

GROUP 17

ENGINE AND EMISSION CONTROL

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ENGINE CONTROL

GENERAL INFORMATION

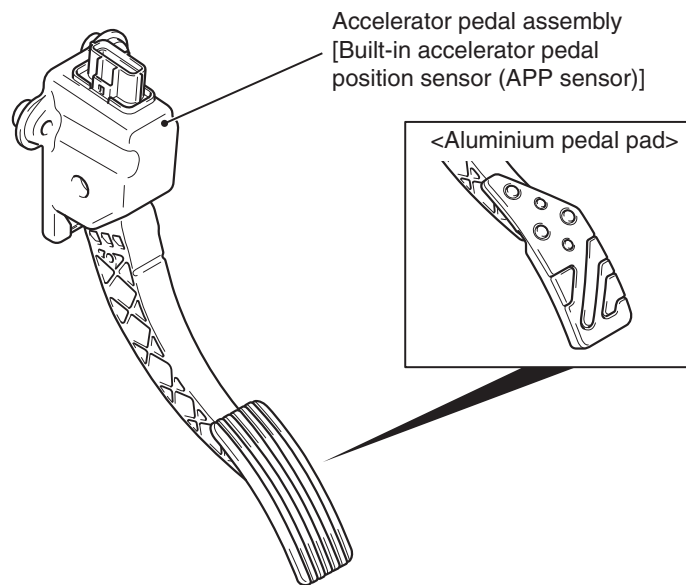
For the accelerator system, the electronic throttle valve control system, disposing of the accelerator cable, is adopted.

This system determines the amount of pressure applied to the accelerator pedal using the built-in accelerator pedal position sensor of the accelerator pedal assembly to control the throttle valve angle electrically.

- A resin arm is employed to reduce weight.
- The aluminium pedal pad has been adopted to enhance the sporty image <some models>.

M1171000101311

CONSTRUCTION DIAGRAM



AC901627 AB

ENGINE CONTROL SYSTEM DIAGNOSIS

INTRODUCTION

If there is a malfunction in the engine control system, the accelerator pedal or throttle body may be faulty.

M1171002000340

TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find an engine control system 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.

M1171002100370

SYMPTOM CHART

M1171002200418

Symptom	Inspection procedure	Reference page
Throttle valve will not fully open or close	1	P.17-4
Accelerator pedal operation not smooth (over acceleration)	2	P.17-6

SYMPTOM PROCEDURES

Inspection Procedure 1: Throttle Valve will not Fully Open or Close

COMMENT

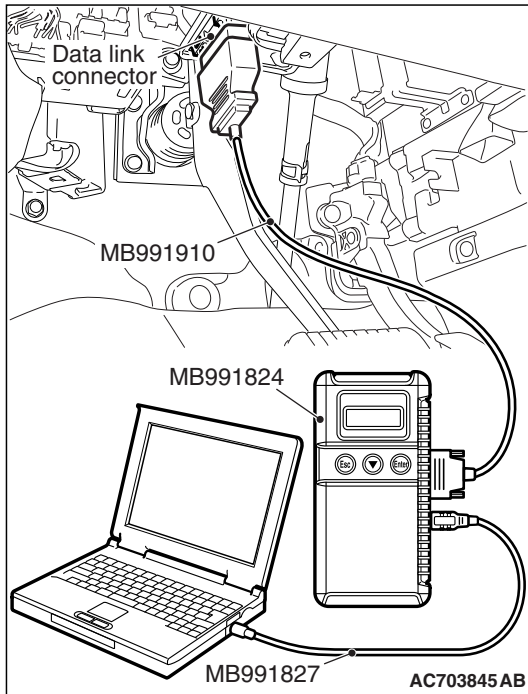
The throttle body or accelerator pedal position sensor (APP sensor) is suspected.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the throttle body.
- Malfunction of the APP sensor.
- Malfunction of the engine control module (ECM).

DIAGNOSIS**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



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

⚠ CAUTION

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

- (1) 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 special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

- (7) Start the M.U.T.-III system on the personal computer.
- (8) Turn the ignition switch to the "ON" position.
- (9) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13A-11](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13B-11](#)) <3.0L Engine>.
- (10) Turn the ignition switch to the "LOCK" (OFF) position, and then remove scan tool MB991958 in the reverse order of installation.

Q: Is any DTC set?

YES : Repair MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13A-49](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Chart [P.13B-51](#)) <3.0L Engine>. Then go to Step 2.

NO : Go to Step 2.

STEP 2. Retest the system.

Q: Does the throttle valve fully open and close?

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 2: Accelerator Pedal Operation not Smooth (Over Acceleration)

COMMENT

The accelerator pedal, its installation condition or the APP sensor is suspected.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the accelerator pedal.
- Incorrectly installed accelerator pedal.
- Malfunction of the APP sensor.

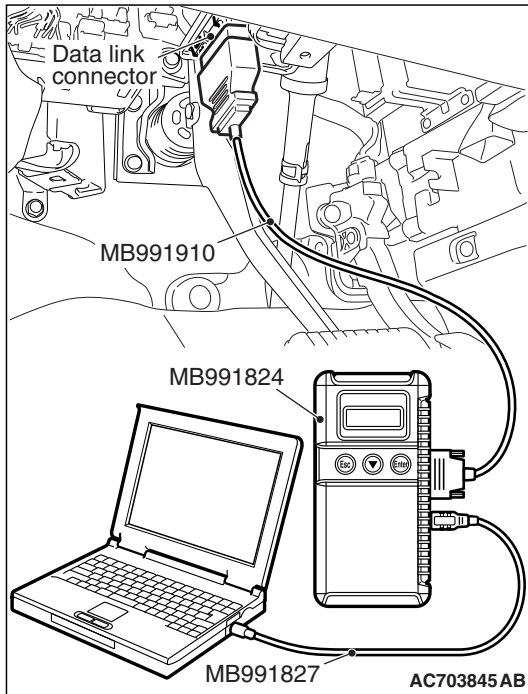
DIAGNOSIS**Required Special Tools:**

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

STEP 1. Check if the accelerator pedal is installed correctly.**Q: Is the accelerator pedal installed correctly?**

YES : Go to Step 2.

NO : Remove and reinstall the accelerator pedal (Refer to [P.17-9](#)). Then go to Step 3.



STEP 2. Using scan tool MB991958, read the MFI system diagnostic trouble code.

⚠ CAUTION

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

- (1) 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 special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

- (7) Start the M.U.T.-III system on the personal computer.
- (8) Turn the ignition switch to the "ON" position.
- (9) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13A-11](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13B-11](#)) <3.0L Engine>.
- (10) Turn the ignition switch to the "LOCK" (OFF) position, and then remove scan tool MB991958 in the reverse order of installation.

Q: Is any DTC set?

YES : Repair MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13A-49](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Chart [P.13B-51](#)) <3.0L Engine>. Then go to Step 3.

NO : Go to Step 3.

STEP 3. Retest the system.

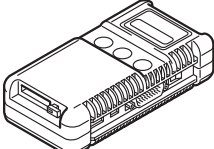

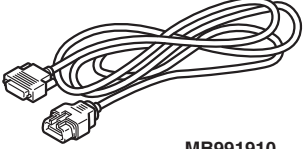
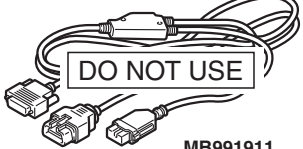

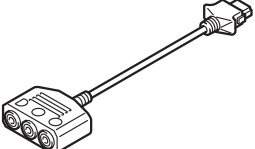
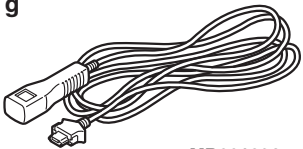
Q: Does the accelerator pedal work normally?

YES : The procedure is complete.

NO : Return to Step 1.

SPECIAL TOOL

M1171000600164

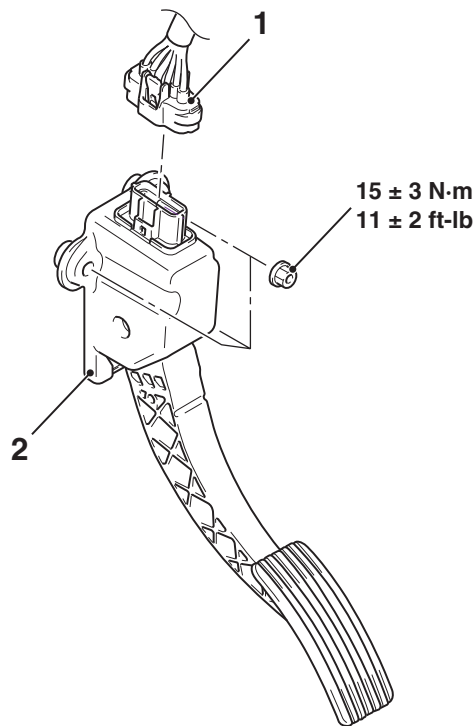
Tool	Tool number and name	Supersession	Application
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826</p> <p>MB991958</p>	<p>MB991958</p> <p>a. MB991824</p> <p>b. MB991827</p> <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 models 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>For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B or C instead, the CAN communication does not function correctly.</p> <p>Checking diagnostic trouble codes</p>

ACCELERATOR PEDAL REMOVAL AND INSTALLATION

M1171003001249

Pre-removal and Post-installation Operation
Bottom Cover Assembly (driver's seat) Removal and
Installation (Refer to GROUP 52A, Instrument Panel
Assembly [P.52A-2](#)).

<Vehicles without aluminium pedal pad>

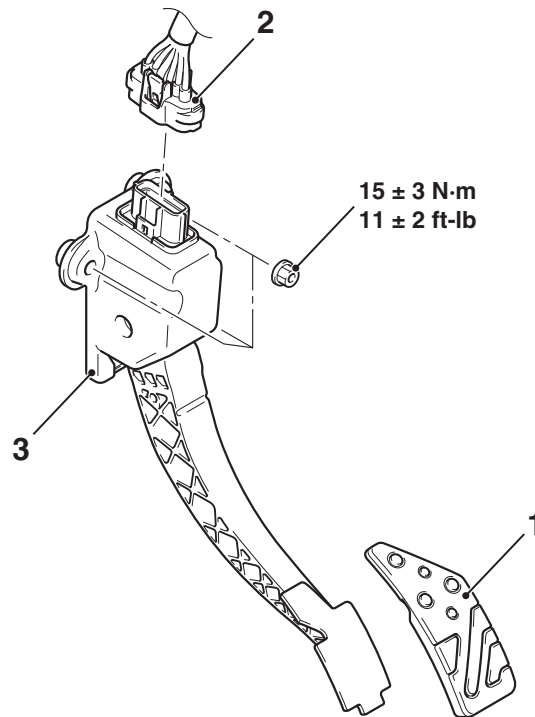


AC610167AD

Removal steps

1. Accelerator pedal position sensor connector
2. Accelerator pedal assembly

<Vehicles with aluminium pedal pad>



AC806114AB

Removal steps

1. Accelerator pedal pad

Removal steps (Continued)

2. Accelerator pedal position sensor connector
3. Accelerator pedal assembly

CRUISE CONTROL

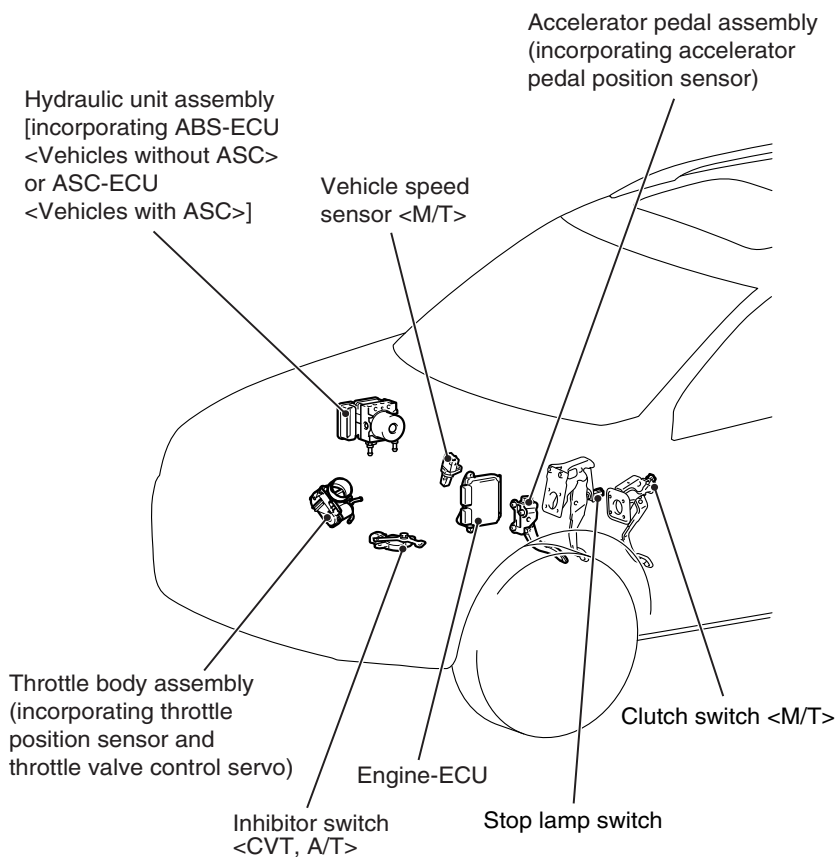
GENERAL INFORMATION

By using the cruise control system, the driver can drive at preferred speeds in a range of approximately 40 to 160 km/h (25 to 100 mph) without depressing the accelerator pedal.

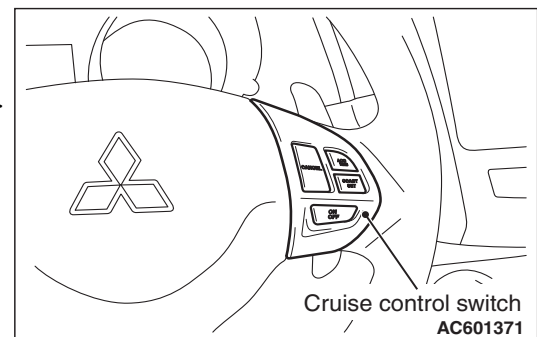
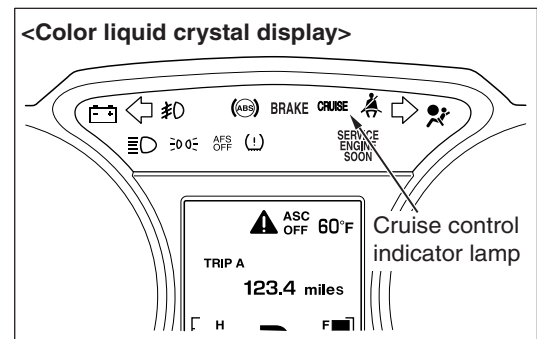
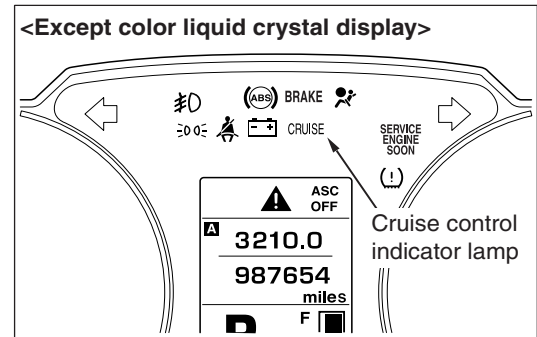
For this cruise control system, in conjunction with the electronic throttle valve control system, the engine control module (ECM) electronically controls the throttle valve.

M1172000101369

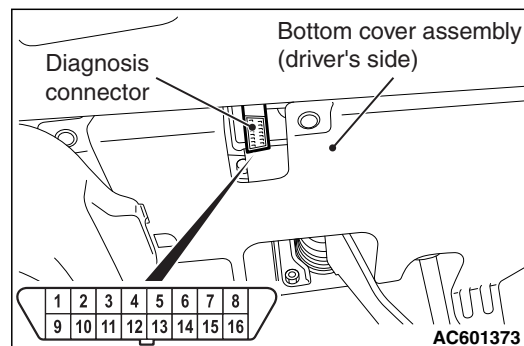
CONSTRUCTION DIAGRAM



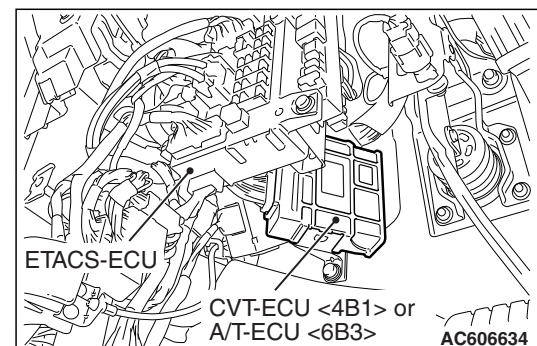
AC808870



AC902701AB



AC601373



AC606634

AC900558AB

CRUISE CONTROL SYSTEM DIAGNOSIS

INTRODUCTION TO CRUISE CONTROL SYSTEM DIAGNOSIS

M1172003300370

The cruise control system allows driving without stepping on the accelerator pedal by setting a random speed between 40 km/h (25 mph) and 160 km/h (100 mph). Malfunctions in this system can be investigated by the following methods.

input signals from the switches and sensors. If the ECM detects a malfunction on any of those components, the ECM estimates where the problem may be occurring, and will set a diagnostic trouble code. Diagnostic trouble codes cover the cruise control switch, stoplight switch and ECM.

CRUISE CONTROL SYSTEM DIAGNOSTIC TROUBLE CODES

The cruise control system consists of the engine control module (ECM), control switches and sensors. The switches and sensors monitor the state of the vehicle. The ECM controls the throttle valve opening angle in the throttle body in accordance with the

DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1172002000860

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will check most of the possible causes of an cruise control system malfunction.

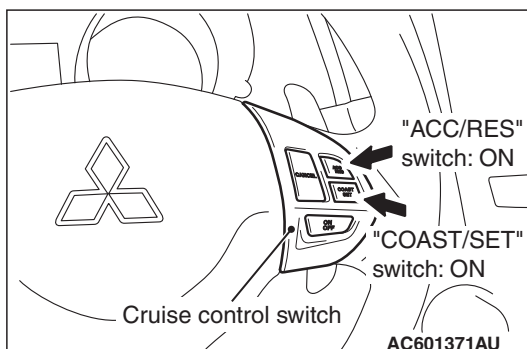
1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any cruise control system DTC. (Refer to [P.17-12](#), Diagnostic Function – How to Read Diagnostic Trouble Codes).
4. If you can verify the condition but no cruise control system DTCs are set, the malfunction may be intermittent. (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-15](#)).
5. If you can verify the condition but there are no cruise control system DTCs, find the fault. (Refer to [P.17-39](#), Symptom Chart).
6. If there is an cruise control system DTC, record the number of the code, then erase the code. (Refer to [P.17-12](#), Diagnostic Function –How to Erase Diagnostic Trouble Codes).
7. Re-create the cruise control system DTC set conditions to see if the same cruise control system DTC will set again. (Refer to [P.17-12](#), Diagnostic Function –How to Read Diagnostic Trouble Codes).
 - If the same cruise control system DTC sets again, perform the diagnostic procedures for the set code. (Refer to [P.17-15](#), Diagnostic Trouble Code Chart).

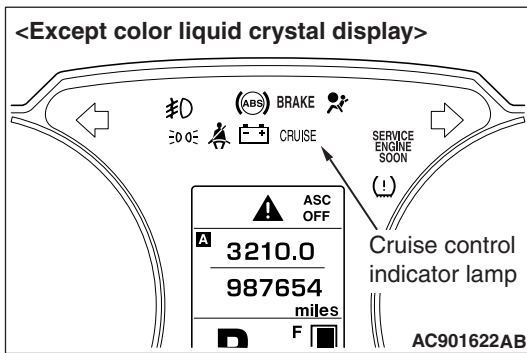
DIAGNOSTIC FUNCTION

M1172004900438

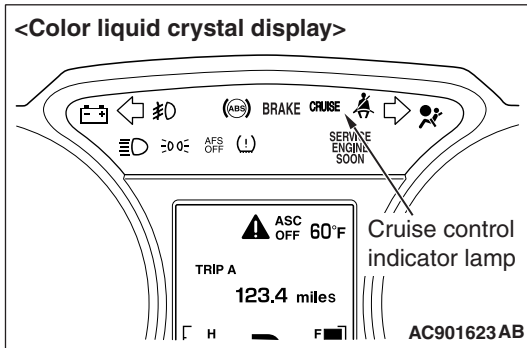
HOW TO READ DIAGNOSTIC TROUBLE CODES

1. Turn the ignition switch to the "ON" position while press the "COAST/SET" switch. Then, within one second, release the "COAST/SET" switch and press the "ACC/RES" switch.





2. Read a diagnostic trouble code by observing the flash display pattern of the "CRUISE" indicator light in the combination meter.



DIAGNOSTIC RESULT DISPLAY METHOD WHEN USING THE "CRUISE" INDICATOR LIGHT

When the diagnostic trouble code number 23 is output	When no diagnostic trouble code is output
<p>12V 0V</p> <p>Pause time: 3 s</p> <p>Ten digit</p> <p>Digit division: 2 s</p> <p>First digit</p> <p>0.5 s</p> <p>AC703915AB</p>	<p>12V 0V</p> <p>0.25 s</p> <p>Continuous ON and OFF signals at intervals of 0.25 s</p> <p>AC703916AB</p>

NOTE: Other on-board diagnostic items are also output as voltage waveforms corresponding to diagnostic trouble code numbers.

HOW TO ERASE DIAGNOSTIC TROUBLE CODES

Disconnect the negative (-) battery cable.

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

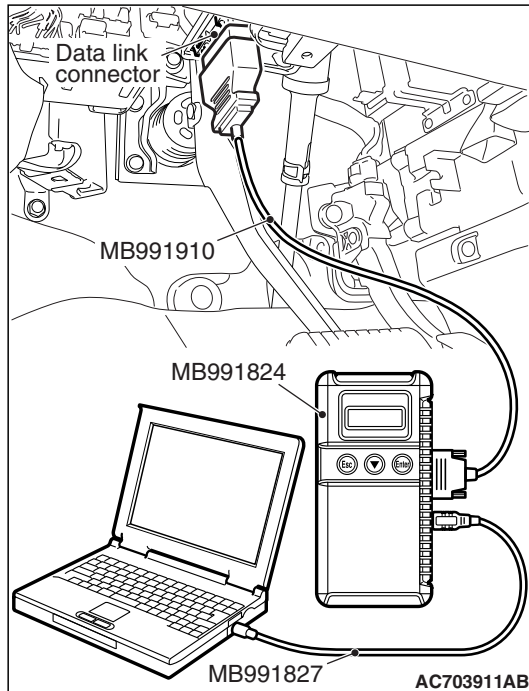
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Start up the personal computer.
2. Connect special tool MB991827 to special tool MB991824 and the personal computer.
3. Connect special tool MB991910 to special tool MB991824.
4. Connect special tool MB991910 to the data link connector.
5. Turn the power switch of special tool MB991824 to the "ON" position.

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in green color.

6. Start the M.U.T.-III system on the personal computer.

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

**HOW TO READ DATA LIST****Required Special Tools:**

- 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

1. Connect 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 CRUISE" from "System List", and press the "OK" button.

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

6. Select the "MITSUBISHI."
7. Select the "Data List."

NOTE: When the "Data List Reference Table" button is selected, the service data reference table is displayed, and the normal values can be checked.

8. Choose an appropriate item.
9. Turn the ignition switch to the "LOCK" (OFF) position.
10. Disconnect scan tool MB991958.

HOW TO DIAGNOSE THE CAN BUS LINE

Required Special Tools:

- 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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select the "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 the "view vehicle information" button.
6. Enter the vehicle information and select the "OK" button.
7. When the vehicle information is displayed, confirm again that it matches the vehicle which whose CAN bus lines will be diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
8. Press the "OK" button.
9. When the optional equipment screen is displayed, choose the one which the vehicle is fitted with, and then select the "OK" button.
10. Turn the ignition switch to the "LOCK" (OFF) position.
11. Disconnect scan tool MB991958.

DIAGNOSTIC TROUBLE CODE CHART

M1172002200950

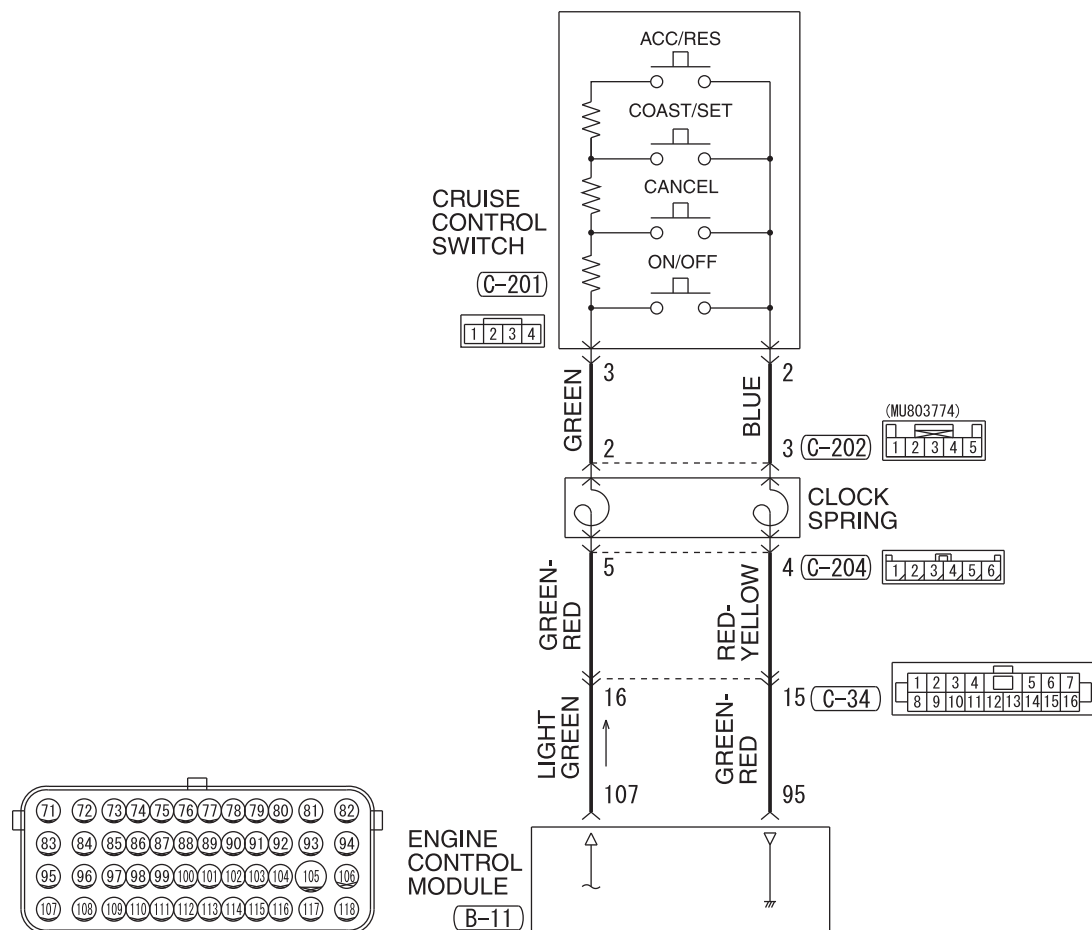
Check according to the inspection chart that is appropriate for the diagnostic trouble code.

Diagnostic trouble code number	Inspection item	Reference page
15	Cruise control switch system	P.17-16
22	Stoplight switch system	P.17-29
23	ECM and its related components	P.17-37

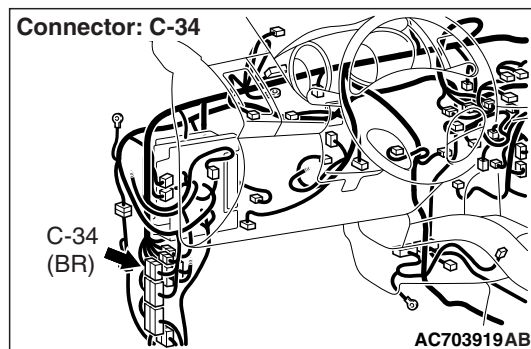
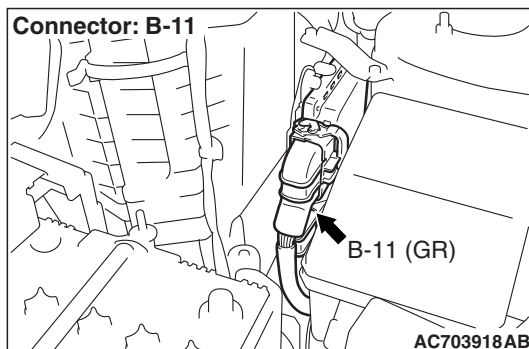
DIAGNOSTIC TROUBLE CODE PROCEDURES

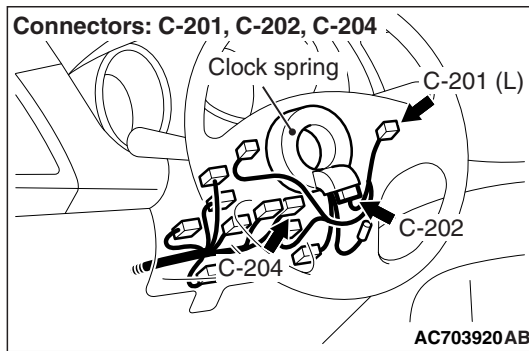
DTC 15: Cruise Control Switch System

Cruise Control Switch Circuit



AC709996 AB





CIRCUIT OPERATION

This circuit judges the signals of each switch ("ON/OFF", "CANCEL", "COAST/SET" and "ACC/RES") of the cruise control switch. The ECM detects the state of the cruise control switch by sensing the voltages shown below.

- When all switches are released: 4.7 –5.0 volts
- When the "ON/OFF" switch is pressed: 0 –0.5 volt
- When the "CANCEL" switch is pressed: 1.0 –1.8 volts
- When the "COAST/SET" switch is pressed: 2.3 – 3.0 volts
- When the "ACC/RES" switch is pressed: 3.5 –4.2 volts

DTC SET CONDITIONS

Check Condition

- The "CRUISE" indicator light illuminates.

Judgment Criteria

- This DTC will be set when the "COAST/SET" switch or the "ACC/RES" switch is continuously ON for 60 seconds or more.

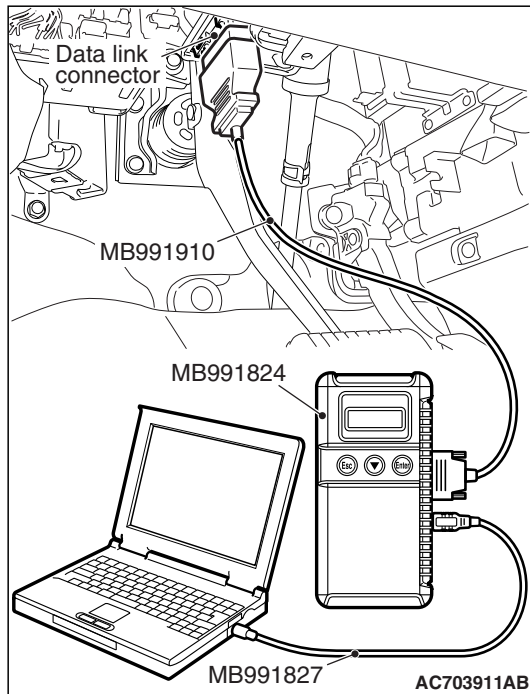
TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Damaged harness or connector.
- Malfunction of the cruise control switch.
- Malfunction of the clock spring.
- Malfunction of the ECM.

DIAGNOSIS

Required Special Tools:

- 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
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB992110: Power Plant ECU Check Harness



STEP 1. Using scan tool MB991958, check the data list item 86: Main switch, item 92: Set switch, item 91: Resume switch and item 75: Cancel switch.

⚠ 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 (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to P.17-12).
 - Item 86: Main switch.
 - When the "ON/OFF" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ON/OFF" switch is pressed again, the display on scan tool MB991958 should be "OFF".
 - Item 92: Set switch.
 - When the "COAST/SET" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "COAST/SET" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 91: Resume switch.
 - When the "ACC/RES" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ACC/RES" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 75: Cancel switch.
 - When the "CANCEL" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "CANCEL" switch is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

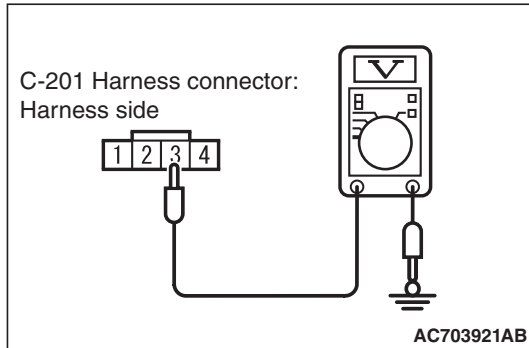
Q: Is the switch operating properly?

YES : Go to Step 18.

NO : Go to Step 2.

STEP 2. Measure the power supply voltage at cruise control switch connector C-201 by backprobing.

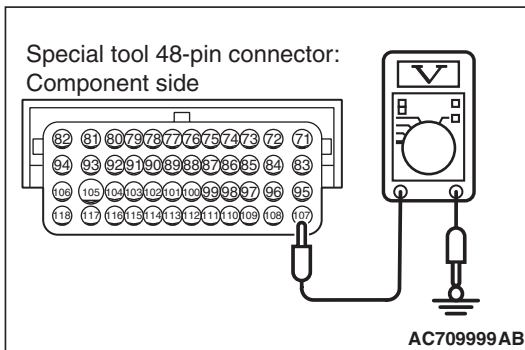
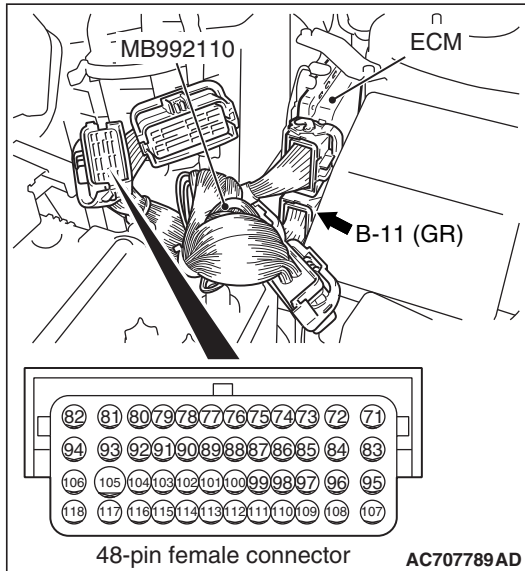
- (1) Remove the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)).
- (2) Remove the cruise control switch from the steering wheel with the cruise control switch connector connected (Refer to [P.17-67](#)).
- (3) Connect the negative (-) battery cable.
- (4) Do not disconnect cruise control switch connector C-201.
- (5) Turn the ignition switch to the "ON" position.
- (6) Do not operate the cruise control switch.
- (7) Measure the power supply voltage between cruise control switch connector C-201 terminal 3 and ground by backprobing.
- (8) Turn the ignition switch to the "LOCK" (OFF) position.
- (9) Install the cruise control switch to the steering wheel (Refer to [P.17-67](#)).



Q: Is the measured voltage between 4.7 and 5.0 volts?

YES : Go to Step 9.

NO : Go to Step 3.

**STEP 3. Measure the power supply voltage at ECM connector B-11.**

- (1) Disconnect all the connectors from the ECM.
- (2) Connect special tool MB992110 between the ECM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Do not operate the cruise control switch.

- (5) Measure the power supply voltage between special tool 48-pin connector terminal 107 (ECM connector B-11 terminal 107) and ground.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.
- (7) Disconnect special tool MB992110 between the ECM and the body-side harness connector.
- (8) Reconnect all the connectors to the ECM.

Q: Is the measured voltage between 4.7 and 5.0 volts?

YES : Go to Step 6.

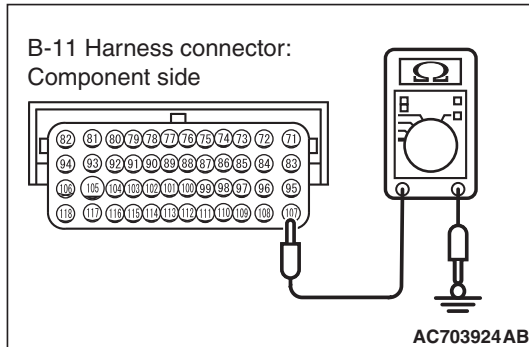
NO : Go to Step 4.

STEP 4. Check ECM connector B-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.



STEP 5. Check the harness for short circuit to ground between the ECM connector B-11 terminal 107 and the cruise control switch connector C-201 terminal 3.

- (1) Disconnect ECM connector B-11 and measure at the harness connector side.
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Measure the continuity between ECM connector B-11 terminal 107 and ground.
- (4) Reconnect ECM connector B-11.

Q: Is the measured continuity open circuit?

YES : Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 17.

NO : Go to Step 6.

STEP 6. Check intermediate connector C-34, cruise control switch connector C-201 and clock spring connectors C-202 and C-204 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 7. Check the harness wire between ECM connector B-11 terminal 107 and cruise control switch connector C-201 terminal 3 for damage.

Q: Are the harness wires in good condition?

YES : Go to Step 8.

NO : Repair the damaged harness wire. Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 8. Check the clock spring.

Refer to GROUP 52B, Air Bag Modules and Clock Spring Inspection [P.52B-443](#).

Q: Is the clock spring 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 Malfunction [P.00-15](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)).

NO : Replace the clock spring (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

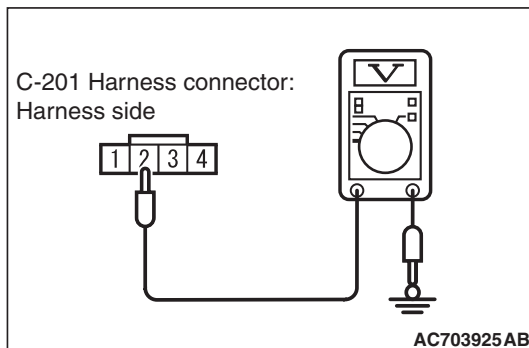
STEP 9. Measure the ground voltage at cruise control switch connector C-201 by backprobing.

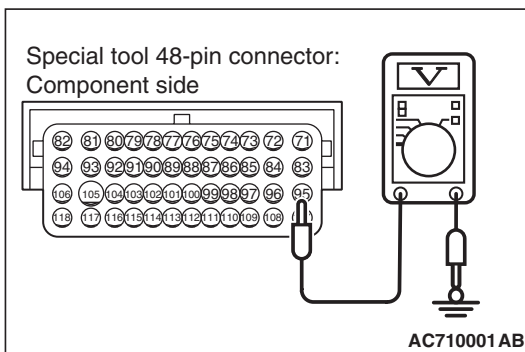
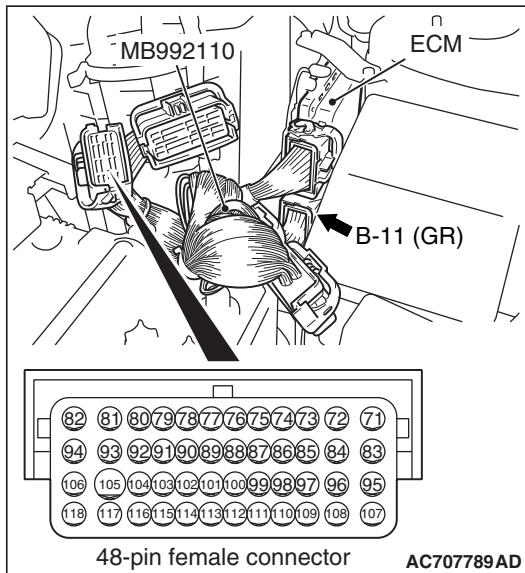
- (1) Remove the cruise control switch from the steering wheel with the cruise control switch connector connected (Refer to [P.17-67](#)).
- (2) Do not disconnect cruise control switch connector C-201.
- (3) Turn the ignition switch to the "ON" position.
- (4) Press the "ON/OFF" switch.
- (5) Measure the ground voltage between cruise control switch connector C-201 terminal 2 and ground by backprobing.
- (6) Release the "ON/OFF" switch.
- (7) Turn the ignition switch to the "LOCK" (OFF) position.
- (8) Install the cruise control switch to the steering wheel (Refer to [P.17-67](#)).

Q: Is the measured voltage 0.5 volt or less?

YES : Go to Step 15.

NO : Go to Step 10.





STEP 10. Measure the ground voltage at ECM connector B-11.

- (1) Disconnect all the connectors from the ECM.
- (2) Connect special tool MB992110 between the ECM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Press the "ON/OFF" switch.

- (5) Measure the ground voltage between special tool 48-pin connector terminal 95 (ECM connector B-11 terminal 95) and ground.
- (6) Release the "ON/OFF" switch.
- (7) Turn the ignition switch to the "LOCK" (OFF) position.
- (8) Disconnect special tool MB992110 between the ECM and the body-side harness connector.
- (9) Reconnect all the connectors to the ECM.

Q: Is the measured voltage 0.5 volt or less?

YES : Go to Step 12.

NO : Go to Step 11.

STEP 11. Check ECM connector B-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 17.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 12. Check ECM connector B-11, intermediate connector C-34, cruise control switch connector C-201 and clock spring connectors C-202 and C-204 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 13.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 13. Check the harness wire between ECM connector B-11 terminal 95 and cruise control switch connector C-201 terminal 2 for damage.

Q: Are the harness wires in good condition?

YES : Go to Step 14.

NO : Repair the damaged harness wire. Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 14. Check the clock spring.

Refer to GROUP 52B, Air Bag Modules and Clock Spring Inspection [P.52B-443](#).

Q: Is the clock spring 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 Malfunction [P.00-15](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)).

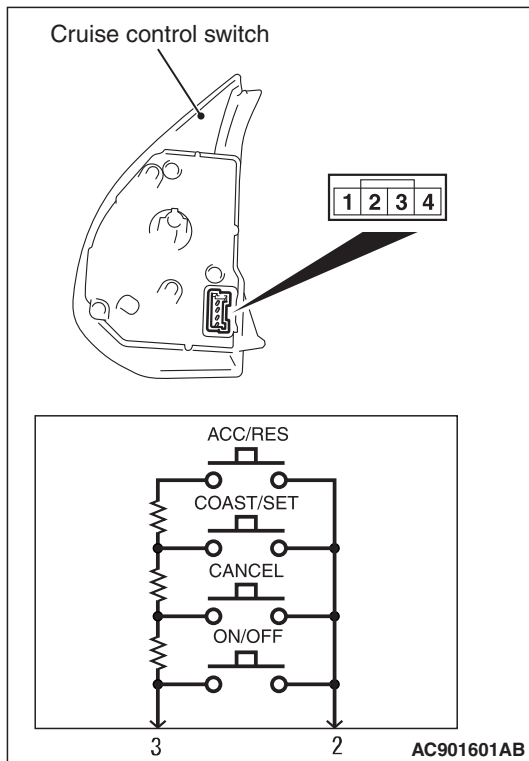
NO : Replace the clock spring (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 15. Check cruise control switch connector C-201 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 16.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.



STEP 16. Check the cruise control switch.

- (1) Remove the cruise control switch (Refer to [P.17-67](#)).
- (2) Measure the resistance between terminal 2 and terminal 3 when each of the "ON/OFF", "COAST/SET", "ACC/RES" and "CANCEL" switch is pressed.

Switch position	Specified condition
All switches are released.	Open circuit
"ON/OFF" switch is pressed	Continuity (less than 2 ohms)
"CANCEL" switch is pressed	202.5 –208 Ω
"COAST/SET" switch is pressed	610.5 –624.5 Ω
"ACC/RES" switch is pressed	1838 –1877 Ω

Q: Is the resistance within specifications?

YES : Install the cruise control switch (Refer to [P.17-67](#)) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 17.

NO : Replace the cruise control switch (Refer to [P.17-67](#)). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring [P.52B-443](#)). Then go to Step 19.

STEP 17. Using scan tool MB991958, check the data list item 86: Main switch, item 92: Set switch, item 91: Resume switch and item 75: Cancel switch.

⚠ 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 (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 86: Main switch.
 - When the "ON/OFF" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ON/OFF" switch is pressed again, the display on scan tool MB991958 should be "OFF".
 - Item 92: Set switch.
 - When the "COAST/SET" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "COAST/SET" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 91: Resume switch.
 - When the "ACC/RES" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ACC/RES" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 75: Cancel switch.
 - When the "CANCEL" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "CANCEL" switch is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 18.

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#) <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#) <3.0L Engine>]. Then go to Step 19.

STEP 18. Read the diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) After turning the cruise control system to ON, when 2 minutes or more has elapsed without operating the cruise control switches, read the diagnostic trouble code of the cruise control system (Refer to [P.17-12](#)).

Q: Is DTC 15 set?

YES : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 19.

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 Malfunction [P.00-15](#)).

STEP 19. Using scan tool MB991958, check the data list item 86: Main switch, item 92: Set switch, item 91: Resume switch and item 75: Cancel switch.

⚠ 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 (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 86: Main switch.
 - When the "ON/OFF" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ON/OFF" switch is pressed again, the display on scan tool MB991958 should be "OFF".
 - Item 92: Set switch.
 - When the "COAST/SET" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "COAST/SET" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 91: Resume switch.
 - When the "ACC/RES" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ACC/RES" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 75: Cancel switch.
 - When the "CANCEL" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "CANCEL" switch is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 20.

NO : Return to Step 2.

STEP 20. Read the diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) After turning the cruise control system to ON, when 2 minutes or more has elapsed without operating the cruise control switches, read the diagnostic trouble code of the cruise control system (Refer to [P.17-12](#)).

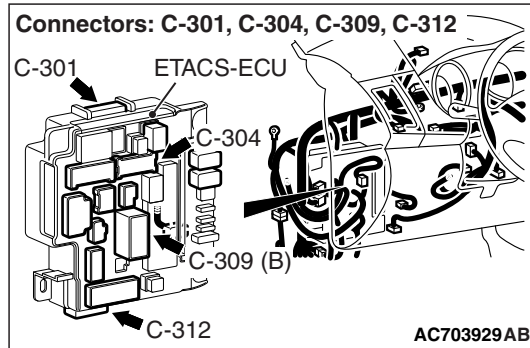
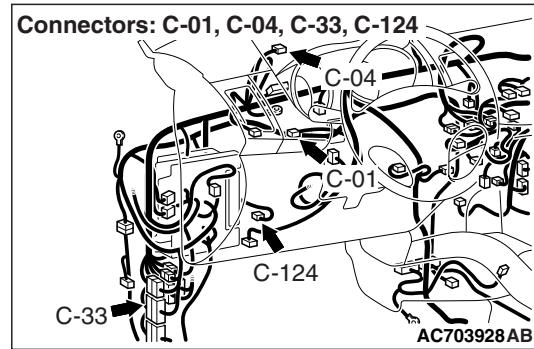
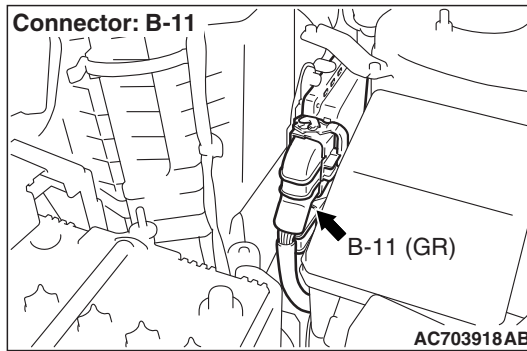
Q: Is DTC 15 set?

YES : Return to Step 1.

NO : The procedure is complete.

Stoplight Switch System Circuit





CIRCUIT OPERATION

- As for the stoplight switch, when the brake pedal is depressed, the stoplight switch signal is transmitted from the ETACS-ECU to the ECM via CAN bus line.
- As for the brake switch, when the brake pedal is depressed, battery positive voltage is supplied to the stoplight switch (terminal 3), and when the brake pedal is not depressed, the voltage of ECM (terminal 108) will indicate 0 volt.

DTC SET CONDITIONS

Check Condition

- The "CRUISE" indicator light illuminates.

Judgment Criteria

- Short or open in stoplight switch circuit.
- Open circuit in the brake switch circuit (between ECM terminal 108 and ground).
- Malfunction of CAN bus line.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of CAN bus system.
- Damaged harness or connector.
- Malfunction of the stoplight switch.
- Malfunction of the ETACS-ECU
- Malfunction of the ECM

DIAGNOSIS

Required Special Tools:

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

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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

⚠ CAUTION

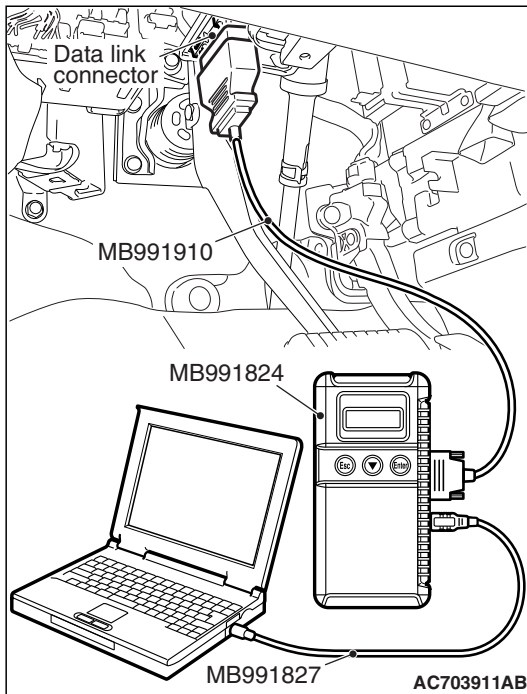
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 15.



STEP 2. Using scan tool MB991958, check the data list item 74: Brake light switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to P.17-12).
 - Item 74, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 9.

NO : Go to Step 3.

STEP 3. Using scan tool MB991958, check the ETACS system data list item 290: Brake light switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54A, Diagnosis –Data List Reference Table [P.54A-787](#)).
 - Item 290, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 15.

NO : Go to Step 4.

STEP 4. Check stoplight switch connector C-124 and stoplight relay connector C-133 and ETACS-ECU connector C-304 and C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Are the connectors and terminals in good condition?**

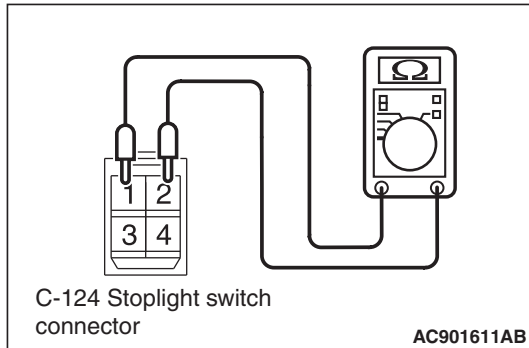
YES : Go to Step 5.

NO : Repair or replace the damaged components (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Then go to Step 15.

STEP 5. Check the harness wire between ETACS-ECU connector C-304 terminal 1 and stoplight switch connector C-124 terminal 1, and check the harness wire stoplight switch connector C-124 terminal 2 and stoplight relay connector C-133 terminal 2, stoplight relay connector C-133 terminal 2 and ETACS-ECU connector C-312 terminal 16 for damage.**Q: Are the harness wires in good condition?**

YES : Go to Step 6.

NO : Repair the damaged harness wire. Then go to Step 15.



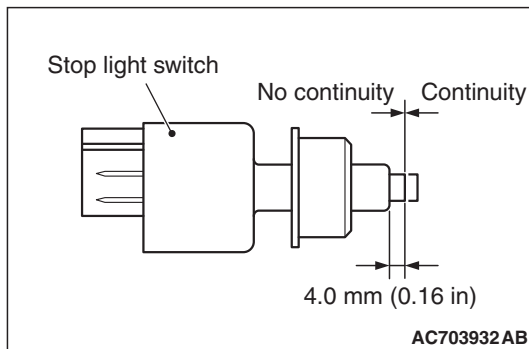
STEP 6. Check the stoplight switch.

- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)).
- (2) Connect an ohmmeter to the stoplight switch between terminals 1 and 2.
- (3) Check for continuity between the terminals when the plunger of the stoplight switch is pushed in and when it is released.
- (4) The stoplight switch is operating properly if the circuit is open between terminals 1 and 2 when the plunger is pushed in to a depth of within 4.0 mm (0.16 inch) from the outer case edge surface, and if the resistance value is less than 2 ohms between terminals 1 and 2 when it is released.

Q: Is the stoplight switch operating properly?

YES : Install the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)). Then go to Step 7.

NO : Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)). Then go to Step 15.

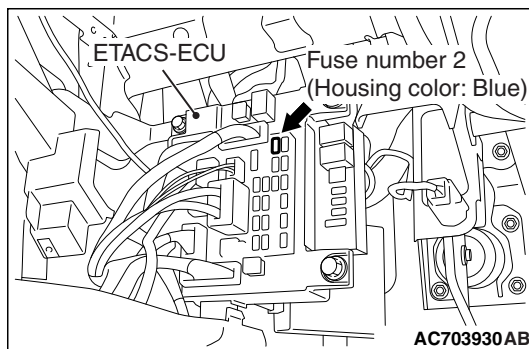


STEP 7. Check fuse number 2 at the ETACS-ECU.

Q: Is the fuse in good condition?

YES : Go to Step 8.

NO : Check the stoplight system harness and replace the fuse. Then go to Step 15.



STEP 8. Using scan tool MB991958, check the ETACS system data list item 290: Brake light switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54A, Data List Reference Table [P.54A-787](#)).
 - Item 290, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 15

NO : Replace the ETACS-ECU (Refer to GROUP 54A, ETACS-ECU [P.54A-841](#)). Then go to Step 15.

STEP 9. Using scan tool MB991958, check the data list item 89: Normally closed brake switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 89, Normally closed brake switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

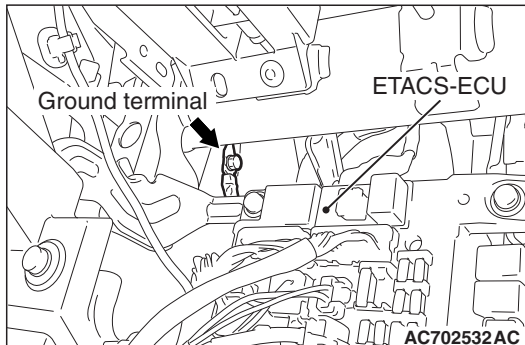
YES : Go to Step 14.

NO : Go to Step 10.

STEP 10. Check ECM connector B-11 and stoplight switch connector C-124 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Are the connectors and terminals in good condition?**

YES : Go to Step 11.

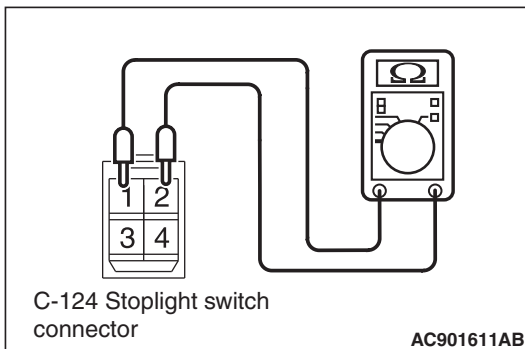
NO : Repair or replace the damaged components (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Then go to Step 15.



STEP 11. Check the harness wire between ECM connector B-11 terminal 108 and stoplight switch connector C-124 terminal 3, and check the harness wire between stoplight switch connector C-124 terminal 4 and ground for damage.
Q: Are the harness wires in good condition?

YES : Go to Step 12.

NO : Repair the damaged harness wire. Then go to Step 15.



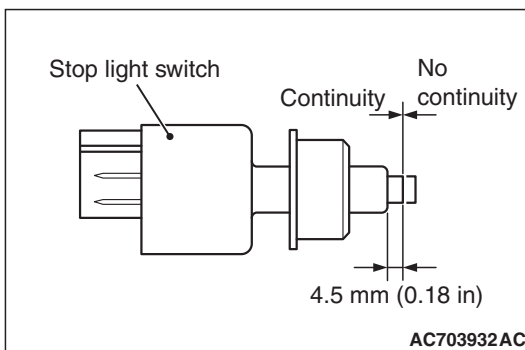
STEP 12. Check the stoplight switch.

- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)).
- (2) Connect an ohmmeter to the stoplight switch between terminals 3 and 4.
- (3) Check for continuity between the terminals when the plunger of the stoplight switch is pushed in and when it is released.
- (4) The stoplight switch is operating properly if the circuit is open between terminals 3 and 4 when the plunger is released, and if resistance value is less than 2 ohms between terminals 3 and 4 when the plunger is pushed in to a depth of within 4.5 mm (0.18 inch) from the outer case edge surface.

Q: Is the stoplight switch operating properly?

YES : Install the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)). Then go to Step 13.

NO : Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal [P.35A-26](#)). Then go to Step 15.



STEP 13. Using scan tool MB991958, check the data list item 89: Normally closed brake switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 89, Normally closed brake switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

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.00-15](#)).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 15.

STEP 14. Read the diagnostic trouble codes.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) With the cruise control switches not operated, depress the brake pedal for several seconds, and then read the diagnostic trouble codes. (Refer to [P.17-12](#)).

Q: Is DTC P22 set?

YES : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 15.

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.00-15](#)).

STEP 15. Using scan tool MB991958, check the data list item 74: Brake light switch, item 89: Normally closed brake switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 74, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
 - Item 89, Normally closed brake switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 16.

NO : Return to Step 2.

STEP 16. Read the diagnostic trouble codes.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) With the cruise control switches not operated, depress the brake pedal for several seconds, and then read the diagnostic trouble codes. (Refer to [P.17-12](#)).

Q: Is DTC P22 set?

YES : Return to Step 1.

NO : The procedure is complete.

DTC 23: ECM and Its Related Component

DTC SET CONDITIONS

This DTC is set when there is failure in the ECM and its related components.

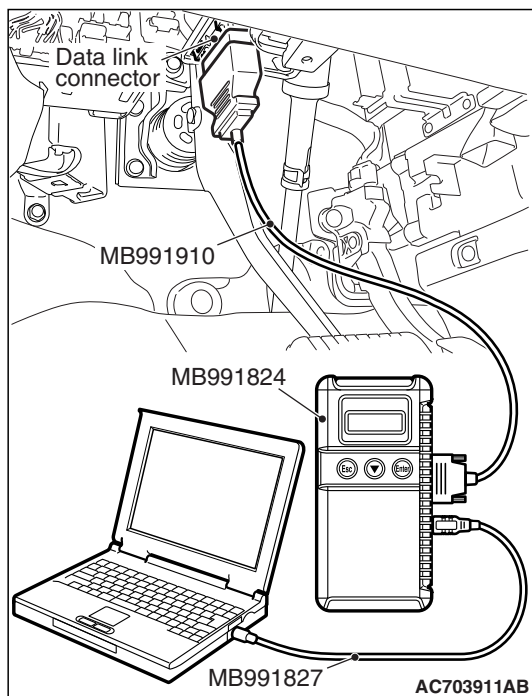
TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of the MFI system.
- Malfunction of the ECM.

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13A-11) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13B-11) <3.0L Engine>.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Chart P.13A-49) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Chart P.13B-51) <3.0L Engine>. Then go to Step 3.

NO : Go to Step 2.

STEP 2. Read the cruise control system diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) After turning the cruise control system to ON, when 2 minutes or more has elapsed without operating the cruise control switches, read the diagnostic trouble code of the cruise control system (Refer to P.17-12).

Q: Is DTC 23 set?

YES : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) P.13A-982] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) P.13B-894] <3.0L Engine>. Then 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.00-15).

STEP 3. Read the cruise control system diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) After turning the cruise control system to ON, when 2 minutes or more has elapsed without operating the cruise control switches, read the diagnostic trouble code of the cruise control system (Refer to [P.17-12](#)).

Q: Is DTC 23 set?

YES : Return to Step 1.

NO : The procedure is complete.

SYMPTOM CHART

M1172002301325

Symptom		Inspection procedure number	Reference page
Scan tool communication with ECM Is not possible. <2.4L Engine>		-	GROUP 13A, Symptom Procedures – Inspection Procedure 1 P.13A-809 .
Scan tool communication with ECM Is not possible. <3.0L Engine>		-	GROUP 13B, Symptom Procedures – Inspection Procedure 1 P.13B-738 .
Cruise control system is not cancelled.	When the brake pedal is depressed	1	P.17-40
	When the selector lever is moved to "N" position	2	P.17-42
	When the "CANCEL" switch is turned ON	3	P.17-44
Cruise control system cannot be set (No response when the "COAST/SET" switch and the "ACC/RES" switch is pressed).		4	P.17-46
Hunting (repeated acceleration and deceleration) occurs at the set vehicle speed.		5	P.17-52
When "ON/OFF" switch is turned "ON", "CRUISE" indicator light inside combination meter does not illuminate (However, cruise control system is normal).		6	P.17-55

SYMPTOM PROCEDURES

Inspection Procedure 1: When the Brake Pedal is Depressed, Cruise Control System is not Cancelled.**COMMENT**

- Malfunction of CAN bus line.
- The stoplight switch circuit is suspected.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of CAN bus system.
- Damaged harness or connector.
- Malfunction of the stoplight switch.
- Malfunction of the ETACS-ECU
- Malfunction of the ECM.

DIAGNOSIS**Required Special Tools:**

- 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

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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

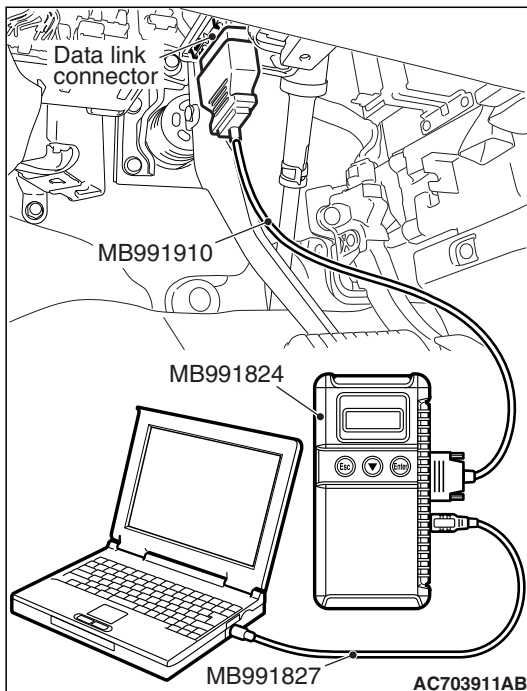
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 4.



STEP 2. Using scan tool MB991958, check the data list item 74: Brake light switch, item 89: Normally closed brake switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 74, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
 - Item 89, Normally closed brake switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 3.

NO : Refer to [P.17-29](#) –DTC 22: Stoplight switch system. Then go to Step 4.

STEP 3. Check the symptoms.

Q: When the brake pedal is depressed, cruise control system is cancelled?

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.00-15](#)).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 4.

STEP 4. Check the symptoms.

Q: When the brake pedal is depressed, cruise control system is cancelled?

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 2: When the Selector Lever is Moved to "N" Position, cruise Control System is not Cancelled.

CIRCUIT OPERATION

When the selector lever is operated, the selector lever signal from the transmission range switch is sent to the TCM. ECM receives the selector lever position signal from the TCM via the CAN bus line.

COMMENT

- Malfunction of CAN bus line.
- The transmission range switch circuit is suspected.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of CAN bus system.
- Damaged harness or connector.
- Malfunction of the transmission range switch.
- Malfunction of the TCM.
- Malfunction of the ECM.

DIAGNOSIS

Required Special Tools:

- 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

CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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

CAUTION

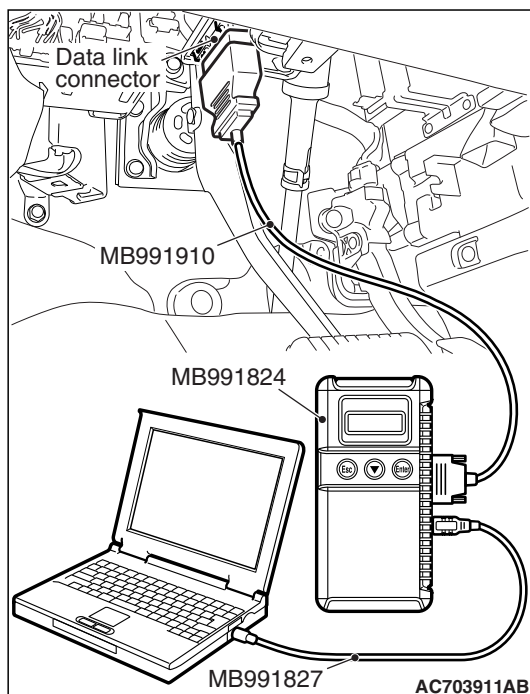
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 6.



STEP 2. Using scan tool MB991958, check the data list item 88: Neutral switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 88, Neutral switch.
 - When the selector lever is moved to "N" or "P" position, the display on scan tool MB991958 should be "ON".
 - When the selector lever is moved to other than "N" or "P" position, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 3 <2.4L Engine>.

YES : Go to Step 4 <3.0L Engine>.

NO : Repair the CVT system (Refer to GROUP 23A, Diagnosis –Diagnostic Trouble Code Procedures – DTC P0705: Malfunction of Transmission Range Switch [P.23A-35](#)) <2.4L Engine>. Then go to Step 6.

NO : Repair the A/T system (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Trouble Code Procedures –DTC P0705: Transmission Range Switch System [P.23C-34](#)) <3.0L Engine>. Then go to Step 6.

STEP 3. Using scan tool MB991958, read the CVT system diagnostic trouble code <2.4L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for CVT system diagnostic trouble code (Refer to GROUP 23A, Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Code [P.23A-14](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the CVT system (Refer to GROUP 23A, Diagnosis –Diagnostic Trouble Code Chart [P.23A-28](#)). Then go to Step 6.

NO : Go to Step 5.

STEP 4. Using scan tool MB991958, read the A/T system diagnostic trouble code <3.0L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.23C-18](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the A/T system (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Trouble Code Chart [P.23C-164](#)). Then go to Step 6.

NO : Go to Step 5.

STEP 5. Check the symptoms.**Q: When the selector lever is moved to "N" position, cruise control system is cancelled?**

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.00-15](#)).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 6.

STEP 6. Check the symptoms.**Q: When the selector lever is moved to "N" position, cruise control system is cancelled?**

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 3: When the "CANCEL" Switch is Set to ON, Cruise Control System is not Cancelled.

COMMENT

The cause is probably an open-circuit in the output circuit inside the "CANCEL" switch.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Damaged harness or connector.
- Malfunction of the cruise control switch.
- Malfunction of the clock spring.
- Malfunction of the ECM.

DIAGNOSIS

Required Special Tools:

- 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 the data list item 75: Cancel switch.

⚠ CAUTION

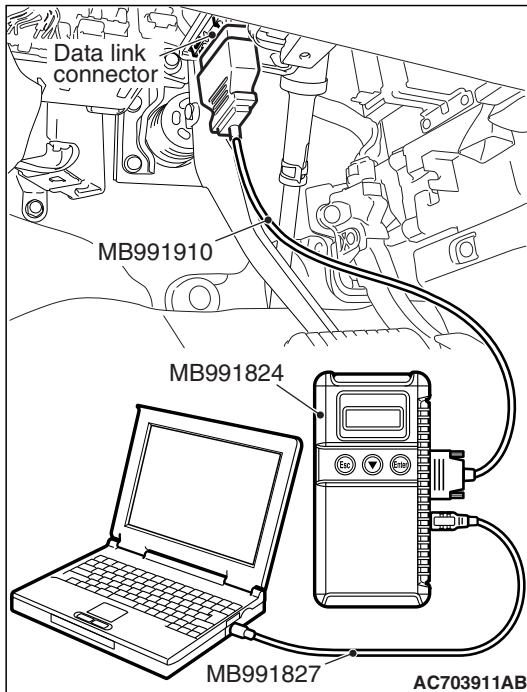
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to P.17-12).
 - Item 75: Cancel switch.
 - When the "CANCEL" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "CANCEL" switch is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 2.

NO : Refer to P.17-16, Diagnostic Trouble Code Procedures –DTC 15: Cruise control switch system. Then go to Step 3.



STEP 2. Check the symptoms.

Q: "CANCEL" switch is pressed, cruise control system is cancelled?

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.00-15).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) P.13A-982] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) P.13B-894] <3.0L Engine>. Then go to Step 3.

STEP 3. Check the symptoms.

Q: "CANCEL" switch is pressed, cruise control system is cancelled?

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 4: Cruise Control System cannot be Set (No Response when the "COAST/SET" Switch and the "ACC/RES" Switch is Pressed).

COMMENT

The fail-safe function is probably canceling cruise control system. In this case, checking the auto-cruise control system, MFI system, CVT system <2.4L Engine> or A/T system <3.0L Engine> and CAN bus line system for diagnostic trouble codes. The scan tool MB991958 can also be used to check if the circuits of each input switch are normal or not by checking the input switch codes.

NOTE: Press the cruise control switches one by one securely. Otherwise, the cruise control system may not be started.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of the CAN bus line system.
- Malfunction of the MFI system.
- Malfunction of the CVT system <2.4L Engine>.
- Malfunction of the A/T system<3.0L Engine>.
- Malfunction of the cruise control switch.
- Malfunction of the stoplight switch.
- Malfunction of the transmission range switch.
- Malfunction of the TCM.
- Malfunction of the ECM.

DIAGNOSIS**Required Special Tools:**

- 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

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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

⚠ CAUTION

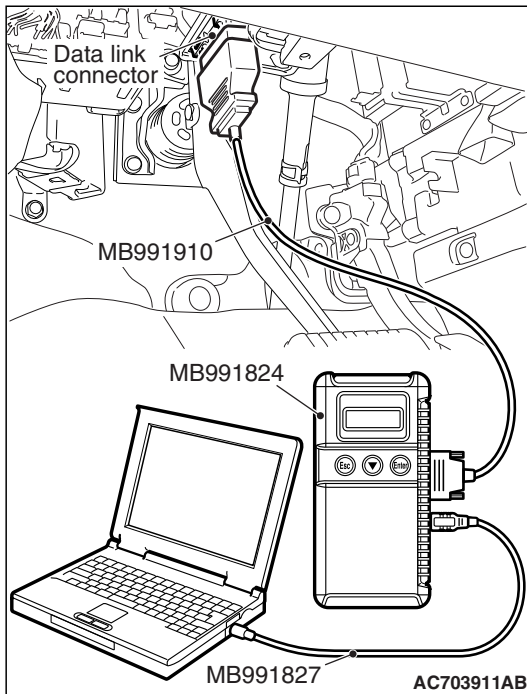
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 10.



STEP 2. Using scan tool MB991958, read the MFI system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.54C-17).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13A-11) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13B-11) <3.0L Engine>.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Chart P.13A-49) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Chart P.13B-51) <3.0L Engine>. Then go to Step 10.

NO : Go to Step 3 <2.4L Engine>.

NO : Go to Step 4 <3.0L Engine>.

STEP 3. Using scan tool MB991958, read the CVT system diagnostic trouble code <2.4L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for CVT system diagnostic trouble code (Refer to GROUP 23A, Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Code [P.23A-14](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the CVT system (Refer to GROUP 23A, Diagnosis –Diagnostic Trouble Code Chart [P.23A-28](#)). Then go to Step 10.

NO : Go to Step 5.

STEP 4. Using scan tool MB991958, read the A/T system diagnostic trouble code <3.0L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.23C-18](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the A/T system (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Trouble Code Chart [P.23C-164](#)). Then go to Step 10.

NO : Go to Step 5.

STEP 5. Read the diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position, and press the "ON/OFF" switch to turn the cruise control system to ON (turn on the "CRUISE" indicator light).
- (3) After turning the cruise control system to ON, when 2 minutes or more has elapsed without operating the cruise control switches, read the diagnostic trouble code of the cruise control system (Refer to [P.17-12](#)).

Q: Is DTC set?

YES : Diagnose the cruise control system (Refer to [P.17-15](#), Diagnostic Trouble Code Chart). Then go to Step 10.

NO : Go to Step 6.

STEP 6. Using scan tool MB991958, check the data list item 86: Main switch, item 92: Set switch, item 91: Resume switch and item 75: Cancel switch.

⚠ 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 (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 86: Main switch.
 - When the "ON/OFF" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ON/OFF" switch is pressed again, the display on scan tool MB991958 should be "OFF".
 - Item 92: Set switch.
 - When the "COAST/SET" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "COAST/SET" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 91: Resume switch.
 - When the "ACC/RES" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "ACC/RES" switch is released, the display on scan tool MB991958 should be "OFF".
 - Item 75: Cancel switch.
 - When the "CANCEL" switch is pressed, the display on scan tool MB991958 should be "ON".
 - When the "CANCEL" switch is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 7.

NO : Refer to [P.17-16](#), Diagnostic Trouble Code Procedures –DTC 15: Cruise control switch system. Then go to Step 10.

STEP 7. Using scan tool MB991958, check the data list item 74: Brake light switch, item 89: Normally closed brake switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 74, Brake light switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
 - Item 89, Normally closed brake switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON".
 - When the brake pedal is released, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 8.

NO : Refer to [P.17-29](#), Diagnostic Trouble Code Procedures –DTC 22: Stoplight Switch System. Then go to Step 10.

STEP 8. Using scan tool MB991958, check the data list item 88: Neutral switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 88, Neutral switch.
 - When the selector lever is moved to "N" or "P" position, the display on scan tool MB991958 should be "ON".
 - When the selector lever is moved to other than "N" or "P" position, the display on scan tool MB991958 should be "OFF".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES : Go to Step 9.

NO : Repair the CVT system (Refer to GROUP 23A, Diagnosis –Diagnostic Trouble Code Procedures – DTC P0705: Malfunction of Transmission Range Switch [P.23A-35](#)) <2.4L Engine>. Then go to Step 10.

NO : Repair the A/T system (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Trouble Code Procedures –DTC P0705: Transmission Range Switch System [P.23C-34](#)) <3.0L Engine>. Then go to Step 10.

STEP 9. Check the symptoms.

Q: Can cruise control be set?

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 Malfunction [P.00-15](#)).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 10.

STEP 10. Check the symptoms.

Q: Can auto-cruise control be set?

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 5: Hunting (Repeated Acceleration and Deceleration) Occurs at the Set Vehicle Speed.**COMMENT**

The secondary pulley speed sensor signal (vehicle speed signal) <2.4L Engine>, output shaft speed sensor signal (vehicle speed signal) <3.0L Engine>, or the throttle body is suspected.

NOTE: When the vehicle is driven with the low-speed gear in the sport mode, hunting occurs easily, however, this is not a failure.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Malfunction of the CAN bus line system.
- Malfunction of the secondary pulley speed sensor <2.4L Engine>.
- Malfunction of the output shaft speed sensor <3.0L Engine>.
- Malfunction of the CVT system <2.4L Engine>.
- Malfunction of the A/T system <3.0L Engine>.
- Malfunction of the throttle body.
- Malfunction of the ECM.

DIAGNOSIS**Required Special Tools:**

- 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

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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.

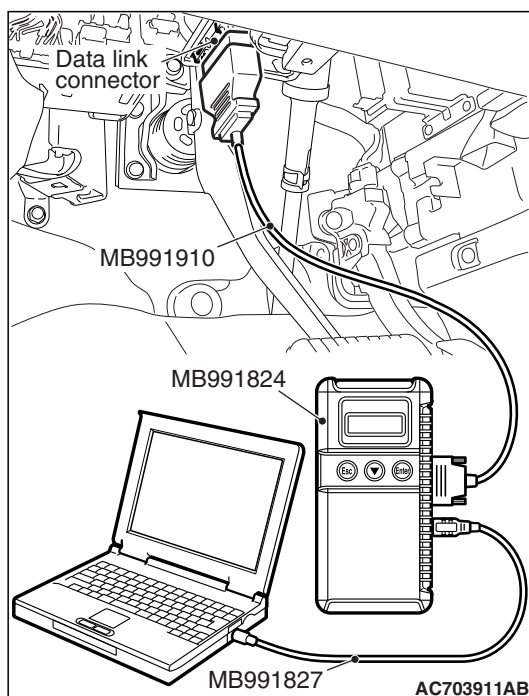
- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2 <2.4L Engine>.

YES : Go to Step 3 <3.0L Engine>.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 7.



STEP 2. Using scan tool MB991958, read the CVT system diagnostic trouble code <2.4L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for CVT system diagnostic trouble code (Refer to GROUP 23A, Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Code [P.23A-14](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the CVT system (Refer to GROUP 23A, Diagnosis –Diagnostic Trouble Code Chart [P.23A-28](#)). Then go to Step 7.

NO : Go to Step 4.

STEP 3. Using scan tool MB991958, read the A/T system diagnostic trouble code <3.0L Engine>.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.23C-18](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the A/T system (Refer to GROUP 23C, Automatic Transaxle Diagnosis –Diagnostic Trouble Code Chart [P.23C-164](#)). Then go to Step 7.

NO : Go to Step 4.

STEP 4. Using scan tool MB991958, read the MFI system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.54C-17](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13A-11](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13B-11](#)) <3.0L Engine>.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is any DTC set?

YES : Diagnose the MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13A-49](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Chart [P.13B-51](#)) <3.0L Engine>. Then go to Step 7.

NO : Go to Step 5.

STEP 5. Using scan tool MB991958, check the data list item 4: vehicle speed signal.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for cruise control system (Refer to [P.17-12](#)).
 - Item 4, Vehicle speed signal.
 - When road test the vehicles, check the display on scan tool MB991958 and speedometer.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the display on scan tool MB991958 and speedometer same value?

YES : Go to Step 6.

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 7.

STEP 6. Retest the system**Q: Does hunting occur?**

YES : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 7.

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.00-15](#)).

STEP 7. Retest the system

Q: Does hunting occur?

YES : Return to Step 1.

NO : The procedure is complete.

Inspection Procedure 6: When "ON/OFF" Switch is Turned "ON", "CRUISE" Indicator Light Inside Combination Meter does not Illuminate (However, Cruise Control System is Normal).

CIRCUIT OPERATION

The ECM detects "ON/OFF" switch ON signal to illuminate the "CRUISE" indicator light within the combination meter.

The "CRUISE" indicator light illuminate signal is transmitted from the ECM to the combination meter via CAN bus line.

COMMENT

The CAN bus line between the ECM and the ETACS-ECU and between the ETACS-ECU and the combination meter may be defective.

The combination meter, ETACS-ECU or ECM may also be defective.

TROUBLESHOOTING HINTS

- Malfunction of CAN bus system.
- Damaged harness or connector.
- Malfunction of the combination meter.
- Malfunction of the ETACS-ECU
- Malfunction of the ECM

DIAGNOSIS

Required Special Tools:

- 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

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.
- Before replacing the ECU, ensure that the CAN bus lines is normal.

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

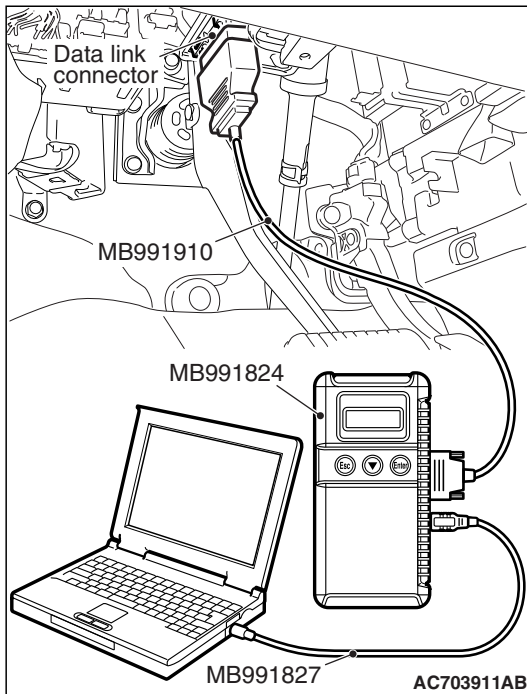
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17-12).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17-12).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 2

NO : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis –CAN Bus Diagnostics Chart P.54C-17). Then go to Step 6.

**STEP 2. Using scan tool MB991958, read the MFI system diagnostic trouble code.**

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.54C-17).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13A-11) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes P.13B-11) <3.0L Engine>.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is DTC U0141 set?

YES : Diagnose the MFI system (Refer to GROUP 13A, Diagnostic Trouble Code Procedures –DTC U0141: ETACS-ECU Time Out P.13A-799) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Trouble Code Procedures –DTC U0141: ETACS-ECU Time Out P.13B-728) <3.0L Engine>. Then go to Step 6.

NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the ETACS system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ETACS system diagnostic trouble code (Refer to GROUP 54A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.54A-738](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is DTC U0155 set?

YES : Refer to GROUP 54A, Diagnostic Trouble Code Procedures –DTC U0155: Combination Meter CAN Time Out [P.54A-759](#). Then go to Step 6.

NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check the combination meter system data list item F7: Cruise control indicator.

- (1) Connect scan tool MB991958 to the data link connector (Refer to [P.17-12](#)).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for combination meter system item F7: Cruise control indicator (Refer to GROUP 54A, Combination Meter –Data List Reference Table [P.54A-90](#)).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is the check result satisfactory?

YES : Go to Step 5.

NO : Repair the combination meter system (Refer to GROUP 54A, Combination Meter –Troubleshooting – Symptom Procedures –Inspection Procedure 5: The combination meter light does not illuminate normally or the multi information display is not displayed normally [P.54A-83](#)). Then go to Step 6.

STEP 5. Retest the system.

Q: Does the "CRUISE" indicator light illuminate when the "ON/OFF" switch is turned "ON"?

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.00-15](#)).

NO : Replace the ECM [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-982](#)] <2.4L Engine> or [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-894](#)] <3.0L Engine>. Then go to Step 6.

STEP 6. Retest the system.

Q: Does the "CRUISE" indicator light illuminate when the "ON/OFF" switch is turned "ON"?

YES : The procedure is complete.

NO : Return to Step 1.

DATA LIST REFERENCE TABLE

M1172002401333

⚠ CAUTION

- Driving tests always need two persons: one driver and one observer.
- When shifting the selector lever to "D" range apply the brakes should be applied so that the vehicle does not move forward.

NOTE: *:After the inspection is completed, Reconnect the throttle position sensor connector, and then delete the diagnostic trouble code using scan tool MB991958 (Refer to GROUP 13A, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13A-11](#)) <2.4L Engine> or (Refer to GROUP 13B, Diagnostic Function –How to Read and Erase Diagnostic Trouble Codes [P.13B-11](#)) <3.0L Engine>.

Scan tool display	Item number	Inspection item		Inspection requirement		Normal condition
APP sensor (main)	11	Accelerator pedal position sensor (main)		Ignition switch: "ON"	Accelerator pedal: Released	900 –1,100 mV
					Accelerator pedal: Gradually depressed	Increases in response to the pedal depression stroke
					Accelerator pedal: Fully depressed	4,000 mV or more
Brake light switch	74	Stoplight switch (for stoplight circuit)		Brake pedal: Depressed		ON
				Brake pedal: Released		OFF
Cancel code	57	Cancel code		Ignition switch: "ON"		The cancel code, which set when the cruise control system was cancelled at the last time.
Cancel switch	75	Cruise control switch	CANCEL	"CANCEL" switch: Pressed		ON
				"CANCEL" switch: Released		OFF
Cruise switch	81	Cruise control system operation		Cruise control system: active		ON
				Cruise control system: Inactive		OFF
Main switch	86	Cruise control switch	ON/OFF	"ON/OFF" switch: Pressed		ON
				"ON/OFF" switch: Pressed again		OFF
Neutral switch	88	Transmission range switch		Transmission range switch: "P" or "N" position		ON
				Transmission range switch: Other than "P" or "N" position		OFF
Normally closed brake switch	89	Stoplight switch (for Cruise control circuit)		Brake pedal: Depressed		ON
				Brake pedal: Released		OFF

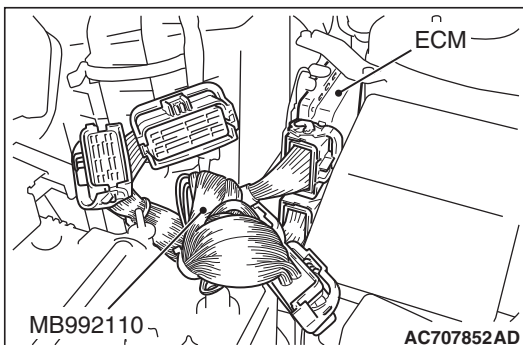
Scan tool display	Item number	Inspection item		Inspection requirement		Normal condition
Resume switch	91	Cruise control switch	ACC/RES	"ACC/RES" switch: Pressed		ON
				"ACC/RES" switch: Released		OFF
Set switch	92	Cruise control switch	COAST/SET	"COAST/SET" switch: Pressed		ON
				"COAST/SET" switch: Released		OFF
TP sensor (main)	13	Throttle position sensor (main)*		<ul style="list-style-type: none">Remove the intake air hose at the throttle body.Disconnect the throttle position sensor connector, and then connect terminals 3, 4, 5 and 6 with the use of the special tool: MB991658 (Test harness).Ignition switch: "ON"	Fully close the throttle valve with your finger	300 –700 mV
					Fully open the throttle valve with your finger	4,000 mV or more
				No load		500 –700 mV <2.4L Engine> 500 –660 mV <3.0L Engine>
				A/C switch: "OFF" to "ON"		Voltage rises
				Selector lever: "N" to "D"		
Vehicle speed sensor	4	Vehicle speed signal		Road test the vehicle		The speedometer and scan tool MB991958 display the same value.

ECM TERMINAL VOLTAGE REFERENCE CHART FOR CRUISE CONTROL SYSTEM OPERATION

M1172006000088

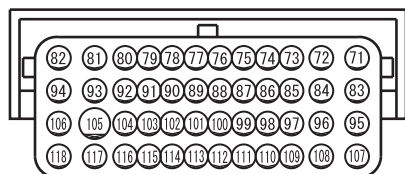
Use special tool power plant ECU check harness (MB992110), check the ECM terminal voltage.

1. Disconnect the all ECM connectors, and connect special tool (MB992110) in between.
2. Measure the voltages between the check connector terminals of special tool (MB992044) and earth terminals (ECM connector B-11 terminal 81 or 93).

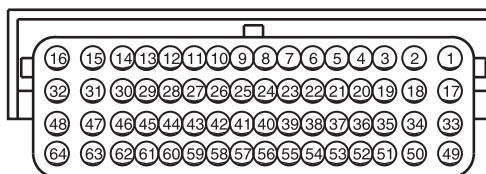


Special tool - Power plant ECU check harness (MB992110) connector: Component side

48-Pin connector
(ECM connector B-11)



64-Pin connector
(ECM connector B-10)



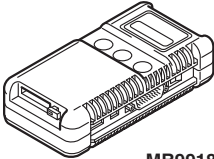
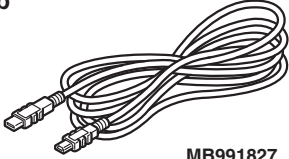
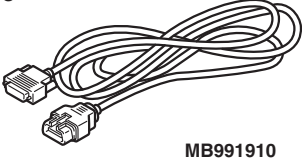
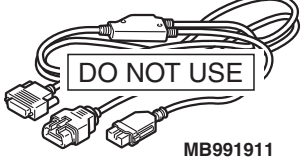
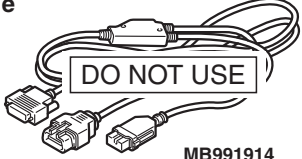
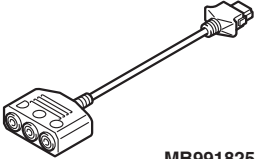
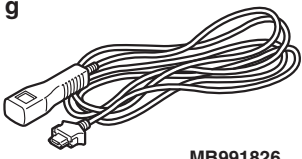
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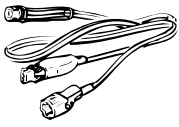
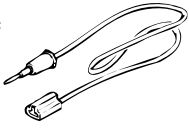

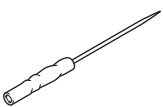
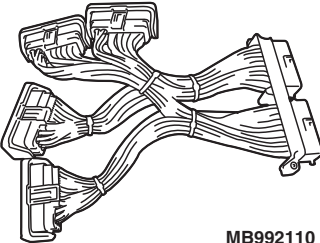
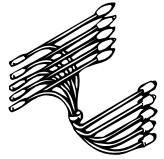
Terminal number	Check item	Check condition		Normal condition
10	Throttle position sensor (main)	<ul style="list-style-type: none"> Remove the intake air hose at the throttle body Disconnect the throttle position sensor, and then connect terminals 3, 4, 5 and 6 with the use of the special tool: MB991658 (Test harness). Ignition switch: "ON" 	Fully close the throttle valve with your finger	0.3 –0.7 V
			Fully open the throttle valve with your finger	4.0 V or more
11	Throttle position sensor (sub)	<ul style="list-style-type: none"> Remove the intake air hose at the throttle body Disconnect the throttle position sensor, and then connect terminals 3, 4, 5 and 6 with the use of the special tool: MB991658 (Test harness). Ignition switch: "ON" 	Fully close the throttle valve with your finger	4.3 –4.7 V <2.4L Engine> 4 V or more <3.0L Engine>
			Fully open the throttle valve with your finger	0.3 –0.7 V <2.4L Engine> 1 V or less <3.0L Engine>
12	Power supply voltage applied to throttle position sensor	Ignition switch: "ON"		4.9 –5.1 V
15	Throttle actuator control motor (+)	<ul style="list-style-type: none"> Ignition switch: "ON" Accelerator pedal: fully opened to fully closed 		Decreases slightly (approx. 2 V) from battery voltage.
16	Throttle actuator control motor (–)	<ul style="list-style-type: none"> Ignition switch: "ON" Accelerator pedal: fully closed to fully opened 		Decreases slightly (approx. 2 V) from battery voltage.
74	Accelerator pedal position sensor (main)	Ignition switch: "ON"	Release the accelerator pedal	0.9 –1.1 V
			Depress the accelerator pedal.	4 V or more
75	Power supply voltage applied to accelerator pedal position sensor (main)	Ignition switch: "ON"		4.9 –5.1 V
77	Accelerator pedal position sensor (sub)	Ignition switch: "ON"	Release the accelerator pedal	0.4 –0.6 V
			Depress the accelerator pedal.	2 V or more

Terminal number	Check item	Check condition		Normal condition
78	Power supply voltage applied to accelerator pedal position sensor (sub)	Ignition switch: "ON"		4.9 –5.1 V
107	Cruise control switch power supply	Ignition switch: "ON"	All switches: Released	4.7 –5.0 V
			"ON/OFF" switch: Pressed	0 –0.5 V
			"CANCEL" switch: Pressed	1.0 –1.8 V
			"COAST/SET" switch: Pressed	2.3 –3.0 V
			"ACC/RES" switch: Pressed	3.5 –4.2 V
108	Stoplight switch (for Cruise control circuit)	Ignition switch: "ON"	Depress the brake pedal.	Battery positive voltage
			Release the brake pedal.	1V or less

SPECIAL TOOLS

M1172000601029

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 models 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>For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B or C instead, the CAN communication does not function correctly. Checking data list</p>

Tool	Tool number and name	Supersession	Application
<p>a</p>  <p>b</p>  <p>c</p>  <p>d</p>  <p>MB991223</p>	<p>MB991223</p> <p>a. MB991219 b. MB991220 c. MB991221 d. MB991222</p> <p>Harness set</p> <p>a. Test harness b. LED harness c. LED harness adaptor d. Probe</p>	General service tools	Checking the continuity and measuring the voltage at the harness connector
 <p>MB992006</p>	<p>MB992006</p> <p>Extra fine probe</p>	General service tool	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector.
 <p>MB992110</p>	<p>MB992110</p> <p>Power plant ECU check harness</p>	–	Measuring the terminal voltage at the ECM
 <p>MB991658</p>	<p>MB991658</p> <p>Test harness</p>	Tool not available	Measuring the terminal voltage at the TP sensor

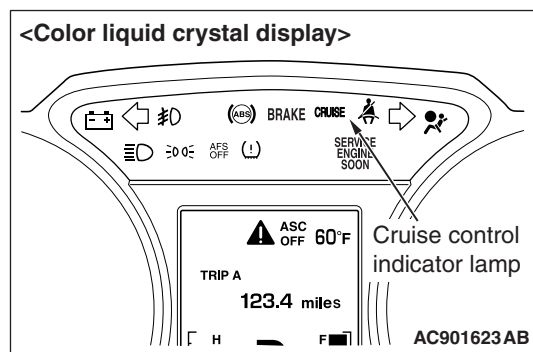
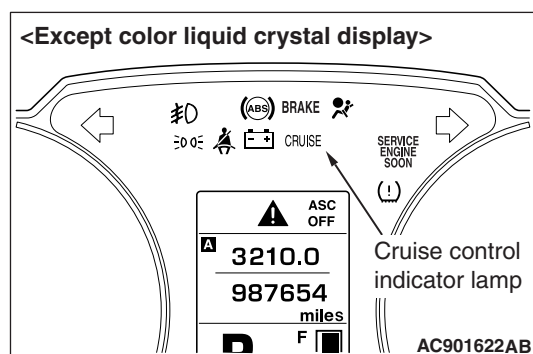
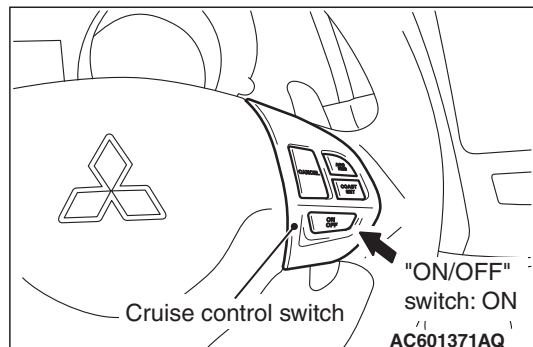
ON-VEHICLE SERVICE

CRUISE CONTROL SYSTEM OPERATION CHECK

M1172001600171

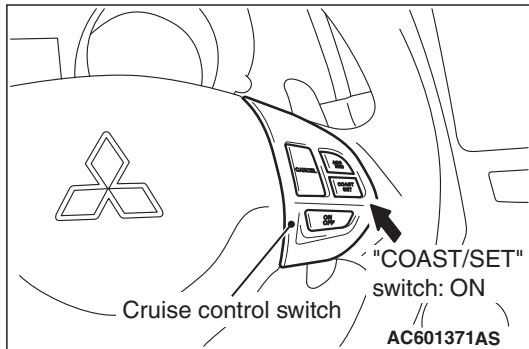
CRUISE CONTROL "ON/OFF" SWITCH CHECK

1. Turn the ignition switch to the "ON" position.
2. Check that the "CRUISE" indicator light within the combination meter illuminates when the "ON/OFF" switch is pressed (cruise control system: ON).
3. Press the "ON/OFF" switch again (cruise control system: OFF), and check that the "CRUISE" indicator light within the combination meter goes out.



CRUISE CONTROL SETTING

1. Press the "ON/OFF" switch (cruise control system: ON, "CRUISE" indicator light: illuminated).
2. Drive at the desired speed, above approximately 40 km/h (25 mph).



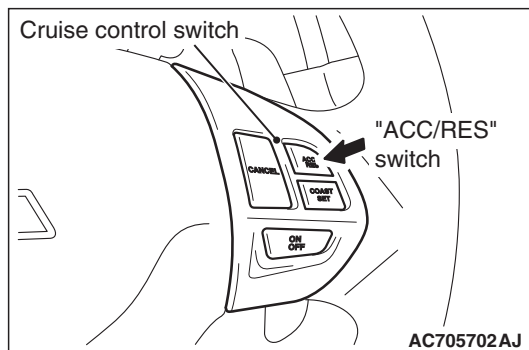
3. Press the "COAST/SET" switch.
4. Check to be sure that when the "COAST/SET" switch is released the speed is the constant speed.

NOTE: If the vehicle speed decreases to approximately 15 km/h (9 mph) below the set speed because of climbing a hill for example, it is normal for the auto-cruise control to be cancelled. When the vehicle speed becomes low-speed limit [approximately 40 km/h (25 mph)] or less, driving at constant speed will be cancelled even if the vehicle speed does not decrease 15 km/h (9 mph) or more.

SPEED-INCREASE SETTING

1. Press the "ON/OFF" switch (cruise control system: ON, "CRUISE" indicator light: illuminated).
2. Set to the desired speed, above approximately 40 km/h (25 mph).
3. Press the "ACC/RES" switch.
4. Check to be sure that acceleration continues while the "ACC/RES" switch is pressed, and that the speed at the time it was released becomes the constant driving speed.

NOTE: Acceleration can be continued even if the vehicle speed has passed the high-speed limit [approximately 160 km/h (100 mph)]. But the constant driving speed when the "ACC/RES" switch is released will be recorded as the high-speed limit.



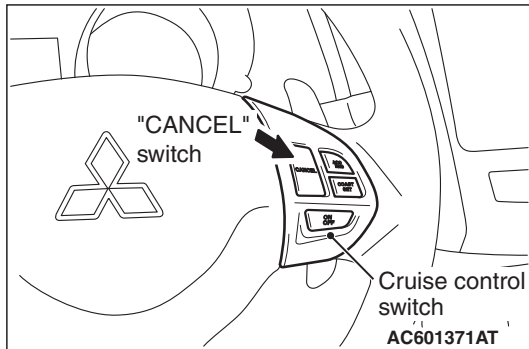
SPEED-REDUCTION SETTING

1. Press the "ON/OFF" switch (cruise control system: ON, "CRUISE" indicator light: illuminated).
2. Set to the desired speed, above approximately 40 km/h (25 mph).
3. Press the "COAST/SET" switch.
4. Check to be sure that deceleration continues while the "COAST/SET" switch is pressed, and that the speed at the time it was released becomes the constant driving speed.

NOTE: When the vehicle speed reaches the low limit [approximately 40 km/h (25 mph)] during deceleration, the cruise control will be cancelled.

RETURN TO THE SET SPEED BEFORE CANCELLATION AND CRUISE CONTROL CANCELLATION

1. Press the "ON/OFF" switch (cruise control system: ON, "CRUISE" indicator light: illuminated).
2. Set to the desired speed, above approximately 40 km/h (25 mph).

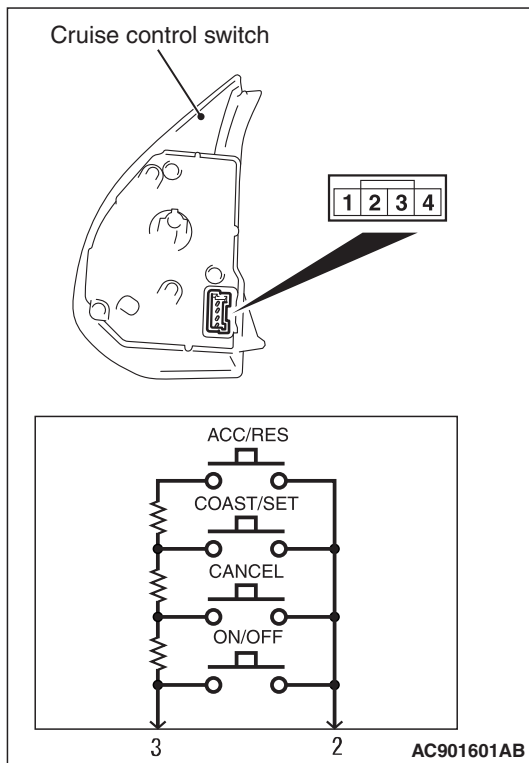


3. When any of the following operations are performed while at constant speed during cruise control, check if normal driving is resumed and deceleration occurs.
 - (1) The "CANCEL" switch is pressed.
 - (2) The brake pedal is depressed.
4. At a vehicle speed of approximately 40 km/h (25 mph) or higher, check if when the "ACC/RES" switch is pressed, the vehicle speed returns to the speed before cruise control driving was cancelled, and constant speed driving occurs.
5. When the "ON/OFF" switch is pressed again (cruise control system: OFF) while driving at constant speed, check if normal driving is resumed and deceleration occurs.

CRUISE CONTROL SWITCH CHECK

M1172001201110

1. Remove the cruise control switch (Refer to [P.17-67](#)).
2. Measure the resistance between terminal 2 and terminal 3 when each of the "COAST/SET", "ACC/RES", "CANCEL" and "ON/OFF" switches is pressed. If values measured at the time each switch is pressed correspond to those in the table below, the resistance values are correct.



Switch position	Specified condition
All switches are released.	Open circuit
"ON/OFF" switch is pressed	Continuity (less than 2 ohms)
"CANCEL" switch is pressed	202.5 –208 Ω
"COAST/SET" switch is pressed	610.5 –624.5 Ω
"ACC/RES" switch is pressed	1838 –1877 Ω

STOPLIGHT SWITCH CHECK

M1172007100044

Refer to GROUP 35A, Brake pedal –Stoplight switch check [P.35A-27](#).

TRANSMISSION RANGE SWITCH CHECK

M1172007200030

Refer to GROUP 23A, On-vehicle Service –Essential Service [P.23A-138](#) <2.4L Engine>.
Refer to GROUP 23C, On-vehicle Service –Essential Service [P.23C-269](#) <3.0L Engine>.

**THROTTLE ACTUATOR CONTROL MOTOR
CHECK**

M1172007300037

Refer to GROUP 13A, On-vehicle Service –Throttle Actuator
Control Motor Check [P.13A-972](#) <2.4L Engine>.

Refer to GROUP 13B, On-vehicle Service –Throttle Actuator
Control Motor Check [P.13B-886](#) <3.0L Engine>.

CRUISE CONTROL SWITCH**REMOVAL AND INSTALLATION**

M1172007600726

Since the cruise control switch is mounted on the
spoke of the steering wheel garnish, refer to Steering
Wheel for removal and installation (Refer to GROUP
37 –Steering Wheel [P.37-28](#)).

EMISSION CONTROL <MFI>**GENERAL INFORMATION**

M1173000101061

The emission control system consists of the fol-
lowing subsystems:

- Positive crankcase ventilation system
- Evaporative emission system
- Exhaust emission control system

SERVICE SPECIFICATIONS

M1173000301270

Item	Standard value
Emission control system	
EGR valve (Stepper Motor) connector resistance [at 20° C (68° F)] Ω	20 –24
Evaporative emission purge solenoid coil resistance [at 20° C (68° F)] Ω	22 –26
Evaporative emission ventilation solenoid coil resistance [at 20° C (68° F)] Ω	17 –21
Purge flow cm^3/s (SCFH) [at 80 –95° C (176 –205° F) with sudden revving]	20 (2.5)

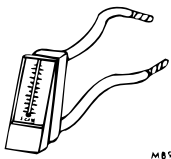
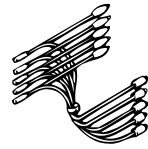
DIAGNOSIS

M1173000700220

SYMPTOM	PROBABLE CAUSE	REMEDY
Engine will not start or hard to start	Vacuum hose disconnected or damaged	Repair or replace
	The EGR valve (Stepper Motor) is not closed.	Repair or replace
	Malfunction of the evaporative emission purge solenoid	Repair or replace
Rough idle or engine stalls	The EGR valve (Stepper Motor) is not closed.	Repair or replace
	Vacuum hose disconnected or damaged.	Repair or replace
	Malfunction of the positive crankcase ventilation valve	Replace
	Malfunction of the purge control system	Check the system; If there is a problem, check its component parts.
Engine hesitates or poor acceleration	Malfunction of the exhaust gas recirculation system	Check the system; If there is a problem, check its component parts.
Excessive oil consumption	Positive crankcase ventilation line clogged	Check positive crankcase ventilation system
Poor fuel mileage	Malfunction of the exhaust gas recirculation system	Check the system; If there is a problem, check its component parts.

SPECIAL TOOLS

M1173000600900

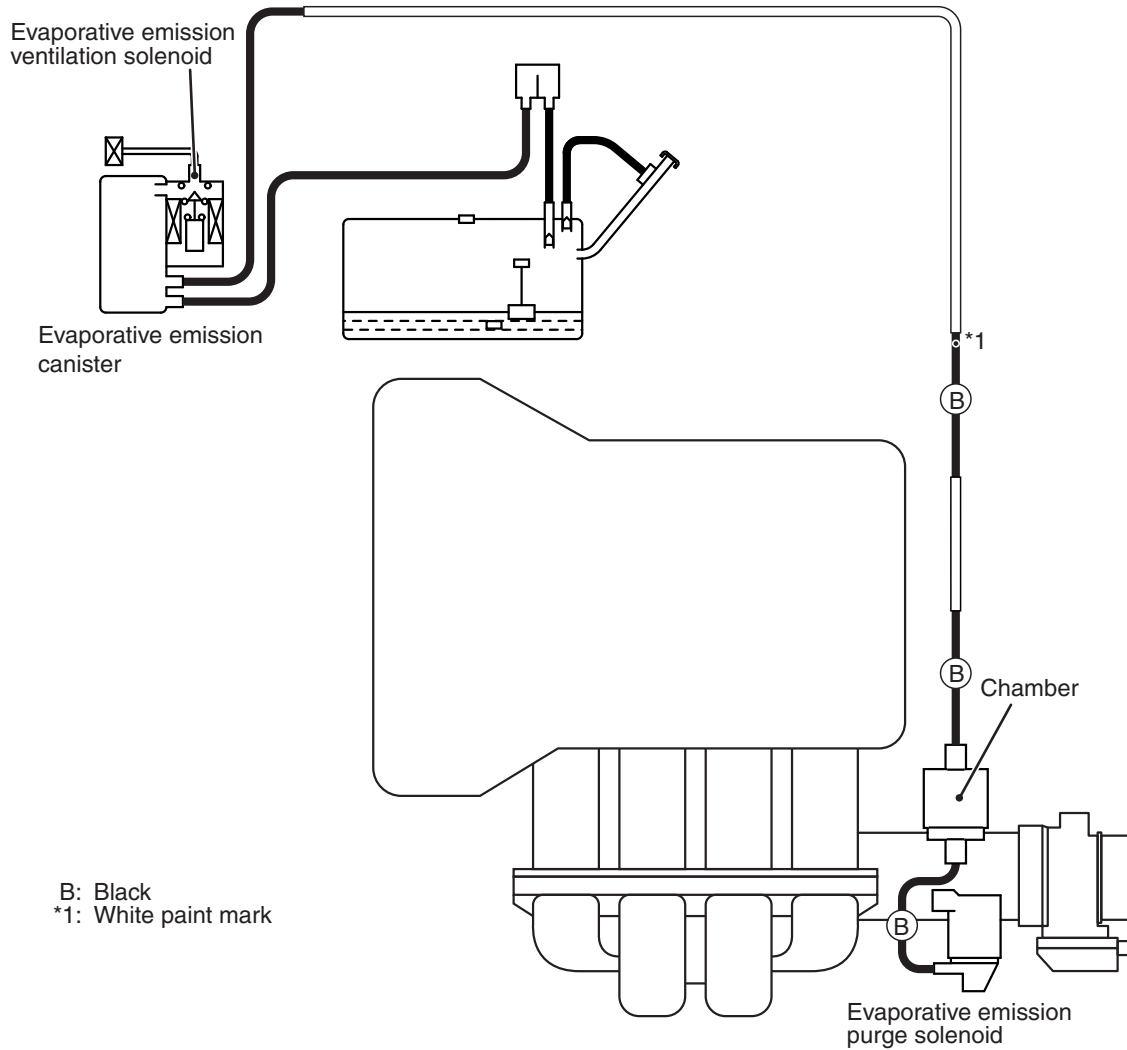
Tool	Tool number and name	Supersession	Application
 MB991700	MB995061 Purge flow indicator	MLR6890A Part of MIT280220	Inspection of purge control system
 MB991658	MB991658 Test harness set	Tool not available	Inspection of EGR valve (Stepper Motor)

VACUUM HOSES

VACUUM HOSE ROUTING

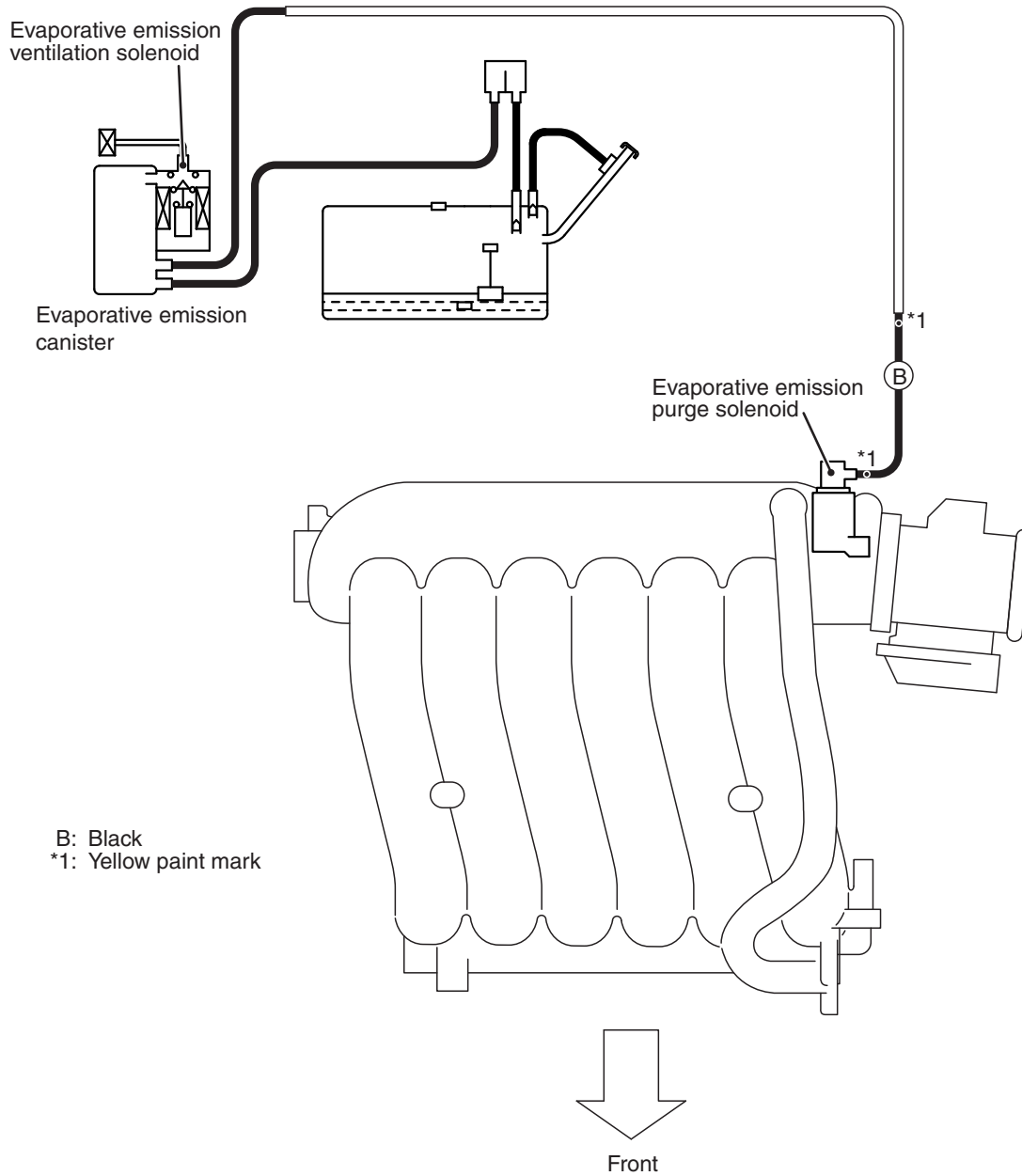
M1173000901863

<2.4L Engine>



AK900404 AB

<3.0L Engine>

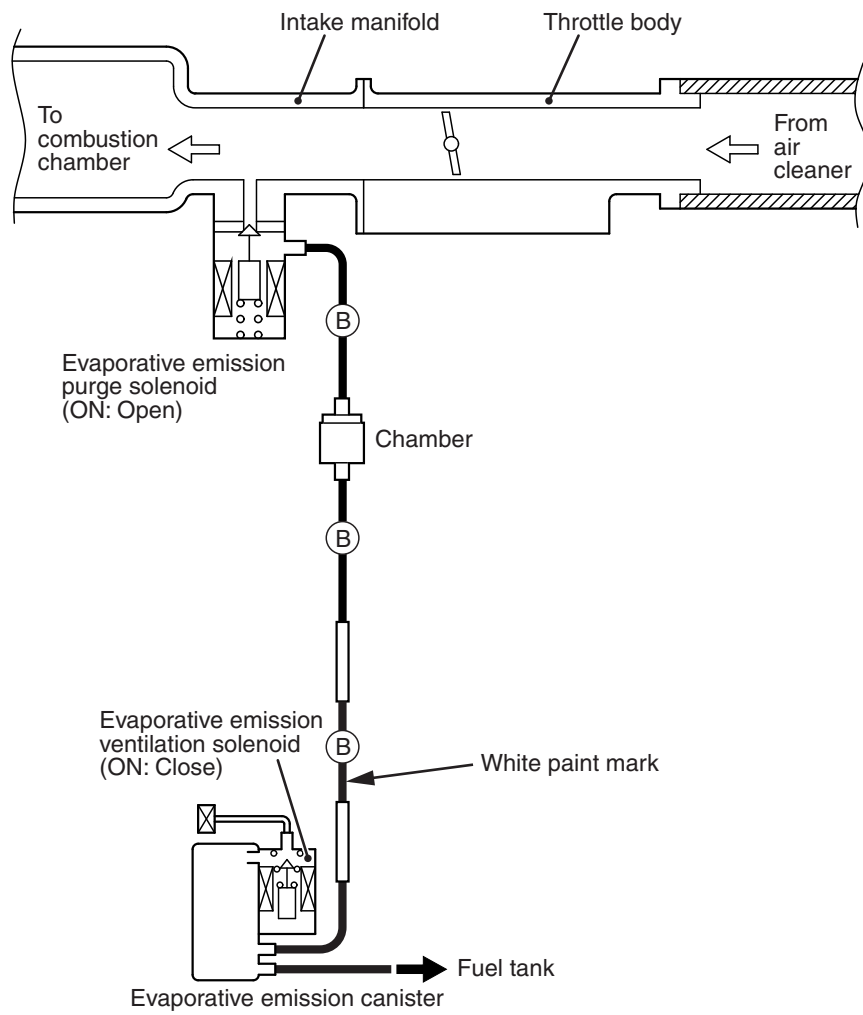


AK900405 AB

VACUUM CIRCUIT DIAGRAM

M1173007101404

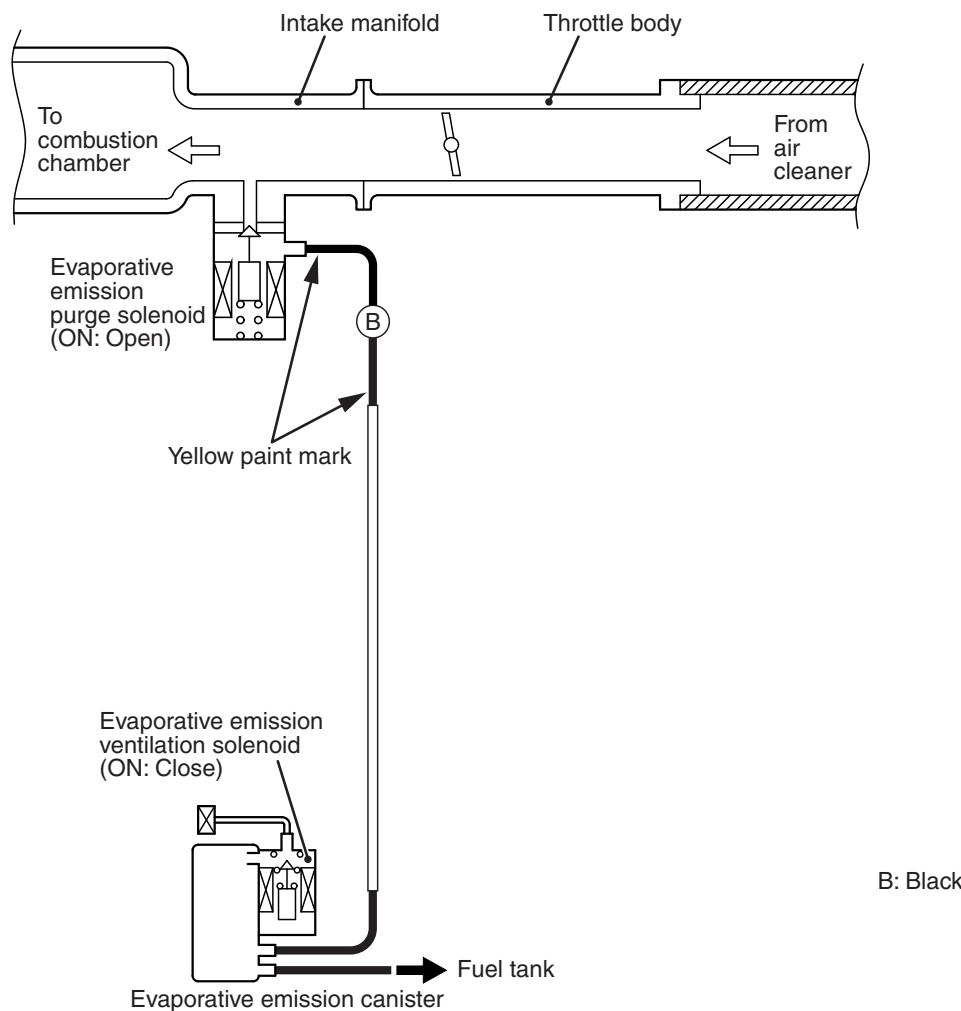
<2.4L Engine>



B: Black

AK800610 AB

<3.0 Engine>



AK900406 AB

VACUUM HOSE INSTALLATION

M1173007200408

1. When connecting the vacuum hoses, they should be securely inserted onto the nipples.
2. Connect the hoses correctly, using the VACUUM HOSE ROUTING diagram as a guide.

VACUUM HOSE CHECK

M1173007300728

1. Using the VACUUM HOSE ROUTING diagram as a guide, check that the vacuum hoses are correctly connected.
2. Check the connection condition of the vacuum hoses which can be removed, loosened, clogged possibly. And then check whether there are no folded and damaged vacuum hoses.

POSITIVE CRANKCASE VENTILATION SYSTEM

GENERAL INFORMATION (POSITIVE CRANKCASE VENTILATION SYSTEM)

M1173005001207

The positive crankcase ventilation (PCV) system prevents the escape of blow-by gases from inside the crankcase into the atmosphere.

Fresh air is sent from the air cleaner into the crankcase through the breather hose to be mixed with the blow-by gas inside the crankcase.

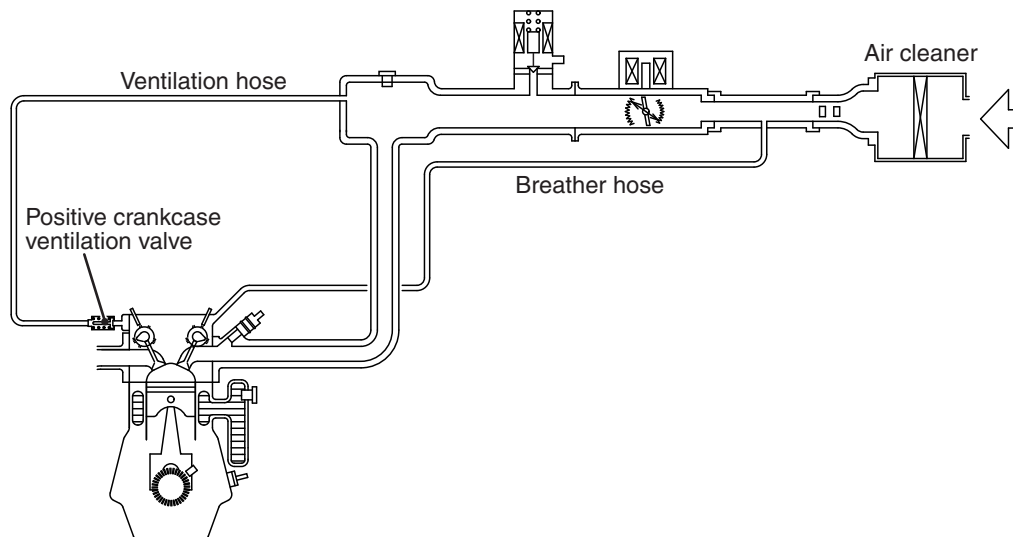
The blow-by gas inside the crankcase is drawn into the intake manifold through the PCV valve.

The PCV valve is designed to lift the plunger according to the intake manifold vacuum so as to regulate the flow of blow-by gas properly.

In other words, the blow-by gas flow is regulated during low load engine operation to maintain engine stability, while the flow is increased during high load operation to improve the ventilation performance.

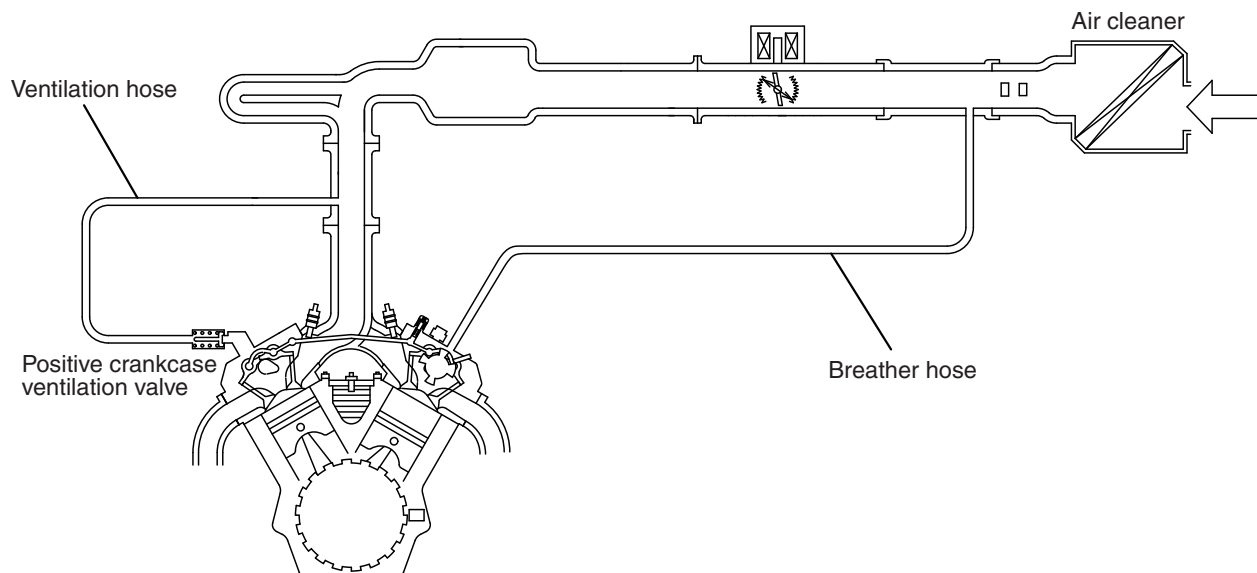
SYSTEM DIAGRAM

<2.4L Engine>



AK604161 AB

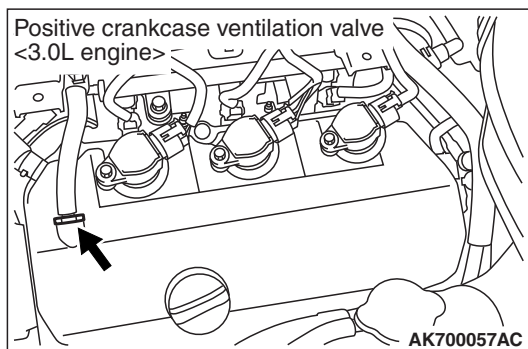
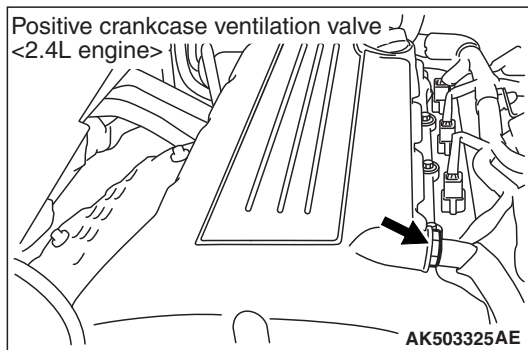
<3.0L Engine>



AK700056 AB

COMPONENT LOCATION

M1173007400844



POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM CHECK

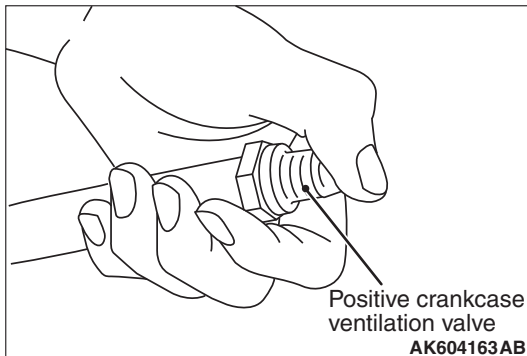
M1173001101149

1. Remove the ventilation hose from the positive crankcase ventilation (PCV) valve.
2. Remove the PCV valve from the rocker cover.
3. Reinstall the PCV valve at the ventilation hose.
4. Start the engine and run at idle.
5. Place a finger at the opening of the PCV valve and check that vacuum of the intake manifold is felt.

NOTE: At this moment, the plunger in the PCV valve moves back and forth.

6. If vacuum is not felt, clean the PCV valve or replace it.
7. Apply a small amount of new engine oil to the O-ring on the PCV valve, and tighten to the specified torque.

Specified torque: $2.5 \pm 0.4 \text{ N} \cdot \text{m}$ ($22 \pm 3 \text{ in-lb}$)

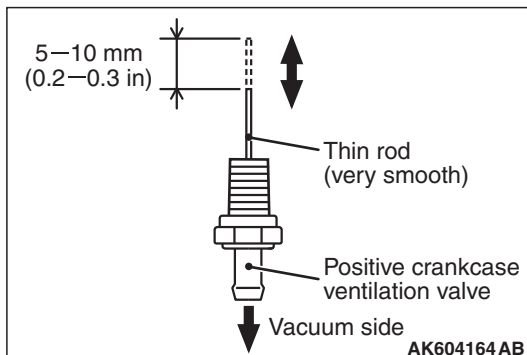


POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM CHECK

M1173001201049

1. Remove the ventilation hose from the positive crankcase ventilation (PCV) valve.
2. Remove the PCV valve from the rocker cover.
3. Hold the PCV valve with the vacuum side down. Insert a thin rod, and using light pressure, depress the end of the PCV valve spring by 5 –10 mm (0.2 –0.3 inch). Release pressure on the rod to see if the PCV valve spring will lift the rod to its original position.
4. If the rod returns quickly to its original position, the PCV valve is OK. If the stick does not return quickly, clean or replace the PCV valve.
5. Apply a small amount of new engine oil to the O-ring on the PCV valve, and tighten to the specified torque.

Specified torque: $2.5 \pm 0.4 \text{ N} \cdot \text{m}$ ($22 \pm 3 \text{ in-lb}$)



EVAPORATIVE EMISSION CONTROL SYSTEM

GENERAL INFORMATION (EVAPORATIVE EMISSION SYSTEM)

M1173005101765

The evaporative emission (EVAP) system prevents fuel vapors generated in the fuel tank from escaping into the atmosphere.

Fuel vapors from the fuel tank flow through the vapor pipe/hose to be stored temporarily in the EVAP canister.

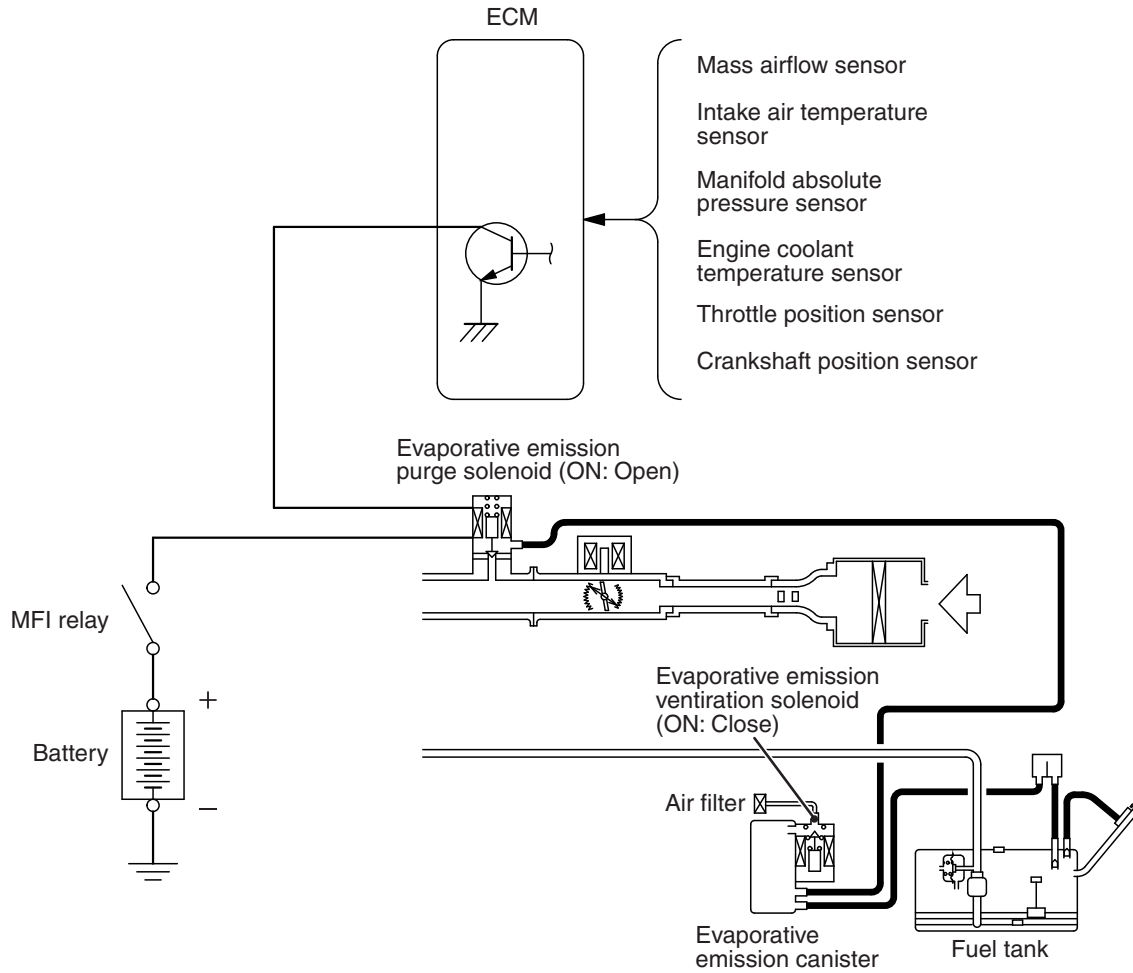
When the vehicle is in operation, fuel vapors stored in the EVAP canister flow through the EVAP purge solenoid, purge port and intake manifold plenum to the combustion chamber.

When the engine coolant temperature is low or when the intake air quantity is small (when the engine is at idle, for example), the engine control module (ECM) brings the EVAP purge solenoid into the OFF state to shut off the fuel vapor flow to the intake manifold plenum. This ensures driveability when the engine is cold or running under low load and also stabilizes the emission level.

An EVAP ventilation solenoid is provided between the EVAP canister and atmosphere to monitor for OBD-II EVAP leaks. This solenoid is normally OFF. However, it turns ON when monitoring the OBD-II EVAP leaks and shuts off the atmosphere flow to the EVAP canister. Then the fuel tank differential pressure sensor monitors the fuel vapor pressure to detect OBD-II EVAP leaks.

When the fuel tank inner pressure increases due to the fuel supply, air is released to the atmosphere from the fuel tank through the EVAP canister and air filter. When the inner pressure of the fuel tank decreases, air is supplied to the fuel tank through the air filter and EVAP canister.

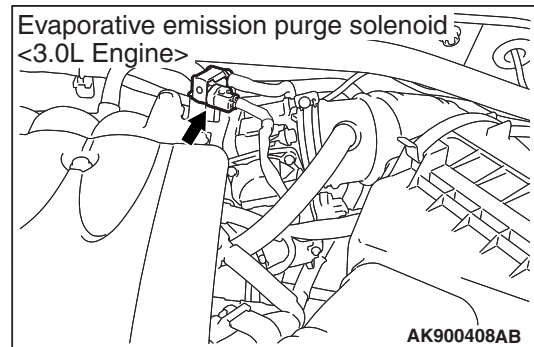
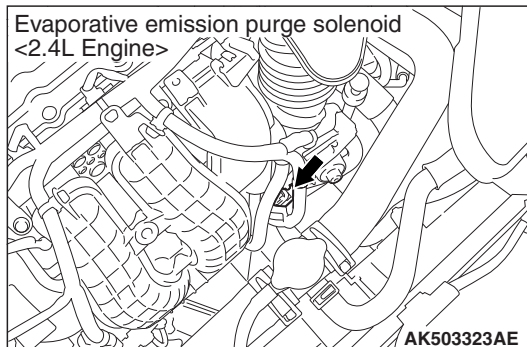
SYSTEM DIAGRAM

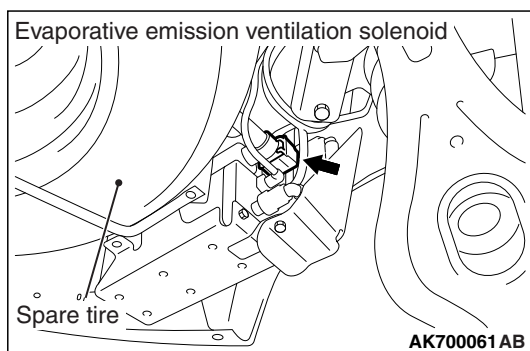


AK900407 AB

COMPONENT LOCATION

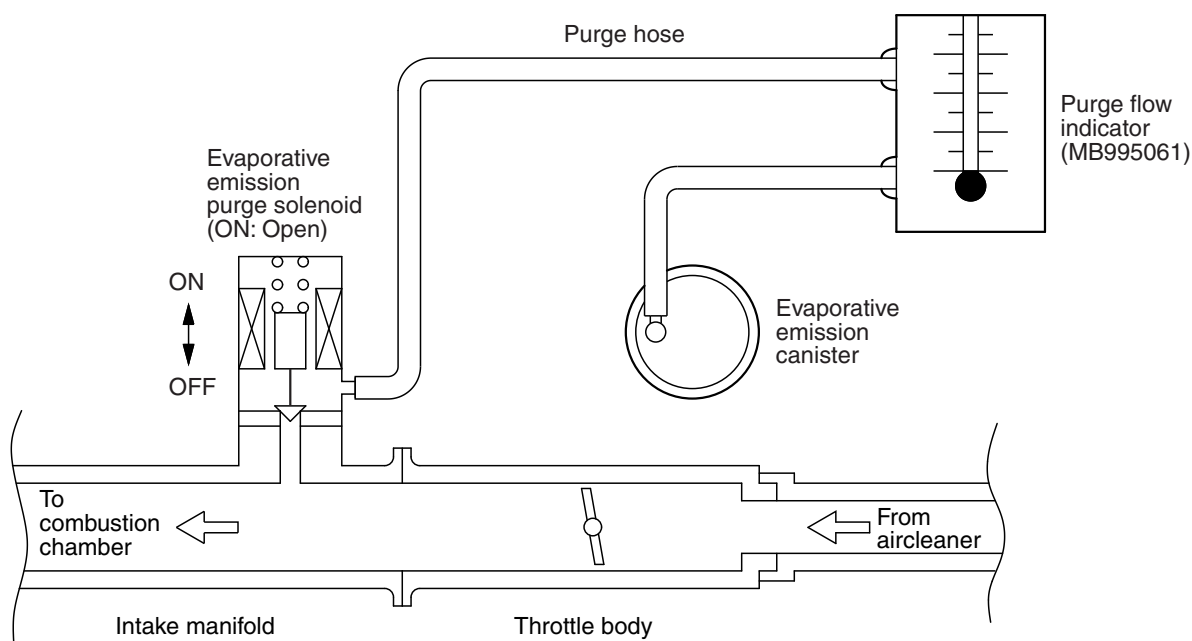
M1173007501048





PURGE CONTROL SYSTEM CHECK (PURGE FLOW CHECK)

M1173001401593



AK604168 AB

Required Special Tool:

MB995061: Purge Flow Indicator

1. Disconnect the purge hose from the evaporative emission (EVAP) purge solenoid, and connect special tool MB995061 between the EVAP purge solenoid and the purge hose.
2. Before inspection, set the vehicle in the following conditions:
 - Engine coolant temperature: 80 –95° C (176 –203° F)
 - Lights, electric cooling fan and accessories: OFF
 - Transaxle: P range

NOTE: Vehicles for Canada, the headlight, taillight, etc. remain lit even when the lighting switch is in "OFF" position but this is no problem for checks.

3. Run the engine at idle for more than four minutes.
4. Check the purge flow volume when engine is revved suddenly several times.

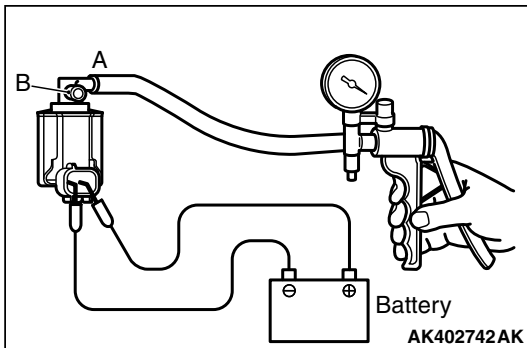
Standard value: Momentarily 20 cm³/s (2.5 SCFH) or more.

5. If the purge flow volume is less than the standard value, check it again with the vacuum hose disconnected from the EVAP canister. If the purge flow volume is less than the standard value, check the vacuum port and the vacuum hose for clogging. Also check the EVAP purge solenoid. If the purge flow volume is at the standard value, replace the EVAP canister.

EVAPORATIVE EMISSION PURGE SOLENOID CHECK

M1173001701044

1. Disconnect the vacuum hose from the evaporative emission (EVAP) purge solenoid.
2. Disconnect the harness connector.
3. Connect a hand vacuum pump to nipple (A) of the EVAP purge solenoid (refer to the illustration at left).
4. As described in the chart below, check airtightness by applying a vacuum with voltage applied directly from the battery to the EVAP purge solenoid valve and without applying voltage.

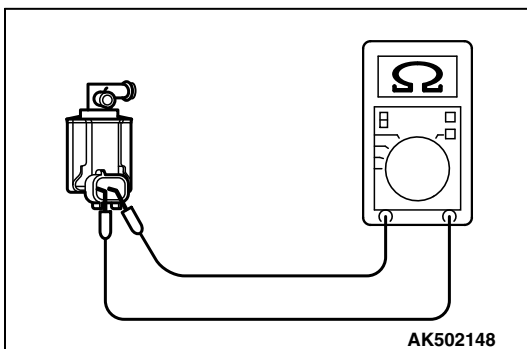


BATTERY POSITIVE VOLTAGE	NORMAL CONDITION
Applied	Vacuum leaks
Not applied	Vacuum maintained

5. Measure the resistance between the terminals of the EVAP purge solenoid.

Standard value: 22 –26 Ω [at 20° C (68° F)]

6. Replace the solenoid if resistance is out of specification.



MASS AIRFLOW SENSOR CHECK

M1173050400224

<2.4L Engine>

To inspect these parts, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect these parts, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

BAROMETRIC PRESSURE SENSOR CHECK

M1173008000377

<2.4L Engine>

To inspect the sensor, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect the sensor, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

ENGINE COOLANT TEMPERATURE SENSOR CHECK

M1173008100783

<2.4L Engine>

To inspect the sensor, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect the sensor, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

INTAKE AIR TEMPERATURE SENSOR CHECK

M1173008200423

<2.4L Engine>

To inspect the sensor, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect the sensor, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

FUEL TANK DIFFERENTIAL PRESSURE SENSOR CHECK

M1173007700317

To inspect the sensor, refer to GROUP 13C, Fuel Supply –Fuel Tank –Fuel Tank Inspection –Fuel Tank Differential Pressure Sensor Check [P.13C-27](#).

EVAPORATIVE EMISSION VENTILATION SOLENOID CHECK

M1173007800273

Refer to Emission Control –Evaporative Emission Canister and Fuel Tank Pressure Relief Valve –Inspection –Evaporative Emission Ventilation Solenoid Check [P.17-89](#).

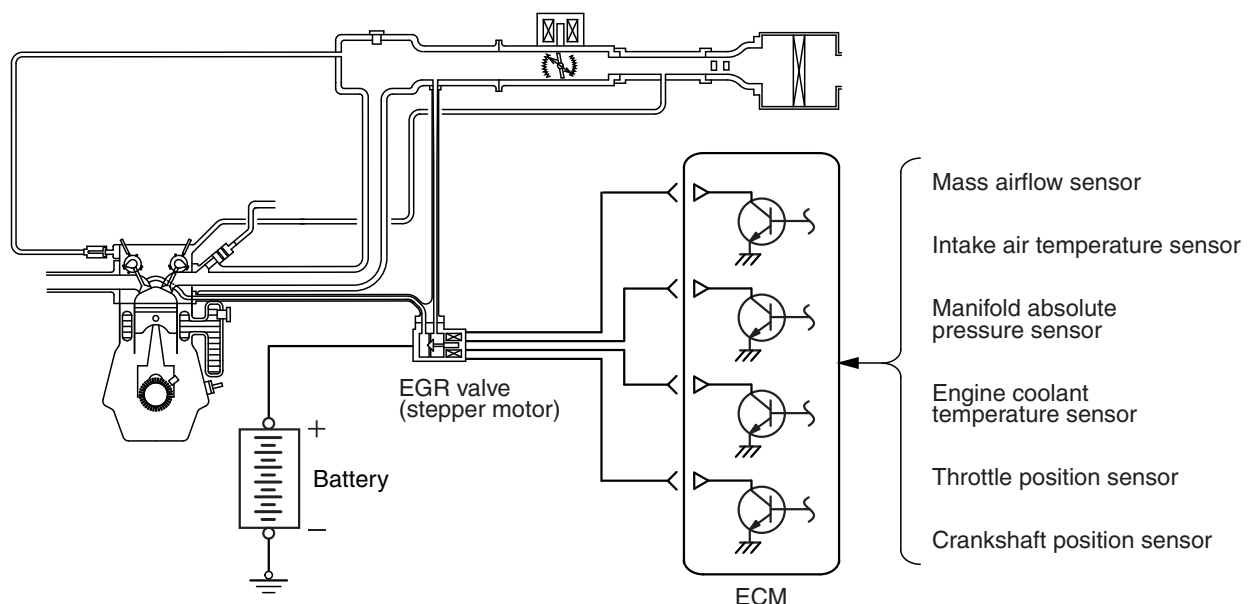
EXHAUST GAS RECIRCULATION (EGR) SYSTEM**GENERAL INFORMATION (EXHAUST GAS RECIRCULATION SYSTEM)**

M1173005201085

The exhaust gas recirculation system (EGR) lowers the nitrogen oxides (NOx) emission level. When the air/fuel mixture combustion temperature is high, a large quantity of NOx is generated in the combustion chamber. Therefore, this system recirculates part of exhaust gas from the exhaust port of the cylinder head to the combustion chamber through the intake manifold to decrease the air/fuel mixture combustion temperature, resulting in reduction of NOx. The EGR flow rate is controlled by the EGR valve (Stepper Motor) for driveability quality.

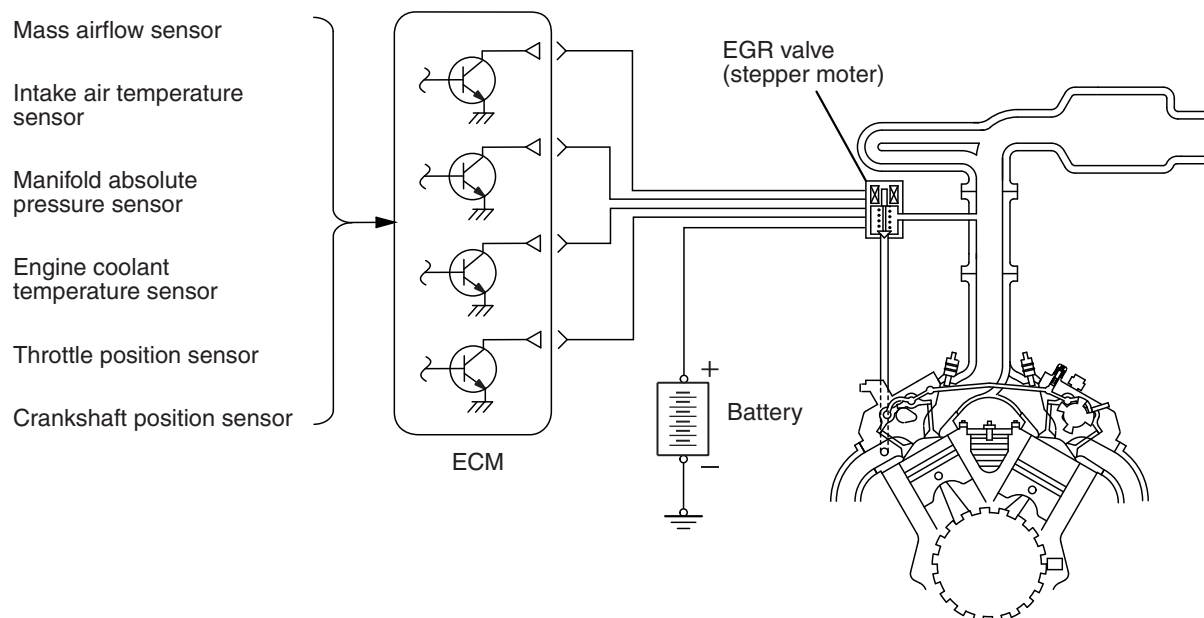
OPERATION

When the engine coolant temperature is low, when the engine is at idle or when a wide open throttle operation is performed, the EGR valve (Stepper Motor) is kept closed, achieving no EGR. After warming up the engine, the EGR valve (Stepper Motor) can be opened by the engine control module (ECM). The ECM monitors the EGR system and illuminates the Malfunction Indicator Lamp (SERVICE ENGINE SOON or Check Engine Lamp) to indicate that there is a malfunction.

SYSTEM DIAGRAM**<2.4L Engine>**

AK502987AE

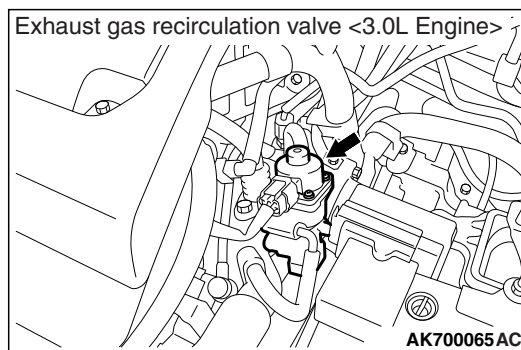
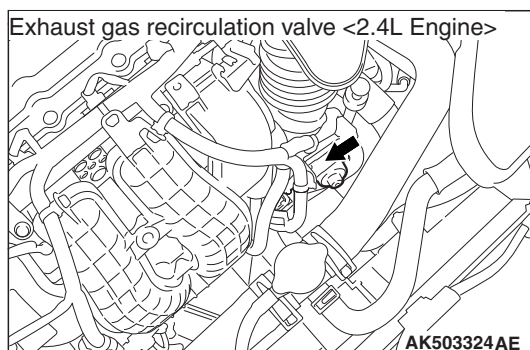
<3.0L Engine>



AK700125AB

COMPONENT LOCATION

M1173007600688



EGR VALVE (STEPPER MOTOR) CHECK

M1173050200576

Required Special Tool:

MB991658: Test Harness Set

Checking the Operation Sound

1. Check that the operation sound of the stepper motor can be heard from the EGR valve when the ignition switch is turned ON (without starting the engine).
2. If the operation sound cannot be heard, inspect the drive circuit of the stepper motor.

NOTE: If the operation sound is not heard, and the circuit is normal, either the stepper motor or the ECM may have failed.

Checking the Coil Resistance

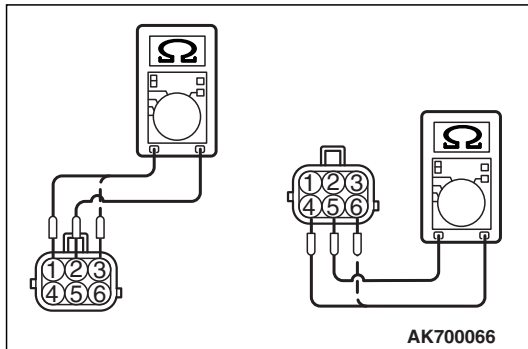
1. Remove the EGR valve.
2. Measure the resistance between terminal No. 2 and either terminal No. 1 or terminal No. 3 of the connector at the EGR valve.

Standard value: 20 –24 Ω [at 20° C (68° F)]

3. If the resistance is not within the standard, replace the EGR valve.
4. Measure the resistance between terminal No. 5 and either terminal No. 6 or terminal No. 4 of the connector at the EGR valve.

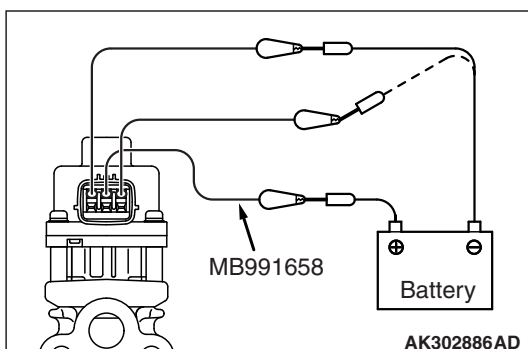
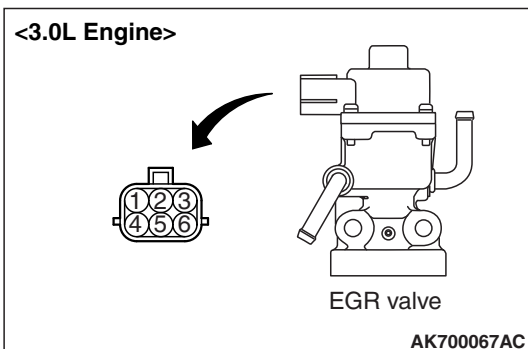
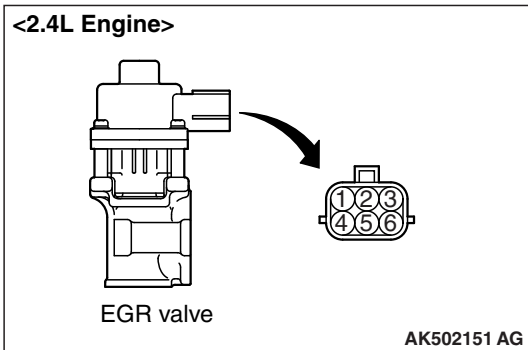
Standard value: 20 –24 Ω [at 20° C (68° F)]

5. If the resistance is not within the standard, replace the EGR valve.



Operation Check

1. Remove the EGR valve.
2. Connect special tool MB991658 to the EGR valve.

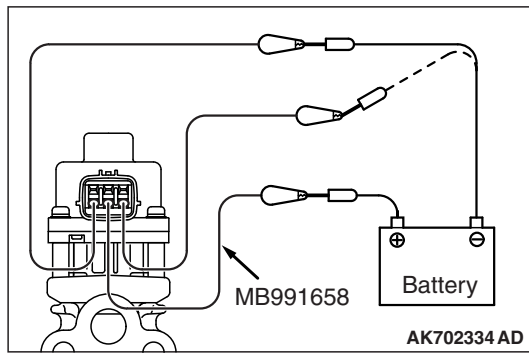


3. Connect the battery positive (+) terminal to terminal No. 2.

CAUTION

Connecting battery voltage to the EGR valve for a long time could damage the coil.

4. Connect terminals 1 and 3 to the negative (-) terminal of the battery, in order to test whether the stepper motor vibrates (with a slight shudder), indicating that the stepper motor is operating.



5. Connect the battery positive (+) terminal to terminal No. 5.

⚠ CAUTION

Connecting battery voltage to the EGR valve for a long time could damage the coil.

6. Connect terminals 4 and 6 to the negative (-) terminal of the battery, in order to test whether the stepper motor vibrates (with a slight shudder), indicating that the stepper motor is operating.
7. If vibrations can be felt as a result of the test, the stepper motor is determined to be normal.

MASS AIRFLOW SENSOR CHECK

M1173050400235

<2.4L Engine>

To inspect these parts, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect these parts, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

ENGINE COOLANT TEMPERATURE SENSOR CHECK

M1173008100794

<2.4L Engine>

To inspect the sensor, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect the sensor, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

CRANKSHAFT POSITION SENSOR CHECK

M1173008300420

<2.4L Engine>

To inspect the sensor, refer to GROUP 13A, Multiport Fuel Injection (MFI) <2.4L Engine> Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13A-49](#).

<3.0L Engine>

To inspect the sensor, refer to GROUP 13B, Multiport Fuel Injection (MFI) <3.0L Engine> –Multiport Fuel Injection (MFI) Diagnosis –Diagnostic Trouble Code Chart [P.13B-51](#).

REMOVAL AND INSTALLATION <2.4L ENGINE>

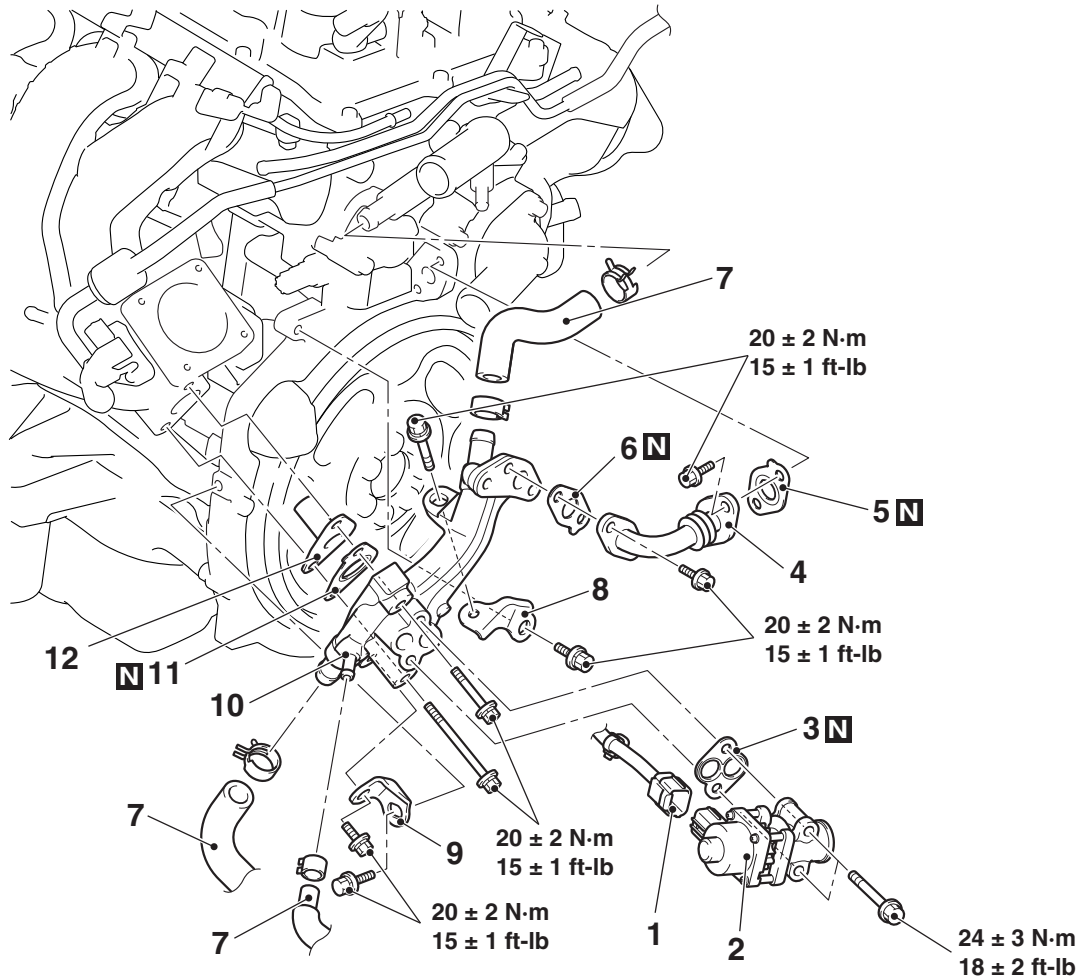
M1173010501145

Pre-removal Operation

- Engine Coolant Draining (Refer to GROUP 14, On-vehicle Service –Engine Coolant Change [P.14-24](#)).
- Air Cleaner Intake Hose and Air Cleaner Assembly Removal (Refer to GROUP 15, Air Cleaner <2.4L Engine>[P.15-4](#)).
- Oil Filler Tube Assembly Removal (Refer to GROUP 23A, Transaxle Assembly [P.23A-153](#)).

Post-installation Operation

- Oil Filler Tube Assembly Installation (Refer to GROUP 23A, Transaxle Assembly [P.23A-153](#)).
- Air Cleaner Intake Hose and Air Cleaner Assembly Installation (Refer to GROUP 15, Air Cleaner <2.4L Engine>[P.15-4](#)).
- Engine Coolant Refilling (Refer to GROUP 14, On-vehicle Service –Engine Coolant Change [P.14-24](#)).



AC605404AC

Removal steps

1. EGR valve connector connection
2. EGR valve
- >>B<< 3. EGR valve gasket
- >>A<< 4. EGR valve pipe
- >>A<< 5. EGR pipe gasket
- >>A<< 6. EGR pipe gasket
7. Water hose connection
- >>A<< 8. EGR support stay A

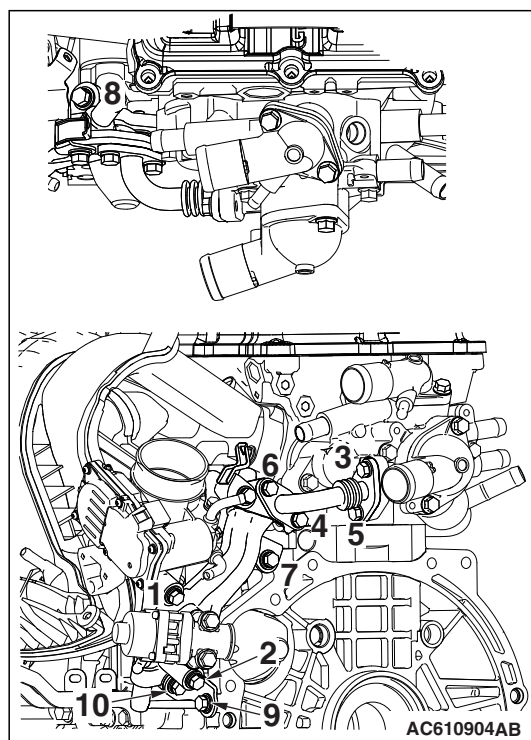
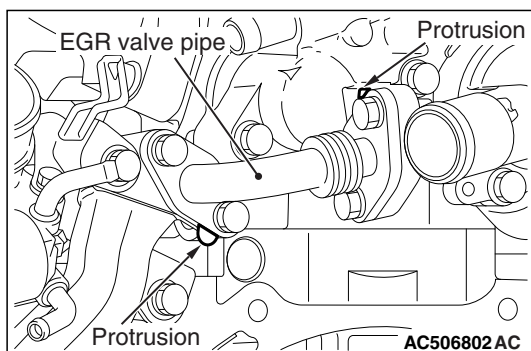
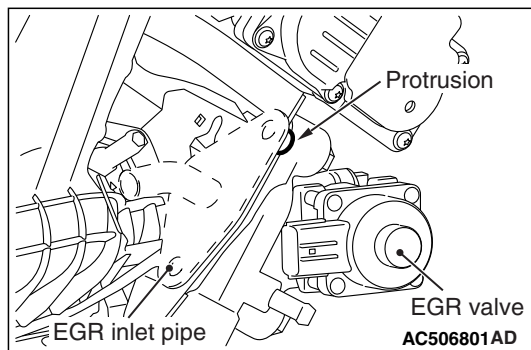
Removal steps (Continued)

- >>A<< 9. EGR support stay B
 - Throttle body assembly (Refer to GROUP 13A, Throttle Body Assembly [P.13A-980](#))
- >>A<< 10. EGR valve support
- >>A<< 11. EGR pipe gasket
12. EGR inlet pipe

INSTALLATION SERVICE POINTS

>>A<< EGR PIPE GASKET/EGR VALVE SUPPORT/EGR SUPPORT STAY B/EGR SUPPORT STAY A/ EGR PIPE GASKET/EGR VALVE PIPE INSTALLATION

1. Temporarily tighten each part so that the protrusion of each gasket is positioned as illustrated

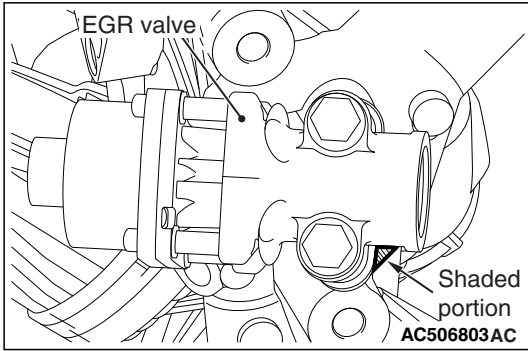


2. Tighten mounting bolts to the specified torque in the order of number shown in the figure.

Tightening torque: 20 ± 2 N·m (15 ± 1 ft-lb)

>>B<< EGR VALVE GASKET INSTALLATION

Install the EGR valve gasket so that its shaded portion is set as shown in the figure.



REMOVAL AND INSTALLATION <3.0L ENGINE>

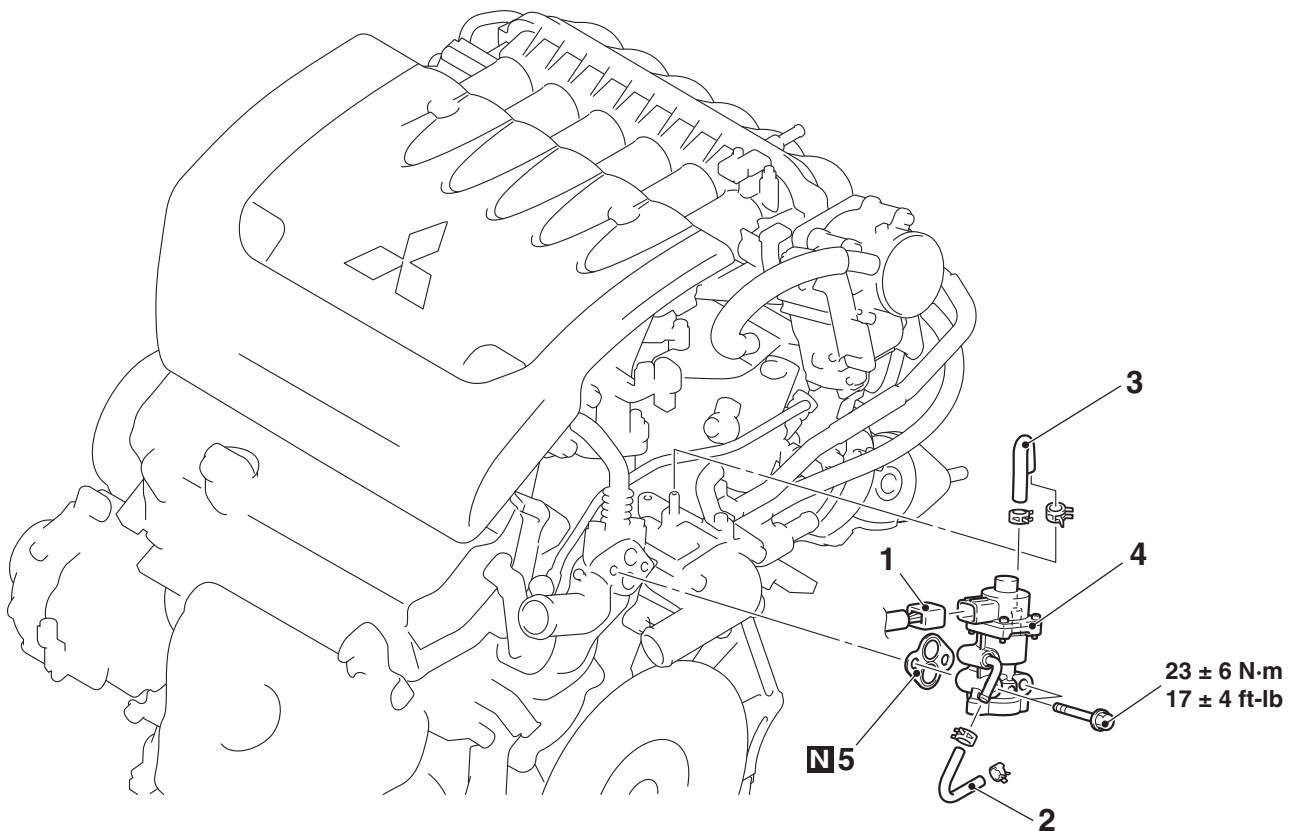
M1173010501305

Pre-removal Operation

- Engine Coolant Draining (Refer to GROUP 14, On-vehicle Service –Engine Coolant Change [P.14-24](#)).
- Air Cleaner Intake Hose and Air Cleaner Assembly Removal (Refer to GROUP 15, Air Cleaner <3.0L Engine>[P.15-5](#)).

Post-installation Operation

- Air Cleaner Intake Hose and Air Cleaner Assembly Installation (Refer to GROUP 15, Air Cleaner <3.0L Engine>[P.15-5](#)).
- Engine Coolant Refilling (Refer to GROUP 14, On-vehicle Service –Engine Coolant Change [P.14-24](#)).



AC704202AB

Removal steps

1. EGR valve connector connection
2. Water hose
3. Water hose

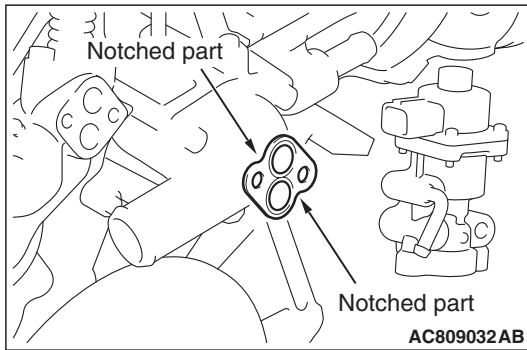
Removal steps (Continued)

- >>A<<
4. EGR valve
 5. EGR valve gasket

INSTALLATION SERVICE POINT

>>A<< EGR VALVE GASKET INSTALLATION

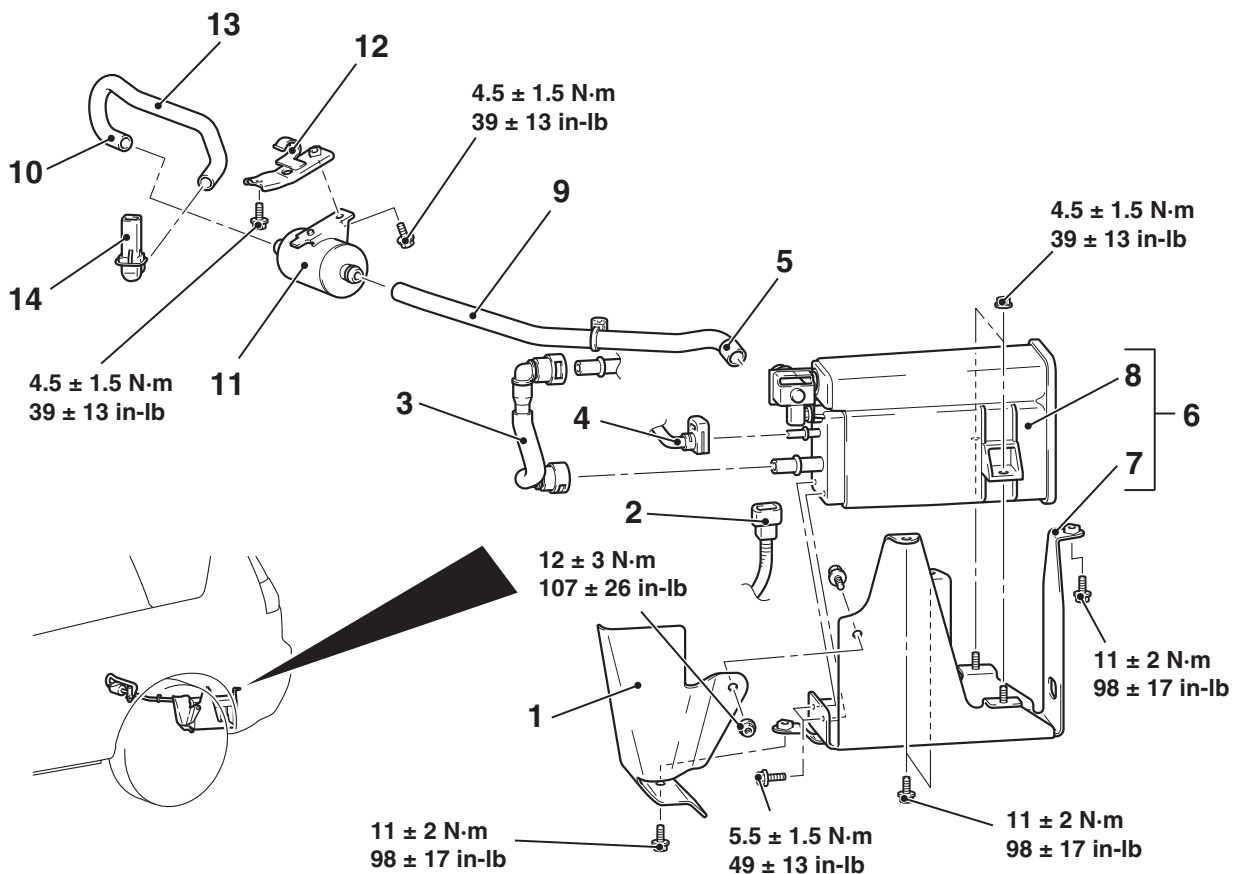
Install the EGR valve gasket as shown in the illustration.



EVAPORATIVE EMISSION CANISTER AND FUEL TANK PRESSURE RELIEF VALVE

REMOVAL AND INSTALLATION

M1173004800542



AC704203AB

Removal steps

1. Evaporative emission canister protector
2. Evaporative emission ventilation solenoid connector connection
3. Fuel vapor tube assembly
4. Fuel purge pipe assembly connection
5. Vent hose A connection

Removal steps (Continued)

6. Evaporative emission canister and bracket assembly
7. Evaporative emission canister bracket
8. Evaporative emission canister and evaporative emission ventilation solenoid assembly

Removal steps (Continued)

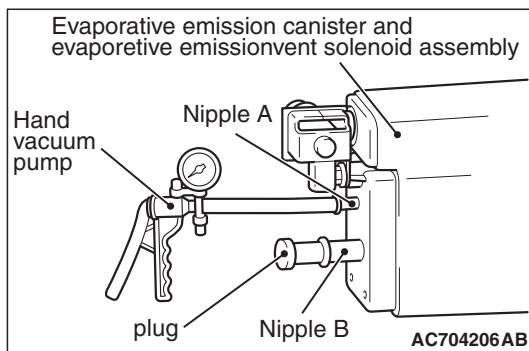
9. Vent hose A
10. Vent hose B connection
11. Air filter
12. Air filter bracket
 - Rear axle drive shaft (LH) <AWD>
(Refer to GROUP 27B, Drive Shaft Assembly [P.27B-23](#))
13. Vent hose B
14. Vent pipe

INSPECTION

M1173004900260

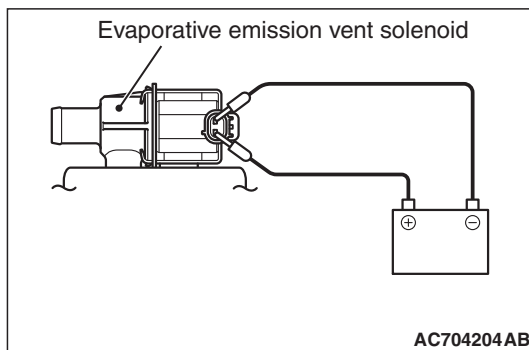
**EVAPORATIVE EMISSION VENTILATION
SOLENOID CHECK**

1. Connect a hand vacuum pump to nipple (A) of the evaporative emission canister and evaporative emission ventilation solenoid assembly.
2. Connect a plug to nipple (B) of the evaporative emission canister and evaporative emission ventilation solenoid assembly.



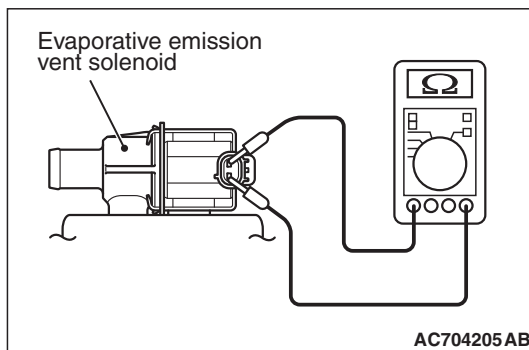
3. Check air tightness by applying a vacuum with voltage applied directly from the battery to the evaporative emission ventilation solenoid and without applying voltage.

Battery voltage	Normal condition
Applied	Vacuum maintained
Not applied	Vacuum leaks



4. Measure the resistance between the terminals of the solenoid.

Standard value: 17 –21 Ω [at 20° C (68° F)]



NOTES