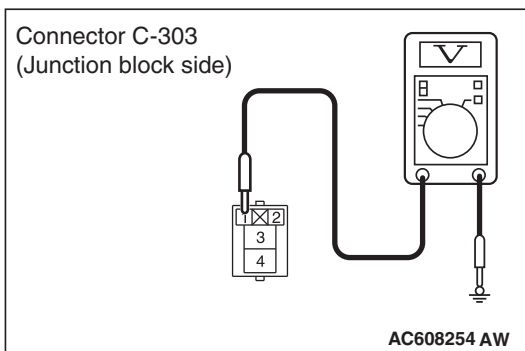
Q: Is the blower relay in good condition?

YES : Go to Step 3.

NO : Replace the rear window defogger relay.

STEP 3. Measure the voltage at blower relay connector C-303.

- Disconnect blower relay connector C-303, and measure the voltage at the junction block side.
 - The measured value should be approximately 12 volts (battery positive voltage).
- Measure the voltage between terminals 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

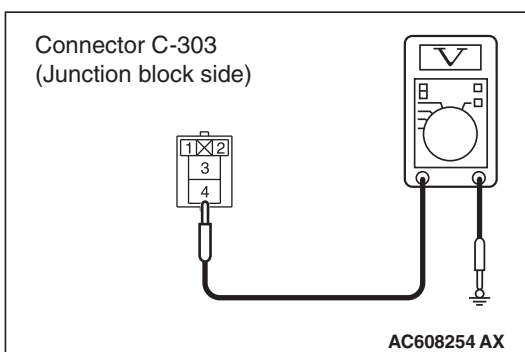


- Measure the voltage between terminals 4 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between blower relay connector C-303 (terminals 1 and 4) and the fusible link (37).

NOTE: Also check ETACS-ECU connector C-309 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connector C-309 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-303 (terminals 1 and 4) and the fusible link (37) in good condition?

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

NO : Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Check blower relay connector C-113 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower relay connector C-113 in good condition?

YES : Go to Step 6.

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

STEP 6. Check the wiring harness between blower relay connector C-303 (terminal 3) and blower motor connector C-113 (terminal 1).

NOTE: Also check ETACS-ECU connector C-315 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connector C-315 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

Q: Is the wiring harness between blower relay connector C-303 (terminal 3) and blower motor connector C-113 (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.00-13.

NO : Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

DATA LIST REFERENCE TABLE

M1554005101236

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Engine speed	17	-	Displays correct engine speed.
Ambient temperature sensor	19	-	Ambient temperature is the same as scan tool displayed temperature
Air thermo sensor	20	-	Evaporator outlet temperature is the same as scan tool displayed temperature.
Interior temperature sensor	21	-	Interior temperature is the same as scan tool displayed temperature
Temperature setting	23		Displays air conditioning set temperature.
ETC sensor	24	-	Engine coolant temperature is the same as scan tool displayed temperature.
Vehicle speed	26	-	Displays vehicle speed.
A/C Compressor drive request	27	Compressor ON	ON
		Compressor OFF	OFF
Air conditioning switch	28	Air conditioning switch ON	ON
		Air conditioning switch OFF	OFF
Refrigerant leak	29	-	Normal
Idle up request	34	-	Displays idle-up request signal.
Rear heater SW light*	35	-	-
PTC heater 1*	36	-	-
PTC heater 2*	37	-	-
PTC heater 3*	38	-	-
In/out select damp poten (target)	45	-	Displays outside/inside air selection damper target position.
In/out select damp potentiometer	46	-	Displays outside/inside air selection damper position.
Air outlet c/o potentiometer	55	-	Displays air outlet changeover damper position.
Air outlet c/o potentio. (Target)	56	-	Displays air outlet changeover damper target position.

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Low pressure judgment	57	–	Normal
Rear defogger switch	60	Rear window defogger switch ON	ON
		Rear window defogger switch OFF	OFF
Pressure sensor	61	–	Displays refrigerant pressure.
Air mix potentiometer	63	–	Displays the air mix damper position.
Photo sensor*	67	–	-
Front blower fan	68	–	Displays blower motor condition.
Front blower fan (Target)	69	–	Displays blower motor target value.
Refrigerant pressure	73	–	Displays refrigerant pressure status.
Condenser fan	74	–	Displays condenser fan running condition.
Temp. set dial position	76	–	Displays the set temperature output value on the control panel.
A/C Panel type	77	–	Display A/C panel type
Fan set dial position	78	–	Displays the air volume output value on the control panel.
Air outlet c/o set dial position	79	–	Displays output value to the air outlet changeover dial on the control panel.
Fan set dial operation flag	80	–	ON when the air volume adjusting dial is operated
A/C SW operation flag	81	–	ON when the air conditioning switch is operated
Temp. set dial operation flag	82	–	ON when the air conditioning switch is operated
Defogger flag	83	–	ON when the air outlet changeover dial is set to the DEF position.
In/out air c/o SW operation flag	84	–	ON when the inside air/outside air changeover switch is operated

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Rear defogger SW operation flag	87	–	ON when the rear window switch is operated
Rear defogger SW light	88	–	Displays rear window switch indicator status.
A/C SW light	89	–	Displays air conditioning switch indicator status.
In/out air c/o SW light	90	–	Displays the status of the inside air/outside air changeover switch indicator.
A/C Compressor drive flag	91	–	ON when the compressor is activated.
Wiper operation flag	92	–	ON when the wiper is operated.
Ignition position information	93	–	Ignition switch position status
Power source voltage	94	–	Displays power supply voltage.
IOD fuse equipment flag	95	–	IOD fuse status
A/T lock up open request	96	–	Displays A/T lock open request signal.
System operation time	100	–	–
Compressor use times	101	–	–
Rear defogger use times	102	–	–
In/out air c/o poten drive time	103	–	–
Air outlet c/o poten drive time	104	–	–
Air mix potentiometer drive time	105	–	–
Hot state time (Interior TEMP.)	106	–	–
Cold state time (Interior TEMP.)	107	–	–
Hot state time (Ambient TEMP.)	108	–	–
Cold state time (Ambient TEMP.)	109	–	–
Maximum ambient temperature	110	–	–
Minimum ambient temperature	111	–	–
Maximum Engine coolant TEMP.	112	–	–
Engine high speed time	113	–	–

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Maximum Engine speed	114	–	–
High pressure drive time	115	–	–
High pressure cut times	116	–	–
Maximum pressure (kPa)	117	–	–
A/C use rate	118	–	–
Compressor operation rate	119	–	–
Eco operation rate	120	–	–
Recirc use rate	121	–	–
A/C operation times	122	–	–
In/out air c/o operation times	123	–	–
Mode dial operation times	124	–	–
Blower fan dial operation times	125	–	–
TEMP. set dial operation times	126	–	–
FACE mode use rate	127	–	–
B/L mode use rate	128	–	–
FOOT mode use rate	129	–	–
D/F mode use rate	130	–	–
DEF mode use rate	131	–	–
Fan OFF use rate	132	–	–
Fan 1-2step use rate	133	–	–
Fan 3-4step use rate	134	–	–
Fan 5-6step use rate	135	–	–
Fan 7-8step use rate	136	–	–
Temp 1-7 step use rate	137	–	–
Temp 8-10step use rate	138	–	–
Temp 11-13 step use rate	139	–	–
Temp 17-19step use rate	140	–	–
Temp 20-22step use rate	141	–	–
Temp 23-29step use rate	142	–	–
PTC heater1 use times*	143	–	–
PTC heater2 use times*	144	–	–
PTC heater3 use times*	145	–	–
Fan LO driving time	146	–	–
Fan M1 driving time	147	–	–

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Fan M2 driving time	148	-	-
Fan HI driving time	149	-	-
Rear PTC heater counter*	150	-	-

*NOTE: * shows that it is displayed but not used.*

ACTUATOR TEST

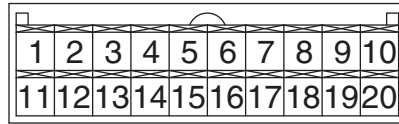
M1554005201147

Item No.	Check items	Operation condition	Normal operation
2	idle up request	Engine is running	Idle-up signal transmission
5	In/out selection damper	-	The moving position of outside/inside air selection damper motor
6	Air mix damper motor	-	The moving position of air mix damper motor
7	Front blower fan	-	The amount of blower motor rotation
8	Air outlet c/o damper	-	Air outlet changeover damper motor moving position
10	Condenser fan	Engine is running	The amount of condenser fan rotation
11	Air conditioning	Engine is running	A/C switch selection position
12	Rear defogger switch	Engine is running	Rear window defogger switch selection position
13	A/T lock open request	-	-

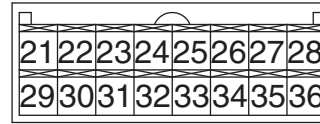
CHECK AT A/C-ECU TERMINAL

M1552010302341

C-20



C-19



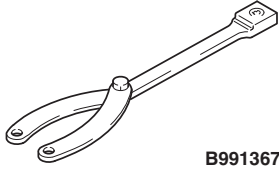
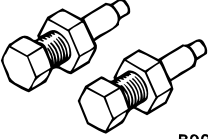
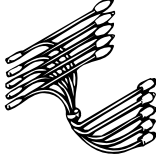
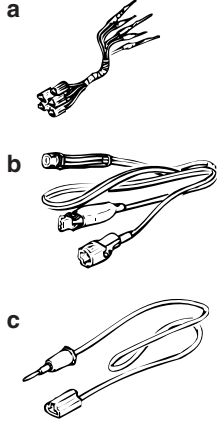
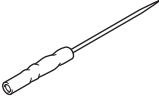
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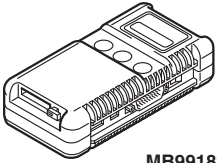
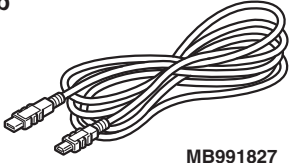
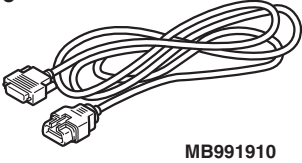
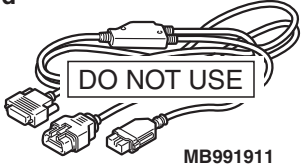
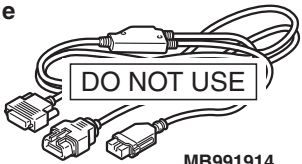
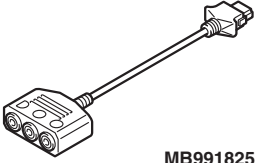
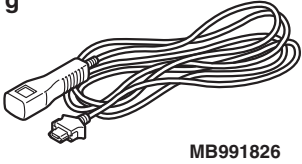
Terminal No.	Check items	Check conditions	Normal conditions
1	Power transistor (DRAIN)	Air volume control dial: Maximum air volume	0 to 2 V
2	Power transistor (GATE)	Air volume control dial: Maximum air volume	Battery positive voltage
3 –8	–	–	–
9	A/C control panel (input)	–	–
10 –12	–	–	–
13	Battery power supply	Always	Battery positive voltage
14	Ground	Always	1 V or less
15	IG1 power supply	Ignition switch: IG1	Battery positive voltage
16	A/C pressure sensor input	Refer to P.55-112.	Refer to P.55-112.
17	Interior temperature sensor	Sensor probe temperature: 25° C (77° F) (4.0 kΩ)	2.1 to 2.7 V
18	–	–	–
19	Sensor ground	Always	1 V or less
20	A/C pressure sensor power supply	Ignition switch: IG2	5 V
21	Fin thermo sensor ground	Always	1 V or less
22	Fin thermo sensor	Sensor probe temperature: 25° C (77° F) (4.0 kΩ)	2.1 to 2.7 V
23	–	–	–
24	Motor for air outside/inside air circulation switching damper	–	–
25	Motor for air outside/inside air circulation switching damper	–	–
26	Motor for air outside/inside air circulation switching damper	–	–
27	Motor for air outside/inside air circulation switching damper	–	–
28	Air mix damper motor	–	–

Terminal No.	Check items	Check conditions	Normal conditions
29	Motor power supply	–	–
30	Air outlet changeover damper motor	–	–
31	Air outlet changeover damper motor	–	–
32	Air outlet changeover damper motor	–	–
33	Air outlet changeover damper motor	–	–
34	Air mix damper motor	–	–
35	Air mix damper motor	–	–
36	Air mix damper motor	–	–

SPECIAL TOOLS

M1552000600765

Tool	Tool number and name	Supersession	Application
 <p>B991367</p>	<p>MB991367 Special spanner</p>	<p>MB991367-01</p>	<p>Armature mounting nut of compressor removal and installation</p>
 <p>B991386</p>	<p>MB991386 Pin</p>	<p>MIT217213</p>	<p>Armature mounting nut of compressor removal and installation</p>
 <p>MB991658</p>	<p>MB991658 Test harness set</p>	<p>Tool not available</p>	<p>Inspection of throttle position sensor</p>
 <p>a b c d</p> <p>DO NOT USE MB991223</p>	<p>MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222</p>	<p>Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe</p>	<p>Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester</p>
 <p>MB992006</p>	<p>MB992006 Extra fine probe</p>	<p>General service tool</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

Tool	Tool number and name	Supersession	Application
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824</p> <p>b. MB991827</p> <p>c. MB991910</p> <p>d. MB991911</p> <p>e. MB991914</p> <p>f. MB991825</p> <p>g. MB991826</p> <p>M.U.T.-III sub-assembly</p> <p>a. Vehicle communication interface (V.C.I.)</p> <p>b. M.U.T.-III USB cable</p> <p>c. M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>d. M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>e. M.U.T.-III main harness C (for Chrysler only)</p> <p>f. M.U.T.-III measurement adapter</p> <p>g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>DTC, data list and actuator test check.</p>

ON-VEHICLE SERVICE**REFRIGERANT LEVEL TEST**

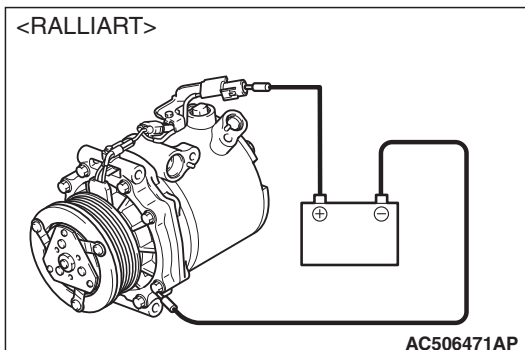
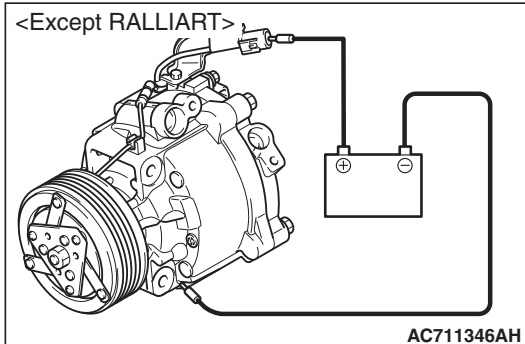
M1552008400583

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

M1552019900151

1. Disconnect the A/C compressor clutch connector to the A/C compressor clutch.

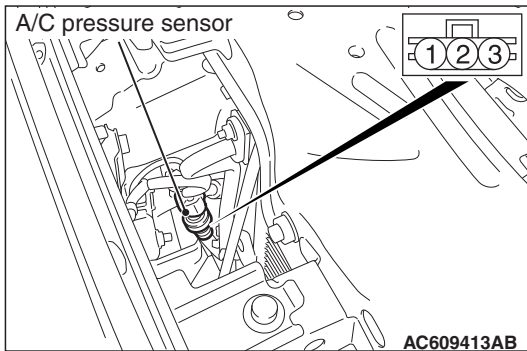


2. Connect positive battery voltage directly to the connector for the A/C compressor clutch.
3. Supply a ground to the A/C compressor assembly.
4. If the A/C compressor clutch is normal, there will be a "click." If the pulley and armature do not make contact ("no click"), there is a malfunction.

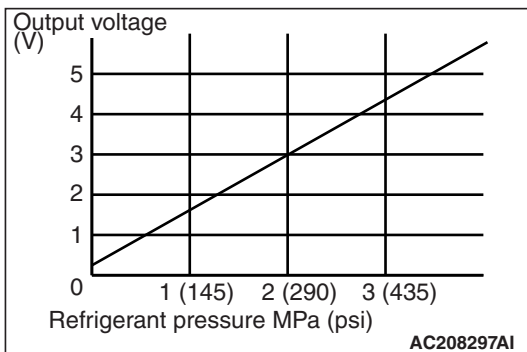
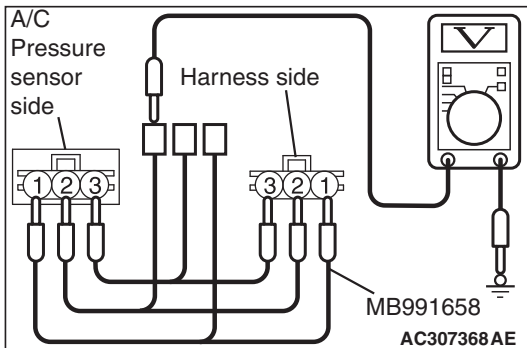
SIMPLE INSPECTION OF THE A/C PRESSURE SENSOR

M1552014700572

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 conditioning 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 $\pm 5\%$.

COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001001361

Refer to GROUP 11A, On-vehicle Service –Drive Belt tension check and adjustment P.11A-9. <2.0L ENGINE>

Refer to GROUP 11C, On-vehicle Service –Drive Belt tension check and adjustment P.11C-8. <2.4L ENGINE>

CHARGING

M1552001200674

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 QS90: 70 cm³ (2.4 fl.oz) or MSC90CAS: 80 cm³ (2.7 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: 25 cm³ (0.8 fl.oz)

Condenser: 15 cm³ (0.5 fl.oz)

Piping: 5 cm³ each (0.2 fl.oz)

PERFORMANCE TEST

M1552001401228

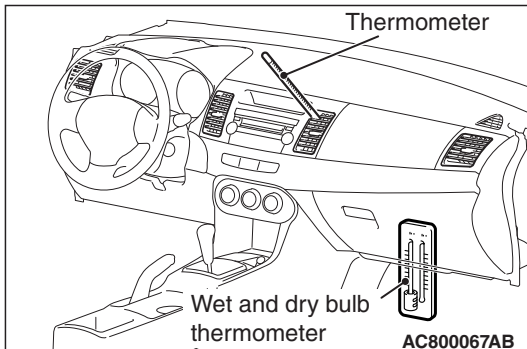
TEST CONDITION

Item	Settings	
Environmental condition	Measurement location	In a shade or indoors
	Temperature	20° C –50° C (68° F –122° F)
	Humidity	Relative humidity 30 –80% RH
Vehicle body condition	Hood	Fully opened
	Door	Fully open for door, window, and tailgate
Air conditioning condition	Air conditioner switch	ON
	Air volume	Maximum air volume
	Temperature control	MAX COOL
	Air outlet	FACE
	Outside/inside air selection	Air recirculation position
Engine speed	Specified idle speed after warming up	
Transmission	N or P	

TEST CONDITION SETTING

Check that the temperature/humidity of measurement location satisfies the test conditions, and then set the vehicle body conditions to the designated status according to the test conditions. If the temperature/humidity is not within the test conditions, an accurate judgment cannot be made. Therefore, postpone the performance test.

COOLING PERFORMANCE CHECK



1. Insert a thermometer into the air outlet located at the center of instrument panel.

NOTE: Set a thermometer so that cool air from the air outlet blows directly against the sensing part.

2. Set a wet and dry bulb thermometer in the air intake of the front passenger's foot area (below the glove box).

NOTE: Set a wet and dry bulb thermometer so that cool air does not blow against it.

3. Start the engine to warm up. Confirm that the engine speed of the test condition is satisfied.
4. Set the A/C control panel to the mode instructed in the test conditions.
5. Wait until the air outlet temperature is stable (approximately 10 minutes after the A/C starts), and measure dry-bulb/wet-bulb temperatures at the air outlet and the air intake.
6. If the air outlet temperature is in the range specified by the table below, it is judged normal. If the temperature is outside the permissible range in the table below, refer to the refrigerant gas pressure inspection result, and check each section according to the diagnosis chart of refrigerant system.

Garage ambient temperature °C	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)
Discharge air temperature °C (°F)	4.7 (40) – 17 (63)	10 (50) – 23 (73)	15 (59) – 28 (82)	20 (68) – 33 (91)	26 (79) – 38 (100)	31 (88) – 44 (111)	36 (97) – 49 (120)

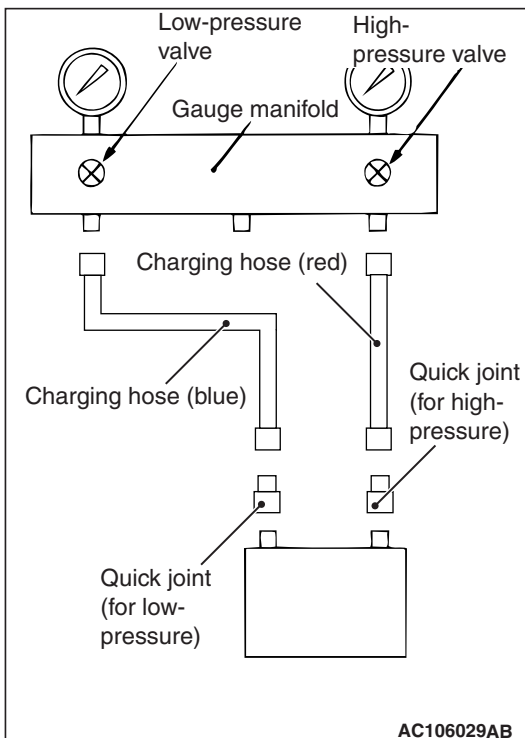
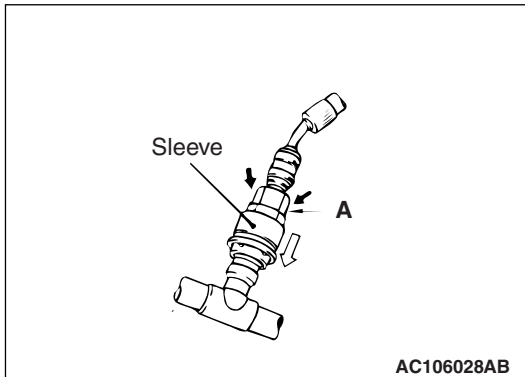
REFRIGERANT GAS PRESSURE CHECK

⚠ CAUTION

- The temperature of equipment in the engine room is high and the refrigerant gas pressure is also high immediately after the engine and A/C operation are stopped, thus leave the vehicle for a while, and then perform the refrigerant gas pressure check.
- On completion, stop the engine and wait until the high-pressure side of the gauge manifold is depressurised. Then remove the quick joints and the others.

⚠ CAUTION

- Place the quick joint onto the service valve, and press to fit the part A securely until the sleeve clicks into place.
- When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.



1. Check that the engine and A/C are stopped.
2. Close the high-pressure valve of the gauge manifold.
3. Connect the charging hose (red) to the hi-pressure side of the gauge manifold.
4. Connect the quick joint (for high pressure) to the charging hose (red).
5. Install the quick joint (for high pressure) to the high-pressure side service valve of the vehicle.
6. Close the low-pressure valve of the gauge manifold.
7. Connect the charging hose (blue) to the low-pressure side of the gauge manifold.
8. Connect the quick joint (for low pressure) to the charging hose (blue).
9. Install the quick joint (for low pressure) to the low-pressure side service valve of the vehicle.
10. Start and fully warm up the engine, and then check that the engine speed of the test condition is satisfied.
11. Set the A/C control panel to the mode instructed in the test conditions.
12. Measure the high pressure/low pressure, and check that the measurement is within the permissible range of the table below. If the value is outside the permissible range, refer to the cooling performance check result, and perform a check according to the diagnosis chart of refrigerant system.

NOTE: Prior to the measurement, wait until the refrigerant pressure is stable. (Approximately 10 minutes after A/C operation start)

Garage ambient temperature °C (°F)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)
Compressor high pressure kPa (psi)	934 (136) – 1,700 (247)	1,068 (155) – 1,850 (268)	1,201 (174) – 2,000 (290)	1,335 (193) – 2,150 (312)	1,468 (213) – 2,300 (334)	1,602 (232) – 2,450 (355)	1,735 (252) – 2,600 (377)
Compressor low pressure kPa (psi)	170 (24.7) – 359 (52.1)	215 (31.2) – 406 (58.9)	260 (37.7) – 452 (65.6)	305 (44.2) – 499 (72.4)	350 (50.8) – 545 (79.1)	395 (57.3) – 592 (85.9)	440 (63.8) – 638 (92.6)



DIAGNOSIS BY REFRIGERANT PRESSURE

A/C system symptom	Measurement circumstance				Cause	Measures
	High pressure	Low pressure	Air outlet temperature	Note		
Cooler is not effective.	Low	High	High	<ul style="list-style-type: none"> Pressure for low pressure side is high, and high pressure side is low. When the A/C operation is stopped, the pressures of low pressure side and high pressure side immediately become identical. 	<ul style="list-style-type: none"> Leakage inside compressor Faulty compression of compressor 	<ol style="list-style-type: none"> Check according to the compressor check. <ol style="list-style-type: none"> When no foreign object is present to the oil, and when the color is light gray, replace only the compressor. When foreign objects are mixed to the oil, and the color is black, replace the compressor and receiver. Perform the evacuation sufficiently to remove the foreign objects and moisture in the cycle. Fill the new gas to the specified amount.
	High	High	High	<ul style="list-style-type: none"> Low pressure side/high pressure side pressure is too high. Low pressure side piping is too hot to touch. 	<ul style="list-style-type: none"> Air is mixed to the refrigerant cycle. Evacuation is insufficient. 	<ol style="list-style-type: none"> Perform the evacuation sufficiently, and remove the foreign objects and moisture in the cycle. Fill the new gas to the specified amount.
Sufficient cooling and insufficient cooling occur periodically.	Fluctuation	Fluctuation	Fluctuation	During the air conditioner operation, the low pressure side pressure alternates between the negative pressure and normal. (also in the high pressure side, the abnormal and normal statuses are alternated).	The moisture in the refrigerant cycle becomes frozen in the expansion valve, then the circulation of refrigerant is stopped temporarily. Subsequently, the status recovers to normal by the melting of ice.	<ol style="list-style-type: none"> Replace the receiver (drier). Perform the evacuation sufficiently, and remove the moisture in the cycle. Fill the new refrigerant to the specified amount.

A/C system symptom	Measurement circumstance				Cause	Measures
	High pressure	Low pressure	Air outlet temperature	Note		
Cooler is sometimes not effective. (works occasionally)	Low	Vacuum	Fluctuation	<ul style="list-style-type: none"> The low pressure side pressure indicates the vacuum, and the high pressure side indicates the low pressure. To the piping before and after the expansion valve, frost or dew is observed. 	<ul style="list-style-type: none"> The foreign objects or moisture inside the refrigerant cycle deposits or freezes inside the expansion valve, and the refrigerant flow is disturbed. Because of the expansion valve operation failure, the refrigerant flow is disturbed. 	<ol style="list-style-type: none"> Check the expansion valve. <ol style="list-style-type: none"> If foreign objects are present inside the expansion valve, remove them by using an air gun or others. When no foreign object is present, the expansion valve operation failure is suspected. Therefore, replace the expansion valve. Perform the evacuation sufficiently, and remove the foreign objects and moisture in the cycle. Fill the new refrigerant to the specified amount.

A/C system symptom	Measurement circumstance				Cause	Measures
	High pressure	Low pressure	Air outlet temperature	Note		
Cooling effectiveness is bad.	Low	Low	Slightly high	<ul style="list-style-type: none"> Low pressure side/high pressure side pressure is low. Outlet air temperature is high. 	<ul style="list-style-type: none"> Gas leakage is present to somewhere in the refrigerant cycle. Refrigerant gas amount is insufficient. 	<ol style="list-style-type: none"> When the pressure gauge indication is close to zero, check the leak position, and then repair the leakage. Also, when the value is lower than the standard pressure, check if the gas leakage is present, and repair if necessary. After checking the leak position, sufficiently perform the evacuation, then fill the new gas to the specified amount.
	High	High	Slightly low	Low pressure side/high pressure side pressure is too high.	<ul style="list-style-type: none"> Refrigerant amount is excessive. Condenser cooling is insufficient. 	<ol style="list-style-type: none"> Clean the condenser fin (fouling, fin clogging) Check the condenser fan motor (radiator fan) operation. When 1 and 2 are normal, recover all the refrigerant. Then, perform a sufficient evacuation again, and fill the new gas to the specified amount.
	High	High	High	<ul style="list-style-type: none"> Low pressure side/high pressure side pressure is too high. Frost or dew is formed to the low pressure side. 	Expansion valve trouble (valve opened excessively)	Replace the expansion valve.
	Normal	Normal	Slightly high	-	Because of the slight difference of measurement environment, secular change of vehicle, or others, it is possible that the outlet temperature fluctuation has occurred.	Check the status for a while, and if the status does not improve, recover all the refrigerant, then fill to the appropriate amount.

COMPRESSOR CHECK

Trouble symptom	Check method/circumstance	Cause	Measures
Abnormal noise from compressor main body at A/C operation (rattling noise)	<ul style="list-style-type: none"> Refrigerant cycle gauge pressure check <ol style="list-style-type: none"> Low pressure side/high pressure side pressure is high. Pressure hunting occurs. 	Abnormal noise due to excessive refrigerant charging	Fill an appropriate amount of refrigerant.
	<ul style="list-style-type: none"> Check the refrigerant cycle gauge pressure. When the pressure difference between the low pressure side and high pressure side is small, remove the compressor oil, and perform the oil judgment. 	Damage to inside the compressor	<p>Compressor oil judgment result: Between transparent and grey/ No contamination with foreign materials</p>  <p>Measures: Replace only the compressor.</p> <p>Compressor oil judgment result: Between grey and black/ Contaminated with foreign materials</p>  <p>Measures: Replace the compressor and the receiver-drier. AC610320AB</p>
<ul style="list-style-type: none"> Compressor malfunction (belt slip) Insufficient cooler effectiveness 	Check the compressor rotation, and if a seizure or sticking is present, remove the compressor oil, then perform a judgment.		

REFRIGERANT LEAK REPAIR PROCEDURE

M1552001500460

LOST CHARGE

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

- Evacuate the system. (Refer to P.55-113).
- Charge the system with approximately 0.453 kg (1 pound) of refrigerant.
- Check for leaks.
- Discharge the system.
- 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.

- Replace receiver drier.
- Evacuate and charge system.

LOW CHARGE

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

HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting or 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.

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.

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.

M1552008700476

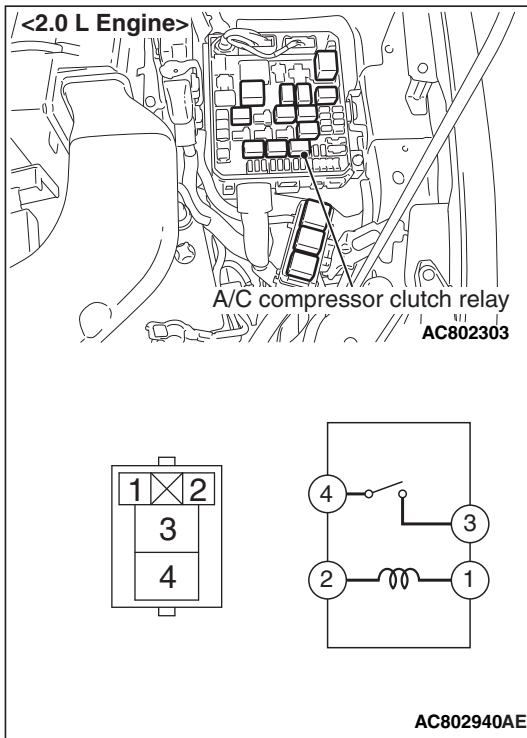
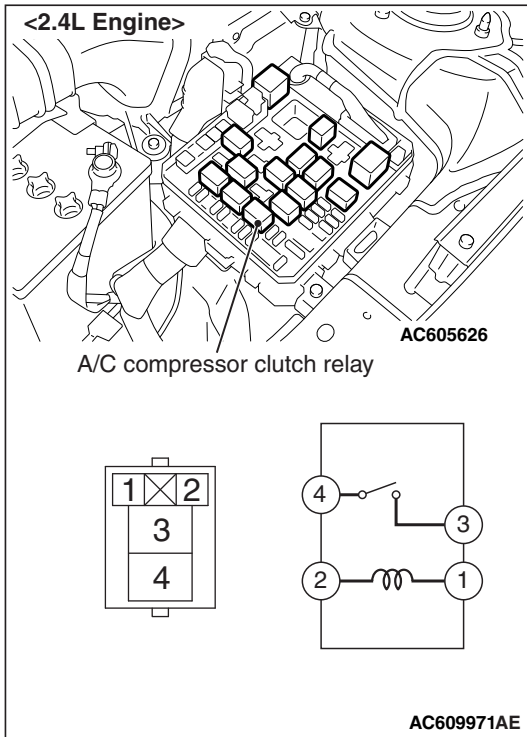
ADJUSTMENT

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.55-113](#)).
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

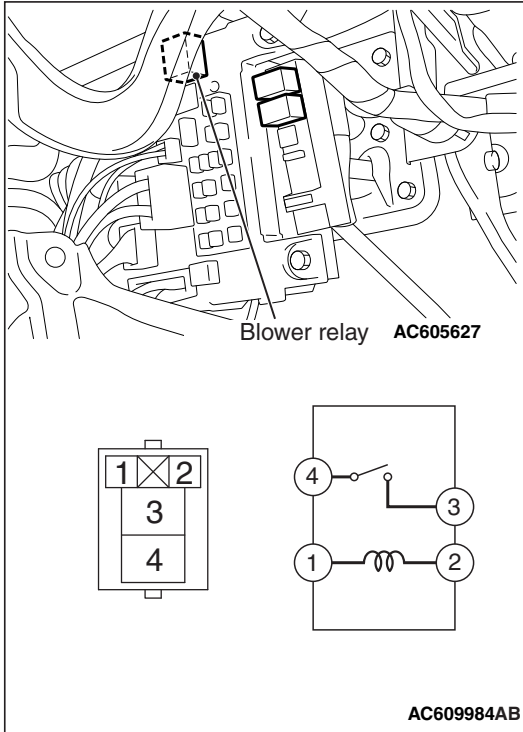
M1552008801313

A/C COMPRESSOR CLUTCH RELAY CONTINUITY
CHECK



Battery voltage	Tester connection	Specified condition
Not applied	3 -4	Open circuit
<ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 1 to the negative battery terminal 	3 -4	Less than 2 ohms

BLOWER RELAY CONTINUITY CHECK



Battery voltage	Tester connection	Specified condition
Not applied	3 –4	Open circuit
<ul style="list-style-type: none"> Connect terminal 1 to the positive battery terminal Connect terminal 2 to the negative battery terminal 	3 –4	Less than 2 ohms

IDLE-UP OPERATION CHECK

M1552001601772

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

1. Check whether or not the idle speed is the standard value.
Refer to GROUP 11A, On-vehicle Service –Idle Speed Check [P.11A-13](#). <2.0L ENGINE>
Refer to GROUP 11C, On-vehicle Service –Idle Speed Check [P.11C-13](#). <2.4L ENGINE>

Standard value: 700 ± 100 r/min <2.0L ENGINE>

Standard value: 650 ± 100 r/min <2.4L ENGINE>

2. Turn on the air conditioning switch and the blower speed selection dial. Engine idling speed should be within the standard value:

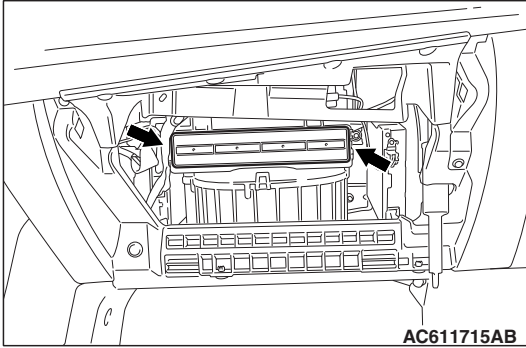
Standard value: 800 ± 50 r/min <2.0L ENGINE>

Standard value: 800 ± 50 r/min <2.4L ENGINE>

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-13](#) <2.0L ENGINE> or GROUP 11C, On-vehicle Service –Idle Speed Check [P.11C-13](#) <2.4L ENGINE>)

REPLACE THE CLEAN AIR FILTER

M1552020100267

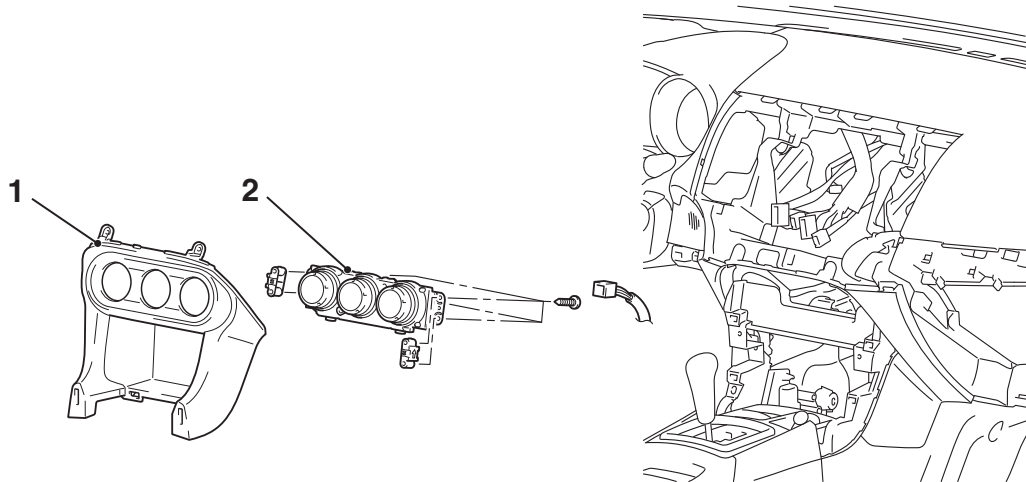


1. Remove the glove box (Refer to GROUP 52A –glove box, [P.52A-6](#)).
2. Loosen the two lugs as shown to replace the clean air filter.
3. Install the glove box.

HEATER CONTROL UNIT

REMOVAL AND INSTALLATION

M1554014700619



AC608191AB

Removal steps

1. Center panel assembly (Refer to GROUP 52A, Instrument panel center panel [P.52A-7](#))
2. Heater control

HEATER UNIT AND BLOWER ASSEMBLY

REMOVAL AND INSTALLATION

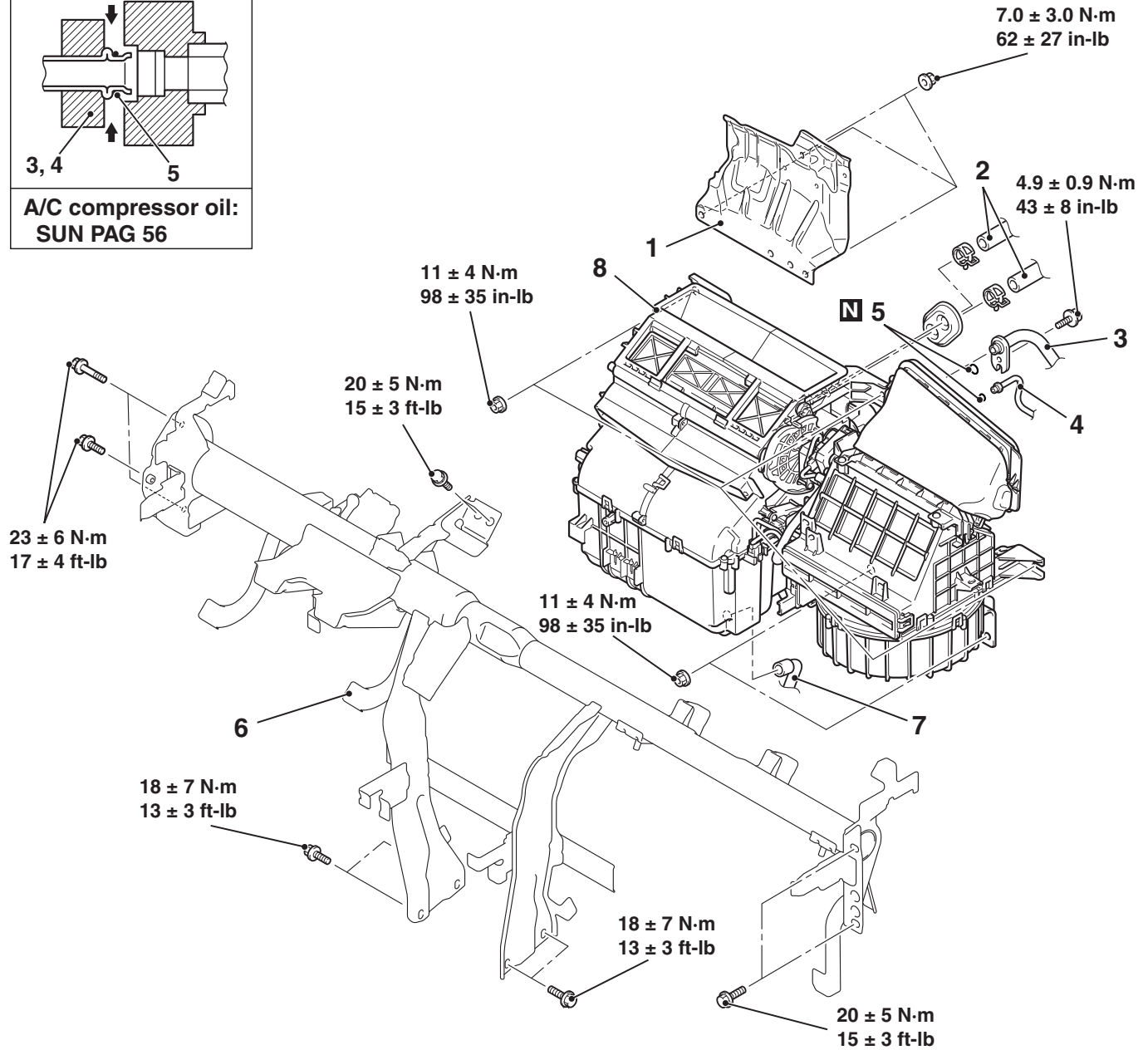
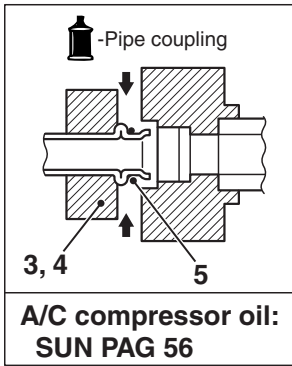
M1552020800772

⚠ 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-414 <GTS> or P.52B-422 <RAL-LIART>.**
- **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-406).**

Pre-removal and Post-installation Operation

- Refrigerant draining and Refilling (Refer to Charging and Discharging P.55-113).
- Engine coolant Draining and Refilling (Refer to GROUP 14, Engine coolant change P.14-24 <2.4L engine> or P.14-26 <2.0L engine>).
- Steering Column Shaft Assembly Removal and Installation (Refer to GROUP 37, Steering Shaft P.37-36).
- Instrument Panel Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-3).
- Floor console Removal and Installation (Refer to GROUP 52A, Floor console P.52A-9).



AC608202AD

Removal steps

1. Heat protector
2. Heater hose connection
3. Suction pipe connection
4. Liquid pipe connection

Removal steps (Continued)

5. O-ring
6. Front deck crossmember
7. Drain hose
8. Heater unit

<<A>>
<<A>>

<>

REMOVAL SERVICE POINTS

<<A>> SUCTION PIPE AND LIQUID PIPE DISCONNECTION

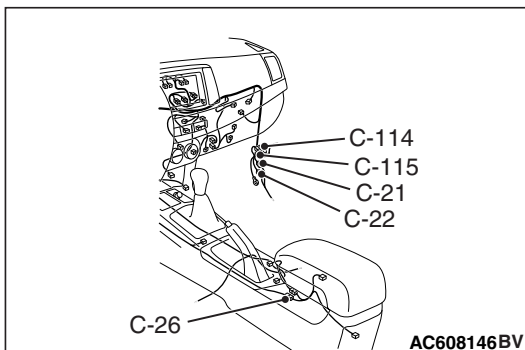
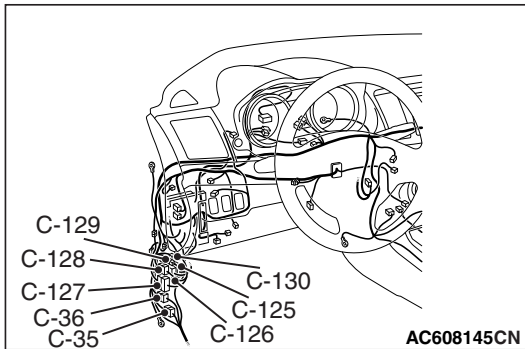
⚠ CAUTION

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.

<> FRONT DECK CROSSMEMBER ASSEMBLY REMOVAL

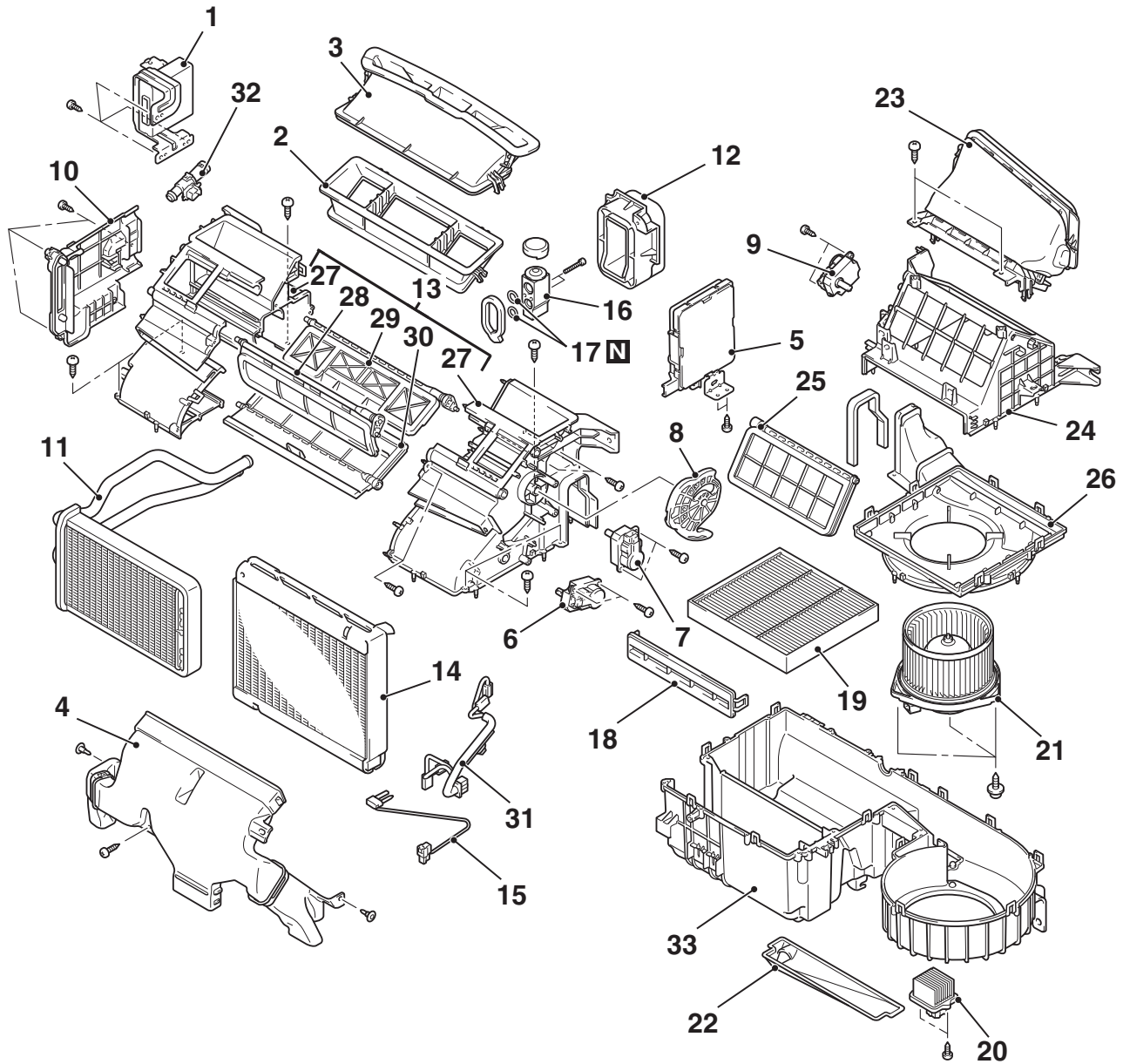
Disconnect the following connectors to gain access to the front deck crossmember.



Connector number	Connector name
C-21	Instrument panel wiring harness and floor wiring harness combination
C-22	Instrument panel wiring harness and floor wiring harness combination
C-26	Instrument panel wiring harness and console wiring harness combination
C-35	Instrument panel wiring harness and floor wiring harness combination
C-36	Instrument panel wiring harness and floor wiring harness combination
C-114	Instrument panel wiring harness and front door wiring harness (RH) combination
C-115	Instrument panel wiring harness and front door wiring harness (RH) combination
C-125	Instrument panel wiring harness and front door wiring harness (LH) combination
C-126	Instrument panel wiring harness and front door wiring harness (LH) combination
C-127	Instrument panel wiring harness and front wiring harness combination
C-128	Instrument panel wiring harness and front wiring harness combination
C-129	Instrument panel wiring harness and front wiring harness combination
C-130	Instrument panel wiring harness and roof wiring harness combination

DISASSEMBLY AND REASSEMBLY

M1552020900542



AC608203AB

Disassembly steps

1. KOS-ECU
2. Rear center duct
3. Front center duct
4. Foot duct
5. A/C-ECU
6. Air mixing damper control motor
7. Mode selection damper control motor
8. Mode lever
9. Outside/Inside air selection damper control motor
10. Heater core cover
11. Heater core
12. Expansion valve cover

Disassembly steps (Continued)

13. Upper case assembly
14. Evaporator
15. Fin thermo sensor
16. Expansion valve
17. O-ring
18. Clean Air filter cover
19. Clean Air filter
20. Power transistor
21. Blower motor
22. Insulator
23. Air intake duct
24. Blower case upper
25. Outside/inside air selection damper
26. Blower case lower

Disassembly steps (Continued)

27. Upper case
28. Mode selection damper (FOOT)
29. Mode selection damper (DEF)
30. Air mixing damper
31. Wiring harness
32. Aspirator
33. Lower case

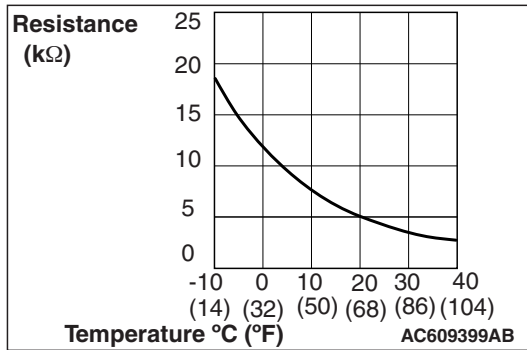
INSPECTION

M1554011900421

FIN THERMO SENSOR CHECK

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

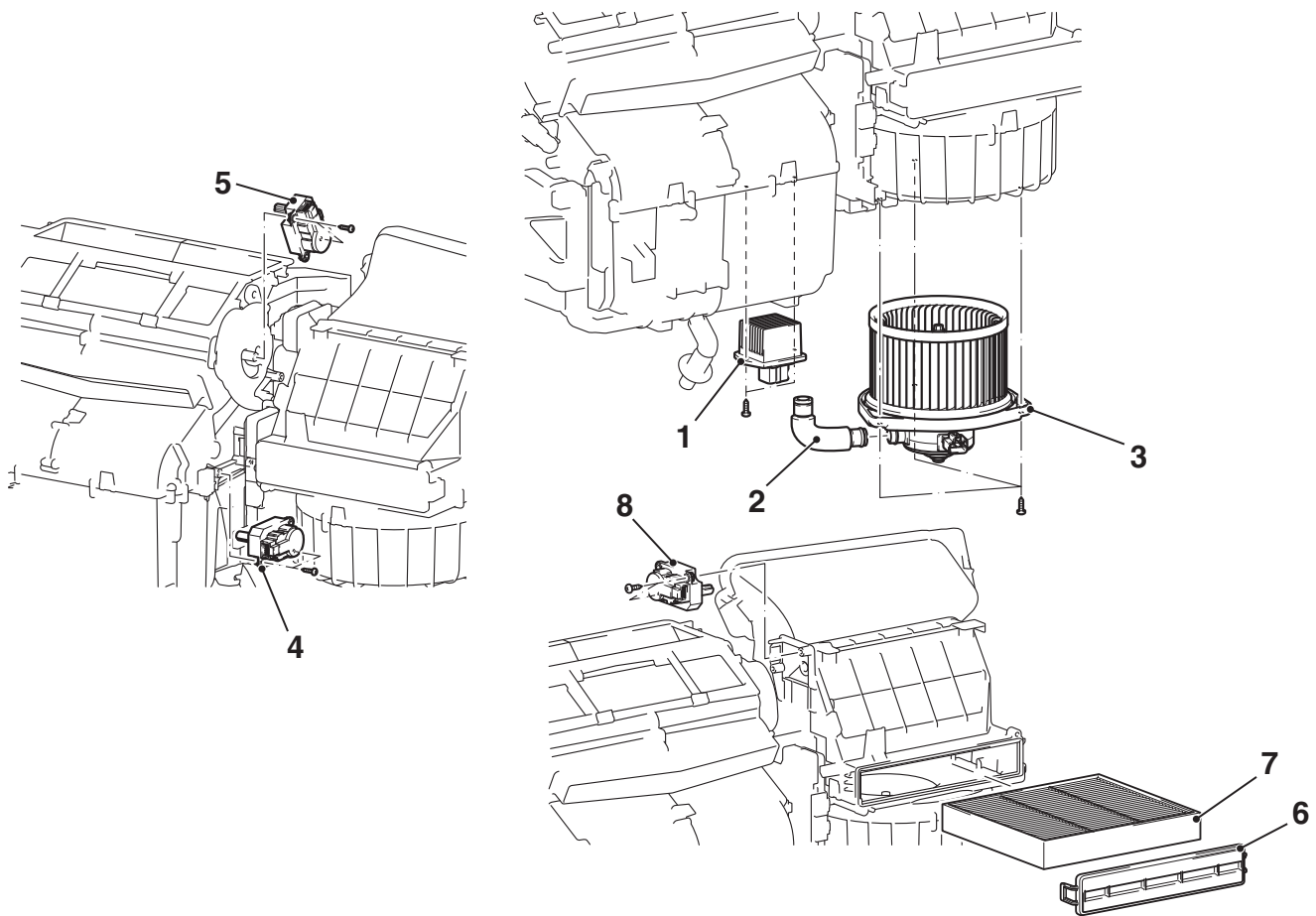
NOTE: The temperature should be within the shown range.



MOTORS AND TRANSISTOR

REMOVAL AND INSTALLATION

M1551006900136



AC708788AC

Power transistor removal steps

- Bottom cover assembly (passenger's side) (Refer to GROUP 52A –Instrument Panel P.52A-3).

1. Power transistor

Blower motor removal steps

- Bottom cover assembly (passenger's side) (Refer to GROUP 52A –Instrument Panel P.52A-3).

2. Hose
3. Blower motor

<<A>>

<<A>>

<<A>> >>A<<

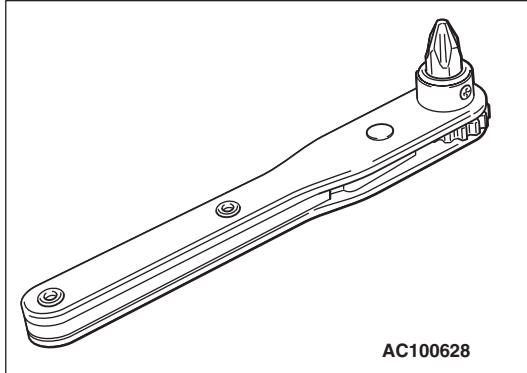
Air mixing damper control motor, mode selection damper control motor and outside/inside air selection damper control motor removal steps

- Foot duct (Refer to P.55-150).
 - A/C-ECU (Refer to P.55-135).
4. Air mixing damper control motor
 5. Mode selection damper control motor
 6. Clean air filter cover
 7. Clean air filter
 8. Outside/inside air selection damper control motor

REMOVAL SERVICE POINT

<<A>> AIR MIXING DAMPER CONTROL MOTOR, OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR, MODE SELECTION DAMPER CONTROL MOTOR REMOVAL

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

**INSTALLATION SERVICE POINT**

>>A<< OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR INSTALLATION

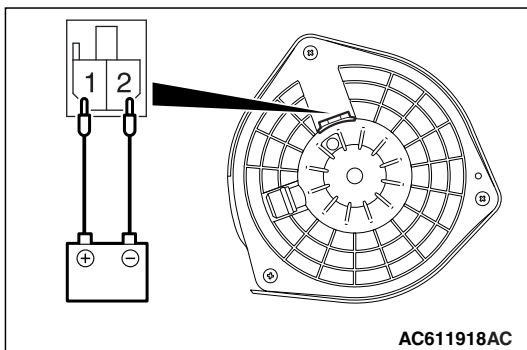
Install the outside/inside air selection damper control motor while pressing the outside/inside air selection damper from the hole of the blower motor.

INSPECTION

M1551006300747

BLOWER MOTOR CHECK

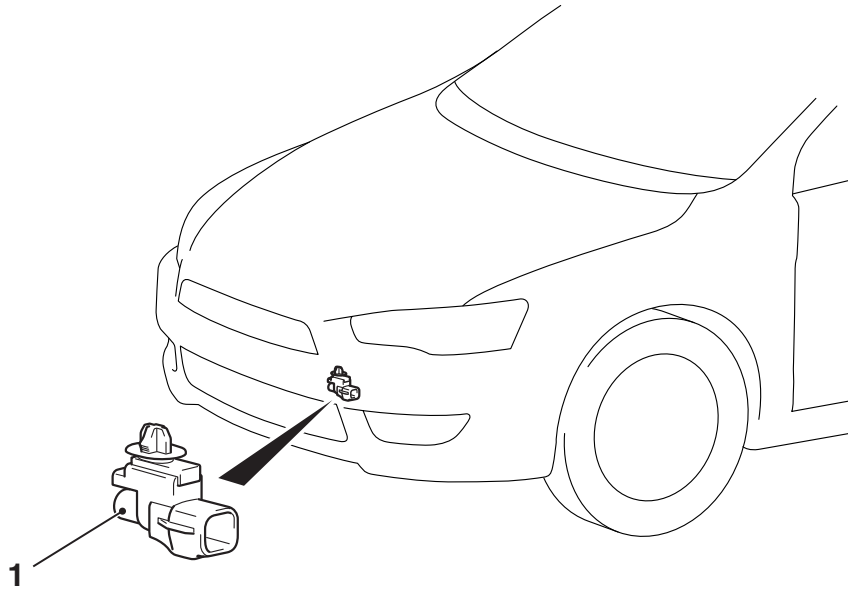
Check that the motor turns when applying battery power between the connector terminals. Also check to see that there is no abnormal sound emitted from the motor at this time..



AMBIENT AIR TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

M1554017500119



AC609030AB

Removal steps

- Headlight support panel cover
(Refer to GROUP 51, Front bumper assembly P.51-5).
1. Ambient air temperature sensor

INSPECTION

M1551006300736

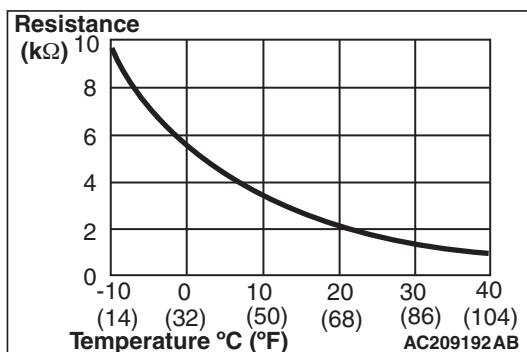
AMBIENT AIR TEMPERATURE SENSOR CHECK

⚠ CAUTION

The ambient air temperature sensor should be checked without 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.

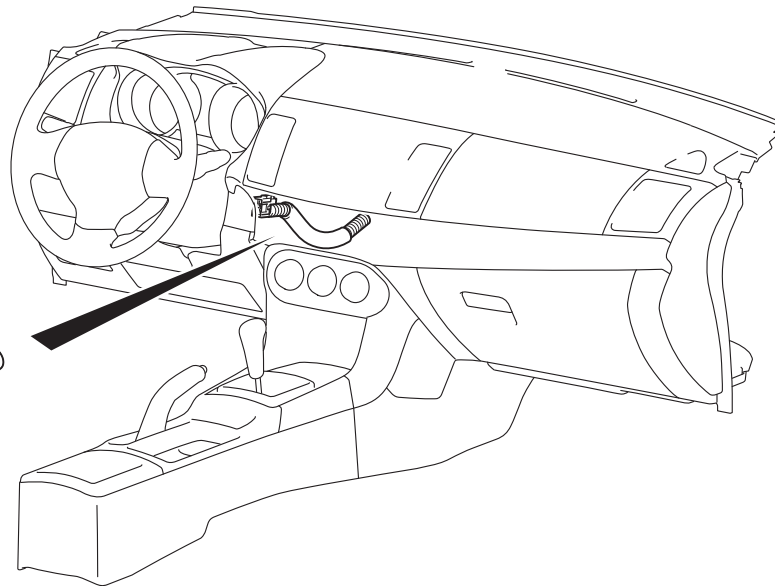
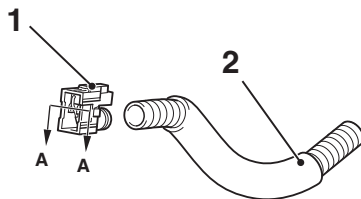
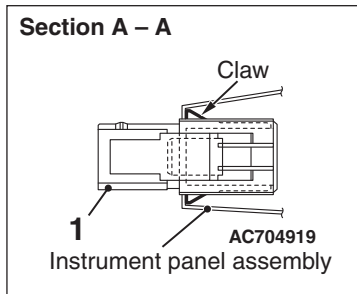
NOTE: The temperature should be within the shown range.



INTERIOR TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

M1554026400262



AC710091AC

Interior temperature sensor removal steps

- Lower panel (Refer to GROUP 52A, Instrument panel [P.52A-3](#)).

Interior temperature sensor removal steps (Continued)

1. Interior temperature sensor
2. Aspirator hose

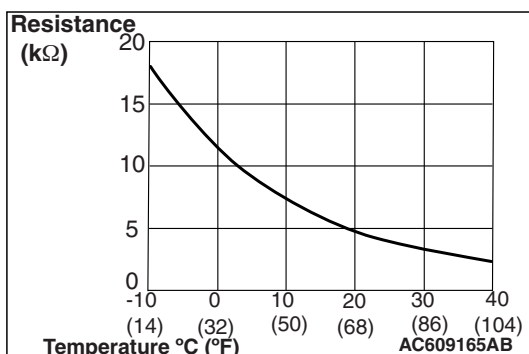
INSPECTION

M1554011900410

INTERIOR TEMPERATURE SENSOR CHECK

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

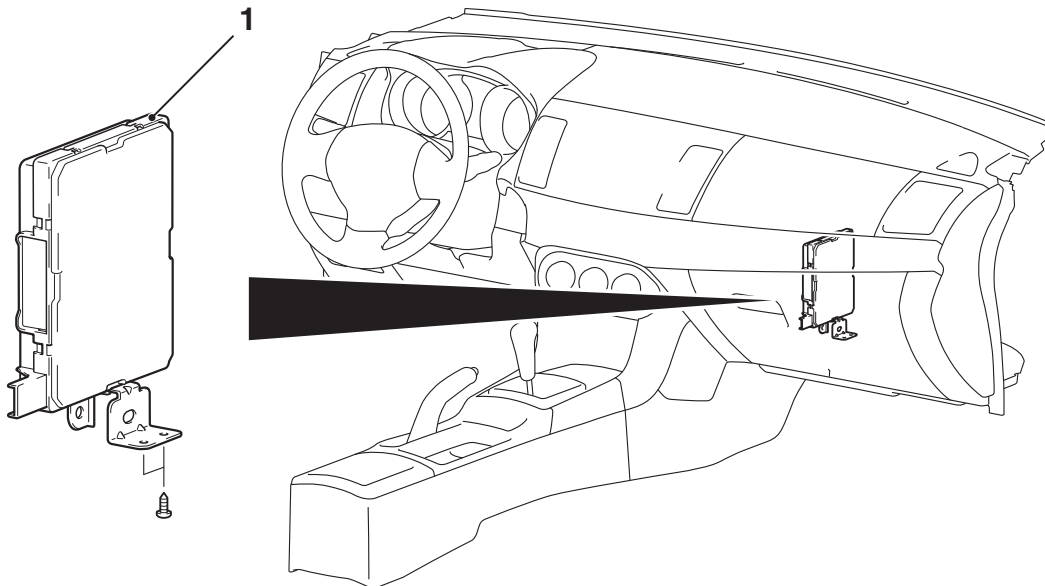
NOTE: The temperature conditions when checking should not exceed the range shown in the diagram.



A/C-ECU

REMOVAL AND INSTALLATION

M1554016600403



AC608297AB

Removal steps

- Glove box, Bottom cover (passenger side) (Refer to GROUP 52A Glove Box [P.52A-6](#))

Removal steps (Continued)

- Foot duct (Refer to [P.55-150](#))
1. A/C-ECU

COMPRESSOR ASSEMBLY <Except RALLIART>

REMOVAL AND INSTALLATION

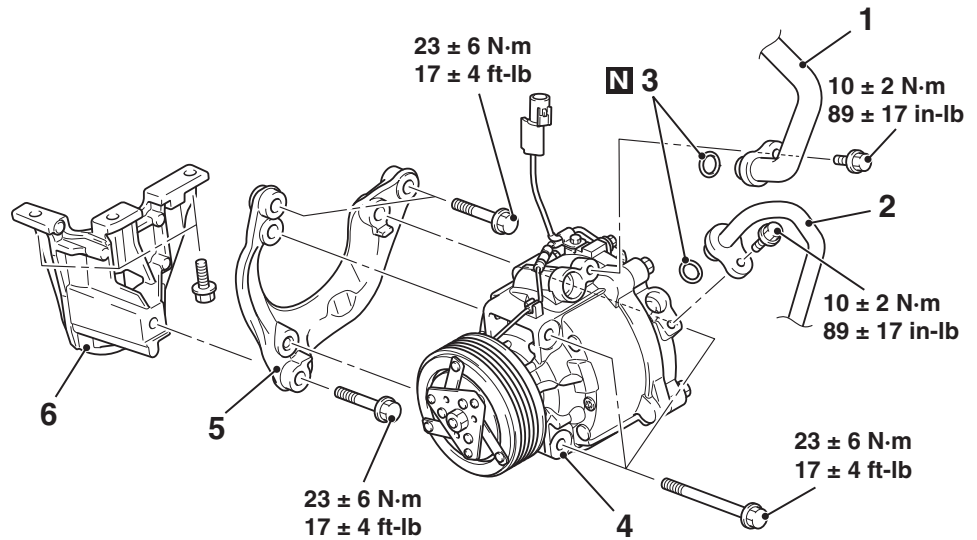
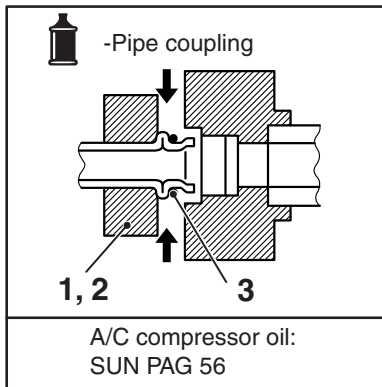
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Pre-removal Operation

- Refrigerant Discharging (Refer to P.55-113).
- Engine room under cover front A, Engine room side cover removal (Refer to GROUP 51, under cover P.51-20).
- Drive belt removal (Refer to GROUP 11C, Crankshaft pulley P.11C-19).

Post-installation Operation

- Drive belt installation (Refer to GROUP 11C, Crankshaft pulley P.11C-19).
- Drive Belt Tension Adjustment (Refer to GROUP 11C, On vehicle service –Drive Belt P.11C-8).
- Refrigerant Charging (Refer to P.55-113).
- Engine room under cover front A, Engine room side cover installation (Refer to GROUP 51, under cover P.51-20).
- Front under cover RH (Refer to GROUP 51, Under cover P.51-20).



AC800210AH

Removal steps

- <<A>> 1. Flexible suction hose connection
- <<A>> 2. Flexible discharge hose connection
- <> >>A<< 3. O-ring
- <> >>A<< 4. A/C compressor and clutch assembly

Removal steps (Continued)

5. A/C compressor bracket A
6. A/C compressor bracket B

NOTE: The service points which are not described are the same as before.

REMOVAL SERVICE POINTS

<<A>> FLEXIBLE DISCHARGE HOSE / FLEXIBLE SUCTION 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.

<> A/C COMPRESSOR REMOVAL

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

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR AND CLUTCH ASSEMBLY INSTALLATION

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

1. Measure the amount [$X \text{ cm}^3$ ($X \text{ fl.oz}$)] 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 = 70 cm^3 (2.4 fl.oz)

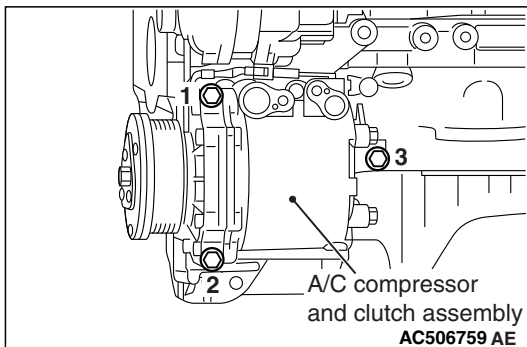
$$70 \text{ cm}^3 - X \text{ cm}^3 = Y \text{ cm}^3 \quad (2.4 \text{ fl.oz.} - X \text{ fl.oz.} = Y \text{ fl.oz.})$$

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

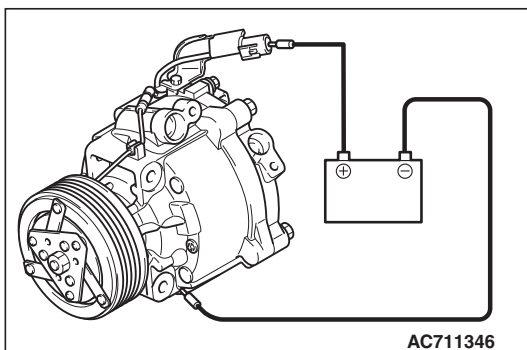
NOTE: When replacing the following parts at the same times as the compressor, subtract the rated oil amount of each part from $Y \text{ cm}^3$ ($Y \text{ fl.oz}$) and discharge from the new compressor.

3. Tighten A/C compressor and clutch assembly mounting bolts to the specified torque in the order of number shown in the figure.

Tightening torque: $23 \pm 6 \text{ N} \cdot \text{m}$



INSPECTION

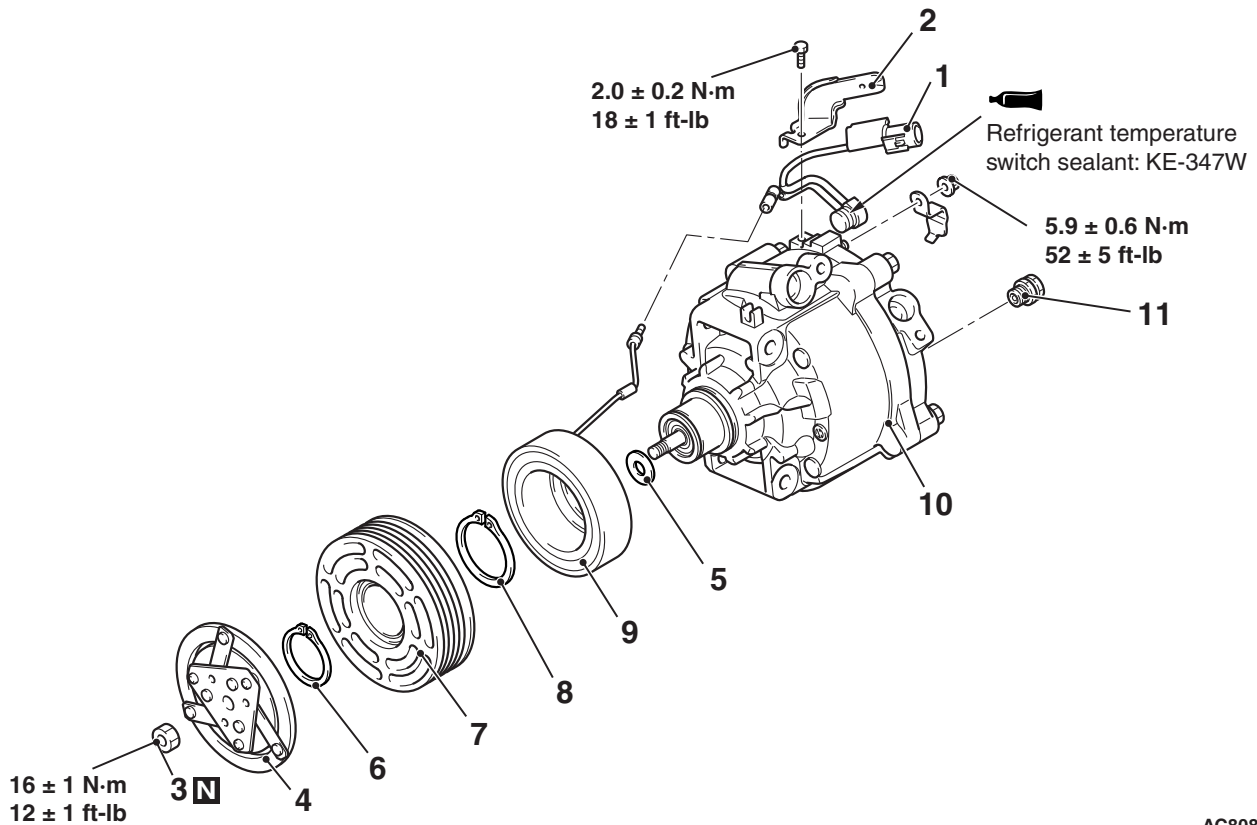


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A/C COMPRESSOR CLUTCH OPERATION CHECK

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



AC808273AC

A/C refrigerant temperature switch disassembly steps

1. A/C refrigerant temperature switch
2. Bracket

A/C compressor clutch disassembly

- >>D<< • Air gap adjustment
- <<A>> >>C<< 3. Self-locking nut
- 4. Armature
- 5. Shim
- >>B<< 6. Snap ring

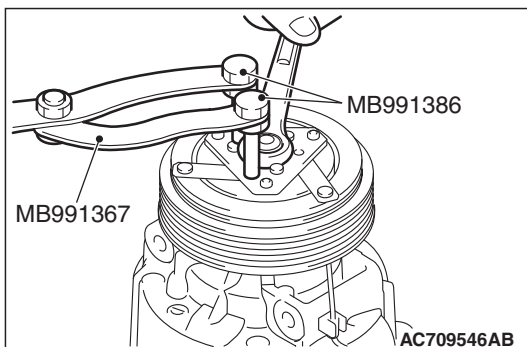
A/C compressor clutch disassembly (Continued)

- >>A<< 7. Rotor
- 8. Snap ring
- 9. Field core
- 10. A/C compressor
- 11. A/C compressor high pressure relief valve

NOTE: The service points which are not described are the same as before.

DISASSEMBLY SERVICE POINT

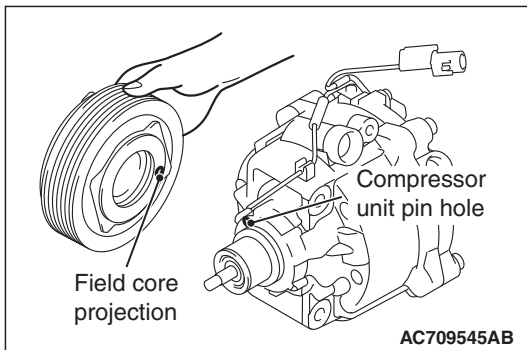
<<A>> SELF-LOCKING NUT REMOVAL



ASSEMBLY SERVICE POINTS

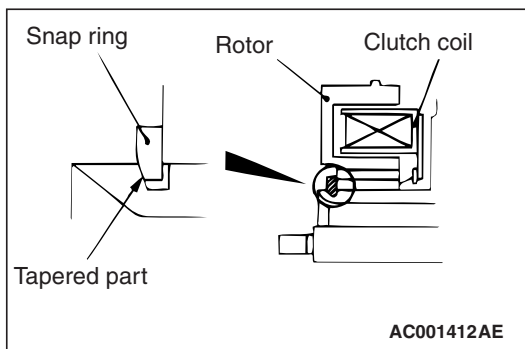
>>A<< FIELD CORE ATTACHMENT

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



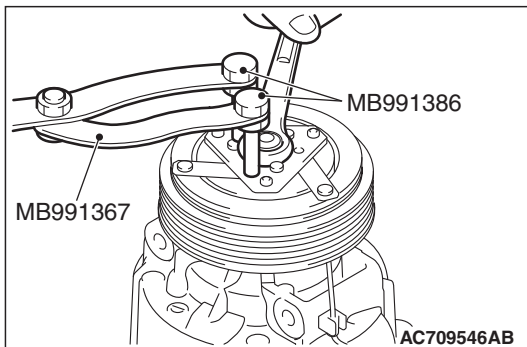
>>B<< SNAP RING INSTALLATION

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



>>C<< SELF-LOCKING NUT INSTALLATION

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



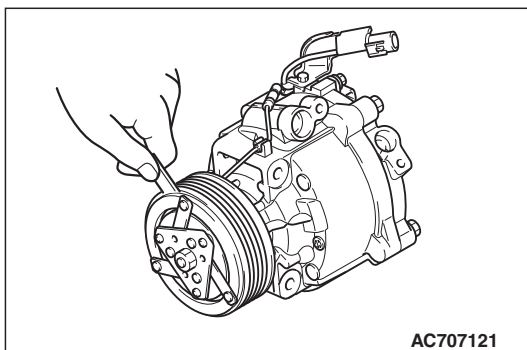
>>D<< AIR GAP ADJUSTMENT

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

Standard value:

0.25 –0.45 mm (0.010 –0.017 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.



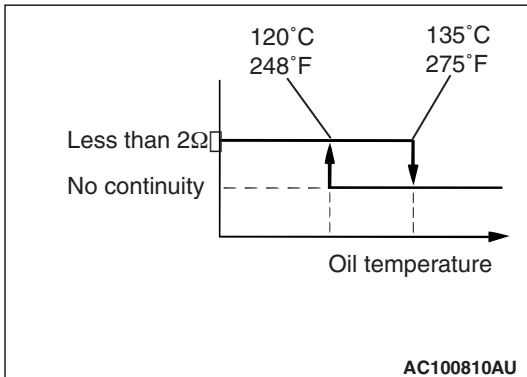
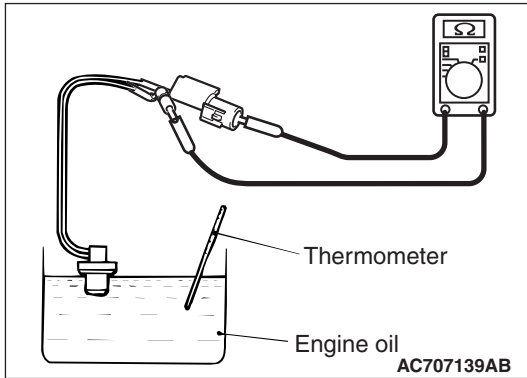
INSPECTION

A/C REFRIGERANT TEMPERATURE SWITCH

⚠ CAUTION

Do not heat more than necessary.

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



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

Standard value:

Item	Temperature
Less than 2 ohms	Slightly below 120° C (248° F)
No continuity	135° C (275° F) or more

NOTE: When the oil temperature is 135° C (275° F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 120° C (248° F) or less.

COMPRESSOR ASSEMBLY <RALLIART>

REMOVAL AND INSTALLATION

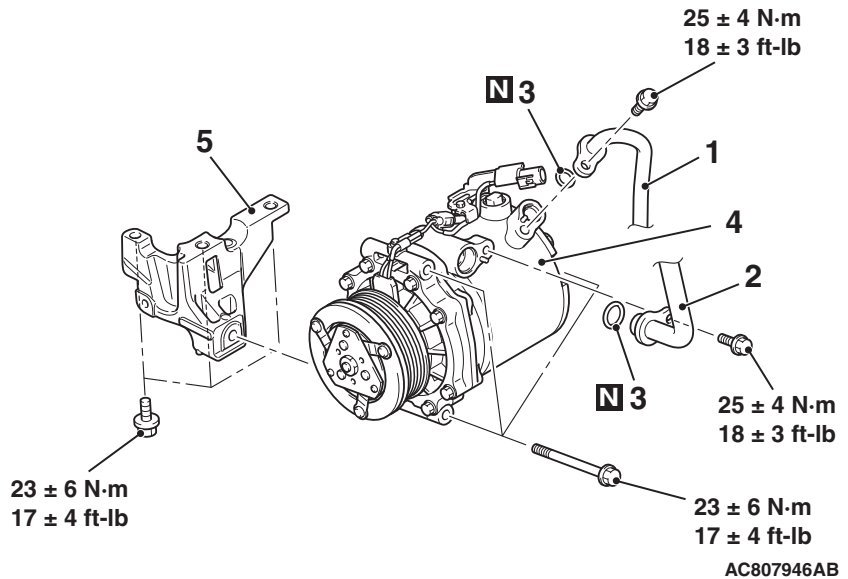
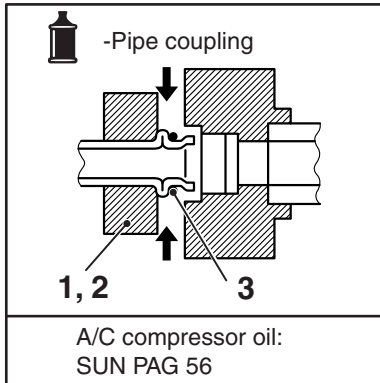
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Pre-removal Operation

- Refrigerant Discharging (Refer to P.55-113).
- Engine room under cover front A, Engine room side cover removal (Refer to GROUP 51, under cover P.51-20).
- Drive belt removal (Refer to GROUP 11A, Crankshaft pulley P.11A-22).

Post-installation Operation

- Drive belt installation (Refer to GROUP 11A, Crankshaft pulley P.11A-22).
- Drive Belt Tension Adjustment (Refer to GROUP 11A, On vehicle service –Drive Belt P.11A-9).
- Engine room under cover front A, Engine room side cover installation (Refer to GROUP 51, under cover P.51-20).
- Refrigerant Charging (Refer to P.55-113).



<<A>>
<<A>>

Removal steps

1. Flexible discharge hose connection
2. Flexible suction hose connection
3. O-ring

<>

Removal steps (Continued)

4. A/C compressor and clutch assembly
5. 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.

<> A/C COMPRESSOR AND CLUTCH ASSEMBLY REMOVAL

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

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR AND CLUTCH ASSEMBLY INSTALLATION

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

1. Measure the amount [$X \text{ cm}^3$ ($X \text{ fl.oz}$)] 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 = 80 cm^3 (2.7 fl.oz)

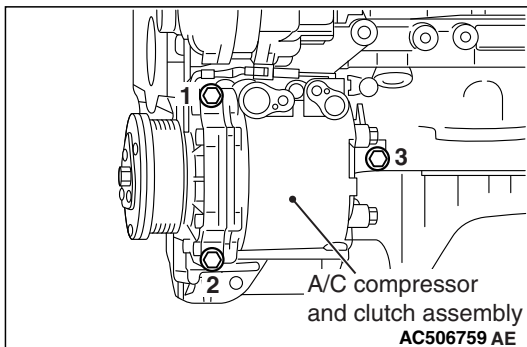
$80 \text{ cm}^3 - X \text{ cm}^3 = Y \text{ cm}^3$ (2.7 fl.oz. - $X \text{ fl.oz.} = Y \text{ fl.oz}$)

NOTE: $Y \text{ cm}^3$ ($Y \text{ fl.oz}$) 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 $Y \text{ cm}^3$ ($Y \text{ fl.oz}$) and discharge from the new compressor.

3. Tighten A/C compressor and clutch assembly mounting bolts to the specified torque in the order of number shown in the figure.

Tightening torque: $23 \pm 6 \text{ N} \cdot \text{m}$ ($17 \pm 4 \text{ ft} \cdot \text{lb}$)

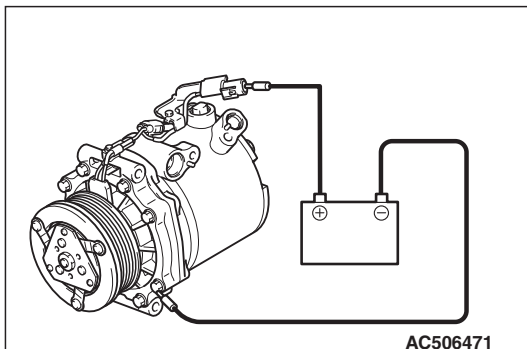


INSPECTION

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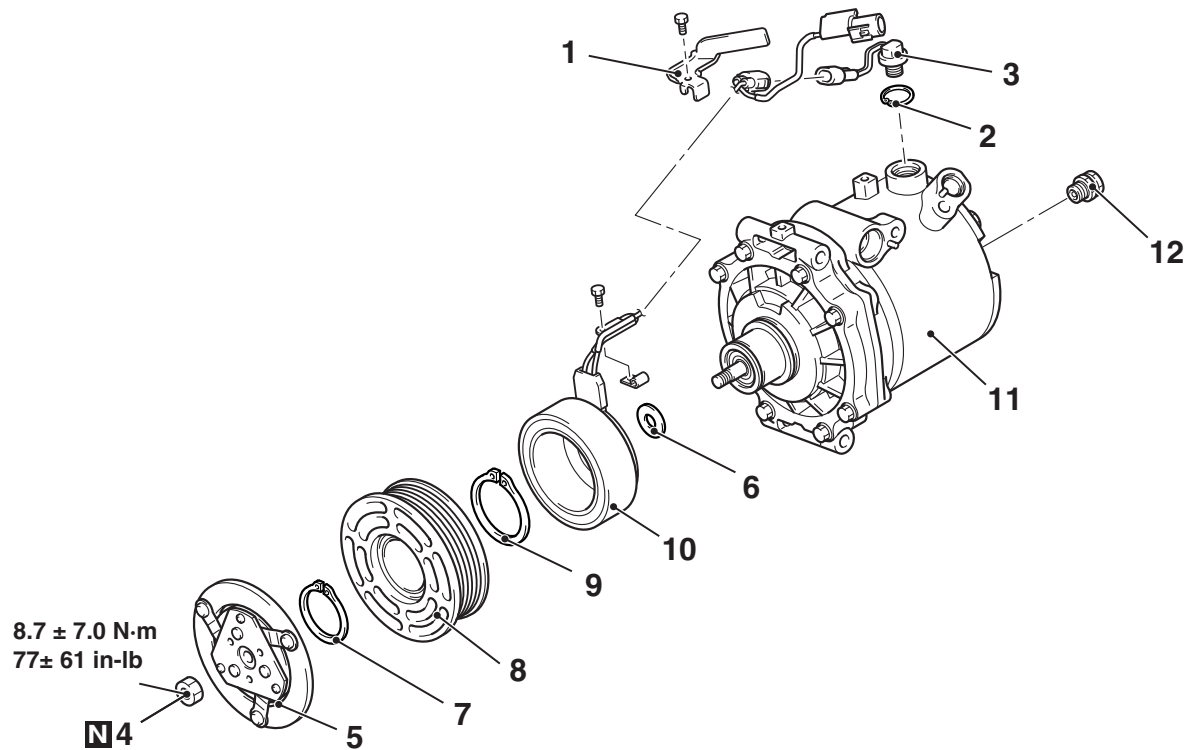
COMPRESSOR A/C COMPRESSOR CLUTCH
OPERATION CHECK

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

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Cooling temperature switch disassembly steps

1. Bracket
2. Snap ring
3. Cooling temperature switch

A/C compressor clutch disassembly

- >>D<< • Air gap adjustment
- <<A>> >>C<< 4. Self-locking nut
- 5. Armature
- 6. Shim
- >>B<< 7. Snap ring

A/C compressor clutch disassembly (Continued)

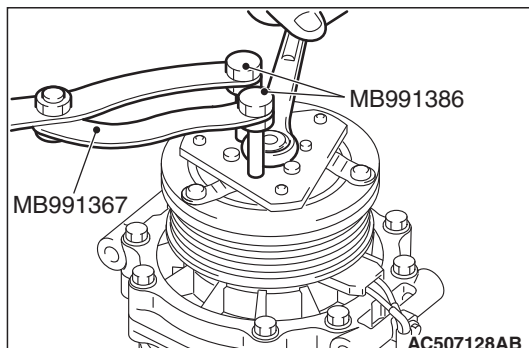
- 8. Rotor
- 9. Snap ring
- >>A<< 10. Field core
- 11. A/C compressor
- 12. A/C compressor high pressure relief valve

Required Special Tools:

- MB991367: Special Spanner
- MB991386: Pin

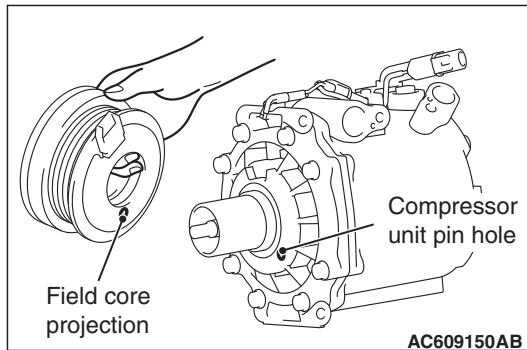
DISASSEMBLY SERVICE POINT

<<A>> SELF-LOCKING NUT REMOVAL

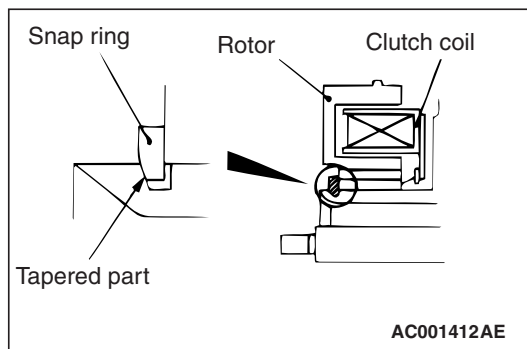


ASSEMBLY SERVICE POINTS**>>A<< FIELD CORE ATTACHMENT**

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

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

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

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

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

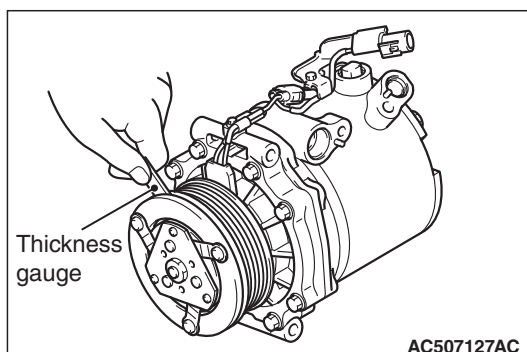
>>D<< AIR GAP ADJUSTMENT

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

Standard value:

0.3 –0.5 mm (0.012 –0.020 inch)

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



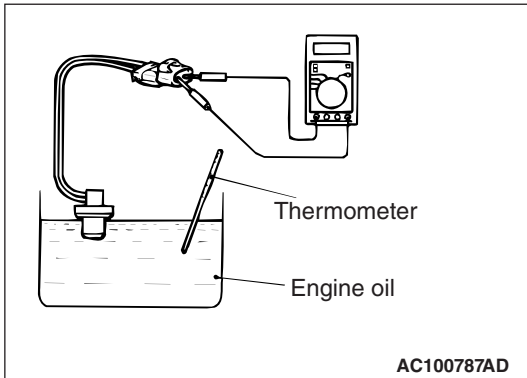
INSPECTION

COOLING 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.

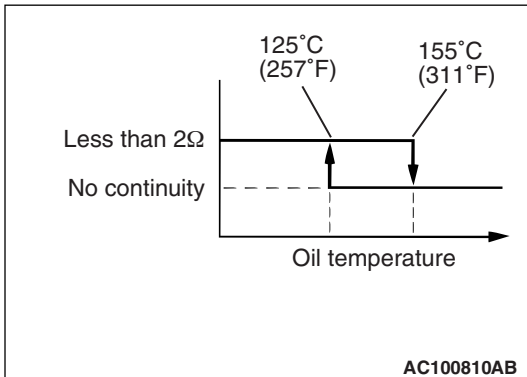


2. When the oil temperature reaches the standard value, check that resistance is supplied between the terminals.

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.



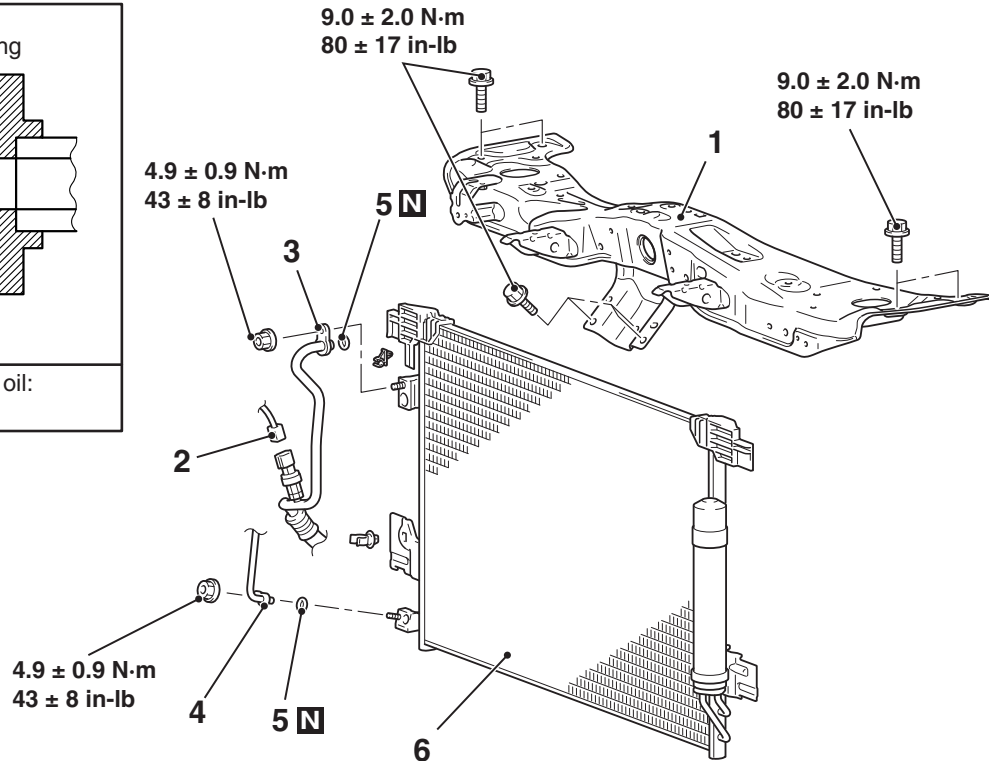
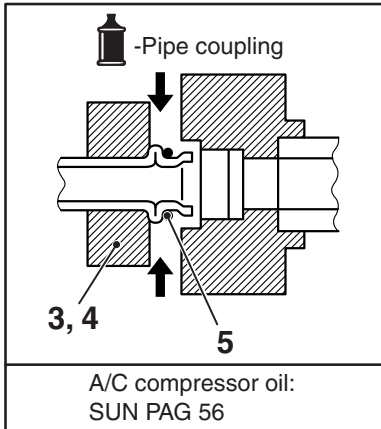
CONDENSER ASSEMBLY

REMOVAL AND INSTALLATION

M1552015401362

Pre-removal and Post-installation Operation

- Refrigerant draining and refilling (Refer to P.55-113).
- Air cleaner intake duct removal and installation (Refer to GROUP 15, Air Cleaner P.15-9). <2.0L ENGINE>
- Air cleaner intake duct removal and installation (Refer to GROUP 15, Air Cleaner P.15-10). <2.4L ENGINE>
- Headlight support panel cover removal and installation (Refer to GROUP 51, Front Bumper P.51-5).



AC901631AC

Removal steps

1. Front end upper bar assembly <<A>>
2. Connector
3. Flexible discharge hose connection <>

Removal steps (Continued)

4. Liquid pipe A connection
5. O-ring
6. Condenser assembly

<<A>>

REMOVAL SERVICE POINTS

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

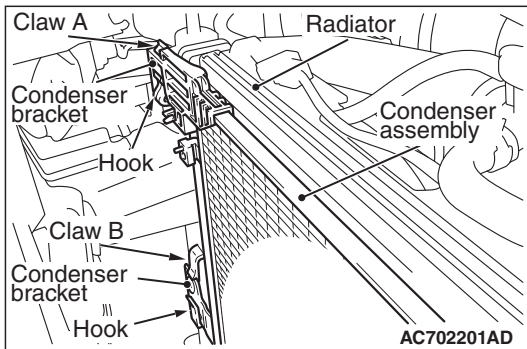
⚠ CAUTION

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.

<> CONDENSER ASSEMBLY DISCONNECTION

1. Lift the condenser while pressing the claw B.
2. Lift the condenser while pressing the claw A and remove it.



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.

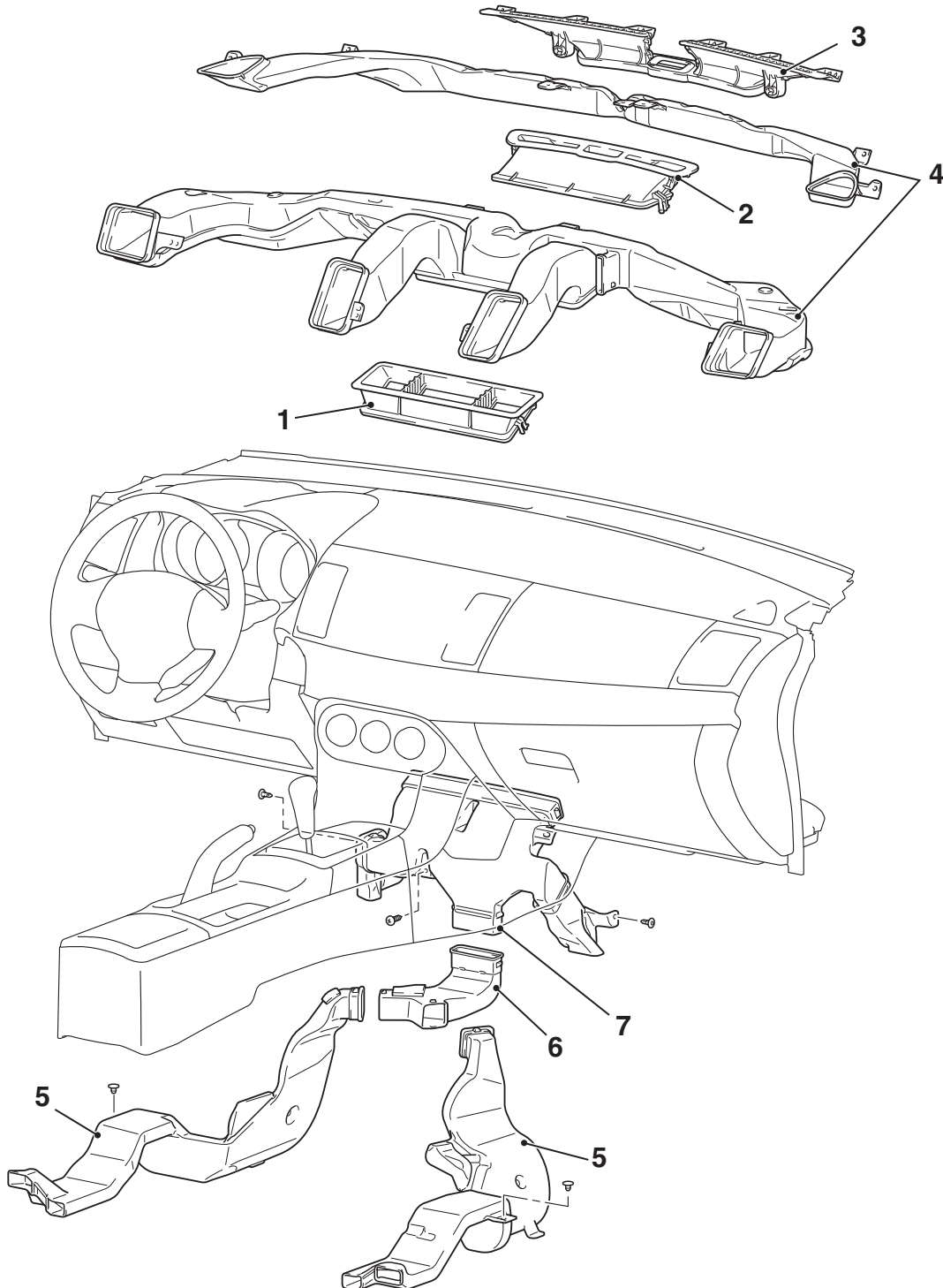
To prevent the entry of other foreign bodies, plug the condenser, compressor, and expansion valve nipples.

DUCTS**REMOVAL AND INSTALLATION**

M1553001001193

⚠ 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-406](#)).



AC608286AB

Defroster nozzle and distribution duct removal steps

- Instrument panel (Refer to GROUP 52A P.52A-3).
- 1. Rear center duct
- 2. Front center duct
- 3. Defroster nozzle
- 4. Ventilator air distribution duct & Side defroster duct

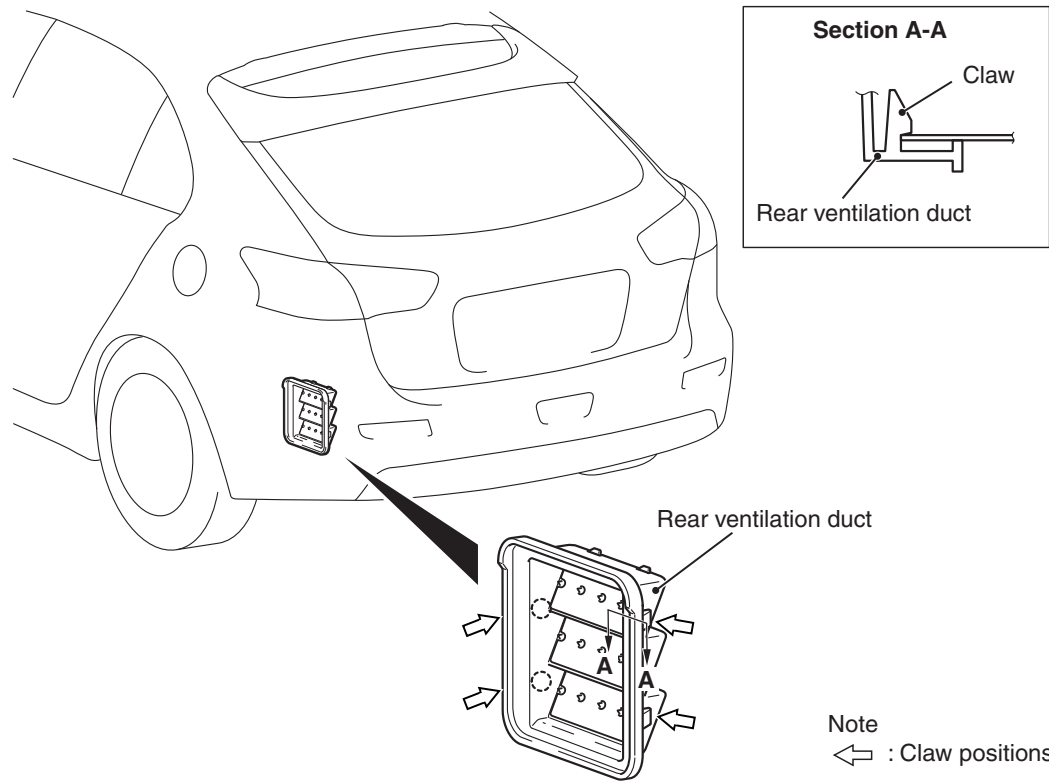
Foot duct and rear heater duct removal steps

- Front seat assembly (Refer to GROUP 52A, Front seat assembly P.52A-20).
- Front scuff plate, cowl side trim (Refer to GROUP 52A, Trims P.52A-11).
- Floor console assembly (Refer to GROUP 52A, Floor console assembly P.52A-9).
- Floor carpet peeling
- 5. Rear heater duct B
- 6. Rear heater duct A
- 7. Foot duct

VENTILATORS

REMOVAL AND INSTALLATION

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Note
← : Claw positions

AC712432AF

Removal steps

- Rear bumper assembly (Refer to GROUP 51, P.51-9).
- 1. Rear ventilation duct

NOTES