

GROUP 17b

AUTO-CRUISE CONTROL SYSTEM

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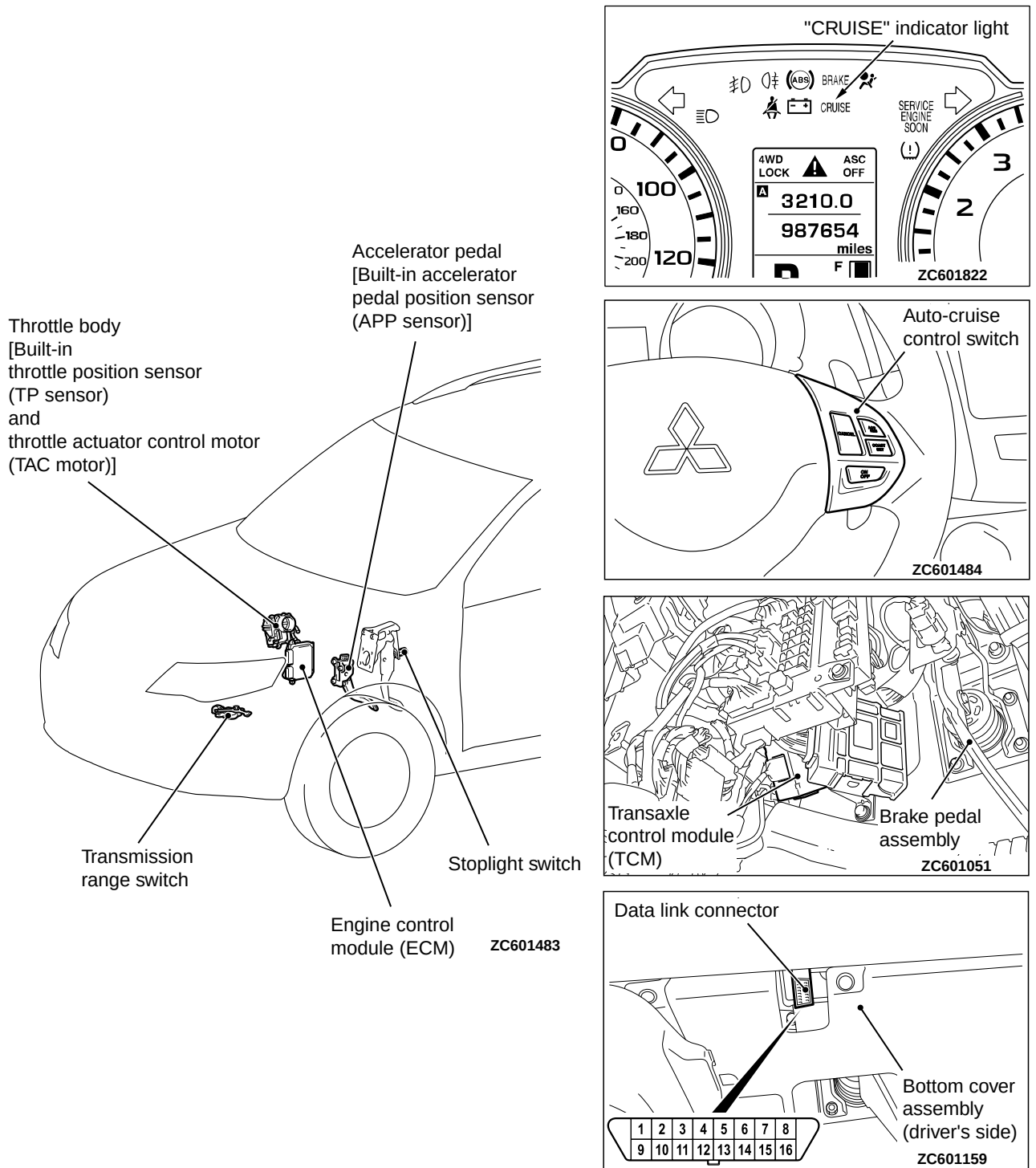
GENERAL INFORMATION

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By using the auto-cruise control, 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 auto-cruise control system, in conjunction with the electronic throttle valve control system, the engine control module (ECM) electronically controls the throttle valve.

CONSTRUCTION DIAGRAM



ZC6014850001

AUTO-CRUISE CONTROL SYSTEM DIAGNOSIS

INTRODUCTION TO AUTO-CRUISE CONTROL SYSTEM DIAGNOSIS

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The auto-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.

Auto-cruise control system diagnostic trouble codes

The auto-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 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 auto-cruise control switch, stoplight switch and ECM.

DIAGNOSTIC TROUBLESHOOTING STRATEGY

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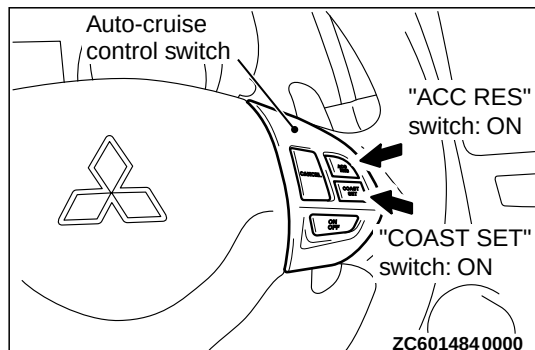
Use these steps to plan your diagnostic strategy. If you follow them carefully, you will check most of the possible causes of an auto-cruise control system malfunction.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any auto-cruise control system DTC. (Refer to P.17b-5, Diagnostic Function - How to Read Diagnostic Trouble Codes).
4. If you can verify the condition but no auto-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 auto-cruise control system DTCs, find the fault. (Refer to P.17b-25, Symptom Chart).

6. If there is an auto-cruise control system DTC, record the number of the code, then erase the code. (Refer to P.17b-5, Diagnostic Function - How to Erase Diagnostic Trouble Codes).
7. Re-create the auto-cruise control system DTC set conditions to see if the same auto-cruise control system DTC will set again. (Refer to P.17b-5, Diagnostic Function - How to Read Diagnostic Trouble Codes).
 - If the same auto-cruise control system DTC sets again, perform the diagnostic procedures for the set code. (Refer to P.17b-7, Diagnostic Trouble Code Chart).

DIAGNOSTIC FUNCTION

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HOW TO READ DIAGNOSTIC TROUBLE CODES

1. Turn the ignition switch to the "ON" position while pushing the "COAST/SET" switch. Then, within one second, release the "COAST/SET" switch and push 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
ZC601825 0000	ZC6018260000

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

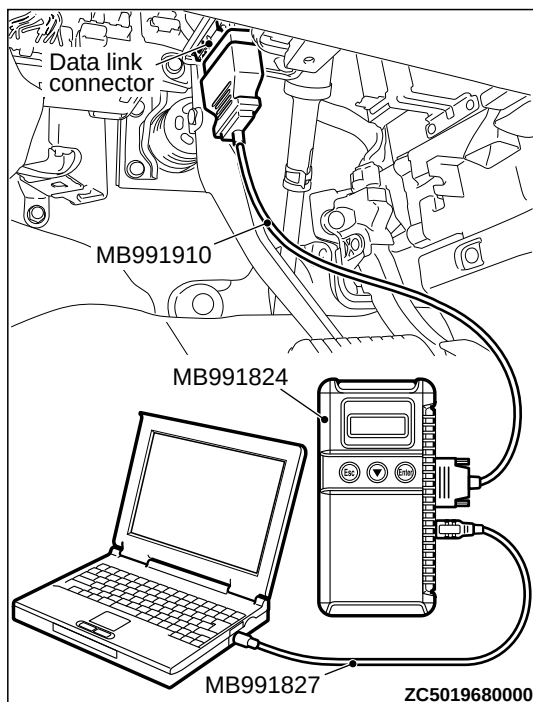
HOW TO ERASE DIAGNOSTIC TROUBLE CODES

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

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

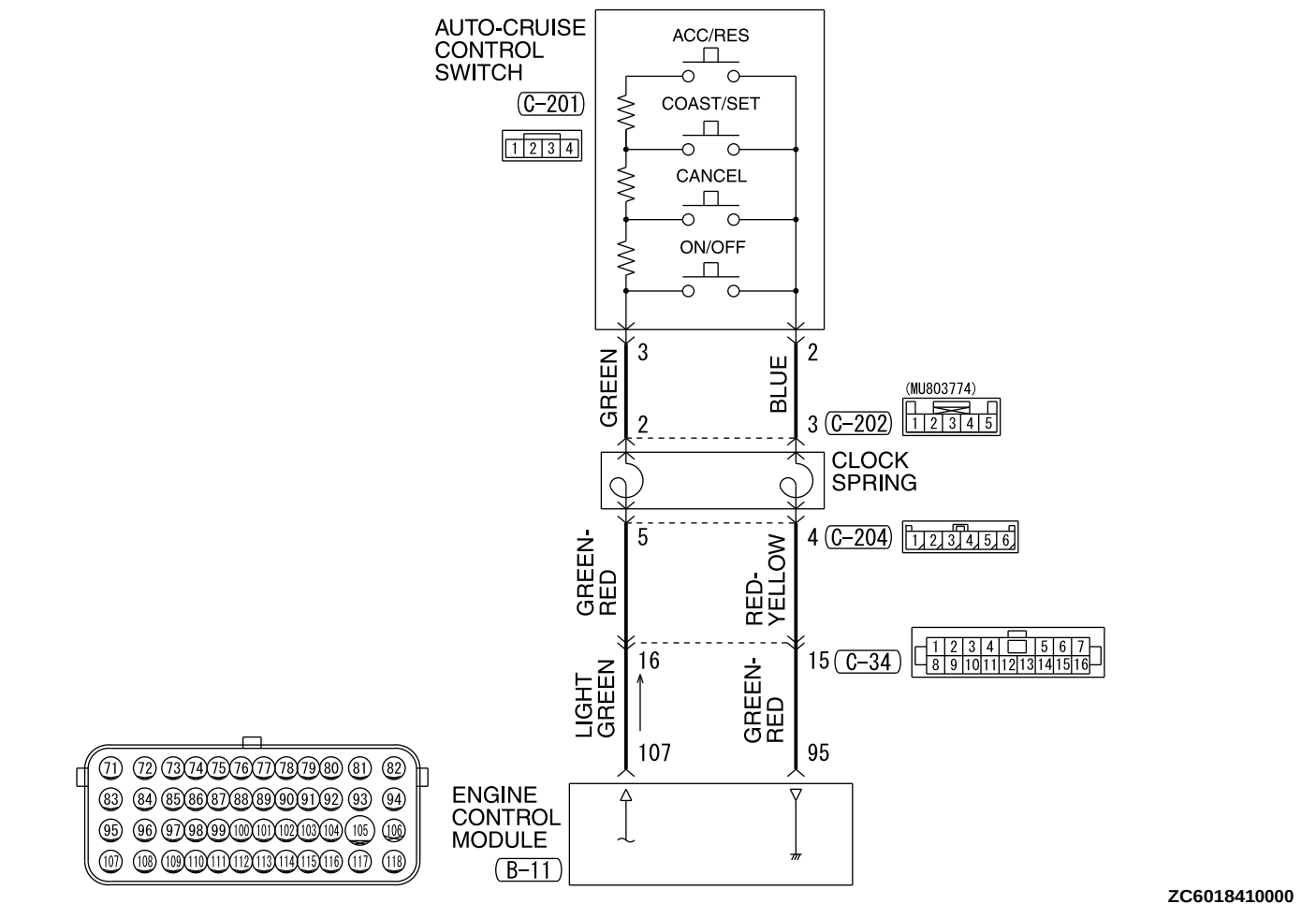
Diagnostic trouble code number	Inspection item	Reference page
15	Auto-cruise control switch system	P.17b-8
22	Stoplight switch system	P.17b-17
23	ECM and its related components	P.17b-23

DIAGNOSTIC TROUBLE CODE PROCEDURES

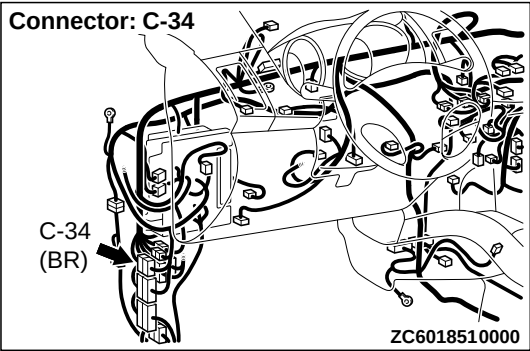
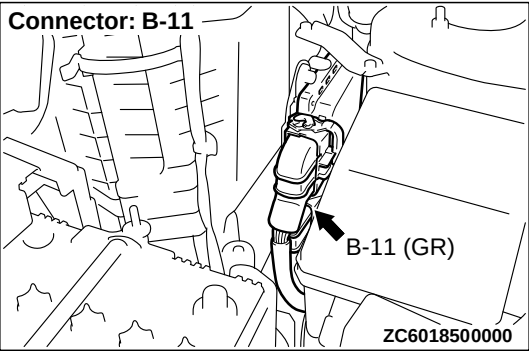
DTC 15: Auto-cruise Control Switch System

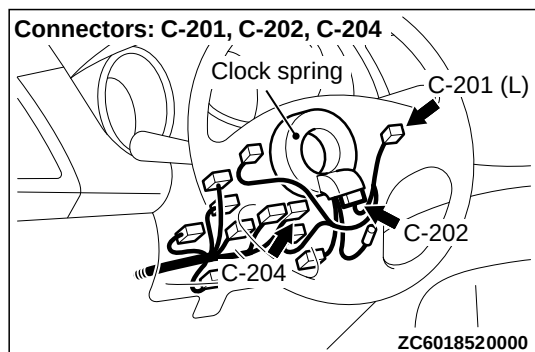
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Auto-cruise Control Switch System Circuit



ZC6018410000





CIRCUIT OPERATION

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

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

DTC SET CONDITIONS

Check Condition

- The "CRUISE" indicator light illuminates.

Judgement Criteria

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

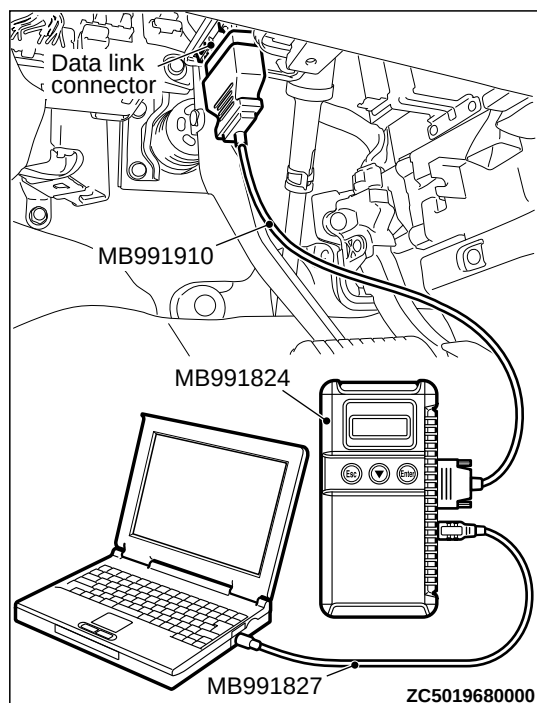
TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the auto-cruise control switch.
- Malfunction of the clock spring.
- Damaged harness or connector.
- 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).

•Item 86: Main switch.

•When "ON/OFF" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "ON/OFF" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 92: Set switch.

•When "COAST/SET" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "COAST/SET" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 91: Resume switch.

•When "ACC/RES" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "ACC/RES" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 75: Cancel switch.

•When "CANCEL" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "CANCEL" switch is at the "OFF" 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: 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: Go to Step 2.

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

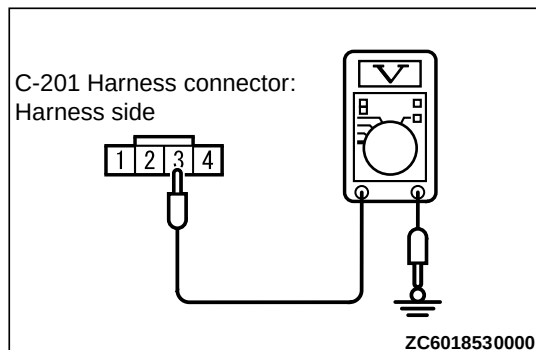
(1) Remove the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329).

(2) Remove the auto-cruise control switch (Refer to P.17b-56).

(3) Connect the negative (-) battery cable.

(4) Do not disconnect auto-cruise control switch connector C-201.

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



- (6) All auto-cruise control switch to the "OFF" position.
- (7) Measure the power supply voltage between auto-cruise control switch connector C-201 terminal 3 and ground by backprobing.
- (8) Turn the ignition switch to the "LOCK" (OFF) position.

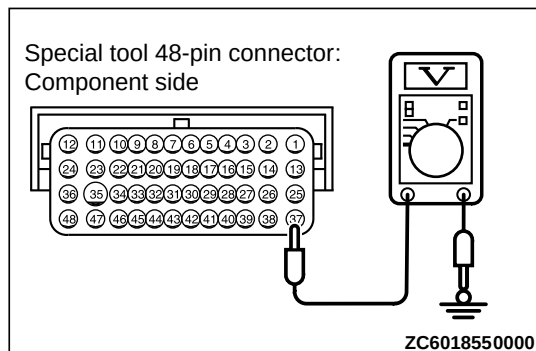
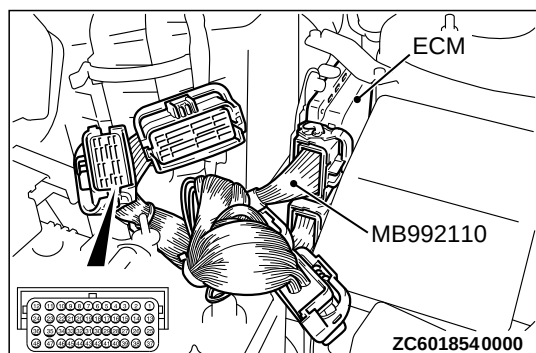
Q: Is the measured voltage between 4.7 and 5.0 volts?

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) All auto-cruise control switch to the "OFF" position.



- (5) Measure the power supply voltage between special tool 48-pin connector terminal 37 (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.

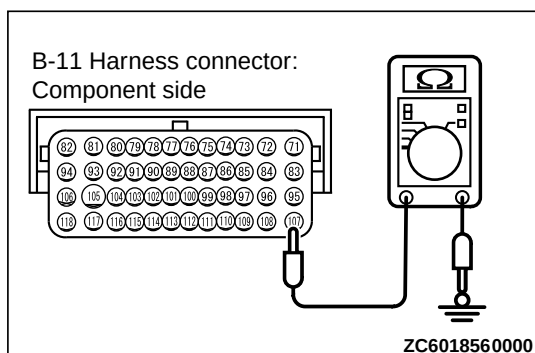
Q: Are the connector and terminals in good condition?

YES: Go to Step 5.

NO: Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Install the auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 5. Check the harness for short circuit to ground between the ECM connector B-11 terminal 107 and the auto-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 auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 17.

NO: Go to Step 6.

STEP 6. Check intermediate connector C-34, auto-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 auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 18.

STEP 7. Check the harness wire between ECM connector B-11 terminal 107 and auto-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 auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 18.

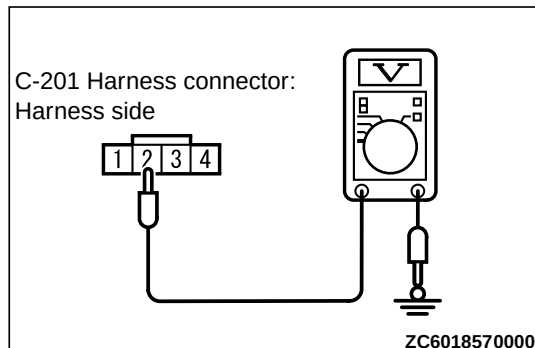
STEP 8. Check the clock spring.

Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329.

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 auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 18.

NO: Replace the clock spring (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Install the auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 18.



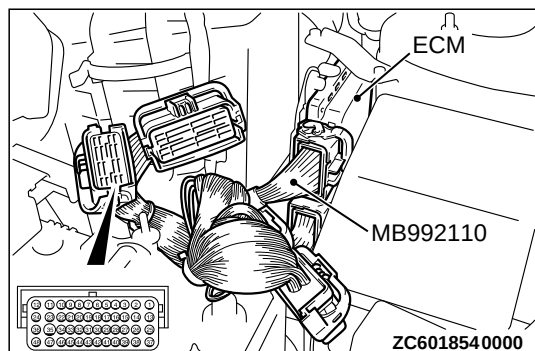
STEP 9. Measure the ground voltage at auto-cruise control switch connector C-201 by backprobing.

- (1) Do not disconnect auto-cruise control switch connector C-201.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the "ON/OFF" switch to the "ON" position.
- (4) Measure the ground voltage between auto-cruise control switch connector C-201 terminal 2 and ground by backprobing.
- (5) Turn the "ON/OFF" switch to the "OFF" position.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage 0.5 volt or less?

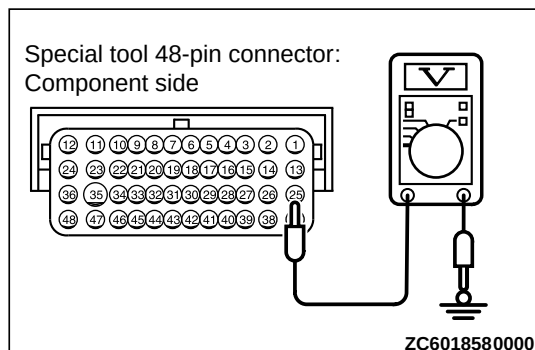
YES: Go to Step 15.

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) Turn the "ON/OFF" switch to the "ON" position.



- (5) Measure the ground voltage between special tool 48-pin connector terminal 25 (ECM connector B-11 terminal 95) and ground.
- (6) Turn the "ON/OFF" switch to the "OFF" position.
- (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 auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P. 52B-329). Then go to Step 17.

NO: Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Install the auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 12. Check ECM connector B-11, intermediate connector C-34, auto-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 auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 13. Check the harness wire between ECM connector B-11 terminal 95 and auto-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 auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 14. Check the clock spring.

Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329.

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 auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

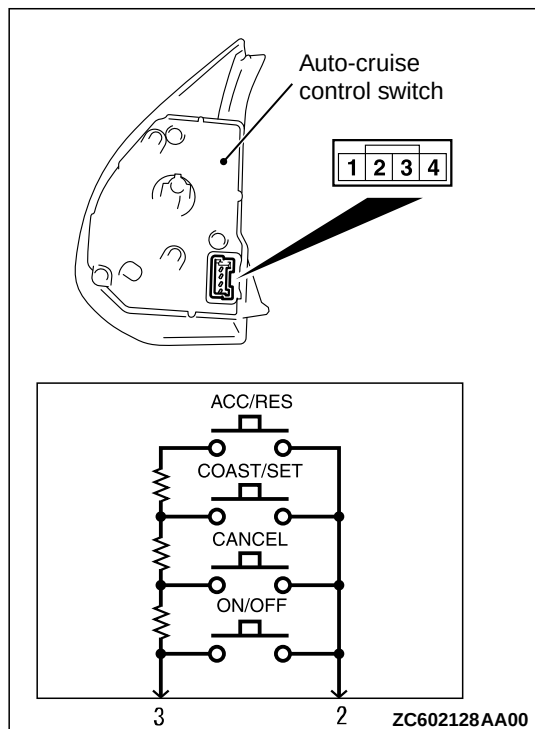
NO: Replace the clock spring (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Install the auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 15. Check auto-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 auto-cruise control switch (Refer to P.17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

STEP 16. Check the auto-cruise control switch.

- (1) Remove the auto-cruise control switch (Refer to P. 17b-56).
- (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
"ON/OFF" switch "OFF"	Open circuit
"ON/OFF" switch "ON"	Continuity (less than 2 ohms)
"CANCEL" switch ON	202.5 - 208 Ω
"COAST/SET" switch ON	610.5 - 624.5 Ω
"ACC/RES" switch ON	1838 - 1877 Ω

Q:Is the resistance within specifications?

YES: Install the auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 17.

NO: Replace the auto-cruise control switch (Refer to P. 17b-56). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 18.

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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).

•Item 86: Main switch.

•When "ON/OFF" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "ON/OFF" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 92: Set switch.

•When "COAST/SET" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "COAST/SET" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 91: Resume switch.

- When "ACC/RES" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".
 - When "ACC/RES" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".
 - Item 75: Cancel switch.
 - When "CANCEL" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".
 - When "CANCEL" switch is at the "OFF" 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: 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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis – ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 18.

STEP 18. Read the diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the "ON/OFF" switch to the "ON" position (turn on the "CRUISE" indicator lamp).
- (4) Read the diagnostic trouble codes (Refer to P.17b-5).

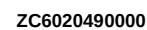
Q:Is DTC 15 set?

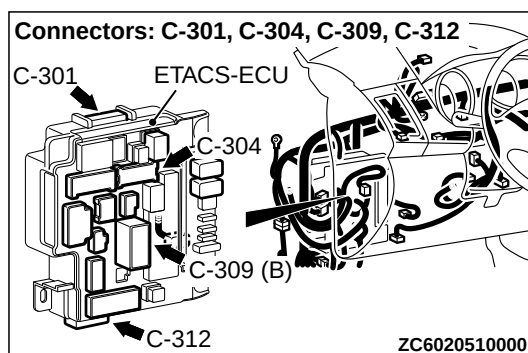
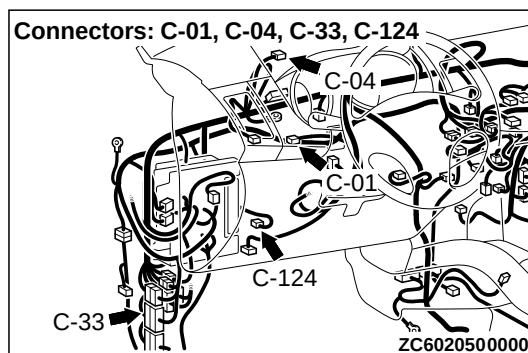
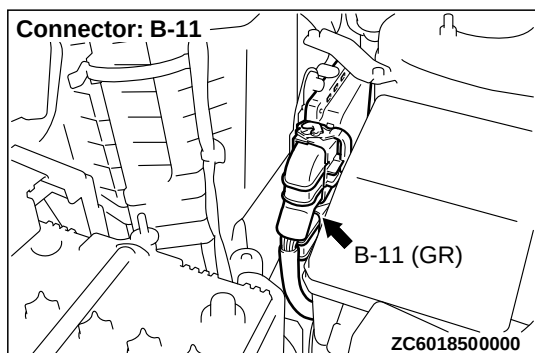
YES: Return to Step 1.

NO: The procedure is complete.

M11702000038USA0000010000

Stoplight Switch System Circuit





CIRCUIT OPERATION

When the brake pedal is depressed, the battery positive voltage is applied to the ECM (terminal 108), and the signal is transmitted from the ETACS-ECU to the ECM via CAN bus line.

DTC SET CONDITIONS

Check Condition

- The "CRUISE" indicator light illuminates.

Judgement Criteria

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

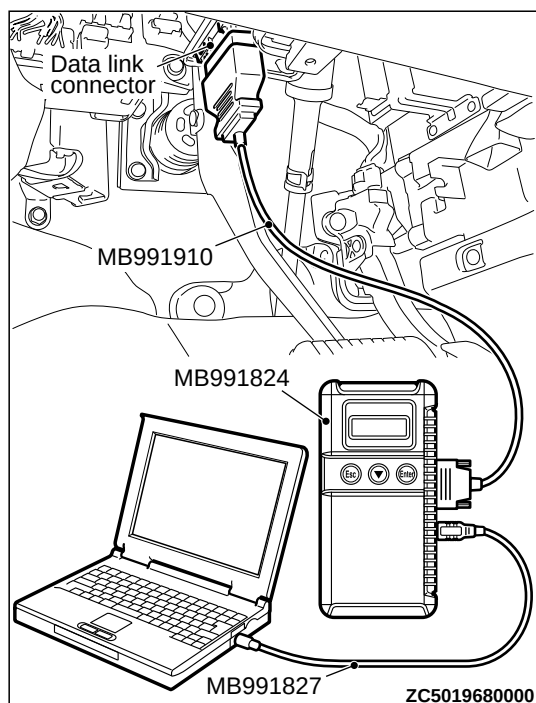
TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the stoplight switch.
- Damaged harness or connector.
- 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



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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54Ad, Diagnosis - Data List Reference Table P.54Ad-51).
 - 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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P. 42C-8). Then go to Step 15.

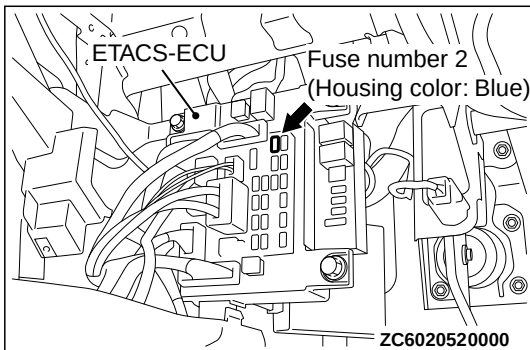
NO: Go to Step 4.

STEP 4. Check fuse number 2 at the ETACS-ECU.

Q:Is the fuse in good condition?

YES: Go to Step 5.

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



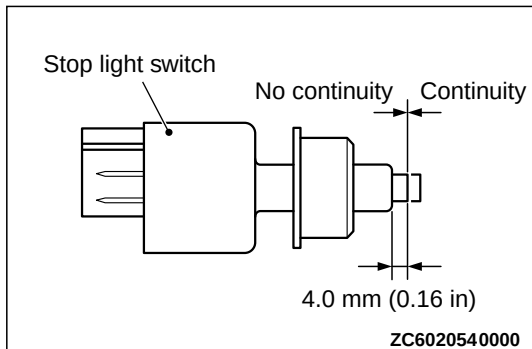
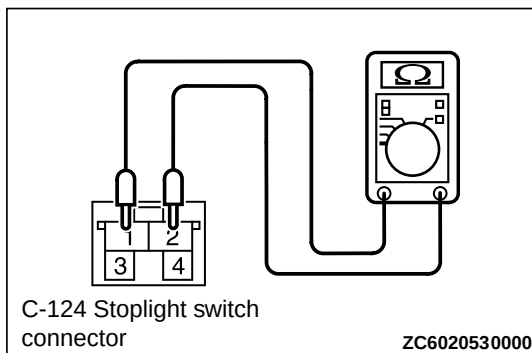
STEP 5. Check the stoplight switch.

- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22).
- (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-22). Then go to Step 6.

NO: Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22). Then go to Step 15.



STEP 6. Check stoplight switch connector C-124 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 7.

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

STEP 7. Check the harness wire between ETACS-ECU connector C-304 terminal 1 and ETACS-ECU connector C-312 terminal 16 for damage.

Q: Is the harness wire in good condition?

YES: Go to Step 8.

NO: Repair the damaged harness wire. 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54Ad, Data List Reference Table P.54Ad-51).

• 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: 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 ETACS-ECU (Refer to GROUP 54Ad, ETACS-ECU P.54Ad-93). 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).

• 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".

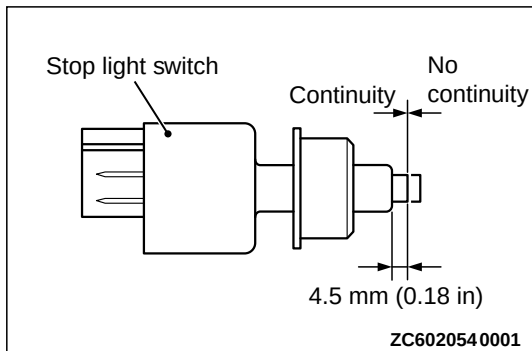
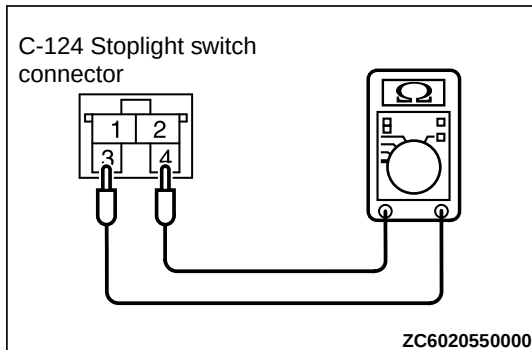
(4) Turn the ignition switch to the "LOCK" (OFF) position.

(5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES: Go to Step 14.

NO: Go to Step 10.



STEP 10. Check the stoplight switch.

- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22).
- (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-22). Then go to Step 11.

NO: Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal P. 35A-22). Then go to Step 15.

STEP 11. 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 12.

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

STEP 12. Check the harness wire between ECM connector B-11 terminal 108 and ground 3 for damage.

Q:Is the harness wire in good condition?

YES: Go to Step 13.

NO: Repair the damaged harness wire. 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - 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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 15.

STEP 14. Read the diagnostic trouble codes.

- (1) Erase diagnostic trouble code. (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the "ON/OFF" switch to the "ON" position (turn on the "CRUISE" indicator lamp).
- (4) Press the brake pedal for 2 second or more, and release.
- (5) Read the diagnostic trouble codes. (Refer to P.17b-5).

Q:Is DTC P22 set?

YES: Replace the ECM. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). 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. Read the diagnostic trouble codes.

- (1) Erase diagnostic trouble code. (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the "ON/OFF" switch to the "ON" position (turn on the "CRUISE" indicator lamp).
- (4) Press the brake pedal for 2 second or more, and release.
- (5) Read the diagnostic trouble codes. (Refer to P.17b-5).

Q:Is DTC P22 set?

YES: Return to Step 1.

NO: The procedure is complete.

DTC 23: ECM and Its Related Component

M11702000039USA0000010000

• Malfunction of the ECM.

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.

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

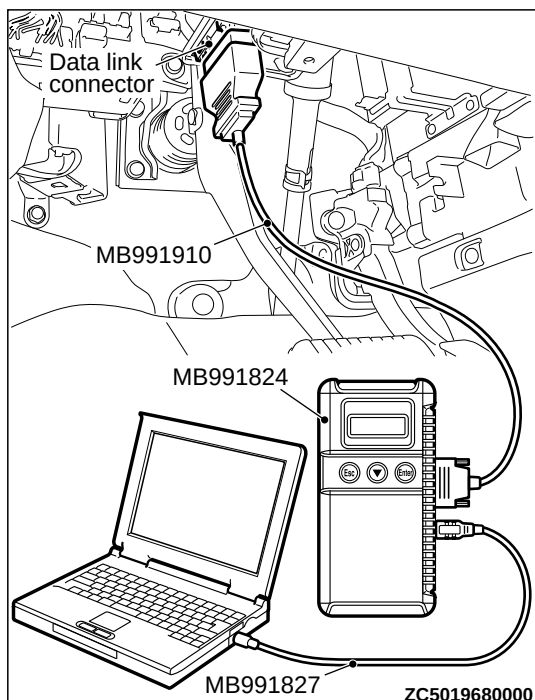
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13Ab, Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.13Ab-8).
- (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 13Ab, Diagnostic Trouble Code Chart P.13Ab-44). Then go to Step 3.

NO: Go to Step 2.



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

- (1) Erase diagnostic trouble code. (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the "ON/OFF" switch to the "ON" position (turn on the "CRUISE" indicator lamp).
- (4) Read the diagnostic trouble codes. (Refer to P.17b-5).

Q:Is DTC 23 set?

YES: Replace the ECM. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). 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 auto-cruise control system diagnostic trouble code.

- (1) Erase diagnostic trouble code. (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.

- (3) Turn the "ON/OFF" switch to the "ON" position (turn on the "CRUISE" indicator lamp).
(4) Read the diagnostic trouble codes. (Refer to P.17b-5).

Q:Is DTC 23 set?

YES: Return to Step 1.

NO: The procedure is complete.

SYMPTOM CHART

M11702000023USA0000010000

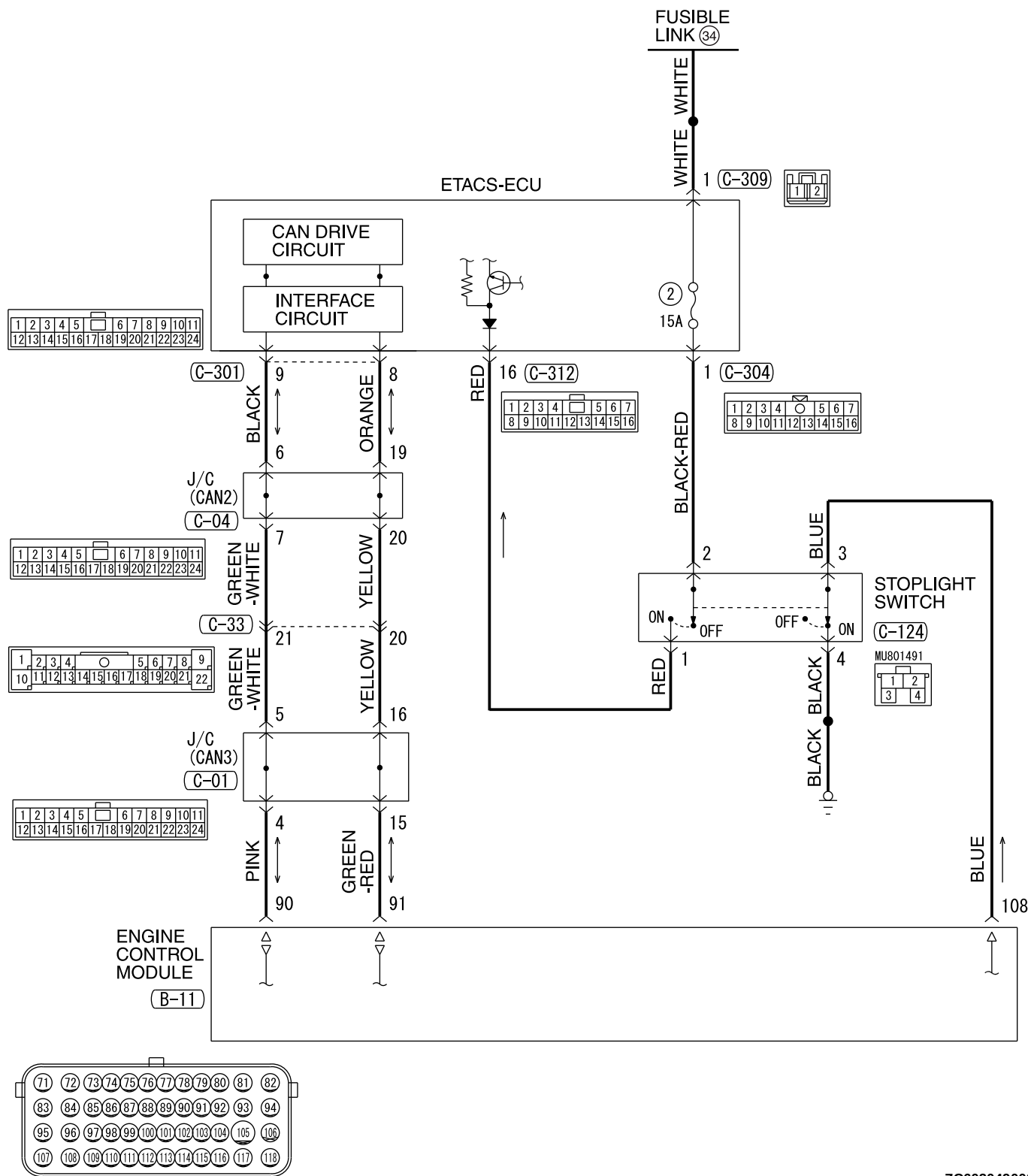
Symptom		Inspection procedure number	Reference page
Scan tool communication with ECM is not possible.		-	GROUP 13Ab, Symptom Procedures - Inspection Procedure 1 P. 13Ab-753.
Auto-cruise control system is not cancelled.	When brake pedal is depressed	1	P.17b-26
	When selector lever is moved to "N" position	2	P.17b-33
	When "CANCEL" switch is turned ON	3	P.17b-36
Auto-cruise control system cannot be set.		4	P.17b-37
Hunting (repeated acceleration and deceleration) occurs at the set vehicle speed.		5	P.17b-41
When "ON/OFF" switch is turned "ON", "CRUISE" indicator light inside combination meter does not illuminate. (However, auto-cruise control system is normal).		6	P.17b-44

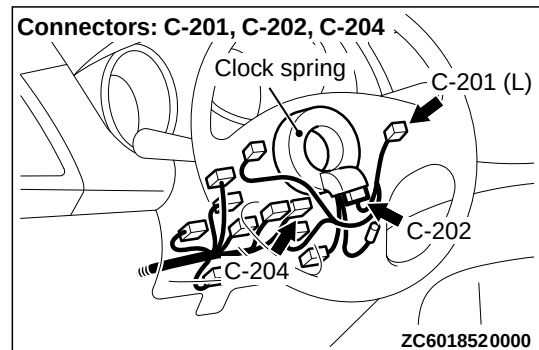
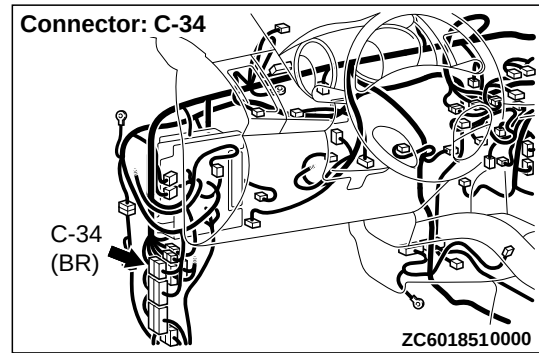
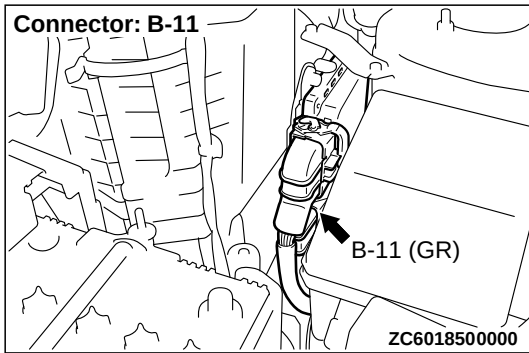
SYMPTOM PROCEDURES

Inspection Procedure 1: When the Brake Pedal is Depressed, Auto-cruise Control System is not Cancelled.

M11702000041USA0000010000

Stoplight Switch System Circuit





COMMENT

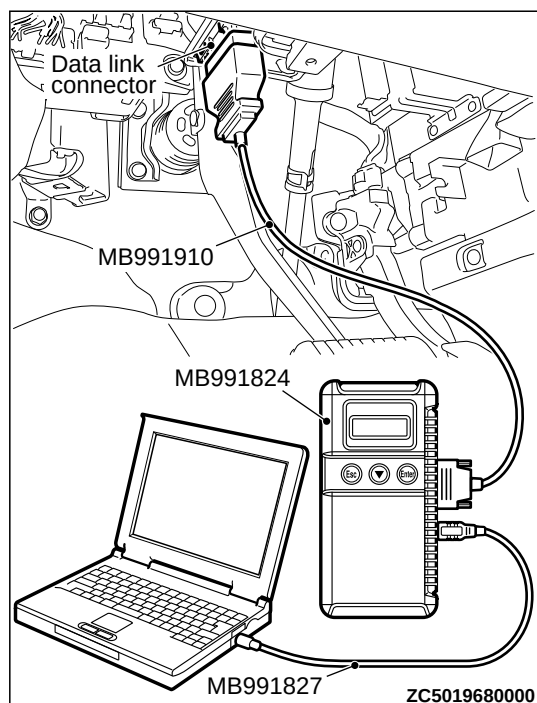
The stoplight switch circuit is suspected.

- Damaged harness or connector.
- Malfunction of the ETACS-ECU
- Malfunction of the ECM.

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

- Malfunction of the stoplight switch.

DIAGNOSIS



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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54Ad, Diagnosis - Data List Reference Table P.54Ad-51).
 - 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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 15.

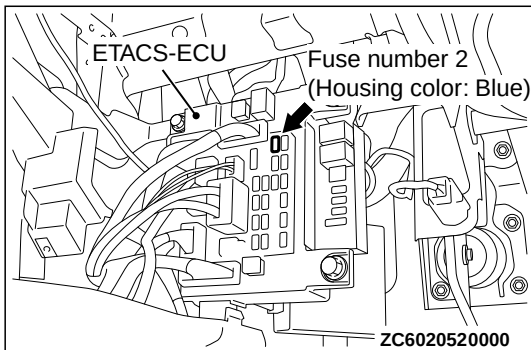
NO: Go to Step 4.

STEP 4. Check fuse number 2 at the ETACS-ECU.

Q:Is the fuse in good condition?

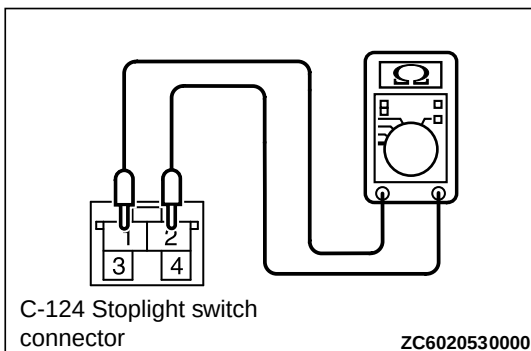
YES: Go to Step 5.

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



STEP 5. Check the stoplight switch.

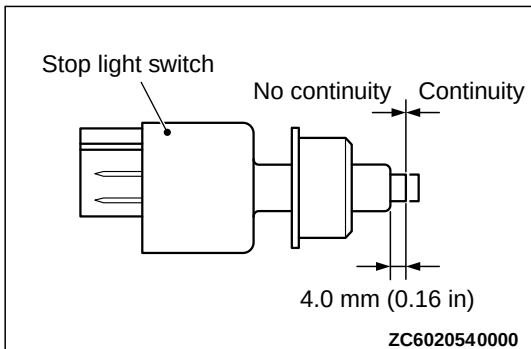
- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22).
- (2) Connect an ohmmeter to the stoplight switch between terminals 1 and 2.
- (3) Check for continuity between the terminals when the plunger of the stoplight switch is pushed in and when it is released.
- (4) The stoplight 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-22). Then go to Step 6.

NO: Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22). Then go to Step 15.



STEP 6. Check stoplight switch connector C-124 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 7.

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

STEP 7. Check the harness wire between ETACS-ECU connector C-304 terminal 1 and ETACS-ECU connector C-312 terminal 16 for damage.

Q: Is the harness wire in good condition?

YES: Go to Step 8.

NO: Repair the damaged harness wire. 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for ETACS system (Refer to GROUP 54Ad, Data List Reference Table P.54Ad-51).

• 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: 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 ETACS-ECU (Refer to GROUP 54Ad, ETACS-ECU P.54Ad-93). 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).

• 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".

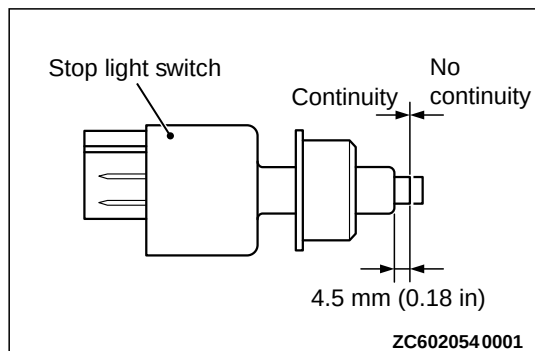
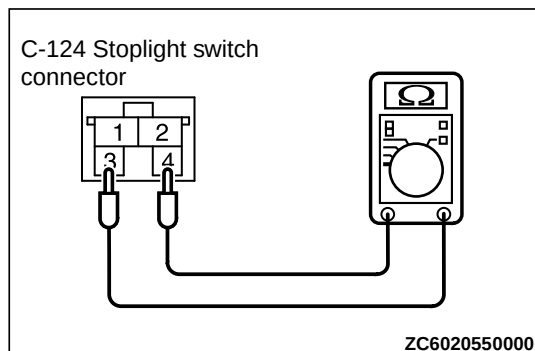
(4) Turn the ignition switch to the "LOCK" (OFF) position.

(5) Disconnect scan tool MB991958.

Q: Is the switch operating properly?

YES: Go to Step 14.

NO: Go to Step 10.



STEP 10. Check the stoplight switch.

- (1) Remove the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22).
- (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-22). Then go to Step 11.

NO: Replace the stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22). Then go to Step 15.

STEP 11. 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 12.

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

STEP 12. Check the harness wire between ECM connector B-11 terminal 108 and ground 3 for damage.

Q:Is the harness wire in good condition?

YES: Go to Step 13.

NO: Repair the damaged harness wire. 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - *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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis – ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 15.

STEP 14. Check the symptoms.

Q:When the brake pedal is depressed, auto-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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis – ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 15.

STEP 15. Check the symptoms.

Q:When the clutch pedal is depressed, auto-cruise control system is cancelled?

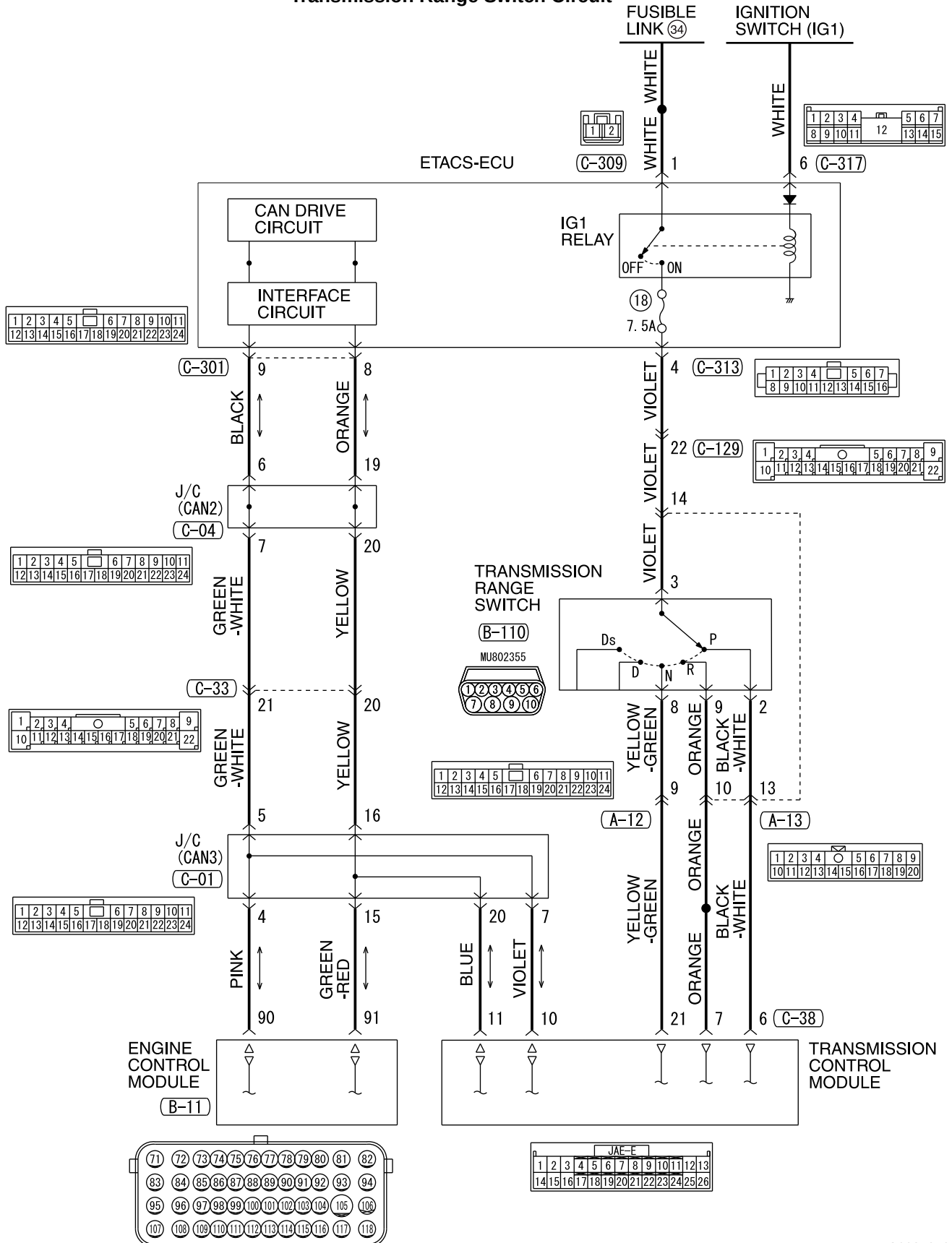
YES: The procedure is complete.

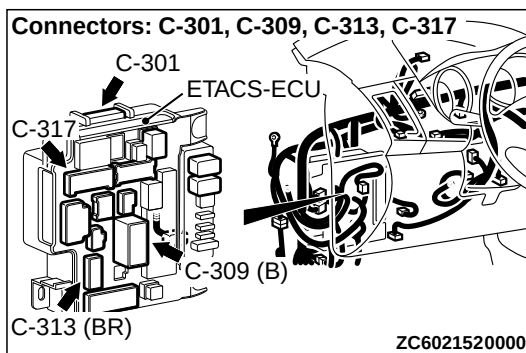
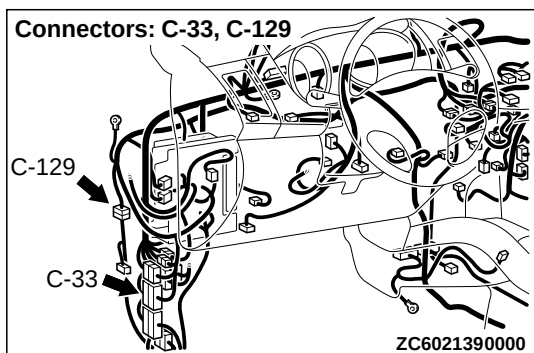
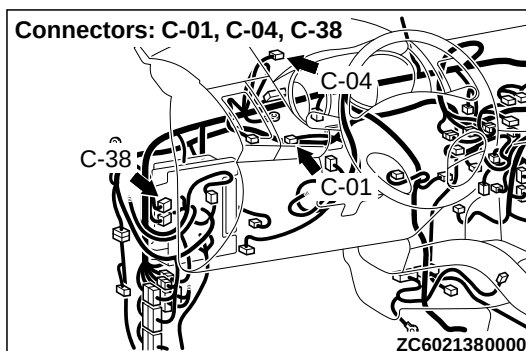
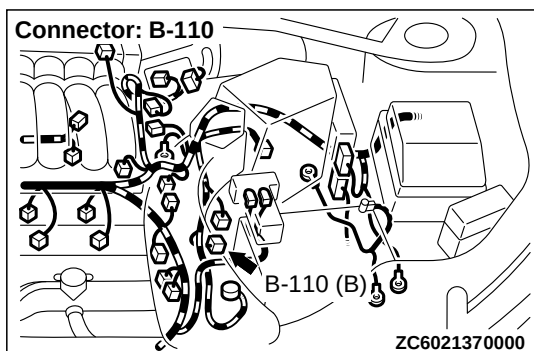
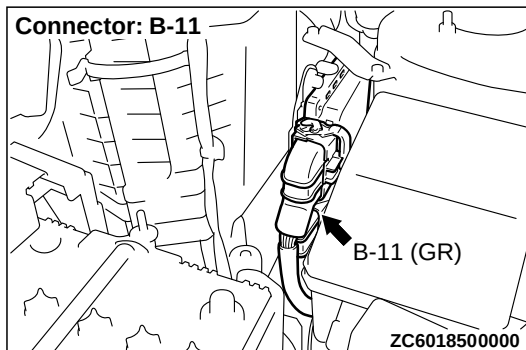
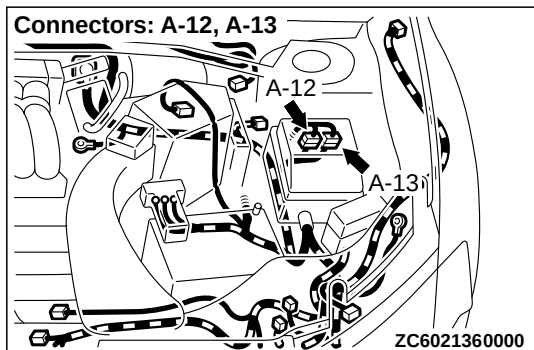
NO: Return to Step 1.

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

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Transmission Range Switch Circuit





CIRCUIT OPERATION

When the selector lever is in the "N" range, the signal is transmitted from the Transaxle Control Module (TCM) to the ECM via CAN bus line.

COMMENT

- Malfunction of A/T system.
- Malfunction of CAN bus line.

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

- Malfunction of the transmission range switch.
- Damaged harness or connector.
- 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

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

⚠ CAUTION

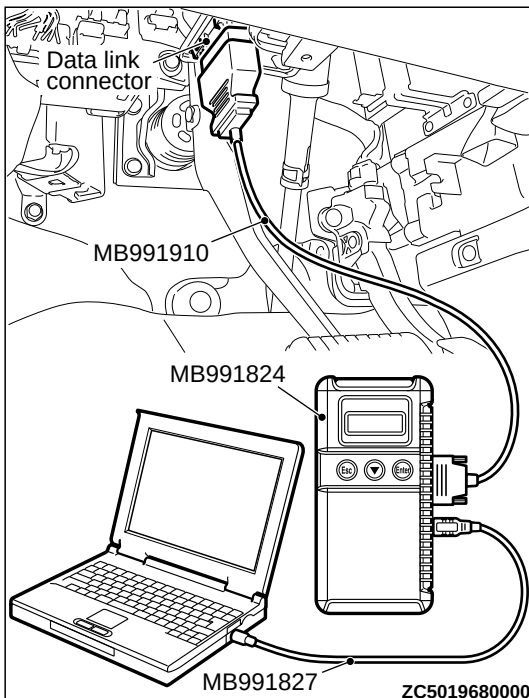
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-17). Then go to Step 4.



STEP 2. Using scan tool MB991958, read the A/T system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23A, Automatic Transaxle Diagnosis - Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.23A-15).
- (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 23A, Automatic Transaxle Diagnosis - Diagnostic Trouble Code Chart P.23A-22). Then go to Step 4.

NO: Go to Step 3.

STEP 3. Check the symptoms.

Q:When the selector lever is moved to "N" position, auto-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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID

Code Registration Necessity Judgment Table P.42C-8).
Then go to Step 4.

STEP 4. Check the symptoms.

Q:When the selector lever is moved to "N" position, auto-cruise control system is cancelled?

YES: The procedure is complete.

NO: Return to Step 1.

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

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COMMENT

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

• Malfunction of the ECM.

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

• Malfunction of the auto-cruise control switch.

DIAGNOSIS

STEP 1. Check the auto-cruise control switch.

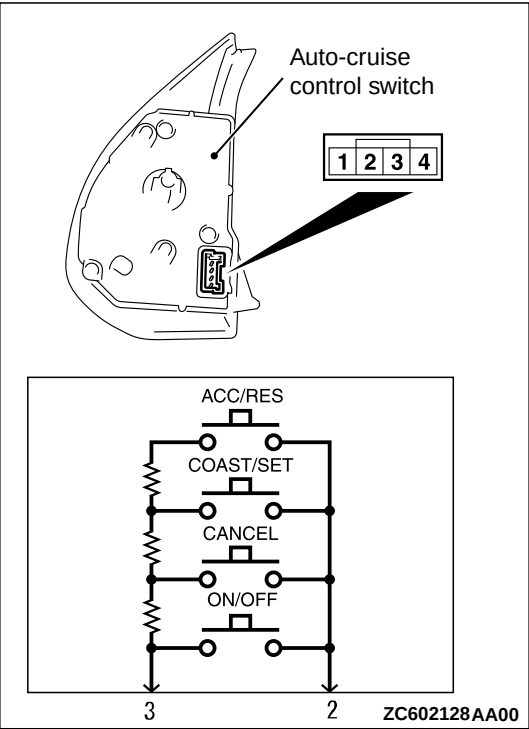
- (1) Remove the auto-cruise control switch (Refer to P. 17b-56).
- (2) Measure the resistance between terminal 2 and terminal 3 when "CANCEL" switch is pressed.

Switch position	Specified condition
"CANCEL" switch ON	202.5 - 208 Ω

Q: Is the resistance within specifications?

YES: Install the auto-cruise control switch (Refer to P. 17b-56) and the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 2.

NO: Replace the auto-cruise control switch (Refer to P. 17b-56). Install the driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329). Then go to Step 3.



STEP 2. Check the symptoms.

Q:"CANCEL" switch is pressed, auto-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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis – ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 3.

STEP 3. Check the symptoms.

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

YES: The procedure is complete.

NO: Return to Step 1.

Inspection Procedure 4: Auto-cruise Control System cannot be Set.

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COMMENT

The fail-safe function is probably canceling auto-cruise control system. In this case, checking the auto-cruise control system, MFI system, A/T system 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.

- Malfunction of the MFI system.
- Malfunction of the A/T system.
- Malfunction of the auto-cruise control switch.
- Malfunction of the stoplight switch.
- Malfunction of the transmission range switch.
- Malfunction of the ECM.

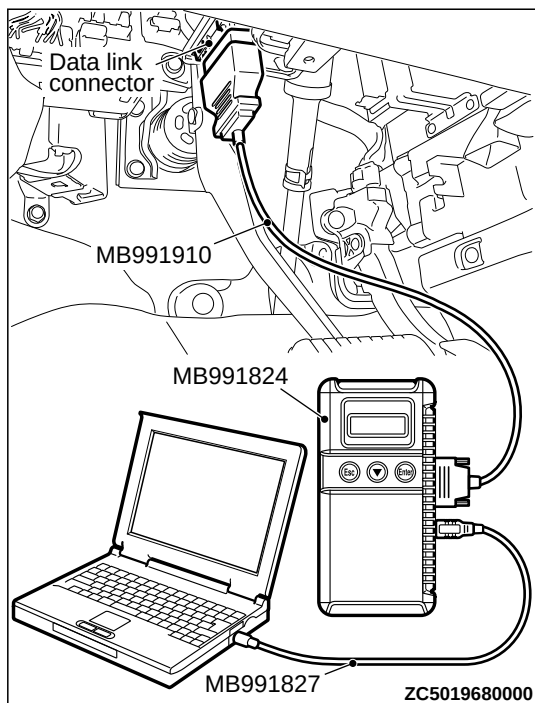
TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the CAN bus line system.

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, 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-17). Then go to Step 9.

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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13Ab, Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.13Ab-8).
- (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 13Ab, Diagnostic Trouble Code Chart P.13Ab-44). Then go to Step 9.

NO: Go to Step 3.

STEP 3. Using scan tool MB991958, read the A/T system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23A, Automatic Transaxle Diagnosis - Diagnostic Function - How to Read and Erase Diagnostic Trouble Code P.23A-15).
- (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 23A, Automatic Transaxle Diagnosis – Diagnostic Trouble Code Chart P.23A-22). Then go to Step 9.

NO: Go to Step 4.

STEP 4. Read the diagnostic trouble code.

Read the auto-cruise control system diagnostic trouble code (Refer to P.17b-5).

Q:Is DTC set?

YES: Diagnose the auto-cruise control system (Refer to P.17b-7, Diagnostic Trouble Code Chart). Then go to Step 9.

NO: Go to Step 5.

STEP 5. 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.17b-5).

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

(3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).

•Item 86: Main switch.

•When "ON/OFF" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "ON/OFF" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 92: Set switch.

•When "COAST/SET" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "COAST/SET" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 91: Resume switch.

•When "ACC/RES" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "ACC/RES" switch is at the "OFF" position, the display on scan tool MB991958 should be "OFF".

•Item 75: Cancel switch.

•When "CANCEL" switch is at the "ON" position, the display on scan tool MB991958 should be "ON".

•When "CANCEL" switch is at the "OFF" 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 6.

NO: Refer to P. 17b-8, Diagnostic Trouble Code Procedures – DTC 15: Auto-cruise Control Switch System. Then go to Step 9.

STEP 6. Using scan tool MB991958, check the data list item 74: Brake light switch, item 290: Brake light switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - 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 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 7.

NO: Refer to P. 17b-17, Diagnostic Trouble Code Procedures – DTC 22: Stoplight Switch System. Then go to Step 9.

STEP 7. Using scan tool MB991958, check data list item 88: Neutral switch.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode for auto-cruise control system (Refer to P.17b-5).
 - Item 88, Neutral switch.
 - When selector lever is at the "N" position, the display on scan tool MB991958 should be "ON".
 - When selector lever is other than "N" 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 8.

NO: Refer to P. 17b-17, Symptom Procedures – Inspection Procedure 2. Then go to Step 9.

STEP 8. Check the symptoms.

Q:Can auto-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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Troubleshooting – ID Code Registration Necessity Judgment Table P. 42C-8). Then go to Step 9.

STEP 9. 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.

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COMMENT

The output shaft speed sensor signal or the throttle body is suspected.

- Malfunction of the output shaft speed sensor .
- Malfunction of the throttle body.
- Malfunction of the ECM.

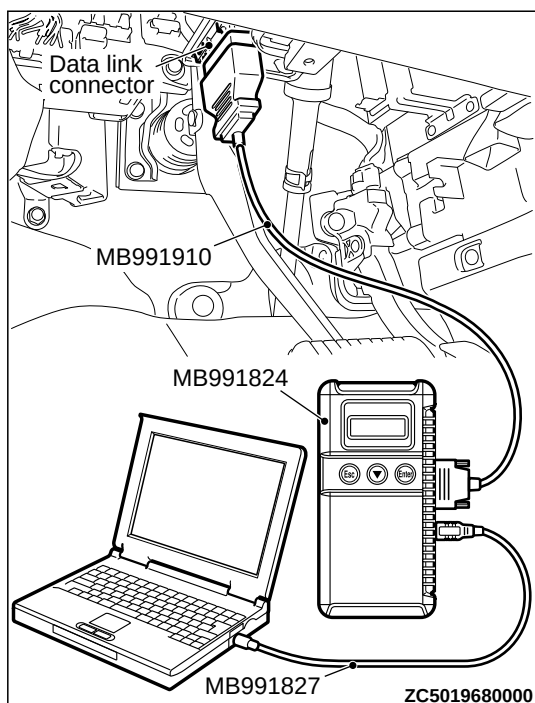
TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the CAN bus line system.

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, 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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-17). Then go to Step 5.

STEP 2. Using scan tool MB991958, read the A/T system diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T system diagnostic trouble code (Refer to GROUP 23A, Automatic Transaxle Diagnosis - Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.23A-15).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is DTC P0720 set?

YES: Refer to GROUP 23A, Automatic Transaxle Diagnosis - Diagnostic Trouble Code Procedures - DTC P0720: Output Shaft Speed Sensor System P.23A-42. Then go to Step 5.

NO: Go to Step 3.

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

- (1) Connect scan tool MB991958 to the data link connector (Refer to P.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13Ab, Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.13Ab-8).
- (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 13Ab, Diagnostic Trouble Code Chart P.13Ab-44). Then go to Step 5.

NO: Go to Step 4.

STEP 4. Retest the system

Q:Does hunting occur?

YES: Replace the ECM. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 5.

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 5. Retest the system

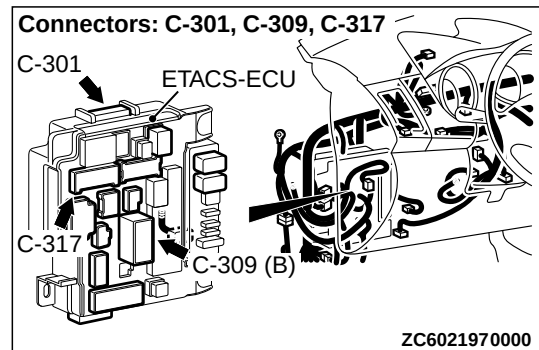
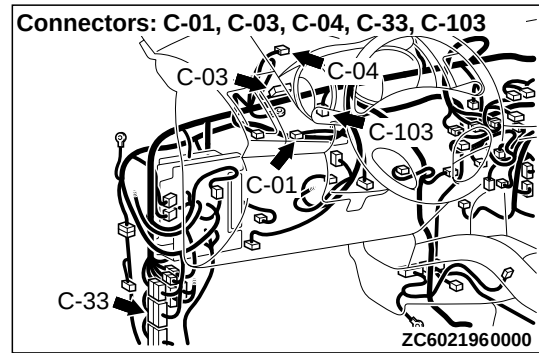
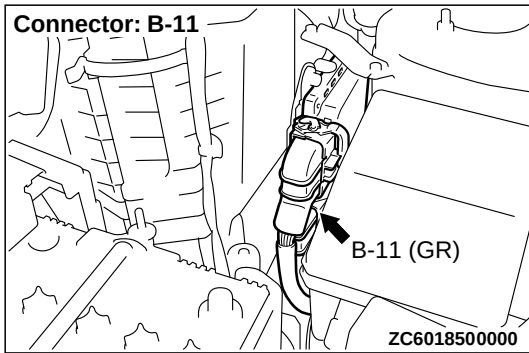
Q:Does hunting occur?

YES: Return to Step 1.

NO: The procedure is complete.

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[illegible]



CIRCUIT OPERATION

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

COMMENT

Connector(s), wiring harness in the CAN bus line between the ECM and the combination meter, power

supply to the ECM, the combination meter, the ETACS-ECU, the ECM may be defective.

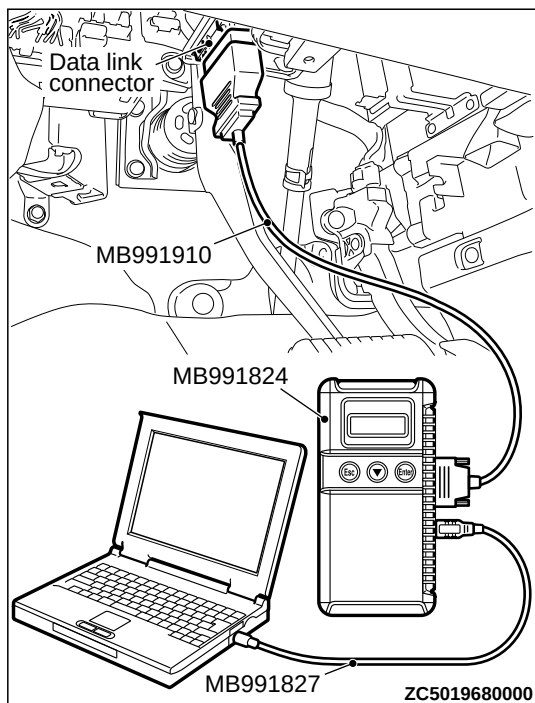
TROUBLESHOOTING HINTS

- Malfunction of the combination meter.
- Damaged harness or connector.
- 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



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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line (Refer to P.17b-5).
- (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 54D, Diagnosis - CAN Bus Diagnostics Chart P.54D-17). Then go to Step 5.

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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI system diagnostic trouble code (Refer to GROUP 13Ab, Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.13Ab-8).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is DTC U0141 set?

YES: Refer to GROUP 13Ab, Diagnostic Trouble Code Procedures - DTC U0141: ETACS-ECU Time Out P.13Ab-746. Then go to Step 5.

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.17b-5).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ETACS system diagnostic trouble code (Refer to GROUP 54Ad, Diagnostic Function - How to Read and Erase Diagnostic Trouble Codes P.54Ad-5).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Disconnect scan tool MB991958.

Q: Is DTC U0155 set?

YES: Refer to GROUP 54Ad, Diagnostic Trouble Code Procedures – DTC U0155: Combination Meter CAN Timeout P. 54Ad-25. Then go to Step 5.

NO: Go to Step 4.

STEP 4. 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. When the ECM is replaced, register the encrypted code (Refer to GROUP 42C, Diagnosis – ID Code Registration Necessity Judgment Table P.42C-8). Then go to Step 5.

STEP 5. 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

⚠ 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,*

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and then delete the diagnostic trouble code using scan tool MB991958 (Refer to GROUP 13Ab, Diagnostic Function – How to Read and Erase Diagnostic Trouble Codes P.13Ab-8).

M.U.T.-III 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	735 - 1,335 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	Brake pedal: Depressed		ON
			Brake pedal: Released		OFF

AUTO-CRUISE CONTROL SYSTEM
AUTO-CRUISE CONTROL SYSTEM DIAGNOSIS

M.U.T.-III scan tool display	Item number	Inspection item		Inspection requirement		Normal condition
Cancel code	57	Cancel code		Ignition switch: "ON"		The cancel code, which set when the auto-cruise control system was cancelled at the last time.
Cancel switch	75	Auto-cruise control switch	CANCEL	"CANCEL" switch: ON		ON
				"CANCEL" switch: OFF		OFF
Cruise switch	81	Auto-cruise control system operation		Auto-cruise control system: active		ON
				Auto-cruise control system: Inactive		OFF
Main switch	86	Auto-cruise control switch	ON/OFF (MAIN)	"ON/OFF" switch: "ON"		ON
				"ON/OFF" switch: "OFF"		OFF
Neutral switch	88	Transmission range switch		Transmission range switch: "N" position		ON
				Transmission range switch: Other than above		OFF
Normally closed brake switch	89	Stoplight switch (brake switch)		Brake pedal: Depressed		ON
				Brake pedal: Released		OFF
Resume switch	91	Auto-cruise control switch	ACC/RES	"ACC/RES" switch: ON		ON
				"ACC/RES" switch: OFF		OFF
Set switch	92	Auto-cruise control switch	COAST/SET	"COAST/SET" switch: ON		ON
				"COAST/SET" switch: OFF		OFF
TP sensor (main)	13	Throttle position sensor (main)*		*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 - 660 mV
				A/C switch: "OFF" to "ON"		Voltage rises
				Selector lever: "N" to "D"		Voltage rises

M.U.T.-III scan tool display	Item number	Inspection item	Inspection requirement	Normal condition
Vehicle speed sensor	4	Vehicle speed signal	Road test the vehicle	The speedometer and scan tool MB991958 display the same value.

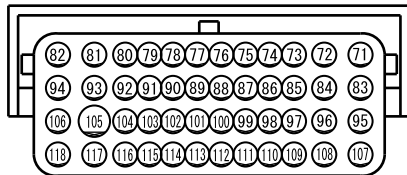
ECM TERMINAL VOLTAGE REFERENCE CHART FOR AUTO-CRUISE CONTROL SYSTEM OPERATION

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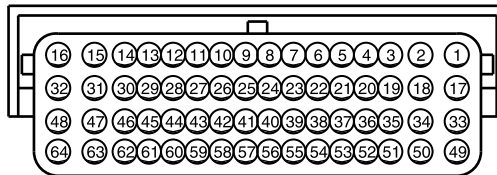
1. Disconnect all ECM connectors, and connect special tool MB992110 (Power plant ECU check harness) in between.
2. Measure the voltages between the check connector terminals of special tool MB992110 and ground terminals 81 or 93.

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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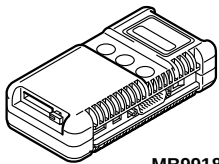
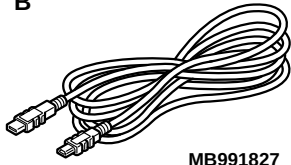
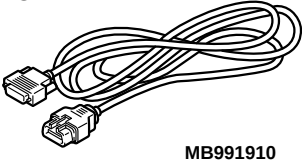
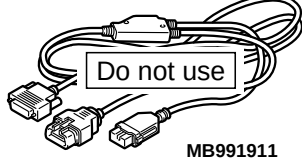
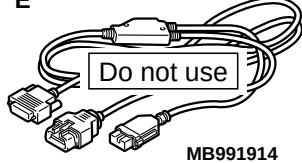
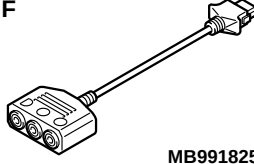
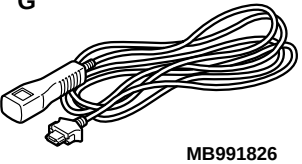
Terminal number	Check item	Check condition		Normal condition
10	Throttle position sensor (main)	- Remove the intake air hose at the throttle body - Disconnect the throttle position sensor, and then connect terminals 3, 4, 5 and 6 with the use of the special tool: MB991658. - Ignition switch: "ON"	Fully 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)	- 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	2.2 - 2.8 V
			Fully open the throttle valve with your finger	4.0 V or more
12	Power supply voltage applied to throttle position sensor	Ignition switch: "ON"		4.9 - 5.1 V

AUTO-CRUISE CONTROL SYSTEM
AUTO-CRUISE CONTROL SYSTEM DIAGNOSIS

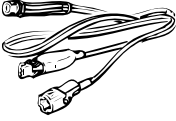
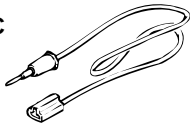
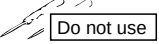
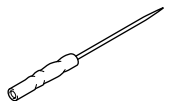
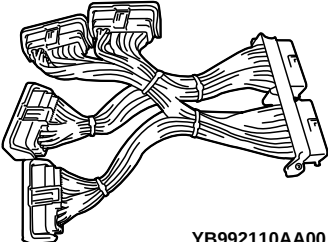
Terminal number	Check item	Check condition		Normal condition
15	Throttle actuator control motor (+)	* Ignition switch: "ON" * Accelerator pedal: fully opened to fully closed		Decreases slightly (approx. 2 V) from battery voltage.
16	Throttle actuator control motor (-)	* Ignition switch: "ON" * Accelerator 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	0.735 - 1.335 V
			Depress the accelerator pedal.	4.0 V or more
76	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	0.435 - 1.035 V
			Depress the accelerator pedal.	3.7 V or more
78	Power supply voltage applied to accelerator pedal position sensor (sub)	Ignition switch: "ON"		4.9 - 5.1 V
107	Auto-cruise control switch power supply	Ignition switch: "ON"	All switches: OFF	4.7 - 5.0 V
			"ON/OFF" switch: "ON"	0 - 0.5 V
			"CANCEL" switch: ON	1.0 - 1.8 V
			"COAST/SET" switch: ON	2.3 - 3.0 V
			"ACC/RES" switch: ON	3.5 - 4.2 V
108	Stoplight switch (brake switch)	Ignition switch: "ON"	Depress the brake pedal.	Battery positive voltage
			Release the brake pedal.	1V or less

SPECIAL TOOLS

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Tool	Tool number and name	Supersession	Application
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991914 F  MB991825 G  MB991826 YB9919580001	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 M.U.T.-III sub assembly A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III main harness C (for Daimler Chrysler models only) F: M.U.T.-III adapter harness G: M.U.T.-III trigger harness	MB991824-KIT <i>NOTE: G: MB991826 M.U.T.-III trigger harness is not necessary when pushing V.C.I. ENTER key.</i>	⚠ CAUTION For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B or C instead, the CAN communication does not function correctly. Checking data list

**AUTO-CRUISE CONTROL SYSTEM
ON-VEHICLE SERVICE**

Tool	Tool number and name	Supersession	Application
A  B  C  D  YB9912230001	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adaptor D: Probe	General service tools	Checking the continuity and measuring the voltage at the harness connector
 YB992006AA01	MB992006 Extra fine probe	General service tool	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector.
 YB992110AA00	MB992110 Power plant ECU check harness	-	Measuring the terminal voltage at the ECM

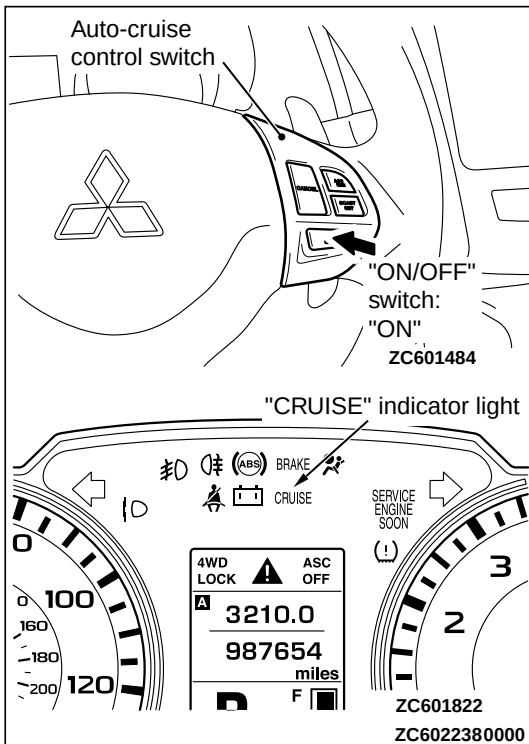
ON-VEHICLE SERVICE

**AUTO-CRUISE CONTROL SYSTEM OPERATION
CHECK**

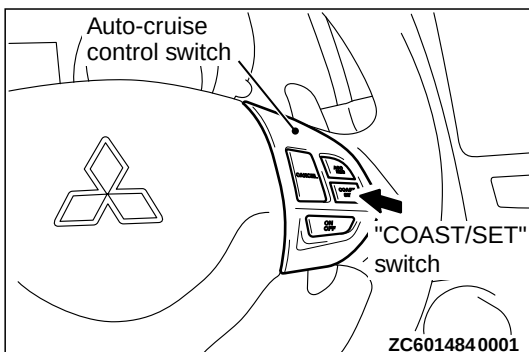
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AUTO-CRUISE CONTROL MAIN SWITCH CHECK

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 switched "ON".



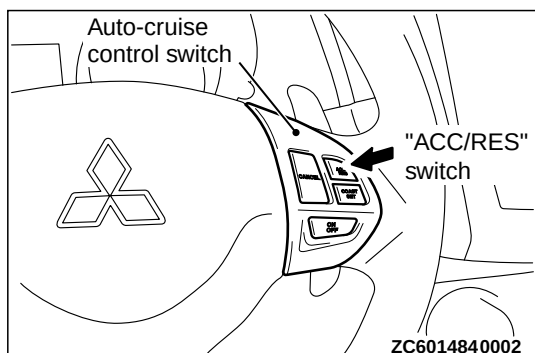
AUTO-CRUISE CONTROL SETTING

1. Switch the "ON/OFF" switch to "ON".
2. Drive at the desired speed, above approximately 40 km/h (25 mph).
3. Push 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 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. Switch the "ON/OFF" switch to "ON".
2. Set to the desired speed, above approximately 40 km/h (25 mph).



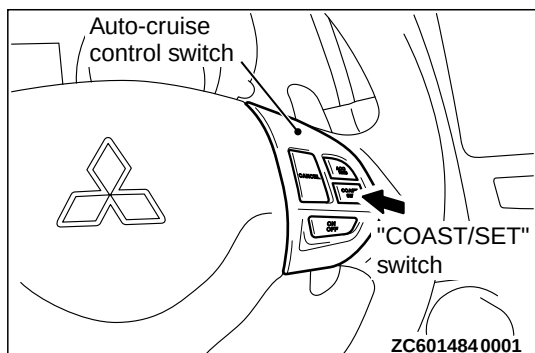
3. Push the "ACC/ES" switch.
4. Check to be sure that acceleration continues while the "ACC/RES" switch is pushed, and that the speed at the time it was released becomes the constant driving speed.

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

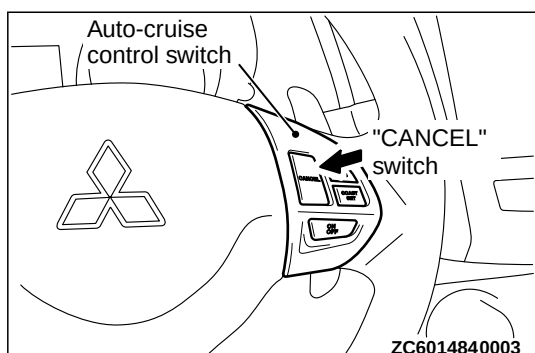
1. Switch the "ON/OFF" switch to "ON".
2. Set to the desired speed, above approximately 40 km/h (25 mph).
3. Push the "COAST/SET" switch.
4. Check to be sure that deceleration continues while the "COAST/SET" switch is pushed, and that the speed at the time it was released becomes the constant driving speed.

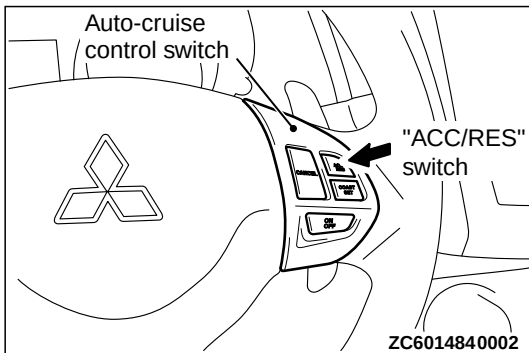
NOTE: When the vehicle speed reaches the low limit [approximately 40 km/h (25 mph)] during deceleration, the auto-cruise control will be cancelled.



RETURN TO THE SET SPEED BEFORE CANCELLATION AND AUTO-CRUISE CONTROL CANCELLATION

1. Switch the "ON/OFF" switch to "ON".
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 auto-cruise control, check if normal driving is resumed and deceleration occurs.
 - (1) The "CANCEL" switch is pushed.
 - (2) The brake pedal is depressed.





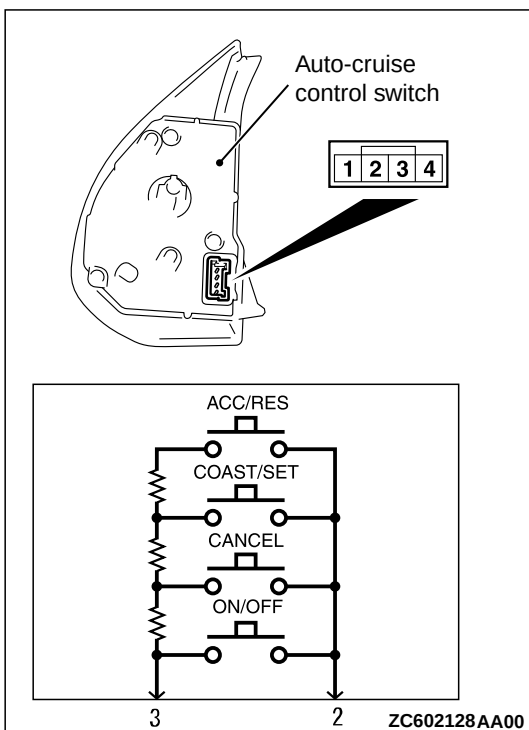
4. At a vehicle speed of approximately 40 km/h (25 mph) or higher, check if when the "ACC/RES" switch is pushed, the vehicle speed returns to the speed before auto-cruise control driving was cancelled, and constant speed driving occurs.
5. When the "ON/OFF" switch is switched to the "OFF" while driving at constant speed, check if normal driving is resumed and deceleration occurs.

AUTO-CRUISE CONTROL SWITCH CHECK

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1. Remove the auto-cruise control switch (Refer to P.17b-56).
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.

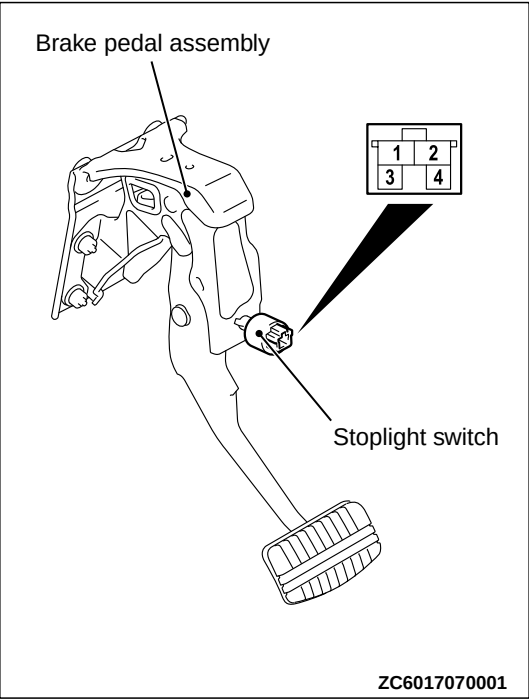
Switch position	Specified condition
"ON/OFF" switch "OFF"	Open circuit
"ON/OFF" switch "ON"	Continuity (less than 2 ohms)
"CANCEL" switch ON	202.5 - 208 Ω
"COAST/SET" switch ON	610.5 - 624.5 Ω
"ACC/RES" switch ON	1838 - 1877 Ω



STOPLIGHT SWITCH CHECK

M11702000009USA0000010000

1. Disconnect the connector.



2. Check for continuity between the terminals of the switch.

Measurement condition	Terminal connector of tester	Specified condition
When brake pedal is depressed.	1 - 2 (for stoplight switch)	Continuity (less than 2 ohms)
	3 - 4 (for brake switch)	Open circuit
When brake pedal is not depressed.	1 - 2 (for stoplight switch)	Open circuit
	3 - 4 (for brake switch)	Continuity (less than 2 ohms)

TRANSMISSION RANGE SWITCH CHECK

M11702000016USA0000010000

Refer to GROUP 23A, On-vehicle Service - Essential Service P. 23A-157.

THROTTLE ACTUATOR CONTROL MOTOR CHECK

M11702000011USA0000010000

Refer to GROUP 13Aa, On-vehicle Service - Throttle Actuator Control Motor Check P.13Aa-31.

AUTO-CRUISE CONTROL

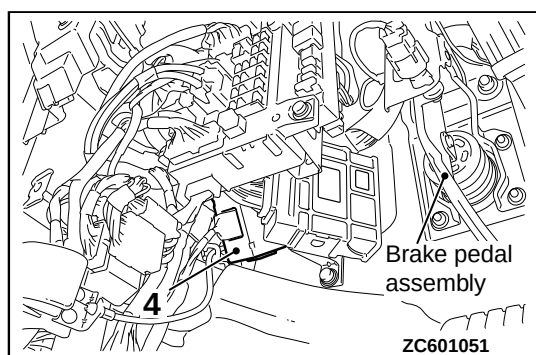
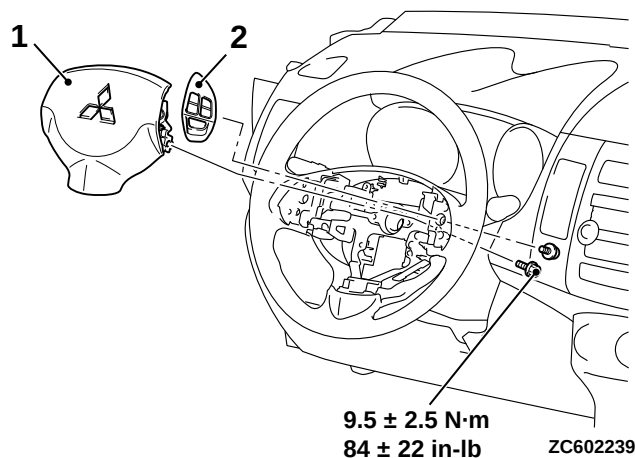
REMOVAL AND INSTALLATION

CAUTION

Do not replace the ECM and the ETACS-ECU simultaneously. Always replace either one of the ECUs first, and register the encrypted code (Refer

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to GROUP 42C, Diagnosis - ID Code Registration Necessity Judgment Table P.42C-8). Then, replace the other ECU.



Auto-cruise control switch removal steps

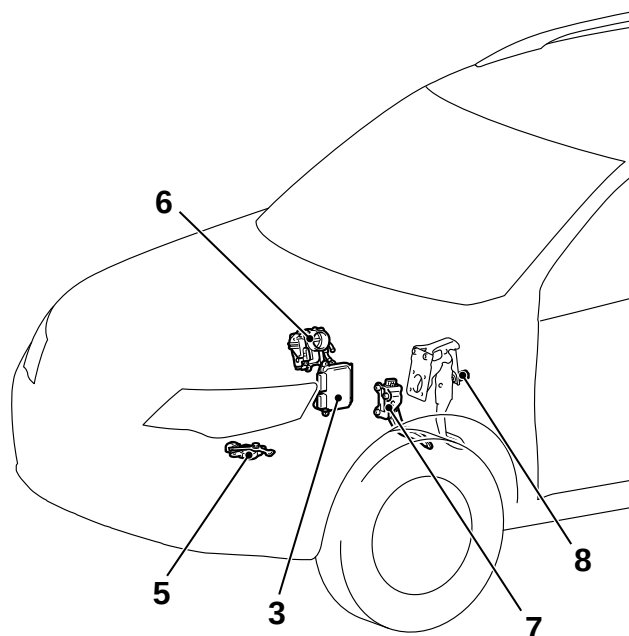
1. Driver's air bag module (Refer to GROUP 52B, Air Bag Modules and Clock Spring P.52B-329).
2. Auto-cruise control switch

Control unit removal

3. ECM [Refer to GROUP 13Aa, Engine Control Module (ECM) P.13Aa-37].
4. TCM [Refer to GROUP 23A, Transaxle Control Module (TCM) P.23A-177].

Sensor removal

5. Transmission range switch (Refer to 23B, Transaxle P.23B-9).



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Sensor removal

6. Throttle body [built-in throttle position sensor (TP sensor) and throttle actuator control motor (TAC motor)] (Refer to GROUP 13Aa, Throttle Body P. 13Aa-36).
7. Accelerator pedal [built-in accelerator pedal position sensor (APP sensor)] (Refer to P.17a-7).
8. Stoplight switch (Refer to GROUP 35A, Brake Pedal P.35A-22).

MEMO