GROUP 54A

CHASSIS ELECTRICAL

CONTENTS

Continued on next page

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

⚠ WARNING

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

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

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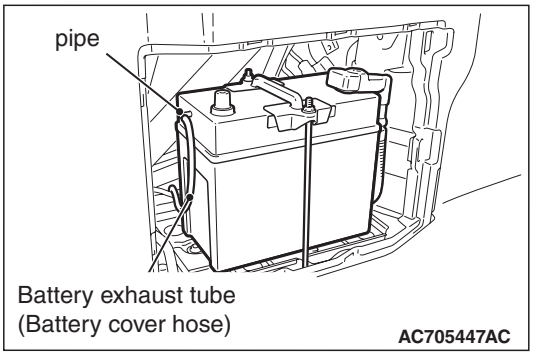
BATTERY

GENERAL INFORMATION

M1541000100302

The sealed battery is installed in the trunk room. The sealed battery has a structure that uses the sealed reaction (cathodic absorption), eliminating the needs for refilling and liquid level check.



- The sealed reaction (cathodic absorption) brings the oxygen gas*, which is generated at positive pole, to the negative pole, and binds the oxygen gas with hydrogen gas generated at negative pole. As a result, the gas is transformed back to water, preventing the decrease of electrolytic solution.

*NOTE: *: The generation of oxygen gas at positive pole occurs in an earlier stage than that of hydrogen gas at negative pole.*

- Calcium alloy with superior characteristics of electrolyte decrease is used for the polar plate grille between the positive and negative poles in the battery container.

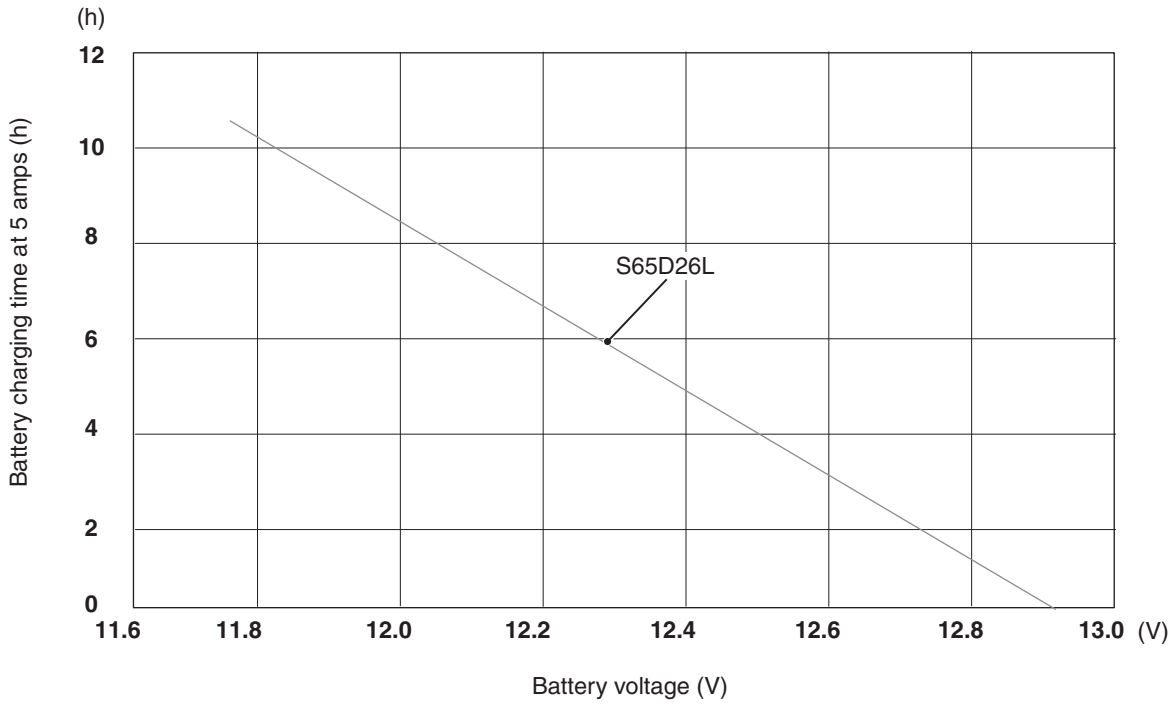
Although the sealed reaction (cathodic absorption) occurs with 100% efficiency with a normal use, the generated gas may not be absorbed completely under the statuses of overcharging, high temperature, or high voltage. Therefore, to prevent the charging of non-absorbed inflammable gas inside the trunk room, the battery exhaust tube (battery cover hose) and pipe for gas bleeding are equipped.

⚠ CAUTION

- **When charging, always set the charging current to 5 amps or less.**
- **Always charge the battery by referencing the charging time in Graph 1.**
- **Do not remove the battery cover or label.**
- **Always securely mount the battery exhaust tube (battery cover hose) and pipe.**

Item	S65D26L
Voltage V	12
Capacity (5-hour rate) Ah	44

Graph 1



AC707780

ON-VEHICLE SERVICE

Electrolyte level and specific gravity checks

M1541000900449

⚠ CAUTION

Because it is the maintenance free battery, the electrolyte level and specific gravity checks are not performed.

NOTE: To maintain the battery performance, never remove the label or top lid.

Charging

M1541001101450

⚠ CAUTION

- **Do not perform boost charging.**
- **The charging current shall be 5.0 A or less.**
- **The battery shall be charged by referring to the graph 1 of the battery test (P.54A-9).**
- **Open flame around the battery while charging may cause explosion.**
- **While charging, pay attention not to cause sparks or other risks.**
- **Perform the operation in a well-ventilated place.**

1. Remove the battery from the vehicle.
2. Set the charging current to 5 amps or less and charge the battery by referencing the charging time in Graph 1 described in the section "battery test". (Refer to P.54A-9.)

How to judge the completion of charging

Perform the battery test to check if it is normal.

TSB Revision

BATTERY TEST

M1541001201509

BATTERY TESTING PROCEDURE

STEP 1. Check the battery cables.
Remove the negative cable, then the positive cable. Check for dirty or corroded connections.

Q: Are the battery cables dirty or have corroded connections?
YES : Clean the battery cables. Then go to Step 2.
NO : Go to Step 2.

STEP 2. Check the battery post.
Check for loose battery post.

Q: Are the battery posts faulty?
YES : Replace the battery. Then go to Step 4.
NO : Go to Step 3.

STEP 3. Check the battery case.
(1) Remove the hold-downs.
(2) Check for broken/cracked case.

Q: Is the battery case faulty?
YES : Replace the battery.
NO : Go to Step 4.

STEP 4. Check the open circuit voltage.
(1) Turn headlights on for 15 seconds.
(2) Turn headlights off for two minutes to allow battery positive voltage to stabilize.
(3) Disconnect the battery cables.
(4) Read open circuit voltage.

Q: Is open circuit voltage 12.4 volts or more?
YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Battery charging
With 5 amp from the current voltage, charge the battery by referring to the Graph 1.

Q: Is open circuit voltage 12.4 volts or more?
YES : Go to Step 6.
NO : Replace the battery.

STEP 6. Check the load test.
(1) Connect a load tester to the battery.
(2) Load the battery at the recommended discharge rate (See LOAD TEST RATE CHART) for 15 seconds.
(3) Read voltage after 15 seconds, then remove load.
(4) Compare the measured value with the minimum voltage (See LOAD TEST CHART).

Q: Is the voltage higher than minimum voltage?
YES : The battery is normal.
NO : Replace the battery.

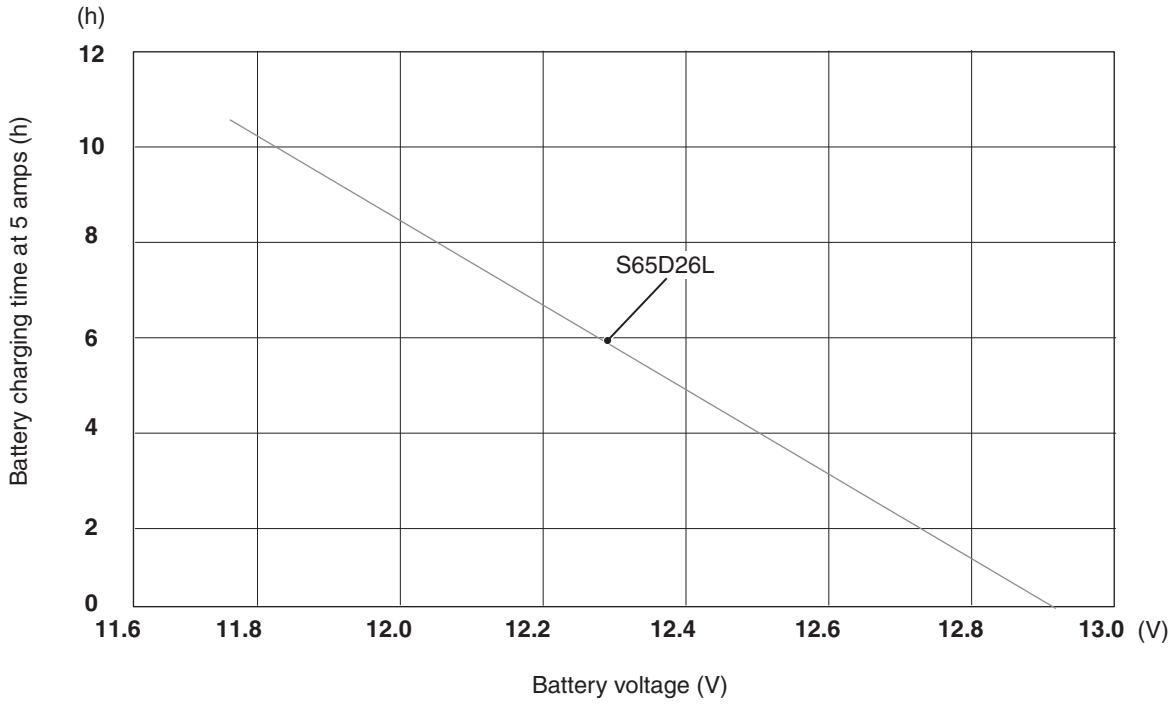
LOAD TEST CHART

Temperature °C (°F)	**21 (70) and above**	**16 (60)**	**10 (50)**	**4 (40)**	**−1 (30)**	**−7 (20)**	**−12 (10)**	**−18 (0)**
Minimum voltage	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

LOAD TEST RATE CHART

Load test	**220 amps**
Cranking ratio [−18° C (0° F)]	450 amps
Reserve capacity	84 minutes
Application	S65D26L

Graph 1



AC707780

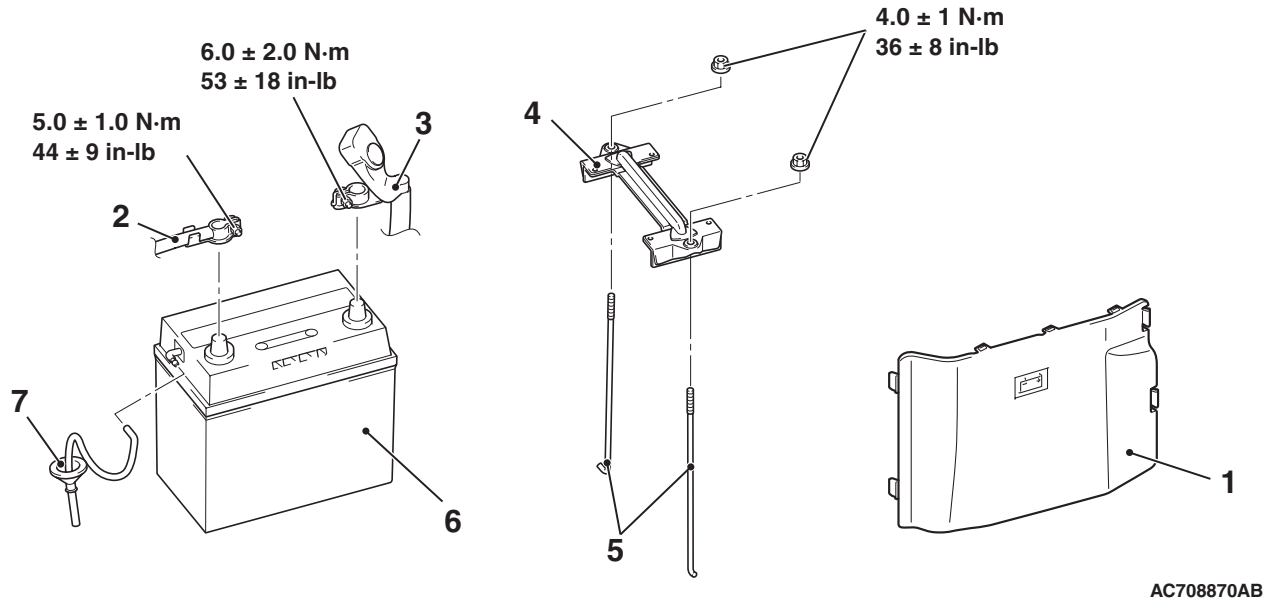
REMOVAL AND INSTALLATION

M1541001300525

BATTERY

⚠ ***WARNING***

When installing the battery, securely connect the exhaust battery cover hose.



AC708870AB

Removal steps

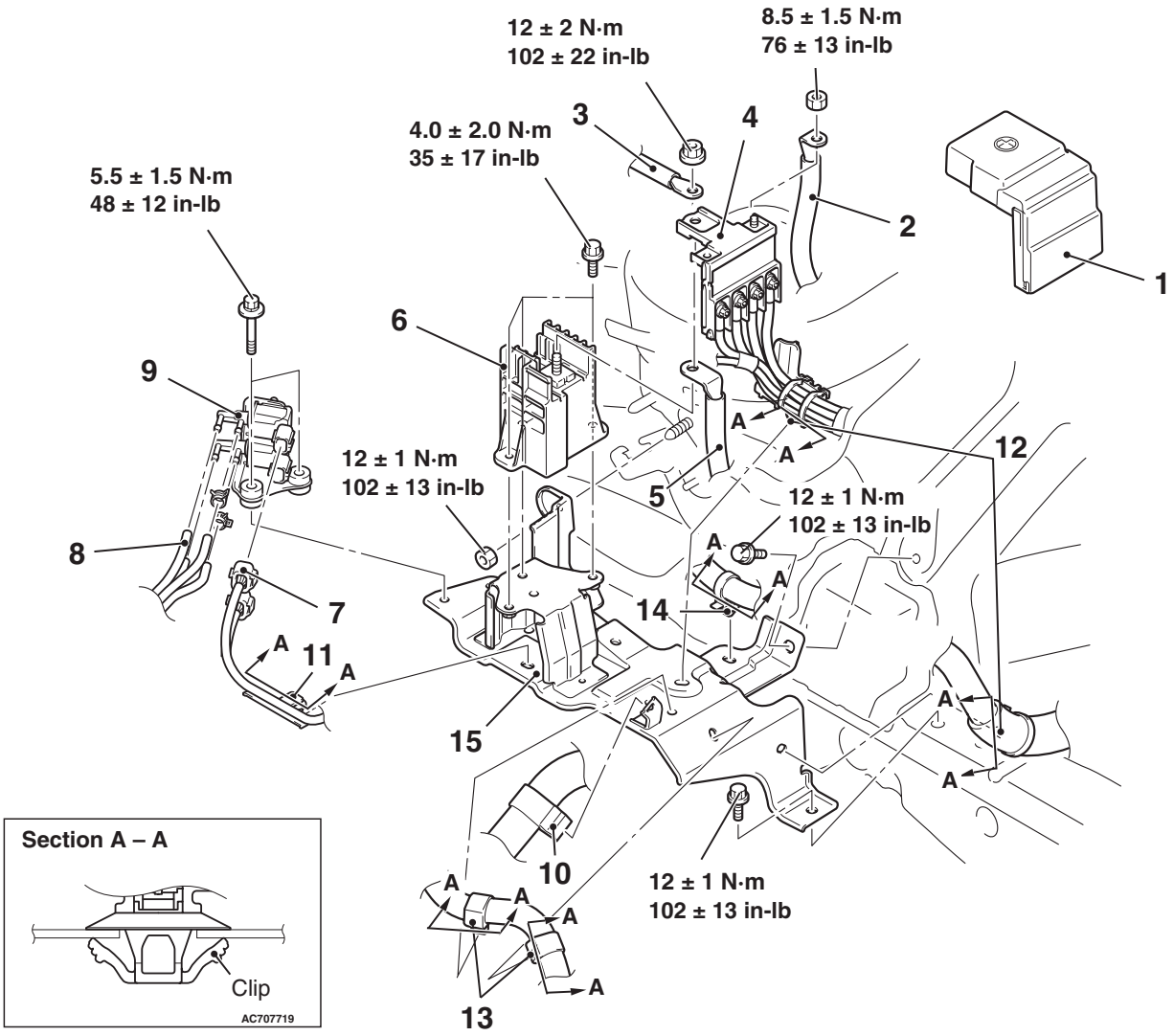
1. Trunk room trim cover (RH)
2. Connection of the battery harness [negative battery terminal]
3. Connection of the battery harness [positive battery terminal]

Removal steps (Continued)

4. Battery holder
5. Battery L-bolt
6. Battery
7. Battery cover hose

TSB Revision

ENG CONTROL HARNESS CONNECTOR BRACKET



Removal steps

1. Fusible link box cover
2. Battery harness connection
3. Battery harness connection
4. Fusible link box connection
5. Battery harness connection
6. Wiring joint
7. Solenoid valve assembly and chassis FR harness connection
8. Solenoid valve assembly and vacuum hose assembly connection
9. Solenoid valve assembly
   - Air cleaner cover assembly (Refer to GROUP 15-Air Cleaner P.15-10.)

Removal steps (Continued)

- Engine control modulator bracket (Refer to GROUP 13A-Engine Control Module P.13A-920)

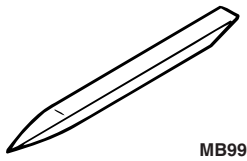
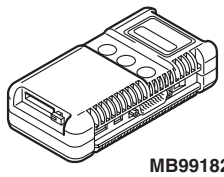
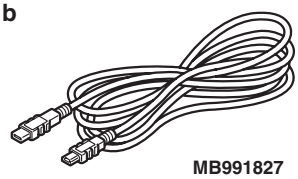
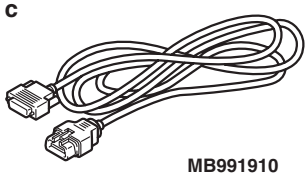
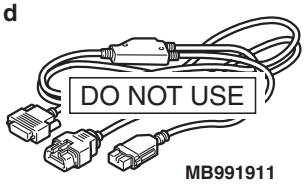
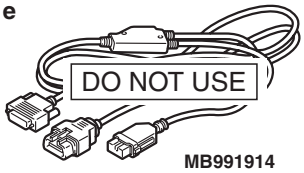
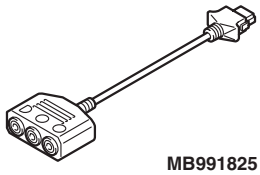
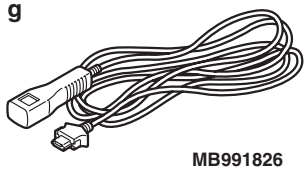
10. Control harness connection by a clip
11. Chassis FR harness connection by a clip
12. Chassis FR harness connection by a clip
13. Battery harness connection by a clip
14. Control harness connection by a clip
15. ENG control harness connector bracket

TSB Revision

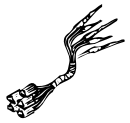
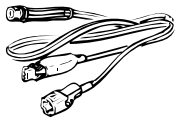
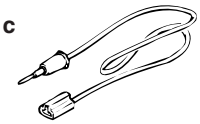
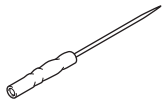
IGNITION SWITCH

SPECIAL TOOLS

M1543000603498

Tool	Tool number and name	Supersession	Application
 MB990784	MB990784 Ornament remover	General service tool	Removal of steering column cover
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.** Diagnostic code, service data and actuator test check.

TSB Revision

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Test harness b. LED harness c. LED harness adaptor d. Probe	General service tools	Continuity check and voltage measurement at harness wire or connector a. Connector pin contact pressure inspection b. Power circuit inspection c. Power circuit inspection d. Commercial tester connection
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector.

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLE SHOOTING

M1543006900937

Refer to Group 00 –Contents of troubleshooting P.00-7.

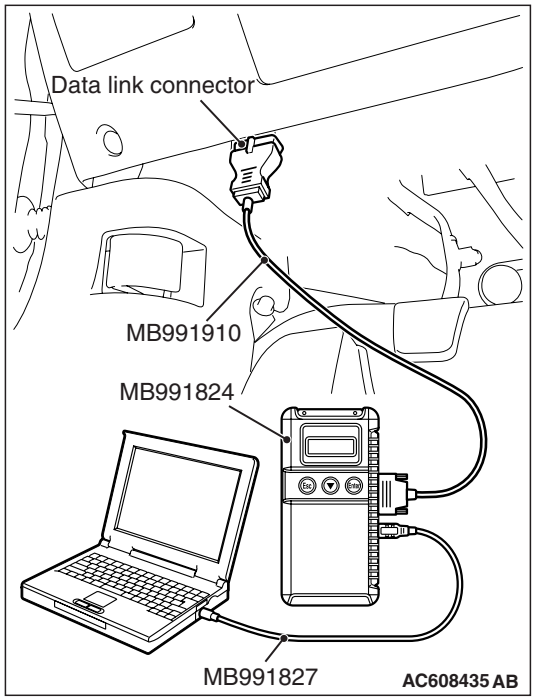
DIAGNOSIS FUNCTION

M1543007001093

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TROUBLE SYMPTOM CHART

M1543007202454

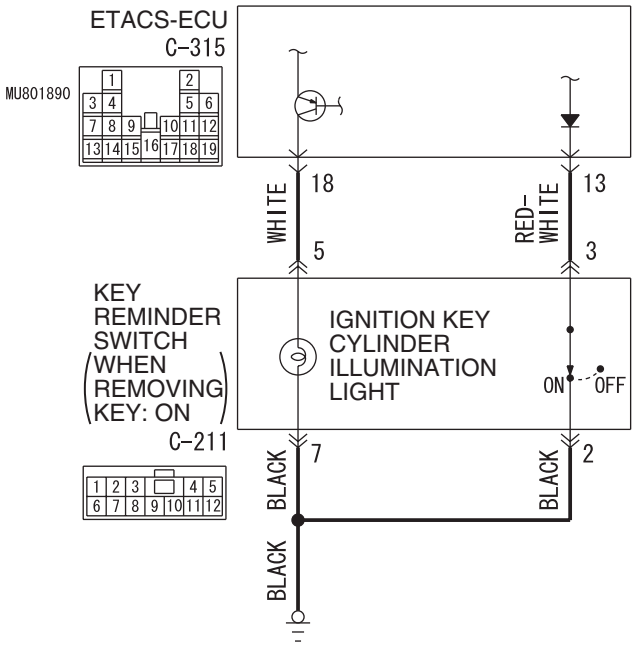
Trouble symptom		Reference page
Ignition key cylinder illumination light does not illuminate/extinguish normally.	vehicles with WCM	P.54A-15

SYMPTOM PROCEDURES

Ignition key cylinder illumination light does not illuminate/extinguish normally. <vehicles with WCM>

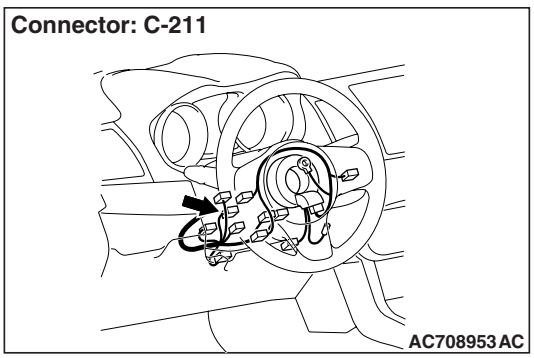
⚠ CAUTION
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

Ignition Key Cylinder Illumination Light Circuit <Vehicles with WCM>

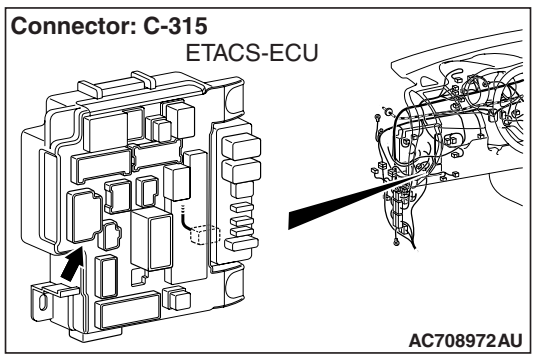


W8H54M000A

Connector: C-211



Connector: C-315
ETACS-ECU



TSB Revision

OPERATION

The ETACS-ECU operates this function in accordance with the input signals below.

- Ignition switch (IG1)
- Key reminder switch
- Driver's door switch
- Driver's door lock actuator

TECHNICAL DESCRIPTION (COMMENT)

If this function does not work normally, these input signal circuit(s), the ignition key cylinder illumination light or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The driver's door switch may be defective
- The driver's door lock actuator may be defective
- The ignition key cylinder illumination light bulb may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

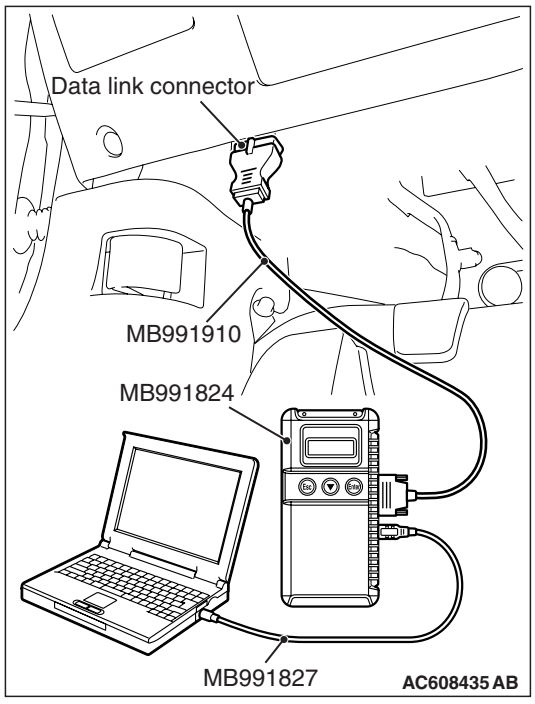
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-13."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.54A-676.
NO : Go to Step 2.



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

Use the ETACS-ECU data list to check the signals related to the ignition key cylinder illumination light function.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Remove the ignition key from the ignition key cylinder.
- Open the driver's door.

Item No.	Item name	Normal conditions
Item 228	Dr door unlock	ON
Item 254	IG voltage	0 V
Item 256	Dr door ajar switch	Open
Item 264	Handle lock switch	Key in →Key out
Item 270	Dr door lock switch	Not lock
Item 271	Dr door unlock switch	Unlock

Q: Does scan tool MB991958 display the items "Dr door unlock", "Dr door ajar switch", and "Handle lock switch" as normal condition?

YES <Normal conditions are displayed for all the items.> : Go to Step 3.

NO <Normal condition is not displayed for item No. 228.> : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the front door lock actuator" P.54A-647.

NO <Normal condition is not displayed for item No. 254.> : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis - Inspection Procedure 2 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P.54A-642.

NO <Normal condition is not displayed for item No. 256.> : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front the front door switch (RH)" P.54A-656.

NO <Normal condition is not displayed for item No. 264.> : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis - Inspection Procedure 3 "ETACS-ECU does not receive any signal from key reminder switch" P.54A-644.

NO <Normal condition is not displayed for item No. 270, 271.> : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from front door lock actuator" P.54A-647.

STEP 3. Check key reminder switch connector C-211, ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector C-211, ETACS-ECU connector C-315 in good condition?

YES : Go to Step 4.
NO : Repair the damaged parts.

STEP 4.Check the wiring harness between key reminder switch connector C-211 (terminal No. 3,5) and ETACS-ECU connector C-315 (terminal No. 13,18).

- Check the input/output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness between key reminder switch connector C-211 and ETACS-ECU connector C-315.

STEP 5. Check of ignition key cylinder illumination light bulb.

Q: Is the ignition key cylinder illumination light bulb in good condition?

YES : Go to Step 6.
NO : Replace the bulb of the ignition key cylinder illumination light.

STEP 6. Check the wiring harness between key reminder switch connector C-211 (terminal No. 7) and body ground.

- Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the wiring harness between key reminder switch connector C-211 and body ground.

STEP 7. Retest the system.

Q: Does the ignition key cylinder illumination light illuminate/extinguish in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the ETACS-ECU.

ON-VEHICLE SERVICE

CHECK OF IGNITION KEY REMINDER WARNING FUNCTION (STEERING LOCK REMINDER BUZZER BY KOS)

M1541200700085

1. Driver's door: Release the closed and steering wheel lock, or turn the ignition key <vehicles with WCM> or emergency key <vehicles with KOS> to the LOCK (OFF) position (key inserted).
2. Change the driver's door state from closed to open.
3. Check that the buzzer sounds normally.
4. If a malfunction is found, carry out the troubleshooting (Refer to P.54A-59).

REMOVAL AND INSTALLATION

M1541200300399

⚠ CAUTION

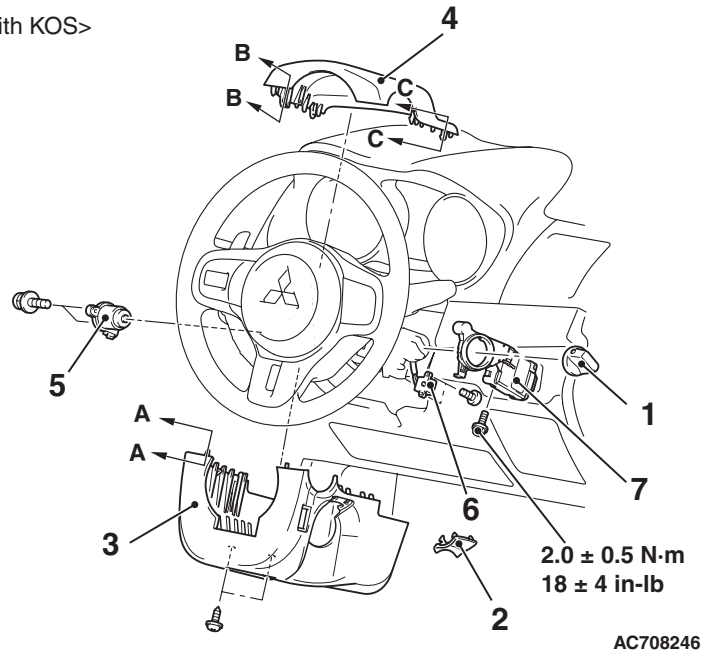
Before removing the steering wheel assembly, refer to GROUP 52B –Service Precautions P.52B-25 and Driver's Air Bag Module and Clock Spring P.52B-386 <Vehicles with WCM>.

⚠ CAUTION

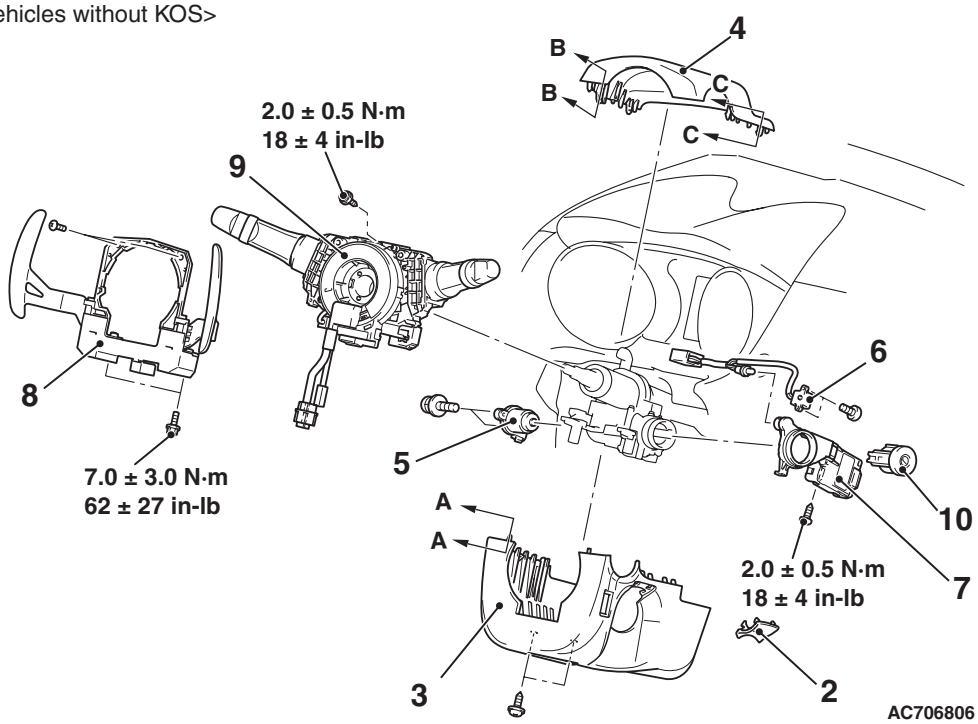
After the installation, perform a calibration for the ASC-ECU to learn the steering wheel sensor neutral point (Refer to GROUP 35C, On-vehicle Service –Steering Wheel Sensor Calibration P.35C-267). <Vehicles with WCM and ASC>

Pre-removal Operation	Post-installation Operation
• Steering wheel straight-ahead position check. <Vehicles with WCM> • Removal of steering wheel assembly (Refer to GROUP 37 –Steering Wheel P.37-22). <Vehicles with WCM>	• Installation of steering wheel assembly (Refer to GROUP 37 –Steering Wheel P.37-22). <Vehicles with WCM> • Steering wheel straight-ahead position check. <Vehicles with WCM>

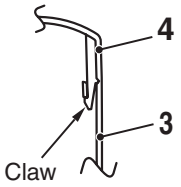
<Vehicles with KOS>



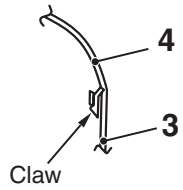
<Vehicles without KOS>



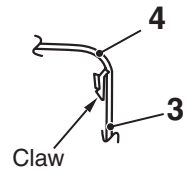
Section A-A



Section B-B



Section C-C



NOTE:
Claw position is symmetrical

AC708361AC

Removal Steps

1. IG knob cap <Vehicles with KOS>
2. Ignition key cover

Removal Steps (Continued)

3. Steering column cover lower
4. Steering column cover upper

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Removal Steps (Continued)

5. Ignition switch
6. Key reminder switch

>>**A**<< 7. Wireless control module (WCM) <Vehicles with WCM>/receiver antenna module <Vehicles with KOS>

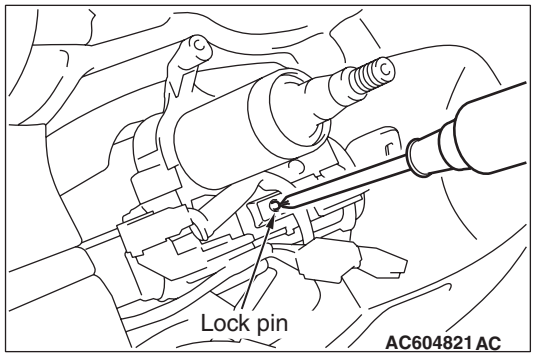
8. Paddle shift assembly <Vehicles with WCM and paddle shift>
9. Column switch assembly <Vehicles with WCM>

< <**A**> > 10. Steering lock cylinder <Vehicles with WCM>

REMOVAL SERVICE POINT

<<A>> STEERING LOCK CYLINDER REMOVAL <VEHICLES WITH WCM>

1. Insert the key into the steering lock cylinder, and turn the ignition key to the ACC position.
2. With using a cross-headed screw driver (small) or similar items to press in the lock pin, remove the ignition key, and then remove the steering lock cylinder.



INSTALLATION SERVICE POINT

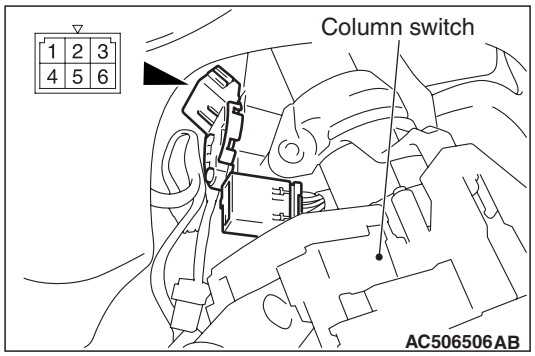
>>A<< WIRELESS CONTROL MODULE (WCM) <VEHICLES WITH WCM>/RECEIVER ANTENNA MODULE <VEHICLES WITH KOS> INSTALLATION

Check that the top claw of receiver antenna module is fixed securely to the boss of steering lock and the antenna is not floated on the key cylinder.

INSPECTION

IGNITION SWITCH CONTINUITY CHECK

M1541200400095

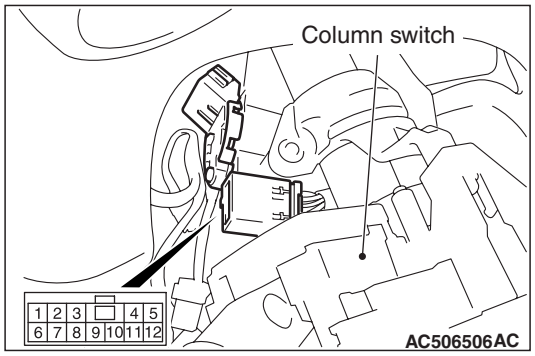


With the ignition switch mounted to the vehicle, disconnect and check the ignition switch connection connector.

Ignition key position	Terminal number	Normal condition
LOCK	1 –2, 1 –4, 1 –5, 1 –6	No continuity
ACC	1 –6	Continuity exists (2 ohms or less)
ON	1 –2 –4 –6	Continuity exists (2 ohms or less)
START	1 –2 –5	Continuity exists (2 ohms or less)

KEY REMINDER SWITCH INSPECTION

M1541200500092



With the key reminder switch mounted to the vehicle, disconnect the key reminder switch connection connector, and then perform the continuity check.

Key status	Terminal number	Normal condition
Key removed	2 –3	Continuity exists (2 ohms or less)
Key inserted	2 –3	No continuity

COMBINATION METER

SERVICE SPECIFICATIONS

M1540200200407

Item			Standard Value
Speedometer indication tolerance {mph (km/h)} <Except vehicles for CANADA>		10 (16)	8.5 –11.5 (13.6 –18.4)
		25 (40)	23.5 –26.5 (37.6 –42.4)
		50 (80)	48.5 –51.5 (77.6 –82.4)
		75 (120)	73.5 –76.5 (117.6 –122.4)
		100 (161)	98.5 –102.5 (158.6 –165.0)
		125 (201)	123.5 –127.5 (198.6 –205.0)
		150 (241)	148.5 –153.5 (239.0 –247.0)
		175 (282)	173.5 –179.0 (279.2 –288.0)
Speedometer indication tolerance {km/h (mph)} <Vehicles for CANADA>		20 (12.4)	19 –24 (11.8 –14.9)
		40 (24.8)	40 –44 (24.8 –27.3)
		80 (49.7)	80 –85 (49.7 –52.8)
		120 (74.6)	120.5 –125.5 (74.9 –78.0)
		160 (99.4)	160.5 –165.5 (99.7 –102.8)
		200 (124.3)	200.5 –207.0 (124.6 –128.6)
		240 (149.1)	240.5 –247.0 (149.4 –153.5)
		280 (174.0)	280.5 –289.0 (174.3 –179.6)
Tachometer indication tolerance (r/min) (The value in parentheses is a reference value.)		600	550 –650
		(2,000)	(1,950 –2,050)
		3,000	2,950 –3,050
		(4,000)	(3,950 –4,050)
		5,000	4,950 –5,050
		6,000	5,950 –6,050
		(7,000)	(6,950 –7,050)
		(8,000)	(7,950 –8,050)
Fuel level sensor resistance (ohms)	main	Stopper position "F"	6.5 ±1.0
		Stopper position "E"	41.9 ±1.0
	sub	Stopper position "F"	6.5 ±1.0
		Stopper position "E"	78.1 ±1.0
Fuel level sensor float height {mm (in)}	main	Stopper position "F"	140.9 (5.5)
		Stopper position "E"	39.1 (1.5)
	sub	Stopper position "F"	14.2 ±3.0 (0.5 ±0.1)
		Stopper position "E"	179.3 ±3.0 (7.0 ±0.1)

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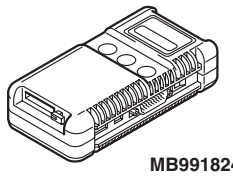
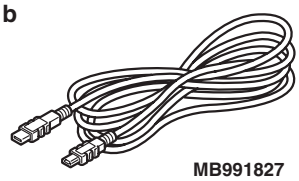
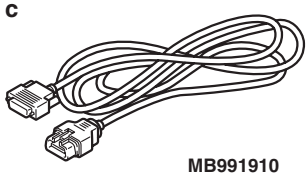
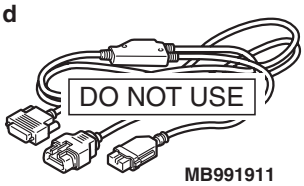
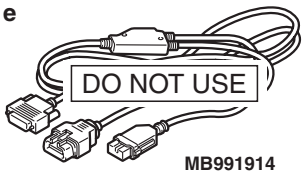
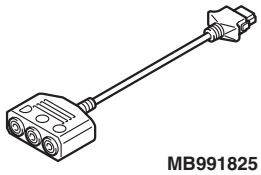
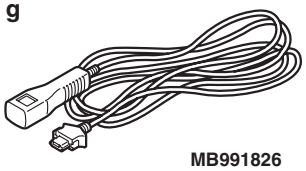
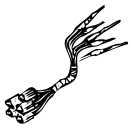
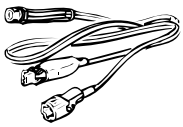
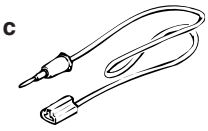
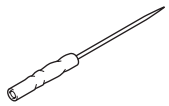
SPECIAL TOOLS

M1540200300147

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540203800152

Refer to GROUP 00, Contents of troubleshooting P.00-7.

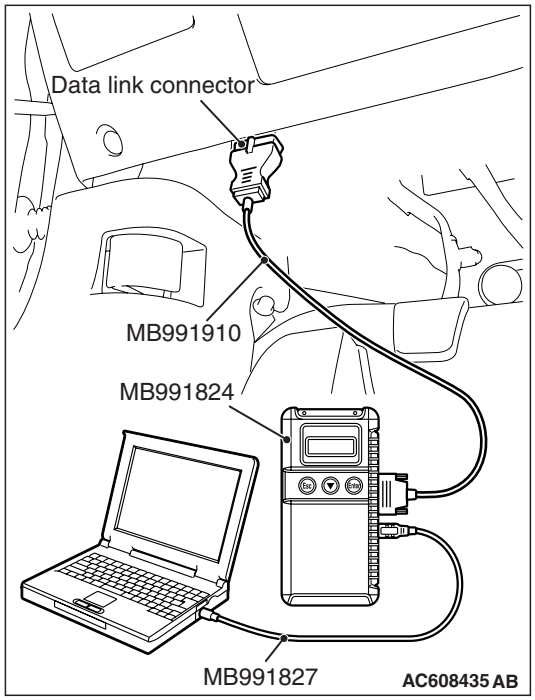
DIAGNOSIS FUNCTION

M1540200500163

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

Required Special Tools:

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



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "Meter" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using the scan tool (GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

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

DISPLAY ITEM LIST

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

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

DIAGNOSTIC TROUBLE CODE CHART

M1540200600308

⚠ CAUTION

- **During troubleshooting, a DTC code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, check all systems for DTC code(s). If DTC code(s) are set, erase them all.**
- **When the combination meter is required to be replaced as a result of the troubleshooting, the current driving distance and number of elapsed days to be used for service reminder function must be entered into the meter after the replacement. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool MB991958, and note them. For the operation method of scan tool MB991958, refer to P.54A-93. If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool MB991958, follow the method described below.**
  a. **For the driving distance for check warning, use the driving distance displayed on the multi information display.**
  b. **For the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service remainder function start date) and current date.**

Diagnostic trouble code number	Diagnostic item	Reference page
B1200	Malfunction of odometer	P.54A-29
B1201	Abnormal fuel information	P.54A-30
B1208	Malfunction of LCD heater	P.54A-33
B1209	Test mode	P.54A-34
B2203	VIN not programmed	P.54A-35
B2463	The sticking of rheostat switch	P.54A-36
B2464	The sticking of multi information meter switch	P.54A-38
B2465	Ignition switch signal error	P.54A-40
U0019	Bus off (CAN-B)	P.54A-42
U0100	Engine control module CAN timeout	P.54A-43
U0141	ETACS CAN timeout	P.54A-45
U0151	SRS-ECU CAN timeout	P.54A-47
U0154	Occupant classification-ECU CAN timeout	P.54A-48
U0164	A/C-ECU CAN timeout	P.54A-50
U0168	KOS-ECU or WCM CAN timeout	P.54A-51
U0184	Audio CAN timeout	P.54A-53
U0197	Hands free module CAN timeout	P.54A-54
U0245	Audio visual navigation unit CAN timeout	P.54A-56
U1415	Coding not completed/Data fail	P.54A-57

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DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1200: Malfunction of odometer

TROUBLE JUDGEMENT

If the odometer information, which is stored in the combination meter, is abnormal when the ignition switch at the ON position and the system voltage is 10 –16 volts (data from ETACS-ECU), DTC B1200 is stored.

TROUBLESHOOTING HINTS

The combination meter may be defective.

DIAGNOSIS

Required Special Tools:

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

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

Check if DTC is set to the combination meter.

⚠ CAUTION

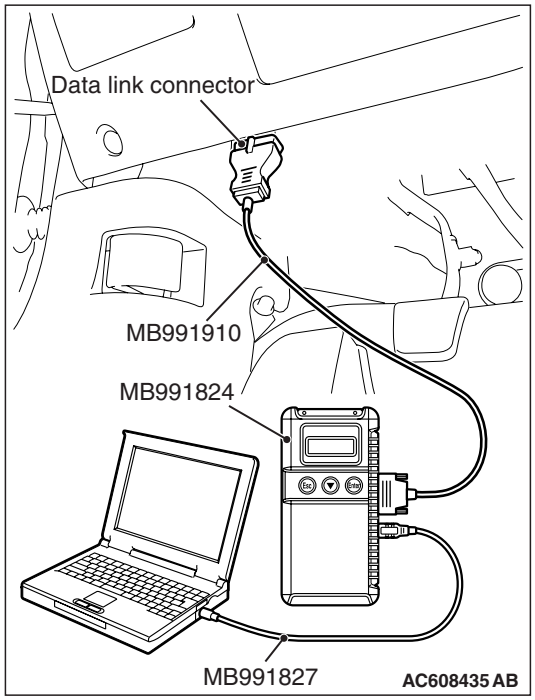
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if diagnosis code is set.

Q: Is the DTC set?

YES : Replace the combination meter, and then go to Step 2.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).



STEP 2. Recheck for diagnostic trouble code.
Check if DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if diagnosis code is set.

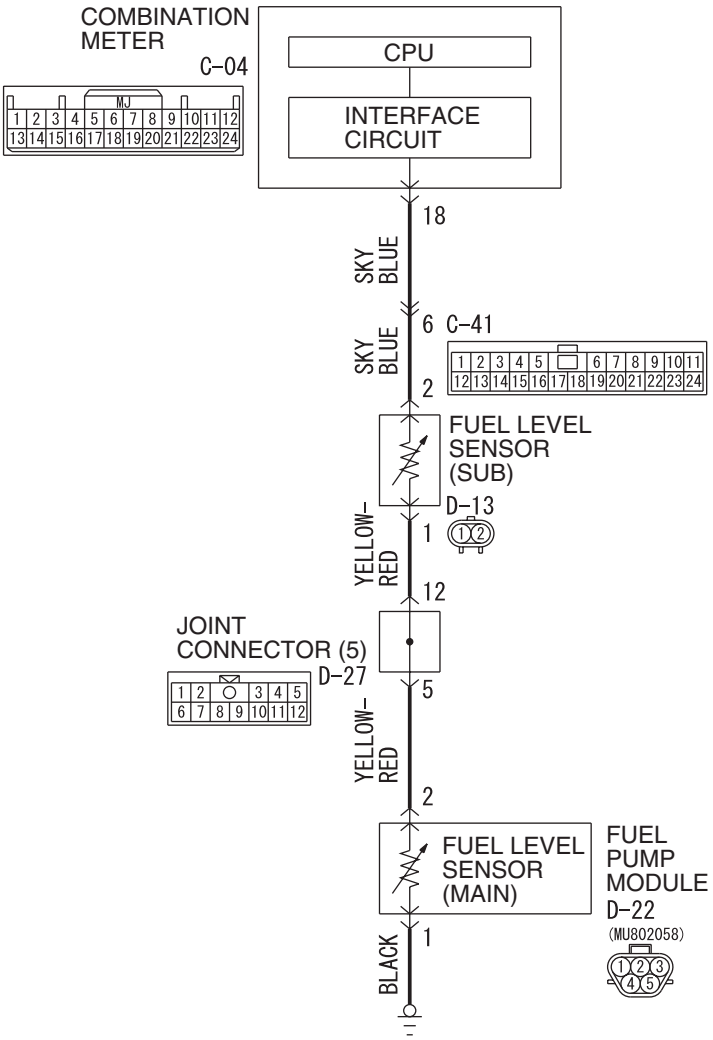
Q: Is the DTC set?

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

DTC B1201: Abnormal fuel information

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

Fuel Gauge Unit Circuit



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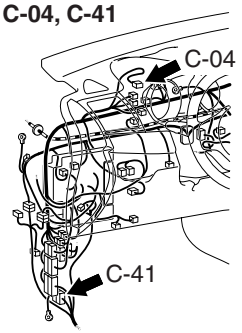
Connectors: C-04, C-41



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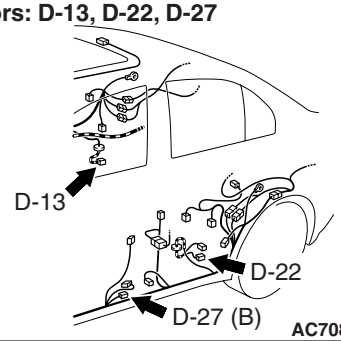
Connectors: D-13, D-22, D-27



AC708955AN

TROUBLE JUDGMENT

With the ignition switch at the ON position and the system voltage at 10 –16 volts (data from ETACS-ECU), if the combination meter detects the abnormal resistance of fuel level sensor circuit for 64 seconds continuously, DTC B1201 is stored.

TROUBLESHOOTING HINTS

- The fuel pump module [fuel level sensor (main)] may be defective.
- The fuel level sensor (sub) may be defective.
- The combination meter may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check fuel pump module connector D-22 and fuel level sensor (sub) connector D-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fuel pump module connector D-22 and fuel level sensor (sub) connector D-13 in good condition?

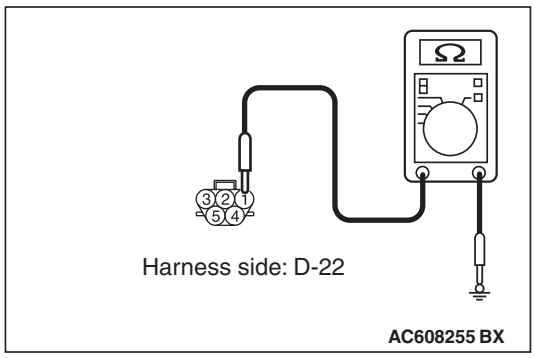
YES : Go to Step 2.
NO : Repair the connector.

STEP 2. Check the fuel level sensor.

Check to see if the fuel level sensor is normal (Refer to P.00E-2).

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the fuel pump module or fuel level sensor (sub).



STEP 3. Measure the resistance at fuel pump module connector D-22.

(1) Disconnect pump module connector D-22, and measure at the wiring harness side.
(2) Measure the resistance value between terminal 1 and ground.
- The measured value should be 2 ohm or less.

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

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

STEP 4. Check the wiring harness between fuel pump module connector D-22 (terminal 1) and ground.

Q: Is the wiring harness between fuel pump module connector D-22 (terminal 1) and ground in good condition?

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

STEP 5. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

YES : Go to Step 6.
NO : Repair the connector.

STEP 6. Check the wiring harness between fuel pump module connector D-22 (terminal 2) and combination meter connector C-04 (terminal 18).

NOTE: Also check intermediate connectors C-41 and joint connector D-27. If intermediate connectors C-41 and joint connector D-27 are damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Are the wiring harness between fuel pump module connector D-22 (terminal 2) and combination meter connector C-04 (terminal 18) in good condition?

YES : Go to Step 7.
NO : Repair the wiring harness. The fuel gauge should work normally.

STEP 7. Using scan tool MB991958, perform actuator test.

- Item 03: Fuel gauge (target value): 0 → 100%
  - Fuel gauge shows 100 %

Q: Is the check result normal?

YES : Go to Step 8.
NO : Replace the combination meter.

STEP 8. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The procedure is complete.

DTC B1208: Malfunction of LCD heater

TROUBLE JUDGEMENT

With the ignition switch at the ON position and the system voltage at 10 – 16 volts (data from ETACS-ECU), if the combination meter detects the LCD heater malfunction, the DTC B1208 is stored.

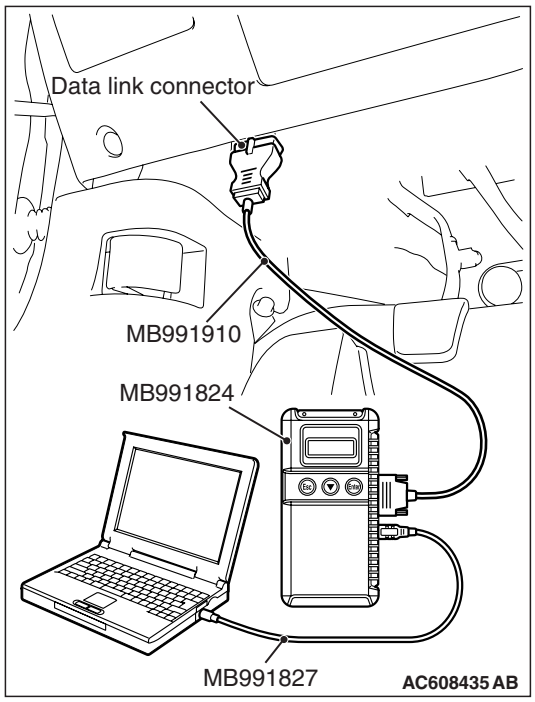
TROUBLESHOOTING HINTS

The combination meter may be defective

DIAGNOSIS

Required Special Tools:

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



Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The procedure is complete.

DTC B1209: Test mode

TROUBLE JUDGEMENT

When the mode is changed to the meter test mode (supplier mode), the combination meter stores the DTC B1209.

TROUBLESHOOTING HINTS

The combination meter may be defective

DIAGNOSIS

Replace the combination meter.

DTC B2203: VIN not programmed

TROUBLE JUDGEMENT

With the ignition switch at the ON position, if the VIN code is not written to the combination meter, DTC B2203 is stored.

TROUBLESHOOTING HINTS

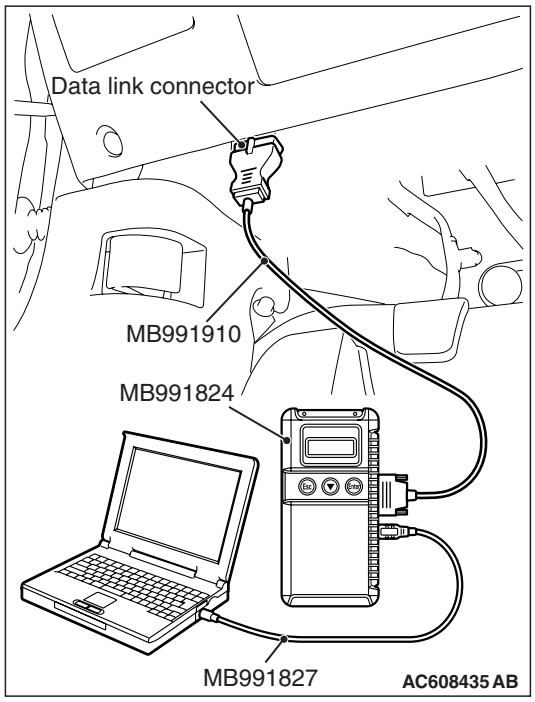
- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The combination meter may be defective.

DIAGNOSIS

Required Special Tools:

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

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



⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC B2463: The sticking of rheostat switch

TROUBLE JUDGMENT

If the combination meter detects the rheostat switch pressed state for 60 seconds or more continuously, DTC B2463 is stored.

TROUBLESHOOTING HINTS

- The combination meter may be defective.
- The combination meter bezel (rheostat switch knob) may be defective.

DIAGNOSTIC PROCEDURE

Required Special Tools:

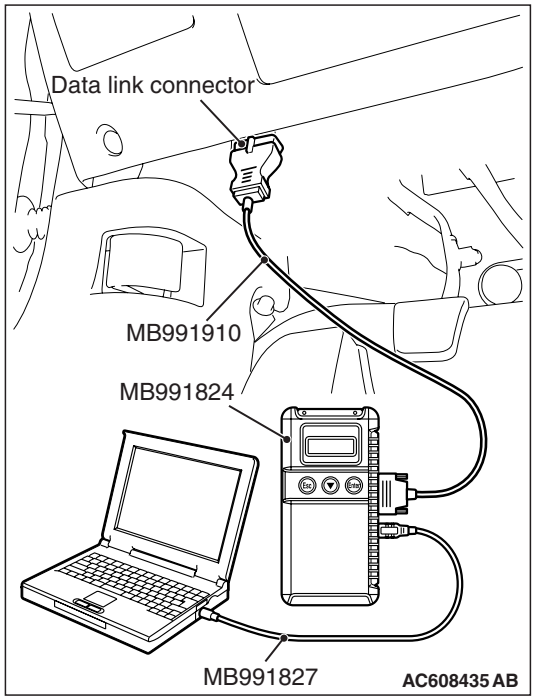
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check the rheostat switch.

Check whether an abnormality is present to the combination meter and the rheostat switch knob attached to the combination meter bezel.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Replace the combination meter or combination meter bezel.



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

Check if DTC is set to the combination meter.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if diagnostic trouble code is set.

Q: Is the DTC set?

YES : Replace the combination meter, and then go to Step 3.
NO : The procedure is complete.

STEP 3. Recheck for diagnostic trouble code.

Check if DTC is set to the combination meter.

(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if diagnostic trouble code is set.

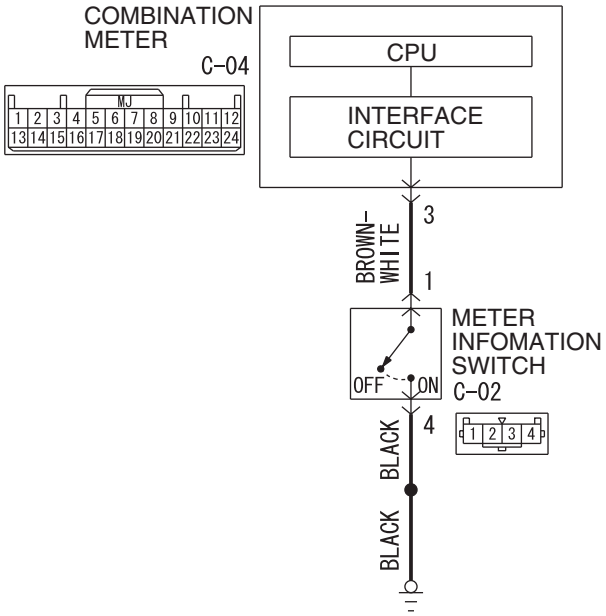
Q: Is the DTC set?

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

DTC B2464: The sticking of multi information meter switch

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

Meter Information Switch Circuit



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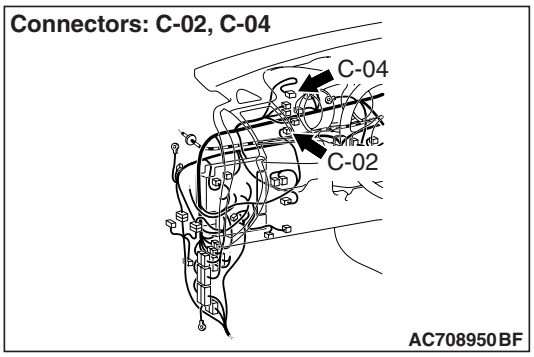

TROUBLE JUDGMENT

If the combination meter detects the multi information meter switch pressed state for 60 seconds or more continuously, DTC B2464 is stored.

TROUBLESHOOTING HINTS

- The multi information meter switch may be defective
- The combination meter may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

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STEP 1. Check meter information switch connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is meter information switch connector C-02 in good condition?

YES : Go to Step 2.
NO : Repair the connector.

STEP 2. Check the multi information meter switch.

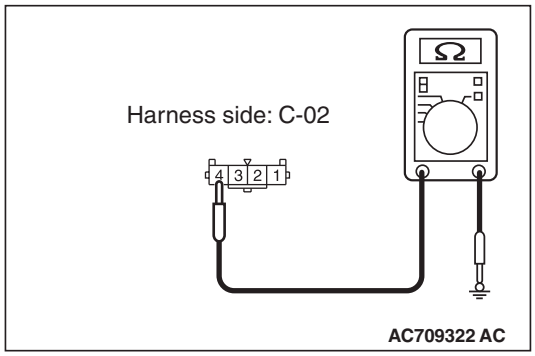
Check the multi information meter switch (Refer to P.54A-92).

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the multi information meter switch.

STEP 3. Measure at meter information switch connector C-02 in order to the ground circuit to the meter information switch.

(1) Disconnect meter information switch connector C-02, and measure at the wiring harness side.
(2) Measure the resistance value between terminal 4 and ground.
- The measured value should be 2 ohm or less.



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

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

STEP 4. Check the wiring harness between meter information switch connector C-02 (terminal 4) and ground.

Q: Is the wiring harness between fuel meter information switch connector C-02 (terminal 4) and ground in good condition?

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

STEP 5. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

YES : Go to Step 6.
NO : Repair the connector.

STEP 6. Check the wiring harness between meter information switch connector C-02 (terminal 1) and combination meter connector C-04 (terminal 3).

Q: Are the wiring harness between meter information switch connector C-02 (terminal 1) and combination meter connector C-04 (terminal 3) in good condition?

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

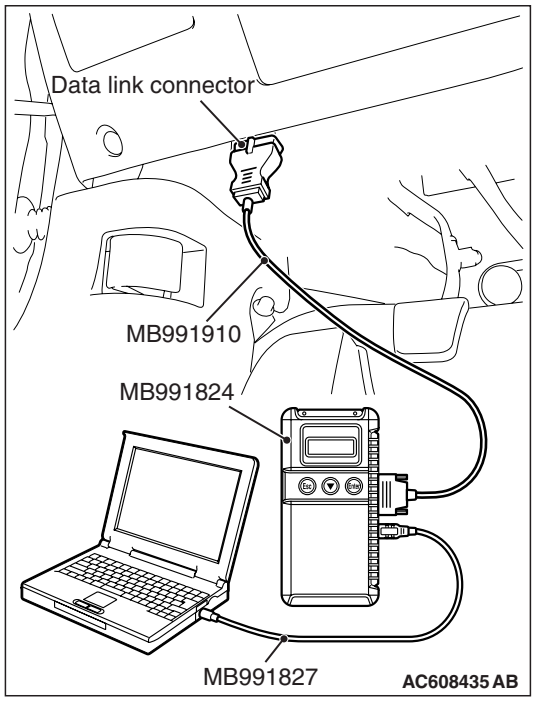
STEP 7. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

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



DTC B2465: Ignition switch signal error

TROUBLE JUDGEMENT

If 5 seconds or more elapses with the ignition switch state and the data from the CAN communication contradicted, the combination meter stores the DTC B2465.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective
- The ETACS-ECU may be defective
- The combination meter may be defective

DIAGNOSIS

Required Special Tools:

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

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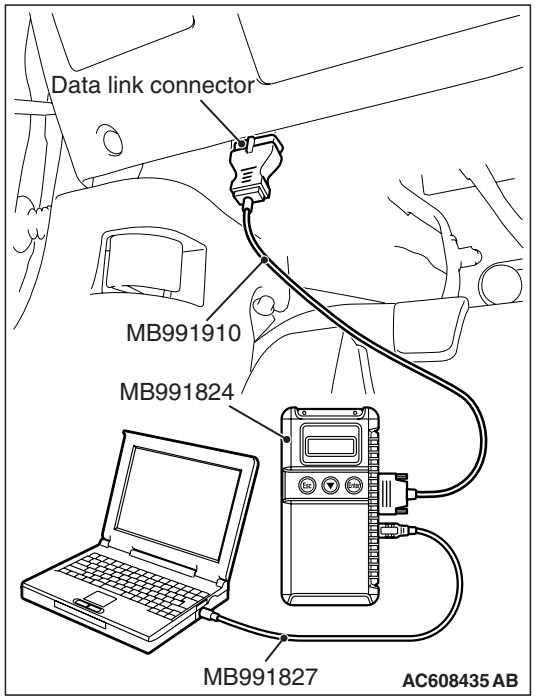


STEP 1. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code

Check if DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 2.

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

(1) Turn the ignition switch to the "ON" position.
(2) Diagnose the CAN bus line.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 3. Combination meter operation check

Check that the combination meter works normally.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Check the power supply circuit of combination meter (Refer to P.54A-60).

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0019: Bus off (CAN-B)

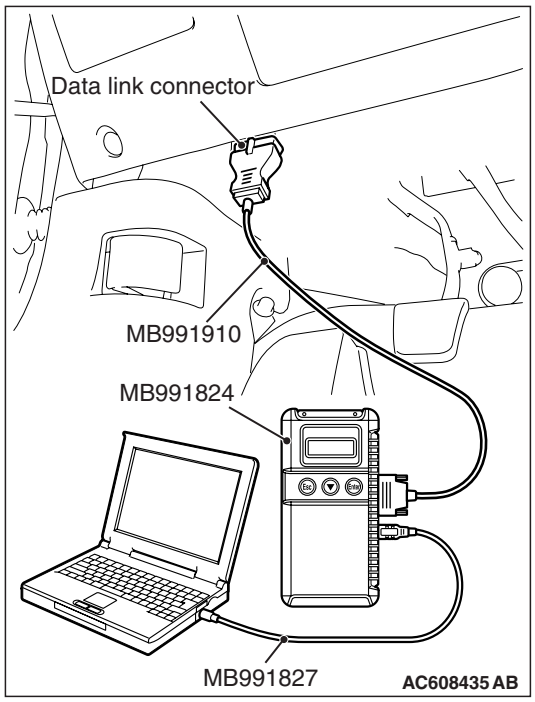
⚠ CAUTION
- **If DTC U0019 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the CAN-B circuit malfunction occurs, the combination meter sets DTC U0019.

JUDGEMENT CRITERIA
With the ignition switch at the ON position and the system voltage at 10 –16 volts (data from ETACS-ECU), if the combination meter becomes unable to transmit data normally due to the CAN-B bus circuit malfunction, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS
The CAN bus line may be defective

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



STEP 1.Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 2.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

(1) Turn the ignition switch to the "ON" position.
(2) Diagnose the CAN bus line.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

DTC U0100: Engine control module CAN timeout

⚠ CAUTION
- **If DTC U0100 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

The combination meter sets DTC U0100 when it cannot receive "CHECK ENGINE" signals from the engine control module.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with engine control module cannot be established for 600 ms or more, the combination meter determines that a problem has occurred.

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PROBABLE CAUSES

- The CAN bus line may be defective.
- The combination meter may be defective.
- The engine control module may be defective.

DIAGNOSIS

Required Special Tools:

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

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

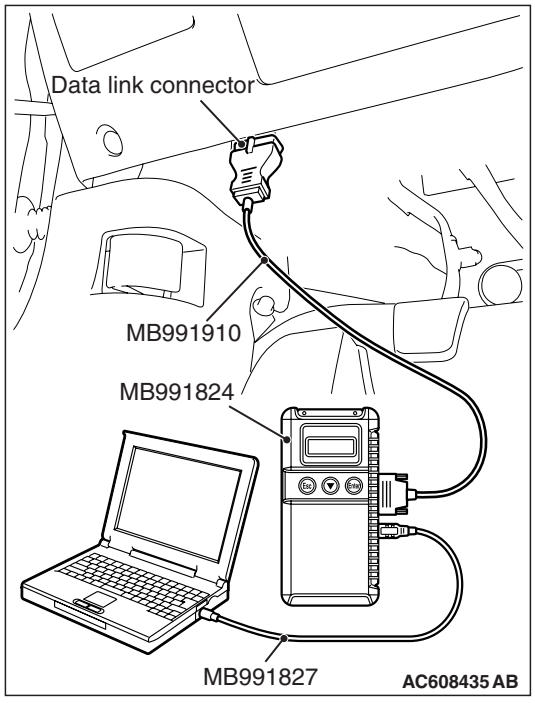
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check if DTC is set to the engine control module.

Q: Is the DTC set?

YES : Troubleshoot the MFI (Refer to GROUP 13A, Diagnosis Code Chart P.13A-44).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0141: ETACS CAN timeout

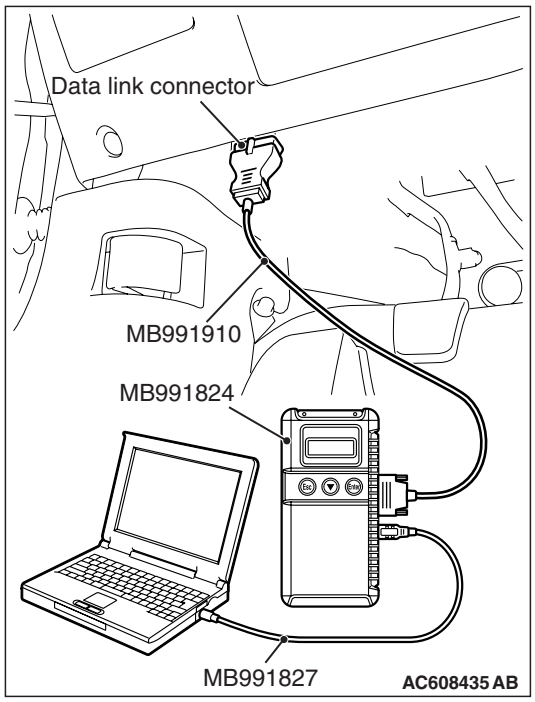
⚠ CAUTION
- **If DTC U0141 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from ETACS-ECU cannot be received, the combination meter sets the DTC U0141.

JUDGEMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with ETACS-ECU cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective
- The combination meter may be defective
- The ETACS-ECU may be defective

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-ECU CAN timeout

⚠ CAUTION

- **If DTC U0151 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from SRS-ECU cannot be received, the combination meter sets DTC U0151.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with SRS-ECU cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

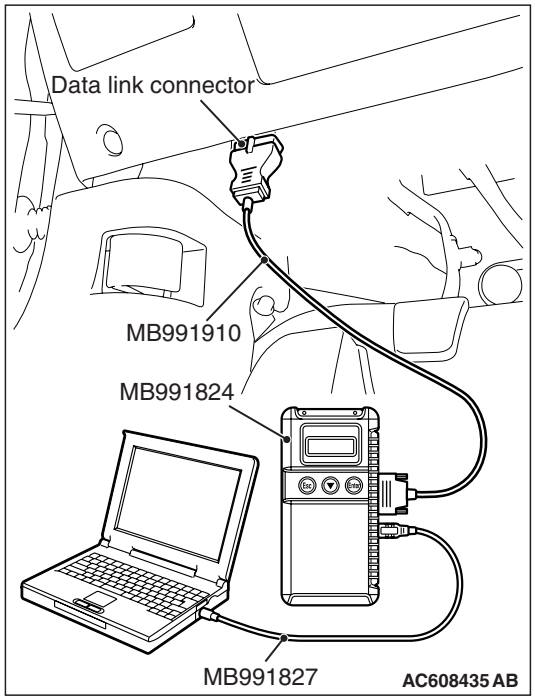
TROUBLESHOOTING HINTS

- The CAN bus line may be defective
- The SRS-ECU may be defective
- The combination meter may be defective

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Troubleshooting P.52B-31).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the combination meter.

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

Q: Is the DTC set?

YES : Replace the combination meter.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0154: Occupant classification-ECU CAN timeout

⚠ CAUTION

- **If DTC U0154 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from occupant classification-ECU cannot be received, the combination meter sets DTC U0154.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with occupant classification-ECU cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

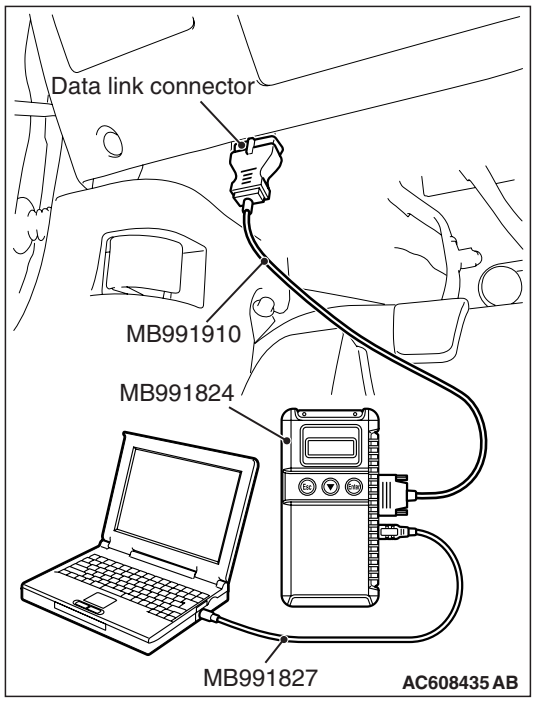
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The combination meter may be defective.
- The occupant classification-ECU may be defective.

DIAGNOSIS

Required Special Tools:

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.
Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

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DTC U0164: A/C-ECU CAN timeout

⚠ CAUTION

- **If DTC U0164 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from A/C-ECU cannot be received, the combination meter sets DTC U0164.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with A/C-ECU cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

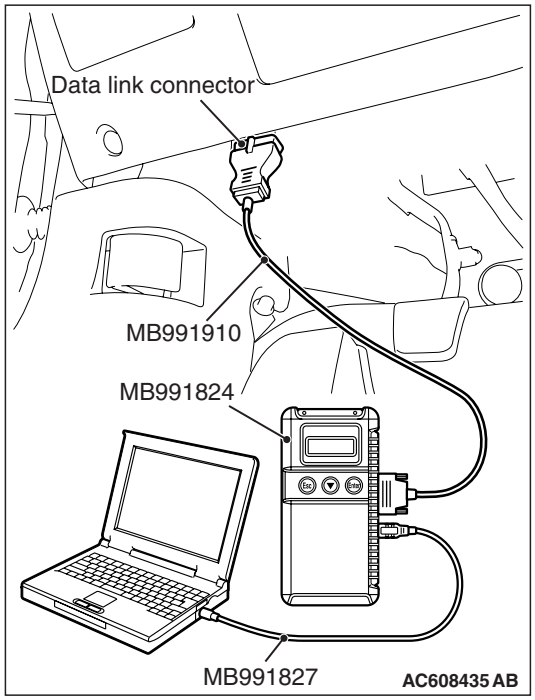
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The A/C-ECU may be defective.
- The combination meter may be defective.

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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STEP 2. Using scan tool MB991958, read the A/C diagnostic trouble code.
Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis P.55-9).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0168: KOS-ECU or WCM CAN timeout

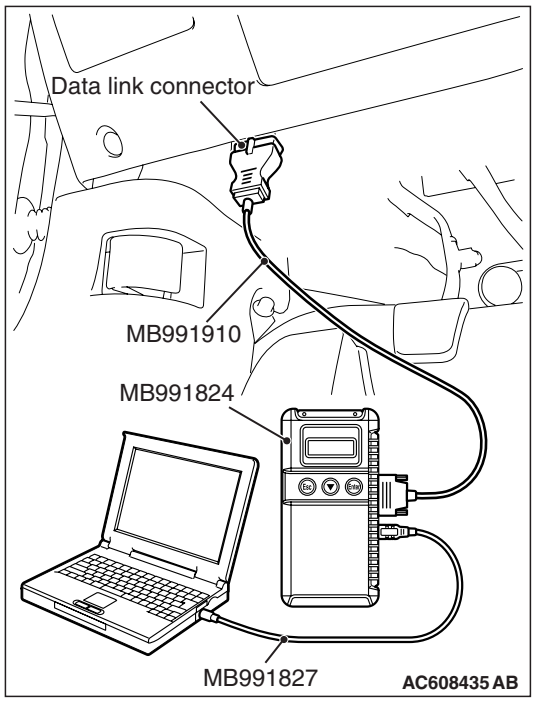
⚠ CAUTION
- **If DTC U0168 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from KOS-ECU or WCM cannot be received, the combination meter sets DTC U0168.

JUDGEMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 V (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with KOS-ECU or WCM cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS
- Malfunction of CAN bus line may be defective.
- Malfunction of the KOS-ECU may be defective.
- Malfunction of the WCM may be defective.
- Malfunction of combination meter may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the KOS-ECU or WCM.

Q: Is the DTC set?

YES : Troubleshoot the KOS or WCM (Refer to GROUP 42B, Troubleshooting P.42B-20 <KOS> or 42C, Troubleshooting P.42C-14 <WCM>).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0184: Audio CAN timeout

⚠ CAUTION

- **If DTC U0184 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from radio and CD player or CD changer cannot be received, the combination meter sets the DTC U0184.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with radio and CD player or CD changer cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The combination meter may be defective.
- The radio and CD player or CD changer may be defective.

DIAGNOSIS

Required Special Tools:

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

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

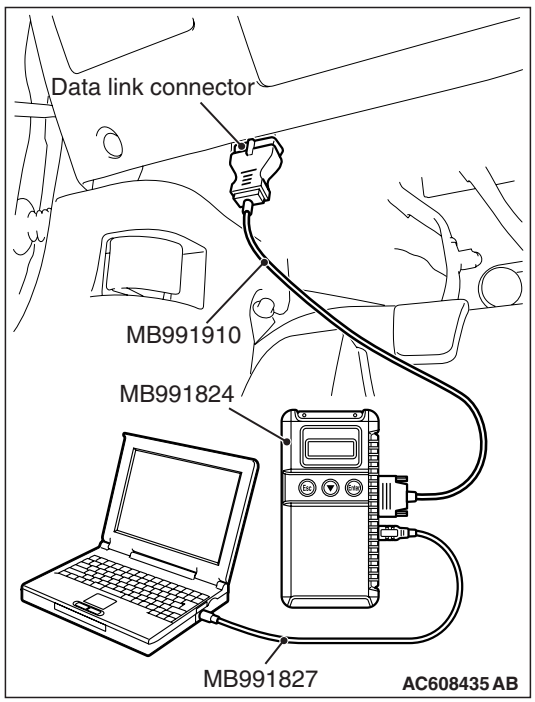
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the audio diagnostic trouble code.
Check again if the DTC is set to the audio.

Q: Is the DTC set?

YES : Troubleshoot the radio and CD player (Refer to P.54A-288).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0197: Hands free module CAN timeout

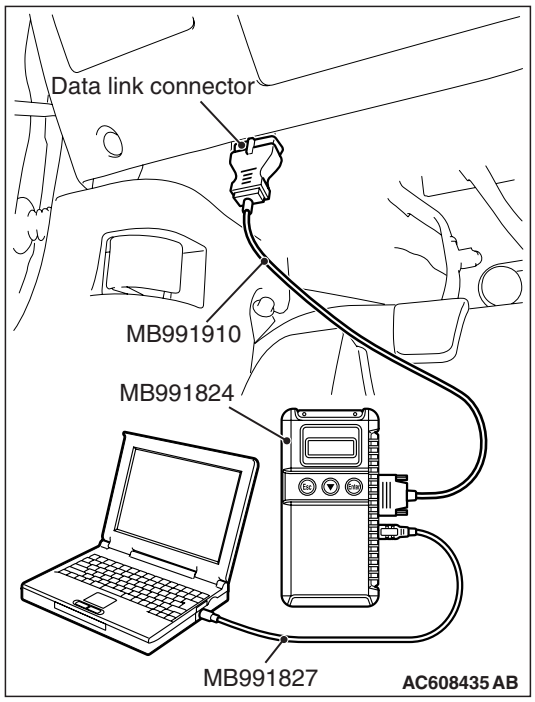
⚠ CAUTION
- **If DTC U0197 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
When the signals from hands free module cannot be received, the combination meter sets DTC U0197.

JUDGEMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with hands free module cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The combination meter may be defective.
- The hands free module may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the hands free module.

Q: Is the DTC set?

YES : Troubleshoot the hands-free cellular phone system.
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0245: Audio visual navigation unit CAN timeout

⚠ CAUTION

- **If DTC U0245 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from audio visual navigation unit cannot be received, the combination meter sets DTC U0245.

JUDGEMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with audio visual navigation unit cannot be established for 2,500 ms or more, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The combination meter may be defective.
- The audio visual navigation unit may be defective.

DIAGNOSIS

Required Special Tools:

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

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

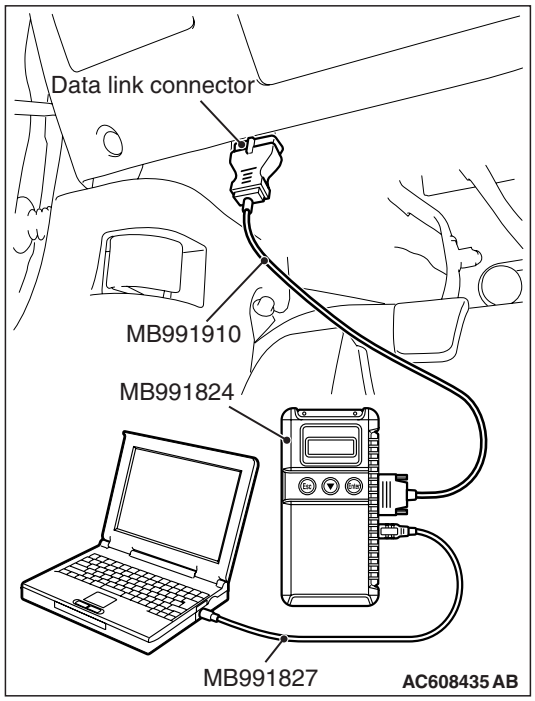
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the audio visual navigation unit diagnostic trouble code.
Check if DTC is set to the audio visual navigation unit.

Q: Is the DTC set?

YES : Troubleshoot the MMCS (Refer to P.54A-384).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the combination meter.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U1415: Coding not completed/Data fail

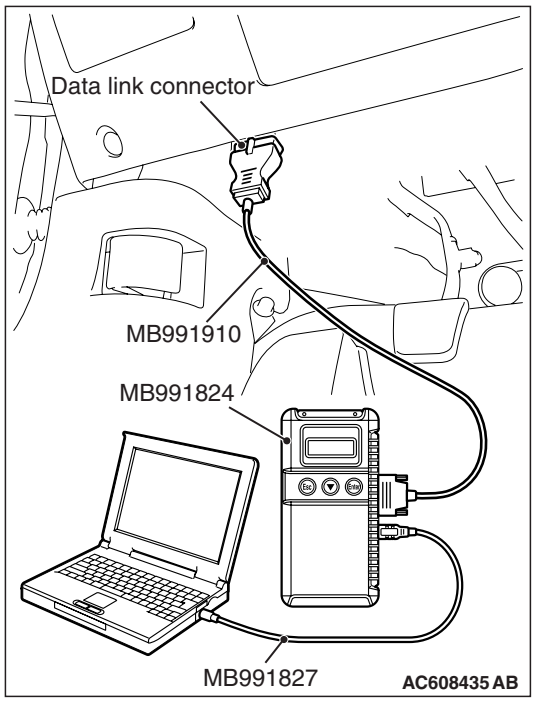
⚠ CAUTION
- **If DTC U1415 is set, diagnose the CAN bus lines.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the vehicle information data is not registered to the combination meter, the combination meter sets DTC U1415.

JUDGEMENT CRITERIA
With the global coding counter value "0," if all the global coding data (vehicle information) are not stored, the combination meter determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The combination meter may be defective.
- The ETACS-ECU may be defective.

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TROUBLE SYMPTOM CHART

M1540200800302

⚠ CAUTION

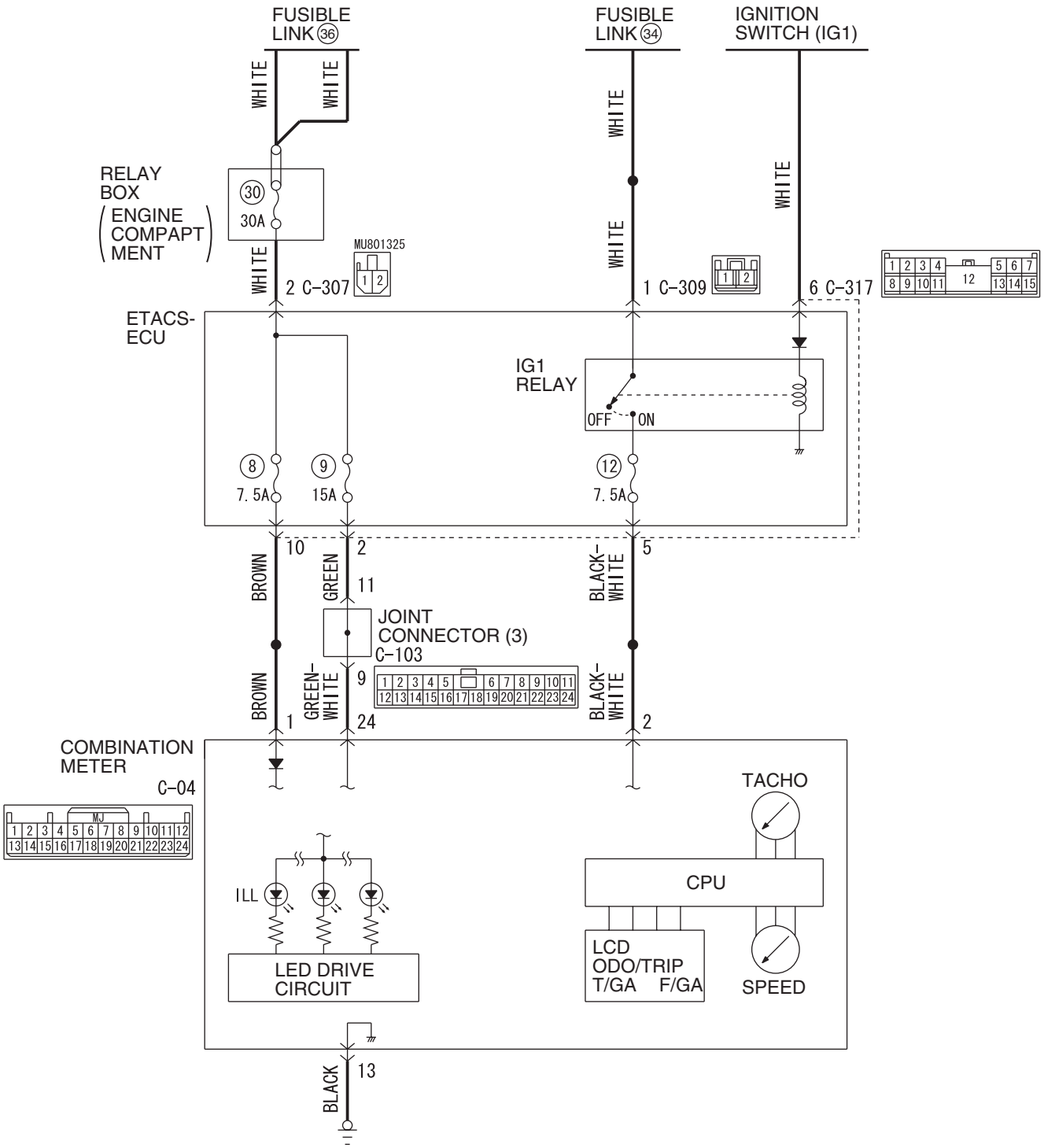
- **During troubleshooting, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.**
- **When the combination meter is required to be replaced as a result of the troubleshooting, the current driving distance and number of elapsed days to be used for service reminder function must be entered into the meter after the replacement. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool MB991958, and note them. For the operation method of scan tool MB991958, refer to P.54A-93. If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool MB991958, follow the method described below.**
  a. **For the driving distance for check warning, use the driving distance displayed on the multi information display.**
  b. **For the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service remainder function start date) and current date.**

Trouble symptom	Inspection Procedure No.	Reference page
Power supply circuit check.	1	P.54A-60
The speedometer does not work (the other meters work).	2	P.54A-65
The tachometer does not work (the other meters work).	3	P.54A-67
Tone alarm does not sound normally.	4	P.54A-69
The combination meter light does not illuminate normally or the multi information display is not displayed normally.	5	P.54A-72
The multi information display screen cannot be changed with the operation of the multi information meter switch.	6	P.54A-75

SYMPTOM PROCEDURES

Inspection Procedure 1: Power supply circuit check.

Combination Meter Power Supply Circuit



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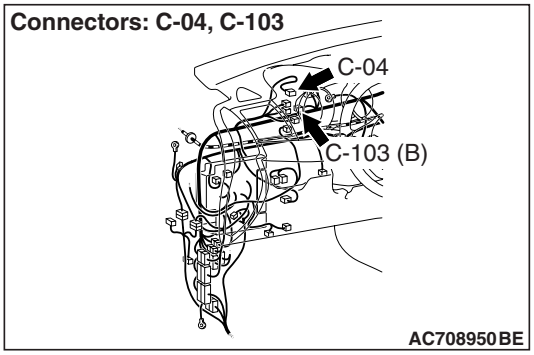
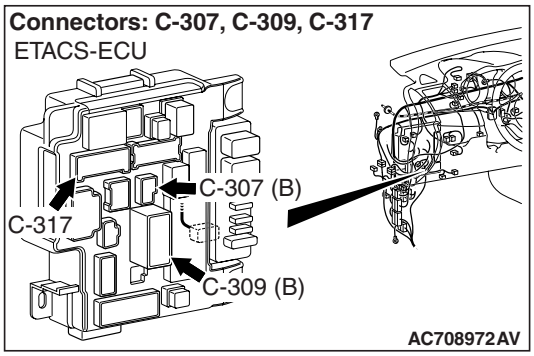




TECHNICAL DESCRIPTION (COMMENT)

If the odometer and tripmeter do not display or all the meter needles do not move, the power supply to the combination meter, or the combination meter itself may have a problem.

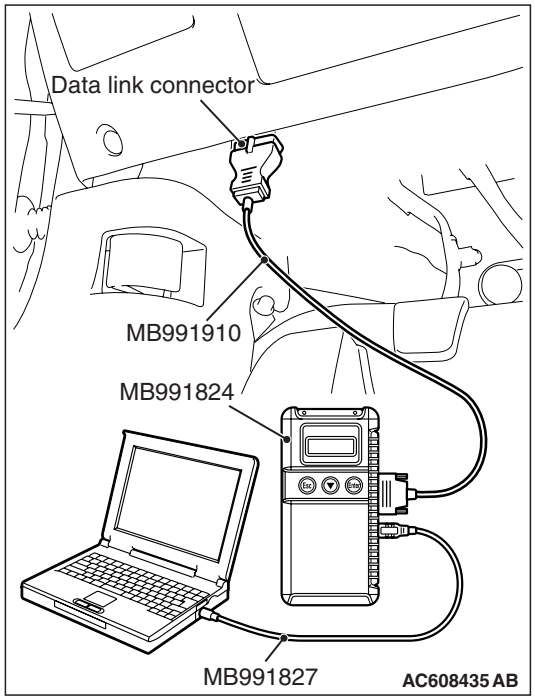
TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The combination meter may be defective

DIAGNOSIS

Required Special Tools:

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



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

Check if DTC is set to the combination meter.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.00E-2."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 2.

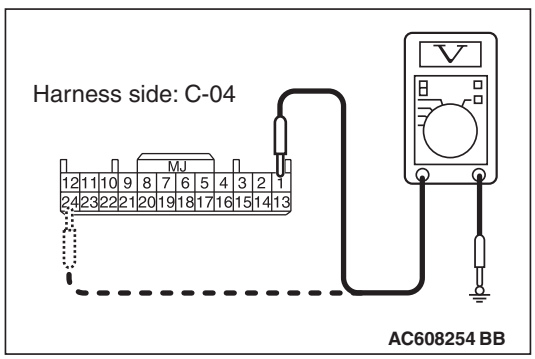
STEP 2. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

YES : Go to Step 3.
NO : Repair the defective connector.

STEP 3. Check the battery power supply circuit to the combination meter. Measure the voltage at combination meter connector C-04.

(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the LOCK (OFF) position.
(3) Measure the voltage between terminals 1, 24 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

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STEP 4. Check the wiring harness between combination meter connector C-04 (terminal 1, 24) and the fusible link (36).

NOTE: Also check ETACS-ECU connectors C-307, C-317 and joint connector C-103 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connector C-307, C-317 or joint connector C-103 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

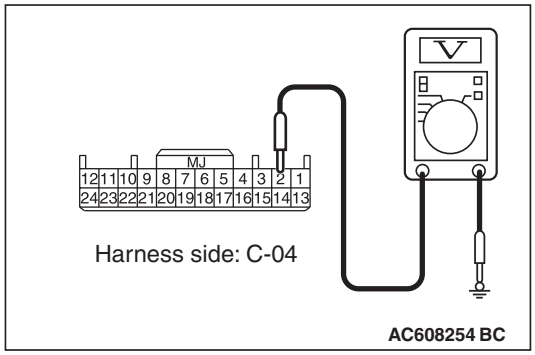
Q: Is the wiring harness between combination meter connector C-04 (terminal 1, 24 and the fusible link (36) in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15).

NO : Repair the wiring harness.

STEP 5. Check the battery power supply circuit to the combination meter. Measure the voltage at combination meter connector C-04.

(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the ON position.
(3) Measure the voltage between terminals 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 8.

NO : Go to Step 6.

STEP 6. Using scan tool MB991958, check data list.

Check the input signal from the ignition switch (IG1) in the ETACS-ECU.

(1) Check the ETACS data list.

- Turn the ignition switch to the "ON" position.

Item No.	Item name	Normal condition
Item 254	IG voltage	Approximately 12 volts (battery positive voltage)

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

Q: Do the scan tool MB991958 display the item "IG voltage" is normal condition?

YES : Go to Step 7.

NO : Troubleshoot the ETACS-ECU. Refer to Inspection Procedure 2 "The ignition switch (IG1) signal is not received P.54A-642."

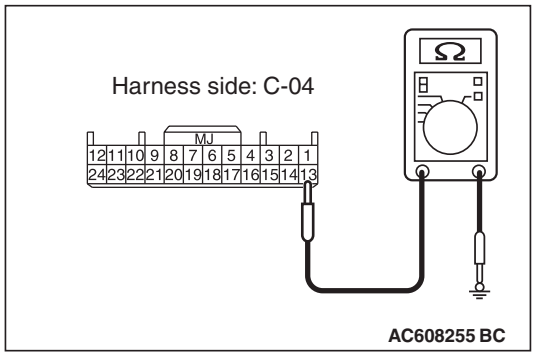
STEP 7. Check the wiring harness between combination meter connector C-04 (terminal 2) and the fusible link (34).

NOTE: Also check ETACS-ECU connectors C-309 and C-317 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connector C-309 or C-317 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector C-04 (terminal 2) and the fusible link (34) in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Repair the wiring harness.



STEP 8. Check the ground circuit to the combination meter. Test at combination meter connector C-04.

(1) Disconnect combination meter connector C-04 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between terminal 13 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check the wiring harness between combination meter connector C-04 (terminal 13) and ground.

Q: Is the wiring harness between combination meter connector C-04 (terminal 13) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Repair the wiring harness.

STEP 10. Retest the system.

Check that the combination meter works normally.

Q: Is the check result satisfactory?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the combination meter.

Inspection Procedure 2: The speedometer does not work (the other meters work).

TECHNICAL DESCRIPTION (COMMENT)

If only the speedometer does not operate, the ASC-ECU and combination meter may have a problem.

TROUBLESHOOTING HINTS

- The ASC-ECU may be defective
- The combination meter may be defective

DIAGNOSIS

Required Special Tools:

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

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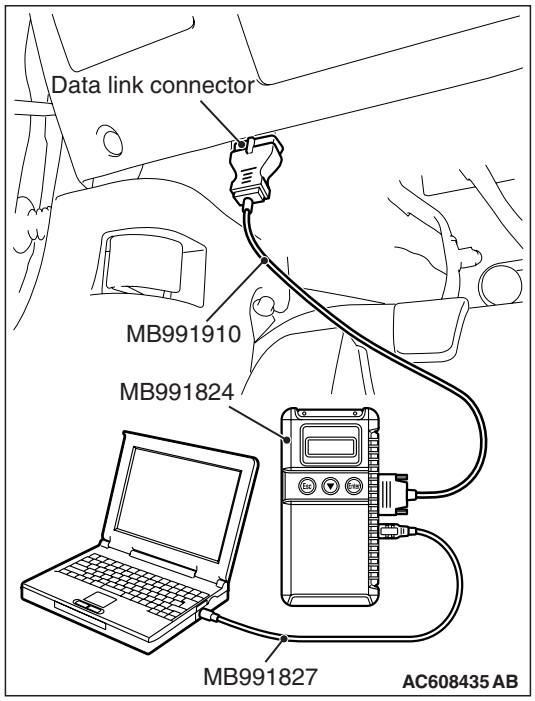
- MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the combination meter.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the ASC-ECU diagnostic trouble code.

Check if diagnostic trouble code is set to the ASC.

Q: Is the DTC set?

YES : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis P.35C-20).
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check data list.
(1) Turn the ignition switch to the "ON" position.
(2) Check the data list on the combination meter.
- Item 80: Speedometer
  - Should read vehicle speed.

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

Q: Does it read vehicle speed?

YES : Go to Step 5.
NO : Replace the combination meter.

STEP 5. Using scan tool MB991958, check actuator test.
(1) Turn the ignition switch to the "ON" position.
(2) Conduct the actuator test of the combination meter.
- Item 1: Speedometer
  - The speedometer operates up to the set position.

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

Q: Is the check result normally?

YES : Go to Step 6.
NO : Replace the combination meter.

STEP 6. Retest the system.
Check that the speedometer works normally.

Q: Is the check result normal?

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

Inspection Procedure 3: The tachometer does not work (the other meters work).

TECHNICAL DESCRIPTION (COMMENT)

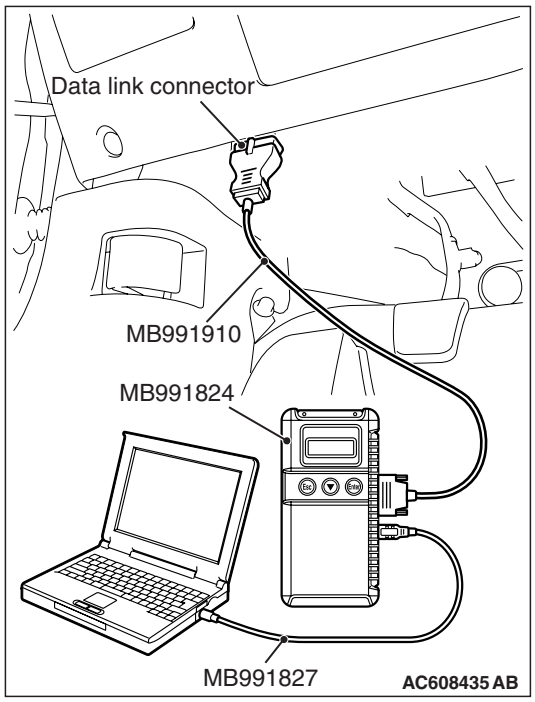
If only the tachometer does not operate, the ignition signal from the engine ECU may not be received or the combination meter may have a problem.

TROUBLESHOOTING HINTS

- The combination meter may be defective
- The engine control module may be defective

DIAGNOSIS

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.
Check if DTC is set to the combination meter.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the MFI diagnostic trouble code.
Check if DTC is set to the engine control module.

Q: Is the DTC set?

YES : Troubleshoot the MFI (Refer to GROUP 13A, Diagnosis P.13A-44).
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check data list.
(1) Turn the ignition switch to the "ON" position.
(2) Check the data list on the combination meter.
- Item 87: Tachometer
  - Should read engine speed.

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

Q: Does it read engine speed?

YES : Go to Step 5.
NO : Troubleshoot the MFI (Refer to GROUP 13A, Diagnosis P.13A-44). Complete the engine troubleshooting, and then go to Step 6.

STEP 5. Using scan tool MB991958, check actuator test.
(1) Turn the ignition switch to the "ON" position.
(2) Conduct the actuator test of the combination meter.
- Item 2: Tachometer
  - The tachometer operates up to the set position.

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

Q: Is the check result normally?

YES : Go to Step 6.
NO : Replace the combination meter.

STEP 6. Retest the system
Check that the tachometer works normally.

Q: Is the check result normal?

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

Inspection Procedure 4: Tone alarm does not sound normally.

⚠ CAUTION
Before replacing the combination meter, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

When the following signals are received via the CAN communication, the combination meter sounds the incorporated tone alarm according to the each pattern.

Seat belt reminder function
- Ignition switch ON signal
- Vehicle speed signal
- Driver's seat belt switch signal
- Front passenger's seat belt switch signal

Keyless operation key reminder tone alarm function (vehicles with KOS)
- Ignition switch OFF signal
- IG knob push switch ON signal
- Driver's door switch ON signal

Ignition key reminder tone alarm function (vehicles without KOS)
- Ignition switch OFF signal
- Key reminder switch OFF signal
- Driver's door switch ON signal

Light reminder tone alarm function
- Ignition switch OFF signal
- Lighting switch ON signal
- Driver's door switch ON signal

Door-ajar warning tone alarm function
- Ignition switch ON signal
- Any door switch or trunk lid latch ON signal
- Vehicle speed signal

Freeze warning tone alarm
- Ignition switch ON signal
- Ambient temperature signal

Parking brake reminder tone alarm function
- Ignition switch ON signal
- Parking brake switch ON signal
- Vehicle speed signal

Multi information display interrupt display tone alarm
- Display condition signal of information display from each warning (When there is a fixed tone alarm sounding pattern for each warning, that pattern has the priority.)

Multi information meter switch operation tone alarm
- ON signal for combination multi information meter switch

Turn-signal light tone alarm function
- Turn-signal light switch ON signal

Paddle shift cancel tone alarm, Theft-alarm function, ETACS-ECU function customize tone alarm, A/C operation tone alarm, audio operation tone alarm
- Sounding request signal from the ETACS-ECU

If the tone alarm does not sound normally, the connector(s) and wiring harness in the CAN bus lines, or each ECU or the combination meter may have a problem.

TROUBLESHOOTING HINTS
- The combination meter may be defective
- The each ECU may be defective

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 (Vehicles with CAN communication system)

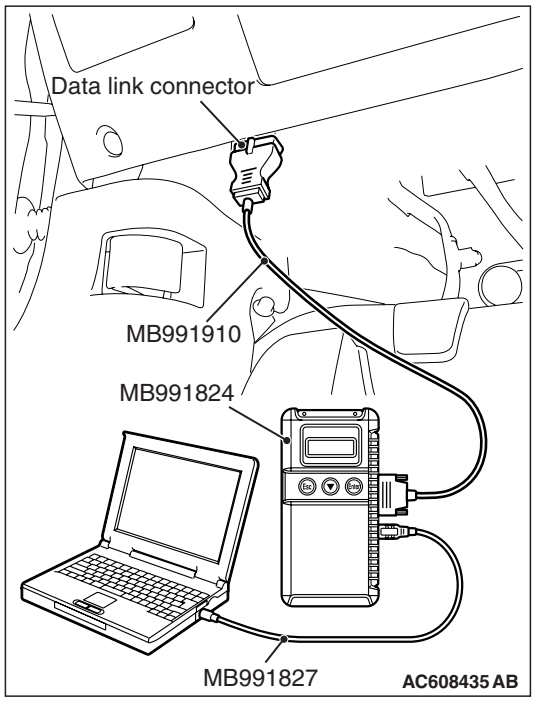
STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.
Check if DTC is set to the combination meter.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read for any diagnostic trouble code.
Check if diagnostic trouble code is set to the engine control module, TC-SST-ECU, ASC-ECU, ETACS-ECU, WCM, KOS-ECU, audio and A/C-ECU.

Q: Is the DTC set to the any of the above?

YES <Set to the engine control module.> : Troubleshoot the engine control module (Refer to GROUP 13A, Diagnosis P.13A-44).
YES <Set to the TC-SST-ECU.> : Troubleshoot the TC-SST (Refer to GROUP 22C, Diagnosis P.22C-10).
YES <Set to the ASC-ECU.> : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis P.35C-20).
YES <Set to the ETACS.> : Troubleshoot the ETACS (Refer to P.54A-582).
YES <Set to the WCM.> : Troubleshoot the WCM (Refer to GROUP 42C, diagnosis P.42C-14).
YES <Set to the KOS.> : Troubleshoot the KOS (Refer to GROUP 42B, Diagnosis P.42B-20).
YES <Set to the audio.> : Troubleshoot the audio (Refer to P.54A-288).
YES <Set to the A/C.> : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis P.55-9).
NO <The diagnostic trouble code is not set.> : Go to Step 4.

STEP 4. Using scan tool MB991958, check actuator test.
(1) Turn the ignition switch to the "ON" position.
(2) Conduct the actuator test of the combination meter.
- Item 12: Tone alarm
  - The tone alarms sound normally.

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

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the combination meter.

STEP 5. Retest the system
Check that the tone alarm normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the combination meter.

Inspection Procedure 5: The combination meter light does not illuminate normally or the multi information display is not displayed normally.

⚠ CAUTION
Before replacing the combination meter, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

When the signal from each ECU is received via the CAN communication, the combination meter illuminates the corresponding display light or warning light, or has the multi information display to display corresponding information.

If the lights do not illuminate or the multi information display does not display normally, the wiring harness and connector(s) in the CAN bus lines, or the each ECU or the combination meter may have a problem.

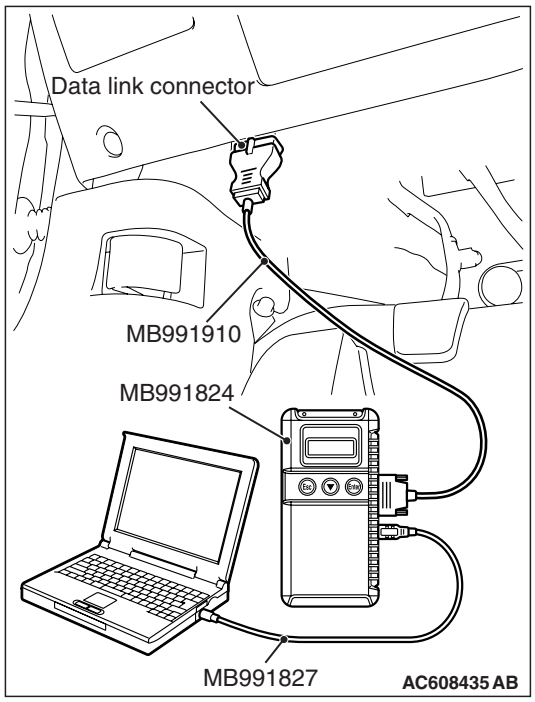
TROUBLESHOOTING HINTS

- The combination meter may be defective
- The each ECU may be defective

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 (Vehicles with CAN communication system)



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the combination meter.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 3.

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

Check again if the DTC is set to the engine control module, TC-SST-ECU, WCM, KOS-ECU, ASC-ECU, SRS-ECU, ETACS-ECU and A/C-ECU.

Q: Is the DTC set to the any of the above?

YES <Set to the engine control module.> : Troubleshoot the engine control module (Refer to GROUP 13A, Diagnosis P.13A-44).

YES <Set to the TC-SST-ECU.> : Troubleshoot the TC-SST (Refer to GROUP 22C, Diagnosis P.22C-10).

YES <Set to the ASC-ECU.> : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis P.35C-20).

YES <Set to the WCM.> : Troubleshoot the WCM (Refer to GROUP 42C, diagnosis P.42C-14).

YES <Set to the KOS-ECU.> : Troubleshoot the KOS (Refer to GROUP 42B, Diagnosis P.42B-20).

YES <Set to the SRS-ECU.> : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-31).

YES <Set to the ETACS-ECU.> : Troubleshoot the ETACS (Refer to P.54A-582).

YES <Set to the A/C-ECU.> : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis P.55-9).

NO <The diagnostic trouble code is not set.> : Go to Step 4.

STEP 4. Using scan tool MB991958, check actuator test.

(1) Turn the ignition switch to the "ON" position.
(2) Conduct the actuator test of the combination meter.
- Item 7: Indicator1
- Item 8: Indicator2
- Item 9: Indicator3
- Item 11: Shift indicator
- Item 13: Indicator4
  - Perform the actuator test, and check that display lights or warning lights are illuminated normally, or multi information display is displayed normally.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the combination meter.

STEP 5. Retest the system.

Check that display lights or warning lights are illuminated normally, or multi information display is displayed normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

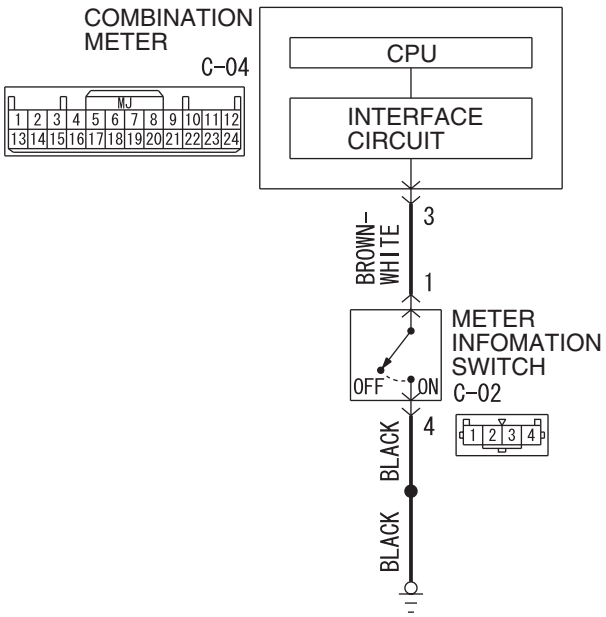
NO : Replace the combination meter.

TSB Revision

Inspection Procedure 6: The multi information display screen cannot be changed with the operation of the multi information meter switch.

⚠ CAUTION
Before replacing the combination meter, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

Meter Information Switch Circuit



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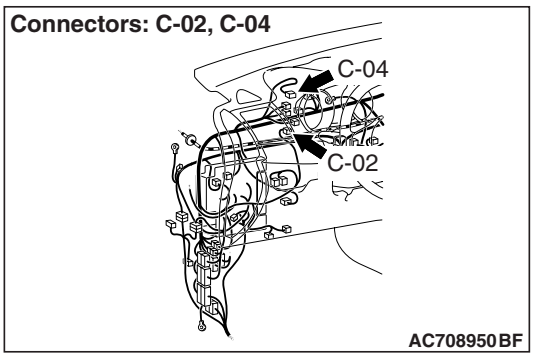

TECHNICAL DESCRIPTION (COMMENT)

When the signal from the meter information switch is received, the combination meter switches the multi information display screen. If the multi information display screen does not switch normally, the meter information switch, wiring harness, connector(s), or combination meter may have a problem.

TROUBLESHOOTING HINTS

- The multi information meter switch may be defective
- The combination meter may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

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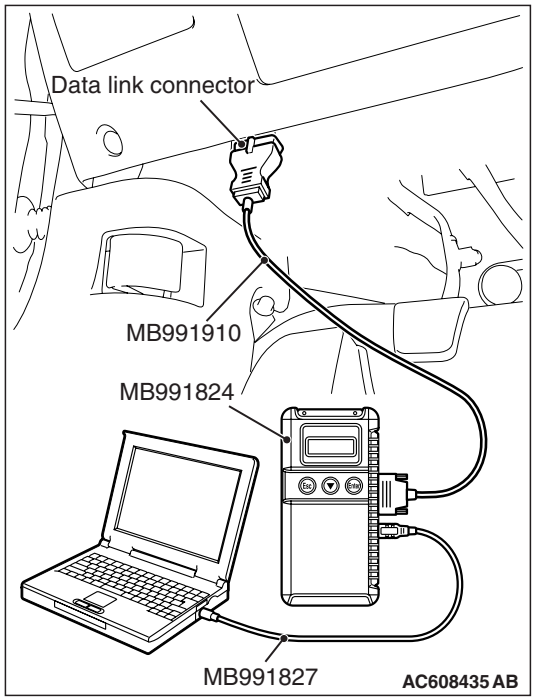
- MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)



STEP 1. Using scan tool MB991958, read the combination meter diagnostic trouble code.
Check if DTC is set to the combination meter.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(4) Check if DTC is set.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 2.

STEP 2. Check meter information switch connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

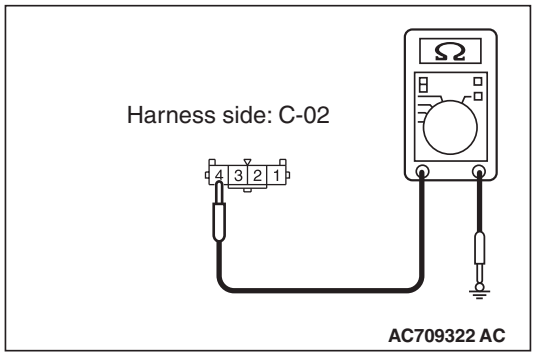
Q: Is meter information switch connector C-02 in good condition?

YES : Go to Step 3.
NO : Repair the connector.

STEP 3. Check the multi information meter switch.
Check the multi information meter switch (Refer to P.54A-92).

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the multi information meter switch.



STEP 4. Measure at meter information switch connector C-02 in order to the ground circuit to the meter information switch.

(1) Disconnect meter information switch connector C-02, and measure at the wiring harness side.
(2) Measure the resistance value between terminal 4 and ground.
- The measured value should be 2 ohm or less.

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

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

STEP 5. Check the wiring harness between meter information switch connector C-02 (terminal 4) and ground.

Check the ground wires for open circuit.

Q: Is the wiring harness between fuel meter information switch connector C-02 (terminal 4) and ground in good condition?

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

STEP 6. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

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

STEP 7. Check the wiring harness between meter information switch connector C-02 (terminal 1) and combination meter connector C-04 (terminal 3).

Check the output lines for open circuit.

Q: Are the wiring harness between meter information switch connector C-02 (terminal 1) and combination meter connector C-04 (terminal 3) in good condition?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Retest the system.
Check that the multi information display screen switches normally when the multi information meter switch is operated.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the combination meter.

SERVICE DATA

M1540201000257

NOTE: For some information result read out by the ECU, the specific items may not be displayed.

Item No.	Display on scan tool	Check condition	Normal condition
01	Illumination	Taillight: Illuminated	ON
		Taillight: Extinguished	OFF
02	Outside temperature	–	°F
03	Frost warning indicator	With warning display	ON
		Without warning display	OFF
04	Engine coolant temp. light(HOT)	With warning display	ON
		Without warning display	OFF
05	Immobilizer indicator	Always	OFF
07	AWD failure indicator	With warning display	ON
		Without warning display	OFF
08	Hood indicator	With warning display	ON
		Without warning display	OFF
23	A/T failure indicator(Symbol)	With warning display	ON
		Without warning display	OFF
25	ASC/TCL failure indicator	With warning display	ON
		Without warning display	OFF
26	Key reminder indicator	With warning display	ON
		Without warning display	OFF
27	Headlight reminder indicator	With warning display	ON
		Without warning display	OFF
28	Brake reminder indicator	With warning display	ON
		Without warning display	OFF
29	F.A.S.T.indicator1(Low battery)	With warning display	ON
		Without warning display	OFF
30	F.A.S.T.indicator2(No key)	With warning display	ON
		Without warning display	OFF
31	F.A.S.T.indicator3(IG knob)	With warning display	ON
		Without warning display	OFF

TSB Revision

Item No.	Display on scan tool	Check condition	Normal condition
32	F.A.S.T.indicator4(Take out key)	With warning display	ON
		Without warning display	OFF
33	F.A.S.T.indicator5(Take out key)	With warning display	ON
		Without warning display	OFF
34	F.A.S.T.indicator6(Lock disable)	With warning display	ON
		Without warning display	OFF
35	F.A.S.T.indicator7(Lock disable)	With warning display	ON
		Without warning display	OFF
36	F.A.S.T.indicator8(Lock disable)	With warning display	ON
		Without warning display	OFF
37	F.A.S.T.indicator9(System error)	With warning display	ON
		Without warning display	OFF
69	Security alarm buzzer	Exterior protection is operating	ON
		Exterior protection is not operating	OFF
70	Presecurity alarm buzzer	Interior alarm is operating	ON
		Interior alarm is not operating	OFF
80	Speed meter	Speedometer displayed value and scan tool displayed value agree with each other.	
87	Tachometer	Tachometer displayed value and scan tool displayed value agree with each other.	
89	Fuel gauge	The resistance value of the fuel gauge unit and scan tool displayed value agree with each other. (The allowance shall be defined as ±2 Ω)	
8A	Fuel gauge(Target)	The remaining fuel level is displayed by %.	
8C	Engine coolant temperature gauge	Coolant temperature and scan tool displayed value agree with each other.	
90	Odometer	Odometer displayed value and scan tool displayed value agree with each other.	
91	Rheostat	Lighting change by rheostat switch operation and change of scan tool displayed value agree with each other.	
92	Trip meter A	Trip meter displayed value and scan tool displayed value agree with each other.	
93	Trip meter B		
94	Power source voltage	Always	5 –20 V
A1	SRS warning light	With warning display	ON
		Without warning display	OFF
A2	ABS warning light	With warning display	ON
		Without warning display	OFF
A3	Oil pressure indicator	With warning display	ON
		Without warning display	OFF

TSB Revision

Item No.	Display on scan tool	Check condition	Normal condition
A4	Charge indicator	With warning display	ON
		Without warning display	OFF
A5	Engine malfunction indicator	With warning display	ON
		Without warning display	OFF
A6	Fuel Warning (step1)	With warning display	ON
		Without warning display	OFF
A7	Brake warning light	With warning display	ON
		Without warning display	OFF
A8	Driver seatbelt indicator	With warning display	ON
		Without warning display	OFF
AA	ASC/TCL Operation indicator	When the indicator illuminates	ON
		When the indicator is extinguished	OFF
AB	ASC/TCL OFF indicator	When the indicator illuminates	ON
		When the indicator is extinguished	OFF
B1	Turn signal indicator(Right)	Turn-signal light (RH): Illuminated	ON
		Turn-signal light (RH): Extinguished	OFF
B2	Turn signal indicator(Left)	Turn-signal light (LH): Illuminated	ON
		Turn-signal light (LH): Extinguished	OFF
B3	Front fog light indicator	Taillight: illuminates and fog light switch: ON	ON
		When fog lights are off	OFF
B4	High beam indicator	Dimmer switch: ON	ON
		Dimmer switch: OFF	OFF
B5	Door indicator(Front Left)	Front passenger's door: Open	ON
		Front passenger's door: Closed	OFF
B6	Door indicator(Front Right)	Driver's door: Open	ON
		Driver's door: Closed	OFF
B7	Door indicator(Rear Left)	Rear left door: Open	ON
		Rear left door: Closed	OFF
B8	Door indicator(Rear Right)	Rear right door: Open	ON
		Rear right door: Closed	OFF
B9	Door indicator (Liftgate)	Trunk lid: Open	ON
		Trunk lid: Closed	OFF
BA	Position light indicator	Taillight switch: ON	ON
		Taillight switch: OFF	OFF
BE	A/T position indicator:Blank	The indicator is not displayed.	ON
		The indicator is displayed.	OFF
BF	A/T position indicator:A	Always	OFF
C1	A/T position indicator:P	Shift lever: P position	ON
		Shift lever: Other than P position	OFF

Item No.	Display on scan tool	Check condition	Normal condition
C2	A/T position indicator:R	Shift lever: R position	ON
		Shift lever: Other than R position	OFF
C3	A/T position indicator:N	Shift lever: N position	ON
		Shift lever: Other than N position	OFF
C4	A/T position indicator:D	Always	OFF
C5	A/T position indicator:Ds	Always	OFF
C6	A/T position indicator:6	Automatic mode: 6th	ON
		Automatic mode: Other than 6th	OFF
C7	A/T position indicator:5	Automatic mode: 5th	ON
		Automatic mode: Other than 5th	OFF
C8	A/T position indicator:4	Automatic mode: 4th	ON
		Automatic mode: Other than 4th	OFF
C9	A/T position indicator:3	Automatic mode: 3rd	ON
		Automatic mode: Other than 3rd	OFF
CA	A/T position indicator:2	Automatic mode: 2nd	ON
		Automatic mode: Other than 2nd	OFF
CB	A/T position indicator:1	Automatic mode: 1st	ON
		Automatic mode: Other than 1st	OFF
CE	A/T position indicator:D1	Manual mode: 1st	ON
		Manual mode: Other than 1st	OFF
CF	A/T position indicator:D2	Manual mode: 2nd	ON
		Manual mode: Other than 2nd	OFF
D1	A/T position indicator:D3	Manual mode: 3rd	ON
		Manual mode: Other than 3rd	OFF
D2	A/T position indicator:D4	Manual mode: 4th	ON
		Manual mode: Other than 4th	OFF
D3	A/T position indicator:D5	Manual mode: 5th	ON
		Manual mode: Other than 5th	OFF
D4	A/T position indicator:D6	Manual mode: 6th	ON
		Manual mode: Other than 6th	OFF
D6	Headlight auto leveling warning	With warning display	ON
		Without warning display	OFF
D8	Car symbol	When a door or the trunk lid is opened	ON
		When the vehicle mark is off	OFF
E1	Tire Pressure indicator	With warning display	ON
		Without warning display	OFF
E2	A/T Oil TEMP.indicator	With warning display	ON
		Without warning display	OFF

Item No.	Display on scan tool	Check condition	Normal condition
E6	Rest reminder indicator	With warning display	ON
		Without warning display	OFF
E7	Service reminder indicator	With warning display	ON
		Without warning display	OFF
108	Fuel Warning (step2)	With warning display	ON
		Without warning display	OFF
F7	Cruise control indicator	When the indicator illuminates	ON
		When the indicator is extinguished	OFF
F13	ACD mode(TARMAC)	AWC switch: TARMAC	ON
		AWC switch: Other than TARMAC	OFF
F14	ACD mode(GRAVEL)	AWC switch: GRAVEL	ON
		AWC switch: Other than GRAVEL	OFF
F15	ACD mode(SNOW)	AWC switch: SNOW	ON
		AWC switch: Other than SNOW	OFF
F18	AWC control display	The control screen is displayed	ON
		The control screen is not displayed	OFF

ACTUATOR TEST TABLE

M1540201100254

Item No.	Item name	Test item	Value
1*	Speedometer	Pointer position setting (km/h or mph)	km/h or mph
2	Tachometer	Pointer position setting (r/min)	r/min
3	Fuel gauge(Target)	Status setting (%)	%
4	Water Temperature gauge	Status setting (°F)	°F
5	Meter illumination	Status setting (%)	%
6	Outside temperature	Status setting (°F)	°F
7	Indicator1	By turning ON/OFF the item values, indicators can be illuminated/extinguished and tone alarms can be sounded.	OFF/ON
8	Indicator2		OFF/ON
9	Indicator3		OFF/ON
11	Shift indicator		OFF/ON
12	Tone alarm		OFF/ON
13	Indicator4		OFF/ON

*NOTE: *: Depending on the main scale of the speedometer, the unit that can be tested changes. Unit is displayed as "–" on the scan tool MB991958 screen.*

CHECK PROCEDURE FOR EACH MULTI INFORMATION DISPLAY SCREEN

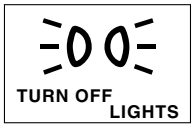
M1540201900227

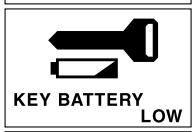
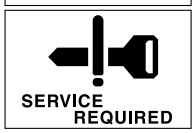
⚠ CAUTION

When there are TV towers, substations, or broadcasting stations which emit strong radio waves in proximity, on rare occasions, a warning is displayed on the multi information screen for a few seconds. This is caused by the reception of strong radio waves, and there is no functional problem.

WARNING SCREEN

When malfunctions occur to the vehicle, the following warning screens are displayed. If these screens are not displayed normally or if they continue to be displayed even after the factor is eliminated, take measures according to the action procedure.

Display content	Factor	Action procedure
 AC509825	Displayed with the sounding of tone alarm when the driver's door is opened with the key inserted in the ignition switch key cylinder.	If the ignition key reminder warning tone alarm is not being sounded, perform the troubleshooting for the ignition key reminder warning tone alarm (Refer to P.54A-69).
 AC509826	Displayed with the sounding of tone alarm when the driver's door is opened with the ignition switch at the LOCK (OFF) or ACC position and the lighting switch at the tail or head position.	If the lighting monitor warning tone alarm is not being sounded, perform the troubleshooting for the lighting monitor warning tone alarm (Refer to P.54A-69).
 AC505679	• Displayed while the theft alarm is in operation. • Immobilizer is registered.	If the warning screen is not displayed normally or if the screen continues to be displayed, carry out the troubleshooting for the theft alarm (Refer to P.54A-687) or immobilizer system (Refer to GROUP 42B – Trouble symptom chart P.42B-172 <vehicles with KOS> or Refer to GROUP 42C –Trouble symptom chart P.42C-84 <vehicles without KOS>.)

Display content	Factor	Action procedure
a  b  c  d  e  f  AC606877AB	Displayed when a malfunction occurs to KOS. Refer to GROUP 42B –Diagnosis . a. Displayed when the following operations are carried out with the ignition switch at positions other than the LOCK (PUSH OFF) position after the engine is stopped. • When the driver's door is opened • When the doors are closed and locked b. Displayed if carrying a KOS key with different ID code or the KOS key is outside the operative range. c. Displayed when the KOS key removal monitoring function or KOS key confinement prevention function is in operation. d. Displayed when the door ajar prevention function is in operation. e. Displayed when there is a malfunction to KOS.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the KOS (Refer to GROUP 42B –Diagnostic trouble code chart P.42B-20).
a  AC609827AB b  AC609828AB	a. Displayed when the tire air pressure is an abnormality. (except spare tire) b. Displayed when the TPMS is an abnormality.	If the warning screen is not displayed normally or erased, carry out the troubleshooting for the TPMS (Refer to GROUP 42B, Diagnosis P.42B-20).
a  AC509829AB b  AC509830AB	a. Displayed when the brake fluid amount is insufficient or a malfunction occurs to the brake device. b. Displayed if vehicle is driven with the parking brake engaged.	If the warning screen is not displayed normally or if the screen continues to be displayed, take the following measures for each displayed item. a. Check the brake fluid or brake device. Refer to GROUP 35A –On-vehicle service P.35A-17. b. Check the parking brake. Refer to GROUP 36 –On-vehicle service P.36-12.

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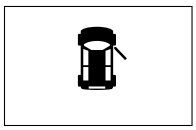
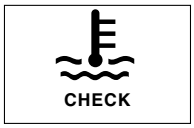
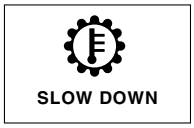
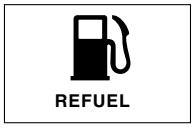
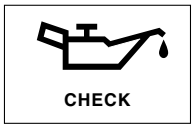
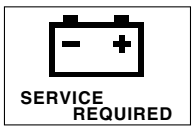
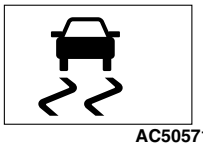
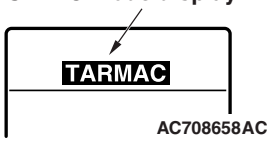
Display content	Factor	Action procedure
 AC509831	Displayed when a malfunction occurs to the anti-lock braking system (ABS).	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the ABS (Refer to GROUP 35C –Trouble symptom chart P.35C-219).
 AC610018	If any of the doors or the trunk lid is not closed completely, the location of the ajar door is displayed with the sounding of tone alarm.	If the door ajar warning tone alarm does not sound, perform the troubleshooting for the door ajar warning tone alarm (Refer to P.54A-69).
a  b  AC709211AB	a. Displayed when the hood is open. b. Displayed when there is a malfunction to the hood.	If the warning screen is not displayed normally, or if the screen continues to be displayed, check the hood latch switch input signal. Refer to P.54A-670.
 AC509834	Displayed when overheated.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the engine (Refer to GROUP 13A –Trouble symptom chart P.13A-48).
a  AC509835AB b  AC509836AB	a. Displayed when the SST fluid temperature becomes high. b. Displayed when there is a malfunction to the TC-SST.	If the warning screen is not displayed normally or if the screen continues to be displayed, check the TC-SST diagnostic trouble code. Refer to GROUP 22C – Diagnostic trouble code chart P.22C-10.
 AC509837	Displayed when the vehicle is driven without the driver's seat belt fastened.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the seat belt reminder warning light (Refer to P.54A-72).

Display content	Factor	Action procedure
a  AC509838AD b  AC509839AB	a. Displayed when there is a malfunction to the fuel system. b. Displayed when the remaining fuel amount is small.	If the warning screen is not displayed normally or if the screen continues to be displayed, take the following measures for each displayed item. a. Check the combination meter diagnostic trouble code. Refer to P.54A-72. b. Immediately fill the fuel.
 AC509840	Displayed when there is a malfunction to the engine oil circulation system.	If the warning screen is not displayed normally or if the screen continues to be displayed, check the engine oil amount. Refer to GROUP 13A –Trouble symptom chart P.13A-48.
 AC509841	Displayed when there is a malfunction to the charging system.	If the warning screen is not displayed normally or if the screen continues to be displayed, check the battery. Refer to P.54A-9.
 AC509842	Displayed when there is a malfunction to the SRS air bag or to the pre-tensioner mechanism.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the SRS air bag/pre-tensioner mechanism warning light (Refer to GROUP 52B –Trouble symptom chart P.52B-357).
 AC509844	Displayed when there is a malfunction to the ASC.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the ASC. Refer to GROUP 35C –Trouble symptom chart P.35C-219.
 AC509845	Displayed when there is a malfunction to the S-AWC or ACD.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the S-AWC or ACD. Refer to GROUP 22A – Trouble symptom chart P.22A-14.
 AC509848	Displayed with the sounding of tone alarm when the ambient temperature is 37° F (3° C) or less.	If the warning screen is not displayed even when the indicator on the combination meter shows 37° F (3° C), perform the troubleshooting for the freeze warning tone alarm. (Refer to P.54A-69).
 AC709214	Displayed when the timing chain becomes worn.	If the warning screen is not displayed normally or if the screen continues to be displayed, visually check the elongation of the timing chain. Refer to GROUP 11A – Engine Adjustment P.11A-17.

OTHER SCREENS

The screen displays the operation state of each system, periodic checkup timing, or timing for taking a rest during driving. If the screen display differs from the actual system operation state or if the screen is not displayed at the set timing, take measures according to the action procedure.

Display content	System operation state	Action procedure
 AC707866	Displayed when the ASC and S-AWC brake controls are stopped by operating the ASC OFF switch.	If the screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting to the ASC. Refer to GROUP 35C –Trouble Symptom Chart P.35C-219.
 AC505710	Displayed when the ASC is in operation.	If the warning screen is not displayed normally or if the screen continues to be displayed, perform the troubleshooting for the ASC. Refer to GROUP 35C –Trouble symptom chart P.35C-219.
S-AWC mode display  AC708658AC	When the sporty driving is continued successively, S-AWC control is temporarily suspended to protect the S-AWC device. At this time, the S-AWC mode on the multi information display blinks.	If the blinking continues even after the vehicle is driven for a while, perform troubleshooting to the S-AWC system. Refer to GROUP 22A –Trouble symptom chart P.22A-14.
 AC509849	Displayed when the set period elapses.	–
 AC613245	Displayed when the set time elapses.	–

CHECK AT ECU TERMINALS

M1540201200314

Connector: C-04

AC606907AD

Terminal No.	Check item	Check condition	Normal condition
1	ECU power supply (battery)	Always	Battery positive voltage
2	ECU power supply (Ignition switch: IG1)	Ignition switch: ON	Battery positive voltage
		Ignition switch: OFF	0 V
3	Meter information switch input	Meter information switch: ON	0 V
		Meter information switch: OFF	Battery positive voltage
4	Parking brake switch input	Parking brake switch: ON	0 V
		Parking brake switch: OFF	Battery positive voltage
5	Seat belt switch (driver's side) input	Seat belt switch (driver's side): ON	0 V
		Seat belt switch (driver's side): OFF	Battery positive voltage
6	Headlight leveling	During headlight leveling warning display	0 V
		Without headlight leveling warning display	Battery positive voltage
7 to 12	–	–	–
13	Ground (sensor)	Always	0 V
14 to 16	–	–	–
17	Fuel level sensor input	–	Depending on the condition of the fuel level sensor, the voltage changes.
18	Fuel level sensor input	Fuel: FULL	Approximately 2 V
		Fuel: EMPTY	Approximately 8 V
19	–	–	–
20	Vehicle speed signal output	Vehicle speed: Approximately 25 mph (40 km/h)	Approximately 28 Hz
		Vehicle speed change	In accordance with the vehicle speed, a pulse is generated.
21	Ground (ECU)	Always	0 V

Terminal No.	Check item	Check condition	Normal condition
22	Illumination (–) output	With daytime lighting control	0 V
		With nighttime lighting control	In accordance with the rheostat switch operation, a pulse is generated.
23	Illumination (+) output	With lighting control	Battery positive voltage
24	Illumination (power supply)	Always	Battery positive voltage

ON-VEHICLE SERVICE

SPEEDOMETER CHECK

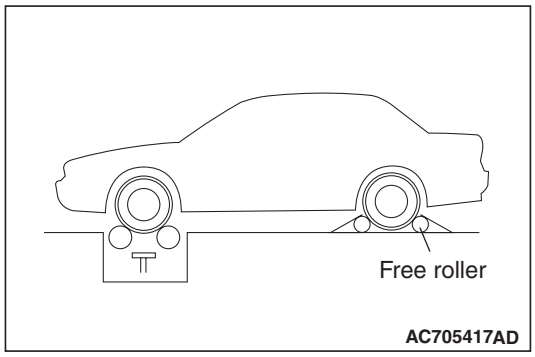
M1540201400374

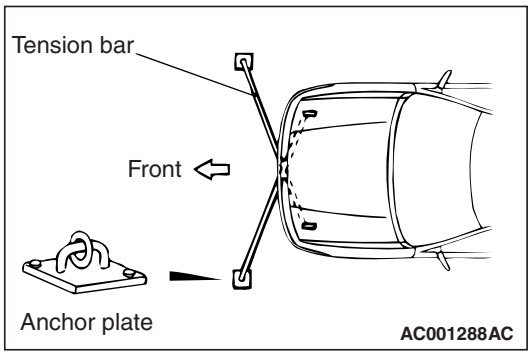
1. Adjust the pressure of tires to the specified level (Refer to GROUP 31, On-vehicle Service P.31-8).
2. Where applicable, ensure that the TPMS warning light is not illuminating or flashing.

⚠ CAUTION

Do not accelerate or decelerate suddenly during servicing work.

3. Set the vehicle onto a speedometer tester and place the rear wheels on a free roller.





4. To prevent the wheel from moving from side to side, attach tension bars to the tie-down hook, and secure both ends to anchor plates.
5. To prevent the vehicle from moving, attach a chain or wire to the rear retraction hook, and make sure the end of the chain or wire is secured.
6. Check if the speedometer indicator range is within the standard values.

Standard value <Except vehicles for CANADA>:

Standard indication {mph (km/h)}	Allowance range {mph (km/h)}
10 (16)	8.5 –11.5 (13.6 –18.4)
25 (40)	23.5 –26.5 (37.6 –42.4)
50 (80)	48.5 –51.5 (77.6 –82.4)
75 (120)	73.5 –76.5 (117.6 –122.4)
100 (161)	98.5 –102.5 (158.6 –165.0)
125 (201)	123.5 –127.5 (198.6 –205.0)
150 (241)	148.5 –153.5 (239.0 –247.0)
175 (282)	173.5 –179.0 (279.2 –288.0)

Standard value <Vehicles for CANADA>:

standard indication {km/h (mph)}	Allowance range {km/h (mph)}
20 (12.4)	19 –24 (11.8 –14.9)
40 (24.8)	40 –44 (24.8 –27.3)
80 (49.7)	80 –85 (49.7 –52.8)
120 (74.6)	120.5 –125.5 (74.9 –78.0)
160 (99.4)	160.5 –165.5 (99.7 –102.8)
200 (124.3)	200.5 –207.0 (124.6 –128.6)
240 (149.1)	240.5 –247.0 (149.4 –153.5)
280 (174.0)	280.5 –289.0 (174.3 –179.6)

7. If not within the standard value, check the tire size. If an incorrect size of tire is used, replace it and check again. If the tire size is correct, a defect may be present in components and circuit between the ASC and the combination meter. Check the following items.
   - ASC (refer to GROUP 35C, Diagnosis P.35C-20).
   - Combination meter (refer to P.54A-28).

TACHOMETER CHECK

M1540201500177

When the actuator tests (item No.2) are performed using scan tool MB991958, check that the tachometer indication error is within the standard value.

NOTE: Values in ( ) indicates the reference value.

Standard value:

Engine speed (r/min)	Tachometer indicating error (r/min)
600	550 –650
(2,000)	(1,950 –2,050)
3,000	2,950 –3,050
(4,000)	(3,950 –4,050)
5,000	4,950 –5,050
6,000	5,950 –6,050
(7,000)	(6,950 –7,050)
(8,000)	(7,950 –8,050)

FUEL LEVEL SENSOR CHECK

M1540201600356

1. Remove the rear seat (Refer to GROUP 52A –Rear Seat Assembly P.52A-25).
2. Remove the floor inspection lid, and then remove the fuel pump module (Refer to GROUP 13B –Fuel Tank P.13B-10).

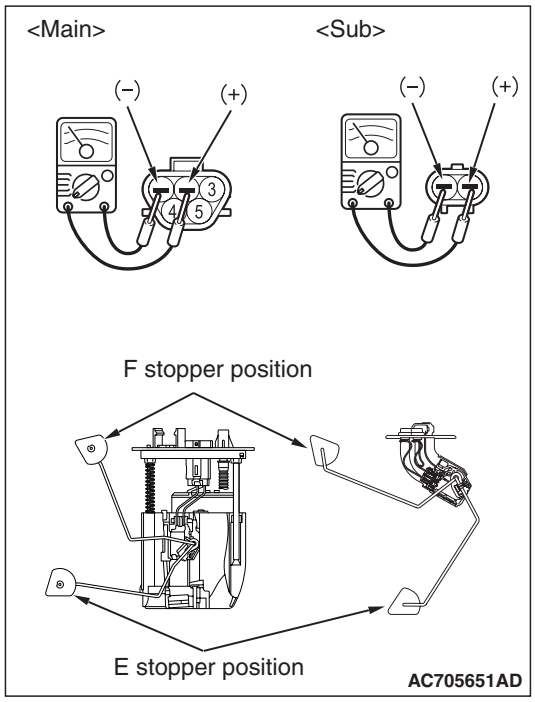
NOMINAL RESISTANCE OF THE FUEL LEVEL SENSOR

When float of the fuel level sensor is in stopper positions F and E, ensure that resistance between the fuel level sensor terminal and ground terminal is within the standard value.

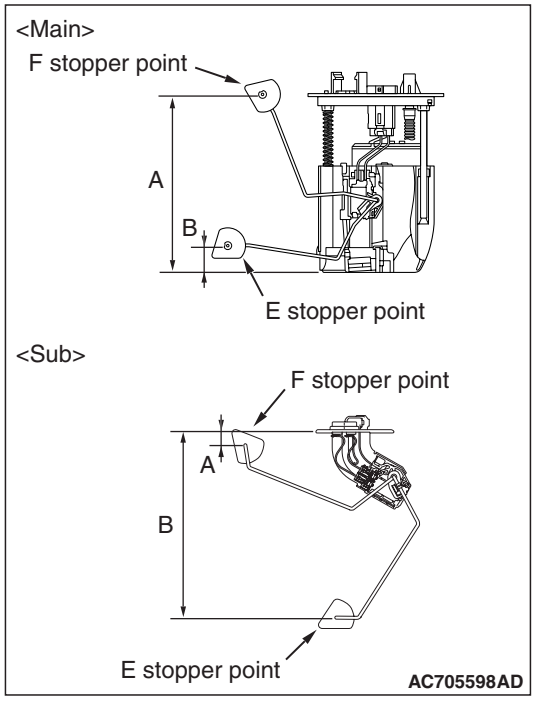
Standard value:

Float position	Gauge resistance value (ohms)	
	Main	Sub
Stopper position "F"	6.5 ±1.0	6.5 ±1.0
Stopper position "E"	41.9 ±1.0	78.1 ±1.0

When the float is moved slowly between stopper positions "F" and "E", ensure that the resistance is smoothly changing.



FUEL LEVEL SENSOR FLOAT HEIGHT



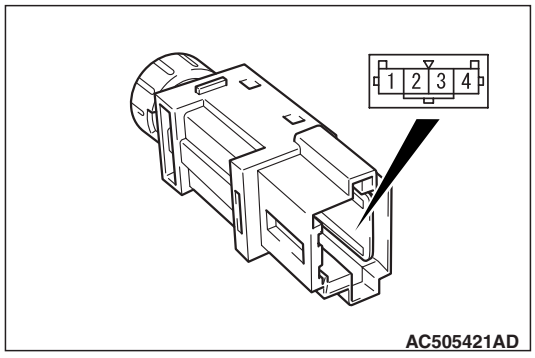
When float is moved to contact the float arm on the stopper, ensure that stopper positions "F" (height A) and "E" (height B) are within the standard value.

Standard value:

Float position	Float height [mm (in)]	
	Main	Sub
Stopper position "F" (height A)	140.9 (5.5)	14.2 ±3.0 (0.5 ±0.1)
Stopper position "E" (height B)	39.1 (1.5)	179.3 ±3.0 (7.0 ±0.1)

MULTI INFORMATION METER SWITCH CHECK

M1540202000164



Switch position	Tester connection	Specified condition
Pressed	1-4	Continuity exists (2 ohms or less)
Released	1-4	Open circuit

SERVICE REMINDER FUNCTION SET

M1540208200337

HOW TO SET BY OPERATING THE SCAN TOOL MB991958

⚠ CAUTION

- **If the combination meter needs to be replaced, the current driving distance and elapsed days must be entered into the meter after the replacement in order to be used for service reminder function. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current schedule" from the meter before the replacement using the special function of the scan tool MB991958, and note them. If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read from the meter using the scan tool MB991958, use the following method.**
  a. **As for the driving distance for check warning, use the driving distance displayed on the multi information display.**
  b. **As for the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service reminder function start date) and current date.**
- **After the service reminder function has started, when the elapsed days for check warning is reset for the vehicle whose battery is removed for a long period (15 days or more), calculate the elapsed days from the delivery date to the customer (service reminder function start date) and the current date, and then input it.**

Using the scan tool MB991958, the following service reminder functions can be set. Before setting, check the current status (schedule, driving distance and elapsed days).

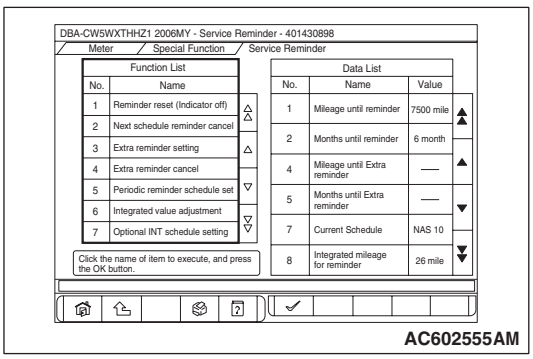
1. Reminder reset (Indicator off)
2. Next schedule reminder cancel
3. Extra reminder setting
4. Extra reminder cancel
5. Periodic reminder schedule set
6. Integrated value adjustment
7. Optional INT schedule setting

HOW TO OPERATE THE SCAN TOOL MB991958

⚠ CAUTION

Before setting, if the combination meter does not start measuring the elapsed time, turn the ignition switch to the ON position while pressing the multi information meter switch to start a measurement.

1. Connect the scan tool MB991958 to the data link connector.
2. Start the scan tool system on the PC and turn the ignition switch to the "ON" position.
3. Select "Meter" on the "System Select" screen, and press the "OK" button.
4. Select "Special Function" on the next screen.
5. Select "Service Reminder" on the "Special function" screen.
6. Select the function to be executed from "Function List."
   - 1 Reminder reset (Indicator off) (Refer to P.54A-93).
   - 2 Next schedule reminder cancel (Refer to P.54A-94).
   - 3 Extra reminder setting (Refer to P.54A-95).
   - 4 Extra reminder cancel (Refer to P.54A-96).
   - 5 Periodic reminder schedule set (Refer to P.54A-96).
   - 6 Integrated value adjustment (Refer to P.54A-97).
   - 7 Optional INT schedule setting (Refer to P.54A-97).



AC602555AM

TSB Revision

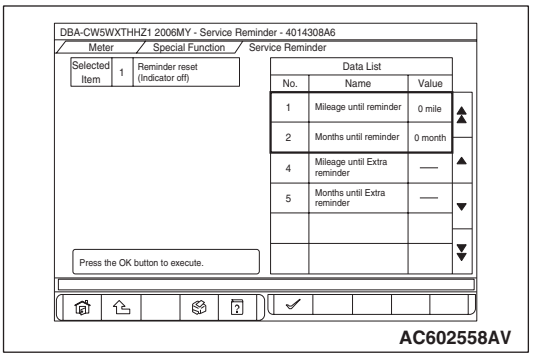
1. REMINDER RESET (INDICATOR OFF)

⚠ CAUTION

- **Be careful not to execute "1 Reminder reset (Indicator off)" again after erasing the service reminder warning indicator which is currently output, because the next warning period will be cancelled.**
- **If the next warning period is cancelled by mistake, the cancelled warning period can be restored by executing "5 Periodic reminder schedule set" to set a schedule different from the current one once, and then returning it to the previous schedule.**

The service reminder warning indicator which is currently output can be cancelled.

NOTE: In addition to the operation of the scan tool MB991958, the service reminder warning indicator can be cancelled by operating the multi information meter switch on the combination meter. Refer to .

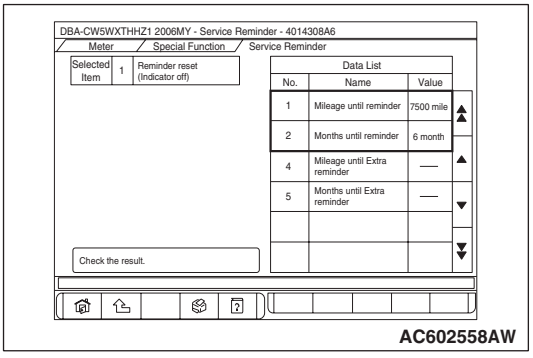


AC602558AV

1. On the "Service Reminder" screen, select "1 Reminder reset (Indicator off)."

   NOTE: The screen indicates that the warning period (Nos. 1 and 2 in the data list) is "0 mile." and "0 month."

2. Press the "OK" button.



AC602558AW

3. The current warning indicator is cancelled, and the next warning period is displayed.

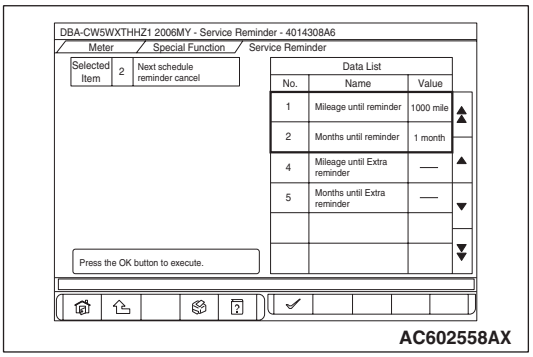
   NOTE: The screen indicates that the warning period (Nos. 1 and 2 in the data list) is "7,500 mile" and "6 month."

2. NEXT SCHEDULE REMINDER CANCEL

⚠ CAUTION

If the next warning period is cancelled by mistake, the cancelled warning period can be restored by executing "5 Periodic reminder schedule set" to set a schedule different from the current one once, and then returning it to the previous schedule.

The next warning period is cancelled, and its following warning period can be set.

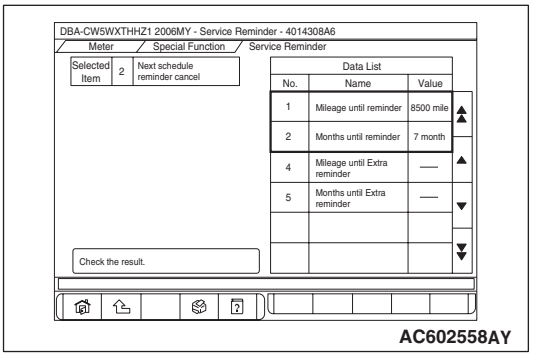


AC602558AX

1. On the "Service Reminder" screen, select "2 Next schedule reminder cancel."

   NOTE: The screen indicates that the warning period (Nos. 1 and 2 in the data list) is "1,000 mile" and "1 month."

2. Press the "OK" button.



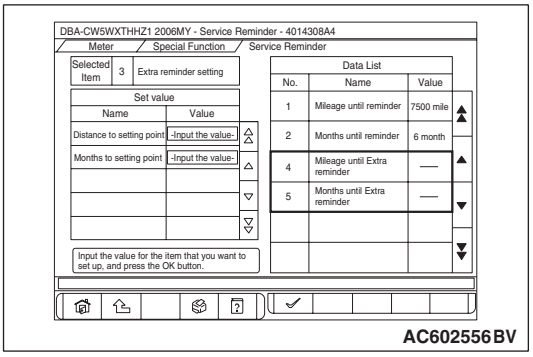
AC602558AY

3. The next warning period is cancelled, and its following warning period is set.

   NOTE: The screen indicates that the warning period (Nos. 1 and 2 in the data list) is changed to "8,500 mile" and "7 month."

3. EXTRA REMINDER SETTING

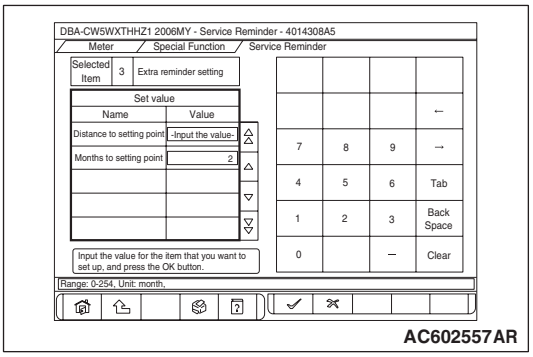
In addition to the current warning period, the temporary service reminder warning period can be set.



AC602556BV

1. On the "Service Reminder" screen, select "3 Extra reminder setting."

   NOTE: The screen indicates that the temporary warning period (Nos. 4 and 5 in the data list) has not been set.

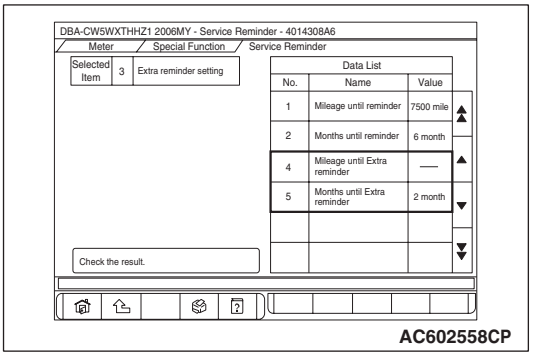


AC602557AR

2. Set the temporary warning period (distance or month) of the "Set value."

   NOTE: Either input of distance or month can execute the setting.

3. Press the "OK" button.



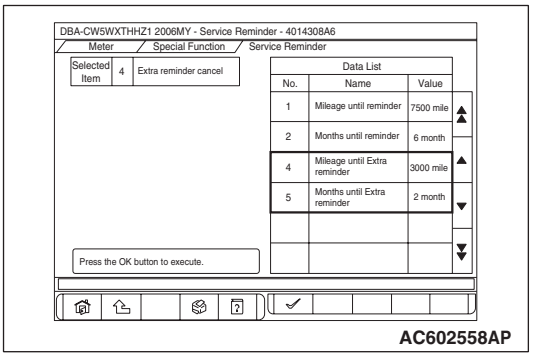
AC602558CP

4. The temporary warning period is set.

NOTE: The screen indicates that "2 month" has been added to the temporary warning period (No. 5 in the data list). (The distance of No. 4 in the data list has not been set).

4. EXTRA REMINDER CANCEL

The temporary service reminder warning period which has been set can be cancelled.

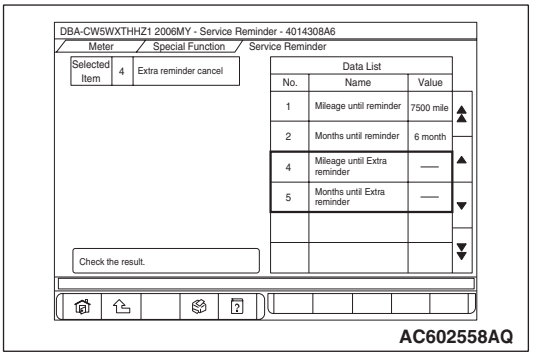


AC602558AP

1. On the "Service Reminder" screen, select "4 Extra reminder cancel."

NOTE: The screen indicates that "3000 mile" and "2 month" have been set to the temporary warning period (Nos. 4 and 5 in the data list).

2. Press the "OK" button.



AC602558AQ

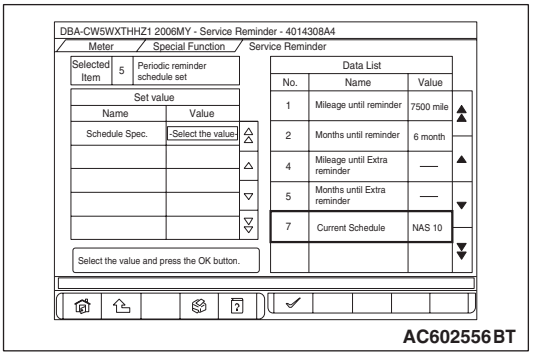
3. The temporary warning period is cancelled.

NOTE: The screen indicates that the temporary warning period (Nos. 4 and 5 in the data list) has been cancelled.

5. PERIODIC REMINDER SCHEDULE SET

The service reminder schedule can be changed.

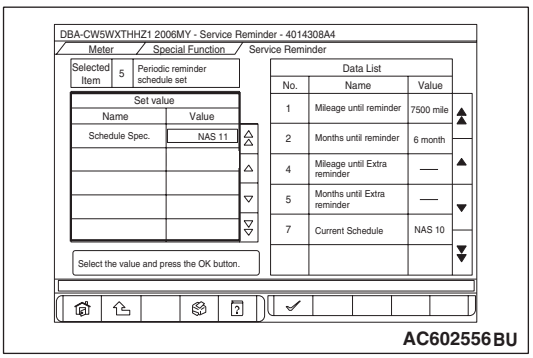
NOTE: In addition to the operation of the scan tool MB991958, the schedule can be changed by operating the multi information meter switch on the combination meter. Refer to .



AC602556BT

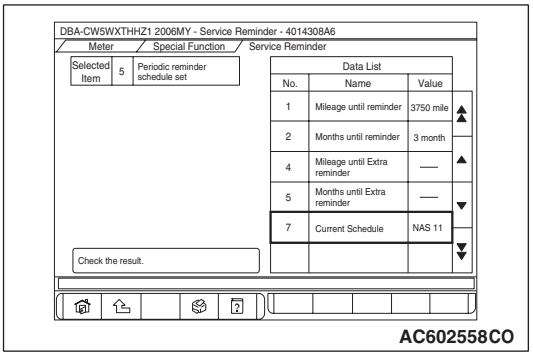
1. On the "Service Reminder" screen, select "5 Periodic reminder schedule set."

NOTE: The screen indicates that the current schedule (No. 7 in the data list) has been set to "NAS 10."



AC602556BU

2. Set the schedule to be changed from "Set value."
3. Press the "OK" button.



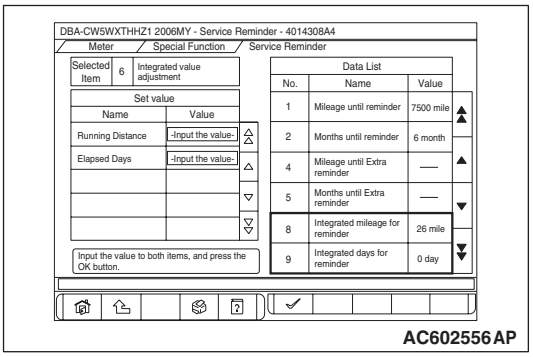
AC602558CO

4. The schedule is changed.

   NOTE: The screen indicates that the current schedule (No. 7 in the data list) has been changed to "NAS 11."

6. INTEGRATED VALUE ADJUSTMENT

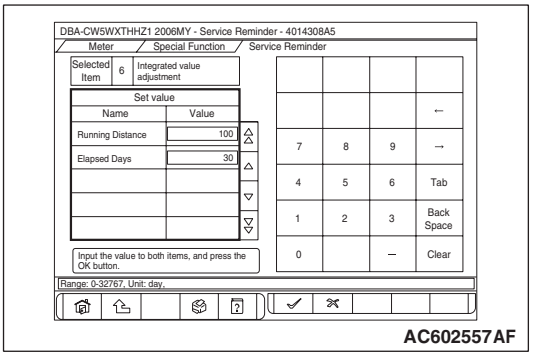
At the combination meter replacement or for the vehicle with its battery being removed for a long period (15 days or more), this adjustment is used to reset the mileage and elapsed days for check warning.



AC602556AP

1. On the "Service Reminder" screen, select "6 Integrated value adjustment."

   NOTE: The screen indicates that the current mileage and elapsed days (Nos. 8 and 9 in the data list) are "26 mile" and "0 day."

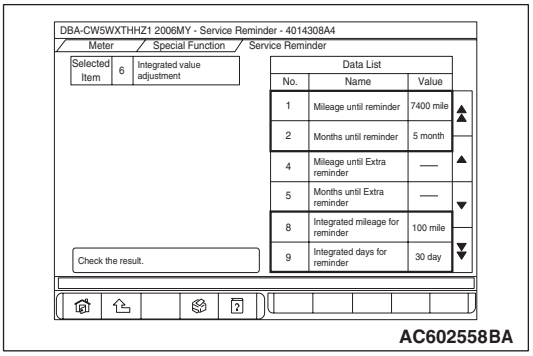


AC602557AF

2. To "Set value," input the mileage and elapsed days to be reset.

   NOTE: Always input both the mileage and elapsed days.

3. Press the "OK" button.



AC602558BA

4. The mileage and elapsed days are changed. The combination meter automatically recalculates the distance and days to the nearest next check from the settings of mileage and elapsed days for check warning, and then displays them in "Data List."

   NOTE:

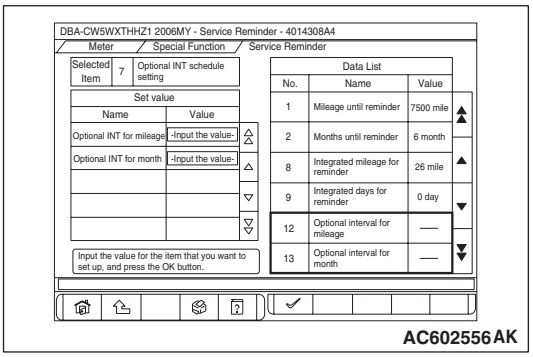
   - *The screen indicates that the current mileage and elapsed days (Nos. 8 and 9 in the data list) have been changed to "100 mile" and "30 day."*
   - *Set the elapsed days for check warning to "0 day" by the above resetting method, thereby the timer is reset indirectly.*

7. OPTIONAL INT SCHEDULE SETTING

⚠ CAUTION

If the current schedule is set to the "Optional INT" by executing "5. Periodic reminder schedule set," the "set value" cannot be input. Therefore, set it to the schedule other than the "Optional INT" once, and then execute "7. Optional INT schedule setting."

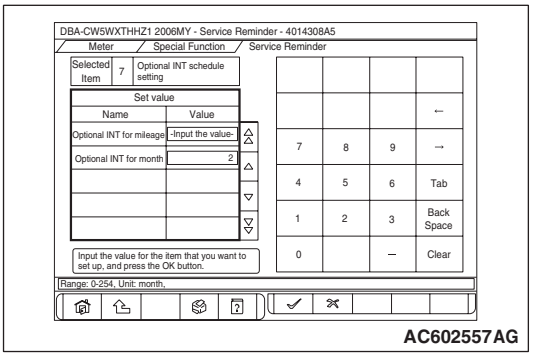
In addition to the existing schedule, the optional service reminder schedule can be set.



AC602556AK

1. On the "Service Reminder" screen, select "7 Optional INT schedule setting."

   NOTE: The screen indicates that the optional schedule (Nos. 12 and 13 in the data list) has not been set.

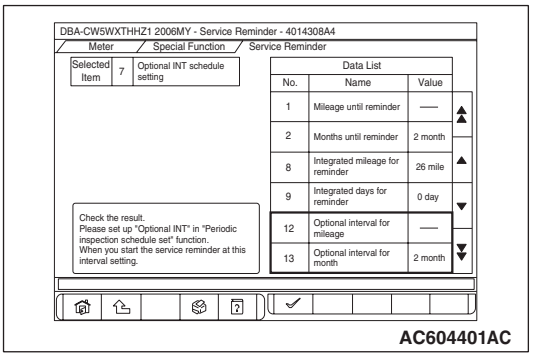


AC602557AG

2. Set the optional schedule (distance or month) of the "Set value."

   NOTE: Either input of distance or month can execute the setting.

3. Press the "OK" button.



AC604401AC

4. The optional schedule is set. The set schedule becomes effective by executing "5 Periodic reminder schedule set" and setting the schedule to "Optional INT."

   NOTE: The screen indicates that "2 month" has been added to the optional schedule (No. 13 in the data list). (The distance of No. 12 in the data list has not been set).

Relationship betwe100en the elapsed months and the elapsed days which are used by the service reminder function

Number of months	Number of days	Number of months	Number of days	Number of months	Number of days	Number of months	Number of days
1	30 –60	13	396 –425	25	761 –790	37	1,126 –1,156
2	61 –90	14	426 –456	26	791 –821	38	1,157 –1,186
3	91 –121	15	457 –486	27	822 –851	39	1,187 –1,217
4	122 –151	16	487 –516	28	852 –882	40	1,218 –1,247
5	152 –182	17	517 –547	29	883 –912	41	1,248 –1,277
6	183 –212	18	548 –577	30	913 –943	42	1,278 –1,308
7	213 –243	19	578 –608	31	944 –973	43	1,309 –1,338
8	244 –273	20	609 –638	32	974 –1,003	44	1,339 –1,369
9	274 –303	21	639 –669	33	1,004 –1,034	45	1,370 –1,399
10	304 –334	22	670 –699	34	1,035 –1,064	46	1,400 –1,430
11	335 –364	23	700 –730	35	1,065 –1,095	47	1,431 –1,460
12	365 –395	24	731 –760	36	1,096 –1,125	48	1,461 –1,491

NOTE:
- *When the number of elapsed days is 0 to 29, the number of elapsed months is 0.*
- *The combination meter performs calculation using 365.25 days for one year and 30.4375 days for one month.*

HOW TO SET BY SPECIAL OPERATION OF SWITCH

By operating the multi information meter switch of the combination meter, the service reminder warning cancellation and the schedule setting can be performed.

HOW TO CANCEL THE SERVICE REMINDER WARNING

⚠ CAUTION
- **Be careful not to execute the service reminder warning cancellation by operating the switch again after erasing the service reminder warning indicator which is currently output, because the next warning period will be cancelled.**
- **If the next warning period is cancelled by mistake, the cancelled warning period can be restored by setting a schedule different from the current one once, and then returning it to the previous schedule.**

1. Turn the ignition switch to the "OFF" position.
2. By operating the multi information meter switch, the warning period is displayed on the multi information display.
3. Press the multi information meter switch once for 1.2 seconds or longer.
4. The service reminder indicator flashes.
5. While the service reminder indicator flashes, press the multi information meter switch once for less than 1.2 seconds.
6. The service reminder indicator is turned ON, and "CLEAR" is displayed on the multi information display for 3 seconds.
7. After "CLEAR" is displayed for 3 seconds, the warning period to the next time is displayed.

HOW TO SET THE SCHEDULE

1. Turn the ignition switch to the "OFF" position.
2. By operating the multi information meter switch, the warning period is displayed on the multi information display.
3. Press the multi information meter switch once for 1.2 seconds or longer.
4. The service reminder indicator flashes.
5. While the service reminder indicator flashes, press the multi information meter switch for 1.2 seconds or longer and 3 times consecutively.
6. The service reminder indicator is turned ON, and the current schedule is displayed on the multi information display.

7. While the current schedule is displayed, press the multi information meter switch for less than 1.2 seconds and 3 times consecutively.
8. The multi information display is shifted to the schedule selection mode.
9. When the multi information meter switch is pressed for less than 1.2 seconds, the schedule is shifted, and when the multi information meter switch is pressed for 1.2 seconds or longer, the displayed schedule is set.

NOTE: For schedule, "JPN", "GCC", "EU" and "AUS" can also be selected. However, the setting shall be for "NAS" only.

10. The schedule set in Step 9 is displayed for 3 seconds, and the warning period to the next time is displayed.

SCHEDULE TABLE

Schedule	Contents of schedule	
NAS 10	Elapsed time (month)	Every 6 elapsed months
	Driving distance (miles)	Every 7,500 miles of driving distance
	Driving distance (km)	Every 12,000 km of driving distance
NAS 11	Elapsed time (month)	Every 3 elapsed months
	Driving distance (miles)	Every 3,750 miles of driving distance
	Driving distance (km)	Every 6,000 km of driving distance
NAS 20 (initial setting)	Elapsed time (month)	Every 5 elapsed months
	Driving distance (miles)	Every 5,000 miles of driving distance
	Driving distance (km)	Every 8,000 km of driving distance
NAS 21	Elapsed time (month)	Every 4 elapsed months
	Driving distance (miles)	Every 3,750 miles of driving distance
	Driving distance (km)	Every 6,000 km of driving distance
Optional INT	The optional schedule can be set. (Only scan tool MB991958 can be set.)	
OFF Display	Without function. "OFF" is displayed on the multi information display.	
Function OFF	Without function (Only scan tool MB991958 can be set.)	

NOTE: For schedule, "JPN", "GCC/EXP", "EU" and "AUS" can also be selected. However, the setting shall be for "NAS" only.

HOW TO INACTIVATE THE SERVICE REMINDER FUNCTION

By setting to "OFF Display" or "Function OFF" when the schedule is set, the service reminder function can be inactivated.

When "OFF Display" is selected

- Even if the service reminder screen is displayed by operating the multi information meter switch, "OFF" is displayed.

When "Function OFF" is selected

- Even when the check warning period is reached, the service reminder display is not displayed.
- Even with the multi information meter switch operation, the service reminder screen is not displayed.

COMBINATION METER

REMOVAL AND INSTALLATION

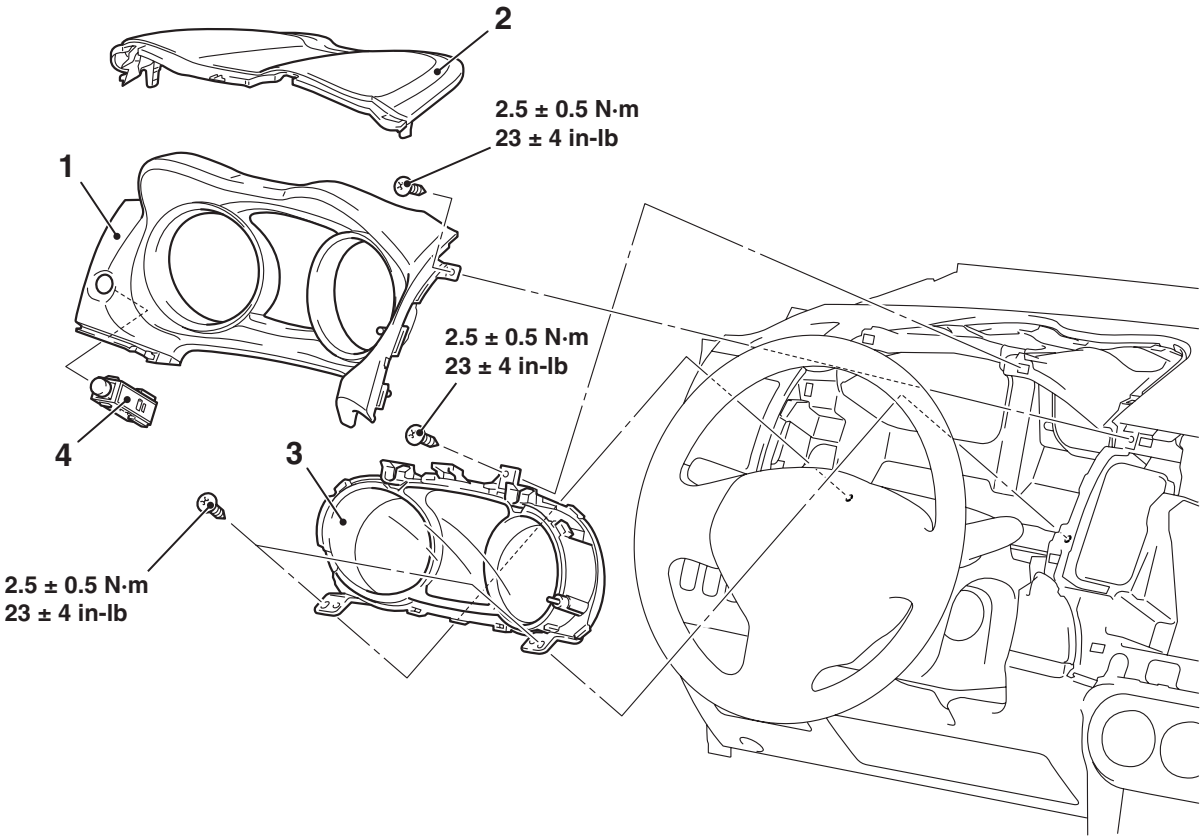
M1540201700290

⚠ CAUTION

When the combination meter is required to be replaced, the current driving distance and number of elapsed days must be entered into the meter after the replacement in order to be used for service reminder function. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool MB991958, and note them. For the operation method of scan tool MB991958, refer to P.54A-93. If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool MB991958, follow the method described below.

- **For the driving distance for check warning, use the driving distance displayed on the multi information display.**
- **For the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service remainder function start date) and current date.**

Pre-removal and Post-installation Operation
- Instrument center panel (Refer to GROUP 52A, Instrument Center Panel P.52A-7).
- Instrument panel air outlet garnish lower (LH) (Refer to GROUP 52A, Instrument lower Panel P.52A-8).



AC709245AB

Removal Steps
1. Combination meter bezel
2. Instrument meter cluster panel

Removal Steps (Continued)
3. Combination meter assembly
4. Multi information meter switch

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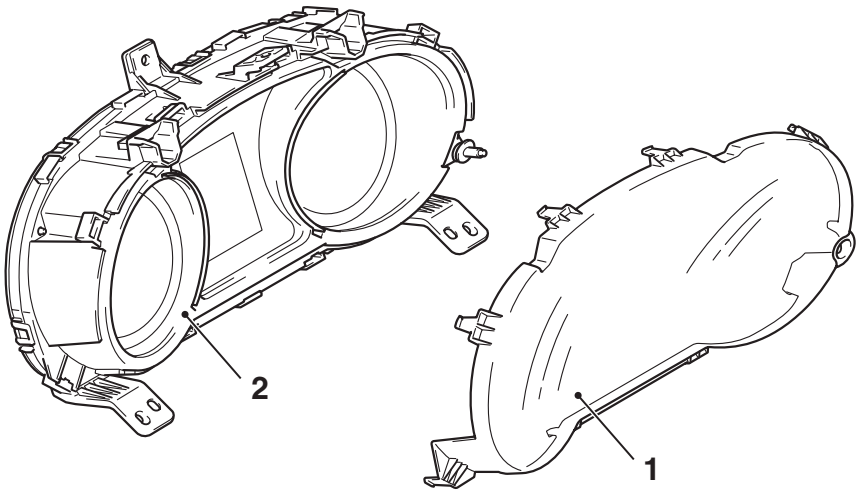
DISASSEMBLY AND ASSEMBLY

M1540201800220



AC707877AC

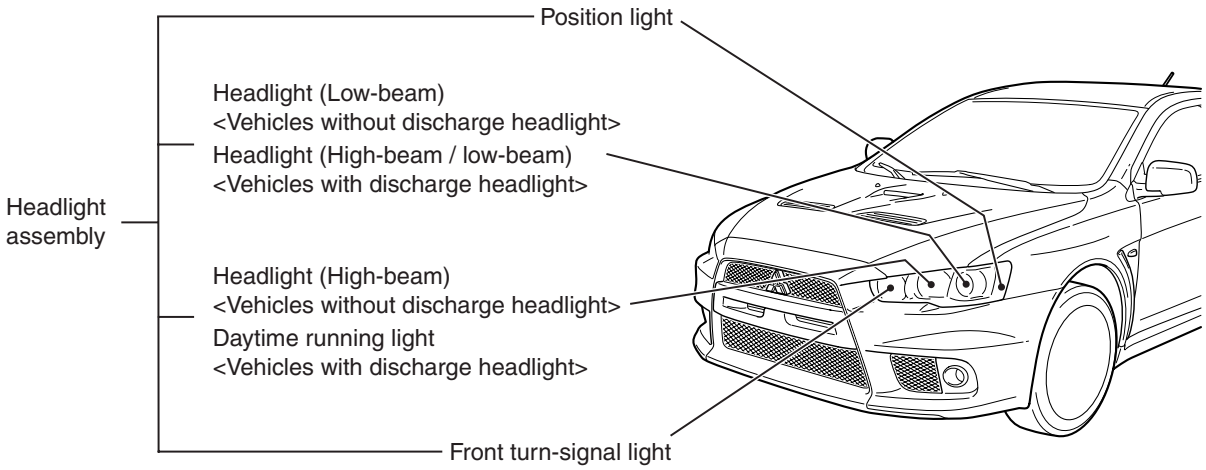
Disassembly steps

1. Combination meter glass
2. Combination meter

HEADLIGHT

GENERAL INFORMATION

M1542000100413



AC709102AC

- As for headlight assembly, a type with halogen bulbs for the high-beam and low-beam and a type with a discharge bulb for both high-beam and low-beam are established.
- The halogen bulb type headlight assembly employs the four-light type integrated with the headlight (low-beam), headlight (high-beam), front turn-signal light, and position light. The dimmed headlight (low-beam) is also used as a daytime running light.
- The discharge bulb type headlight assembly employs the two-light type integrated with the projector type headlight (low-beam/high-beam), daytime running light, front turn-signal light, and position light, and the headlight manual leveling system are adopted. The switching of headlight (low-beam/high-beam) is performed by the driving of light-shield in the projector unit using the signal from lighting switch.

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SERVICE SPECIFICATIONS

M1540100200251

Item			Standard value	Limit
Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam <Vehicles without discharge headlight>	Vertical direction	Horizontal line (H) ±50.5 mm (±2.0 inches) (±0.38 degrees angle)	–
		Horizontal direction	±126.4 mm (±5.0 inches) (±0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)	–
	Low-beam <Vehicles with discharge headlight>	Vertical direction	53.2 mm (2.1 inches) (0.4 degrees) below horizontal line (H). ±50.5 mm (±2.0 inches) (±0.38 degrees angle)	–
		Horizontal direction	Elbow point intersects the vertical line (V). ±126.4 mm (±5.0 inches) (±0.95 degrees angle)	–
Headlight intensity cd (at high-beam)			–	40,000 or more {when a screen is set 18.3m(60 ft) ahead of the vehicle}

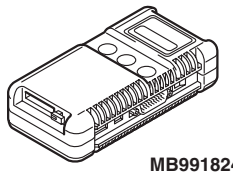
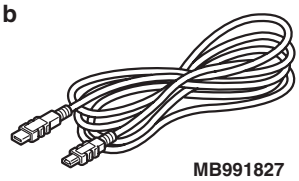
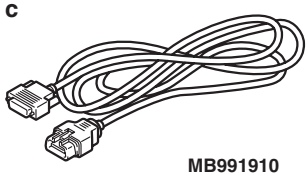
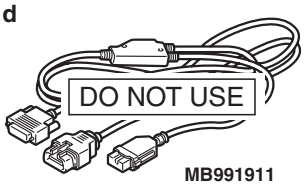
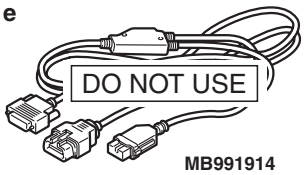
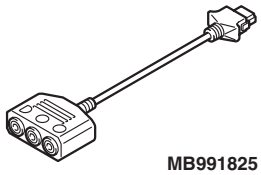
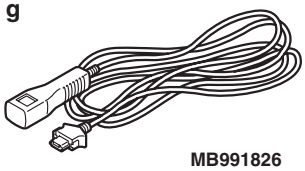
PRECAUTIONS ON HOW TO USE THE HEADLIGHT ASSEMBLY

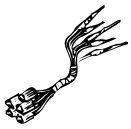
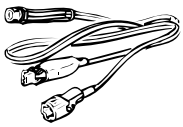
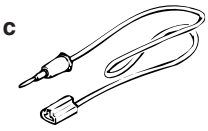
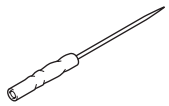
Be careful with the following items as resin lenses are used in the headlight assembly.

- Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.
- Don't tape the outer lens.
- Don't scratch the outer lens surface with a sharp edged special tool.
- Use the specified genuine bulb.

SPECIAL TOOLS

M1540104400116

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540104200167

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC FUNCTION

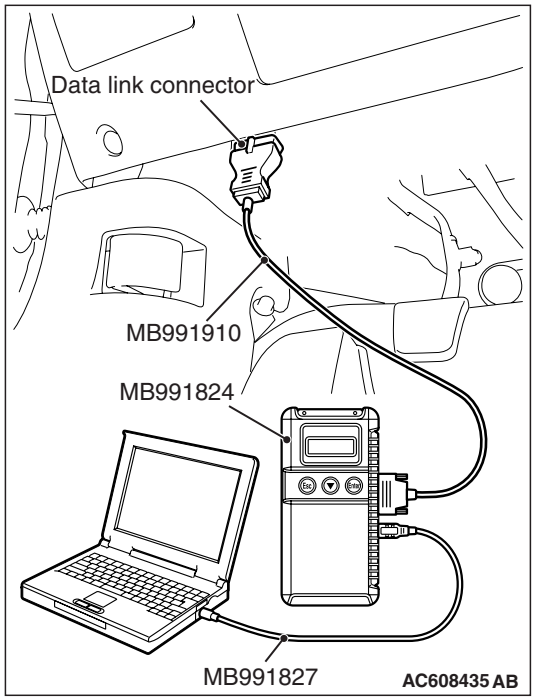
M1540104300090

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

DIAGNOSTIC TROUBLE CODE CHART

M1540101400269

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

ETACS-ECU

Diagnostic trouble code No.	Diagnostic item	Reference page
B16A2	Blown turn-signal light (LH) bulb	P.54A-107
B16A3	Turn-signal light (LH) short circuit	P.54A-113
B16A4	Blown turn-signal light (RH) bulb	P.54A-116
B16A5	Turn-signal light (RH) short circuit	P.54A-121

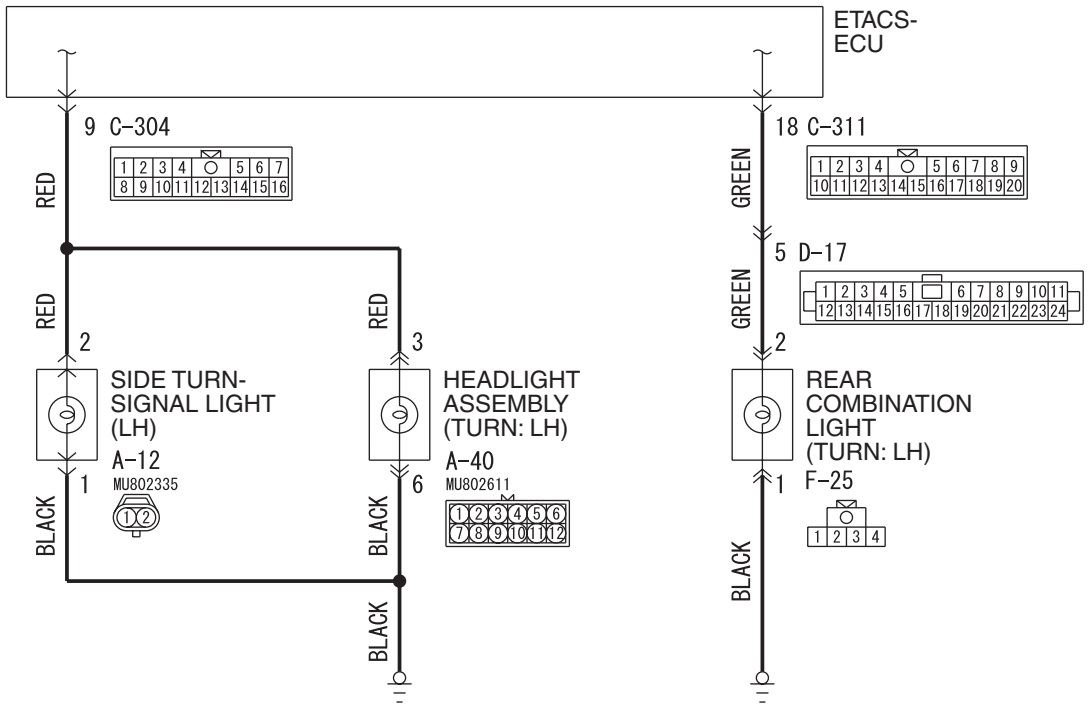
LIN

Diagnostic trouble code No.	Diagnostic item	Reference page
L0432	RLS RS adaptation error	P.54A-124
L0434	RLS rain sensor error	P.54A-125
L0436	RLS light sensor error	

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B16A2: Blown turn-signal light (LH) bulb

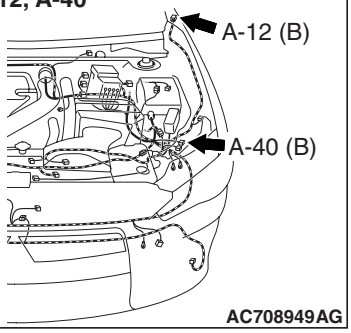
Turn-Signal Lights (LH) Circuit



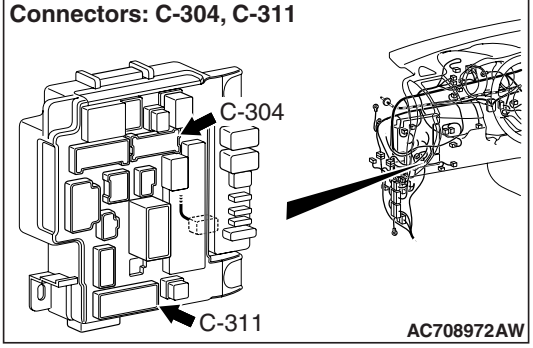
W8G54M150A

TSB Revision

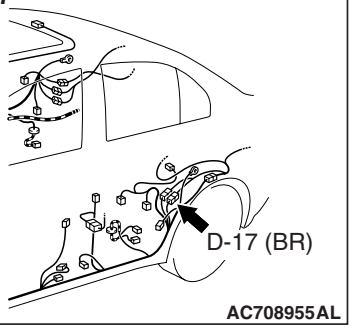
Connectors: A-12, A-40



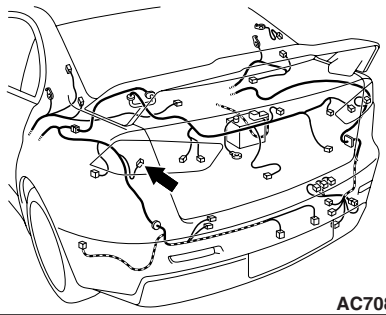
Connectors: C-304, C-311



Connector: D-17



Connector: F-25



TROUBLE JUDGMENT

When the left bulb of turn-signal light is blown, the ETACS-ECU sets DTC B16A2.

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU sets DTC B16A2 under the following conditions.

- If there is a malfunction to the left turn-signal light bulb, the blown left bulb counter counts once when the illumination of hazard or turn-signal light (left side) is attempted.
- After the bulb counter reaches "3," DTC B16A2 is set.

TROUBLESHOOTING HINTS

- Malfunction of turn-signal light bulb (left)
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

STEP 1. Bulb check.

Check whether the left turn-signal light illuminates normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the bulb of turn-signal light which does not illuminate.

STEP 2. Check headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, rear combination light (LH) connector F-25 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, rear combination light (LH) connector F-25 <rear> in good condition?

YES : Go to Step 3.

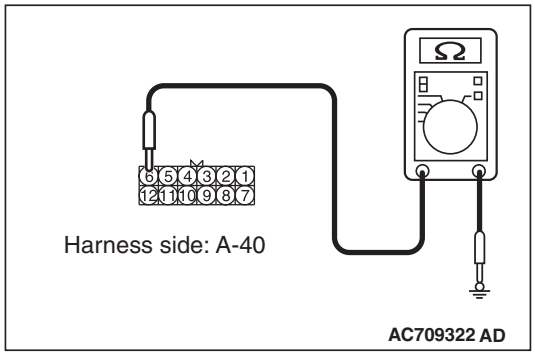
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Resistance measurement at headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, and rear combination light (LH) connector F-25 <rear>.

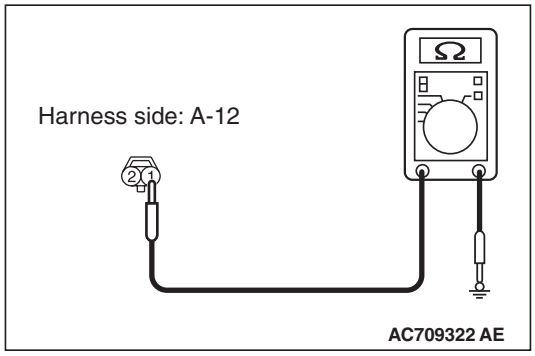
(1) Disconnect the connector, and measure at the wiring harness side.

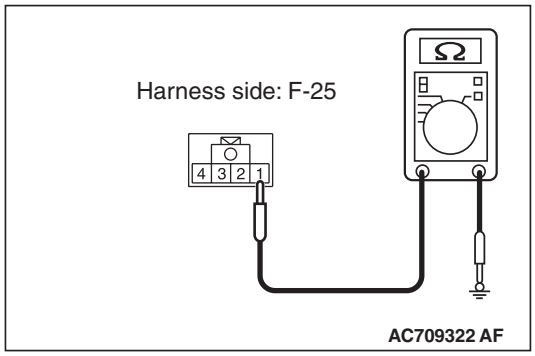
(2) Measure the resistance between the connector terminal of light which does not illuminate and ground.

- Measure the resistance between the headlight assembly (LH) connector A-40 (terminal 6) and body ground. <Front>



- Measure the resistance between side turn-signal light (LH) connector A-12 (terminal 1) and body ground. <Side>





- Measure the resistance between rear combination light (LH) connector F-25 (terminal 1) and body ground. <Rear>

OK: The measured value should be 2 Ω or less.

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

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

STEP 4. Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 6) <front>, side turn-signal light (LH) connector A-12 (terminal 1) <side>, rear combination light (LH) connector F-25 (terminal 1) <rear> and ground.

- Check the ground wires for open circuit.

Q: Are the wiring harness between headlight assembly (LH) connector A-40 (terminal 6) <front>, side turn-signal light (LH) connector A-12 (terminal 1) <side>, rear combination light (LH) connector F-25 (terminal 1) <rear> and ground in good condition?

YES : Go to Step 7.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.

STEP 5. Check ETACS-ECU connectors C-304 and C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-304 <front or side> and C-311 <rear> in good condition?

YES : Go to Step 6.
NO : Replace the bulb(s) of the light that does not illuminate.

STEP 6. Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 3) <front>, side turn-signal light (LH) connector A-12 (terminal 2) <side>, rear combination light (LH) connector F-25 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 9) <front or side> or C-311 (terminal 18) <rear>.

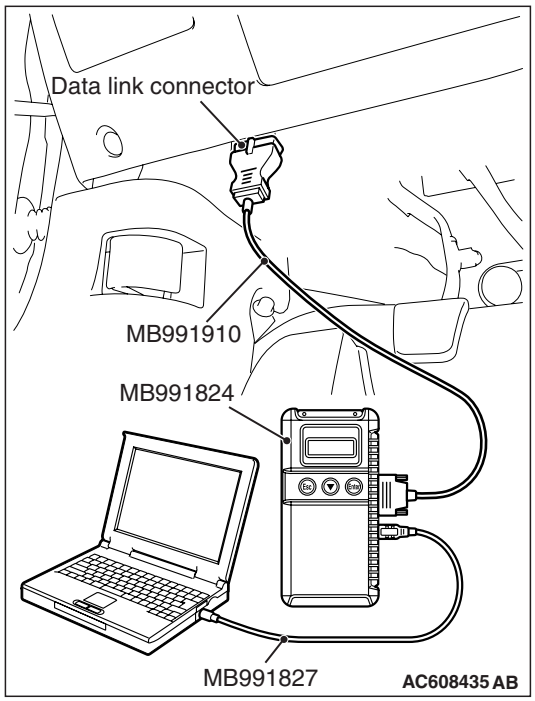
NOTE: Also check intermediate connector D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication line for open circuit.

Q: Are the wiring harness between headlight assembly (LH) connector A-40 (terminal 3) <front>, side turn-signal light (LH) connector A-12 (terminal 2) <side>, rear combination light (LH) connector F-25 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 9) <front or side> or C-311 (terminal 18) <rear> in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.



STEP 7. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

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

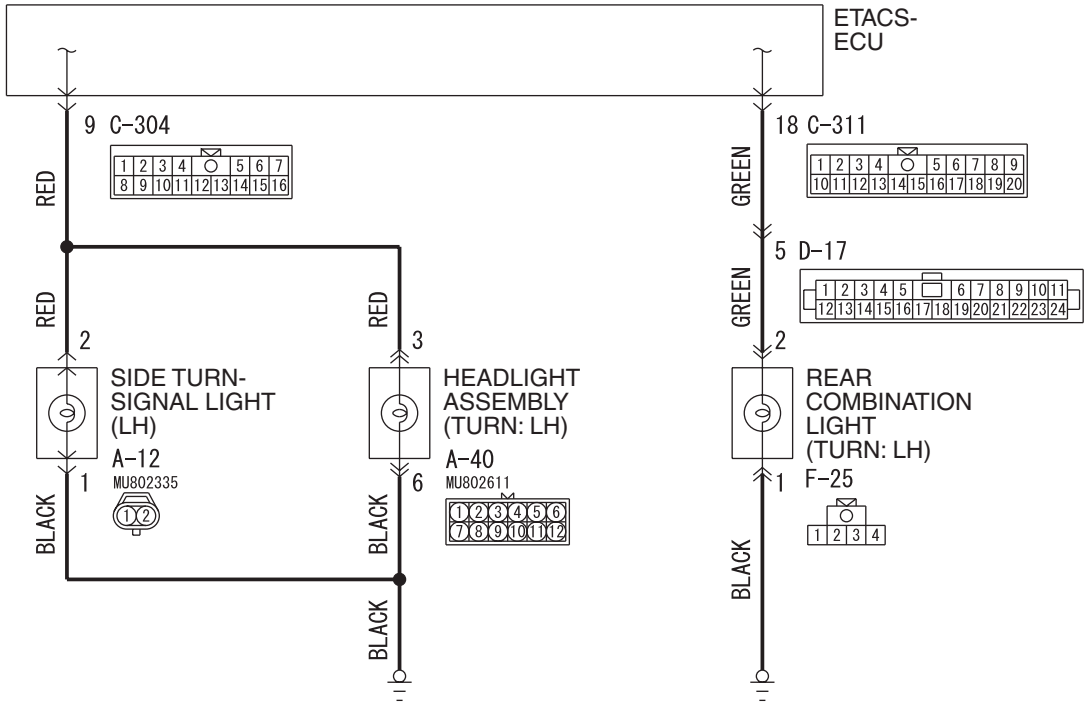
(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check whether the ETACS-ECU DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

DTC B16A3: Turn-signal light (LH) short circuit

Turn-Signal Lights (LH) Circuit



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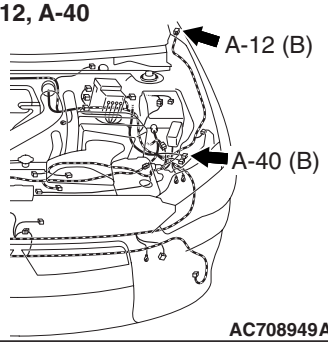
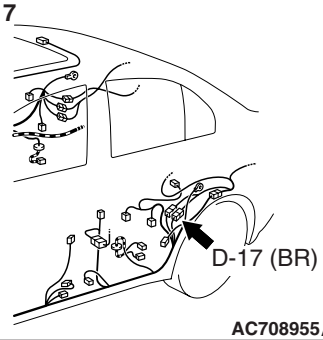
Connectors: A-12, A-40



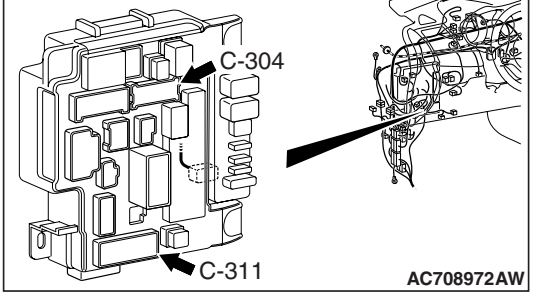
AC708949AG

Connector: D-17



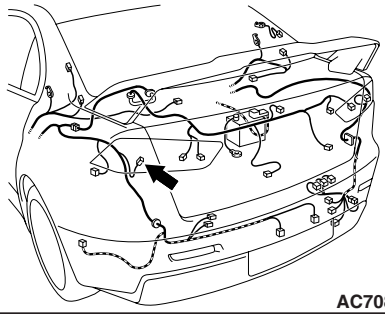
AC708955AL

Connectors: C-304, C-311



AC708972AW

Connector: F-25



AC708970AH

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TROUBLE JUDGMENT

When the left wiring harness of turn-signal light is short circuited, the ETACS-ECU sets DTC B16A3.

TECHNICAL DESCRIPTION (COMMENT)

When the short circuit is detected three times consecutively, the ETACS-ECU sets the DTC B16A3.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, rear combination light (LH) connector F-25 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, rear combination light (LH) connector F-25 <rear> in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 2. Check ETACS-ECU connectors C-304 and C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-304 <front or side> and C-311 <rear> in good condition?

YES : Go to Step 3.

NO : Replace the bulb(s) of the light that does not illuminate.

STEP 3. Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 3) <front>, side turn-signal light (LH) connector A-12 (terminal 2) <side>, rear combination light (LH) connector F-25 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 9) <front or side> or C-311 (terminal 18) <rear>.

NOTE: Also check intermediate connector D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication line for open circuit.

Q: Are the wiring harness between headlight assembly (LH) connector A-40 (terminal 3) <front>, side turn-signal light (LH) connector A-12 (terminal 2) <side>, rear combination light (LH) connector F-25 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 9) <front or side> or C-311 (terminal 18) <rear> in good condition?

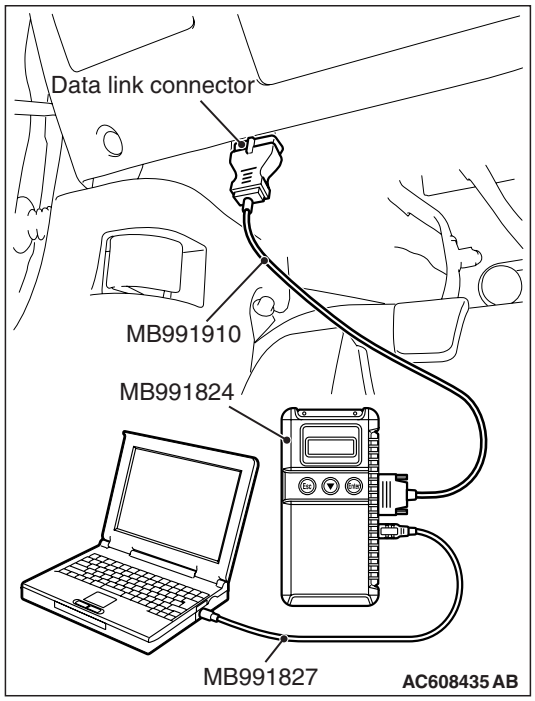
YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.

STEP 4. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

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



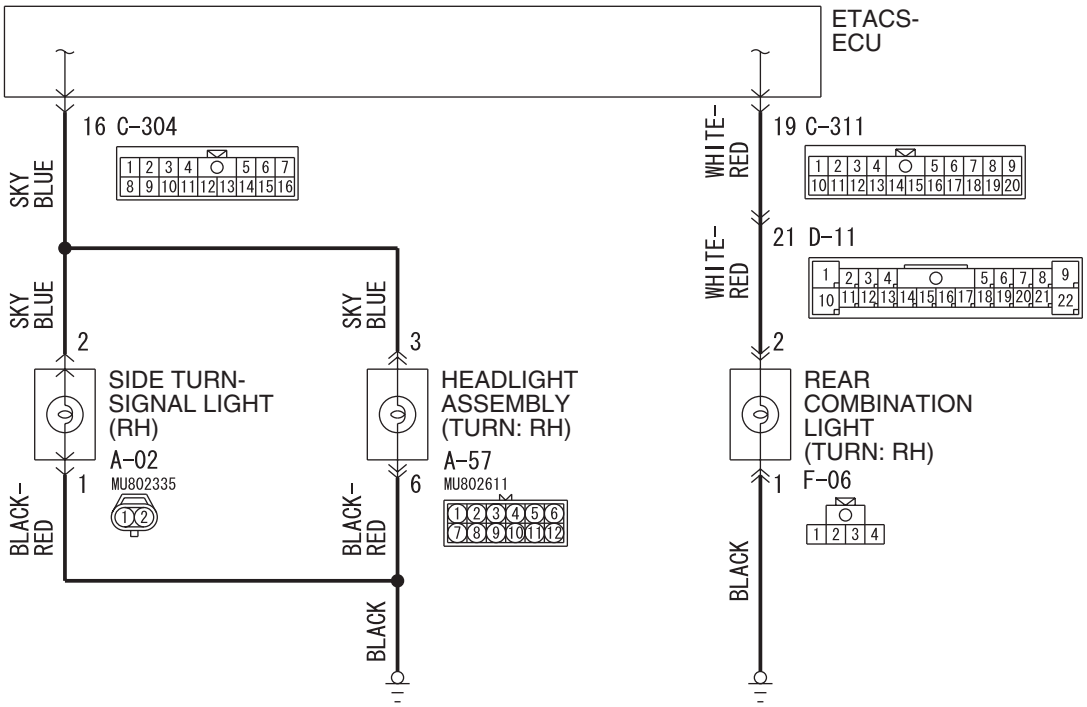
. (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

DTC B16A4: Blown turn-signal light (RH) bulb

Turn-Signal Lights (RH) Circuit



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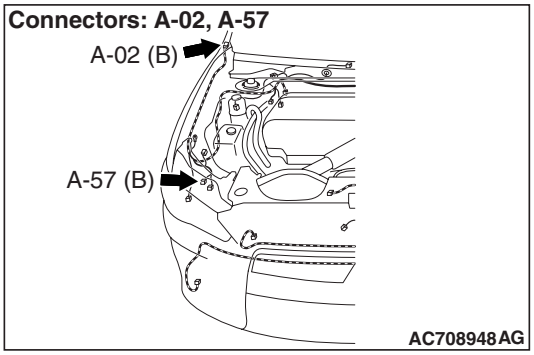
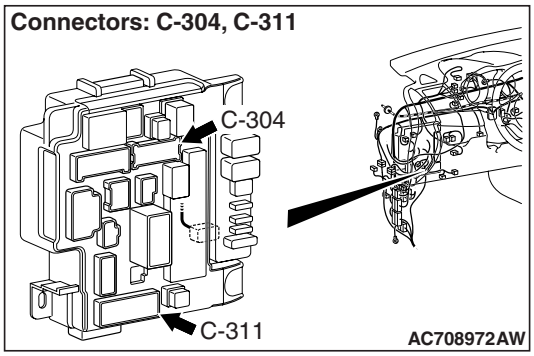
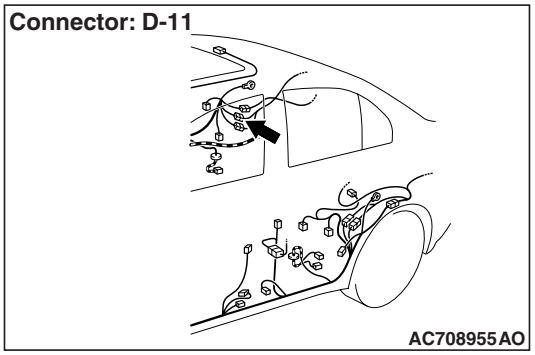
Connectors: A-02, A-57



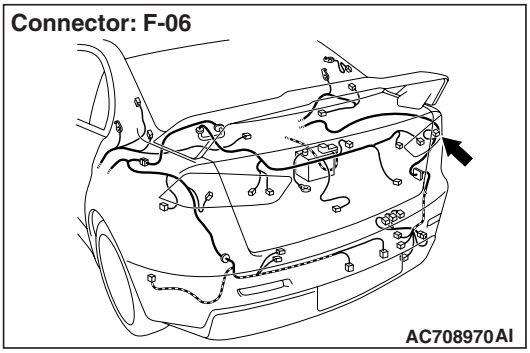
Connectors: C-304, C-311



Connector: D-11



Connector: F-06



DIAGNOSTIC FUNCTION

When the right bulb of turn-signal light is blown, the ETACS-ECU sets DTC B16A4.

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU sets DTC B16A4 under the following conditions.

- If there is a malfunction to the right turn-signal light bulb, the blown right bulb counter counts once when the illumination of hazard or turn-signal light (right side) is attempted.
- If the blown right bulb counter reaches "3," the DTC B16A4 is set.

TROUBLESHOOTING HINTS

- Malfunction of turn-signal light bulb (right side)
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

STEP 1. Bulb check.

Check whether the bulb of turn-signal light which does not illuminate is normal.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the bulb of turn-signal light which does not illuminate.

STEP 2. Check headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, rear combination light (RH) connector F-06 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, rear combination light (RH) connector F-06 <rear> in good condition?

YES : Go to Step 3.

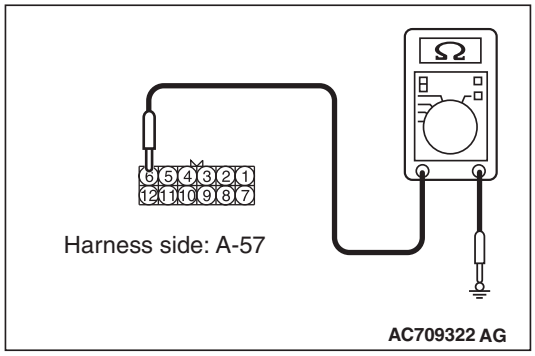
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Resistance measurement at headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, and rear combination light (RH) connector F-06 <rear>.

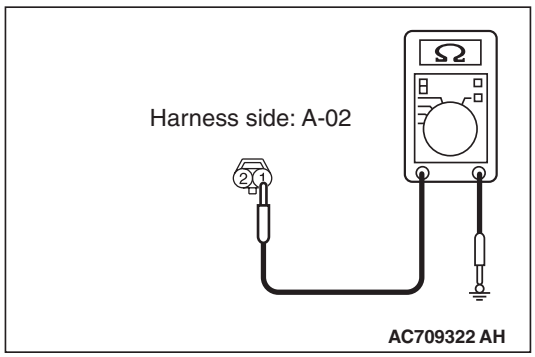
(1) Disconnect the connector, and measure at the wiring harness side.

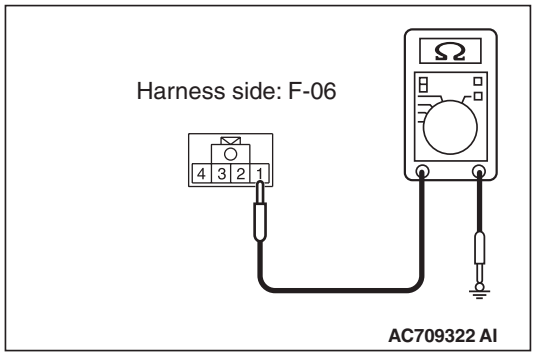
(2) Measure the resistance between the connector terminal of light which does not illuminate and body ground.

- Measure the resistance between the headlight assembly (RH) connector A-57 (terminal 6) and body ground. <Front>



- Measure the resistance between the side turn-signal light (RH) connector A-02 (terminal 1) and body ground. <side>





- Measure the resistance between the rear combination light (RH) connector F-06 (terminal 1) and body ground. <Rear>

  OK: The measured value should be continuity exists (2 ohm or less).

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

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

STEP 4. Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 6) <front>, side turn-signal light (RH) connector A-02 (terminal 1) <side>, rear combination light (RH) connector F-06 (terminal 1) <rear> and ground.

- Check the ground wires for open circuit.

Q: Are the wiring harness between headlight assembly (RH) connector A-57 (terminal 6) <front>, side turn-signal light (RH) connector A-02 (terminal 1) <side>, rear combination light (RH) connector F-06 (terminal 1) <rear> and ground in good condition?

YES : Go to Step 7.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check ETACS-ECU connectors C-304 and C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-304 and C-311 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 3) <front>, side turn-signal light (RH) connector A-02 (terminal 2) <side>, rear combination light (RH) connector F-06 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 16) <front or side> or C-311 (terminal 19) <rear>.

NOTE: Also check intermediate connector D-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-11 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication line for open circuit.

Q: Are the wiring harness between headlight assembly (RH) connector A-57 (terminal 3) <front>, side turn-signal light (RH) connector A-02 (terminal 2) <side>, rear combination light (RH) connector F-06 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 16) <front or side> or C-311 (terminal 19) <rear> in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

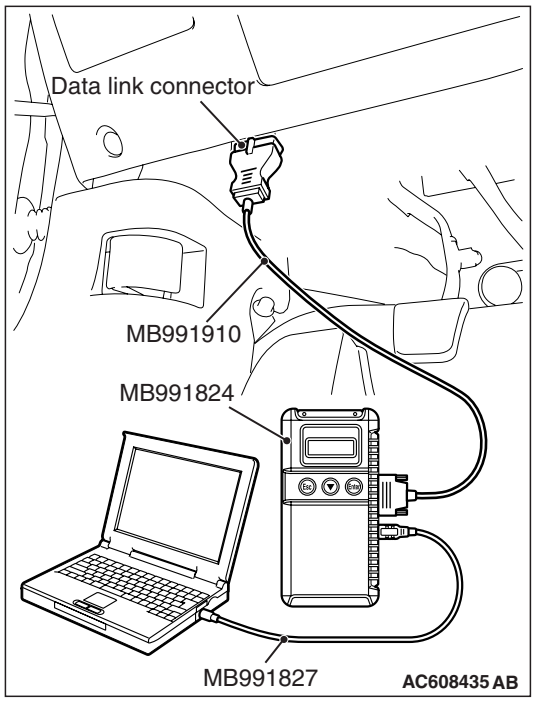
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

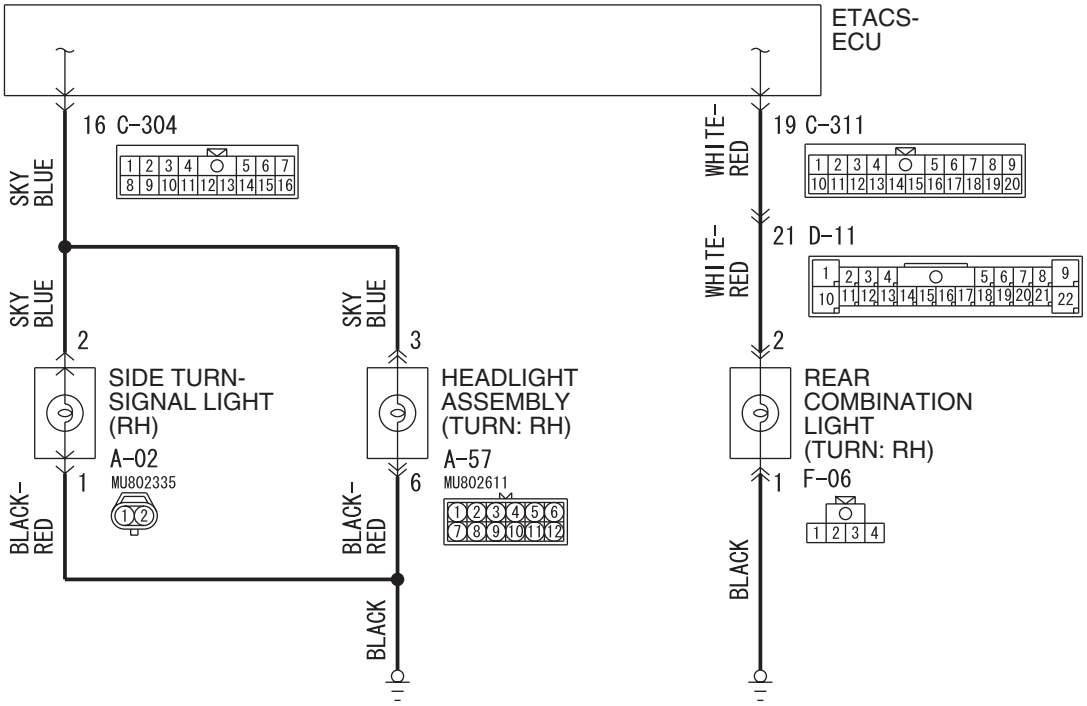
YES : Replace the ETACS-ECU.

NO : The procedure is complete.



DTC B16A5: Turn-signal light (RH) short circuit

Turn-Signal Lights (RH) Circuit



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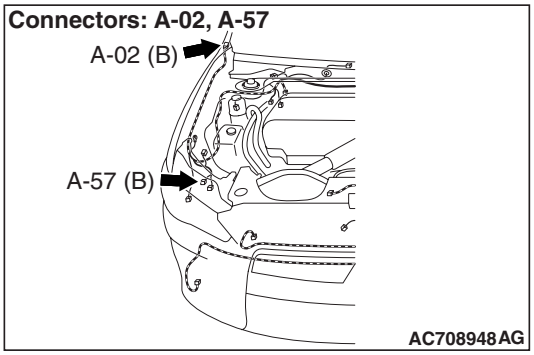
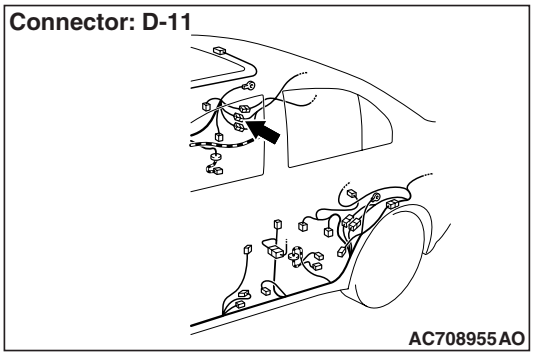
Connectors: A-02, A-57



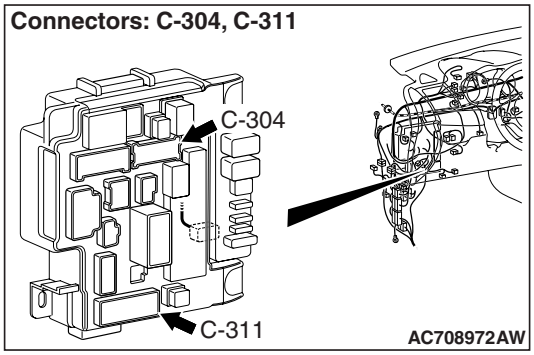
AC708948AG

Connector: D-11



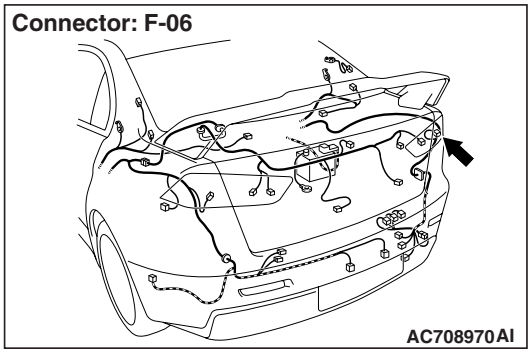
AC708955AO

Connectors: C-304, C-311



AC708972AW

Connector: F-06



AC708970AI

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TROUBLE JUDGMENT

When the right wiring harness of turn-signal light is short circuited, the ETACS-ECU sets DTC B16A5.

TECHNICAL DESCRIPTION (COMMENT)

When the short circuit is detected three times consecutively, the ETACS-ECU sets the DTC B16A5.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, rear combination light (RH) connector F-06 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, rear combination light (RH) connector F-06 <rear> in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 2. Check ETACS-ECU connectors C-304 and C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-304 <front or side> and C-311 <rear> in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 3) <front>, side turn-signal light (RH) connector A-02 (terminal 2) <side>, rear combination light (RH) connector F-06 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 16) <front or side> or C-311 (terminal 19) <rear>.

NOTE: Also check intermediate connector D-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-11 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication line for open circuit.

Q: Are the wiring harness between headlight assembly (RH) connector A-57 (terminal 3) <front>, side turn-signal light (RH) connector A-02 (terminal 2) <side>, rear combination light (RH) connector F-06 (terminal 2) <rear> and ETACS-ECU connector C-304 (terminal 16) <front or side> or C-311 (terminal 19) <rear> in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

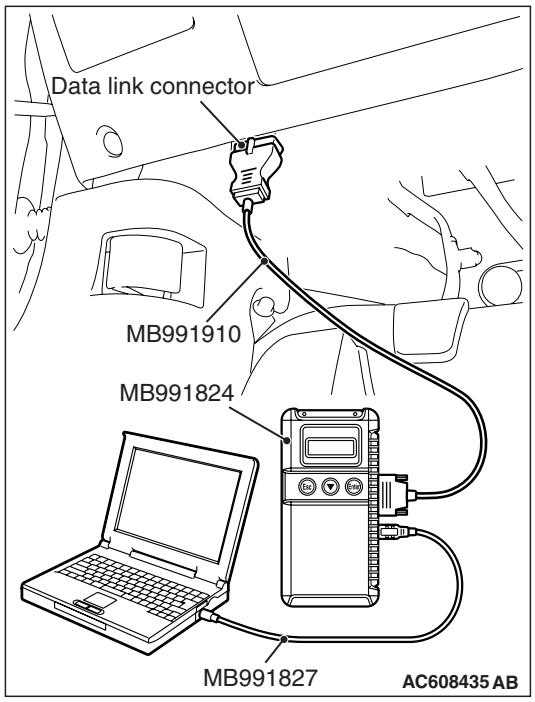
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.

NO : The procedure is complete.



DTC L0432: RLS RS Adaptation Error

TROUBLE JUDGMENT

When the lighting control sensor is installed with the wrong procedure, DTC L0432 is stored by LIN.

TECHNICAL DESCRIPTION (COMMENT)

The lighting control sensor may have been installed with the wrong procedure.

- Incorrect installation procedure: Connect the connector before mounting the lighting control sensor onto the optical coupler of the windshield.
- Correct installation procedure: Mount the lighting control sensor onto the optical coupler of the windshield. Wipe the windshield surface thoroughly, and check that the surface is dry. Then, connect the connector.

TROUBLESHOOTING HINTS

- Lighting control sensor improperly installed
- Lighting control sensor (rain sensor) abnormal operation

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 (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Disconnect the connector from the lighting control sensor, and connect the connector to the lighting control sensor again. Then, check again if the DTC is set to LIN.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."

(2) Disconnect the connector of lighting control sensor, and connect it again.

NOTE: When connecting the connector, follow the correct installation procedure.

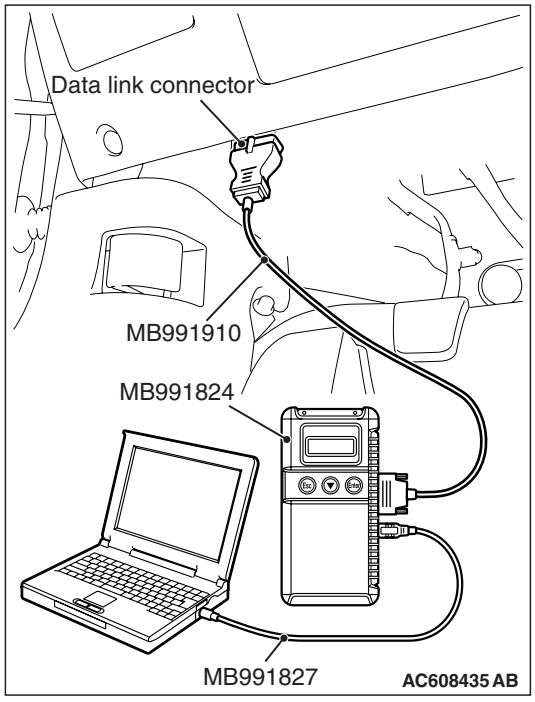
(3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.

(4) Check if DTC is set.

Q: Is the DTC set?

YES : Go to Step 2.

NO : The lighting control sensor is installed with the wrong procedure.



TSB Revision

STEP 2. Lighting control sensor installation surface check
Visually check the presence of scratches or air bubbles <diameter of 5 mm (0.2 inch) or more> on the windshield to which the lighting control sensor is installed. In addition, visually check that the optical coupler is not broken and that the lighting control sensor can be installed.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the windshield (Refer to GROUP 42A – Windshield P.42A-19)

STEP 3. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.
Check again if the DTC is set to LIN.
(1) Wipe the windshield surface of the lighting control sensor section thoroughly, and check that the surface is dry. Then, perform the lighting control sensor (rain sensor) adaptation. <Refer to GROUP 51 –Lighting Control Sensor (Rain Sensor) Adaptation P.51-76>.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the lighting control sensor.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

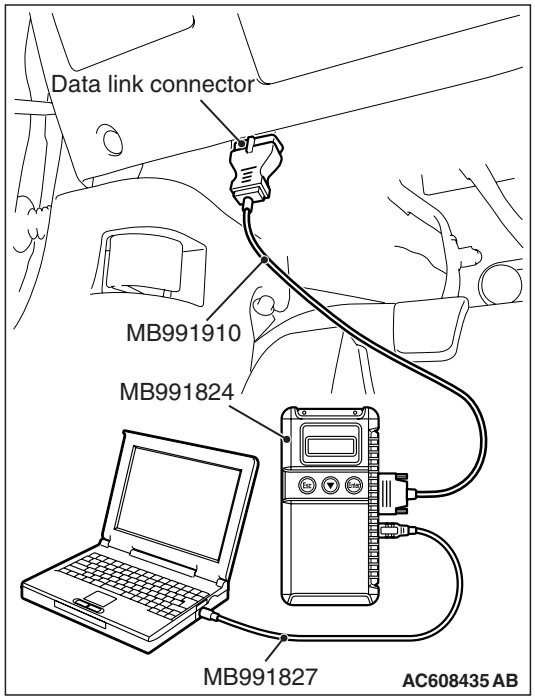
DTC L0434: RLS Rain Sensor Error
DTC L0436: RLS Light Sensor Error

TROUBLE JUDGMENT
If a trouble occurs in the lighting control sensor, DTC L0434 and L0436 are stored to LIN.

TECHNICAL DESCRIPTION (COMMENT)
Malfunction of the lighting control sensor

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 (Vehicles with CAN communication system)



Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Check again if the DTC is set to LIN.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-105."
(2) Erase the DTC.
(3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(4) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the lighting control sensor.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TROUBLE SYMPTOM CHART

M1540102100302

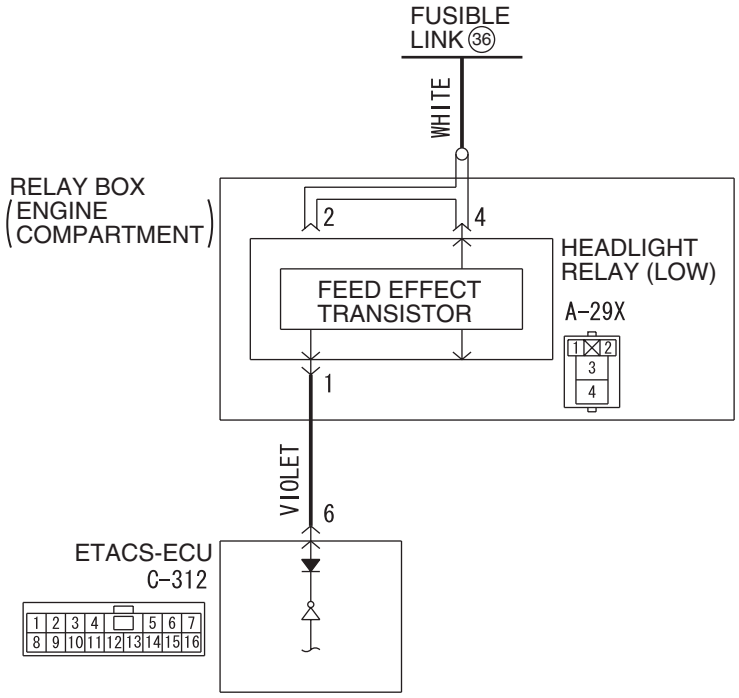
Inspection Procedure No.	Trouble symptom			Reference page
1	Headlight and taillight	All the headlights (low-beam) do not illuminate..		P.54A-128
2		All the headlights (high-beam) do not illuminate..		P.54A-133
3		The headlights illuminate at low-beam (high-beam does not illuminate) regardless of the lighting switch positions.		P.54A-137
4		Headlights do not illuminate when the passing switch is operated.		P.54A-138
5		One of the headlights does not illuminate.		P.54A-140
6		High-beam indicator light does not illuminate normally.		P.54A-144
7		The headlight automatic shutdown function does not work normally.		P.54A-146
8		Daytime running light function does not work normally.	Halogen type headlight	P.54A-149
			Discharge type headlight	P.54A-153
9		Any of the tail lights, side marker lights or the license plate lights does not Illuminate.		P.54A-160
10		The auto light function does not work normally.		P.54A-166
11	Turn-signal light	All the turn-signal lights do not illuminate.		P.54A-168
12		The comfort flashing function does not work normally.		P.54A-170
13		The turn-signal indicator lights do not illuminate.		P.54A-172

SYMPTOM PROCEDURES

Inspection Procedure 1: All the headlights (low-beam) do not illuminate.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Headlight Relay (Low-Beam) Circuit <Halogen Type>



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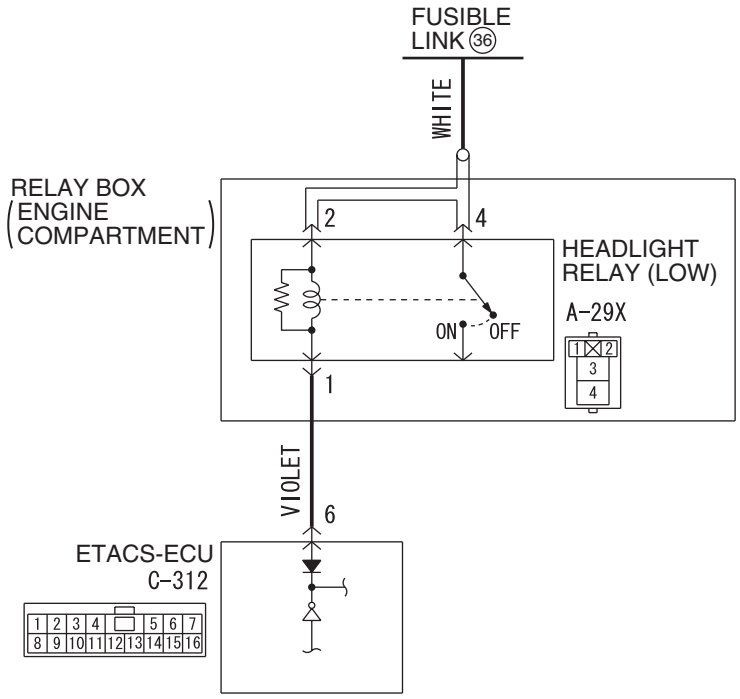
Headlight Relay (Low-Beam) Circuit <Discharge Type>



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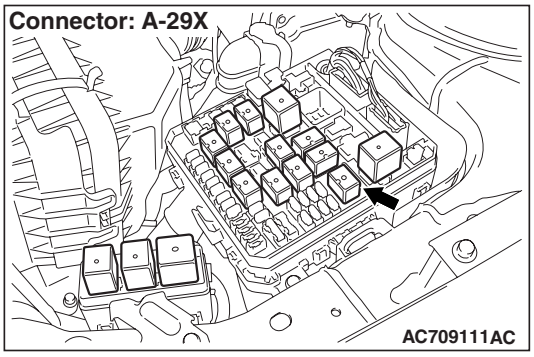

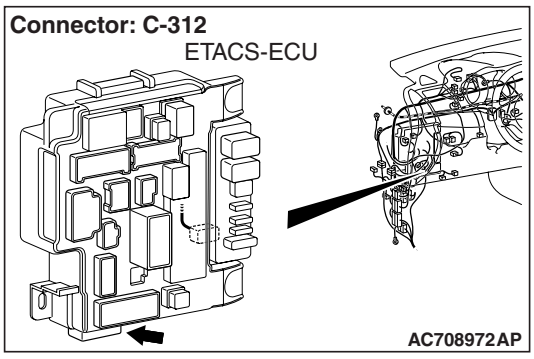

TECHNICAL DESCRIPTION (COMMENT)

If both headlights (low-beam) do not illuminate normally, the headlight switch input circuit, headlight relay (LOW), or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of headlight relay (LOW)
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)

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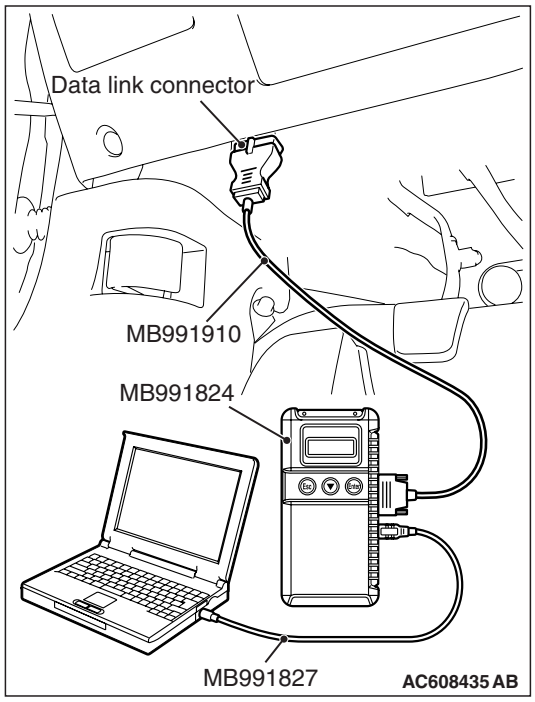
- MB991824: Vehicle Communication Interface (V.C.I.)
- MB991827 M.U.T.-III USB Cable
- MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 2.

STEP 2. Using scan tool MB991958, check data list

Use the ETACS-ECU service data to check the signals related to the operation of headlight function.

- Turn the headlight switch to the ON position.

Item No.	Item name	Normal condition
Item 341	Headlight switch	ON

Q: Do scan tool MB991958 display the items "Headlight switch" as normal condition?

YES : Go to Step 3.
NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-639.

STEP 3. Check headlight relay (LOW) connector A-29X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight relay (LOW) connector A-29X in good condition?

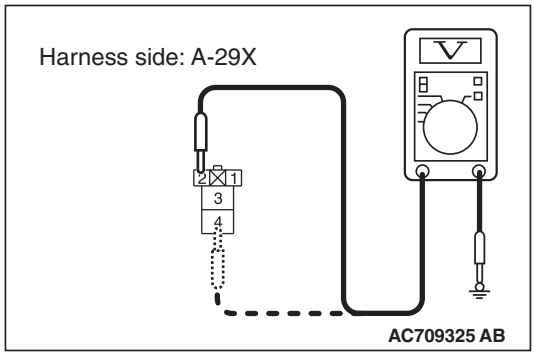
YES : Go to Step 4.
NO : Repair the damaged parts.

STEP 4. Check the battery power supply circuit to the headlight relay (LOW). Measure the voltage at headlight relay (LOW) connector A-29X.

⚠ CAUTION
The top and bottom of the headlight relay (LOW) are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

(1) Disconnect headlight relay (LOW) connector A-29X and measure the voltage available at the relay box side of the connector.
(2) Measure the voltage between terminal 2 or 4 and ground.

OK: The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

STEP 5. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 6.
NO : Repair the damaged parts.

STEP 6. Check the wiring harness between headlight relay (LOW) connector A-29X (terminal 1) and ETACS-ECU connector C-312 (terminal 6).

- Check the ground wires for open circuit.

Q: Is the wiring harness between headlight relay (LOW) connector A-29X (terminal 1) and ETACS-ECU connector C-312 (terminal 6) in good condition?

YES (Vehicles without discharge headlight) : Go to Step 8.
YES (Vehicles with discharge headlight) : Go to Step 9.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the low-beam headlights illuminate normally.

TSB Revision

STEP 7. Check the wiring harness between headlight relay (LOW) connector A-29X (terminal 2 or 4) and the fusible link (36).

- Check the power supply line for open circuit.

Q: Is the wiring harness between headlight relay (LOW) connector A-29X (terminal 2 or 4) and fusible link (36) in good condition?

YES (Vehicles without discharge headlight) : Go to Step 8.

YES (Vehicles with discharge headlight) : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the low-beam headlights illuminate normally.

STEP 8. Temporarily replace the headlight relay (LOW), and retest the system.

Temporarily replace the headlight relay (LOW), check that the headlights (low-beam) illuminate normally.

Q: Does the headlights (low-beam) do not illuminate in good condition?

YES : Replace the headlight relay (LOW).

NO : Replace the ETACS-ECU.

STEP 9. Check of headlight relay (LOW).

Refer to P.54A-189.

Q: Is the headlight relay (LOW) in good condition?

YES : Go to Step 10.

NO : Replace the headlight relay (LOW). Verify that the low-beam headlights illuminate normally.

STEP 10. Retest the system

Q: Does the headlights (low-beam) do not illuminate in good condition?

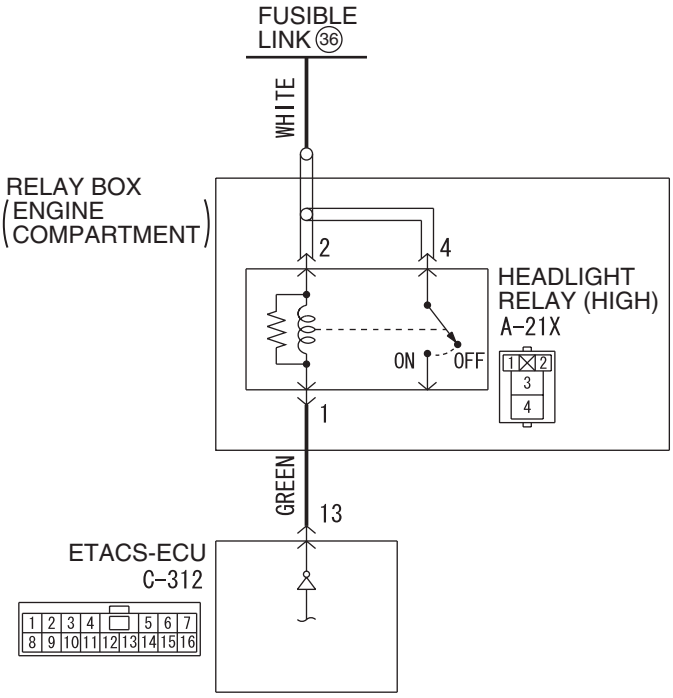
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: All the headlights (high-beam) do not illuminate.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Headlight Relay (High-Beam) Circuit



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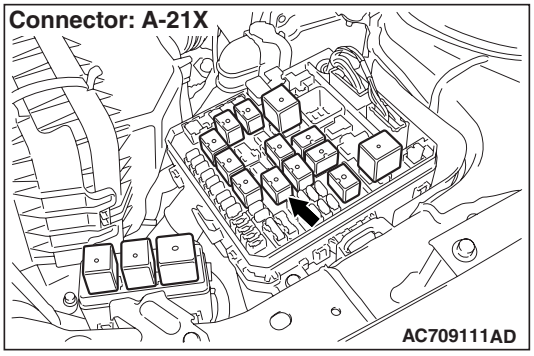
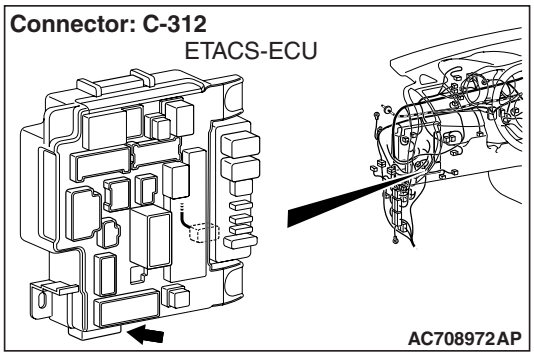




TECHNICAL DESCRIPTION (COMMENT)

If both headlights (high-beam) do not illuminate normally, the headlight switch input circuit, headlight relay (HIGH), or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of headlight relay (HIGH)
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

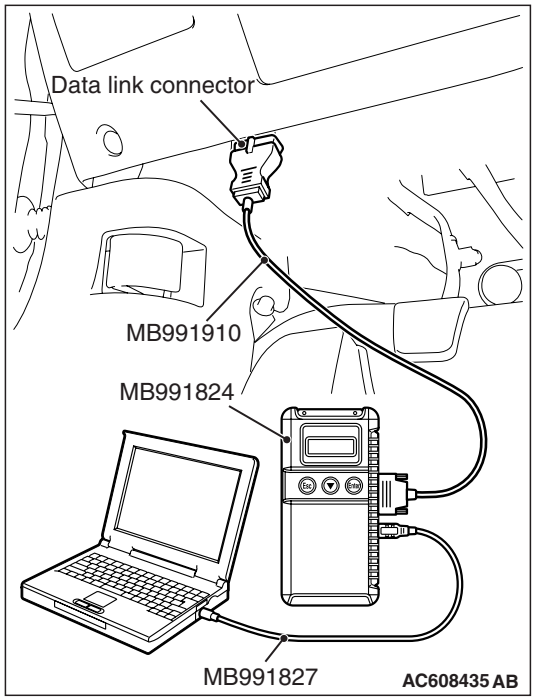
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 2.



STEP 2. Using scan tool MB991958, check data list

Use the ETACS-ECU service data to check the signals related to the operation of headlight function.

- Turn the headlight switch to the ON position.

Item No.	Item name	Normal condition
Item 341	Headlight switch	ON

- Turn the passing switch to the ON position.

Item No.	Item name	Normal condition
Item 350	Headlight switch (flasher)	ON

Q: Do scan tool MB991958 display the items "Headlight switch" and "Headlight switch (flasher)" as normal condition?

YES : (Normal conditions are displayed for all items.) Go to Step 3.

NO : (Normal condition is not displayed.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-639.

STEP 3. Check headlight relay (HIGH) connector A-21X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight relay (HIGH) connector A-21X in good condition?

YES : Go to Step 4.

NO : Repair the damaged parts.

STEP 4. Check of headlight relay (HIGH)

Refer to P.54A-189.

Q: Is the headlight relay (HIGH) in good condition?

YES : Go to Step 5.

NO : Replace the headlight relay (HIGH). Verify that the high-beam headlights illuminate normally.

STEP 5. Check the battery power supply circuit to the headlight relay (HIGH). Measure the voltage at headlight relay (HIGH) connector A-21X

⚠ CAUTION

The top and bottom of the headlight relay (HIGH) are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

(1) Disconnect headlight relay (HIGH) connector A-21X and measure the voltage available at the relay box side of the connector.

(2) Measure the voltage between terminal 2 or 4 and ground.

OK: The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 8.

STEP 6. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 7.

NO : Repair the damaged parts.

STEP 7. Check the wiring harness between headlight relay (HIGH) connector A-21X (terminal 1) and ETACS-ECU connector C-312 (terminal 13).

- Check the ground wires for open circuit.

Q: Is the wiring harness between headlight relay (HIGH) connector A-21X (terminal 1) and ETACS-ECU connector C-312 (terminal 13) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the high-beam headlights illuminate normally.

STEP 8. Check the wiring harness between headlight relay (HIGH) connector A-21X (terminal 2 or 4) and the fusible link (36).

- Check the power supply line for open circuit.

Q: Is the wiring harness between headlight relay (HIGH) connector A-21X (terminal 2 or 4) and fusible link (36) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the high-beam headlights illuminate normally.

STEP 9. Retest the system

Q: Does the headlights (high-beam) do not illuminate in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 3: The headlights illuminate at low-beam (high-beam does not illuminate) regardless of the lighting switch positions.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate only at low-beam regardless of the lighting switch position, the headlight fail-safe function may be active.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

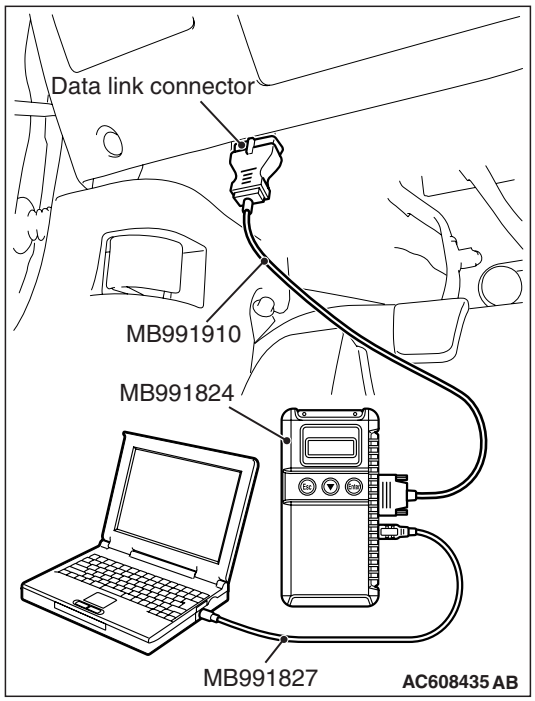
DIAGNOSIS

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 (Vehicles with CAN communication system)

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

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



(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 2.

STEP 2. Retest the system

Q: Do the headlights illuminate normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the ETACS-ECU.

Inspection Procedure 4: Headlights do not illuminate when the passing switch is operated.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If both headlights (low-beam and high-beam) do not illuminate, the passing switch input circuit or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check that the headlights operate.

Check that the low-beam and high-beam headlights illuminate normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 1 "All the headlights (low-beam) do not illuminate." P.54A-128 and Inspection Procedure 2 "All the headlights (high-beam) do not illuminate." P.54A-133.

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

⚠ CAUTION

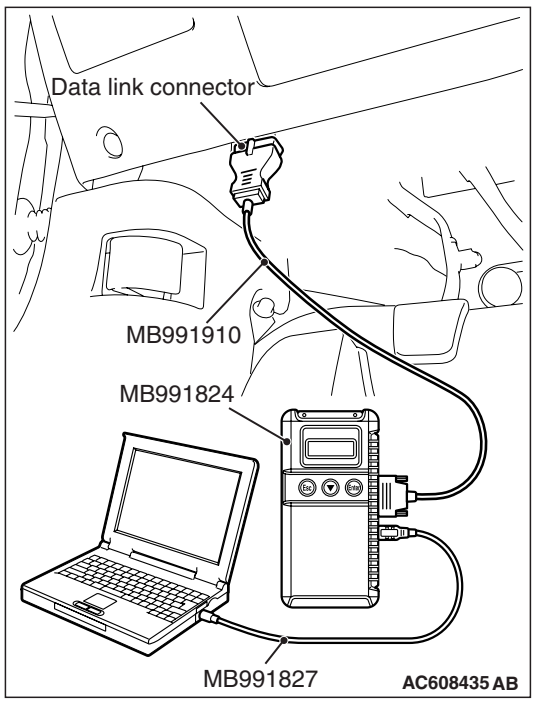
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.

NO : Go to Step 3.



STEP 3. Retest the system

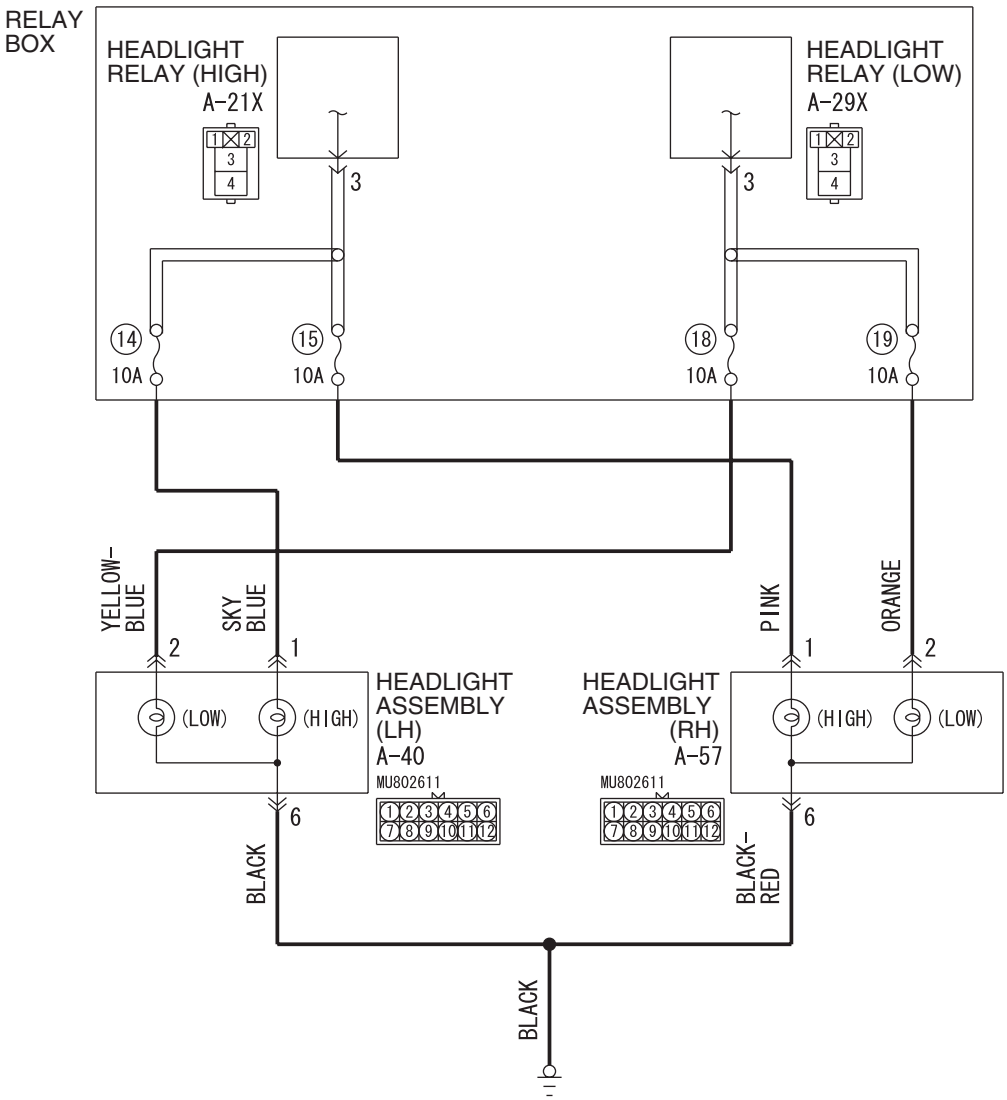
Q: Do the headlights (low-beam and high-beam) illuminate normally when turning ON the passing switch?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 5: One of the headlights does not illuminate.

Headlights Circuit <Halogen Type>



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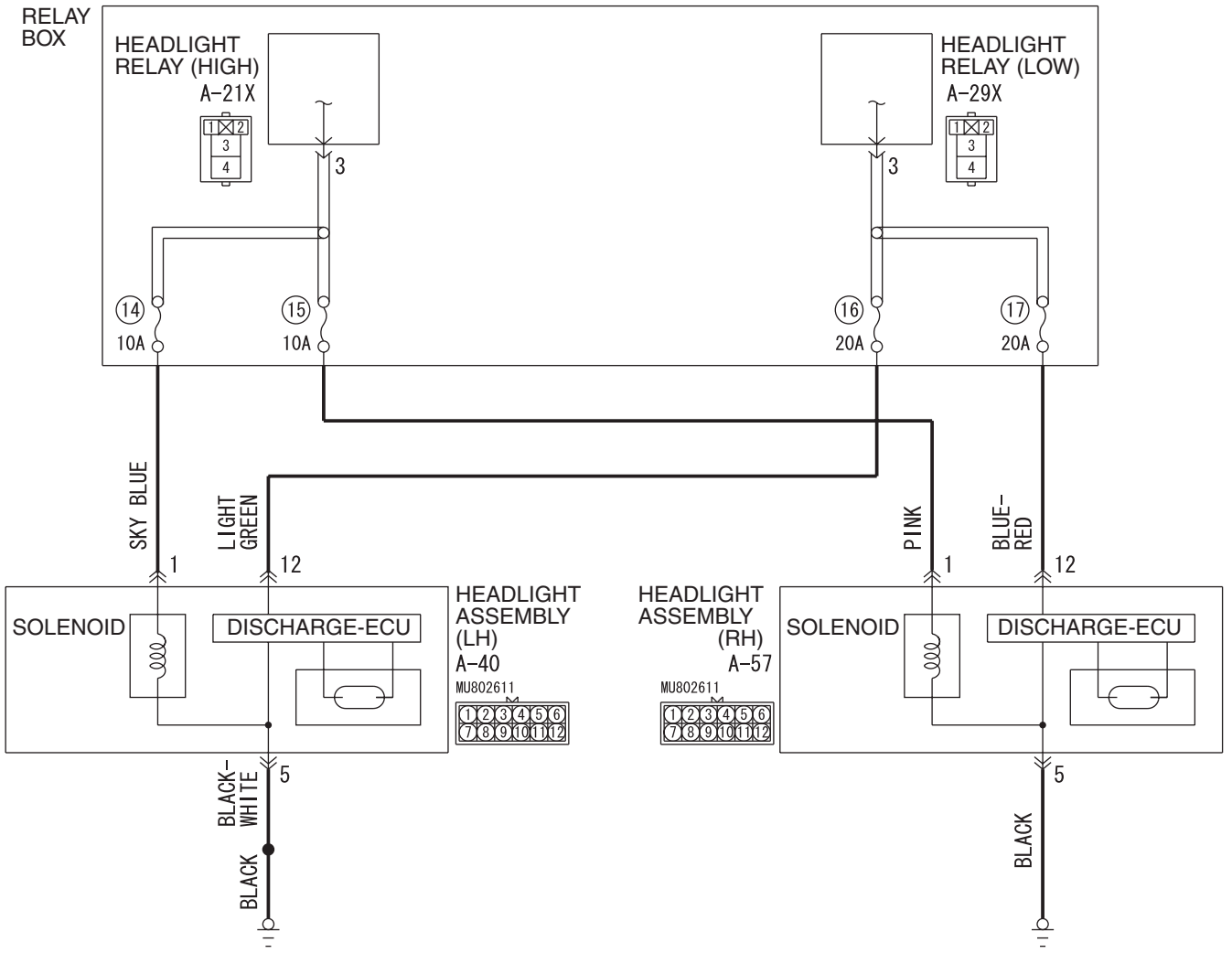
Headlights Circuit <Discharge Type>



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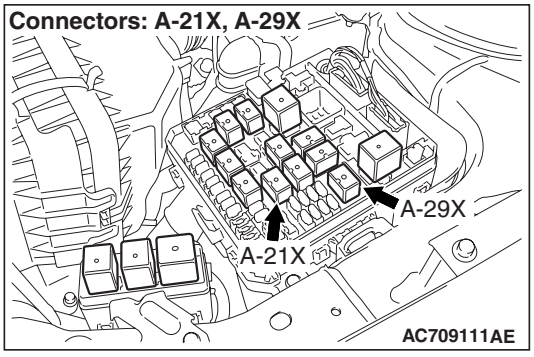
Connectors: A-21X, A-29X



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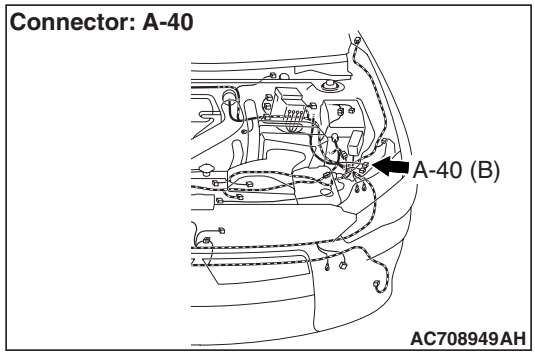
Connector: A-40



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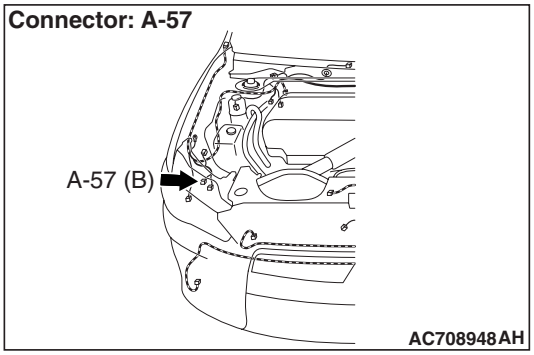
TSB Revision



TROUBLESHOOTING HINTS

- Malfunction of the headlight bulbs
- Malfunction of the headlight assembly
- Damaged harness wires and connectors

TECHNICAL DESCRIPTION (COMMENT)

If any of the headlights does not Illuminate, the wiring harness, connector(s), or the bulb may have a problem, or the fuse may be burned out.

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check headlight assembly connector A-40 <LH> or A-57 <RH>, for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly connector A-40 <LH> or A-57 <RH> in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 2. Check bulb.

Check the bulb(s) of headlight that does not illuminate.

NOTE: If discharge-type lower beam headlights do not illuminate, their bulbs cannot be inspected. In this case, assume the bulbs to be normal and proceed with steps.

Q: Is the bulb in good condition?

YES : Go to Step 3.

NO : Replace the bulb(s) of the light that does not illuminate.

STEP 3. Check the wiring harness between headlight assembly connector and headlight relay connector or wiring harness between headlight assembly connector and ground.

Check the power supply or ground line for open circuit.

<Halogen type headlight>

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 2) and headlight relay (LOW) connector A-29X (terminal 3). <LH-LOW>
- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 1) and headlight relay (HIGH) connector A-21X (terminal 3). <LH-HIGH>
- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 6) and ground. <LH-LOW and HIGH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 2) and headlight relay (LOW) connector A-29X (terminal 3). <RH-LOW>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 1) and headlight relay (HIGH) connector A-21X (terminal 3). <RH-HIGH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 6) and ground. <RH-LOW and HIGH>

<Discharge type headlight>

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 12) and headlight relay (LOW) connector A-29X (terminal 3). <LH-LOW>
- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 1) and headlight relay (HIGH) connector A-21X (terminal 3). <LH-HIGH>
- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 5) and ground. <LH-LOW and HIGH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 12) and headlight relay (LOW) connector A-29X (terminal 3). <RH-LOW>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 1) and headlight relay (HIGH) connector A-21X (terminal 3). <RH-HIGH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 5) and ground. <RH-LOW and HIGH>

Q: Is the wiring harness between headlight assembly connector and headlight relay connector in good condition?

YES : Replace the headlight assembly that does not illuminate.

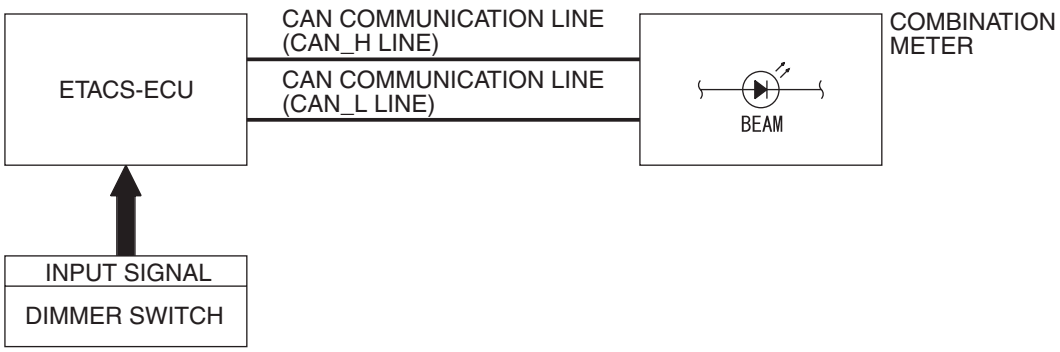
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.

TSB Revision

Inspection Procedure 6: High-beam indicator light does not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

High-Beam Indicator Light Circuit



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TECHNICAL DESCRIPTION (COMMENT)

If the high-beam indicator does not illuminate normally, the harness in the CAN bus lines, connector(s), ETACS-ECU, or combination meter may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Malfunction of combination meter
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

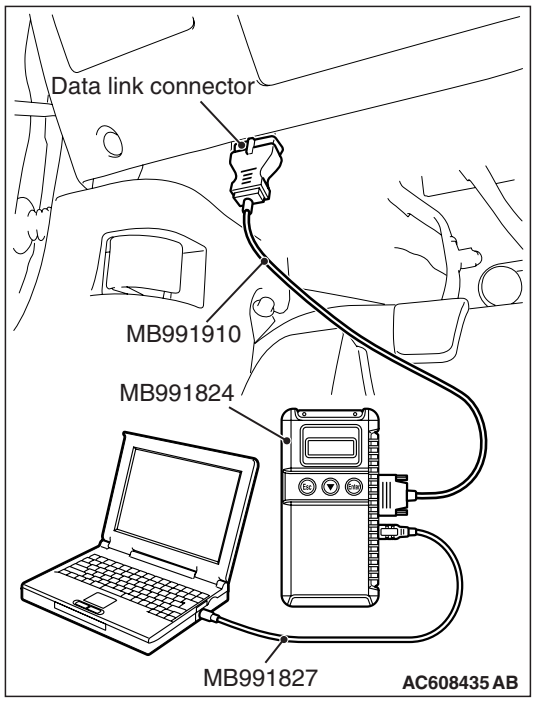
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check of headlight (high-beam).

Check that the headlights (high-beam) illuminate/extinguish normally when the lighting switch is operated.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to Inspection Procedure 2 "All the headlights (high-beam) do not illuminate P.54A-133."



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check actuator test.

(1) Turn the ignition switch to the "ON" position.
(2) Perform the actuator test for the combination meter, and check that the high-beam indicator light illuminates (Refer to combination meter P.54A-82).
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Replace the ETACS-ECU.
NO : Replace the combination meter.

Inspection Procedure 7: The headlight automatic shutdown function does not work normally.

⚠ **CAUTION**

Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

OPERATION

The ETACS-ECU operates this function in accordance with the input signals from column switch (lighting switch), ignition switch (IG1), and front door switch (LH).

TECHNICAL DESCRIPTION (COMMENT)

If the headlight automatic shutdown function does not work normally, the above described input circuits or ETACS-ECU may have a problem. Also, it may be possible that the headlight automatic shutdown function is set to "Disable" through configuration function.

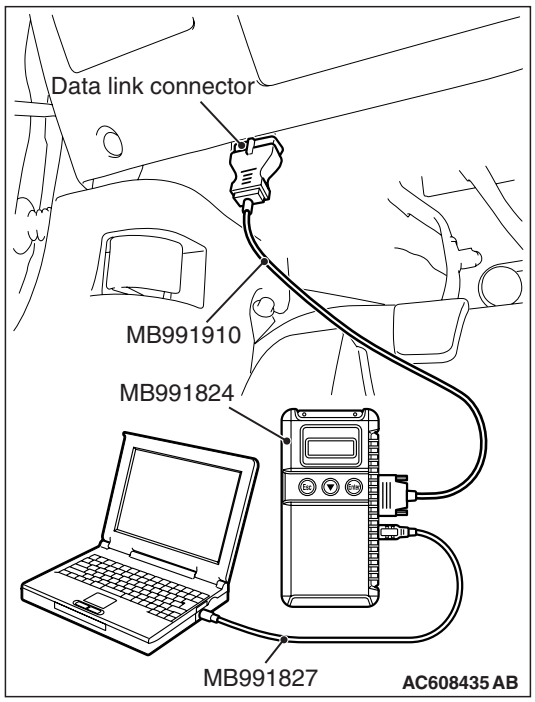
TROUBLESHOOTING HINTS

- Malfunction of front door switch (LH)
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



STEP 1. Using scan tool MB991958, Check the configuration function.

Use the ETACS-ECU configuration function to check that the "Head light auto cut customize" is set to "C-spec."

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Use the ETACS-ECU configuration function to check that the "Headlight auto cut customize" is set to "C-spec."
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Use the ETACS-ECU configuration function to set the "Headlight auto cut customize" to "C-spec." (Refer to P.54A-183).

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

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

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to ETACS, Diagnosis P.54A-582).
NO : Go to Step 3.

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

Use the ETACS-ECU service data to check the signals related to the operation of headlight automatic shutdown function.

- Turn the ignition switch to the LOCK (OFF) position.
- Illuminate the headlights.

Item No.	Item name	Normal condition
Item 206	Head light LO ON duty	100%
Item 254	IG voltage	0 V

- Open the driver's door.

Item No.	Item name	Normal condition
Item 256	Dr door ajar switch	Open

Q: Does scan tool MB991958 display the items "Head light LO ON duty", "IG voltage" and "Dr door ajar switch" as normal condition?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-639.

STEP 4. Retest the system

Check that the headlight automatic shutdown function works normally.

Q: Is the check result normal?

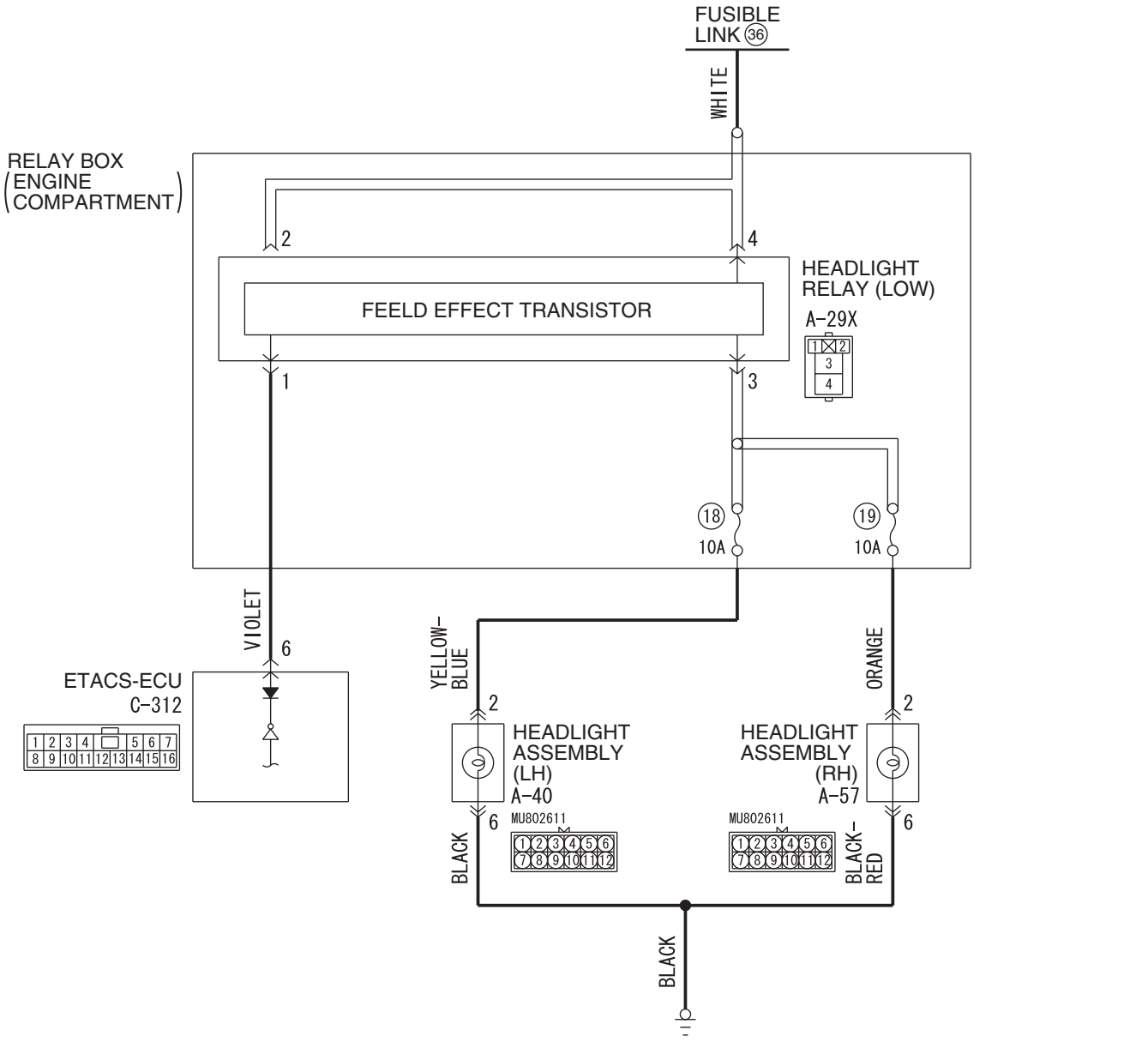
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 8: Daytime running light function does not work normally. <Halogen type headlight>

⚠ CAUTION
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

Daytime Running Light Circuit



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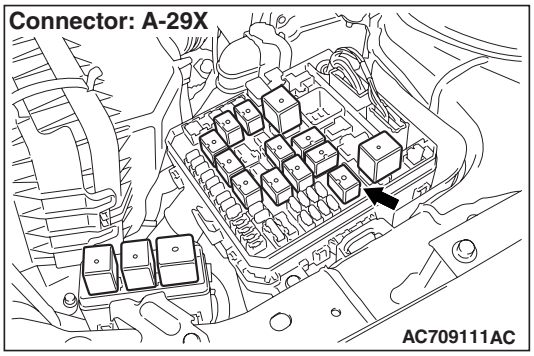
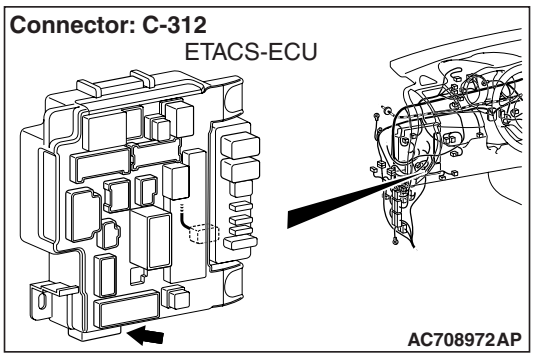
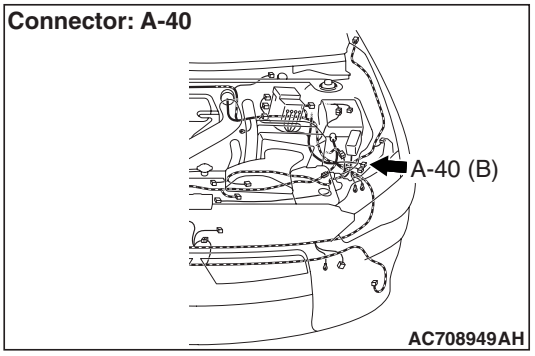
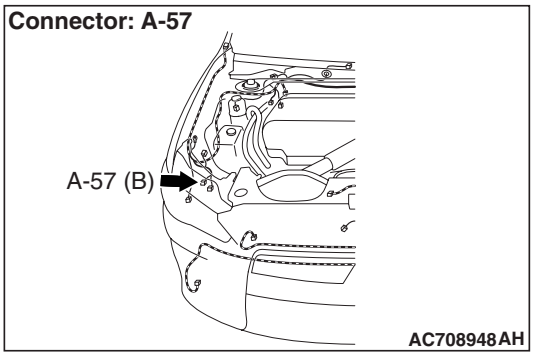
TSB Revision









TECHNICAL DESCRIPTION (COMMENT)

If the daytime running light function does not work, connector(s), wiring harness in the CAN bus lines, the engine control module, the combination meter, the headlight relay (LOW), the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- Malfunction of headlight relay (LOW)
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

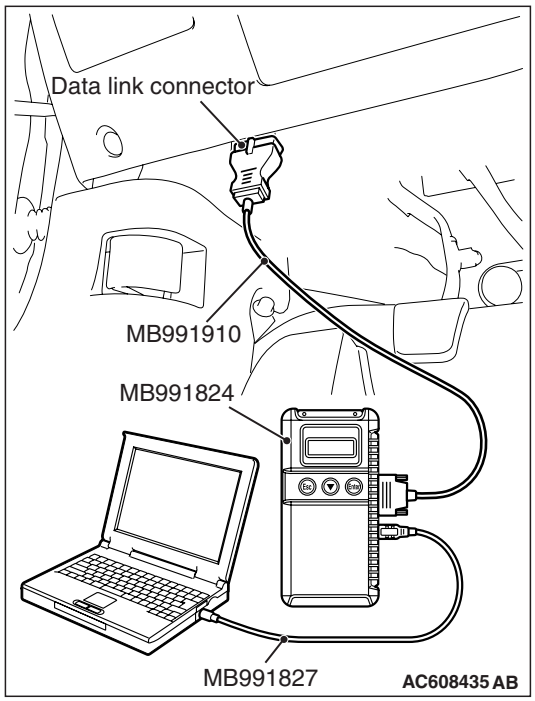
STEP 1. Verify the headlight (low-beam) operation.

Check to see that the headlight (low-beam) lights up properly when operating the dimmer switch while the headlight switch is ON.

Q: Do the headlights (low-beam) illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 1 "All the headlights (low-beam) do not illuminate normally P.54A-128."



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

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

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 4.

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

Check whether engine control module DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for engine control module DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the MFI system. Refer to GROUP 13A, Diagnosis P.13A-44.
NO : Go to Step 5.

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STEP 5. Check the parking brake switch.

Check the input signals from the parking brake switch.

(1) Turn the ignition switch to the "ON" position.
(2) Check that the brake warning light on the combination meter goes off when the parking brake lever is released.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the brake warning light go off?

YES : Go to Step 6.
NO : Refer to GROUP 36, Diagnosis, Inspection Procedure 3 P.36-7. Verify that the daytime running light function does not work normally.

STEP 6. Temporarily replace the headlight relay (LOW), and retest the system.

After temporarily replacing the headlight relay (LOW), with the ignition switch being in the ON position (engine is running), release the parking brake (parking brake switch: OFF) and turn the lighting switch to the OFF or TAIL position, and then check if the headlights (low-beam) illuminate with a reduced beam state.

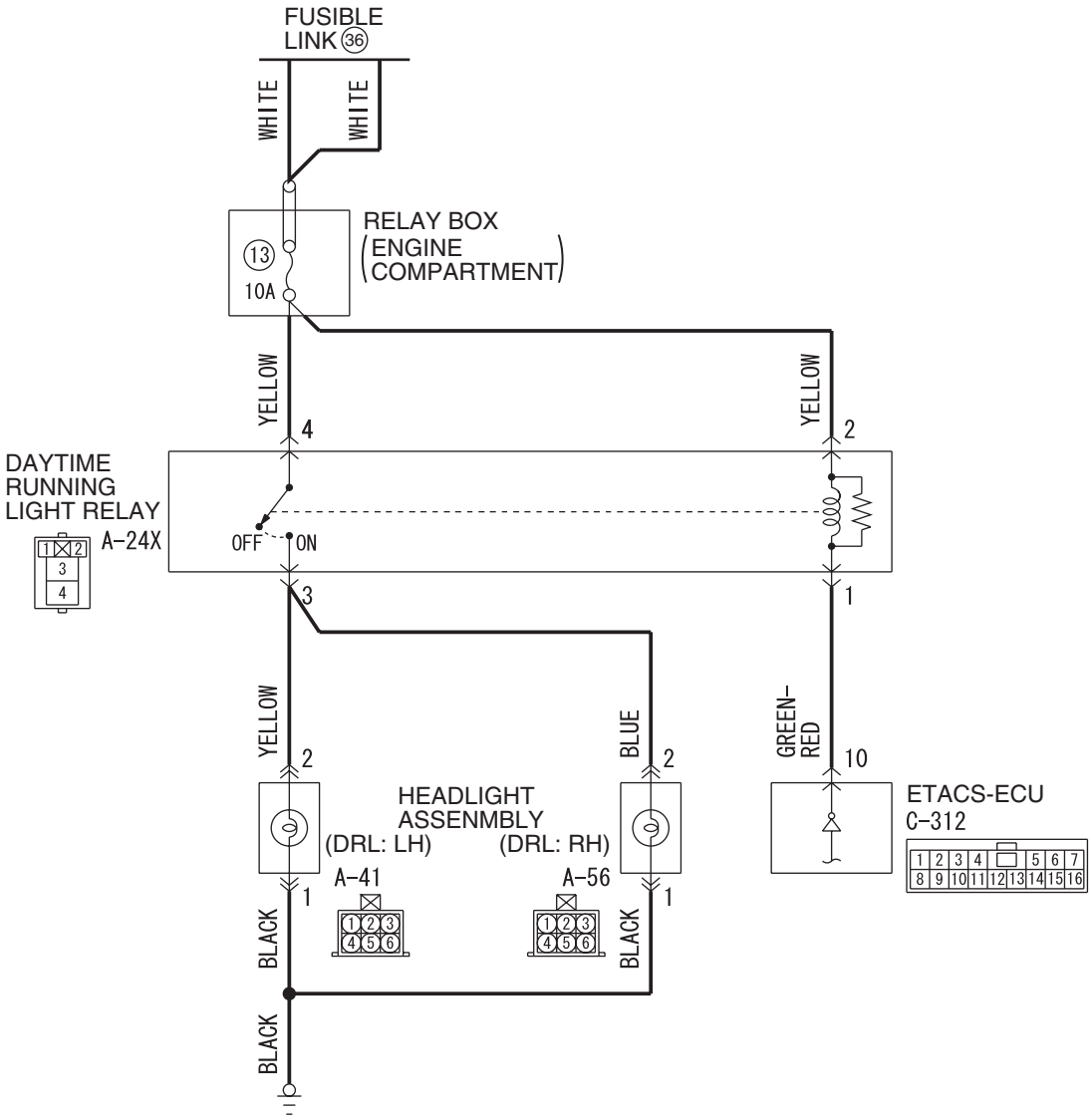
Q: Does the headlights (low-beam) do not illuminate in good condition?

YES : Replace the headlight relay (LOW).
NO : Replace the ETACS-ECU.

Inspection Procedure 8: Daytime running light function does not work normally. <Discharge type headlight>

⚠ CAUTION
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

Daytime Running Light Circuit



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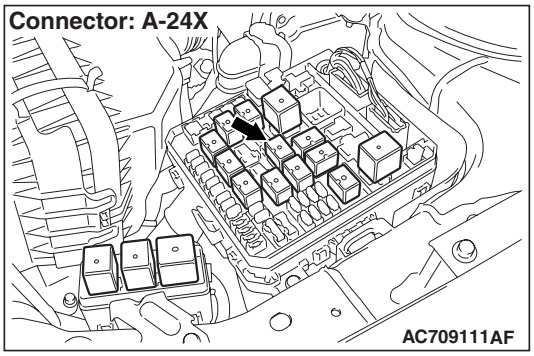

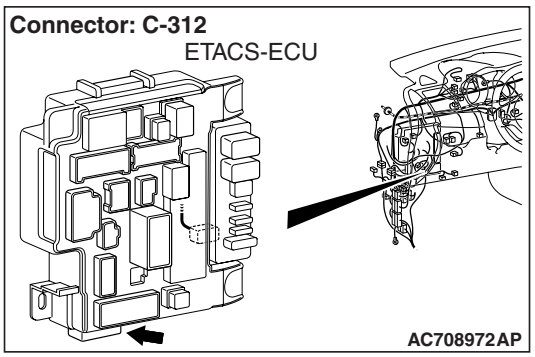

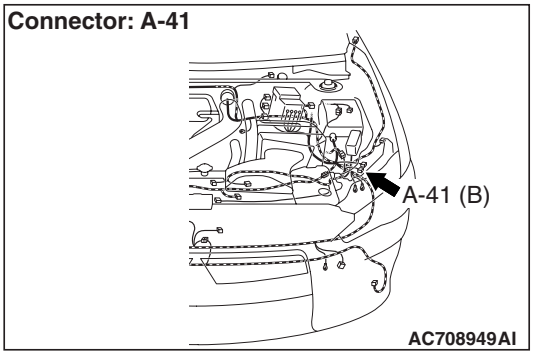

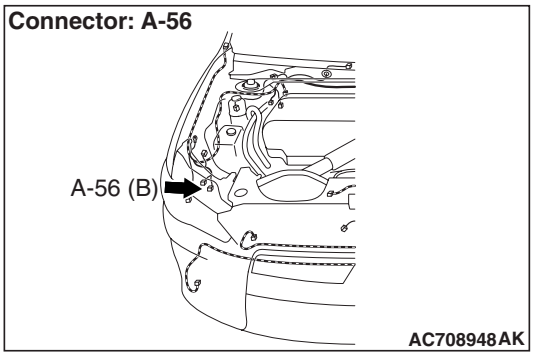

COMMENTS ON TROUBLE SYMPTOM

If the daytime running lights do not illuminate, the wiring harness connector(s), the bulb or the ETACS-ECU may have a problem.

PROBABLE CAUSES

- Burned-out daytime running light bulb
- Malfunction of the daytime running light relay
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check that the tail/stop lights and headlights operate.

Check that the tail/stop lights and headlights illuminate normally.

Q: Do the tail/stop lights and headlights operate normally?

YES : Go to Step 2.

NO : Check the tail/stop lights and the headlights (Refer to trouble symptom chart P.54A-127).

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STEP 2. Check the daytime running light bulb.

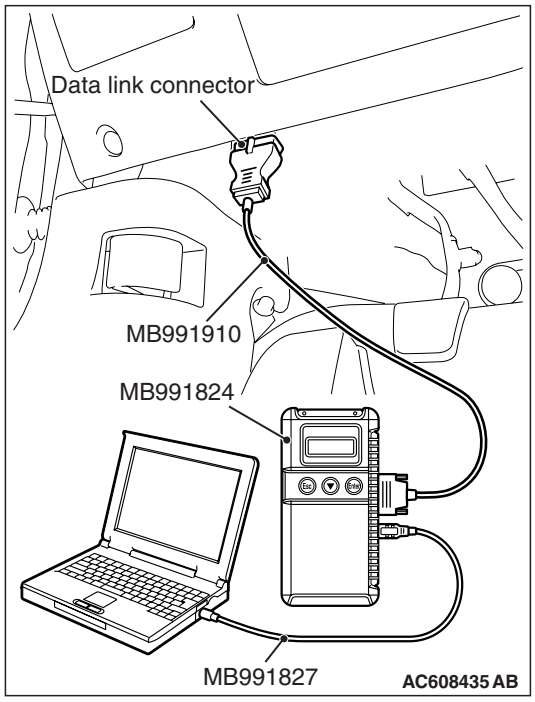
(1) Remove the daytime running light bulb.
(2) Verify that the daytime running light bulb is not damaged or burned out.

Q: Is the daytime running light bulb in good condition?

YES : Go to Step 3.
NO : Replace the fog light bulb. Verify that the daytime running lights illuminate normally.

STEP 3. Using scan tool MB991958, diagnose the CAN bus line.

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



(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 4. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 5.

STEP 5. Using scan tool MB991958, read the MFI system diagnostic trouble code.

Check whether engine control module DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for engine control module DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the MFI system. Refer to GROUP 13A, Diagnosis P.13A-44.
NO : Go to Step 6.

STEP 6. Check the parking brake switch.

Check the input signals from the parking brake switch.
(1) Turn the ignition switch to the "ON" position.
(2) Check that the brake warning light on the combination meter goes off when the parking brake lever is released.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the brake warning light go off?

YES : Go to Step 7.
NO : Refer to GROUP 36, Diagnosis, Inspection Procedure 3 P.36-7. Verify that the daytime running light function does not work normally.

STEP 7. Check daytime running light (LH) connector A-41, daytime running light (RH) A-56 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

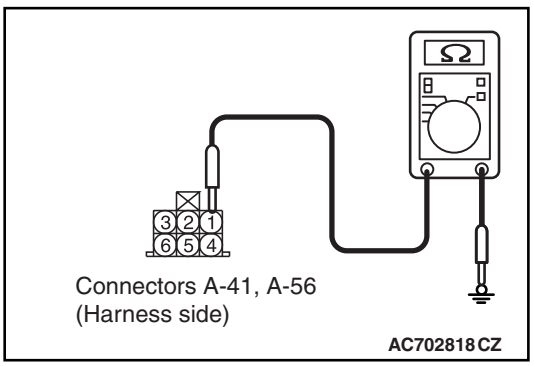
Q: Is daytime running light (LH) connector A-41, daytime running light (RH) A-56 in good condition?

YES : Go to Step 8.
NO : Repair the damaged parts.

STEP 8. Check the ground circuit to the daytime running light (LH) or daytime running light (RH). Measure the resistance at daytime running light (LH) connector A-41 or daytime running light (RH) connector A-56.

(1) Disconnect the connector, and measure at the wiring harness side.
(2) Check the resistance between the fog light connector and ground.
- Resistance between A-41 daytime running light (LH) connector terminal No.1 and ground
- Resistance between A-56 daytime running light (RH) connector terminal No.1 and ground

OK: The resistance should be 2 ohm or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.
NO : Go to Step 9.

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STEP 9. Check the wiring harness between daytime running light (LH) connector A-41 (terminal 1) or daytime running light (RH) connector A-56 (terminal 1) and ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between daytime running light (LH) connector A-41 (terminal 1) or daytime running light (RH) connector A-56 (terminal 1) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15).

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the daytime running lights illuminate normally.

STEP 10. Check daytime running light relay connector A-24X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is daytime running light relay connector A-24X in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

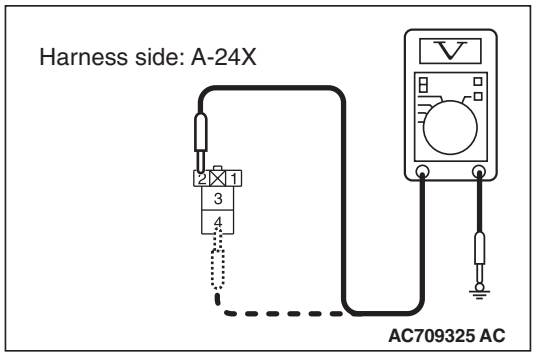
STEP 11. Check the daytime running light relay.

Refer to P.54A-189.

Q: Is the daytime running light relay in good condition?

YES : Go to Step 12.

NO : Replace the daytime running light relay. Verify that the daytime running lights illuminate normally.



STEP 12. Check the battery power supply circuit to the daytime running light relay. Measure the voltage at daytime running light relay connector A-24X.

⚠ CAUTION

The top and bottom of the daytime running light relay are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

(1) Disconnect daytime running light relay connector A-24X and measure the voltage available at the relay box side of the connector.

(2) Measure the voltage between terminal 2 and ground, and also between terminal 4 and ground.

OK: The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 14.

NO : Go to Step 13.

STEP 13. Check the wiring harness between daytime running light relay connector A-24X (terminal 2 and 4) and fusible link (36).

- Check the power supply line for open circuit.

Q: Is the wiring harness between daytime running light relay connector A-24X (terminal 2 and 4) and fusible link (36) in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15).

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the daytime running lights illuminate normally.

STEP 14. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 15.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 15. Check the wiring harness between daytime running light relay connector A-24X (terminal 1) and ETACS-ECU connector C-312 (terminal 10).

- Check the communication wires for open circuit.

Q: Is the wiring harness between daytime running light relay connector A-24X (terminal 1) and ETACS-ECU connector C-312 (terminal 10) in good condition?

YES : Go to Step 16.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the daytime running lights illuminate normally.

STEP 16. Retest the system.

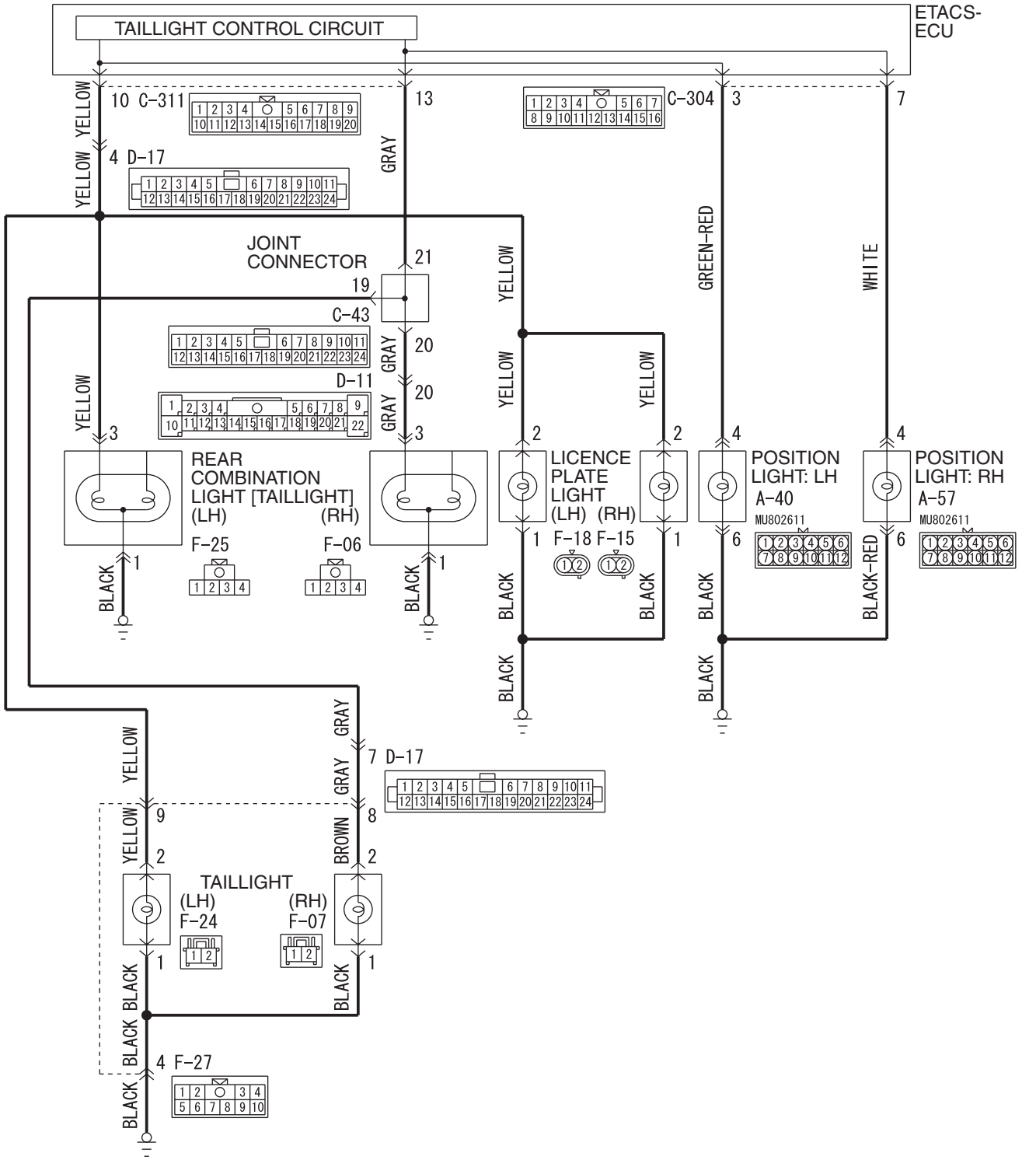
Q: Does the daytime running lights illuminate in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 9: Any of the tail lights, the position lights or the license plate lights does not Illuminate.

Position Lights, Licence Plate Lights and Tail Lights Circuit



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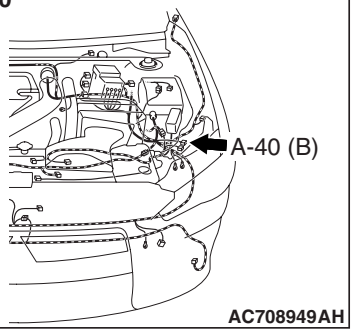
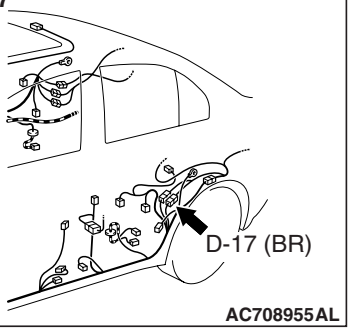
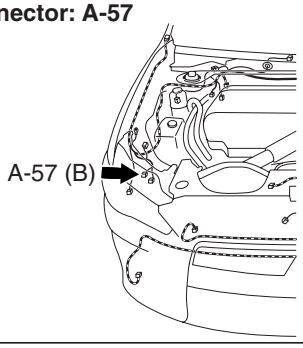
Connector: A-40



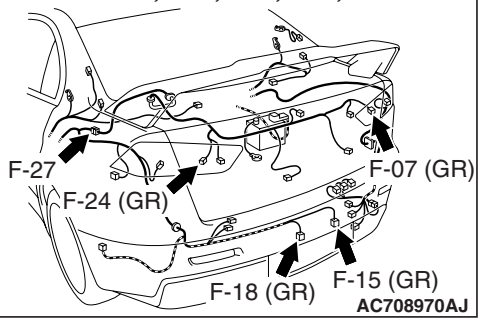
Connector: D-17



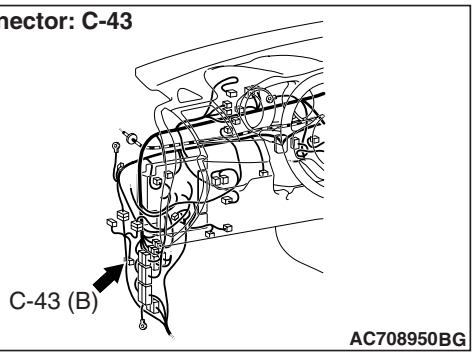
Connector: A-57



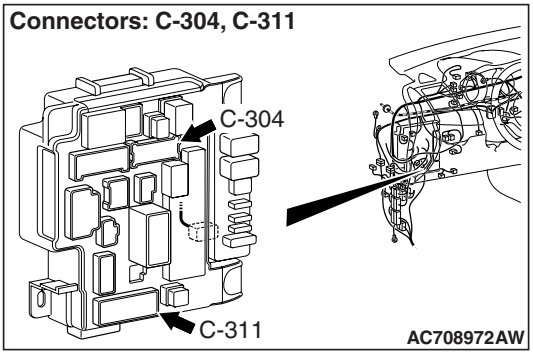
Connectors: F-07, F-15, F-18, F-24, F-27



Connector: C-43



Connectors: C-304, C-311



TECHNICAL DESCRIPTION (COMMENT)

If any of the tail lights, the position lights or the license plate lights does not Illuminate, the harness, connector(s), or bulb(s) may have a problem, or the fuse may be burned out.

TROUBLESHOOTING HINTS

- Malfunction of bulbs
- Malfunction of rear combination light
- Malfunction of rear combination light harness
- Malfunction of license plate light
- Malfunction of headlight
- Malfunction of tail light
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

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STEP 1. Rear combination light (taillight) check.

Q: Does the rear combination light (taillight) illuminate normally?

YES : Go to Step 2.
NO : Check the taillight (Refer to trouble symptom chart P.54A-209).

STEP 2. Check headlight assembly connector A-40 (position light-LH) or A-57 (position light-RH), tail light connector F-24 (LH) or F-07 (RH) or license plate light connector F-18 (LH) or F-15 (RH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly connector A-40 (position light-LH) or A-57 (position light-RH), tail light connector F-24 (LH) or F-07 (RH) or license plate light connector F-18 (LH) or F-15 (RH) in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Bulb check.
Check the bulb(s) of the light that does not illuminate.

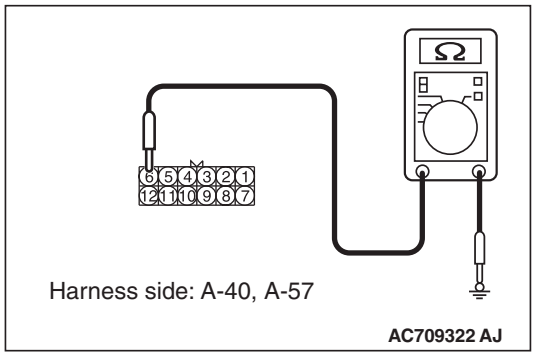
Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the bulb(s) of the light that does not illuminate.

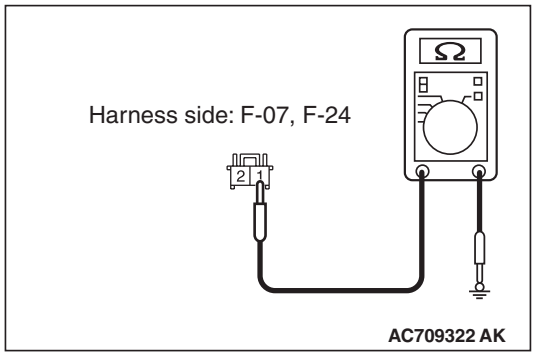
STEP 4. Resistance measurement at headlight assembly connector A-40 (position light-LH) or A-57 (position light-RH), tail light connector F-24 (LH) or F-07 (RH) or license plate light connector F-18 (LH) or F-15 (RH).

(1) Disconnect the connector, and measure at the wiring harness side.

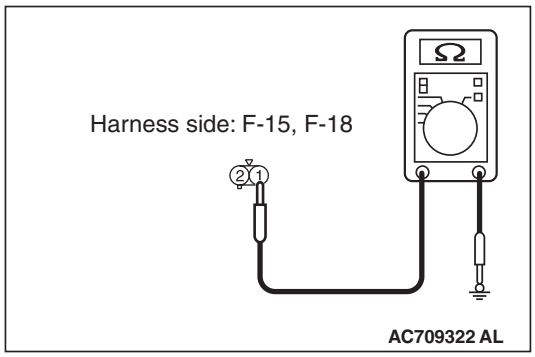
(2) Measure the resistance between the connector of light which does not illuminate and the body ground.



- Measure the resistance between headlight assembly connector A-40 (LH) or A-57 (RH) (terminal 6) and body ground.



- Measure the resistance between tail light connector F-24 (LH) or F-07 (RH) (terminal 1) and body ground.



- Measure the resistance between license plate light connector F-18 (LH) or F-15 (RH) (terminal 1) and body ground.

  OK: The measured value should be continuity exists (2 Ω or less).

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

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

STEP 5. Check the wiring harness between headlight assembly connector, tail light connector or license plate light connector and the body ground.

Check the ground line for open circuit.

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 6) and the body ground. <position light-LH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 6) and the body ground. <position light-RH>
- Check the wiring harness between tail light (LH) connector F-24 (terminal 1) and the body ground. <tail light-LH>

  NOTE: Also check intermediate connector F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between tail light (RH) connector F-07 (terminal 1) and the body ground. <tail light-RH>

  NOTE: Also check intermediate connector F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (LH) connector F-18 (terminal 1) and the body ground. <license plate light-LH>
- Check the wiring harness between license plate light (RH) connector F-15 (terminal 1) and the body ground. <license plate light-RH>

Q: Is the wiring harness between headlight assembly connector, tail light connector or license plate light connector and the body ground in good condition?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 6. Check ETACS-ECU connector C-304 <position light> or C-311 <tail light or license plate light> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-304 <position light> or C-311 <tail light or license plate light> in good condition?

YES : Go to Step 7.
NO : Repair the damaged parts.

STEP 7. Check wiring harness between headlight assembly connector, tail light connector or license plate light connector and ETACS-ECU connector.

Check the ground line for open circuit.

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 4) and ETACS-ECU connector C-304 (terminal 3). <position light-LH>
- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 4) and ETACS-ECU connector C-304 (terminal 7). <position light-RH>
- Check the wiring harness between tail light (LH) connector F-24 (terminal 2) and ETACS-ECU connector C-311 (terminal 10). <tail light-LH>

  NOTE: Also check intermediate connectors D-17 and F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 or F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between tail light (RH) connector F-07 (terminal 2) and ETACS-ECU connector C-311 (terminal 13). <tail light-RH>

  NOTE: Also check intermediate connectors D-17 and F-27 and joint connector C-43 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 or F-27 or joint connector C-43 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (LH) connector F-18 (terminal 2) and ETACS-ECU connector C-311 (terminal 10). <license plate light-LH>

  NOTE: Also check intermediate connectors D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (RH) connector F-15 (terminal 2) and ETACS-ECU connector C-311 (terminal 10). <license plate light-RH>

  NOTE: Also check intermediate connectors D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between headlight assembly connector, tail light connector or license plate light connector and ETACS-ECU connector in good condition?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Retest the system.
Check that the position light, tail light, or license plate light illuminate normally.

Q: Do the position light, tail light, or license plate light work normally?

YES (The light illuminate normally at both high and low beams.) : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO <When the position light does not illuminate> : Replace the position light socket.

NO <When the license plate light does not illuminate> : Replace the license plate light socket.

NO <When the tail lights do not illuminate> : Replace the rear side maker light socket.

Inspection Procedure 10: The auto light function does not work normally.

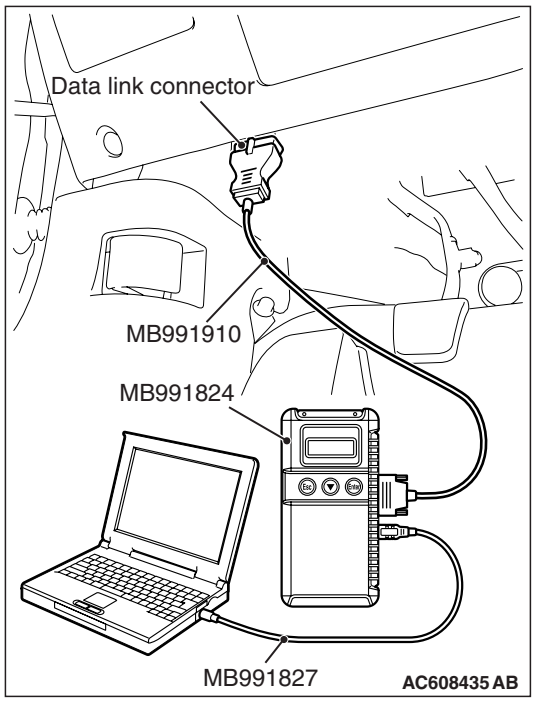
⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

OPERATION
The ETACS-ECU operates this function in accordance with the input signals from driving distance, lighting control sensor, and column switch (auto light switch). Also, when the column switch (lighting switch) is in the "AUTO" position, and when an abnormality is present to the auto light circuit, the fail-safe function is activated and the low beam is turned ON at all times regardless of the brightness around the vehicle.

TECHNICAL DESCRIPTION (COMMENT)
If the auto light function does not work normally, the above input signal circuit(s) or the ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS
- Malfunction of the lighting control sensor
- Malfunction of the column switch
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.
Check if DTC is set to the LIN.

Q: Is the DTC set?

YES : Refer to DTC chart P.54A-107.
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the ETACS diagnostic trouble code.
Check if DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS (Refer to P.54A-582).
NO : Go to Step 4.

STEP 4. Check that the headlights operate.
Check that the headlights (low-beam) illuminate normally.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Refer to Inspection Procedure 1 "All the headlights (low-beam) do not illuminate." P.54A-128.

STEP 5. Using scan tool MB991958, check data list

Use the ETACS-ECU service data to check the signals related to the operation of auto light function.

- Turn the lighting switch to the "AUTO" position.

Item No.	Item name	Normal condition
Item 348	Headlight switch (auto)	ON

Q: Do scan tool MB991958 display the items "Headlight switch (auto)" as normal condition?

YES : Go to Step 6.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-639.

STEP 6. Lighting control sensor check

Check the lighting control sensor. Refer to P.54A-191.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the lighting control sensor.

STEP 7. Retest the system

Check that the auto light function works normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 11: All the turn-signal lights do not illuminate.

TECHNICAL DESCRIPTION (COMMENT)

If all the turn-signal lights do not illuminate, the ignition switch (IG1), the turn-signal light switch input circuit or the ETACS-ECU may have a problem.

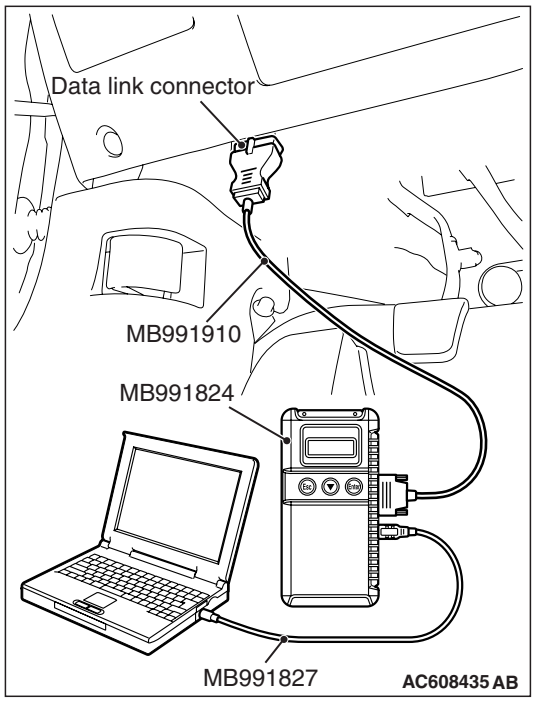
TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



STEP 1. Using scan tool MB991958, read the ETACS-ECU 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. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to ETACS, Diagnosis P.54A-582).
NO : Go to Step 2.

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

Using the ETACS-ECU service data, check the signals related to the illumination of turn-signal light.

- Turn the ignition switch to the "ON" position.

Item No.	Item name	Normal conditions
Item 254	IG voltage	Battery voltage

Q: Does scan tool MB991958 display the item "IG voltage" as normal condition?

YES : Go to Step 3.
NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis - Inspection Procedure 2 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P.54A-639.

STEP 3. Retest the system.
Check that turn-signal lights illuminate.

Q: Do turn-signal lights work normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 12: The comfort flashing function does not work normally.

TECHNICAL DESCRIPTION (COMMENT)

If the comfort flashing function does not work normally, the turn-signal light switch input circuit(s) and ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

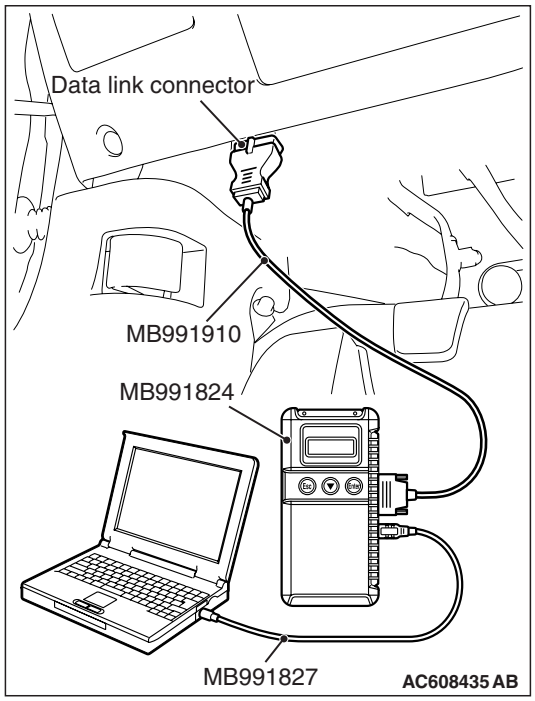
DIAGNOSIS

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 (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, Check the configuration function.

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



. (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Use the ETACS-ECU configuration function to check that the "Comfort flasher" is set to "Enable".
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the "Comfort flasher" set to "Enable"?

YES : Go to Step 2.
NO : Use the ETACS-ECU customize function to set the "Comfort flasher" to "Enable" (Refer to P.54A-183).

STEP 2. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.
(1) Turn the ignition switch to the "ON" position.
(2) Check whether the ETACS-ECU DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to ETACS, Diagnosis P.54A-582).
NO : Go to Step 3.

STEP 3. Check that the turn-signal light operate.
Check that the turn-signal light work normally when the ignition switch is in the "ON" position.

Q: Do turn-signal lights work normally?

YES : Go to Step 4.
NO : Refer to Inspection Procedure 11 "The turn-signal lights do not illuminate" P.54A-168.

STEP 4. Retest the system
Check that the comfort flashing function works normally.

Q: Does comfort flashing function works normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the ETACS-ECU.

Inspection Procedure 13: The turn-signal indicator light do not illuminate.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal light indicator does not illuminate normally, the harness in the CAN bus lines, connector(s), ETACS-ECU, or combination meter may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Malfunction of combination meter
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

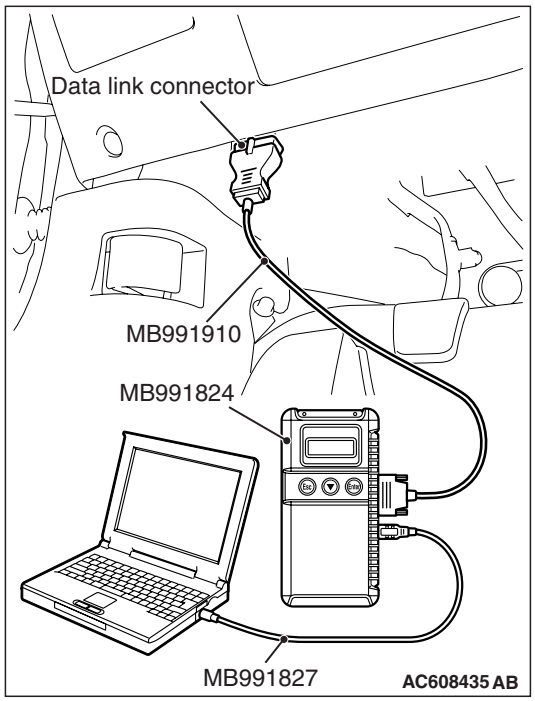
STEP 1. Check turn-signal light.

Check that the turn-signal light flashes normally when the turn-signal switch is operated.

Q: Do Turn-signal light work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 11 "The turn-signal lights do not illuminate" P.54A-168.



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-105."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if diagnostic trouble code is set to the ETACS-ECU.
(1) Turn the ignition switch to the "ON" position.
(2) Check whether the ETACS-ECU related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check actuator test.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Set scan tool MB991958 to the actuator test mode.
- Item 7: Indicator1

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

Q: Is the check result normal?

YES : Replace the ETACS-ECU.
NO : Replace the combination meter.

DATA LIST REFERENCE TABLE

M1540103800133

LIN <LIGHTING CONTROL SENSOR (LIGHT SENSOR)>

Item No.	Scan tool display	Check conditions	Normal conditions
7001	RLS IG1	When the ignition switch is in the "LOCK" or "ACC" position	OFF
		When the ignition switch is in the "ON" or "START" position	ON
7002	RLS Light sensor sensitivity	When the customize value of lighting control sensor sensitivity is set to Level 1 (fast)	Level 1 (+) bright
		When the customize value of lighting control sensor sensitivity is set to Level 2 (slightly fast)	Level 2
		When the customize value of lighting control sensor sensitivity is set to Level 3 (normal)	Level 3
		When the customize value of lighting control sensor sensitivity is set to Level 4 (slightly slow)	Level 4 (-) dark
		When the customize value of lighting control sensor sensitivity is set to Level 5 (slow)	Level 5 (-) dark
7004	RLS Radio ACC	When the ignition switch is in the "LOCK" or "START" position	OFF
		When the ignition switch is in the "ACC" or "ON" position	ON
7007	RLS Vehicle speed	Perform a test run of the vehicle.	The values displayed on the speedometer and the scan tool MB991958 are almost the same.
7009	RLS Low beam "ON" request	When the lighting control sensor area is bright	OFF
		When the lighting control sensor area is dark	ON
7010	RLS judgment illuminance output	When the lighting control sensor area changes from dark to bright	The value displayed on the scan tool MB991958 increases.
		When the lighting control sensor area changes from bright to dark	The value displayed on the scan tool MB991958 decreases.
7011	RLS Taillight "ON" request	When the lighting control sensor area is bright	OFF
		When the lighting control sensor area is dark	ON

Item No.	Scan tool display	Check conditions	Normal conditions
7012	RLS Tunnel detect output	When the lighting control sensor area is bright	OFF
		When the lighting control sensor area is dark	ON
7014	RLS specification	–	EU
7015	RLS ECU Diagnostic Version	–	–
7016	RLS ECU Hardware Version	–	–
7017	RLS ECU Software Version	–	–
7018	RLS ECU Part number	–	8634A001
7019	RLS ECU Serial number	–	–

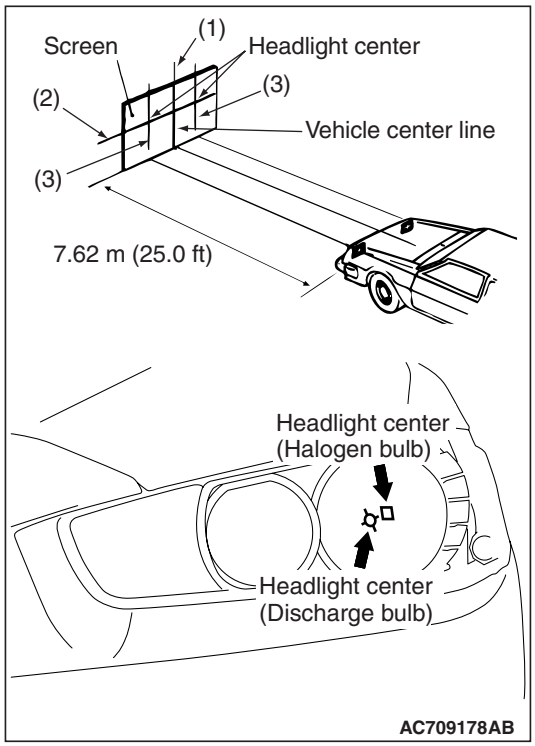
ON-VEHICLE SERVICE

HEADLIGHT AIMING

M1540100500304

PRE-AIMING INSTRUCTIONS (LOW-BEAM)

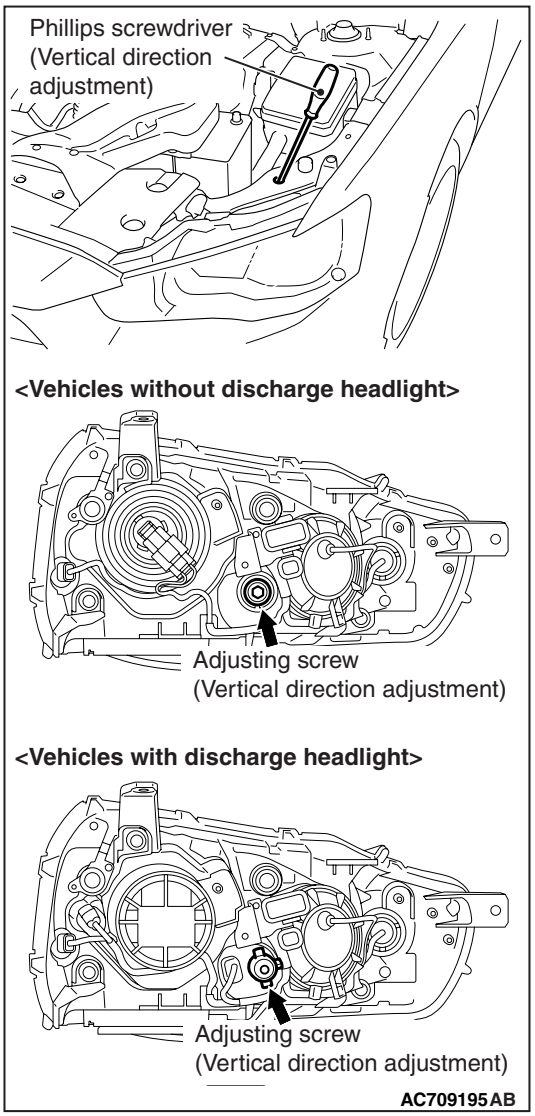
1. Inspect for rusted or faulty headlight assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 kg (6.6 pounds) per gallon].
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
6. Turn the headlight leveling switch to the switch position "0." <Vehicles with headlight manual leveling system>
7. Thoroughly clean headlight lenses.
8. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 m (25.0 ft) away from the bulb center-marks on the headlight lens.
9. Rock vehicle sideways to allow vehicle to assume its normal position.
10. Bounce the front suspension through three (3) oscillations by applying the body weight to hood or bumper.



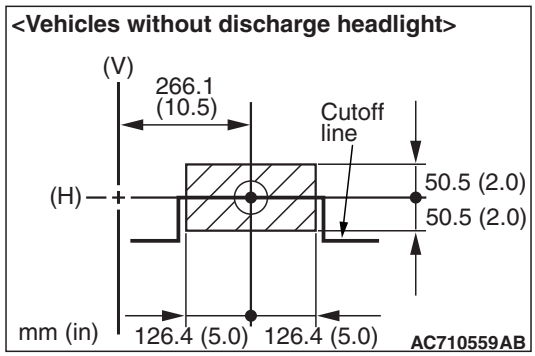
11. Set the distance between the screen and the bulb center marks of the headlight as shown in the illustration.
12. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
    (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
    (2) Measure the distance from the center-marks on the headlight lens to the floor [reference value: 679.5 mm (26.75 inches)]. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
    (3) Measure the distance from the center line of the vehicle to the center of each headlight. Transfer the measurement to the screen. Vertical tape or mark on the screen with reference to the center line of each headlight bulb.

HEADLIGHT ADJUSTMENT (LOW-BEAM)

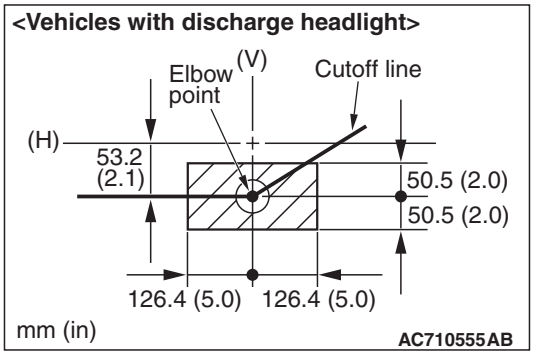
1. The low-beam headlight will project on the screen upper edge of the beam (cut-off).



2. Turn the adjusting screw to achieve the specified low-beam cut-off location on the aiming screen.



Standard value
<Vehicles without discharge headlight>:
(Vertical direction) Horizontal line (H) ±50.5 mm (±2.0 inches) (±0.38 degrees angle)
(Horizontal direction): ±126.4 mm (±5.0 inches) (±0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)



Standard value <Vehicles with discharge headlight>:
(Vertical direction) 53.2 mm (2.1 inches) (0.4 degrees) below horizontal line (H). ±50.5 mm (±2.0 inches) (±0.38 degrees angle)
(Horizontal direction): Elbow point intersects the vertical line (V). ±126.4 mm (±5.0 inches) (±0.95 degrees angle)

TSB Revision

⚠ CAUTION

Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.

NOTE: High-beam pattern should be correct when the low-beams are adjusted properly.

LUMINOUS INTENSITY MEASUREMENT

M1540100600129

1. Set the headlights to high-beam.
2. Using a photometer, and following its manufacturer's instruction manual, measure the headlight center intensity and check to be sure that the limit value is satisfied.

   Limit: 40,000 cd or more {When a screen is set 18.3m (60 feet) ahead of the vehicle}

NOTE: When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery fully charged.
There may be special local regulations pertaining to headlight intensity. Be sure to make any adjustments necessary to satisfy such regulations.
If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

$I = E \times r^2$

- I = intensity (cd)
- E = illumination (lux)
- r = distance (m) from headlights to illuminometer

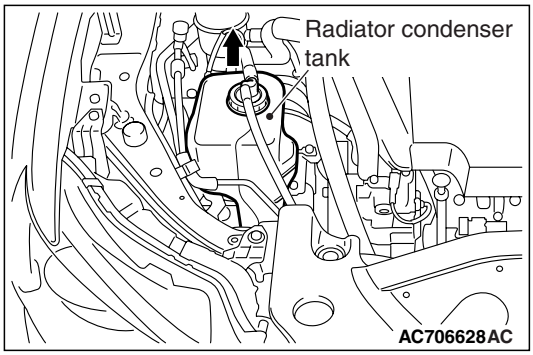
REPLACE THE BULB

M1540100700290

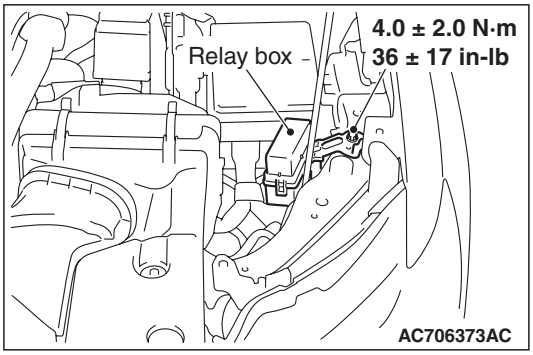
HEADLIGHT BULB (LOW-BEAM) REPLACEMENT <VEHICLES WITHOUT DISCHARGE HEADLIGHT>

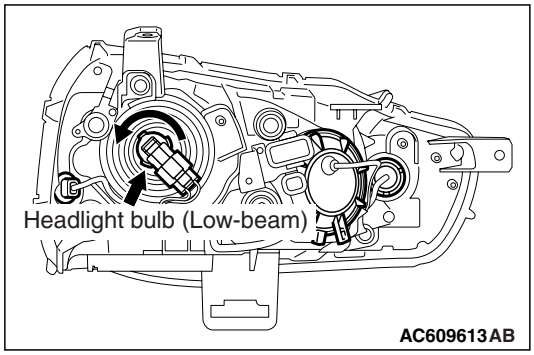
⚠ CAUTION

Do not touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, immediately clean it with alcohol or thinner. After drying completely, install the bulb.



1. When replacing the right bulb, lift the radiator condenser tank upward, and remove it. When replacing the left bulb, remove the relay box.



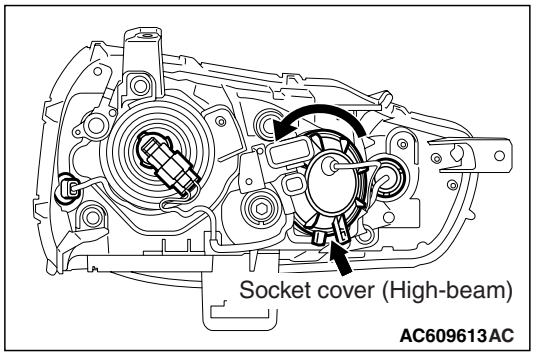


2. Disconnect the connector, and twist the headlight bulb (low-beam) to remove.

HEADLIGHT BULB (HIGH-BEAM) REPLACEMENT <VEHICLES WITHOUT DISCHARGE HEADLIGHT>

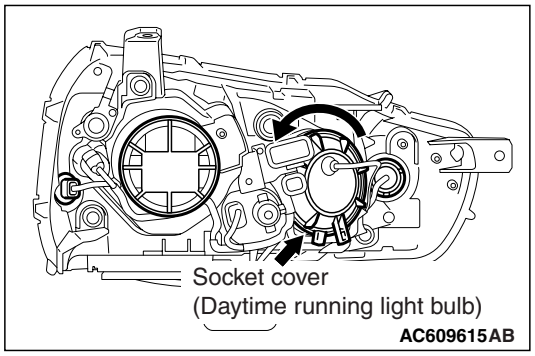
⚠ CAUTION

Do not touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, immediately clean it with alcohol or thinner. After drying completely, install the bulb.



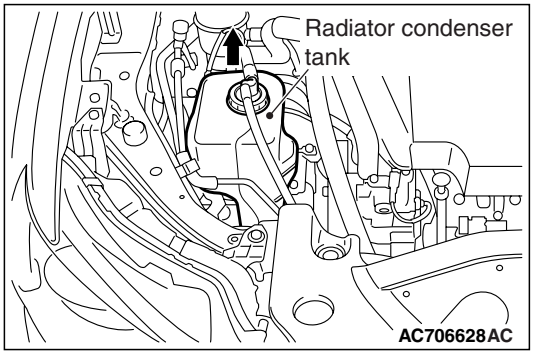
1. Twist the socket cover to remove.
2. Disconnect the connector, and twist the headlight bulb (high-beam) to remove.

DAYTIME RUNNING LIGHT BULB REPLACEMENT <VEHICLES WITH DISCHARGE HEADLIGHT>

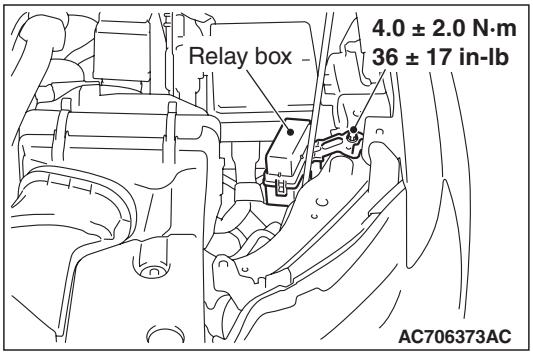


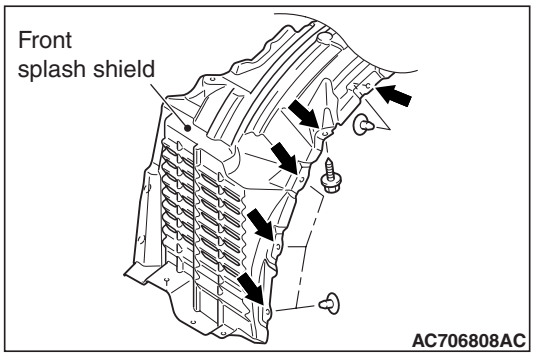
1. Twist the socket cover to remove.
2. Twist the daytime running light socket to remove it.

POSITION LIGHT BULB REPLACEMENT

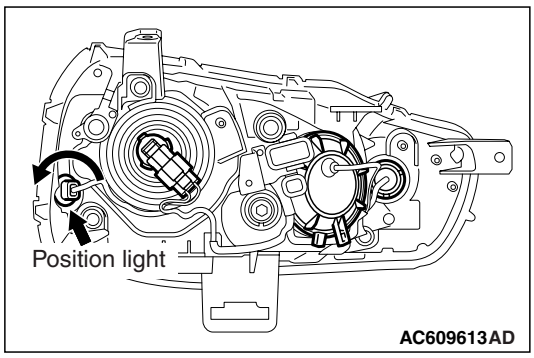


1. When replacing the right bulb, lift the radiator condenser tank upward, and remove it. When replacing the left bulb, remove the relay box. <Vehicles without discharge headlight>





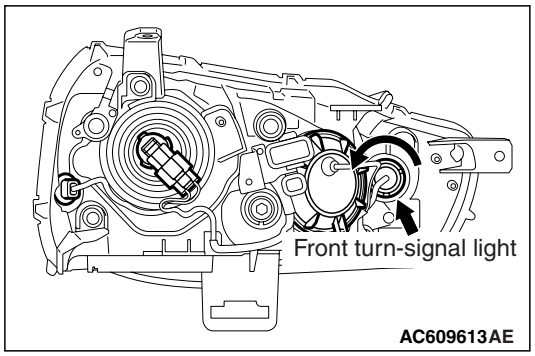
2. Remove the front splash shield assembling clip shown in the figure, and turn up the front splash shield. <Vehicles with discharge headlight>



3. Twist the position light socket to remove.

FRONT TURN-SIGNAL LIGHT BULB REPLACEMENT

1. Remove the headlight support panel cover. (Refer to GROUP 51 –Front Bumper Assembly and Radiator Grille P.51-3.)
2. Twist the front turn-signal light socket to remove.



HEADLIGHT AUTOMATIC-SHUTDOWN FUNCTION CHECK

M1540100800220

Confirm that the headlights turn OFF in one second if the driver's door is opened when the ignition switch is OFF and the lighting switch is ON (HEAD position). If there is a malfunction, perform the troubleshooting (Refer to P.54A-127).

HEADLIGHT AUTO LIGHT FUNCTION CHECK

M1540100900164

Under the direct sunlight with the ignition switch ON and the lighting switch in the AUTO position, check that the headlight automatically illuminates when the lighting control sensor receiver is covered by hand. If there is any trouble, carry out the troubleshooting. (Refer to P.54A-127.)

NOTE: When covering the lighting control sensor receiver, be careful not to touch the windshield surface (where the lighting control sensor receiver is mounted). (The lighting control sensor receiver has limited resistance to oil.)

CUSTOMIZATION FUNCTION

M1540103700404

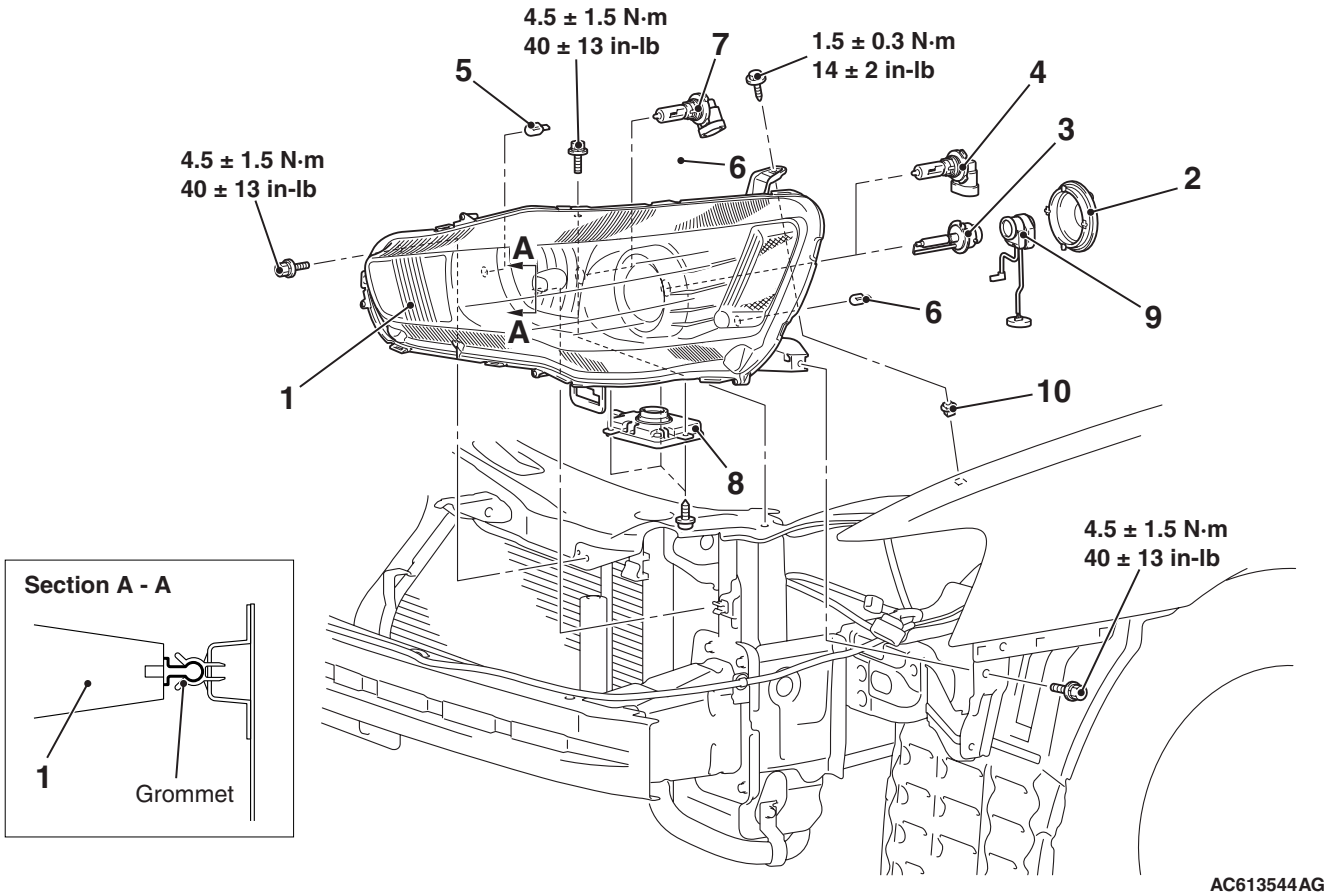
By operating the ETACS system or MMCS of scan tool MB991958, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
ACC power auto cut	Time to ACC power cut-off when the ignition switch is in the ACC position	Disable	No function (default)
		30 min	30 minutes
		60 min	60 minutes
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (default)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (default)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 seconds (default)
		Long	0.8 seconds
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (default)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function
Sensitivity for auto light	Lighting control sensor sensitivity (illumination intensity) <vehicles with auto light>	Level 1 (+)bright	High-high ambient brightness
		Level 2	High ambient brightness
		Level 3	Standard ambient brightness (default)
		Level 4(–)dark	Low ambient brightness
		Level 5(–)dark	Low-low ambient brightness
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (default)

HEADLIGHT REMOVAL AND INSTALLATION

M1540101000346

Pre-removal operation	Post-installation operation
Front bumper and radiator grille assembly removal (Refer to GROUP 51 –Front Bumper Assembly and Radiator Grille P.51-3.)	• Front bumper and radiator grille assembly installation (Refer to GROUP 51 –Front Bumper Assembly and Radiator Grille P.51-3). • Check the beam direction of the headlight (Refer to Headlight Aiming P.54A-175).



Removal Steps

1. Headlight assembly
2. Headlight bulb socket cover <Vehicles with discharge headlight>

<<A>>

3. Headlight bulb <Vehicles with discharge headlight>
4. Headlight bulb (low-beam) <Vehicles without discharge headlight>
5. Front turn-signal light bulb
6. Position light bulb

Removal Steps (Continued)

7. Headlight bulb (high-beam) <Vehicles without discharge headlight> or daytime running light bulb <Vehicles with discharge headlight>
8. Headlight control unit <Vehicles with discharge headlight>
9. Headlight control unit (harness) <Vehicles with discharge headlight>
10. Grommet

TSB Revision

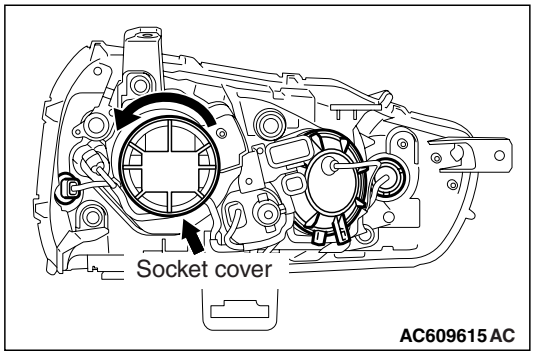
REMOVAL SERVICE POINT

<<A>> HEADLIGHT (LOW-BEAM) BULB REMOVAL <VEHICLES WITH DISCHARGE HEADLIGHT>

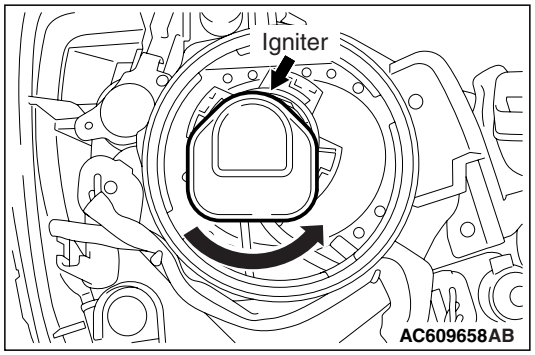
⚠ CAUTION

Do not touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, immediately clean it with alcohol or thinner. After drying completely, install the bulb.

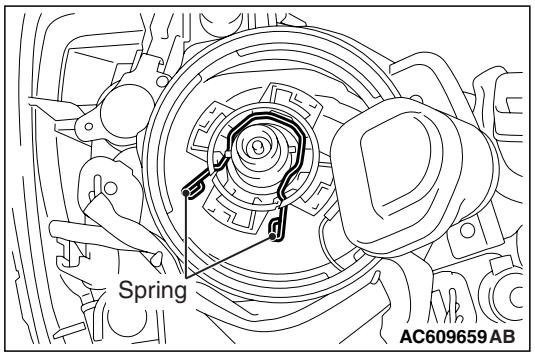
1. Twist the socket cover to remove.



2. Disconnect the igniter.

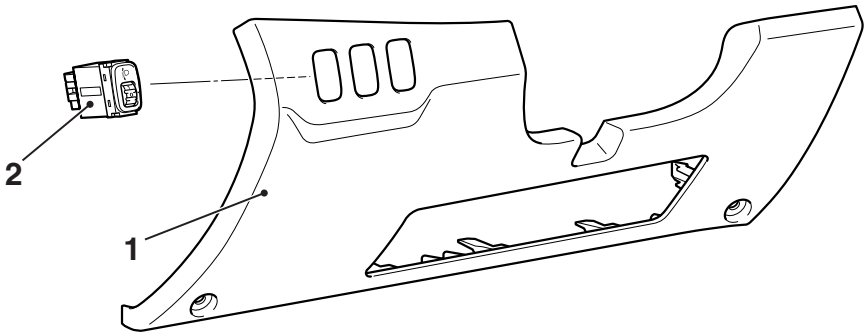


3. Release the bulb securing spring, and remove the bulb.



HEADLIGHT LEVELING SWITCH REMOVAL AND INSTALLATION

M1540105200137



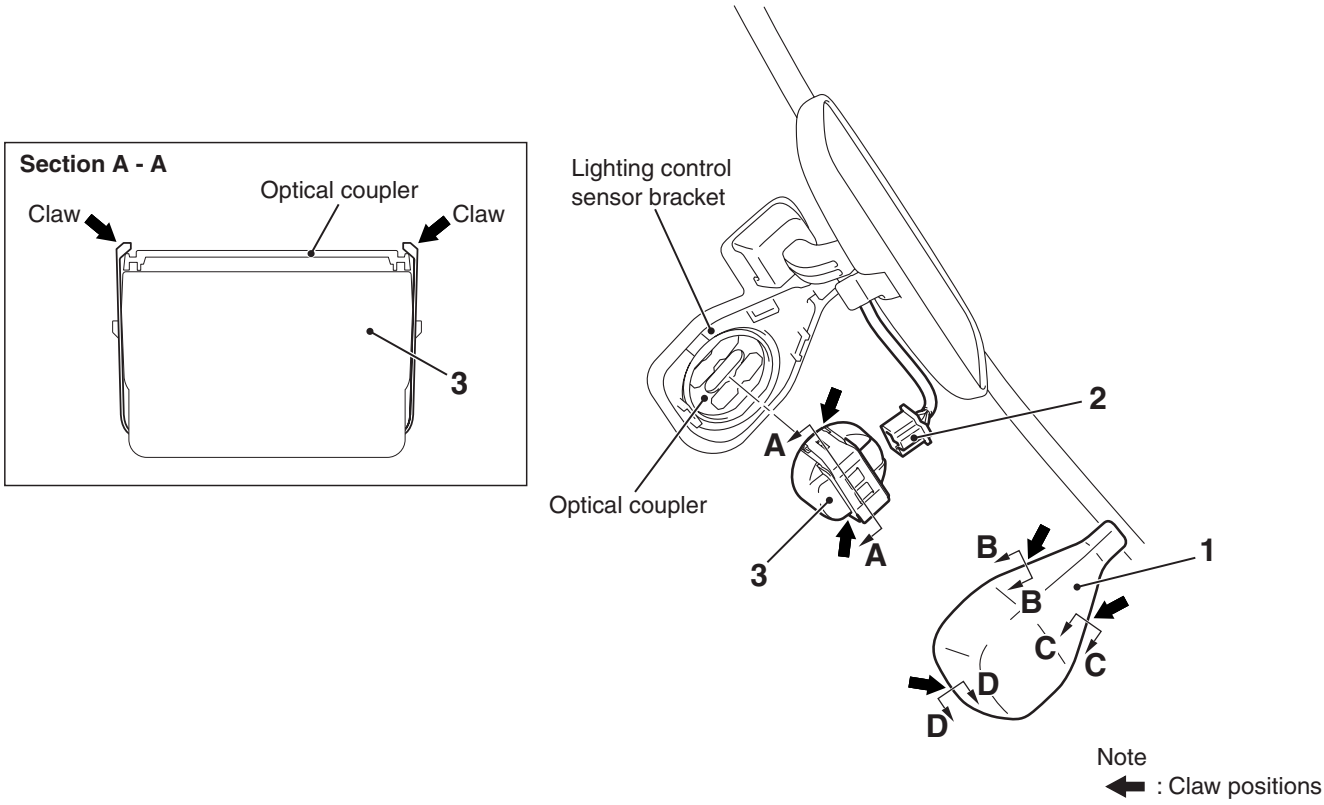
AC709250AB

Removal Steps

1. Instrument panel cover assembly (Refer to GROUP 52A –Instrument Lower Panel P.52A-8).
2. Headlight leveling switch

LIGHTING CONTROL SENSOR REMOVAL AND INSTALLATION

M1540108500126



AC709252AB

Removal Steps

1. Lighting control sensor cover

<<A>> >>A<<

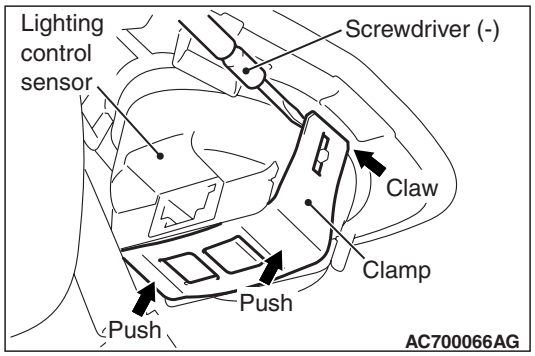
Removal Steps (Continued)

2. Connector
3. Lighting control sensor

TSB Revision

REMOVAL SERVICE POINT

<<A>> LIGHTING CONTROL SENSOR REMOVAL



While pushing the clamp to the windshield side, pry up the clamp to disengage the right and left claws using the screwdriver (–), and then remove the lighting control sensor.

INSTALLATION SERVICE POINT

>>A<< LIGHTING CONTROL SENSOR INSTALLATION

⚠ CAUTION

After executing the lighting control sensor (rain sensor) adaptation, do not touch the lighting control sensor (or do not move it from the fixed position).

- Mount the lighting control sensor onto the optical coupler, and then connect the connector.
- When reusing the lighting control sensor or when the lighting control sensor is pushed to check the installation condition, install the connector and the lighting control sensor cover and wipe the windshield thoroughly. When the windshield is dry, execute the lighting control sensor (rain sensor) adaptation. <Refer to GROUP 51 –Lighting Control Sensor (Rain Sensor) Adaptation P.51-76>.

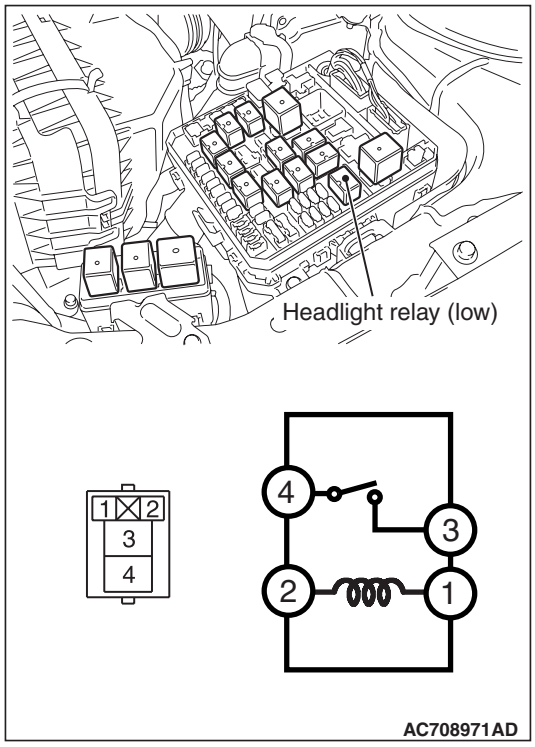
NOTE: Be careful not to touch the lighting control sensor receiver. (The lighting control sensor receiver has limited resistance to oil.)

INSPECTION

HEADLIGHT RELAY CHECK

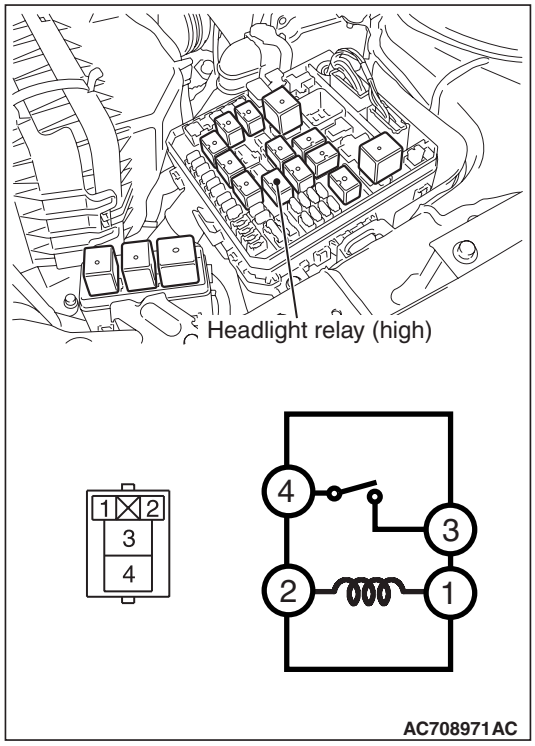
M1540104000248

HEADLIGHT RELAY (LOW) CHECK <VEHICLES WITH DISCHARGE HEADLIGHT>



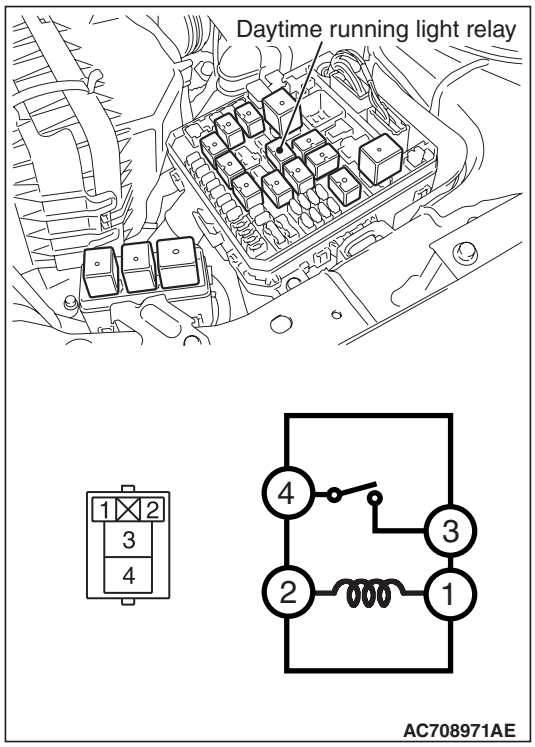
Battery voltage	Terminal number	Normal conditions
Not energized	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)

HEADLIGHT RELAY (HIGH) CHECK



Battery voltage	Terminal number	Normal conditions
Not energized	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)

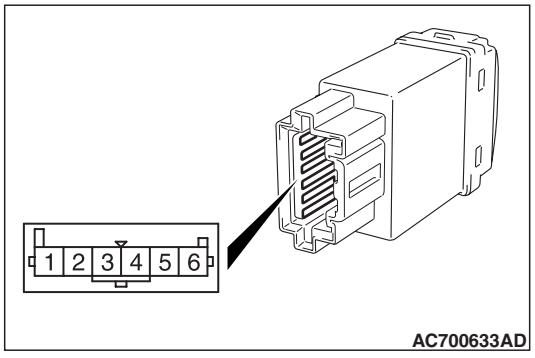
DAYTIME RUNNING LIGHT RELAY CHECK <VEHICLES WITH DISCHARGE HEADLIGHT>



Battery voltage	Terminal number	Normal conditions
Not energized	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)

HEADLIGHT LEVELING SWITCH CHECK <VEHICLES WITH HEADLIGHT MANUAL LEVELING SYSTEM>

M1540101300239



Measured terminals	Switch position	Resistance value Ω
4 –6	0	750
	1	1,110
	2	1,470
	3	1,830
	4	2,190
5 –6	0, 1, 2, 3, 4	2,810

LIGHTING CONTROL SENSOR (LIGHT SENSOR) CHECK

M1540109000124

Using the scan tool MB991958, check the LIN data list as follows.

1. Under the direct sunlight, turn the ignition switch to the ON position and the lighting switch to the AUTO position.
2. When the lighting control sensor receiver is covered by hand, and if the item No. 7009 (RLS Low beam "ON" request) and the item No. 7011 (RLS Taillight "ON" request) turn from OFF to ON, it is judged normal.

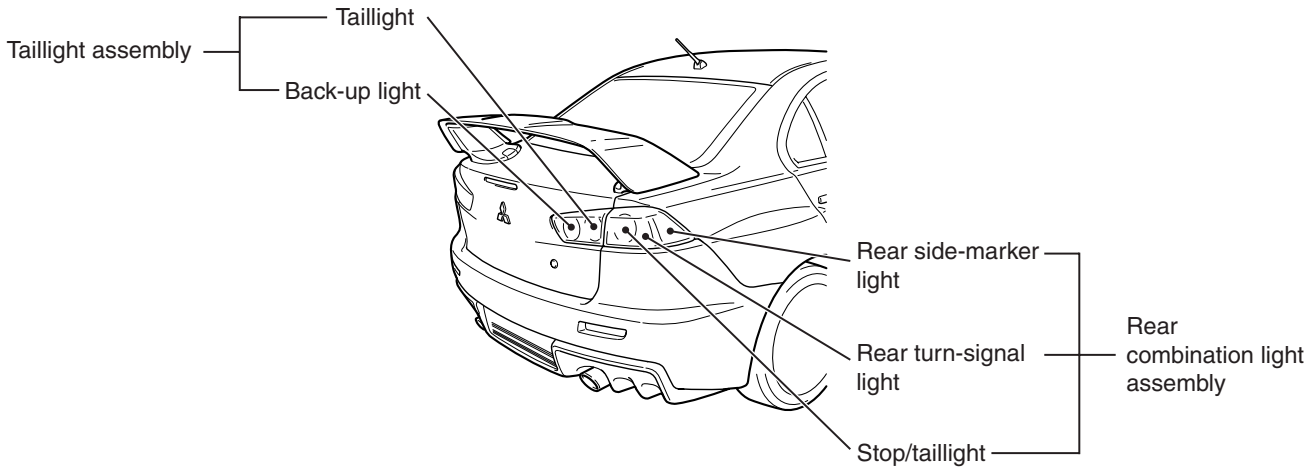
NOTE:

- *Before inspection using the scan tool MB991958, wipe off the windshield clearly. Then check that there is no abnormality on the windshield surface where the lighting control sensor is mounted.*
- *When covering the lighting control sensor receiver, be careful not to touch the windshield surface (where the lighting control sensor receiver is mounted). (The lighting control sensor receiver has limited resistance to oil.)*

REAR COMBINATION LIGHT

GENERAL INFORMATION

M1542000100424

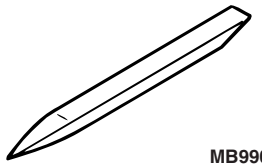


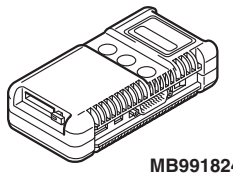
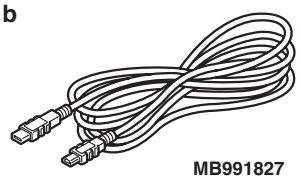
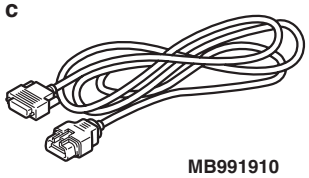
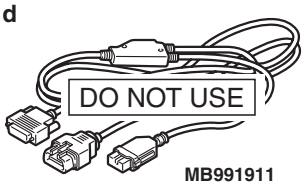
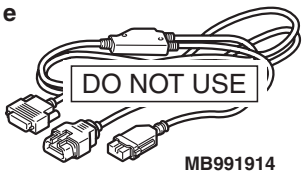
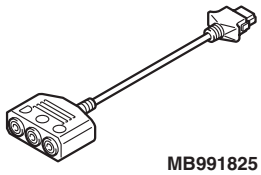
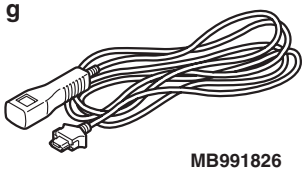
AC709103AC

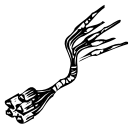
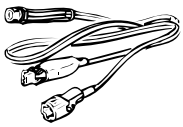
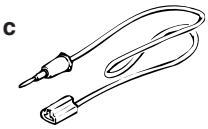
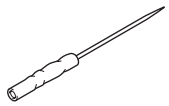
- The rear combination light assembly are integrated with the stop/taillight, rear turn-signal light and rear side-marker light.
- The taillight assembly are integrated with the taillight and back-up light.

SPECIAL TOOLS

M1541400100087

Tool	Tool number and name	Supersession	Application
 MB990784	MB990784 Ornament remover	General service tool	Removal of trunk lid trim, rear combination light assembly, taillight assembly

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541402500081

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC FUNCTION

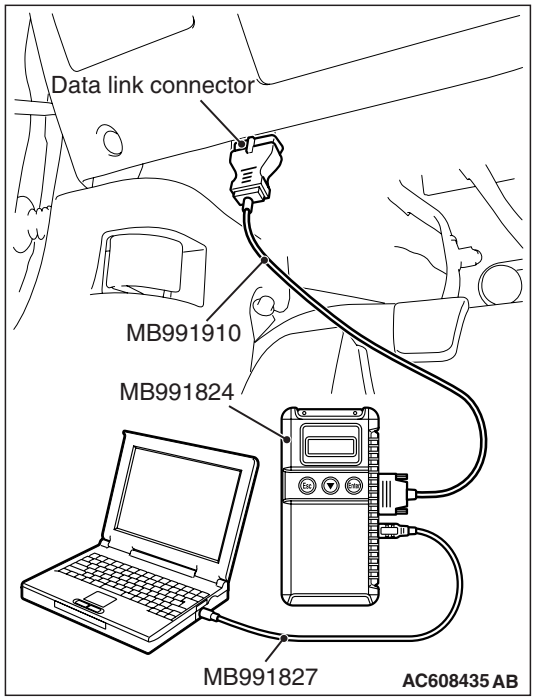
M1541400900038

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

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DIAGNOSTIC TROUBLE CODE CHART

M1541400200136

⚠ CAUTION

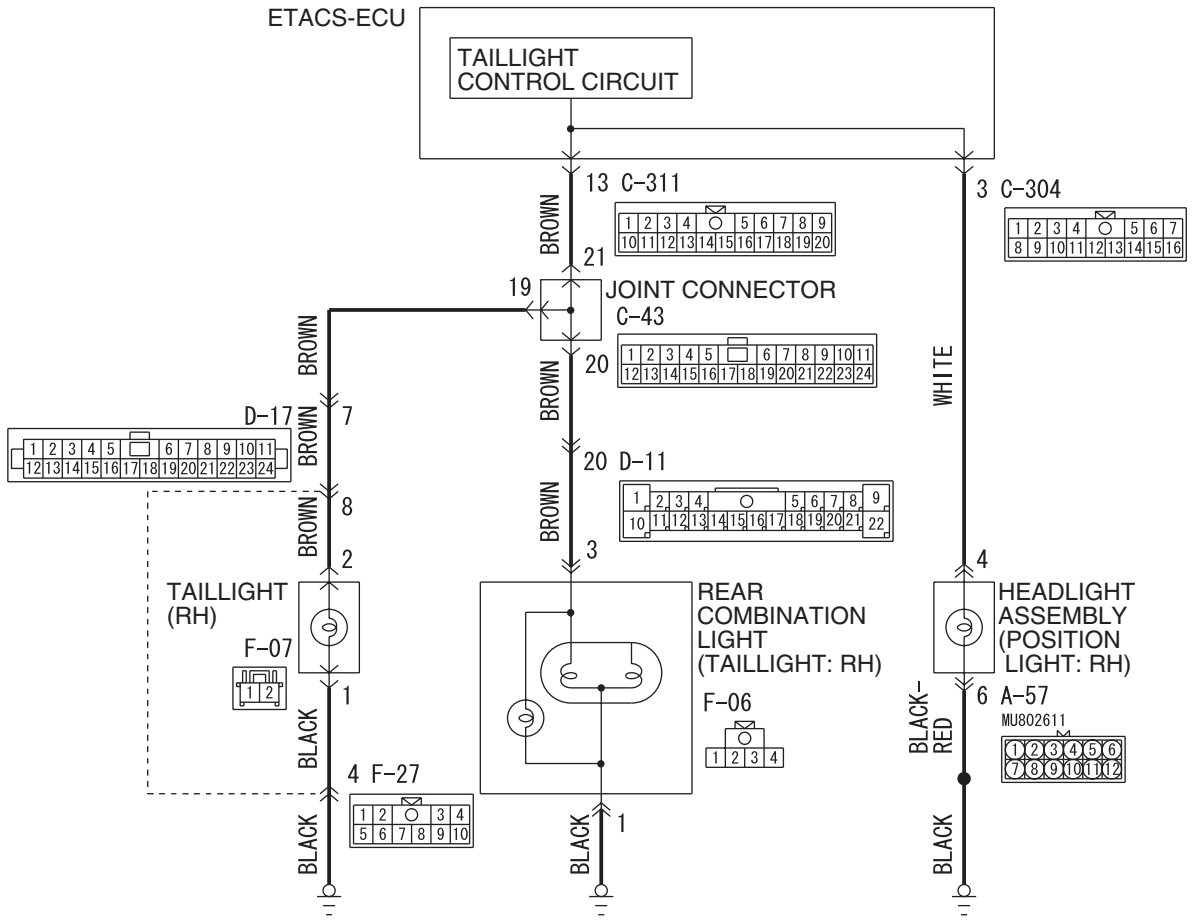
On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
B16A0	Taillight (RH) circuit open (Open circuit in taillight (RH) or position light (RH))	P.54A-197
B16A7	Taillight (RH) circuit short (Short circuit in taillight (RH) or position light (RH))	
B16A1	Taillight (LH) circuit open (Open circuit in taillight (LH), position light (LH), or license plate light)	P.54A-203
B16A8	Taillight (LH) circuit short (Short circuit in taillight (LH), position light (LH), or license plate light)	

DIAGNOSTIC TROUBLE CODE PROCEDURES

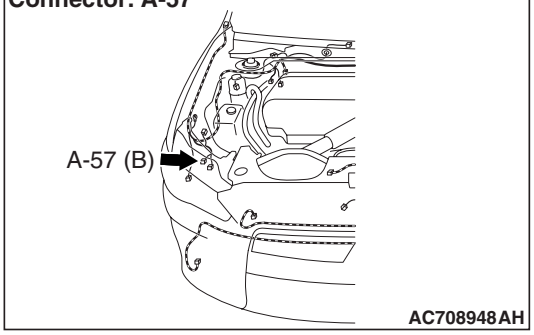
DTC B16A0: Taillight (RH) circuit open (Open circuit in taillight (RH) or position light (RH))
DTC B16A7: Taillight (RH) circuit short (Short circuit in taillight (RH) or position light (RH))

Taillight and Position Light Circuit

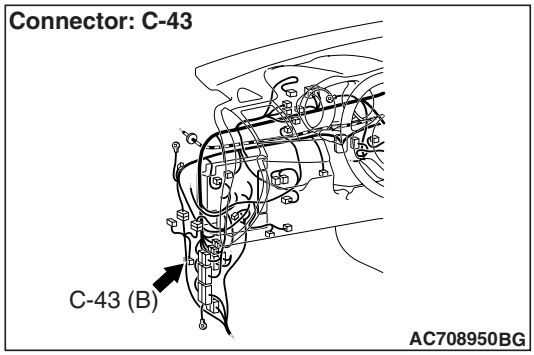


W8G54M181A

Connector: A-57



Connector: C-43



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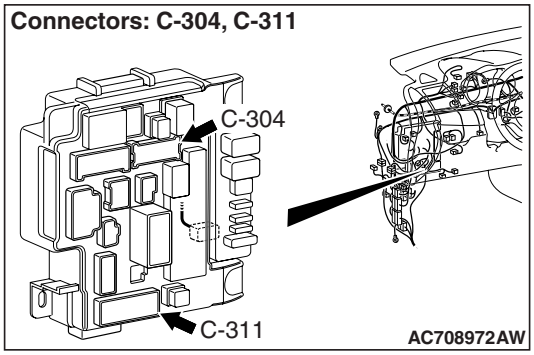
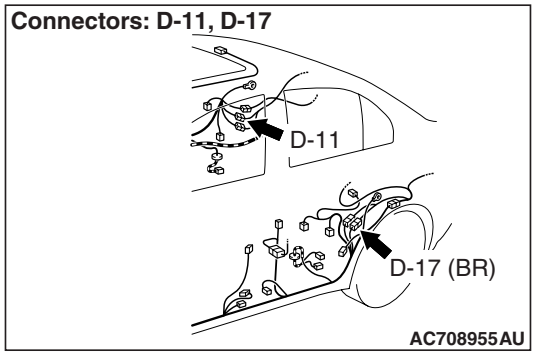
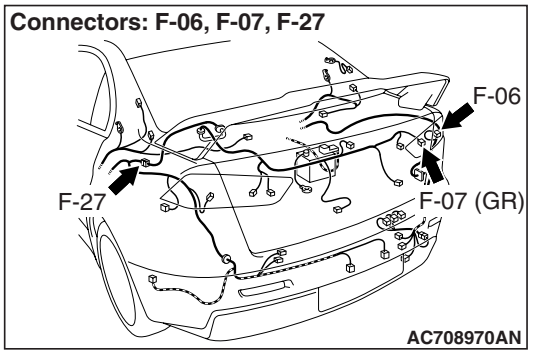






TROUBLE JUDGMENT

When an open circuit is detected in the taillight or position light circuit, the ETACS-ECU sets DTC B16A0. If a short circuit is detected, DTC B16A7 is set.

TECHNICAL DESCRIPTION (COMMENT)

The problem detection of taillight or position light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the taillight or position light. When the ignition switch is "ON", the ETACS-ECU determines the taillight or position light circuit state from the load placed on the line. After 100 ms has elapsed since the start of the check, the ETACS-ECU performs a sampling with each 10 ms. If an abnormality is detected, it increases the counter by 2, and when no abnormality is detected, it decreases the counter by 1. Once the counter reaches "10", the ETACS-ECU sets the DTC B16A0 if the load is detected on the line, and sets the DTC B16A7 if no load is detected.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of bulbs
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Bulb check.

Check the bulb(s) of the light that does not illuminate.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the bulb(s) of the light that does not illuminate.

STEP 2. Check headlight assembly (RH) connector A-57, rear combination light (RH) connector F-06 and taillight (RH) connector F-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly (RH) connector A-57, rear combination light (RH) connector F-06 and taillight (RH) connector F-07 in good condition?

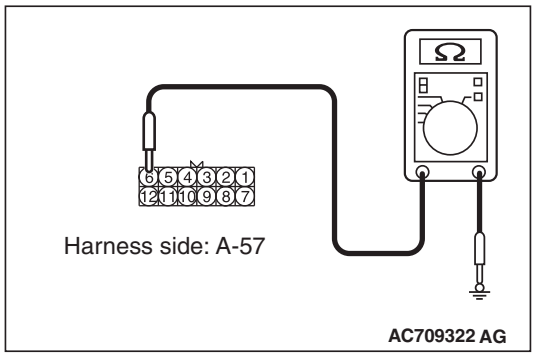
YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

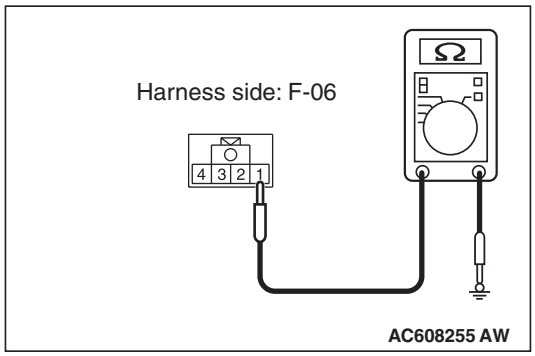
STEP 3. Resistance measurement at headlight assembly (RH) connector A-57, rear combination light (RH) connector F-06 and taillight (RH) connector F-07.

(1) Disconnect the connector, and measure at the wiring harness side.

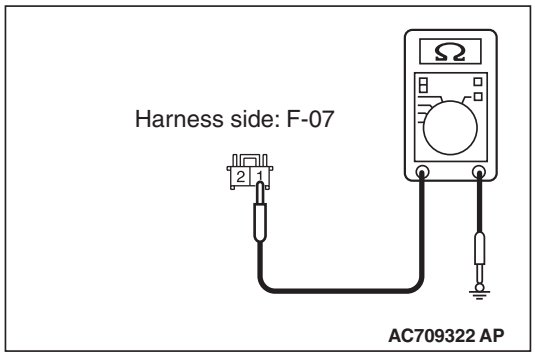
(2) Measure the resistance between the connector of light which does not illuminate and the body ground.



- Measure the resistance between headlight assembly (RH) connector A-57 (terminal 6) and the body ground.



- Measure the resistance between rear combination light (RH) connector F-06 (terminal 1) and the body ground.



- Measure the resistance between taillight (RH) connector F-07 (terminal 1) and the body ground.

  OK: The measured value should be continuity exists (2 Ω or less).

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

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between headlight assembly connector, rear combination light connector or tail light connector and the body ground.

Check the ground line for open circuit.

- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 6) and the body ground.
- Check the wiring harness between rear combination light (RH) connector F-06 (terminal 1) and the body ground.
- Check the wiring harness between taillight (RH) connector F-07 (terminal 1) and the body ground.

NOTE: Also check intermediate connector F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between headlight assembly connector, rear combination light connector or tail light connector and the body ground in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check ETACS-ECU connectors C-304 <position light> and C-311 <taillight> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-304 <position light> and C-311 <taillight> in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check wiring harness between headlight assembly connector, rear combination light connector and taillight connector and ETACS-ECU connector.

Check the power supply line for open circuit or short circuit.

- Check the wiring harness between headlight assembly (RH) connector A-57 (terminal 4) and ETACS-ECU connector C-304 (terminal 3).
- Check the wiring harness between rear combination light (RH) connector F-06 (terminal 3) and ETACS-ECU connector C-311 (terminal 13).

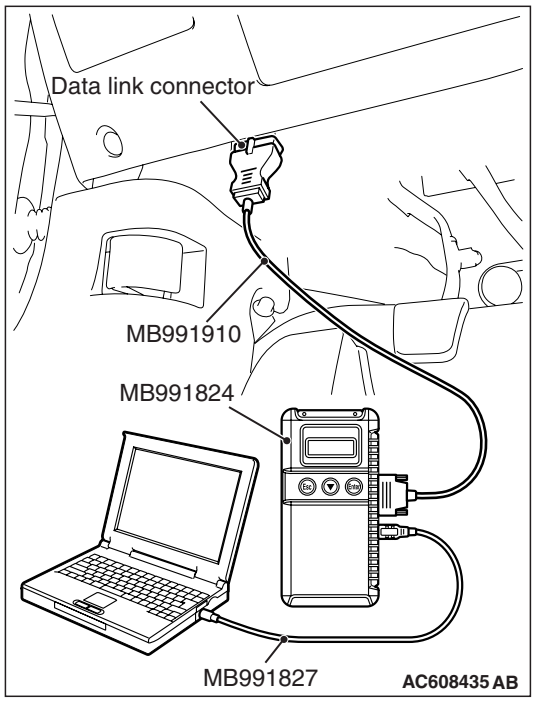
  NOTE: Also check intermediate connectors D-11 and joint connector C-43 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-11 or joint connector C-43 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between taillight (RH) connector F-07 (terminal 2) and ETACS-ECU connector C-311 (terminal 13).

  NOTE: Also check intermediate connectors D-17 and F-27 and joint connector C-43 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 or F-27 or joint connector C-43 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between headlight assembly connector, rear combination light connector or taillight connector and ETACS-ECU connector in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



STEP 7. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

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

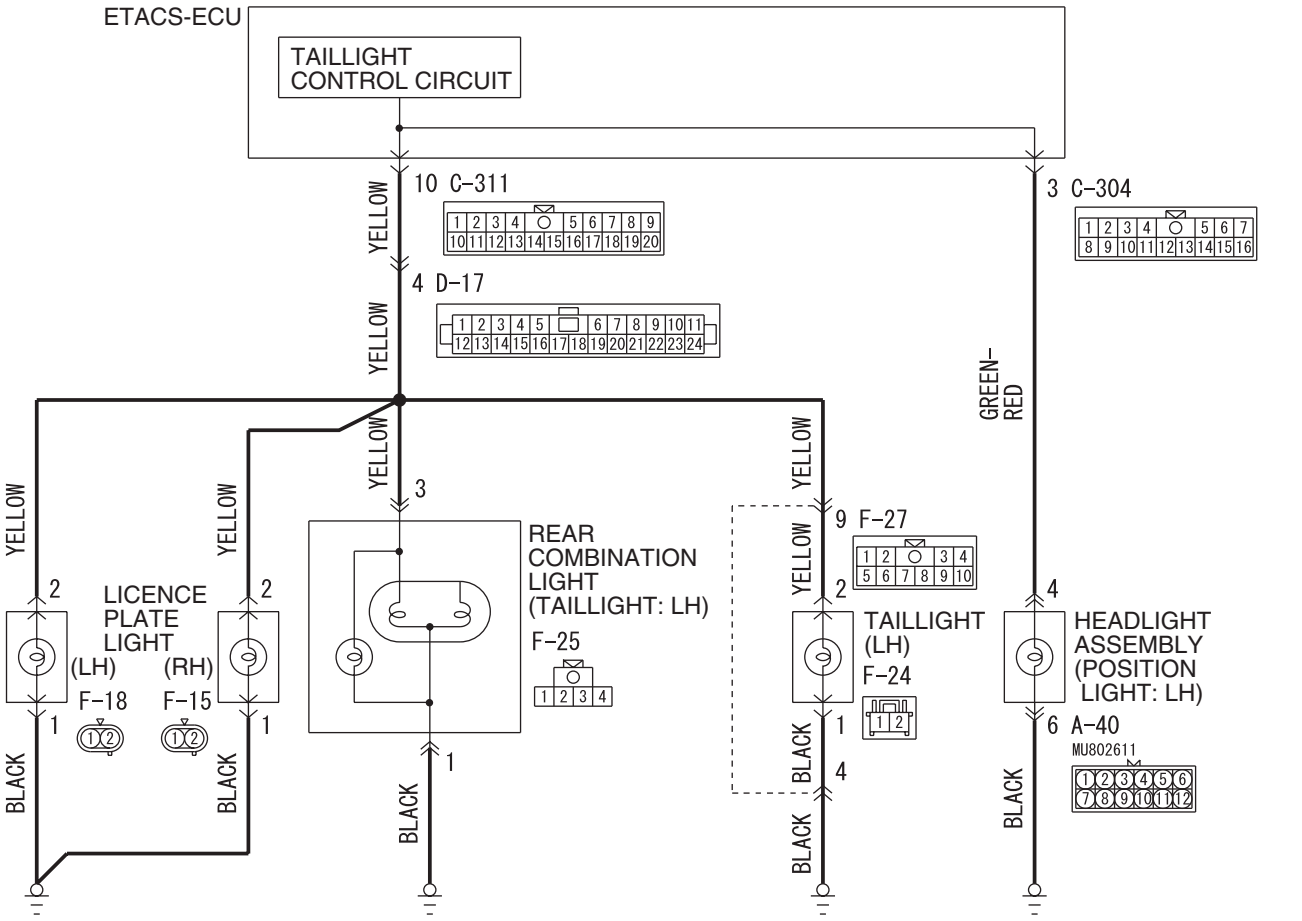
(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-194."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

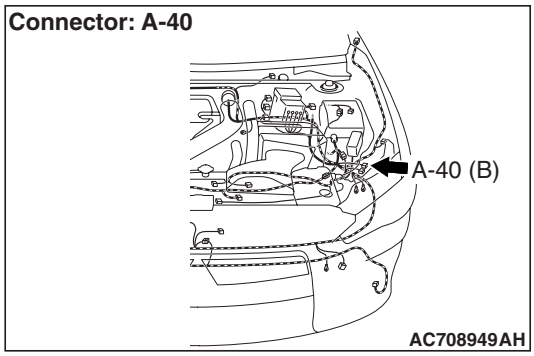
DTC B16A1: Taillight (LH) circuit open (Open circuit in taillight (LH), position light (LH), or license plate light)
DTC B16A8: Taillight (LH) circuit short (Short circuit in taillight (LH), position light (LH), or license plate light)

Taillight, Position Light and License Plate Light Circuit

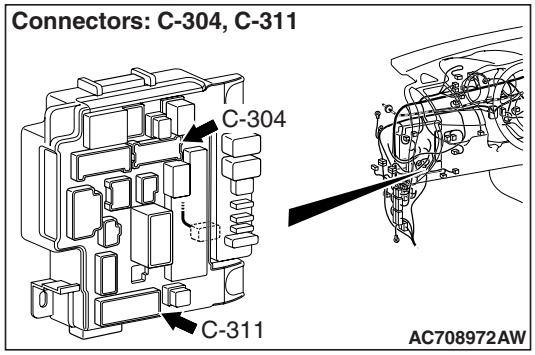


W8G54M180A

Connector: A-40



Connectors: C-304, C-311



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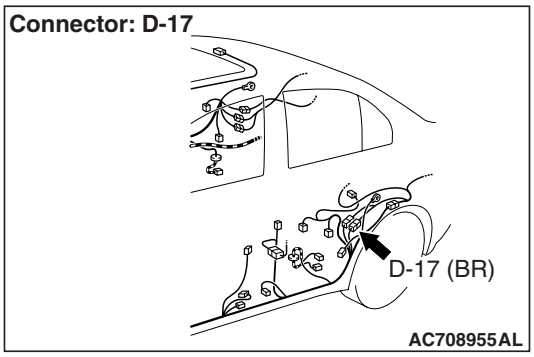
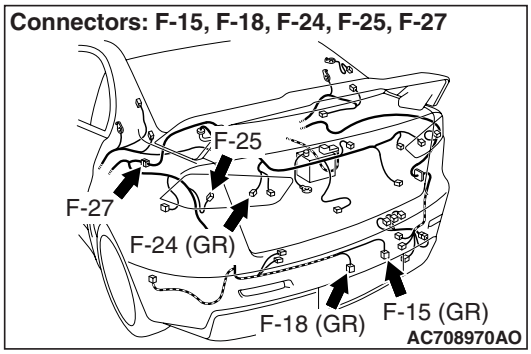




TROUBLE JUDGMENT

When an open circuit is detected in the taillight, position light or license plate light circuit, the ETACS-ECU sets DTC B16A1. If a short circuit is detected, DTC B16A8 is set.

TECHNICAL DESCRIPTION (COMMENT)

The problem detection of taillight, position light or license plate light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the taillight, position light or license plate light. When the ignition switch is "ON", the ETACS-ECU determines the taillight, position light or license plate light circuit state from the load placed on the line. After 100 ms has elapsed since the start of the check, the ETACS-ECU performs a sampling with each 10 ms. If an abnormality is detected, it increases the counter by 2, and when no abnormality is detected, it decreases the counter by 1. Once the counter reaches "10", the ETACS-ECU sets the DTC B16A1 if the load is detected on the line, and sets the DTC B16A8 if no load is detected.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of bulbs
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Bulb check.

Check the bulb(s) of the light that does not illuminate.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the bulb(s) of the light that does not illuminate.

STEP 2. Check headlight assembly (LH) connector A-40, rear combination light (LH) connector F-25, taillight (LH) connector F-24, license plate light connector F-18 (LH) and F-15 (RH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly (LH) connector A-40, rear combination light (LH) connector F-25, taillight (LH) connector F-24, license plate light connector F-18 (LH) and F-15 (RH) in good condition?

YES : Go to Step 3.

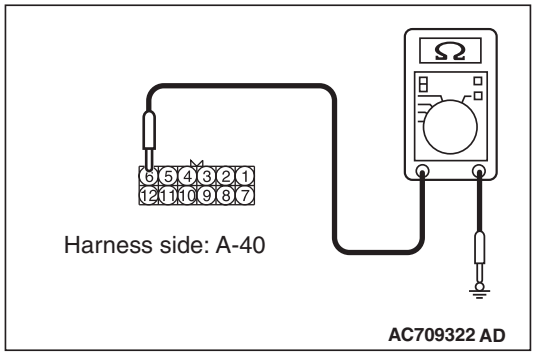
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Resistance measurement at headlight assembly (LH) connector A-40, rear combination light (LH) connector F-25, taillight (LH) connector F-24, license plate light connector F-18 (LH) and F-15 (RH).

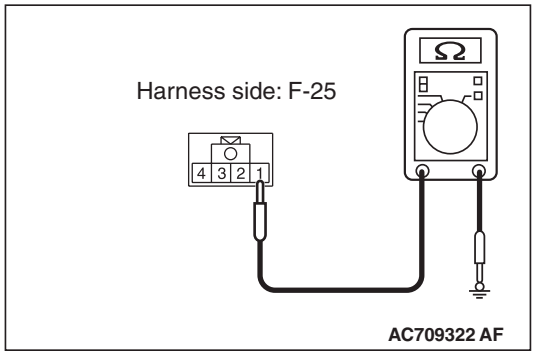
(1) Disconnect the connector, and measure at the wiring harness side.

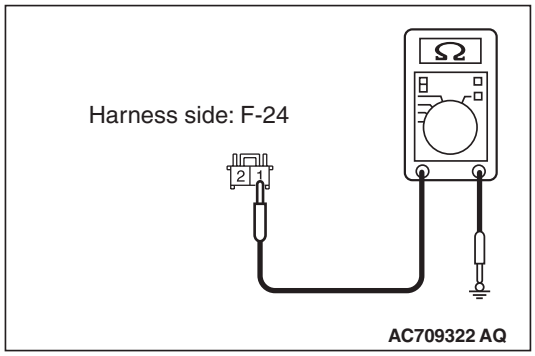
(2) Measure the resistance between the connector of light which does not illuminate and the body ground.

- Measure the resistance between headlight assembly (LH) connector A-40 (terminal 6) and the body ground.

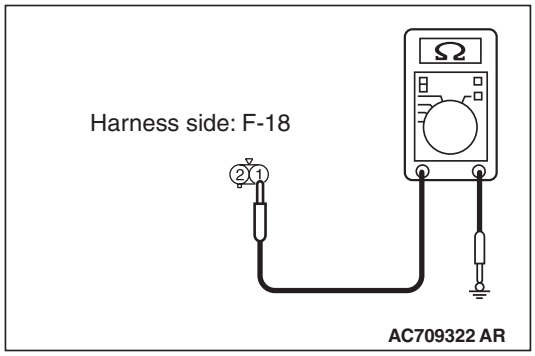


- Measure the resistance between rear combination light (LH) connector F-25 (terminal 1) and the body ground.

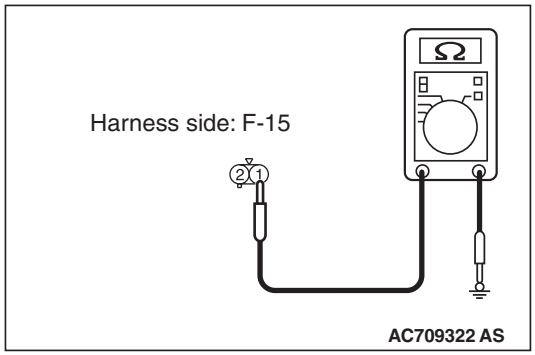




- Measure the resistance between taillight (LH) connector F-24 (terminal 1) and the body ground.



- Measure the resistance between license plate light (LH) connector F-18 (terminal 1) and the body ground.



- Measure the resistance between license plate light (RH) connector F-15 (terminal 1) and the body ground.

  OK: The measured value should be continuity exists (2 Ω or less).

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

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

STEP 4. Check the wiring harness between headlight assembly connector, rear combination light connector, tail light connector or license plate light and the body ground.
Check the ground line for open circuit.

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 6) and the body ground.
- Check the wiring harness between rear combination light (LH) connector F-25 (terminal 1) and the body ground.
- Check the wiring harness between taillight (LH) connector F-24 (terminal 1) and the body ground.

  NOTE: Also check intermediate connector F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (LH) connector F-18 (terminal 1) and the body ground.
- Check the wiring harness between license plate light (RH) connector F-15 (terminal 1) and the body ground.

Q: Is the wiring harness between headlight assembly connector, rear combination light connector, tail light connector or license plate light and the body ground in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check ETACS-ECU connectors C-304 <position light> and C-311 <taillight or license plate light> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-304 <position light> and C-311 <taillight or license plate light> in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check wiring harness between headlight assembly connector, rear combination light connector, taillight connector or license plate light and ETACS-ECU connector.

Check the power supply line for open circuit or short circuit.

- Check the wiring harness between headlight assembly (LH) connector A-40 (terminal 4) and ETACS-ECU connector C-304 (terminal 3).
- Check the wiring harness between rear combination light (LH) connector F-25 (terminal 3) and ETACS-ECU connector C-311 (terminal 10).

  NOTE: Also check intermediate connectors D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between taillight (LH) connector F-24 (terminal 2) and ETACS-ECU connector C-311 (terminal 10).

  NOTE: Also check intermediate connectors D-17 and F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 or F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (LH) connector F-18 (terminal 2) and ETACS-ECU connector C-311 (terminal 10).

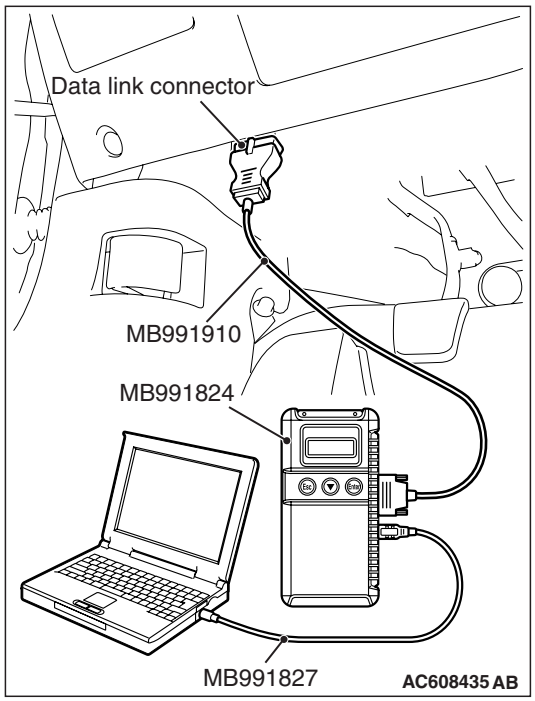
  NOTE: Also check intermediate connectors D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- Check the wiring harness between license plate light (RH) connector F-15 (terminal 2) and ETACS-ECU connector C-311 (terminal 10).

  NOTE: Also check intermediate connectors D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between headlight assembly connector, rear combination light connector, taillight connector or license plate light and ETACS-ECU connector in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



STEP 7. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-194."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

TROUBLE SYMPTOM CHART

M1541401000243

Inspection Procedure No.	Trouble symptom	Reference page
1	All the taillights do not illuminate.	P.54A-209
2	One of the headlights does not illuminate.	P.54A-212

SYMPTOM PROCEDURES

Inspection Procedure 1: All the taillights do not illuminate.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If all the taillights do not illuminate normally, the taillight switch input circuit or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

STEP 1. License plate light operation check

Check that the license plate light illuminates normally.

Q: Does license plate light work normally?

YES : Go to Step 2.
NO : Replace the ETACS-ECU.

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

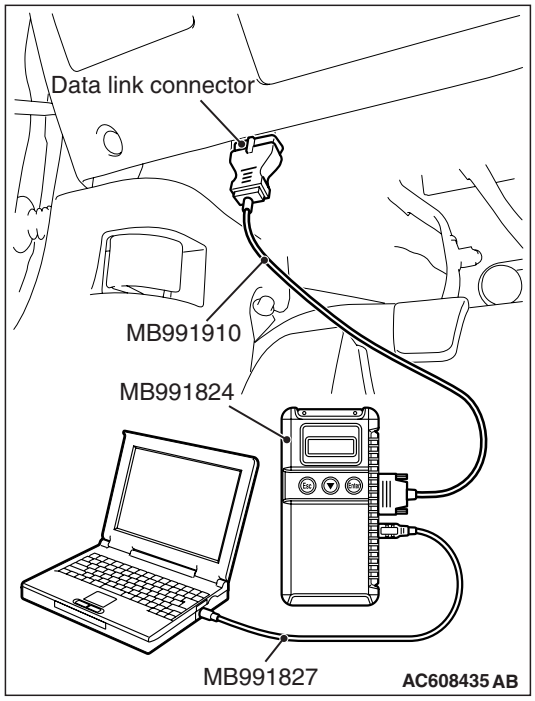
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-194."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 3.



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

Use the ETACS-ECU data list to check the signals related to the taillight illumination.

- Turn the ignition switch to the "ACC" position.
- Turn the taillight switch to the "ON" position.

Item No.	Item name	Normal conditions
Item 218	Taillight	ON

Q: Does scan tool MB991958 display the items "Taillight" as normal condition?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU (Refer to P.54A-639).

STEP 4. Retest the system

Check that the taillight illuminates normally.

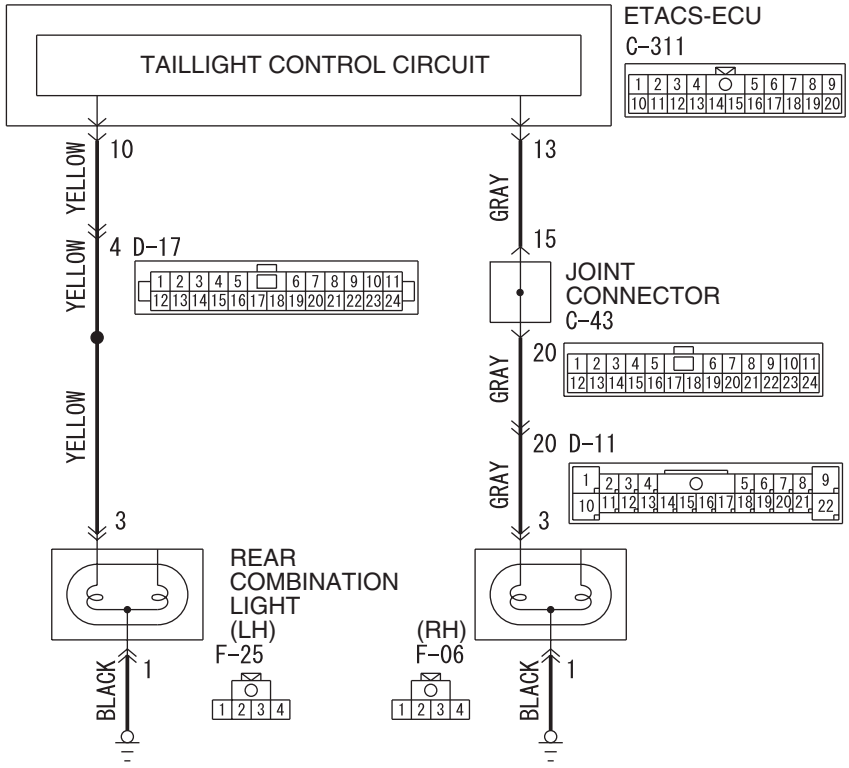
Q: Does the taillight work normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

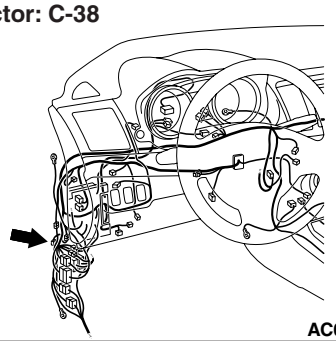
Inspection Procedure 2: One of the headlights does not illuminate.

Taillight Circuit



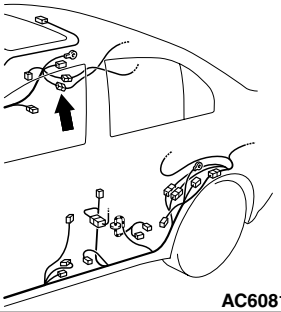
W8G54M162A

Connector: C-38



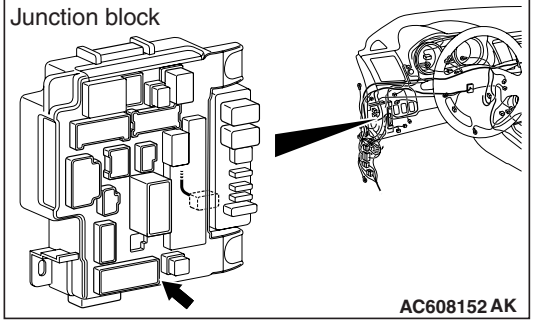
AC608145BT

Connector: D-11



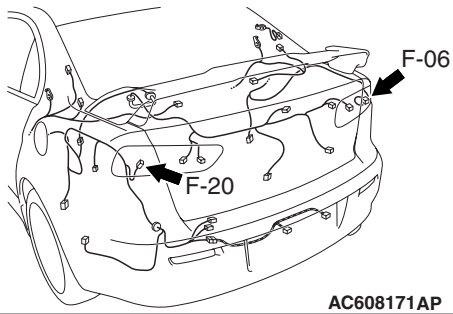
AC608166AM

Connector: C-311
Junction block



AC608152AK

Connectors: F-06, F-20



AC608171AP

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TECHNICAL DESCRIPTION (COMMENT)

If any of the taillights does not Illuminate, the wiring harness, connector(s), or rear combination light unit may have a problem, or the fuse may be burned out.

TROUBLESHOOTING HINTS

- Malfunction of rear combination light unit
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check rear combination light connector F-25 (LH) or F-06 (RH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light connector F-25 (RH) or F-06 (LH) in good condition?

YES : Go to Step 2.

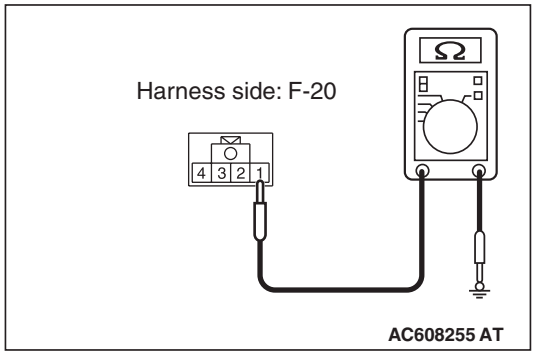
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

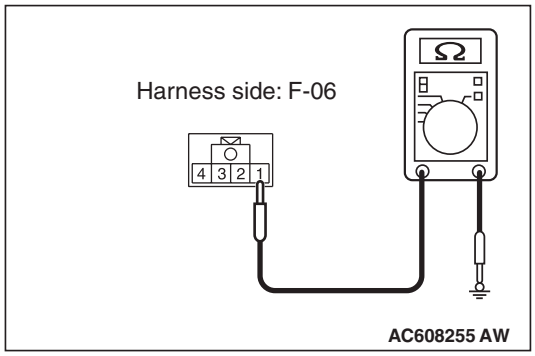
STEP 2. Resistance measurement at rear combination light connector F-25 (LH) or F-06 (RH).

(1) Disconnect the connector, and measure at the wiring harness side.

(2) Measure the resistance between the connector of light which does not illuminate and body ground.

- Measure the resistance between rear combination light (LH) connector F-25 (terminal 1) and body ground.





- Measure the resistance between rear combination light (RH) connector F-06 (terminal 1) and body ground.

  OK: The measured value should be continuity exists (2 ohms or less).

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

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between rear combination light connectors F-25 (LH) (terminal 1) or F-06 (RH) (terminal 1) and ground.

Q: Is the wiring harness between rear combination light connectors F-25 (LH) (terminal 1) or F-06 (RH) (terminal 1) and ground in good condition?

YES : Go to Step 6.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check ETACS-ECU connectors C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-311 in good condition?

YES : Go to Step 5.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Check the wiring harness between rear combination light connector and ETACS-ECU connector.

Check the power supply line for open circuit.

- Check the wiring harness between rear combination light (LH) connector F-25 (terminal 3) and ETACS-ECU connector C-311 (terminal 10). <LH>
- Check the wiring harness between rear combination light (RH) connector F-06 (terminal 3) and ETACS-ECU connector C-311 (terminal 13). <RH>

NOTE: Also check joint connector C-43 and intermediate connector D-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-43 or intermediate connector D-11 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light connector and ETACS-ECU connector in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 6. Retest the system.

Check that the taillight illuminates normally.

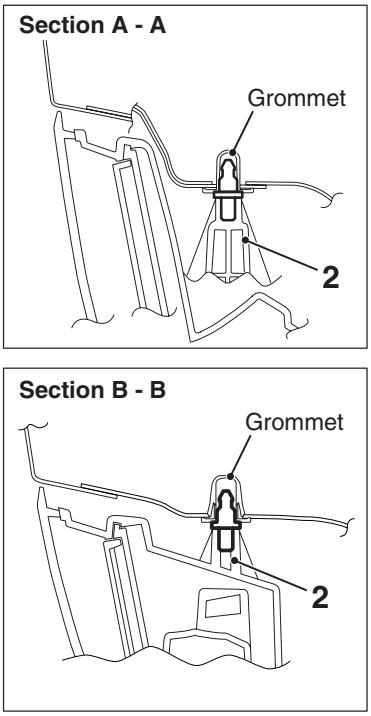
Q: Does the taillight work normally?

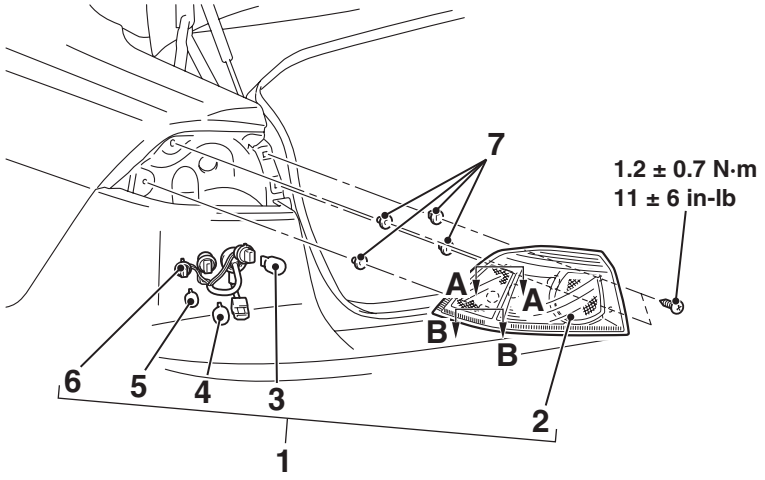
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the defective rear combination light unit.

REAR COMBINATION LIGHT REMOVAL AND INSTALLATION

M1541402200295





AC709273AB

Removal Steps

1. Rear combination light assembly
2. Rear combination light unit
3. Stop/taillight bulb
4. Rear turn-signal light bulb

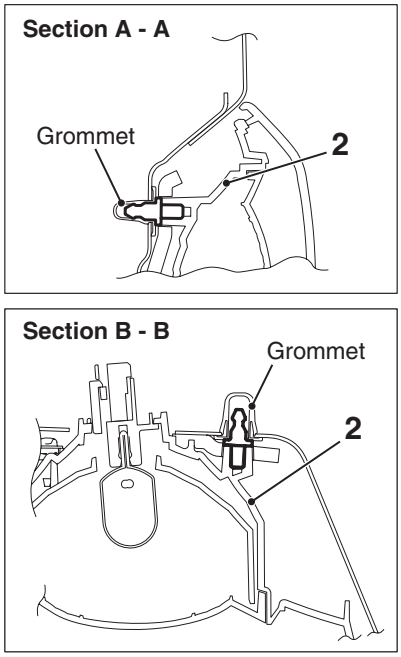
Removal Steps (Continued)

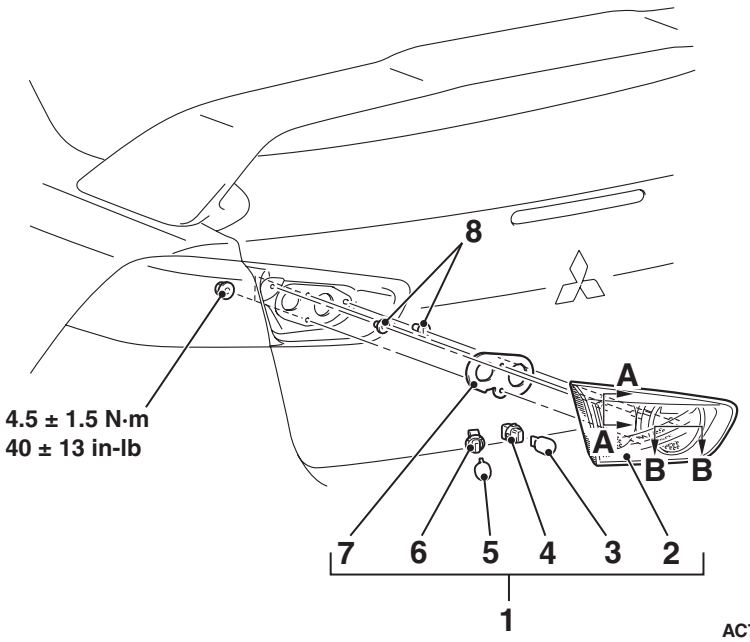
5. Rear side-marker light bulb
6. Socket
7. Grommet

TSB Revision

TAILLIGHT REMOVAL AND INSTALLATION

M1541402600107





AC706935AC

Removal Steps

- Trunk lid trim (Refer to GROUP 52A –Trims P.52A-11).

1. Taillight assembly
2. Taillight unit
3. Back-up light bulb

Removal Steps (Continued)

4. Socket
5. Taillight bulb
6. Socket
7. Gasket
8. Grommet

FOG LIGHT

SERVICE SPECIFICATIONS

M1540400900091

Item	Standard value	Limit
Fog light aiming (cutoff line direction) [at 7.62 m (25.0 ft)]	The horizontal line 153.0 mm (6.02 inches) (1.15 degrees angle) below the horizontal line (H)	–
Fog light aiming (vertical direction) [at 7.62 m (25.0 ft)]	–	Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line
Fog light aiming (horizontal direction) [at 7.62 m (25.0 ft)]	–	Vertical line (V) ±599.7 mm (±23.6 inches) (±4.5 degrees angle).

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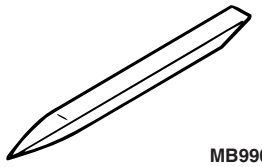
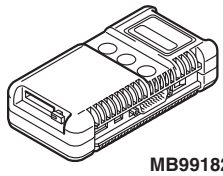
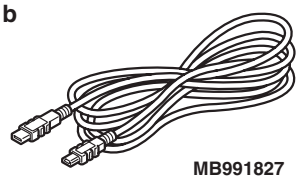
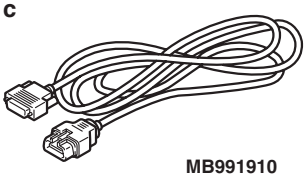
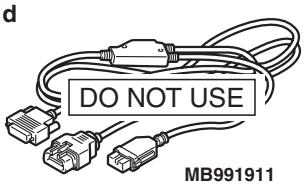
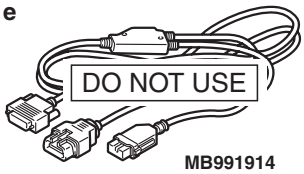
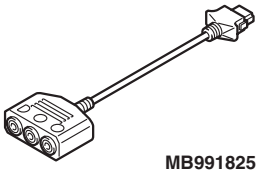
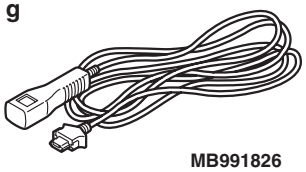
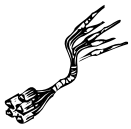
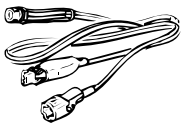
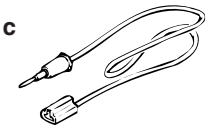
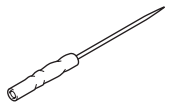
SPECIAL TOOLS

M1540401800075

Tool	Tool number and name	Supersession	Application
 MB990784	MB990784 Ornament remover	General service tool	Removal of front fog light bezel
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub-assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.** DTC, data list and actuator test check.

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540401700012

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC FUNCTION

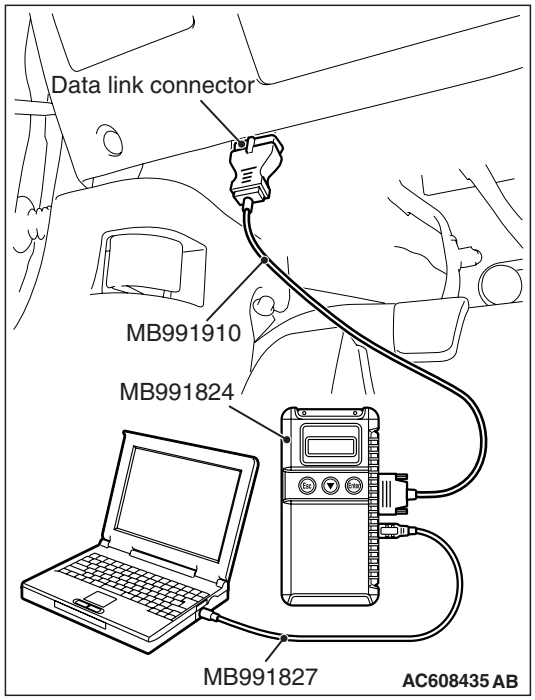
M1540403000020

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

REQUIRED SPECIAL TOOLS:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TROUBLE SYMPTOM CHART

M1540401000228

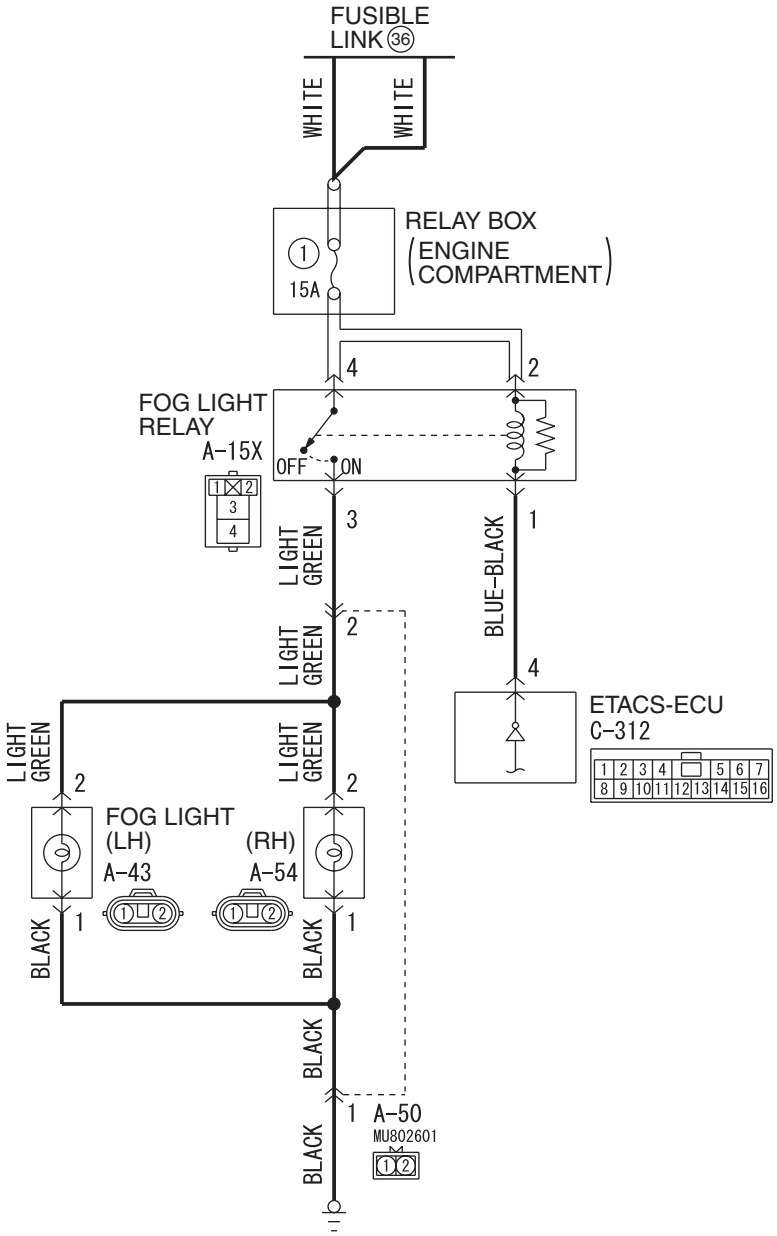
Inspection Procedure No.	Trouble symptom	Reference page
1	All the front fog lights do not illuminate normally.	P.54A-222
2	One of the fog lights does not illuminate.	P.54A-228
3	The front fog light indicator does not illuminate normally.	P.54A-232

SYMPTOM PROCEDURES

Inspection Procedure 1: All the front fog lights do not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Fog Light and ETACS-ECU Communication Circuit



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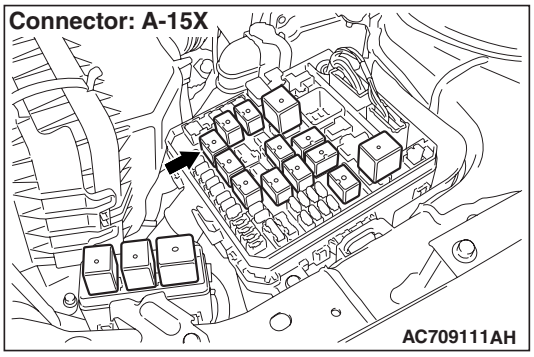
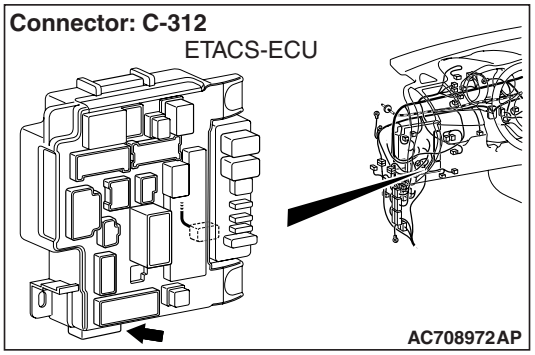
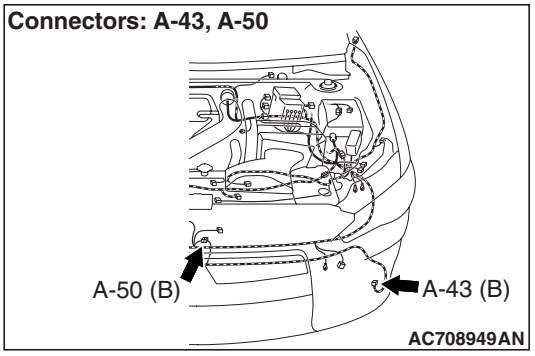
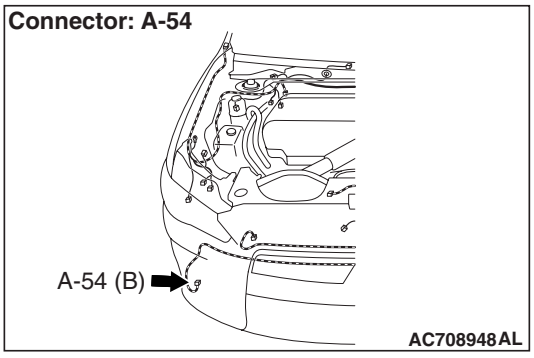








CIRCUIT OPERATION

If all the fog lights do not illuminate normally, the input signal circuit(s) below or the ETACS-ECU may be defective.

- Tail light switch
- Headlight switch
- Fog light switch
- Option coding information

TECHNICAL DESCRIPTION (COMMENT)

When the fog lights do not illuminate normally, the mentioned input signal circuit(s) or ETACS-ECU may be defective.

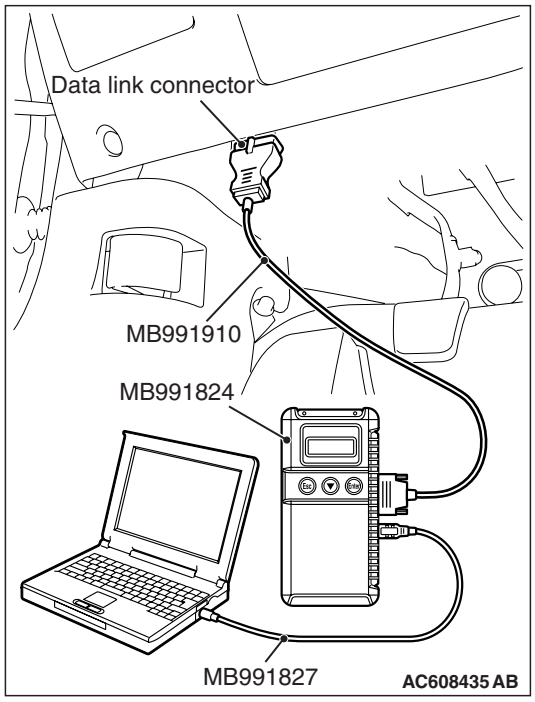
TROUBLESHOOTING HINTS

- Malfunction of the column switch
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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



STEP 1. ETACS-ECU coding data check.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-219."
(2) Turn the ignition switch to the "ON" position.
(3) Read out the option coding information in ETACS-ECU (Refer to GROUP 00, Precautions before service, Coding Table P.00-39).
(4) Check that the "Front fog light" is set to "YES."
(5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ETACS-ECU coding data normal?

YES : Go to Step 2.
NO : Operate scan tool MB991958 to set the option coding "Front fog light" to "Yes," and check the trouble symptom.

STEP 2. Check that the tail/stop lights and headlights operate.

Check that the tail/stop lights and headlights illuminate normally.

Q: Do the tail/stop lights and headlights operate normally?

YES : Go to Step 3.
NO : Check the tail/stop lights and the headlights (Refer to trouble symptom chart P.54A-127).

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

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

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to ETACS, Diagnosis P.54A-582).
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check data list.

Use the ETACS-ECU data list to check the signals related to the fog light function.

- Turn the ignition switch to the "ACC" position.
- Turn the fog light switch to ON.

Item No.	Item name	Normal condition
Item 212	Front fog light	ON

Q: Does scan tool MB991958 display the items "Front fog light" as normal condition?

YES : Go to Step 5.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis - Inspection Procedure 12 "ETACS-ECU does not receive any signal from the column switch signal." P.54A-639.

STEP 5. Check fog light relay connector A-15X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-15X in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

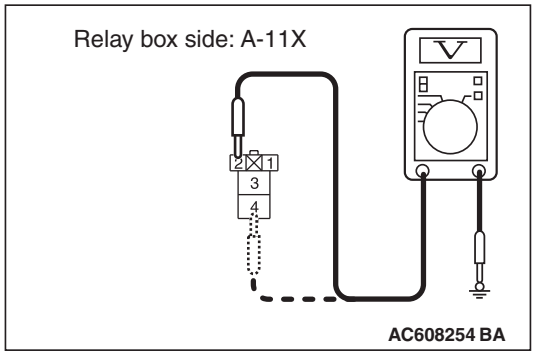
STEP 6. Check the fog light relay.

Refer to P.54A-237.

Q: Is the fog light relay in good condition?

YES : Go to Step 7.

NO : Replace the fog light relay.



STEP 7. Check the battery power supply circuit to the fog light relay. Measure the voltage at fog light relay connector A-15X.

⚠ CAUTION

The top and bottom of the fog light relay are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

(1) Disconnect fog light relay connector A-15X and measure the voltage available at the relay box side of the connector.
(2) Measure the voltage between terminal 2 and ground, and between terminal 4 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

STEP 8. Check the wiring harness between fog light relay connector A-15X (terminal 2 and 4) and fusible link (36).

- Check the power supply line for open circuit.

Q: Is the wiring harness between fog light relay connector A-15X (terminal 2 and 4) and fusible link (36) in good condition?

YES : Go to Step 13.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 10.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 10. Check the wiring harness between fog light relay connector A-15X (terminal 1) and ETACS-ECU connector C-312 (terminal 4).

Q: Is the wiring harness between fog light relay connector A-15X (terminal 1) and ETACS-ECU connector C-312 (terminal 4) in good condition?

YES : Go to Step 11.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 11. Check the wiring harness between fog light relay connector A-15X (terminal 3) and fog light (LH) connector A-43 (terminal 2) or fog light (RH) connector A-54 (terminal 2).

NOTE: Also check intermediate connector A-50 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-50 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the power supply line for open circuit.

Q: Is the wiring harness between fog light relay connector A-15X (terminal 3) and fog light (LH) connector A-43 (terminal 2) or fog light (RH) connector A-54 (terminal 2) in good condition?

YES : Go to Step 12.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 12. Check the wiring harness between fog light (LH) connector A-43 (terminal 1) or fog light (RH) connector A-54 (terminal 1) and ground.

NOTE: Also check intermediate connector A-50 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-50 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the ground wires for open circuit.

Q: Is the wiring harness between fog light (LH) connector A-43 (terminal 1) or fog light (RH) connector A-54 (terminal 1) and ground in good condition?

YES : Go to Step 13.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 13. Retest the system.

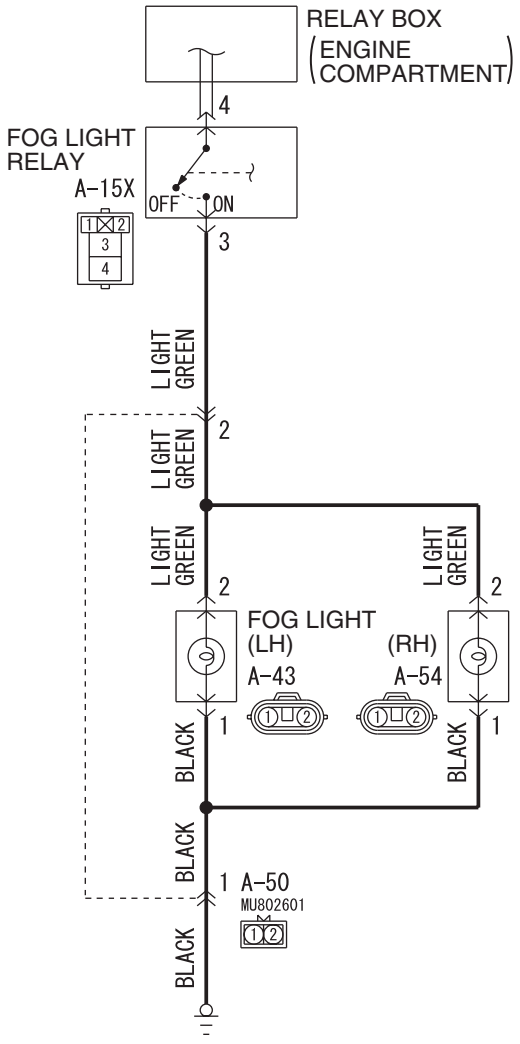
Q: Does the fog lights illuminate in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

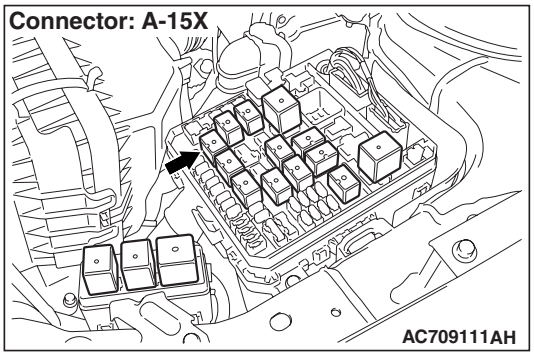
Inspection Procedure 2: One of the fog lights does not illuminate.

Fog Light Circuit



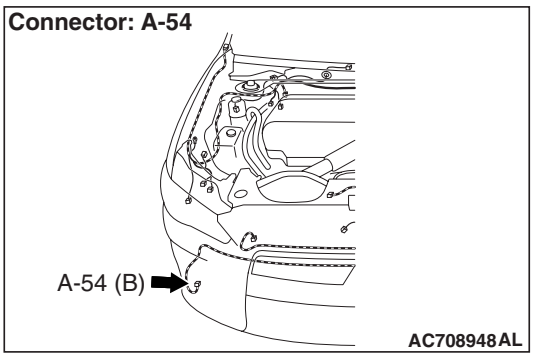
W8G54M164A

Connector: A-15X



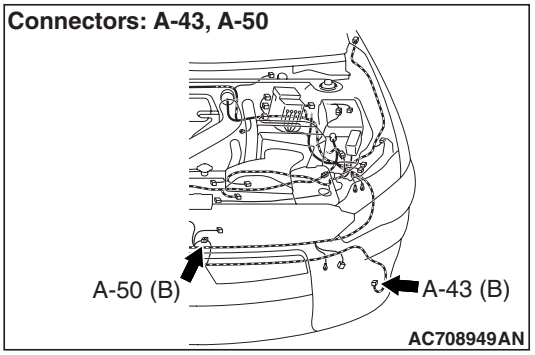
AC709111AH

Connector: A-54



AC708948AL

Connectors: A-43, A-50



AC708949AN

TECHNICAL DESCRIPTION (COMMENT)

If one of the fog lights does not Illuminate, the wiring harness connector(s), the bulb may be defective.

TROUBLESHOOTING HINTS

- Burned-out fog light bulb
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check fog light (LH) connector A-43 or fog light (RH) A-54 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-43 or fog light (RH) A-54 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 2. Check the fog light bulb.

(1) Remove the fog light bulb.

(2) Verify that the fog light bulb is not damaged or burned out.

Q: Is the fog light bulb in good condition?

YES : Go to Step 3.

NO : Replace the fog light bulb.

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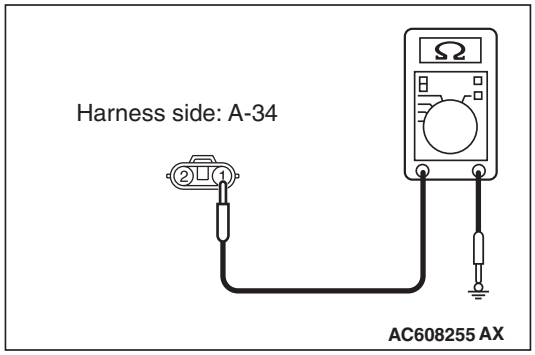
Step 3. Check the ground circuit to the fog light (LH) or fog light (RH). Measure the resistance at fog light (LH) connector A-43 or fog light (RH) connector A-54.

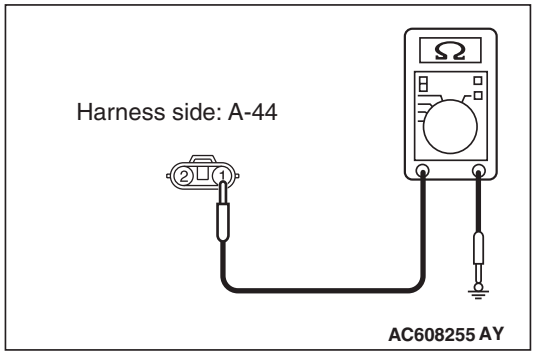
(1) Disconnect the connector, and measure at the wiring harness side.

(2) Check the resistance between the fog light connector and ground.

- Resistance between A-43 fog light (LH) connector terminal No.1 and ground



- Resistance between A-54 front fog light (RH) connector terminal No.1 and ground



OK: The resistance should be 2 ohm or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

Step 4. Check the wiring harness between fog light (LH) connector A-43 (terminal 1) or fog light (RH) connector A-54 (terminal 1) and ground.

NOTE: Also check intermediate connector A-50 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-50 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the ground wires for open circuit.

Q: Is the wiring harness between fog light (LH) connector A-43 (terminal 1) or fog light (RH) connector A-54 (terminal 1) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check fog light relay connector A-15X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-15X in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check the wiring harness between fog light (LH) connector A-43 (terminal 2) or fog light (RH) connector A-54 (terminal 2) and fog light relay connector A-15X (terminal 3).

NOTE: Also check intermediate connector A-50 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-50 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the power supply line for open circuit.

Q: Is the wiring harness between fog light (LH) connector A-43 (terminal 2) or fog light (RH) connector A-54 (terminal 2) and fog light relay connector A-15X (terminal 3) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Retest the system.

Q: Does the right or left fog light does not illuminate in good condition?

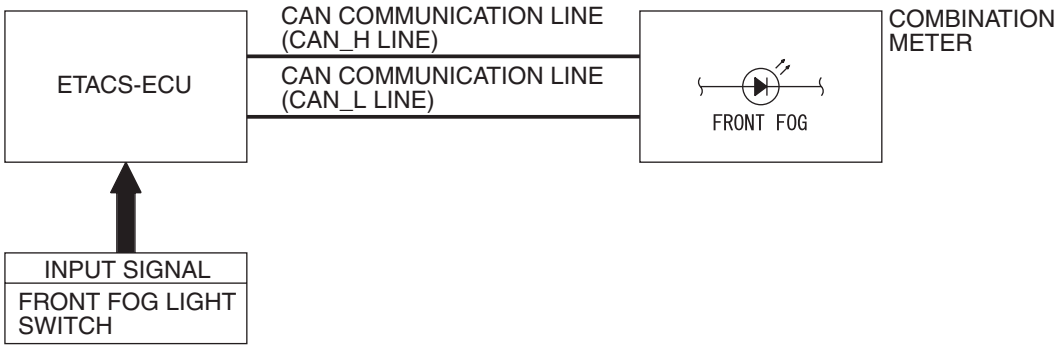
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the fog light(s).

Inspection Procedure 3: The front fog light indicator does not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Front Fog Light Indicator Light Circuit



W4X54E035A

TECHNICAL DESCRIPTION (COMMENT)

If the fog light indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- The combination meter may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

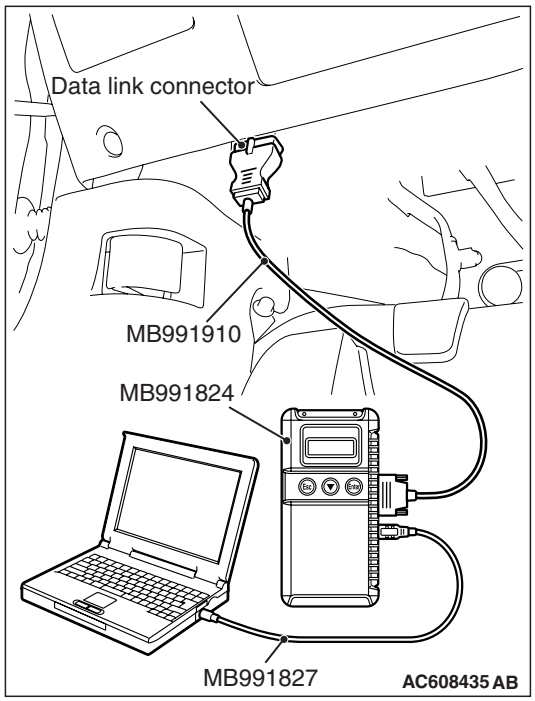
- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Check the fog lights.

When the fog light switch is operated, check that the fog lights illuminate and go off normally.

Q: Is the fog lights normal?

YES : Go to Step 2.
NO : First, repair the front fog lights. Refer to Inspection Procedure 2 "The right or left fog light does not illuminate P.54A-228."



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-219."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

(1) Check whether a combination meter-related DTC is set.
(2) Turn the ignition switch to the "ON" position.
Check whether the combination meter-related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to combination meter, Diagnosis P.54A-28).
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check actuator test.

(1) Turn the ignition switch to the "ON" position.
(2) Perform the actuator test for the combination meter, and check that the fog light indicator illuminates (Refer to combination meter, Diagnosis P.54A-59).
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Replace the ETACS-ECU.
NO : Replace the combination meter.

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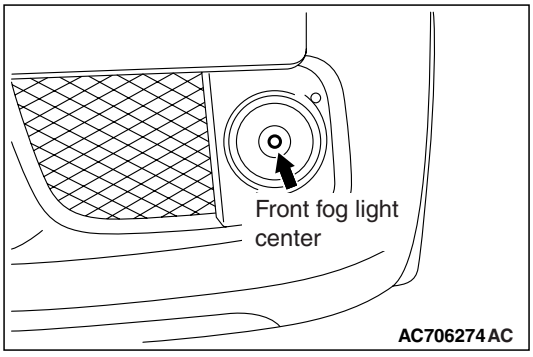
ON-VEHICLE SERVICE

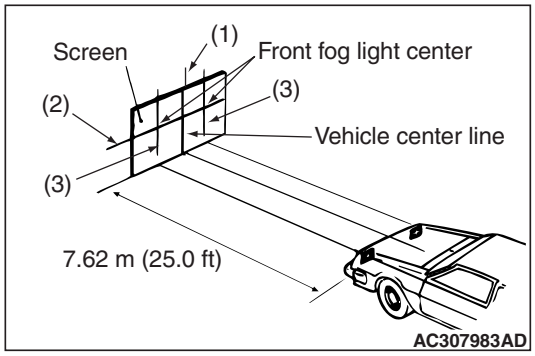
FRONT FOG LIGHT AIMING

M1540400300282

PRE-AIMING INSTRUCTIONS

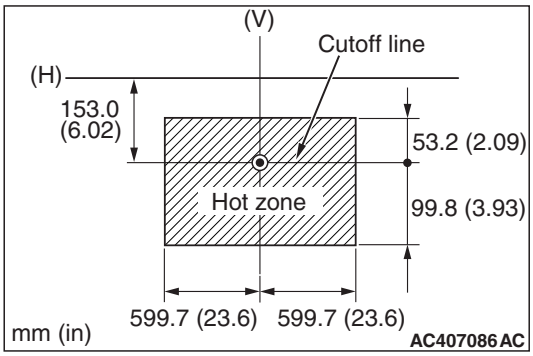
1. Inspect for rusted or faulty front fog light assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 kg (6.5 pounds) per gallon].
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
6. Thoroughly clean the front fog light lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 meters (25.0 ft) away from the bulb center-marks on the fog light lens.
8. Rock the vehicle sideways to allow the vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to the hood or bumper.
10. Measure the center of the front fog lights as shown in the illustration.





11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
    (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
    (2) Measure the distance from the center of the front fog light lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
    (3) Measure the distance from the center line of the vehicle to the center of each front fog light. Transfer the measurement to the screen. Vertical tape or mark on the screen is for reference to the center line of each front fog light.

FOG LIGHT ADJUSTMENT



1. Check if the beam shining onto the screen is at the standard value.

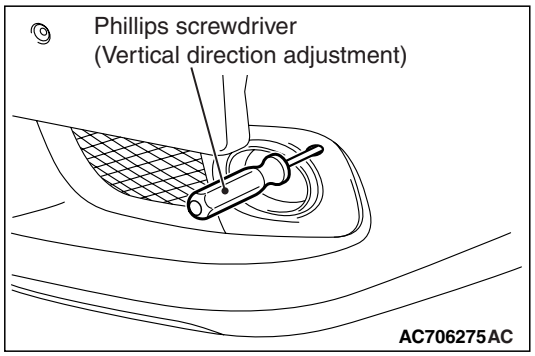
   Standard value:

   (Cutoff line direction): The horizontal line 153.0 mm (6.02 inches) (1.15 degrees angle) below the horizontal line (H)

   Limit:

   (Vertical direction): Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line

   (Horizontal direction): Vertical line (V) ±599.7 mm (± 23.6 inches) (±4.5 degrees angle)



2. If it is not within the standard value range, adjust by turning the adjusting screw.

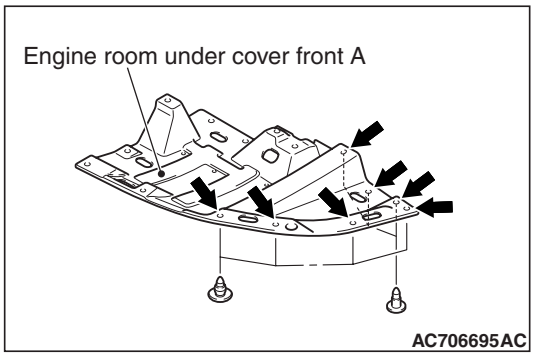
NOTE: The horizontal direction is non-adjustable. If deviation of the light beam axis exceeds the standard value, check that the mounting location or some other points are not faulty.

FRONT FOG LIGHT BULB REPLACEMENT

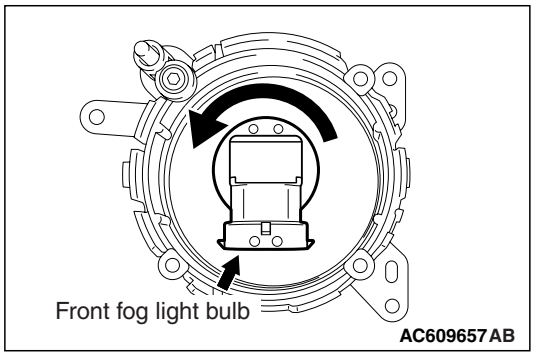
M1540400400289

⚠ CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



1. Remove the assembling clip of engine room under cover front A shown in the figure, and turn up the engine room under cover front A.

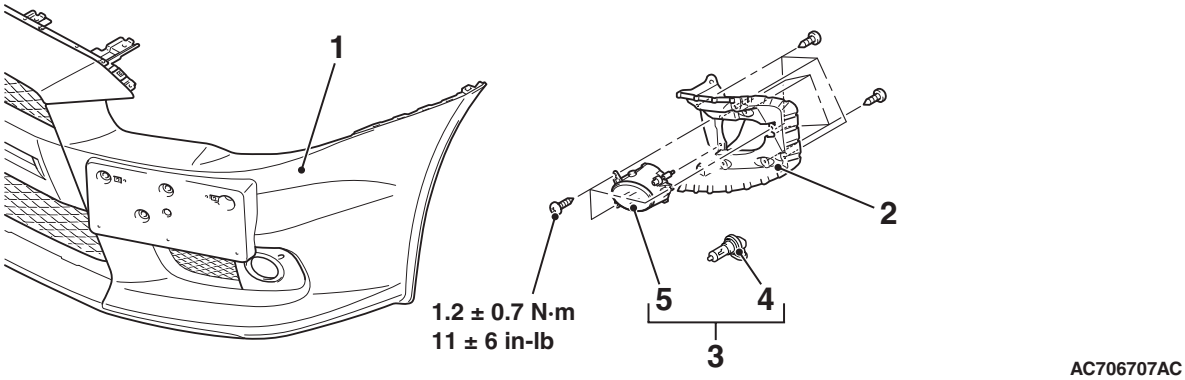


2. Disconnect the connector and withdraw the bulb.

REMOVAL AND INSTALLATION

M1540400500123

Post-installation operation
Check the beam direction of the front fog light (Refer to Front Fog light Aiming P.54A-234).



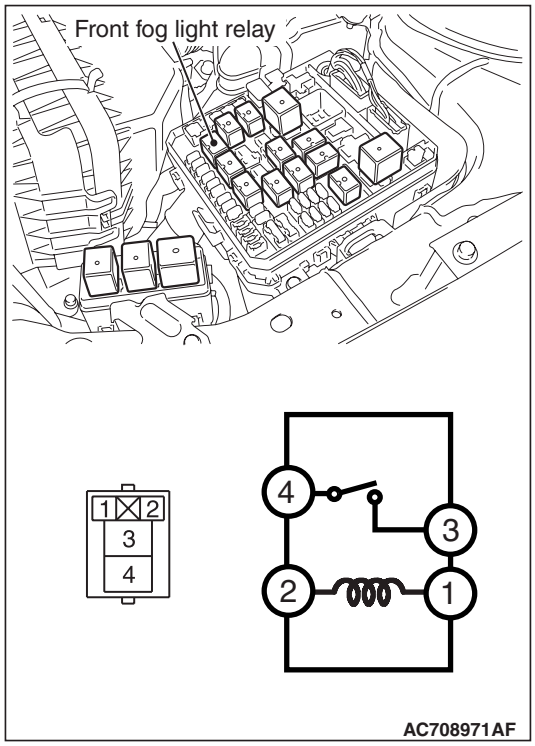
Removal steps
1. Front bumper and radiator grille assembly (Refer to GROUP 51 – Front Bumper Assembly and Radiator Grille P.51-3)
2. Front fog light bracket

Removal steps (Continued)
3. Fog light assembly
4. Bulb
5. Fog light unit

INSPECTION

FRONT FOG LIGHT RELAY CHECK

M1540400700105

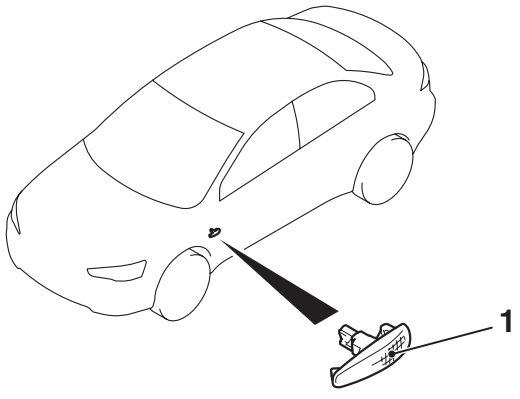


Battery voltage	Terminal number	Normal conditions
Not energized	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)

SIDE TURN-SIGNAL LIGHT

REMOVAL AND INSTALLATION

M1541800200286



Removal step

<<**A**>> >>**A**<< 1. Side turn-signal light assembly

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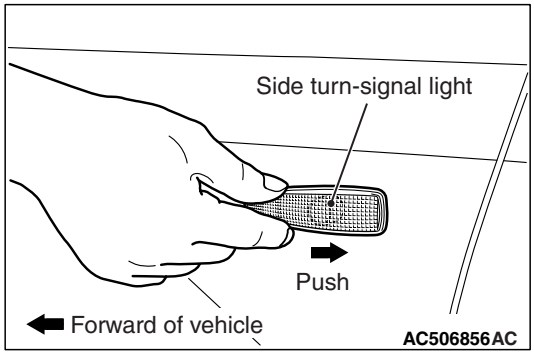
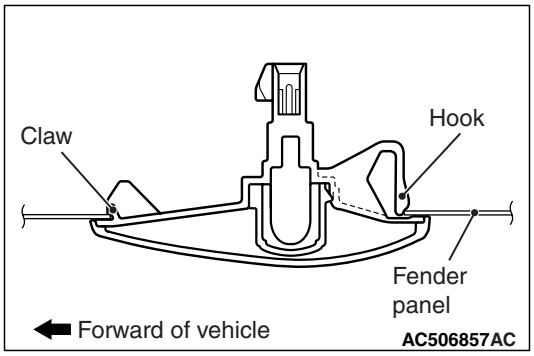
REMOVAL SERVICE POINT

<<A>> SIDE TURN-SIGNAL LIGHT REMOVAL

Push the side turn-signal light toward the vehicle rear to bend the hook, and then remove by disengaging the tab from the fender panel.





INSTALLATION SERVICE POINT

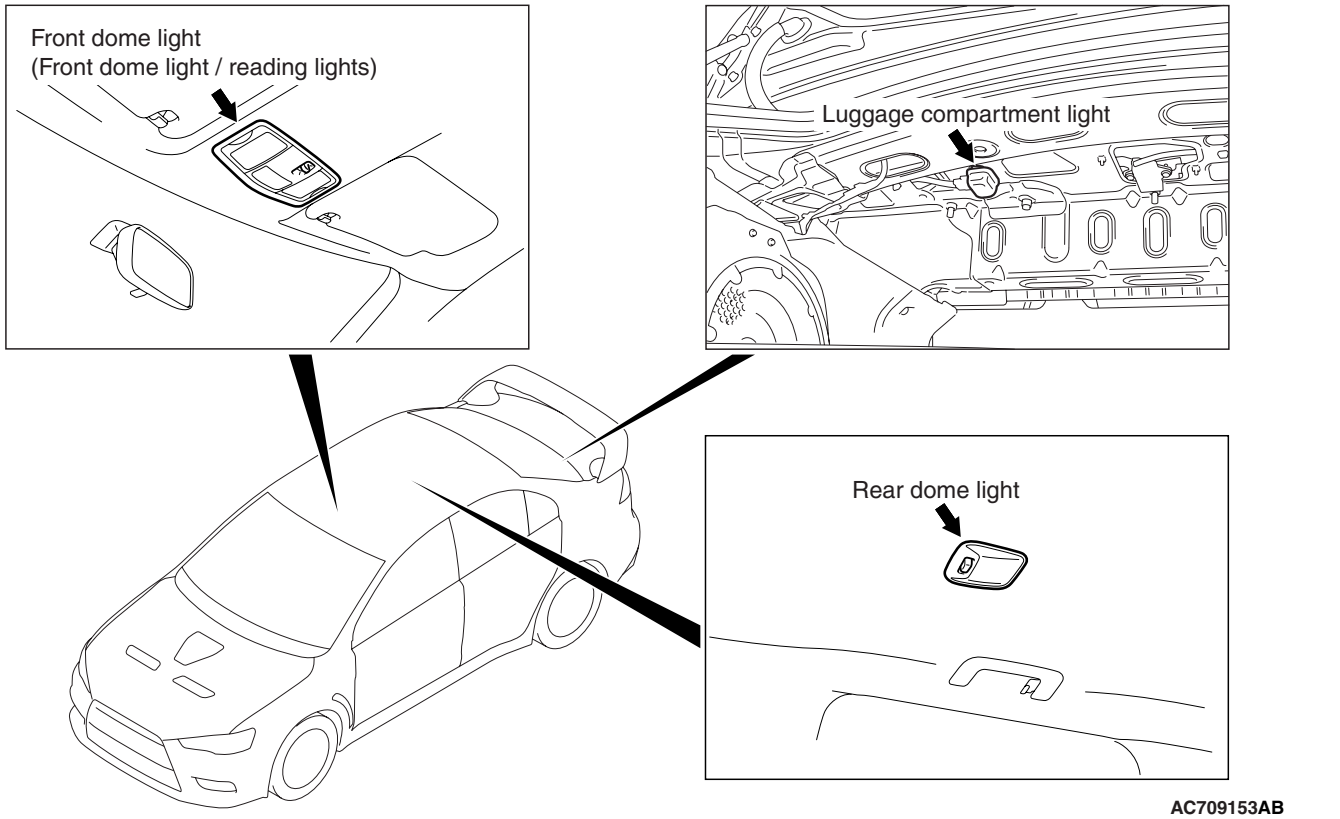
>>A<< SIDE TURN-SIGNAL LIGHT INSTALLATION

Engage the claw to the fender panel to install the side turn signal light.

DOME LIGHT

GENERAL INFORMATION

M1542000100435



AC709153AB

- A front dome light, installed to the front part of the roof, has been equipped with the lens-push type front dome light / reading light which can be operated easily from the driver's and front passenger's seat, offering excellent operability for turning on and off the light.
- The rear dome light, which illuminates the rear passenger's seat, is installed above the rear seat. <Vehicle without sunroof>
- The luggage compartment light is installed to the upper part of the luggage compartment.

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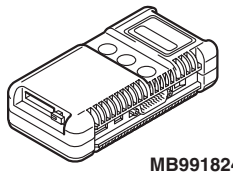
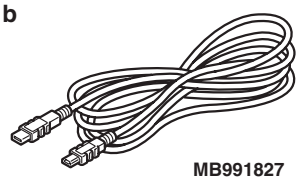
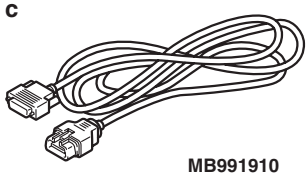
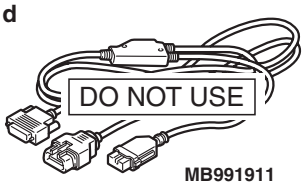
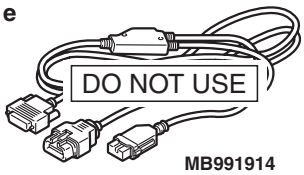
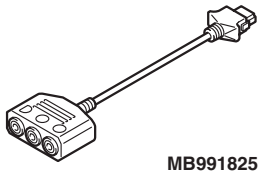
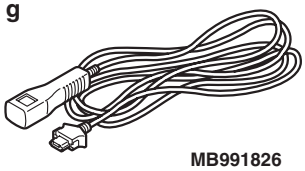
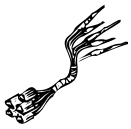
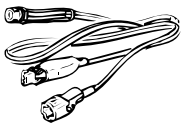
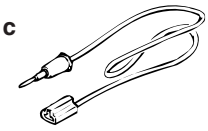
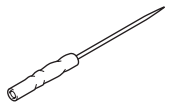
SPECIAL TOOLS

M1541301600088

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541301500081

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC FUNCTION

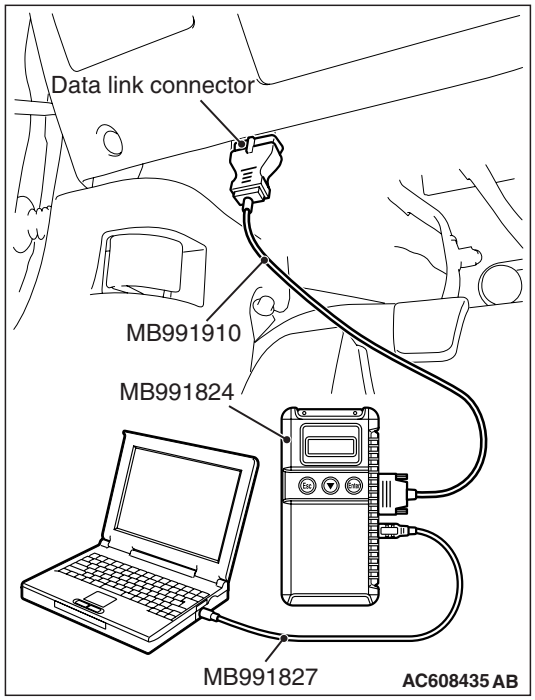
M1541302100020

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TSB Revision

TROUBLE SYMPTOM CHART

M1541300200139

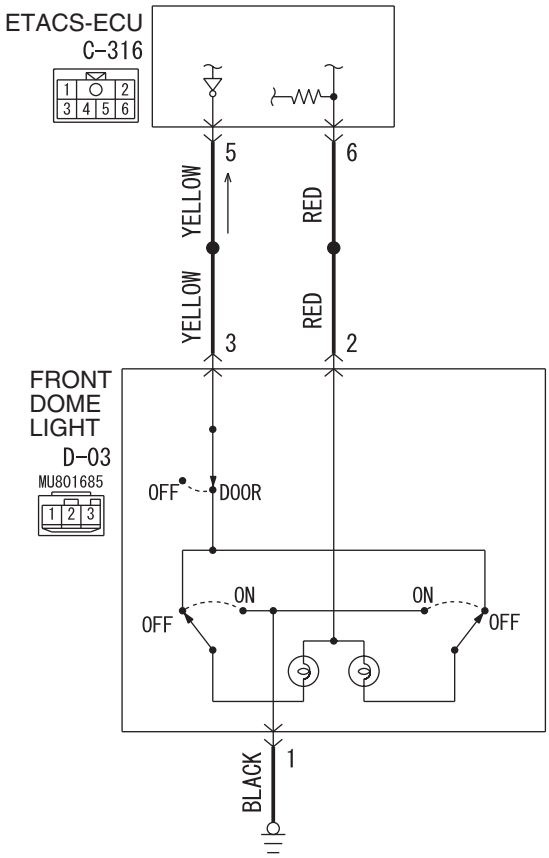
Inspection Procedure No.	Trouble symptom	Reference page
1	The front dome light does not illuminate normally.	P.54A-243
2	The rear dome light does not illuminate normally.	P.54A-248
3	The luggage compartment light does not illuminate normally.	P.54A-252
4	The interior light auto-cut function does not operate correctly.	P.54A-255

SYMPTOM PROCEDURES

Inspection Procedure 1: The front dome light does not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Front Dome Light Circuit



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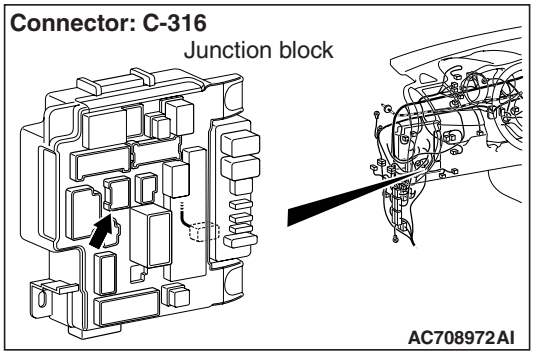
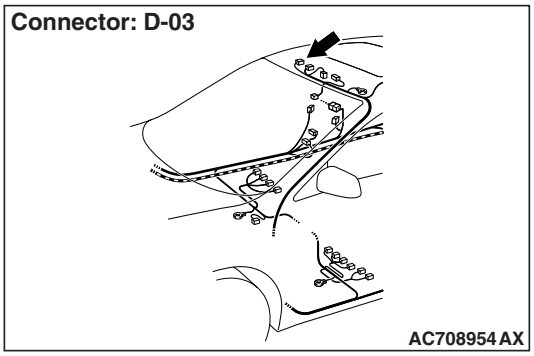
TSB Revision





TROUBLE JUDGMENT

The ETACS-ECU illuminates and extinguishes the front room light in accordance with the input signals below.

- Ignition switch (IG1)
- Key reminder switch
- Door switches
- Front door lock actuator

TECHNICAL DESCRIPTION (COMMENT)

If this does not work normally, the above switch input circuit(s), front dome light, or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the key reminder switch
- Malfunction of door switch
- Malfunction of the front door lock actuator switch
- Malfunction of front dome light
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

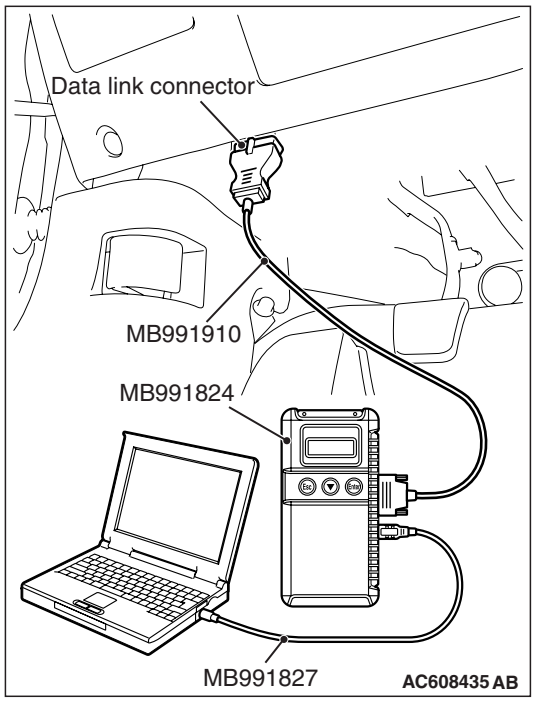
STEP 1. Rear dome light operation check.

Check that the rear dome light illuminates and extinguishes normally.

Q: Does rear dome light work normally?

YES : Go to Step 2.

NO : Replace the ETACS-ECU.



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-241."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, check data list.
Use the ETACS-ECU data list to check the signals related to the front dome light.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Remove the ignition key from the ignition key cylinder.
- Open each door.

Item No.	Item name	Normal condition
Item 228	Dr door unlock	ON
Item 254	IG voltage	0 V
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 264	Handle lock switch	Key in →Key out

Q: Does scan tool MB991958 display the items "Dr door unlock", "IG voltage", "Dr door ajar switch", "As door ajar switch", "RR door ajar switch", "RL door ajar switch" and "Handle lock switch" as normal condition?

YES : (Normal conditions are displayed for all items.) Go to Step 4.
NO : (Normal condition is not displayed.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input signal chart P.54A-639.

STEP 4. Check front dome light connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front dome light connector D-03 in good condition?

YES : Go to Step 5.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Front dome light bulb check
Check that the front dome light bulb is normal.

Q: Is front dome light bulb normal?

YES : Go to Step 6.
NO : Replace the front dome light bulb.

STEP 6. Check ETACS-ECU connector C-316 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-316 in good condition?

YES : Go to Step 7.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

TSB Revision

STEP 7. Check the wiring harness between front dome light connector D-03 (terminal 2, 3) and ETACS-ECU connector C-316 (terminal 6, 5)

Q: Are wiring harness between front dome light connector D-03 (terminal 2, 3) and ETACS-ECU connector C-316 (terminal 6, 5) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Check the wiring harness between front dome light connector D-03 (terminal 1) and body ground.

Q: Is wiring harness between front dome light connector D-03 (terminal 1) and body ground in good condition?

YES : Replace the front dome light, and then go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Check that the front dome light illuminates and extinguishes normally.

Q: Do the front dome light work normal?

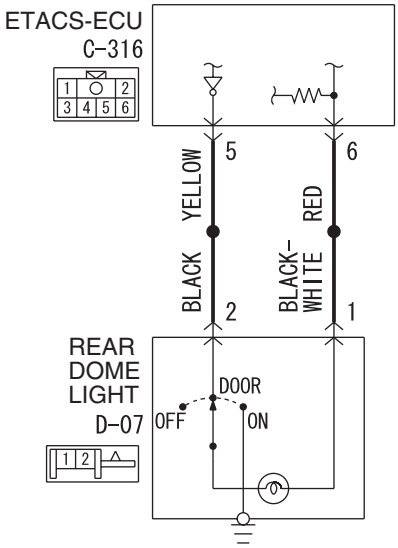
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The rear dome light does not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Rear Dome Light Circuit



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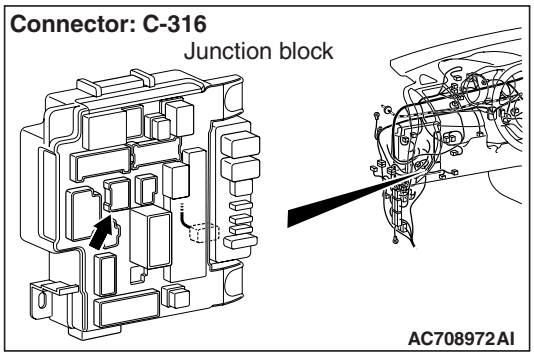
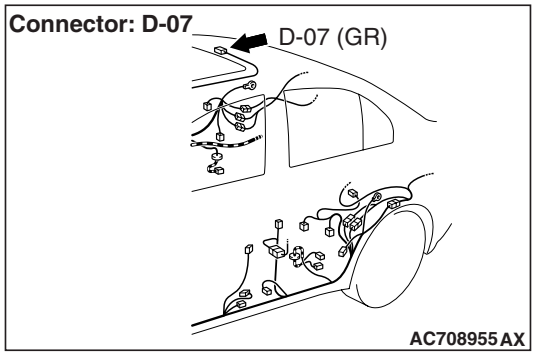




TROUBLE JUDGMENT

The ETACS-ECU illuminates and extinguishes the rear dome light in accordance with the input signals below.

- Ignition switch (IG1)
- Key reminder switch
- Door switches
- Front door lock actuator

TECHNICAL DESCRIPTION (COMMENT)

If this does not work normally, the above switch input circuit(s), rear dome light, or ETACS-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the key reminder switch
- Malfunction of door switch
- Malfunction of the front door lock actuator (RH)
- Malfunction of rear dome light
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

TSB Revision

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 (Vehicles with CAN communication system)

STEP 1. Front dome light operation check

Check that the front dome light illuminates and extinguishes normally.

Q: Does rear dome light work normally?

YES : Go to Step 2.
NO : Replace the ETACS-ECU.

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

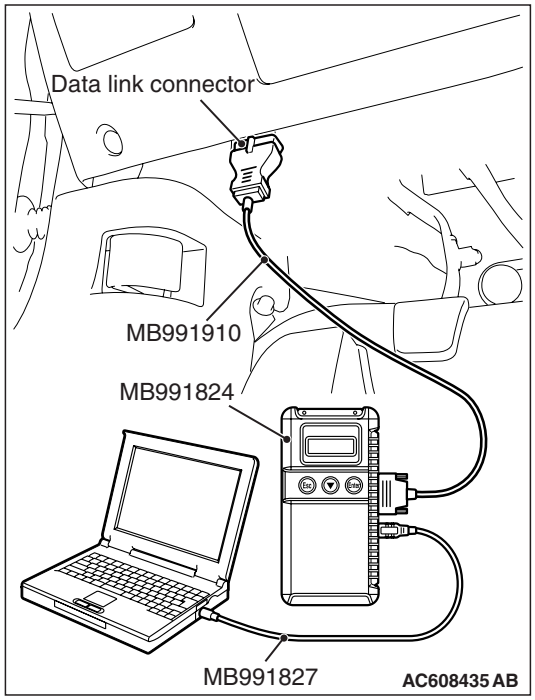
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-241."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 3.



STEP 3. Using scan tool MB991958, check data list.
Use the ETACS-ECU data list to check the signals related to the rear dome light.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Remove the ignition key from the ignition key cylinder.
- Open each door.

Item No.	Item name	Normal condition
Item 228	Dr door unlock	ON
Item 254	IG voltage	0 V
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 264	Handle lock switch	Key in →Key out

Q: Does scan tool MB991958 display the items "Dr door unlock", "IG voltage", "Dr door ajar switch", "As door ajar switch", "RR door ajar switch", "RL door ajar switch" and "Handle lock switch" as normal condition?

YES : (Normal conditions are displayed for all items.) Go to Step 4.
NO : (Normal condition is not displayed.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input signal chart P.54A-639.

STEP 4. Check rear dome light connector D-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear dome light connector D-07 in good condition?

YES : Go to Step 5.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Rear dome light bulb check
Check that the rear dome light bulb is normal.

Q: Is rear dome light bulb normal?

YES : Go to Step 6.
NO : Replace the rear dome light bulb.

STEP 6. Check ETACS-ECU connector C-316 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-316 in good condition?

YES : Go to Step 7.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

TSB Revision

STEP 7. Check the wiring harness between rear dome light D-07 connector (terminal 1, 2) and ETACS-ECU connector C-316 (terminal 6, 5)

Q: Is wiring harness between rear dome light D-07 connector (terminal 1, 2) and ETACS-ECU connector C-316 (terminal 6, 5) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Retest the system

Check that the rear dome light illuminates and extinguishes normally.

Q: Does rear dome light work normal?

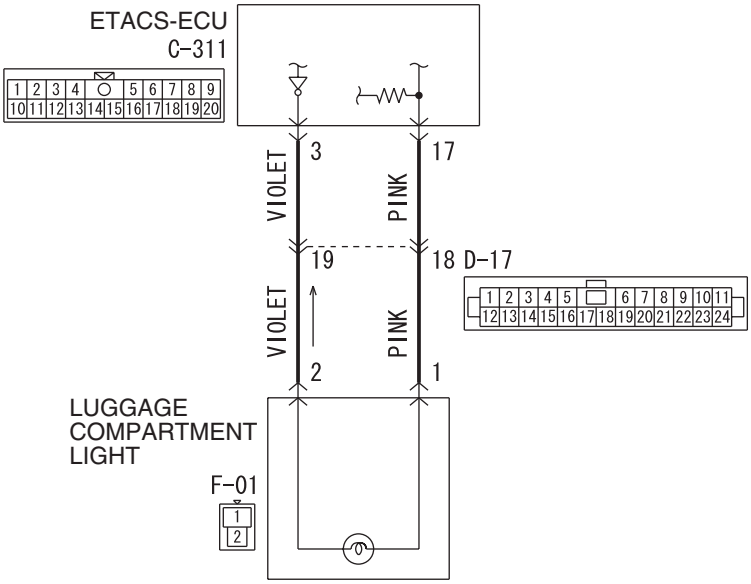
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 3: The luggage compartment light does not illuminate normally.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Luggage Compartment Light Circuit



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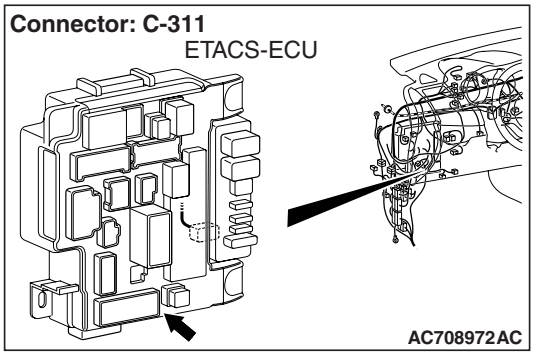
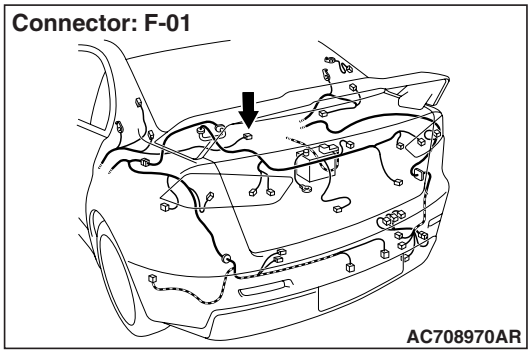
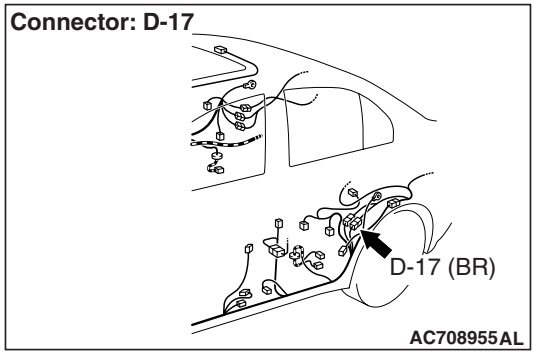






TROUBLE JUDGMENT

The ETACS-ECU illuminates and extinguishes the luggage compartment light in accordance with the input signals from trunk lid latch switch.

TECHNICAL DESCRIPTION (COMMENT)

If this does not work normally, the trunk lid latch switch input circuit, luggage compartment light, or ETACS-ECU may have a problem.

TSB Revision

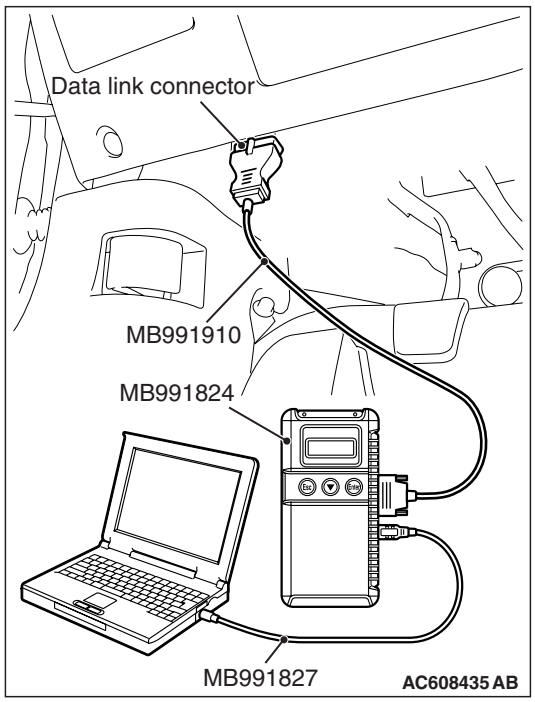
TROUBLESHOOTING HINTS

- Malfunction of trunk lid latch assembly
- Malfunction of luggage compartment light
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-241."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 2.

STEP 2. Using scan tool MB991958, check data list.
Use the ETACS-ECU service data to check the signal related to the operation of luggage compartment light.

- Open the trunk lid.

Item No.	Item name	Normal condition
Item 260	Trunk/gate trunk ajar switch	Open

Q: Does scan tool MB991958 display the item "Trunk/gate trunk ajar switch" as normal condition?

YES : (Normal condition is displayed.) Go to Step 3.
NO : (Normal condition is not displayed.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input signal chart P.54A-639.

STEP 3. Check luggage compartment light connector F-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is luggage compartment light connector F-01 in good condition?

YES : Go to Step 4.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 4. Luggage compartment light bulb check
Check that the luggage compartment light bulb is normal.

Q: Is luggage compartment light bulb normal?

YES : Go to Step 5.
NO : Replace the luggage compartment light bulb.

STEP 5. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connectors C-311 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check the wiring harness between luggage compartment light connector F-01 (terminal 1, 2) and ETACS-ECU connector C-311 (terminal 17, 3).

NOTE: Also check intermediate connector D-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is wiring harness between luggage compartment light connector F-01 (terminal 1, 2) and ETACS-ECU connector C-311 (terminal 17, 3) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Retest the system

Check that the luggage compartment light illuminates and extinguishes normally.

Q: Do the trunk room work normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 4: The interior light auto-cut function does not operate correctly.

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU operates the interior light auto-cut function in accordance with the input signals below.

- Ignition switch (ACC)
- Ignition switch (IG1)
- Door switches
- Trunk lid latch switch

If this function does not work normally, these input signal circuit(s) or the ETACS-ECU may have a problem. Also, "Interior light auto cut timer" may be set to "0min" through customization.

TROUBLESHOOTING HINTS

- Malfunction of door switch
- Malfunction of trunk lid latch assembly
- Malfunction of the dome light
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

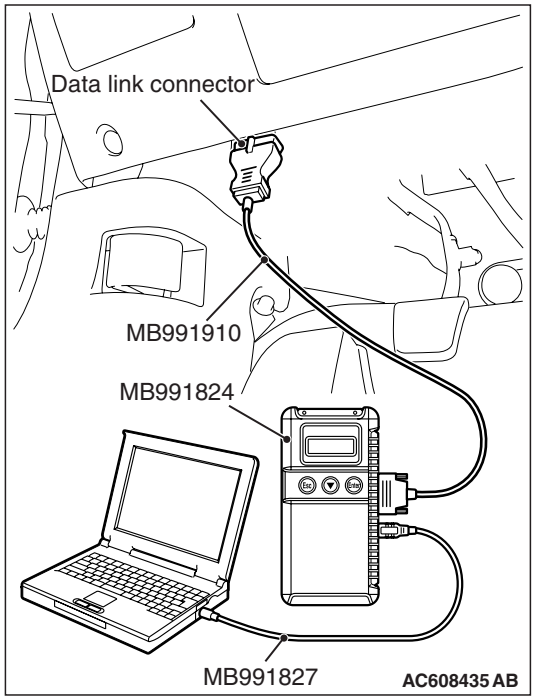
Required Special Tools:

- 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 (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, Check the configuration function.

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-241."
(2) Turn the ignition switch to the "ON" position.
(3) Use the ETACS-ECU customize function to check to see which of the followings other than "0min" the "Interior light auto cut timer" is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Use the ETACS-ECU configuration function to set the "Interior light auto cut timer" to other than "Disable" (Refer to P.54A-258).

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

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

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-582.
NO : Go to Step 3.

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

Use the ETACS-ECU data list to check the signals related to the interior light auto-cut function.

- Turn the ignition switch to the "ACC" position.
- Turn the ignition switch to the "LOCK" (OFF) position.
- Open each door.
- Open the trunk lid.

Item No.	Item name	Normal condition
Item 254	IG voltage	0 V
Item 288	ACC switch	OFF
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 260	Trunk/gate trunk ajar switch	Open

Q: Does scan tool MB991958 display the items "IG voltage", "ACC switch", "As door ajar switch", "RR door ajar switch", and "RL door ajar switch" as normal condition?

YES : (Normal conditions are displayed for all items.) Go to Step 4.

NO : (Normal condition is not displayed.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input signal chart P.54A-639.

STEP 4. Retest the system.

Check that the interior light automatic shutdown function works normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

ON-VEHICLE SERVICE

CUSTOMIZATION FUNCTION

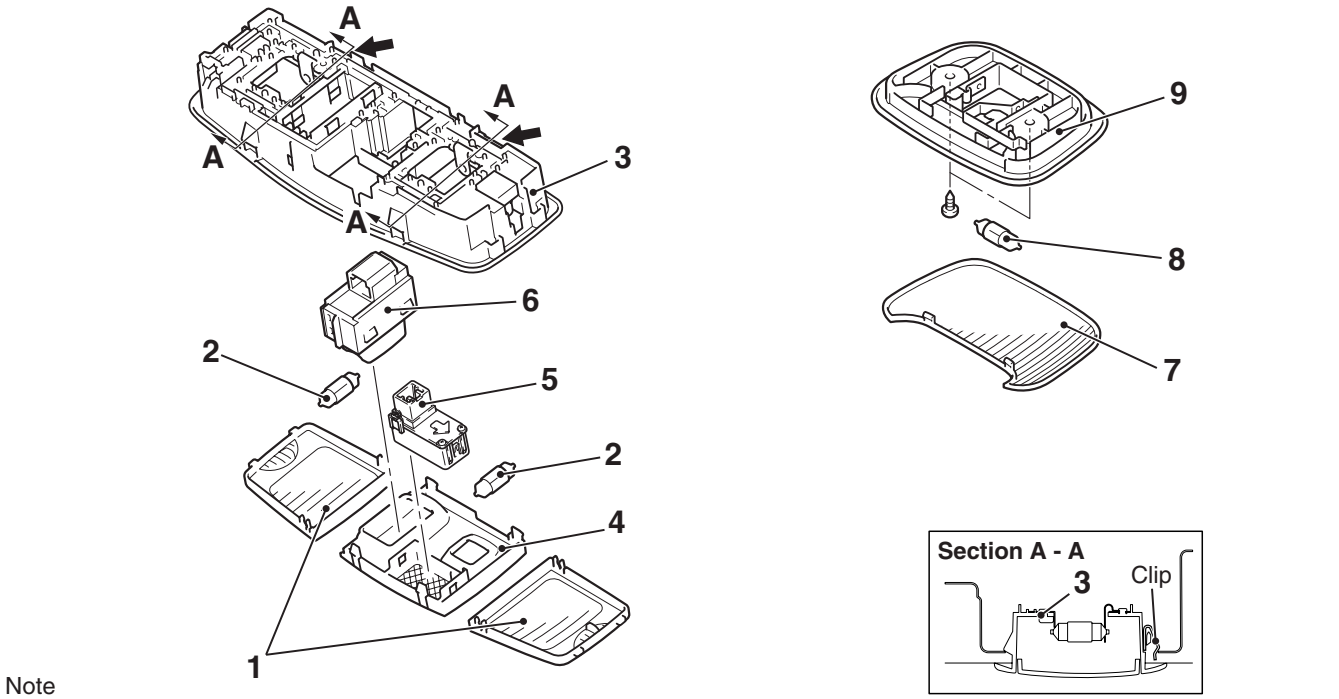
M1541301200303

By operating the ETACS system or MMCS of scan tool MB991958, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
Dome light delay timer with door	Adjustment of interior light delay shutdown time	0 sec	0 second (no delay shutdown time)
		7.5 sec	7.5 seconds
		15 sec	15 seconds
		30 sec	30 seconds (default)
		60 sec	60 seconds
		120 sec	120 seconds
		180 sec	180 seconds
Interior light auto cut timer	Adjustment of interior light automatic shutdown function operation time	Disable	No function
		3 min	3 minutes
		30 min	30 minutes (default)
		60 min	60 minutes

DOME LIGHT REMOVAL AND INSTALLATION

M1541302700099



AC709278AB

Note
◀ : Clip positions

Removal Steps

1. Front dome light lens
2. Dome light bulb

<<**A**>>

3. Front dome light
4. Front dome light cover
5. Microphone unit <Vehicles with hands-free cellular phone system>

Removal Steps (Continued)

6. Sunroof switch <Vehicles with sunroof>
7. Rear dome light lens
8. Dome light bulb
9. Rear dome light

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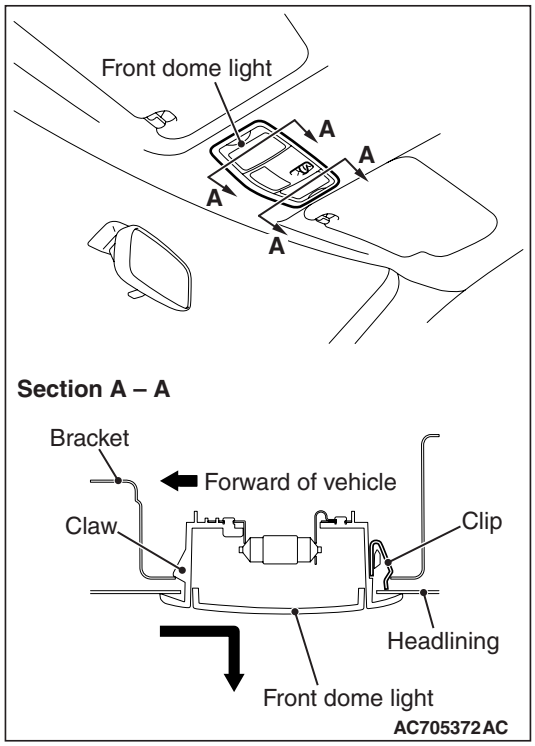
REMOVAL SERVICE POINT

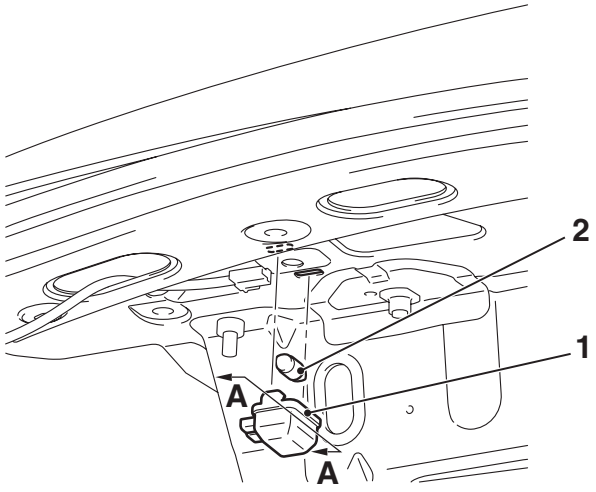
<<A>> FRONT DOME LIGHT REMOVAL

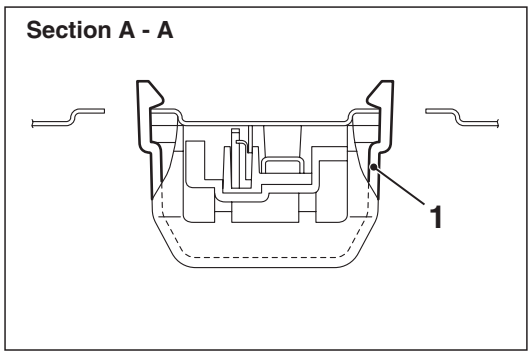
While pressing the front dome light toward the rear of the vehicle, slide the front side of the front dome light downward, and remove the front dome light.



LUGGAGE COMPARTMENT LIGHT REMOVAL AND INSTALLATION

M1541302600014





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Removal Steps

1. Luggage compartment light lens
2. Luggage compartment light bulb

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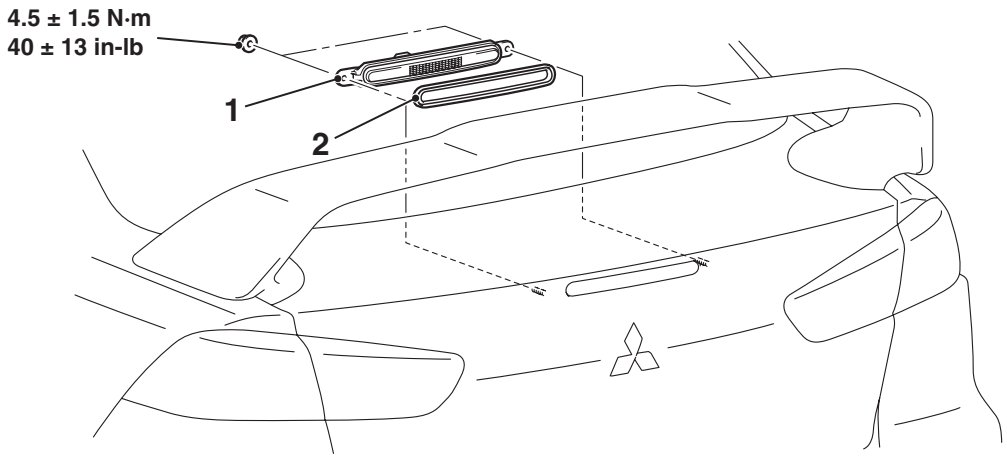
HIGH-MOUNTED STOPLIGHT

REMOVAL AND INSTALLATION

M1541700200331



AC706683AB

Removal Steps

- Trunk lid trim (Refer to GROUP 52A –Trims P.52A-11).

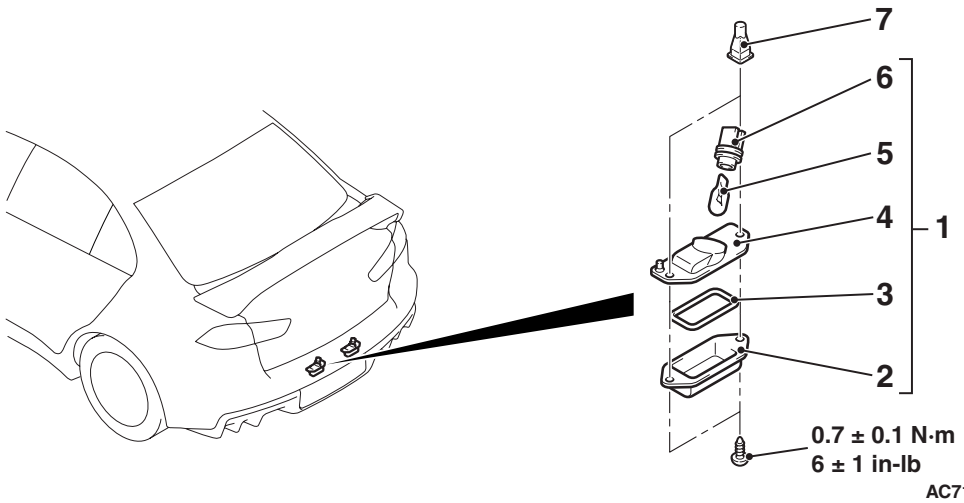
Removal Steps (Continued)

1. High-mounted stoplight assembly
2. Gasket

LICENSE PLATE LIGHT

REMOVAL AND INSTALLATION

M1541900200294



AC710519AB

Removal Steps

1. License plate light assembly
2. Lens
3. Gasket
4. Body

Removal Steps (Continued)

5. Bulb
6. Socket
7. Grommet

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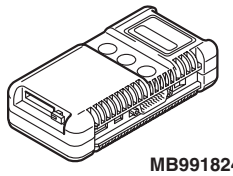
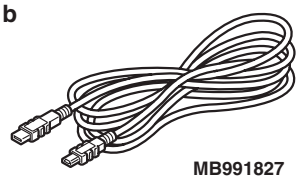
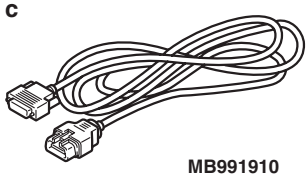
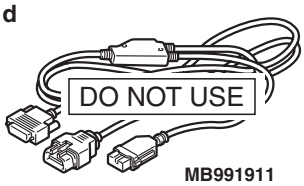
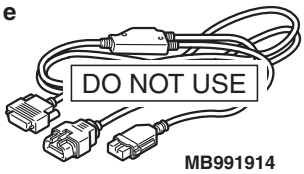
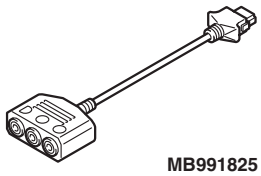
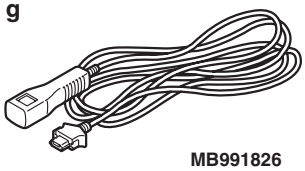
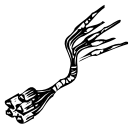
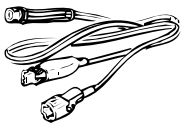
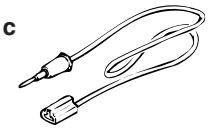
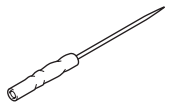
HAZARD WARNING LIGHT SWITCH

SPECIAL TOOLS

M1541500100084

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

TSB Revision

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541501400088

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC FUNCTION

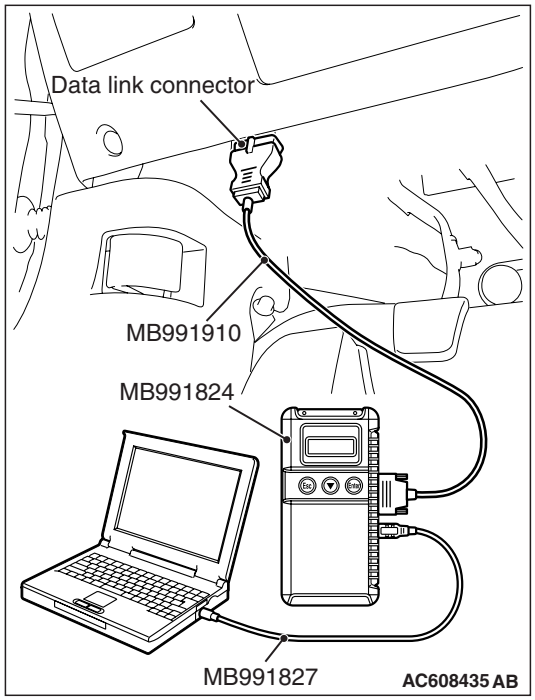
M1541500600034

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

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DIAGNOSTIC TROUBLE CODE CHART

M1541500200025

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
B16A6	Turn-signal fuse blown	P.54A-265

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B16A6: Turn-signal fuse blown

TROUBLE JUDGEMENT

When the hazard warning light fuse is blown, the ETACS-ECU sets the DTC B16A6.

TECHNICAL DESCRIPTION (COMMENT)

With the DTC not set, when the blown fuse of hazard warning light is detected three times consecutively, the ETACS-ECU sets the DTC B16A3.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

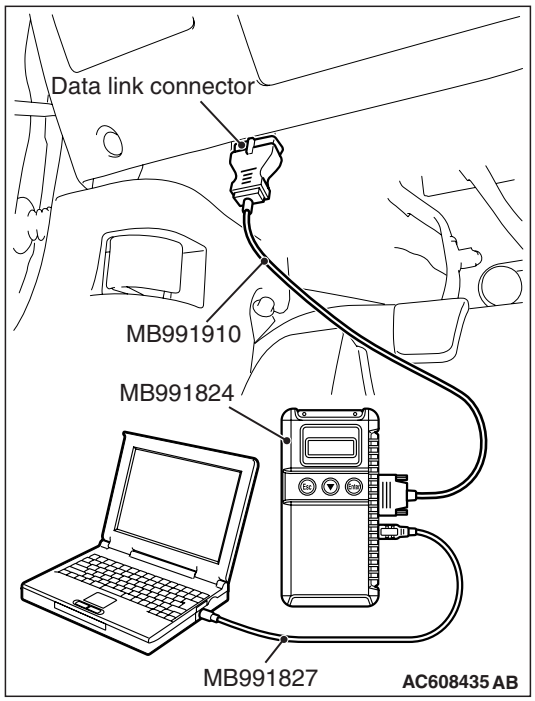
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Fuse check

Check if the turn-signal light fuse is normal.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Replace the turn-signal light fuse.



STEP 2. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-263."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

TROUBLE SYMPTOM CHART

M1541500700075

Inspection Procedure No.	Trouble symptom	Reference page
1	The hazard warning lights do not illuminate.	P.54A-266

SYMPTOM PROCEDURES

Inspection Procedure 1: The hazard warning lights do not illuminate.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning light does not illuminate, the hazard warning light switch input circuit in center panel unit or the ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of center panel unit
- Malfunction of the ETACS-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)

STEP 1. Check that the turn-signal light operate.

Check that the turn-signal lights illuminate normally.

Q: Does turn-signal light work normally?

YES : Go to Step 2.

NO : Diagnose the headlights. Refer to Inspection Procedure 11 "All the turn-signal lights do not illuminate" P.54A-168.

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

Using the ETACS-ECU service data, check the hazard warning light signal.

⚠ CAUTION

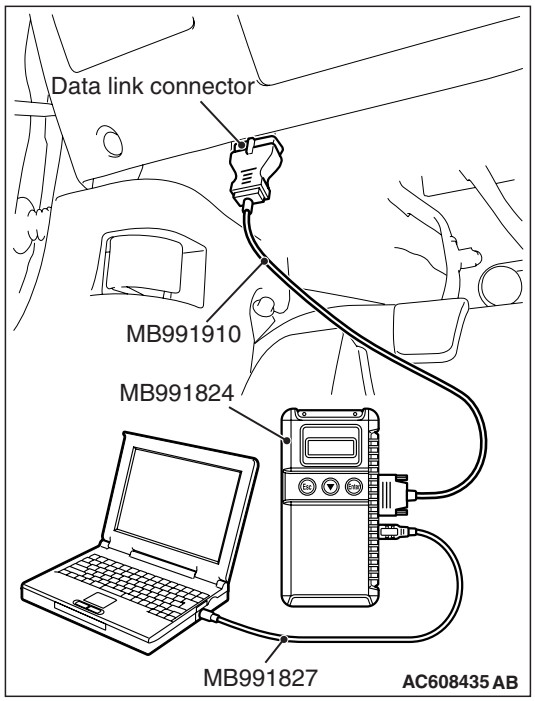
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1.Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-263."

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

3.Turn "ON" the hazard light switch.

Item No.	Item name	Normal conditions
Item 265	Hazard switch	ON



Q: Does scan tool MB991958 display the items "Hazard switch" as normal condition?

YES : (Normal condition is displayed for item) Go to Step 3.

NO : (Normal condition is not displayed for item No. 265.) Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis - Inspection Procedure 10 "ETACS-ECU does not receive any signal from the hazard warning light switch" P.54A-667.

STEP 3. Retest the system

Check that the hazard warning light illuminate normally.

Q: Does the taillight work normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

REMOVAL AND INSTALLATION

M1541501000154

Refer to GROUP 52A –Instrument Center Panel P.52A-7.

INSPECTION

HAZARD WARNING LIGHT SWITCH CHECK

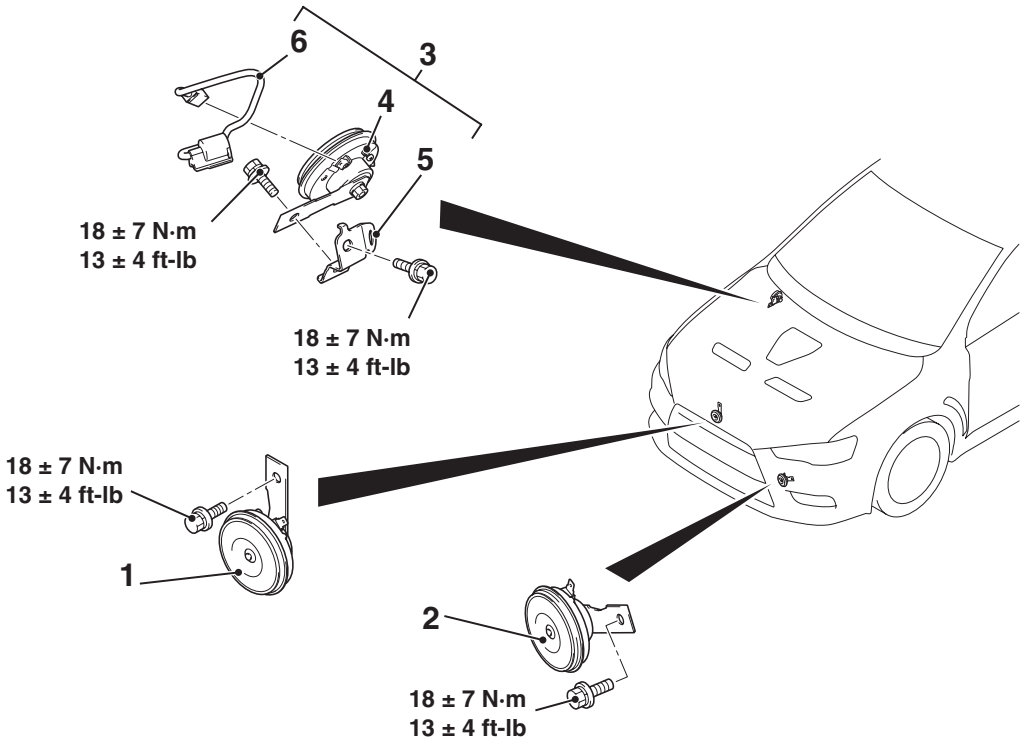
M1541501100236

Check the ETACS service data list using the scan tool MB991958. With the item No. 265 (Hazard switch), it is judged normal if the display shows ON when the hazard warning light switch is pressed, and OFF when not pressed.

HORN

REMOVAL AND INSTALLATION

M1542100200365



Horn (LOW) Removal Steps

- Headlight support panel cover (Refer to GROUP 51 –Front Bumper Assembly And Radiator Grille P.51-3).

1. Horn (LOW)

Horn (HIGH) Removal Steps

- Front bumper and radiator grille assembly (Refer to GROUP 51 – Front Bumper Assembly And Radiator Grille P.51-3).

2. Horn (HIGH)

Theft-alarm horn Removal Steps

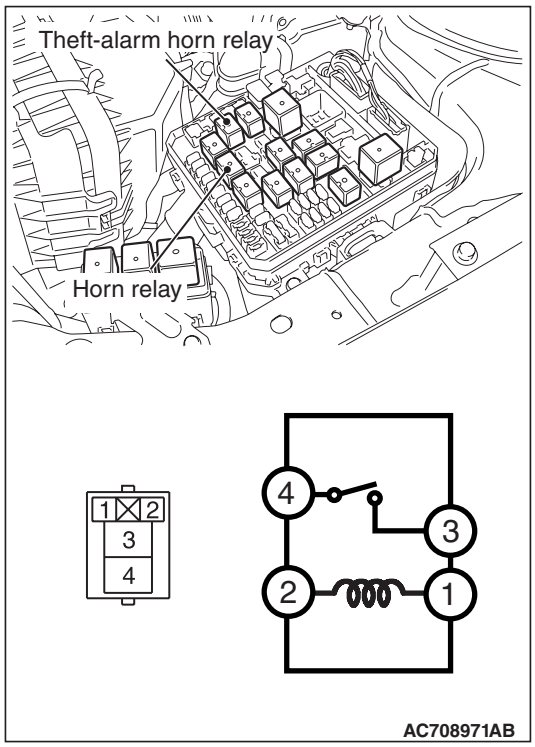
- ASC-ECU harness connector (Refer to GROUP 35C –Hydraulic Unit P.35C-272).

3. Theft-alarm horn assembly
4. Theft-alarm horn
5. Bracket
6. Theft-alarm horn harness

INSPECTION

HORN RELAY CHECK

M1542100400284



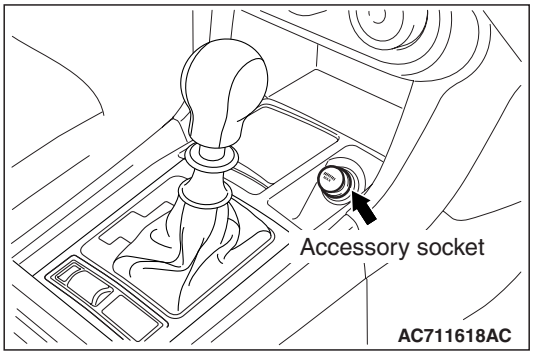
Battery voltage	Terminal number	Normal condition
At no energization	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)

ACCESSORY SOCKET

GENERAL INFORMATION

M1542300500111

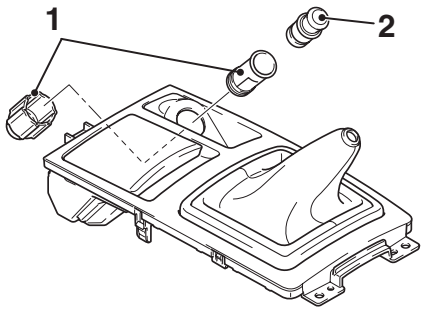
The plug-in type accessory socket has been installed for the convenient use of accessories. This accessory socket can be replaced to the cigar lighter as an option.
Accessory socket has been added to the front floor console.
The maximum load is 120 W when a single accessory socket is used



REMOVAL AND INSTALLATION

M1542300200303

Pre-removal operation	Post-installation operation
• Removal of floor console panel assembly (Refer to GROUP 52A –Floor Console Assembly P.52A-9)	• Installation of floor console panel assembly (Refer to GROUP 52A –Floor Console Assembly P.52A-9)



AC706787AB

Removal Steps

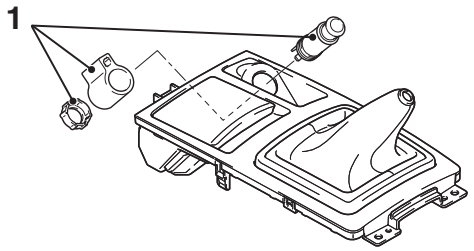
1. Accessory socket case
2. Accessory socket cap

CIGARETTE LIGHTER

REMOVAL AND INSTALLATION

M1543005600234

Pre-removal operation	Post-installation operation
• Removal of floor console panel assembly (Refer to GROUP 52A –Floor Console Assembly P.52A-9)	• Installation of floor console panel assembly (Refer to GROUP 52A –Floor Console Assembly P.52A-9)



AC707557AB

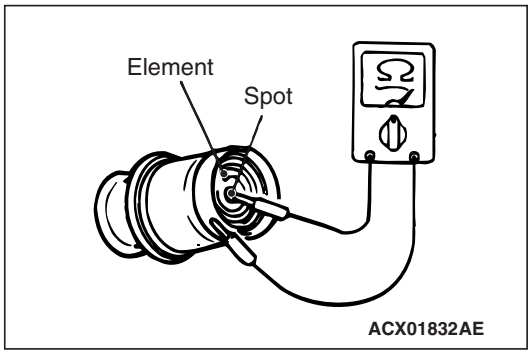
Removal Step

1. Cigar lighter

INSPECTION

M1543019502979

CIGARETTE LIGHTER CHECK



ACX01832AE

- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check that the element resistance value is 1.7 ohms.

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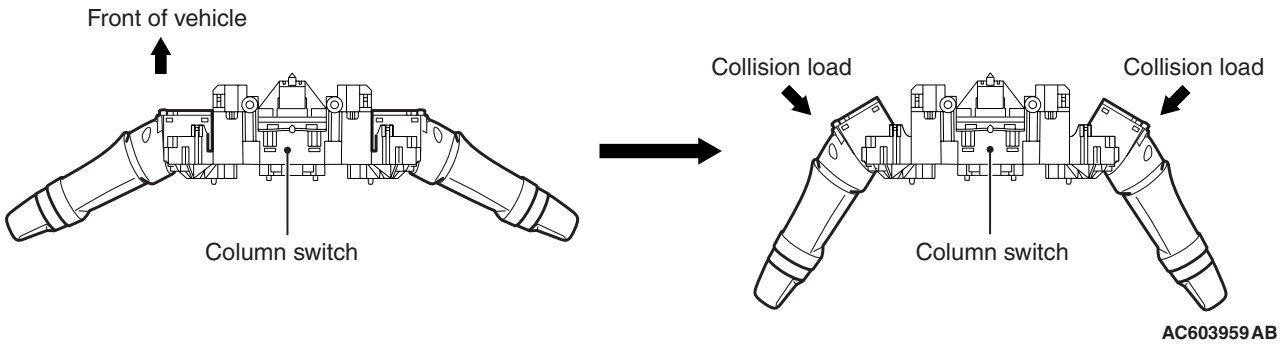
COLUMN SWITCH

GENERAL INFORMATION

M1543101800017

Column switch has a function to ensure the driver's safety during frontal collision of vehicle.

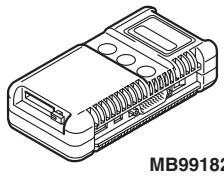
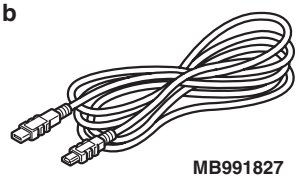
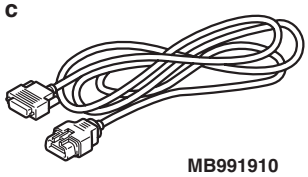
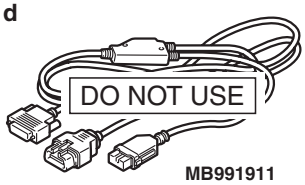
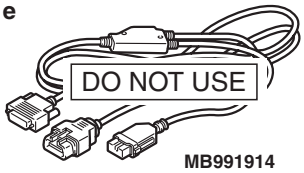
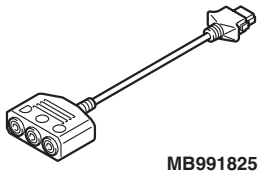
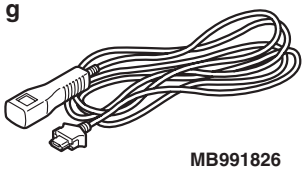
Function

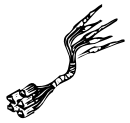
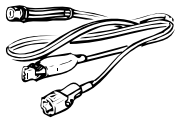
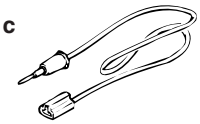
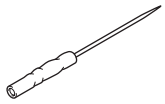


If the column switch is moved to the front of the vehicle and hit on the instrument panel or meter bezel by the frontal collision of vehicle, the steering wheel is moved to the front of the vehicle because the right and left levers fall down, ensuring the driver's safety. In addition, the column switch secures the rigidity that the levers do not fall down by the normal operation, however, it cannot be reused after the deformation.

SPECIAL TOOLS

M1543100200175

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1543101200112

Refer to GROUP 00 –Contents of troubleshooting P.00-7.

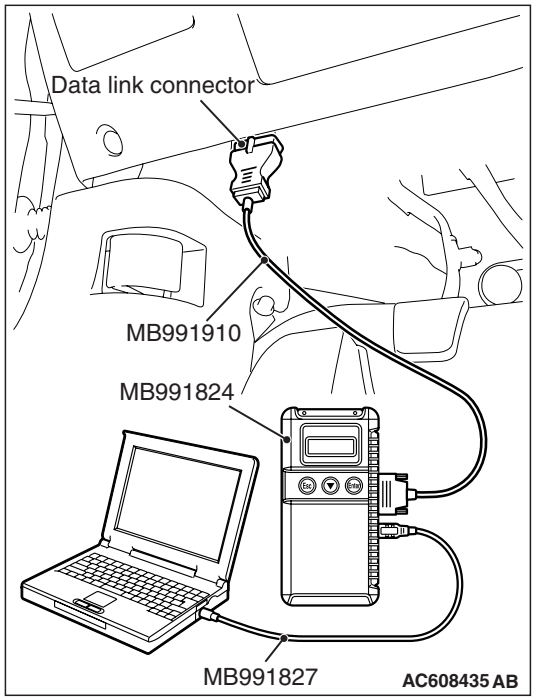
DIAGNOSTIC FUNCTION

M1543101300090

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

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DIAGNOSTIC TROUBLE CODE TABLE

M1543100300224

Diagnostic trouble code No.	Diagnostic item	Reference page
B2350	Lighting switch	P.54A-276
B2351	Wiper switch	

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B2350: Lighting switch
DTC B2351: Wiper switch

TROUBLE JUDGMENT

The ETACS-ECU receives the signals related to lighting and wiper/washer from the column switch. If the fail information data is included in the signal from column switch, DTC B2350 (malfunction of lighting switch) or B2351 (malfunction of wiper/washer switch) is stored.

TECHNICAL DESCRIPTION (COMMENT)

The column switch or the ETACS-ECU may have a problem.

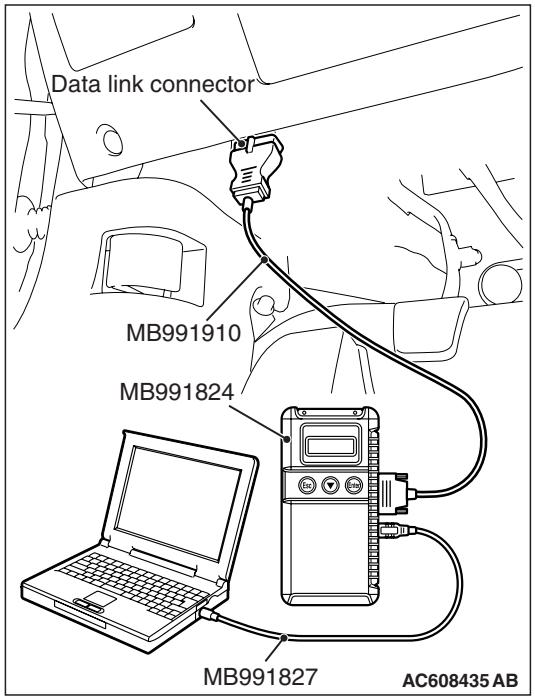
TROUBLESHOOTING HINTS

- Column switch may be defective
- The ETACS-ECU may be defective

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 (Vehicles with CAN communication system)



STEP 1. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Check again if the DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-274".
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if the DTC B2350 or B2351 is set.
(6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

DTC B2351 is set. : Go to Step 2.
DTC B2350 is set. : Go to Step 3.
No DTC is set. : The trouble can be an intermittent malfunction (GROUP 00 –How to Cope with Intermittent Malfunction P.00-15).

STEP 2. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Check again if the DTC is set to the ETACS-ECU.

(1) Replace the wiper/washer switch.
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.
(6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.
NO : The procedure is complete.

STEP 3. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Check again if the DTC is set to the ETACS-ECU.
(1) Replace the lighting switch.
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.
(6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The procedure is complete.

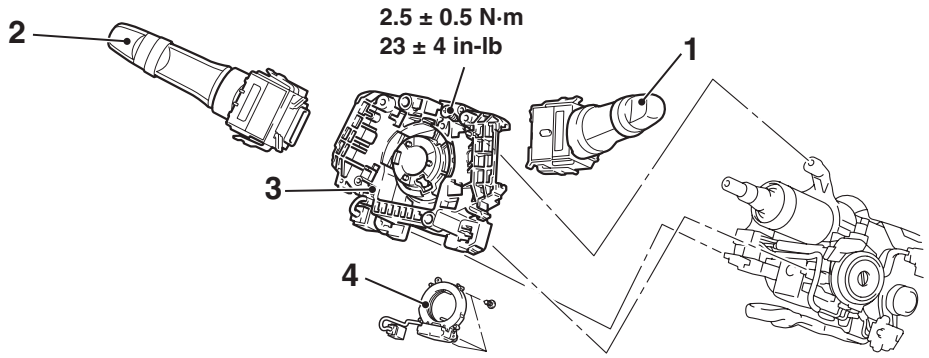
REMOVAL AND INSTALLATION

M1543100700266

⚠ CAUTION

- **To remove the driver air bag module, refer to GROUP 52B –Service Precautions P.52B-25 and Driver's Air Bag Module and Clock Spring P.52B-386.**
- **When the steering wheel sensor is replaced, always carry out calibration to make ASC-ECU learn the neutral point. (Refer to GROUP 35C –On-vehicle Service-Steering Wheel Sensor Calibration P.35C-267.)**

Pre-removal operation	Post-installation operation
• Removal of steering column lower cover, steering column upper cover (Refer to GROUP37 –Steering column shaft assembly P.37-26.)	• Installation of steering column lower cover, steering column upper cover (Refer to GROUP37 –Steering column shaft assembly P.37-26.)



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Removal Steps
1. Wiper/washer switch
2. Lighting switch (integrated with the column ECU)
- Steering wheel assembly (Refer to GROUP 52B –Driver's Air Bag Module(s) and Clock Spring P.52B-386.)
- Paddle shift assembly <vehicles with paddle shift> (Refer to GROUP 52B – Driver's Air Bag Module(s) and Clock Spring P.52B-386)

Removal Steps
- Clock spring (Refer to GROUP 52B –Driver's Air Bag Module(s) and Clock Spring P.52B-386.)
3. Column switch body
4. Steering wheel sensor (Refer to GROUP 35C – Steering wheel sensor P.35C-279.)

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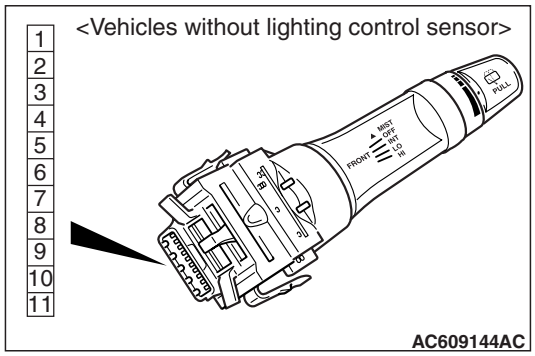
INSPECTION

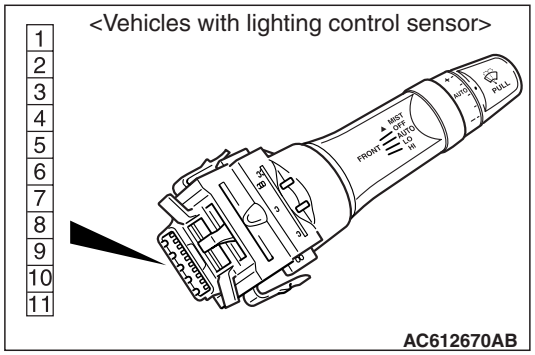
WIPER/WASHER SWITCH CONTINUITY CHECK

M1543101700076



<VEHICLES WITHOUT LIGHTING CONTROL SENSOR>

Switch position		Tester connection	Specified condition
OFF		–	Open circuit
Windshield intermittent wiper interval adjusting knob		6 –3	Operating the adjusting knob changes the resistance.
Windshield washer switch		6 –7	Continuity exists (2 Ω or less)
Windshield wiper switch	Hi	6 –8	Continuity exists (2 Ω or less)
	Lo	6 –9	Continuity exists (2 Ω or less)
	Int	6 –10	Continuity exists (2 Ω or less)
	Mist	6 –11	Continuity exists (2 Ω or less)



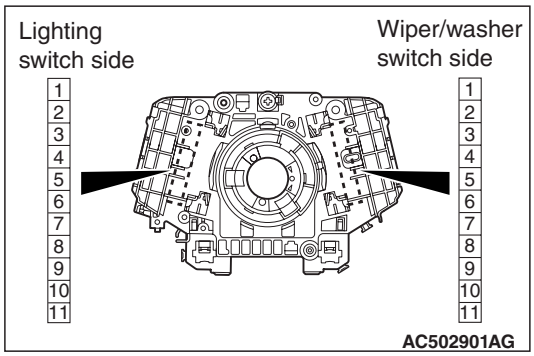
<VEHICLES WITH LIGHTING CONTROL SENSOR>

Switch position		Tester connection	Specified condition
OFF		–	Open circuit
Windshield rain sensitive wiper function adjusting knob		6 –3	Operating the adjusting knob changes the resistance.
Windshield washer switch		6 –7	Continuity exists (2 Ω or less)
Windshield wiper switch	Hi	6 –8	Continuity exists (2 Ω or less)
	Lo	6 –9	Continuity exists (2 Ω or less)
	Auto	6 –10	Continuity exists (2 Ω or less)
	Mist	6 –11	Continuity exists (2 Ω or less)

COLUMN SWITCH (SWITCH BODY PART) CONTINUITY CHECK

M1543100800058

1. Remove the lighting switch and wiper/washer switch.
2. Check that the continuity is present for the same terminal numbers of the column switch body connectors that remain on the steering column.

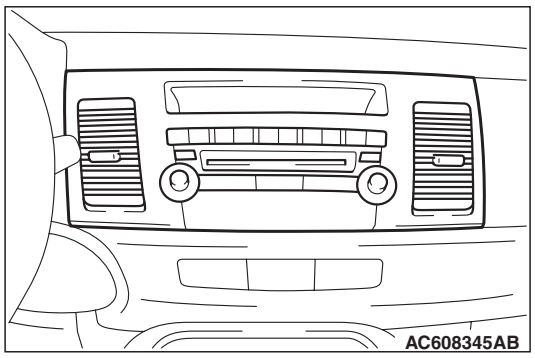


Column switch body	Terminal number	Normal condition
Lighting switch side connector Wiper/washer switch side connector	3 –3 6 –6 7 –7 8 –8 9 –9 10 –10 11 –11	Continuity exists (2 ohms or less)

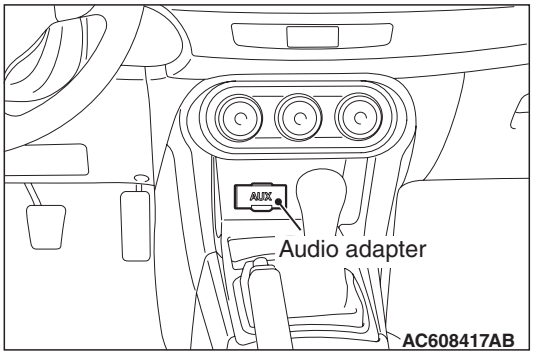
RADIO AND CD PLAYER

GENERAL INFORMATION

M1544000100408



- Two types of radio and CD player, radio and CD player or CD changer built-in type radio and CD player , have been established. The radio and CD player was designed to create a uniformity impression with the instrument panel. Also, a new function automatically corrects the sound quality and volume during driving.



- For the vehicles with Rockford Fosgate ® premium sound system, the audio adapter has been established onto the center tray. With this modification, portable music player can be connected.

Item	radio and CD player	CD changer built-in type radio and CD player
Electronic tuning radio	Equipped	Equipped
SIRIUS satellite radio	–	Equipped (Only the vehicles with the satellite radio tuner)
Hands free cellular phone system	Equipped (Only the vehicles with the hands free module)	Equipped (Only the vehicles with the hands free module)
CD player*1 (compatible with MP3*2)	Equipped	Equipped
6-disk CD autochanger*1 (compatible with MP3*2)	–	Equipped
Audio integrated 4-ch power amplifier and digital signal processor (DSP)	General 140 W	General 140 W
Audio amplifier-integrated 8-ch power amplifier and digital signal processor (DSP) <Rockford Fosgate® premium sound system>	–	General 650 W (maximum)

NOTE:

- **1: CD-R/CD-RW may not be played.*
- **2: Some may not be played.*

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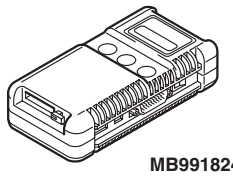
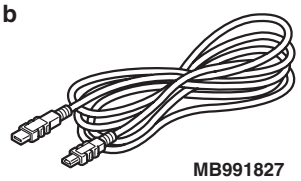
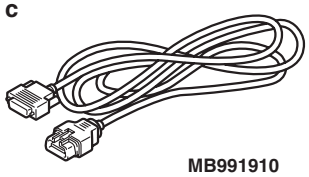
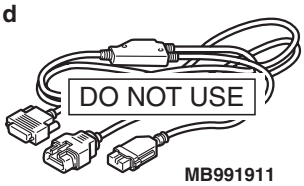
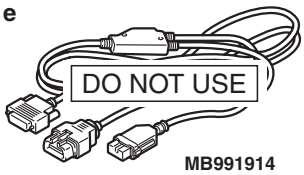
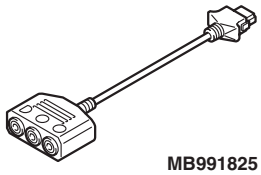
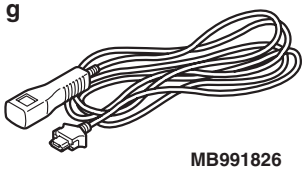
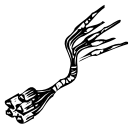
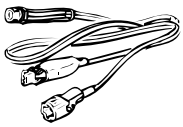
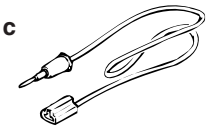
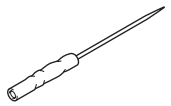
SPECIAL TOOLS

M1542000602629

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

INTRODUCTION TO AUDIO SYSTEM DIAGNOSIS

M1544004700350

RADIO AND CD PLAYER ERROR CODES

If the radio and CD player detects any malfunction in itself or the inserted CD, the error codes below will be shown on the display.

Error code	Cause	Cause of trouble and its solution
ERROR	Power supply error	This error code will be shown if there is any problem in the power supply system of the radio and CD player. Check the connectors and wiring harness of the power supply system, and check that the battery voltage is normal. Check that the same error does not appear.
ERROR 01	Focus error	These error codes will be shown if there is any problem with the CD or there is excessive vibration on the vehicle. If the error codes are not displayed when the vehicle is stopped and another CD is inserted, there is a problem with the CD. Check if there is any of the following problems with the CD. • Contamination, scratch, or deformation • Formation of moisture or grease Repair the CD and insert it again. Then, check that no error appears.
ERROR 02	Abnormal disk	

Error code	Cause	Cause of trouble and its solution
ERROR 03	Mechanical error	This error codes will be shown if there is any internal mechanical or electrical problem in the radio and CD player. Replace the radio and CD player check that no error codes are shown.
ERROR HOT	Protection against high temperature	If the internal temperature is extremely high, this error code will be shown. Turn off the radio and CD player and wait until they cool down. Wait for a while, and then turn on the unit again. Check that the same error does not appear.
ERROR DC	Detection abnormal output to the speaker	This error code will be shown if the radio and CD player or the audio amplifier has an internal error or is contaminated with the foreign material, and there is a problem with output to the speaker. If it is contaminated with the foreign material, turn OFF the power. Dry the foreign material if it is liquid, and remove it if it is solid. Then, check if the error code is displayed. If the error code is displayed, replace the radio and CD player or the audio amplifier.

SATE LLITE RADIO ERROR CODES <Vehicles with satellite radio tuner>

The display displays the error codes below if an abnormality related to the satellite radio is detected.

Error code	Cause	Cause of trouble and its solution
ANTENNA ERROR	Antenna error	This code is displayed when there is a failure, improper connection, or open circuit in the satellite antenna base and the satellite radio tuner cannot receive normal voltage value or current value. Check the satellite radio tuner, the satellite antenna base and the antenna feeder cable, and replace if necessary. (Refer to P.54A-555.)
ACQUIRING SIGNAL	Cannot pick up signal	This code is displayed when the signal is too weak and it cannot be received. Move to a place where the signal can be received easily, or check if there is foreign material that interferes with signal reception on the satellite antenna base, and remove if necessary.
CALL 888-539-SIRIUS	Unauthorized channel	This code is displayed when the channel to be received is not included in the contract with SIRIUS™ satellite radio. Contact SIRIUS™ satellite radio and make a contract for the channel.
NO CHANNEL	There is no selectable channel	There is no channel that can be selected. Cancel the SKIP settings so that the channels can be selected.
INVALID CHANNEL	Channel is invalid	No program is broadcast on this channel now, or this channel cannot be received. Ask SIRIUS™ satellite radio.
SAT ERROR	Mechanical fault or bad connection	This code is displayed when the satellite radio tuner has a mechanical problem or when an error occurs in the communication with radio and CD player. Check the radio and CD player, the satellite radio tuner, and each harness and connector, and replace if necessary. (Refer to P.54A-555.)

Error code	Cause	Cause of trouble and its solution
OFF AIR	OFF AIR	This code is displayed when this channel is not broadcast at this moment, or broadcast of the satellite radio is interrupted. Check the airtime and the broadcast conditions of SIRIUS™ satellite radio.
NOT ACTIVATED	ID not registered	This code is displayed when the SIRIUS ID is not written to the satellite radio tuner. Replace the satellite radio tuner.
READING	Data reading in progress	This code is displayed when the data received is being read. Wait until reading of the data received is completed.
UPDATING	Channel data updating in progress	This code is displayed when SIRIUS™ satellite radio is updating the channel data. Wait until update is completed.
SUB UPDATINGPRESS ANY KEY	Contract status updating complete	This code is displayed when the contract status is updated. This code disappears when any of the audio switch is pressed.

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1544004800733

Refer to GROUP 00, Troubleshooting contents P.00-7.

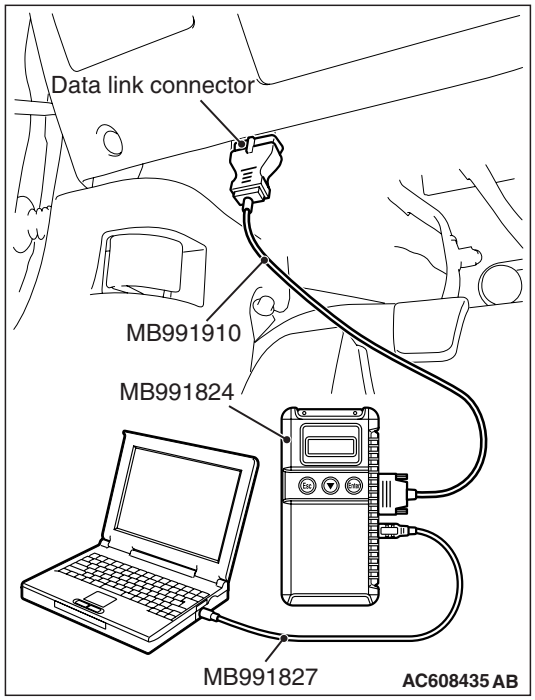
DIAGNOSIS FUNCTION

M1544013200182

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

Required Special Tools:

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



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "Meter" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using scan tool MB991958.

When detecting fault and storing the diagnostic trouble code, the ECU connected to CAN bus line obtains the data before the determination of the diagnostic trouble code and the data when the diagnostic trouble code is determined, and then stores the ECU status of that time. By analyzing each data from scan tool MB991958, the troubleshooting can be performed more efficiently. The displayed items are as the table below.

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the diagnostic trouble code is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
4	Accumulated minute	Cumulative time for current malfunction of diagnostic trouble code	min

DIAGNOSTIC TROUBLE CODE CHART

M1544012900218

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

DTC No.	Description	Reference page
U0019	Bus off (CAN-B)	P.54A-288
U0141	ETACS CAN timeout	P.54A-290
U0151	SRS-ABG CAN timeout	P.54A-291
U0154	OCM CAN timeout	P.54A-293
U0155	Meter CAN timeout	P.54A-294
U0164	A/C CAN timeout	P.54A-296
U0168	WCM CAN timeout	P.54A-297
U0195	Satellite radio CAN timeout	P.54A-299
U0197	Hands free module CAN timeout	P.54A-300
U1415	Coding not completed/Data fail	P.54A-302
B2420	Power integrated circuit	P.54A-304
B2421	Radio tuner	P.54A-305
B2423	6 CD player error	P.54A-307
B2424	CD player error	P.54A-309
B2450	Switch panel communication	P.54A-311
B2451	Audio panel type error	P.54A-315

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC U0019: Bus off (CAN-B)

⚠ CAUTION

- **If DTC U0019 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

TROUBLE JUDGMENT

When the radio and CD player is returned from the bus off state, or when the bus error is indicated to the radio and CD player state, the DTC U0019 (CAN-B) is set.

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player, power supply for the radio and CD player, ground circuit, or CAN bus line may have a problem.

PROBABLE CAUSES

- Malfunctions of radio and CD player
- Malfunction of CAN bus line wiring harness and connector

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, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

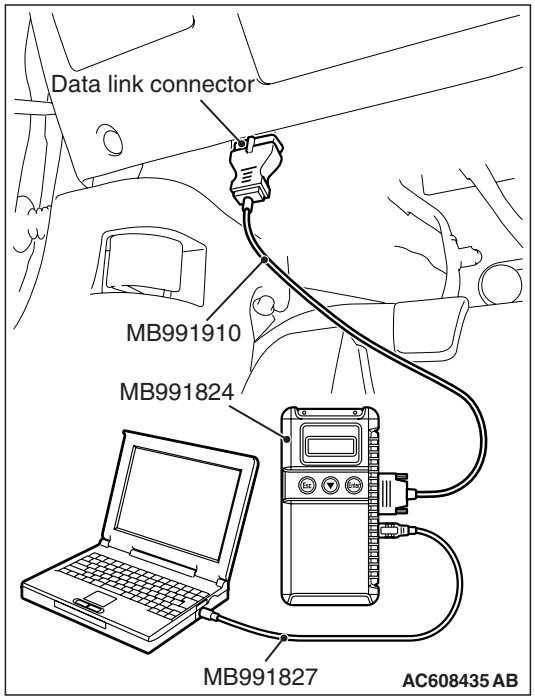
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.



STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0141: ETACS CAN timeout

⚠ CAUTION

- **If DTC U0141 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from ETACS-ECU cannot be received, the radio and CD player sets the DTC U0141.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with ETACS-ECU cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective
- The radio and CD player may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

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

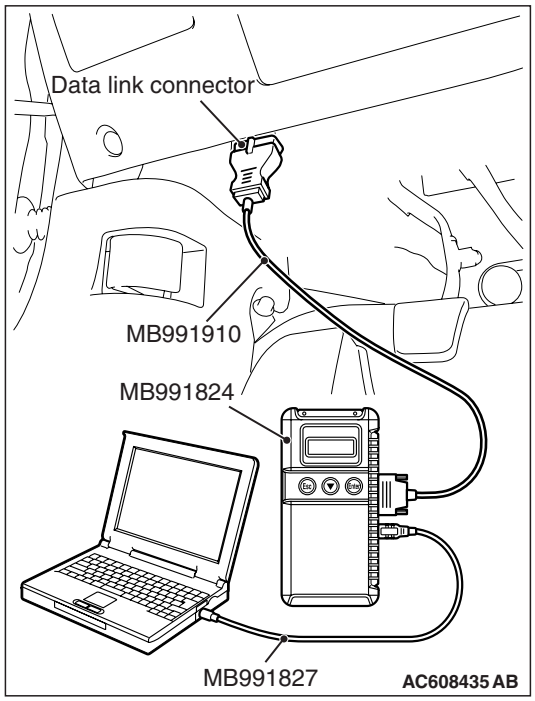
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-ABG CAN timeout

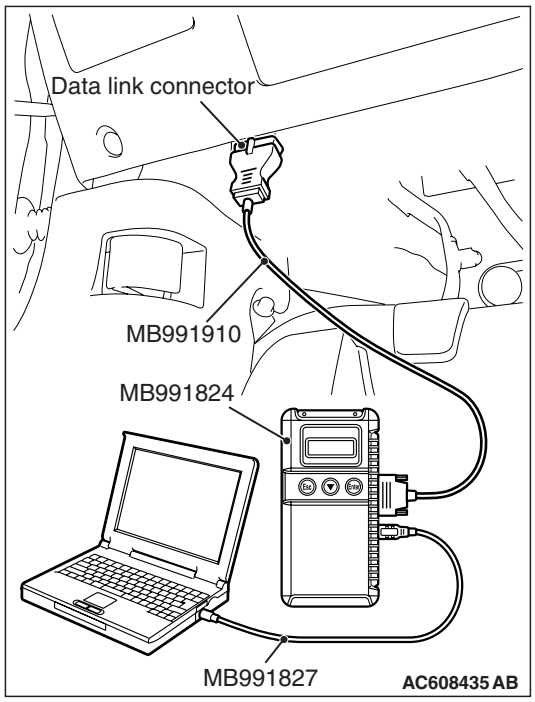
⚠ CAUTION
- **If DTC U0151 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from SRS-ECU cannot be received, the radio and CD player sets DTC U0151.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with SRS-ECU cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective
- The radio and CD player may be defective
- The SRS-ECU may be defective

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Troubleshooting P.52B-31).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0154: OCM CAN timeout

⚠ CAUTION
- **If DTC U0154 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
When the signals from occupant classification-ECU cannot be received, the radio and CD player sets DTC U0154.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with occupant classification-ECU cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The occupant classification-ECU may be defective.

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

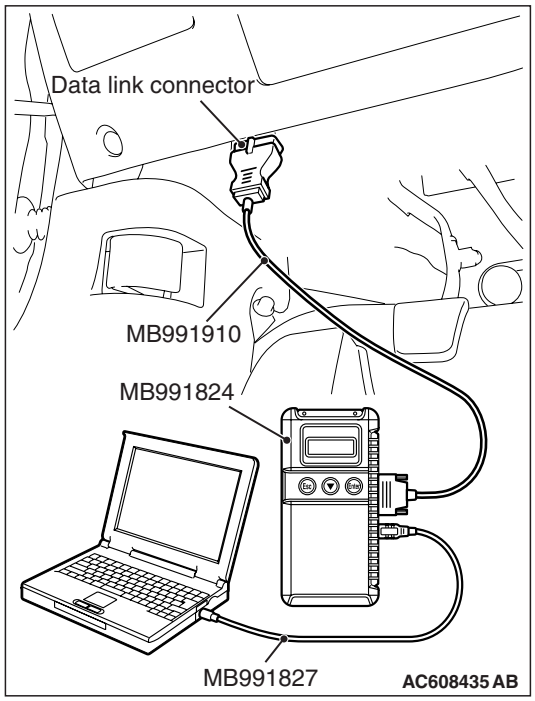
STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.
Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0155: Meter CAN timeout

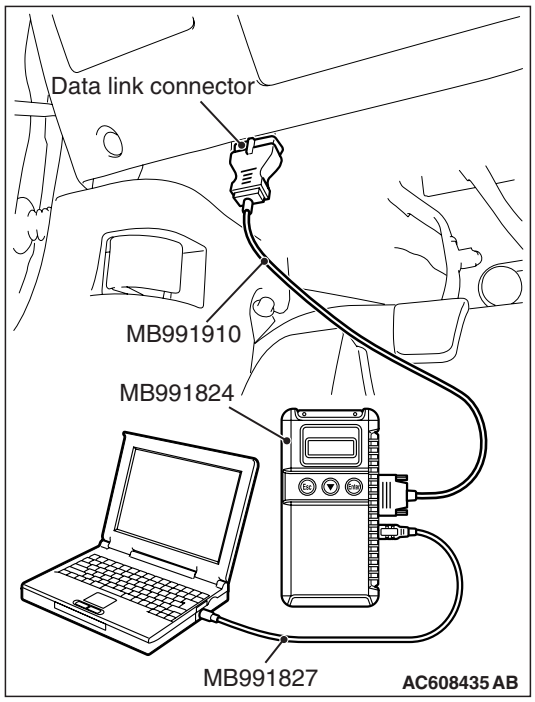
⚠ CAUTION
- **If DTC U0155 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
When the signals from combination meter cannot be received, the radio and CD player sets DTC U0155.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with occupant classification-ECU cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The combination meter may be defective.

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check whether a combination meter DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for combination meter DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to combination meter, Diagnosis P.54A-28).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0164: A/C CAN timeout

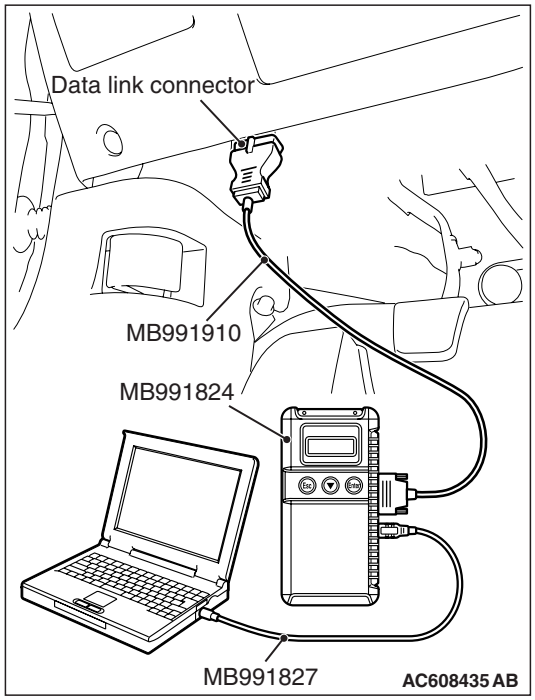
⚠ CAUTION
- **If DTC U0164 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from A/C-ECU cannot be received, the radio and CD player sets DTC U0164.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with A/C-ECU cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The A/C-ECU may be defective.
- The radio and CD player may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

TSB Revision

STEP 2. Using scan tool MB991958, read the A/C diagnostic trouble code.
Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Automatic A/C Diagnosis P.55-9).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0168: WCM CAN timeout

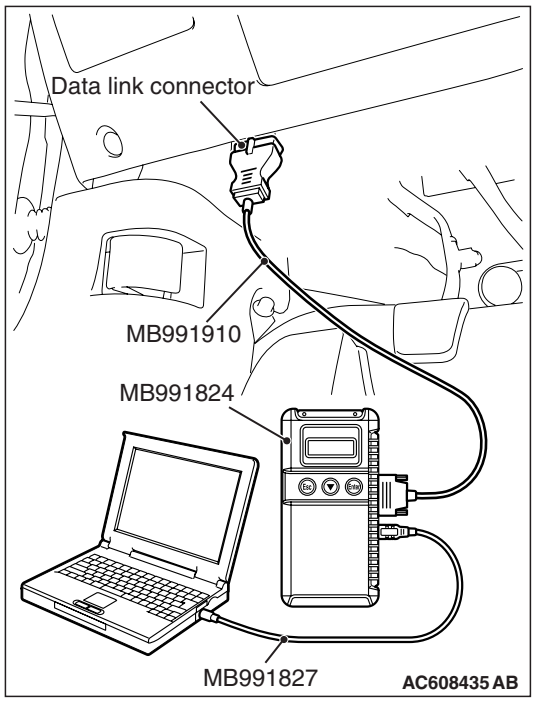
⚠ CAUTION
- **If DTC U0168 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be received, the radio and CD player sets DTC U0168.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 V (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The KOS-ECU may be defective. <vehicles with KOS>
- The WCM may be defective. <vehicles with WCM>
- The radio and CD player may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> diagnostic trouble code.

Check again if the DTC is set to the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM>.

Q: Is the DTC set?

YES : Troubleshoot the KOS or WCM (Refer to GROUP 42B, Diagnosis P.42B-20 <KOS> or GROUP 42C, Diagnosis P.42C-14 <WCM>).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0195: Satellite radio CAN timeout

⚠ CAUTION

- **If DTC U0195 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from satellite radio tuner cannot be received, the radio and CD player sets DTC U0195.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with satellite radio tuner cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The satellite radio tuner may be defective.

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

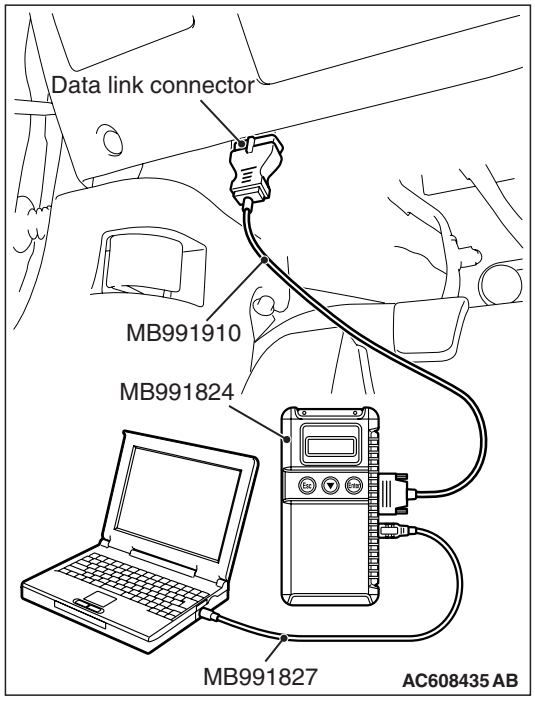
⚠ CAUTION

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958 read the satellite radio tuner diagnostic trouble code.

Check whether a satellite radio tuner DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for satellite radio tuner DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the satellite radio tuner. (Refer to P.54A-540.)
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0197: Hands free module CAN timeout

⚠ CAUTION

- **If DTC U0197 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from hands free module cannot be received, the radio and CD player sets DTC U0197.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with hands free module cannot be established for 2,500 ms or more, the radio and CD player determines that a problem has occurred.

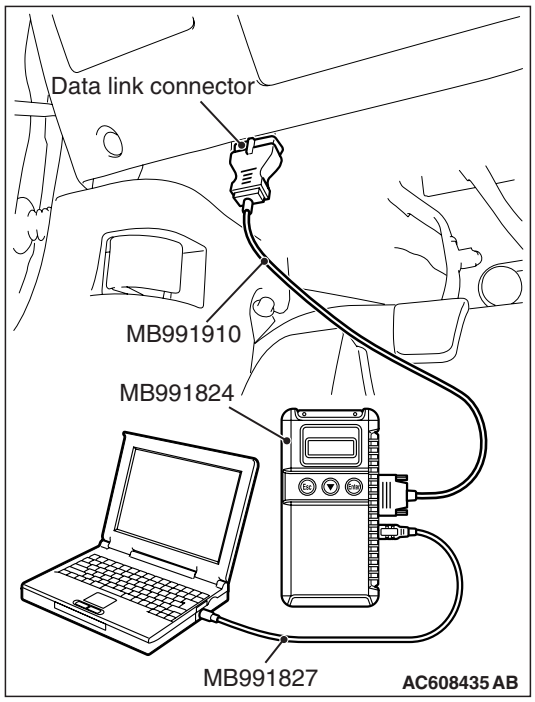
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The hands free module may be defective.

DIAGNOSIS

Required Special Tools:

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

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

Q: Is the DTC set?

YES : Troubleshoot the hands-free cellular phone system. (Refer to P.54A-462.)
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U1415: Coding not completed/Data fail

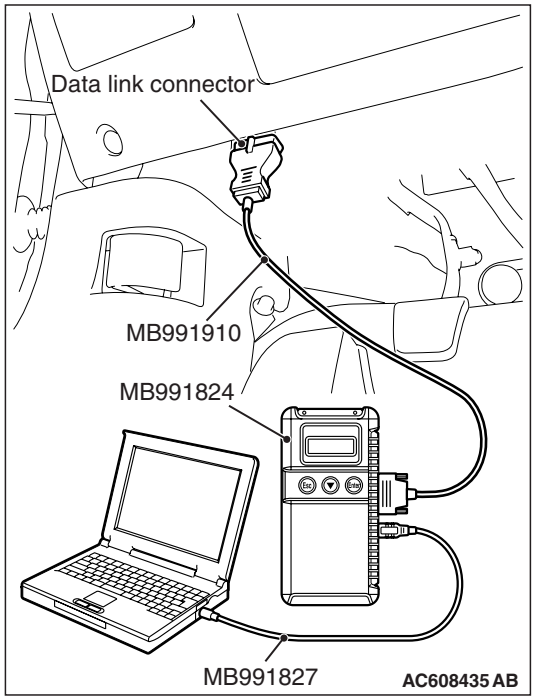
⚠ CAUTION
- **If DTC U1415 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

TROUBLE JUDGMENT
When the vehicle information data is not registered to the radio and CD player, the radio and CD player sets the diagnostic trouble code No.U1415.

COMMENTS ON TROUBLE SYMPTOM
The radio and CD player, ETACS-ECU, or CAN bus line may have a problem.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The ETACS-ECU may be defective.

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, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.

STEP 2. Using scan tool MB991958, read the other system DTC.

Check if DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to GROUP 54A, ETACS-ECU, Diagnosis P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC B2420: Power integrated circuit

⚠ CAUTION
Before replacing the radio and CD player, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TROUBLE JUDGMENT

If the radio and CD player continuously apply the voltage of two volts or more to the speakers for one minute or more, it is determined that the offset voltage is exceeded, and then the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player or CAN bus line may have a problem.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The radio and CD player may be defective.

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, diagnose the CAN bus line.

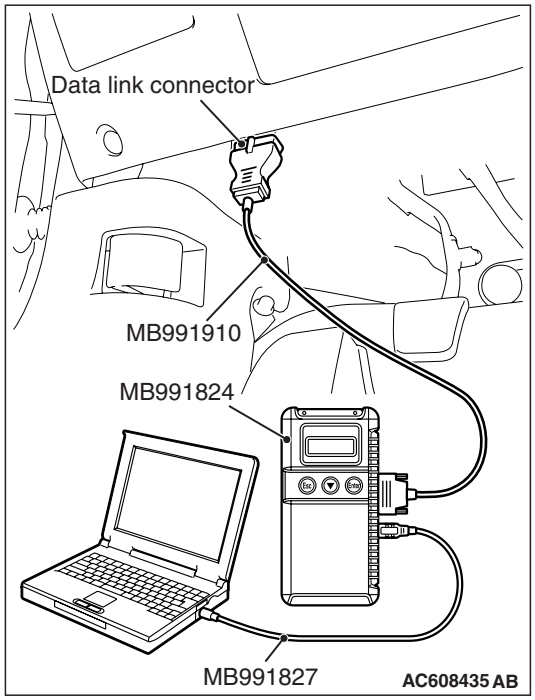
Use scan tool MB991958 to diagnose the CAN bus lines.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.



STEP 2. Recheck for diagnostic trouble code.
Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

DTC B2421: Radio tuner

⚠ CAUTION
Before replacing the radio and CD player, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TROUBLE JUDGMENT

If the communication cannot be established consecutively for 10 times between the incorporated tuner of radio and CD player and the microcomputer, the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player or CAN bus line may have a problem.

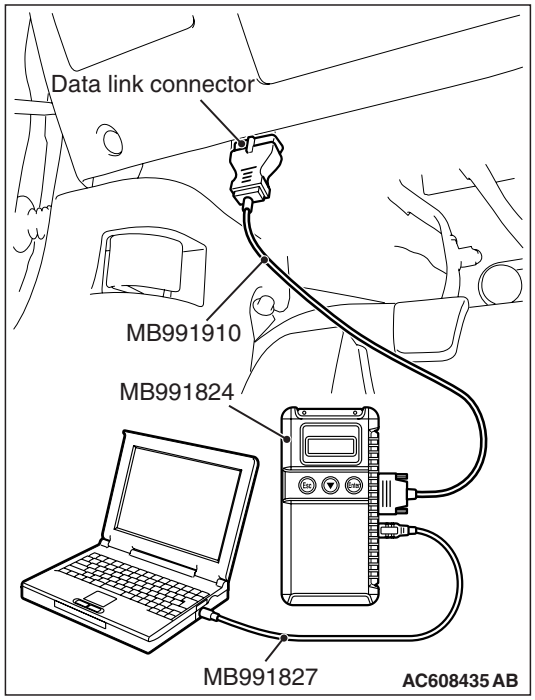
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The radio and CD player may be defective.

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, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

DTC B2423: 6CD player error

⚠ CAUTION
If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, always diagnose the CAN bus lines.

⚠ CAUTION
Before replacing the radio and CD player <CD changer built-in type>, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TROUBLE JUDGMENT

During the use of the radio and CD player <CD changer built-in type>, if any of the ERROR, ERROR01, ERROR02, ERROR03, ERROR DC or ERROR HOT continues for 1 minute, the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player <CD changer built-in type> or CAN bus line may have a problem.

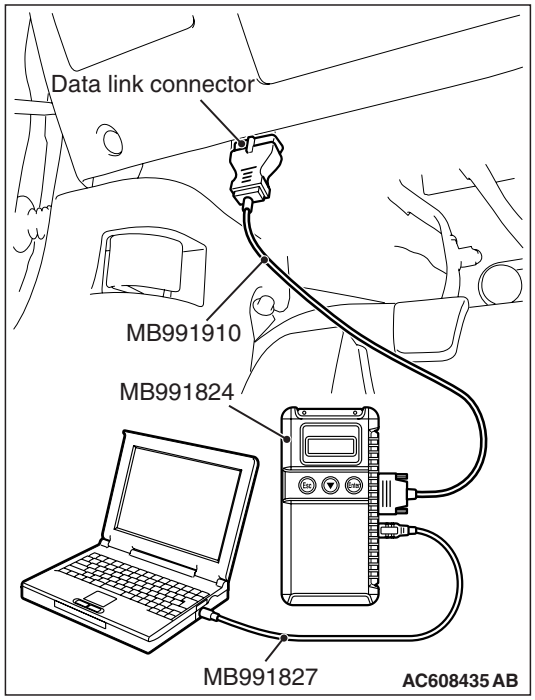
TROUBLESHOOTING HINTS

- The radio and CD player may be defective.<CD changer built-in type>
- The CAN bus line may be defective.

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, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. CD check

Playback a clean and unscratched CD for one minute, and recheck if the diagnostic trouble code is set to the radio and CD player.

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Playback the clean, unscratched CD for one minute.
(4) Check if diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Go to Step 3.
NO : Clean the CD, use a CD without scratches and burrs, or remove the CD burrs, and then reinsert the CD.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC B2424: CD player error

⚠ CAUTION
Before replacing the radio and CD player, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TROUBLE JUDGMENT
During the use of the radio and CD player, if any of the ERROR, ERROR01, ERROR02, ERROR03, ERROR DC or ERROR HOT continues for 1 minute, the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM
The radio and CD player or CAN bus line may have a problem.

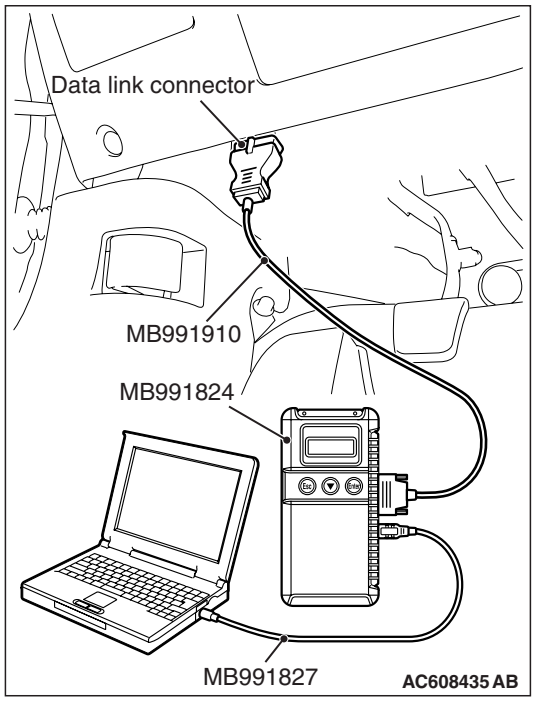
PROBABLE CAUSES
- The CAN bus line may be defective.
- The radio and CD player may be defective.

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, diagnose the CAN bus line.
Use scan tool MB991958 to diagnose the CAN bus lines.

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



. (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. CD check

Playback a clean and unscratched CD for one minute, and recheck if the diagnostic trouble code is set to the radio and CD player.
(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Playback the clean, unscratched CD for one minute.
(4) Check if diagnostic trouble code is set.

Q: Is the DTC set?

YES : Go to Step 3.
NO : Clean the CD, use a CD without scratches and burrs, or remove the CD burrs, and then reinsert the CD.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

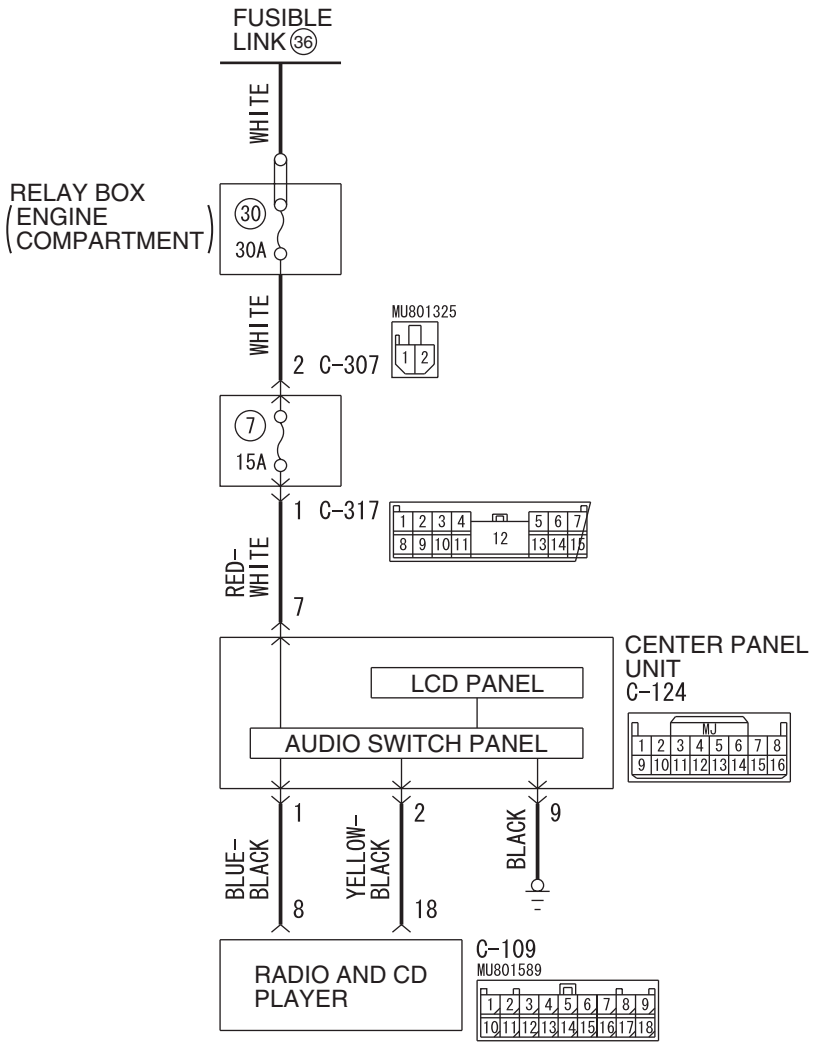
YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC B2450: Switch panel communication

⚠ CAUTION

Before replacing the radio and CD player, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

Center Panel Unit Power Supply Circuit



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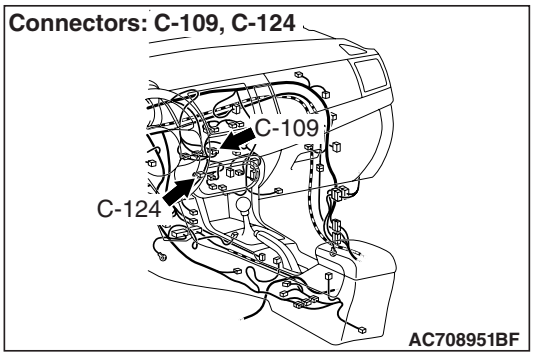
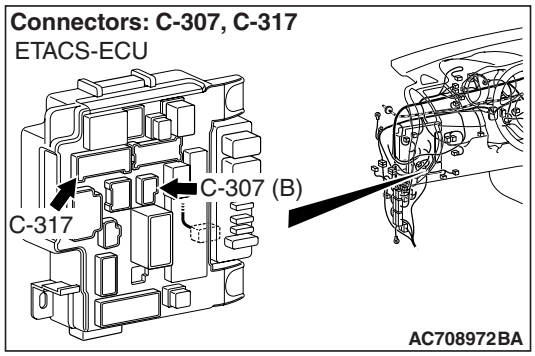




TSB Revision

TROUBLE JUDGMENT

If the radio and CD player cannot establish the communication with center panel assembly for 1 minute or more, the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player, center panel assembly, or CAN bus line may have a problem.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The radio and CD player may be defective.
- The center panel unit may be defective.

DIAGNOSIS

Required Special Tools:

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

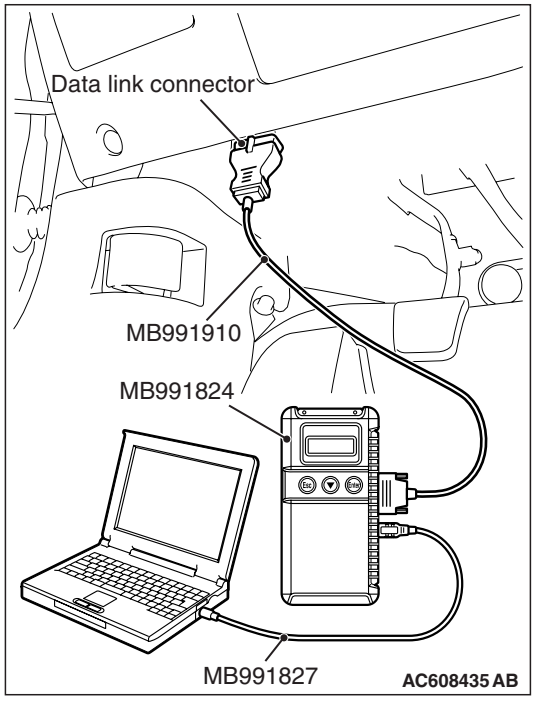
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Check center panel unit connector C-124 and radio and CD player connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are center panel unit connector C-124 and radio and CD player connector C-109 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 3. Check the wiring harness between center panel unit connector C-124 (terminal 1, 2) and radio and CD player connector C-109 (terminal 8, 18).

Q: Is the wiring harness between center panel unit connector C-124 (terminal 1, 2) and radio and CD player connector C-109 (terminal 8, 18) in good condition?

YES : Go to Step 4.

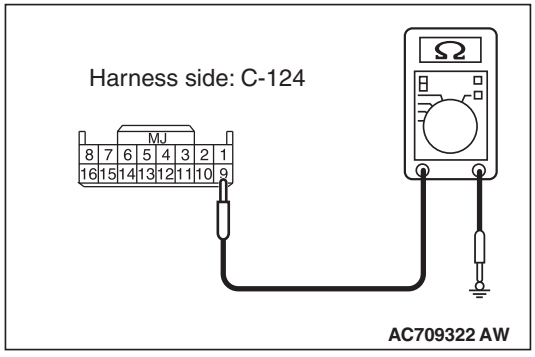
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check the ground circuit to the center panel unit. Measure the resistance at center panel unit connector C-124.

(1) Disconnect the connector, and measure at the wiring harness side.

(2) Measure resistance between terminal 9 and ground.

OK: The resistance should be 2 ohm or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between center panel unit connector C-124 (terminal 9) and ground.

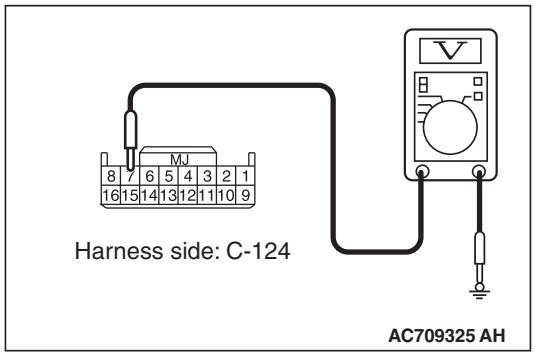
- Check the ground wires for open circuit.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 9) and ground in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

TSB Revision



STEP 6. Check the power supply circuit to the center panel unit. Measure the voltage at center panel unit connector C-124.

(1) Disconnect the connector, and measure at the harness side connector.
(2) Measure voltage between terminal 7 and ground.

OK: Battery voltage

Q: Is the measured voltage battery voltage?

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

STEP 7. Check the wiring harness between center panel unit connector C-124 (terminal 7) and fusible link 34.

- Check the power supply line for open circuit and short circuit.

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

Q: Is the wiring harness between center panel unit connector C-124 (terminal 7) and fusible link 34 in good condition?

YES : Go to Step 8.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 9.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

STEP 9. Recheck for diagnostic trouble code.
Temporarily replace the center panel unit, and recheck that the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : Replace the center panel unit.

DTC B2451: Audio panel type error

⚠ CAUTION
If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, always diagnose the CAN bus lines.

TROUBLE JUDGMENT

If the radio and CD player consecutively receive the display trouble signal from the center panel assembly for 1 minute, the diagnostic trouble code is set.

COMMENTS ON TROUBLE SYMPTOM

The center panel assembly or CAN bus line may have a problem.

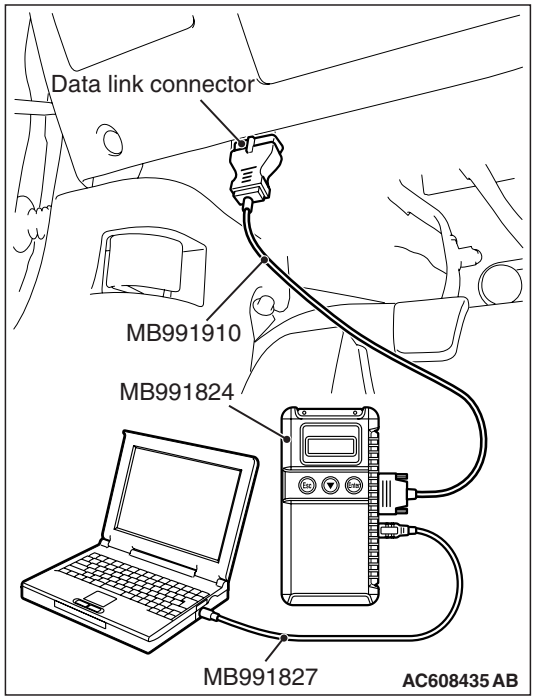
PROBABLE CAUSES

- The CAN bus line may be defective.
- The radio and CD player may be defective.

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, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-285."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set to the radio and CD player.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the radio and CD player.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

TROUBLE SYMPTOM CHART

M1544004901302

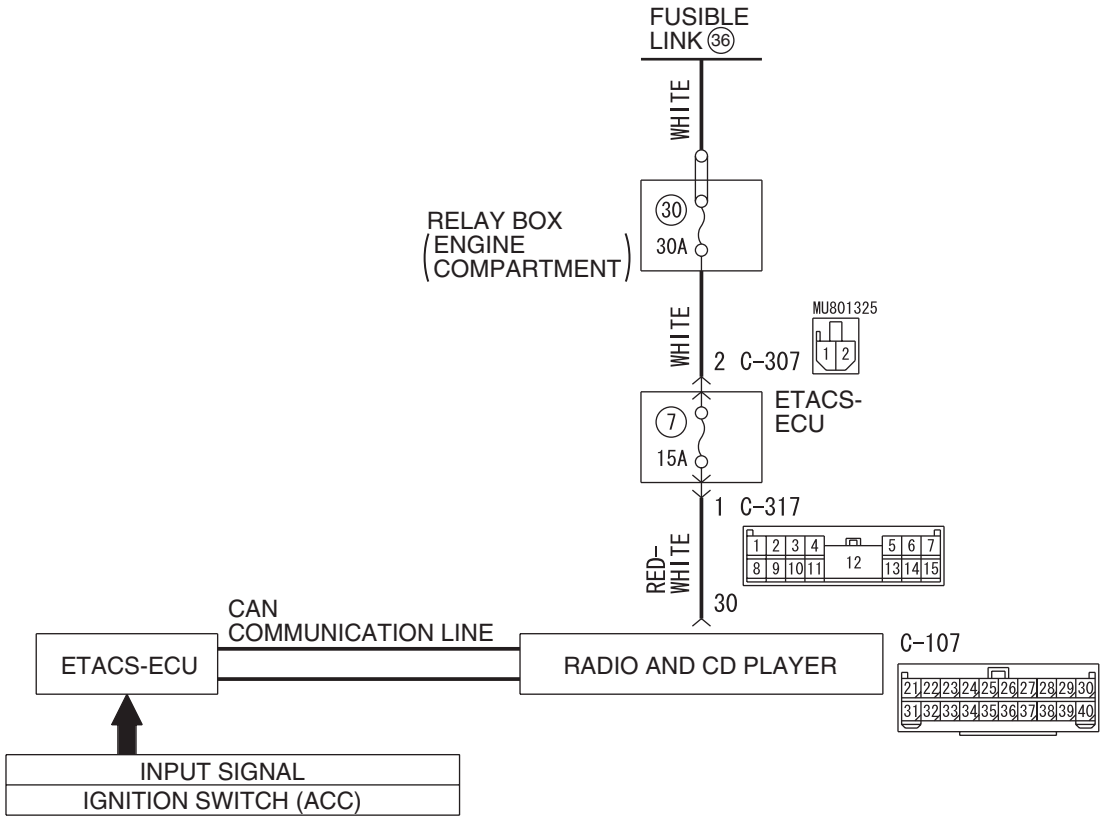
Inspection Procedure No.	Trouble symptom		Reference page
1	Power is not turned ON when the power switch is turned ON.		P.54A-318
2	No sound is heard. <Vehicles with audio amplifier>		P.54A-322
3	No sound is heard from one of the speakers.	<Vehicles without audio amplifier>	P.54A-328
		<Vehicles with audio amplifier>	P.54A-333
4	The audio does not operate normally by operating the radio and CD player of the center panel unit.		P.54A-340
5	Audio illuminations does not work normally.		P.54A-344
6	The sound of external input are not played.		P.54A-348
7	Noise	Noise is present while moving (AM).	P.54A-350
8		Noise is present while moving (FM).	P.54A-350
9		Sound mixed with noise, only at night (AM).	P.54A-351
10		Noise is overpowering both AM and FM.	P.54A-352
11		Excessive noise on AM and FM.	P.54A-352
12		Noise is detected with engine running.	P.54A-353
13		Noise appears during vibration or shocks.	P.54A-354
14		Noise is present while moving (FM).	P.54A-355
15		Constant noise.	P.54A-356
16	Radio	No reception (AM).	P.54A-356
17		Poor reception.	P.54A-357
18		Distortion on AM and/or FM.	P.54A-358
19		Distortion on FM only.	P.54A-359
20		Auto select function inoperative, too few automatic stations are selected.	P.54A-359
21		Preset stations are erased.	P.54A-360
22	CD player	CD cannot be inserted.	P.54A-360
23		No sound. (CD only).	P.54A-361
24		CD sound skips.	P.54A-361
25		Sound quality is poor.	P.54A-362
26		CD cannot be ejected.	P.54A-362

SYMPTOM PROCEDURES

Inspection Procedure 1: Power is not turned ON when the power switch is turned ON.

⚠ CAUTION
When replacing the ECU, always check that the communication circuit is normal.

Radio and CD Player Power Supply Circuit



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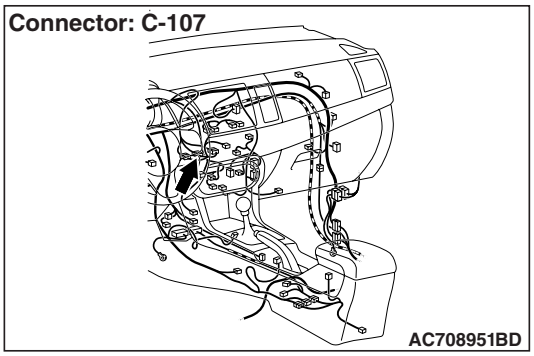
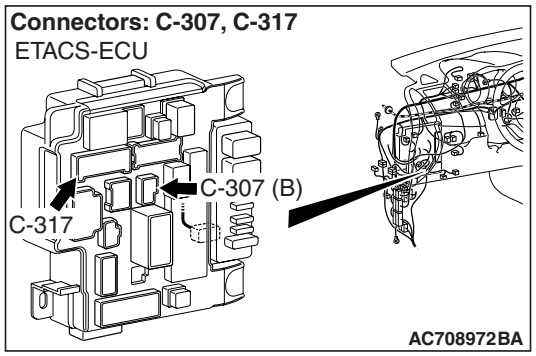




TSB Revision

OPERATION

When the ignition switch is in the ON or ACC position, the radio and CD player power can be turned ON. With the radio and CD player power ON, when the ignition switch is turned to the OFF position, the power for radio and CD player is also turned OFF.

COMMENTS ON TROUBLE SYMPTOM

Provided that the audio diagnostic trouble code is not set, if the power for radio and CD player cannot be turned ON, the radio and CD player, or power supply circuit for radio and CD player may have a problem, or the option coding information may be inconsistent.

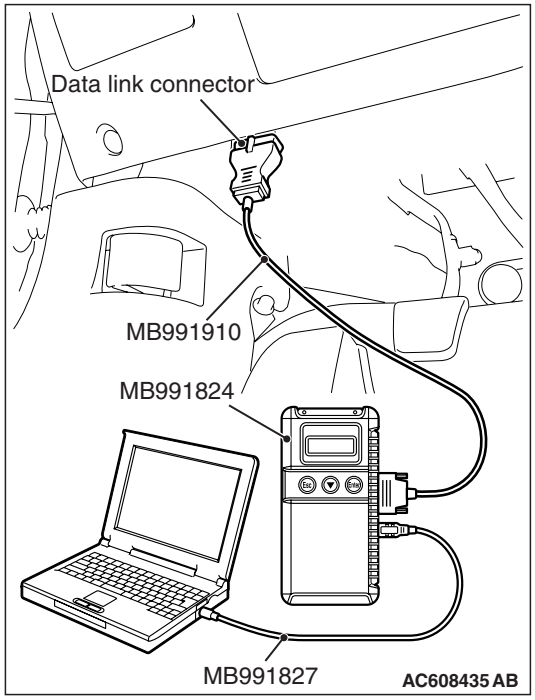
PROBABLE CAUSES

- The radio and CD player may be defective
- The ETACS-ECU may be defective
- Option coding information inconsistency
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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



STEP 1. ETACS-ECU coding data check.

(1) Operate scan tool MB991958 to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).

(2) Check that the "AUDIO" is set to "enabled."

Q: Is the check result normal?

YES : Go to Step 2.

NO : Operate scan tool MB991958 to set the option coding "AUDIO" to "enabled," and check the trouble symptom.

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

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

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 3.

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

Check if the diagnostic trouble code is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to GROUP 54A, ETACS, Diagnosis P.54A-582).
NO : Go to Step 4.

STEP 4. Using scan tool MB991958, check data list.

Check the input signal of ACC relay.

- Turn the ignition switch to the ACC position.

Item No.	Item name	Normal conditions
Item 288	ACC switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Refer to GROUP 54A, ETACS, Diagnosis –Inspection Procedure 1 "The ignition switch (ACC) signal is not received" P.54A-640.

STEP 5. Check ETACS-ECU connector C-317 and radio and CD player connector C-107 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-317 and radio and CD player connector C-107 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering remote control switch should work normally.

STEP 6. Check the wiring harness between ETACS-ECU connector C-317 (terminal 1) and radio and CD player connector C-107 (terminal 30).

- Check the power supply lines (battery power supply) for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-317 (terminal 1) and radio and CD player connector C-107 (terminal 30) in good condition?

YES : Go to Step 7.

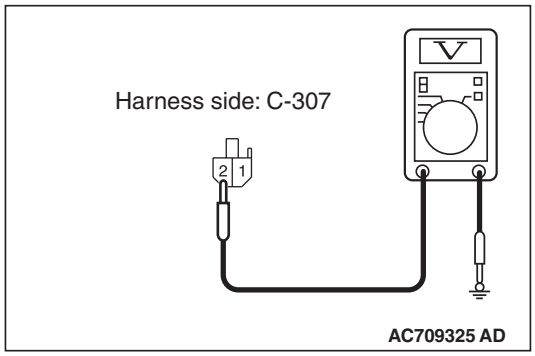
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-307.

(1) Disconnect the connector, and measure at the wiring harness-side connector.

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

OK: Battery voltage



Q: Is the measured voltage battery voltage?

YES : Go to Step 9.

NO : Go to Step 8.

STEP 8. Check the wiring harness between ETACS-ECU connector C-307 (terminal 2) and fusible link (36)

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-307 (terminal 2) and fusible link (36) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Check if the radio and CD player power is turned ON.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the radio and CD player.

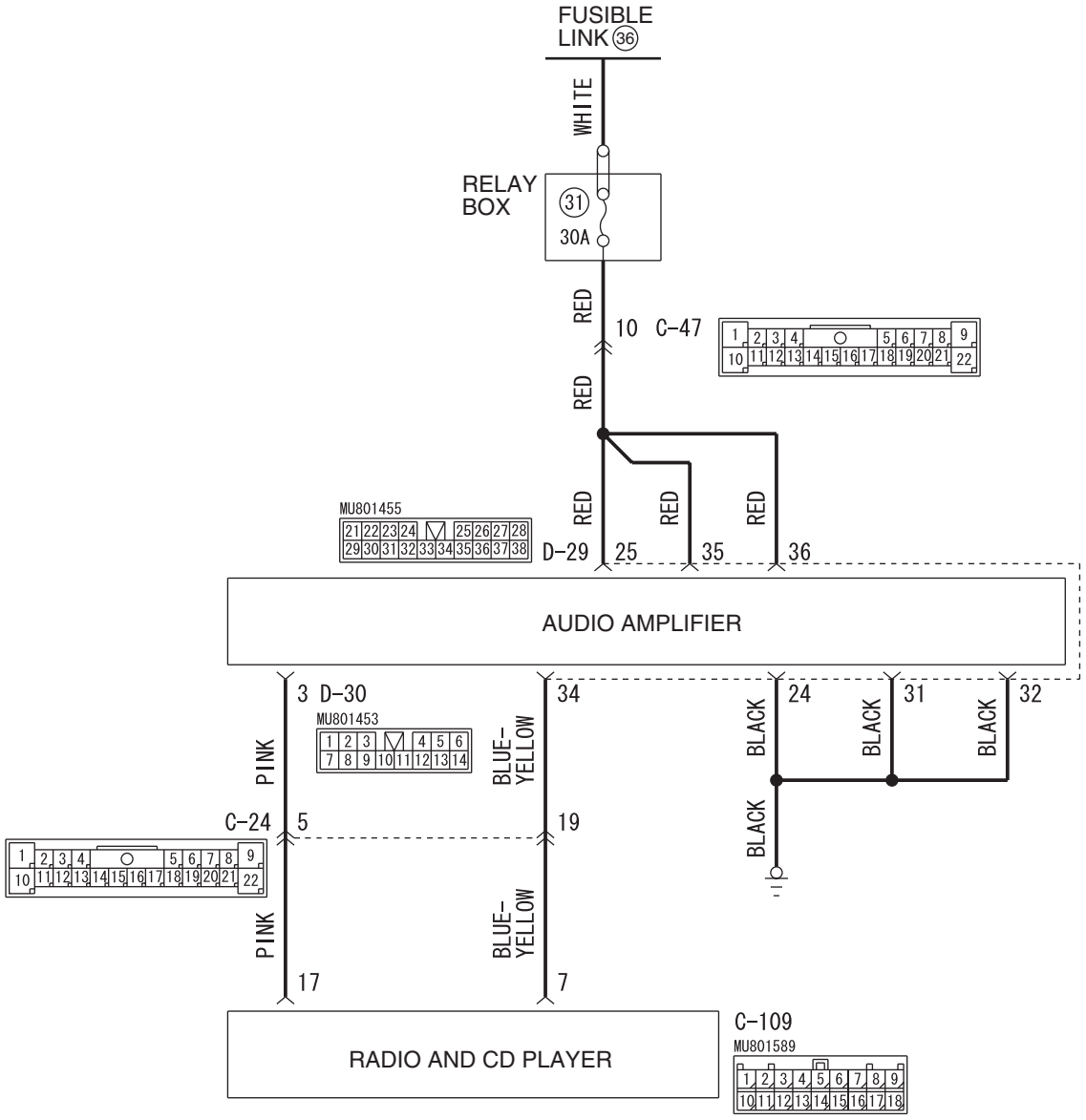
TSB Revision

Inspection Procedure 2: No sound is heard. <Vehicles with audio amplifier>

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Audio Amplifier System Circuit



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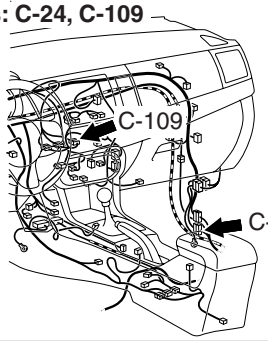
Connectors: C-24, C-109



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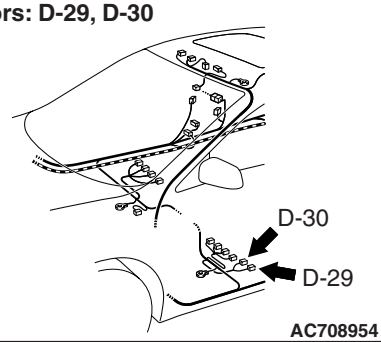
Connectors: D-29, D-30



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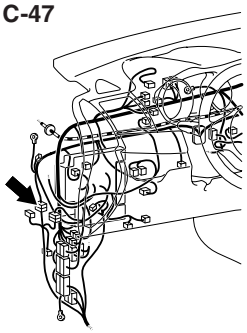
Connector: C-47



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COMMENTS ON TROUBLE SYMPTOM

If the audio sound is not output, the radio and CD player, audio amplifier, or power supply circuit of audio amplifier may have a problem, or the option coding information may be inconsistent.

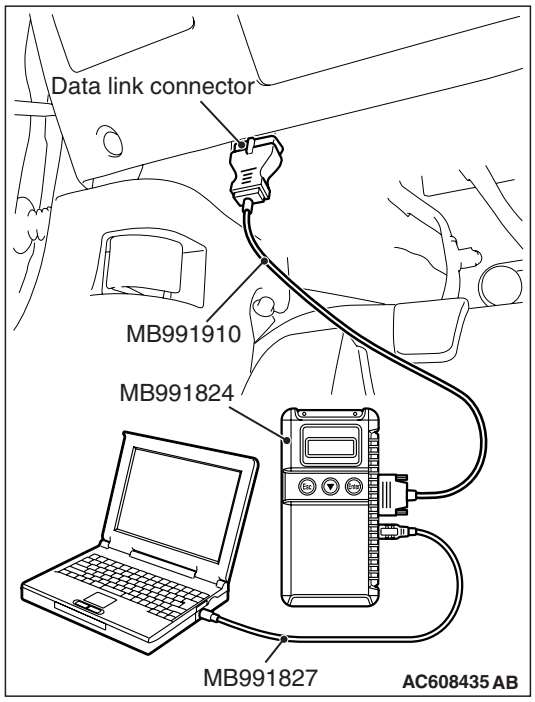
PROBABLE CAUSES

- The radio and CD player may be defective
- The audio amplifier may be defective
- Option coding information inconsistency
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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



STEP 1. Check the ETACS-ECU coding data.

(1) Operate the scan tool MB991958 to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).

(2) Check that the "Speaker" is set to "Premium."

Q: Is the check result normal?

YES : Go to Step 2.

NO : Operate scan tool MB991958 to set the option coding "Speaker" to "Premium," and check the trouble symptom.

STEP 2. Check audio amplifier connector D-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is audio amplifier connector D-29 in good condition?

YES : Go to Step 3.

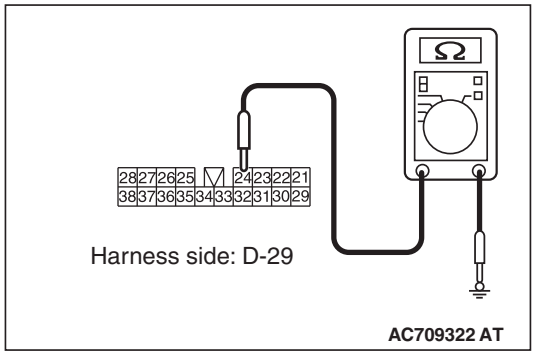
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

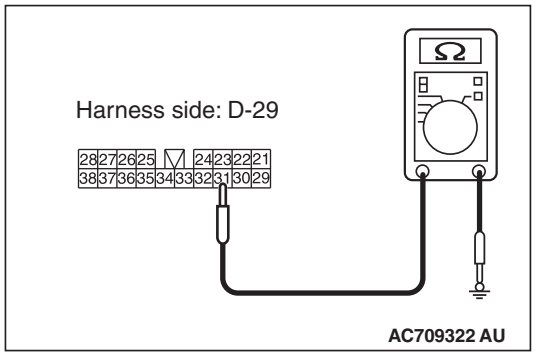
STEP 3. Check the ground circuit to the audio amplifier. Measure the resistance at audio amplifier connector D-29.

(1) Disconnect audio amplifier connector D-29, and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance between terminal 24 and ground.

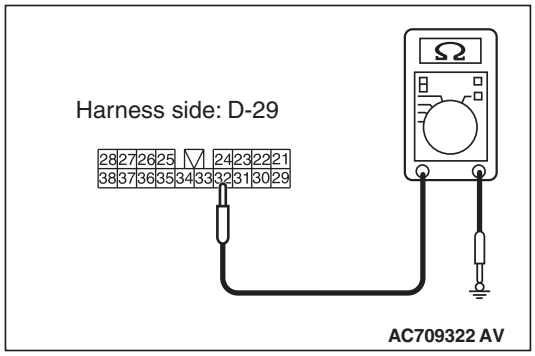
OK: The resistance should be 2 ohms or less





(3) Measure the resistance between terminal 31 and ground.

OK: The resistance should be 2 ohms or less



(4) Measure the resistance between terminal 32 and ground.

OK: The resistance should be 2 ohms or less

Q: Is the measured resistance 2 ohms or less?

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

STEP 4. Check the wiring harness between audio amplifier connector D-29 (terminal 24, 31, 32) and ground.

- Check the ground wires for open circuit.

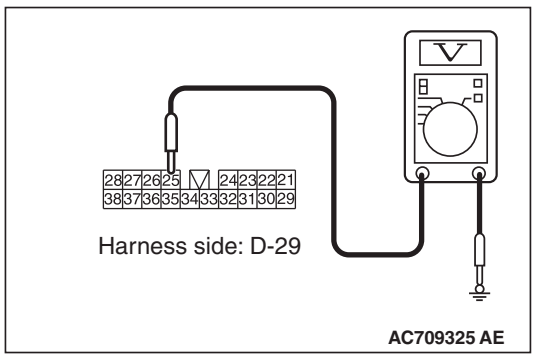
Q: Is the wiring harness between audio amplifier connector D-25 (terminal 24, 31, 32) and ground in good condition?

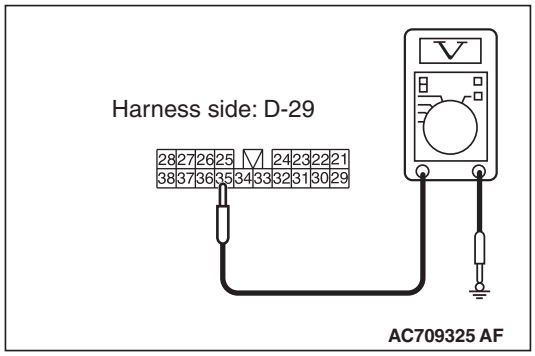
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check the power supply circuit to the audio amplifier. Measure the voltage at audio amplifier connector D-29.

(1) Disconnect audio amplifier connector D-29, and measure the voltage available at the wiring harness-side connector.
(2) Measure the voltage between terminal 25 and ground.

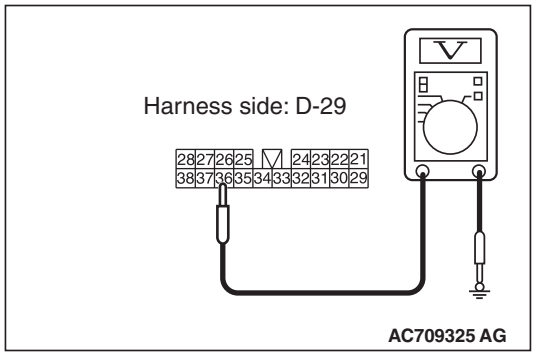
OK:Battery voltage.





(3) Measure the voltage between terminal 35 and ground.

OK:Battery voltage.



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

OK: Battery voltage.

Q: Is the measured voltage battery voltage?

YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between audio amplifier connector D-29 (terminal 25, 35, 36) and fusible link (36).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-47 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between audio amplifier connector D-29 (terminal 25, 35, 36) and fusible link (36) in good condition?

YES : Go to Step 7.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check radio and CD player connector C-109 and audio amplifier connector D-30 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are radio and CD player connector C-109 and audio amplifier D-30 in good condition?

YES : Go to Step 8.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 8. Check the wiring harness between radio and CD player connector C-109 (terminal 17) and audio amplifier connector D-30 (terminal 3), and between radio and CD player connector C-109 (terminal 7) and audio amplifier connector D-29 (terminal 34).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between radio and CD player connector C-109 (terminal 17) and audio amplifier connector D-30 (terminal 3), and between radio and CD player connector C-109 (terminal 7) and audio amplifier connector D-29 (terminal 34)?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Replace the audio amplifier, then check that the audio sound is output.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

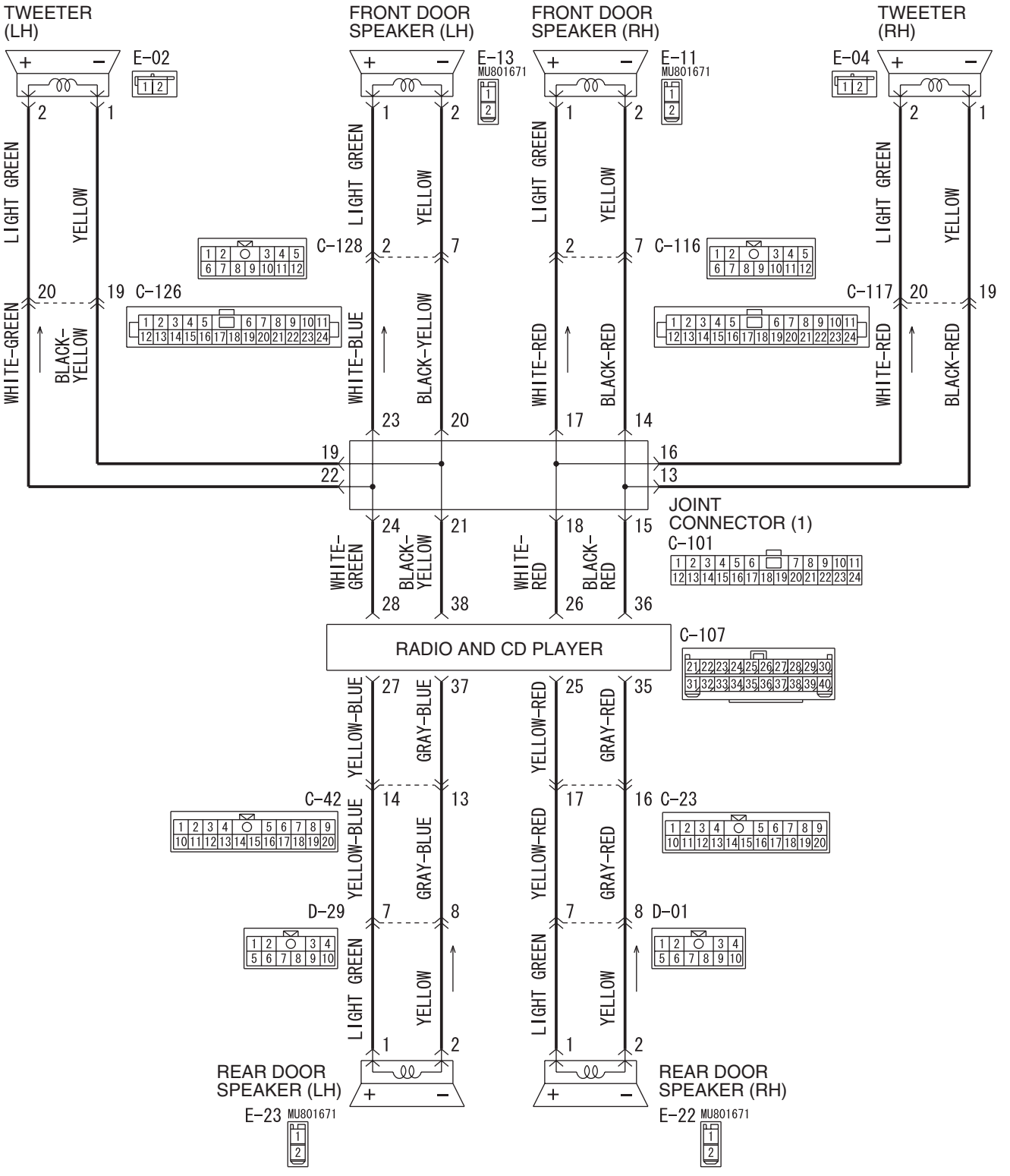
NO : Replace the radio and CD player.

Inspection Procedure 3: No sound is heard from one of the speakers. <Vehicles without audio amplifier>

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

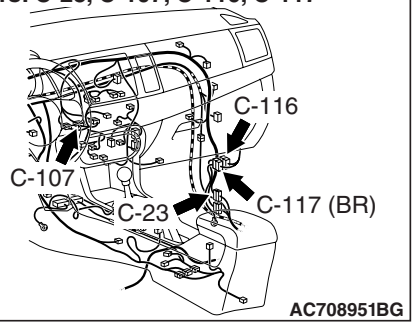
Speaker System Circuit



W8G54M101A

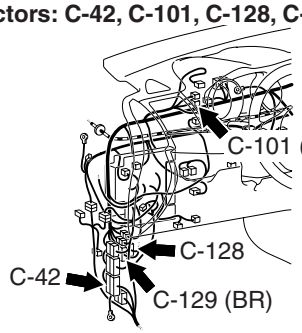
TSB Revision

Connectors: C-23, C-107, C-116, C-117



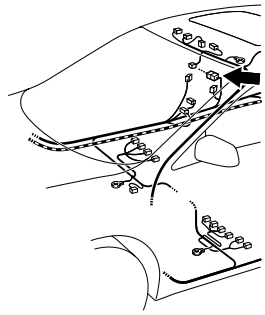
AC708951BG

Connectors: C-42, C-101, C-128, C-129



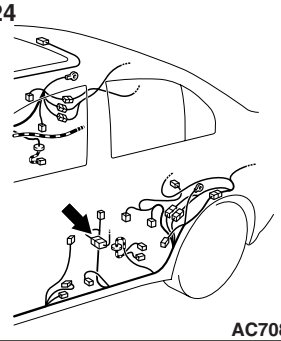
AC708950BJ

Connector: D-01



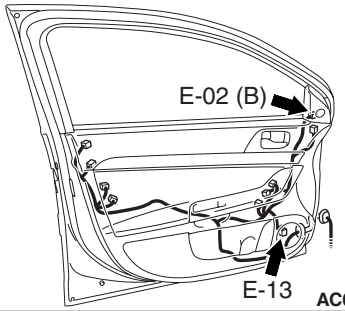
AC708954AO

Connector: D-24



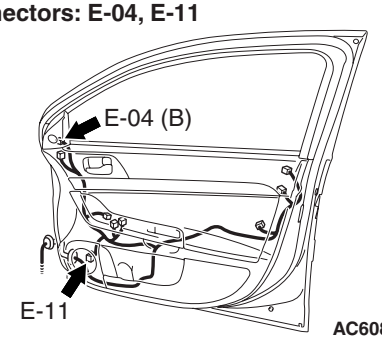
AC708955AK

Connectors: E-02, E-13



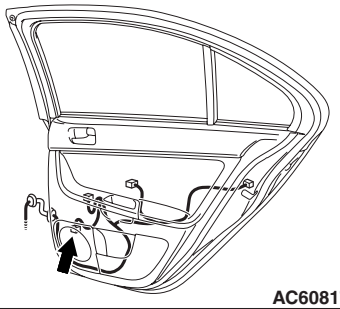
AC608167AB

Connectors: E-04, E-11



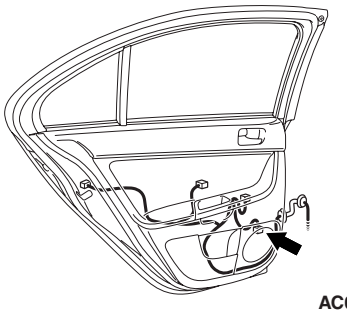
AC608168AJ

Connector: E-22



AC608170AI

Connector: E-23



AC608169AH

COMMENTS ON TROUBLE SYMPTOM

If the sound is not output from one of the speakers, the speaker, radio and CD player, communication line from the radio and CD player to the speakers may have a problem.

PROBABLE CAUSES

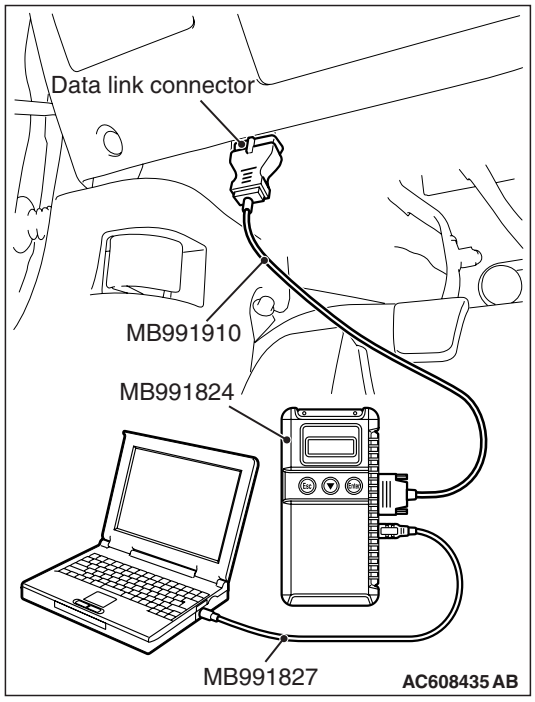
- The speaker may be defective
- The radio and CD player may be defective
- Damaged harness wires and connectors

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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. ETACS-ECU coding data check.

(1) Operate the scan tool to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).

(2) Check that the "Speaker" is set to "6 speakers".

Q: Is the check result normal?

YES : Go to Step 2.

NO : Operate the scan tool to set the option coding "Speaker" to "6 speakers", and check the trouble symptom.

STEP 2. Checking with audio speaker check

Perform the audio speaker check, and check which speaker does not output the sound (Refer to P.54A-573).

NOTE: In the following procedure, check the speaker or tweeter that is abnormal.

Q: Is the check result normal?

YES (normal for all) : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO (Either a speaker is abnormal) : Go to Step 3.

STEP 3. Check door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH> in good condition?

YES : Go to Step 4.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 4. Check the speaker or tweeter.

(1) Remove the speaker or tweeter (Refer to P.54A-575).
(2) Check that the speaker or tweeter outputs the noise when the voltage of 5 V is applied to the speaker or tweeter connector terminal.

Q: Does the speaker or tweeter output the noise?

YES : Go to Step 5.
NO : Replace the speaker or tweeter.

STEP 5. Check radio and CD player connector C-107 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is radio and CD player connector C-107 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 6. Check the wiring harness between the speaker or tweeter connector terminal and the radio and CD player connector terminal.

- Check the communication lines for open circuit and short circuit.
- <Front door speaker (LH)> Check the wiring harness between front door speaker (LH) connector E-13 (terminal 1, 2) and radio and CD player connector C-107 (terminal 28, 38).

  NOTE: Also check joint connector C-101 and intermediate connector C-128 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 or intermediate connector C-128 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Front door speaker (RH)> Check the wiring harness between front door speaker (RH) connector E-11 (terminal 1, 2) and radio and CD player connector C-107 (terminal 26, 36).

  NOTE: Also check joint connector C-101 and intermediate connector C-116 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 or intermediate connector C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Rear door speaker (LH)> Check the wiring harness between rear door speaker (LH) connector E-23 (terminal 1, 2) and radio and CD player connector C-107 (terminal 27, 37).

  NOTE: Also check intermediate connectors D-24 and C-42 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-24 or C-42 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Rear door speaker (RH)> Check the wiring harness between rear door speaker (RH) connector E-22 (terminal 1, 2) and radio and CD player connector C-107 (terminal 25, 35).

  NOTE: Also check intermediate connectors C-23 and D-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or D-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Tweeter (LH)> Check the wiring harness between tweeter (LH) connector E-02 (terminal 1, 2) and radio and CD player connector C-107 (terminal 38, 28).

  NOTE: Also check joint connector C-101 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 or intermediate connector C-129 is damaged, repair

or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- <Tweeter (RH)> Check the wiring harness between tweeter (RH) connector E-04 (terminal 1, 2) and radio and CD player connector C-107 (terminal 36, 26).

  NOTE: Also check joint connector C-101 and intermediate connector C-117 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 or intermediate connector C-117 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between the speaker or tweeter connector terminal and the radio and CD player connector terminal in good condition?

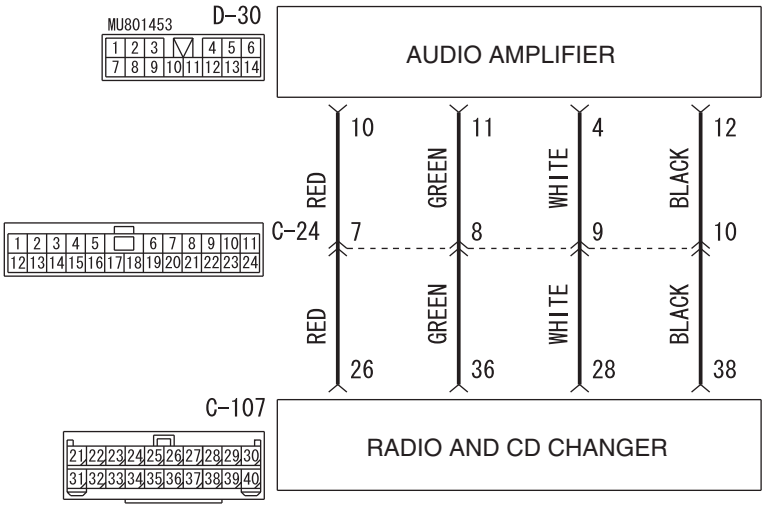
YES : Replace the radio and CD player.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Inspection Procedure 3: No sound is heard from one of the speakers. <Vehicles with audio amplifier>

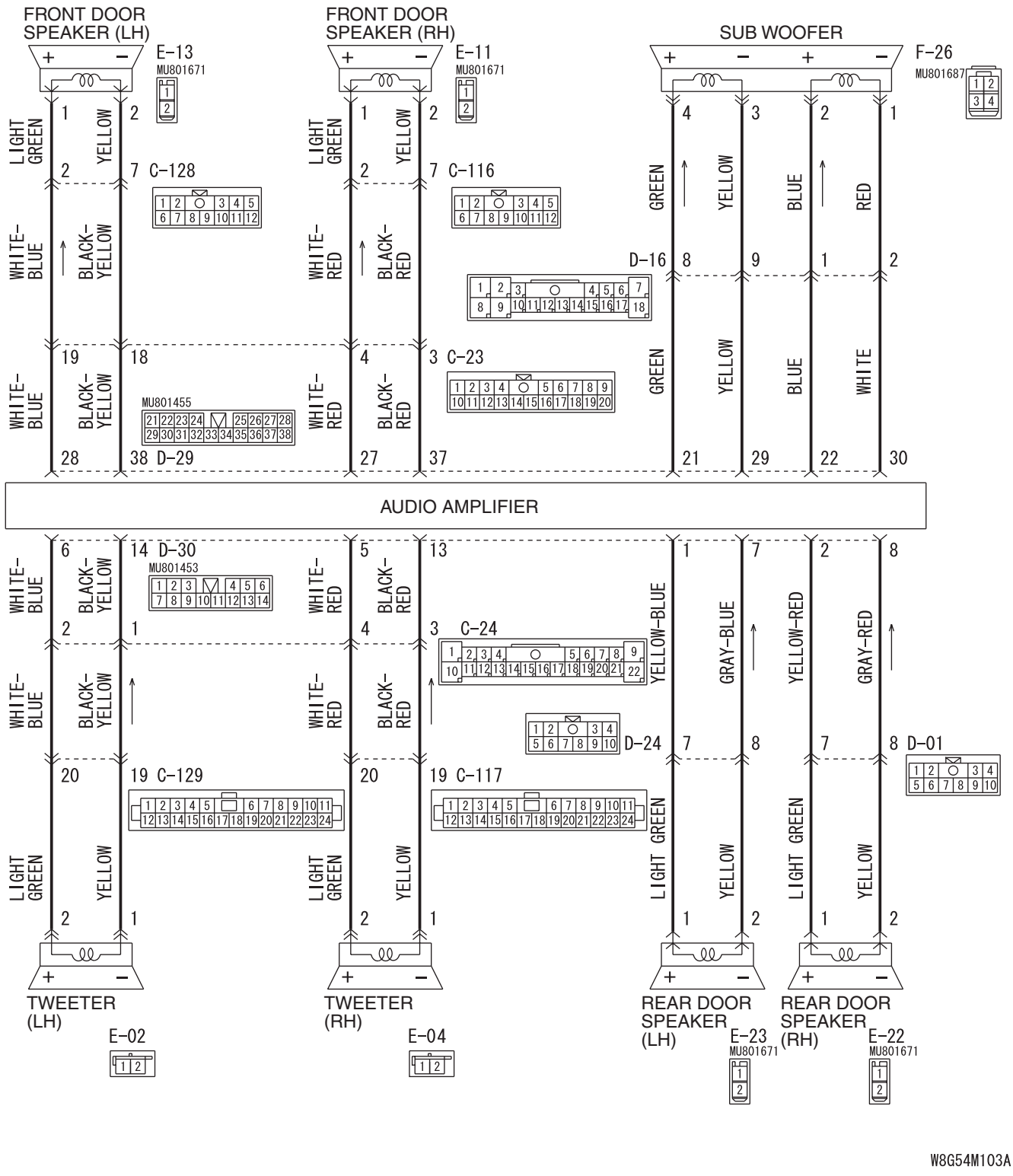
⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.



W8G54M102A

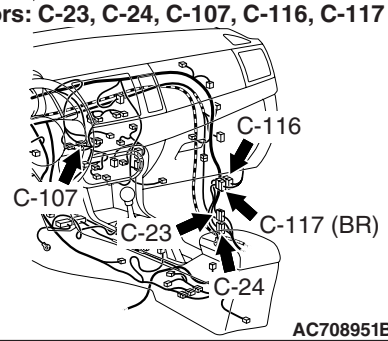
Speaker System Circuit



W8G54M103A

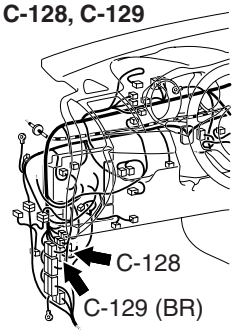
TSB Revision

Connectors: C-23, C-24, C-107, C-116, C-117



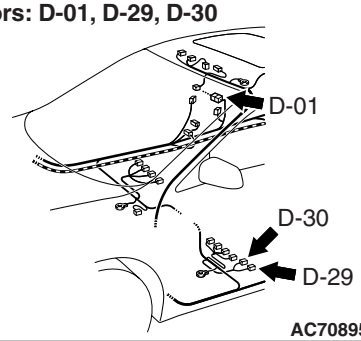
AC708951BJ

Connectors: C-128, C-129



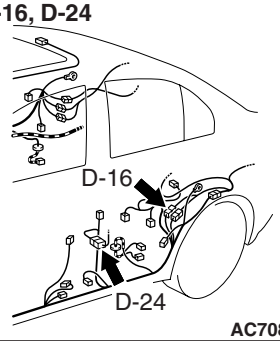
AC708950BH

Connectors: D-01, D-29, D-30



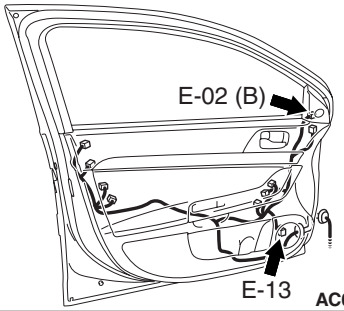
AC708954AS

Connectors: D-16, D-24



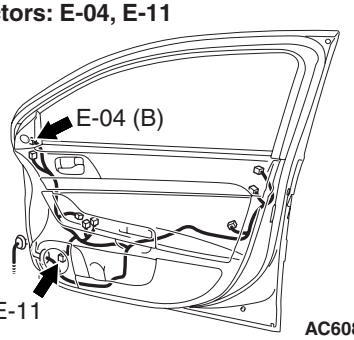
AC708955AV

Connectors: E-02, E-13



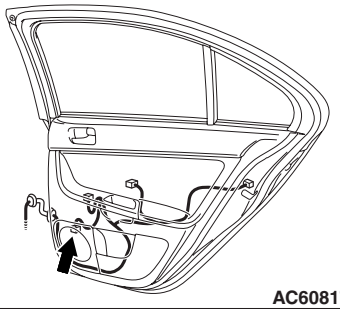
AC608167AB

Connectors: E-04, E-11



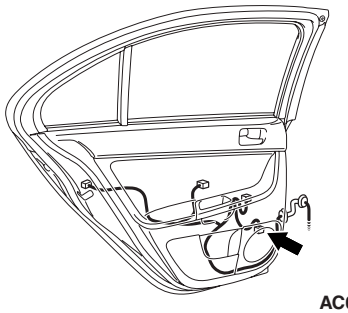
AC608168AJ

Connector: E-22



AC608170AI

Connector: E-23



AC608169AH

COMMENTS ON TROUBLE SYMPTOM

If the sound is not heard from one of the speakers, the speaker, radio and CD player, audio amplifier, communication line from the radio and CD player to the audio amplifier, or communication line from the audio amplifier to the speaker may have a problem. Also, the option coding information may be inconsistent.

PROBABLE CAUSES

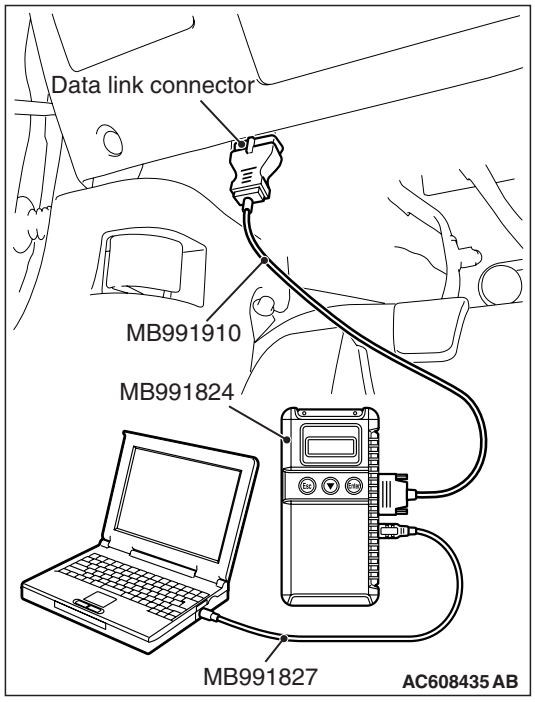
- The speaker may be defective
- The radio and CD player may be defective
- The audio amplifier may be defective
- Option coding information inconsistency
- Damaged harness wires and connectors

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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. ETACS-ECU coding data check.

(1) Operate scan tool MB991958 to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).
(2) Check that the "Speaker" is set to "Premium."

Q: Is the check result normal?

YES : Go to Step 2.
NO : Operate scan tool MB991958 to set the option coding "Speaker" to "Premium," and check the trouble symptom.

STEP 2. Checking with audio speaker check

Perform the audio speaker check, and check which speaker does not output the sound (Refer to P.54A-573).

NOTE: In the following procedure, check the speaker or tweeter that is abnormal.

Q: Is the check result normal?

YES (normal for all) : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO (Either a speaker is abnormal) : Go to Step 3.

STEP 3. Check door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH>, or sub woofer connector F-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH>, or sub woofer connector F-26 in good condition?

YES : Go to Step 4.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 4. Check the speaker, tweeter or subwoofer.

(1) Remove the speaker, tweeter or subwoofer (Refer to P.54A-575).
(2) Check that the speaker or tweeter outputs the noise when the voltage of 5 V is applied to the speaker or tweeter connector terminal. <speaker or tweeter>
(3) Check that the subwoofer outputs the noise when the voltage of 5 V is applied to the subwoofer connector terminal. <subwoofer>

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the speaker, tweeter or subwoofer.

STEP 5. Check audio amplifier connector D-29 <front door speaker or sub woofer> or D-30 <rear door speaker or tweeter> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is audio amplifier connector D-29 <front door speaker or sub woofer> or D-30 <rear door speaker or tweeter> in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 6. Check the wiring harness between the speaker, tweeter or sub woofer connector terminal and the audio amplifier connector terminal.

- Check the communication lines for open circuit and short circuit.
- <Front door speaker (LH)> Check the wiring harness between front door speaker (LH) connector E-13 (terminal 1, 2) and audio amplifier connector D-29 (terminal 28, 38).

  NOTE: Also check intermediate connectors C-23 and C-128 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or C-128 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Front door speaker (RH)> Check the wiring harness between front door speaker (RH) connector E-11 (terminal 1, 2) and audio amplifier connector D-29 (terminal 27, 37).

  NOTE: Also check intermediate connectors C-23 and C-116 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Rear door speaker (LH)> Check the wiring harness between rear door speaker (LH) connector E-23 (terminal 1, 2) and audio amplifier connector D-30 (terminal 1, 7).

  NOTE: Also check intermediate connector D-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Rear door speaker (RH)> Check the wiring harness between rear door speaker (RH) connector E-22 (terminal 1, 2) and audio amplifier connector D-30 (terminal 2, 8).

  NOTE: Also check intermediate connector D-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Tweeter (LH)> Check the wiring harness between tweeter (LH) connector E-02 (terminal 1, 2) and audio amplifier connector D-30 (terminal 14, 6).

  NOTE: Also check intermediate connectors C-24 and C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or C-117 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Tweeter (RH)> Check the wiring harness between tweeter (RH) connector E-04 (terminal 1, 2) and audio amplifier connector D-26 (terminal 13, 5).

  NOTE: Also check intermediate connectors C-24 and C-117

for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or C-117 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- <Subwoofer> Check the wiring harness between subwoofer connector F-26 (terminal 1, 2, 3, 4) and audio amplifier connector D-29 (terminal No.30, 22, 29, 21).

  NOTE: Also check intermediate connector D-16 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-16 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between the speaker, tweeter or sub woofer connector terminal and the audio amplifier connector terminal in good condition?

YES <front door speaker> : Go to Step 7.
YES <except front door speaker> : Go to Step 9.
NO (harness wire is abnormal) : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 7. Check radio and CD player connector C-107 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is radio and CD player connector C-107 in good condition?

YES : Go to Step 8.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 8. Check the harness wire between radio and CD player connector C-107 (terminal 26, 28, 36, 38) and audio amplifier connector D-30 (terminal 10, 4, 11, 12).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between radio and CD player connector C-107 (terminal 26, 28, 36, 38) and audio amplifier connector D-30 (terminal 10, 4, 11, 12) in good condition?

YES : Check the trouble symptom, go to Step 9.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 9. Replace the audio amplifier temporarily, and check the trouble symptom.
Replace the audio amplifier temporarily, and check that the sound is output from the speaker.

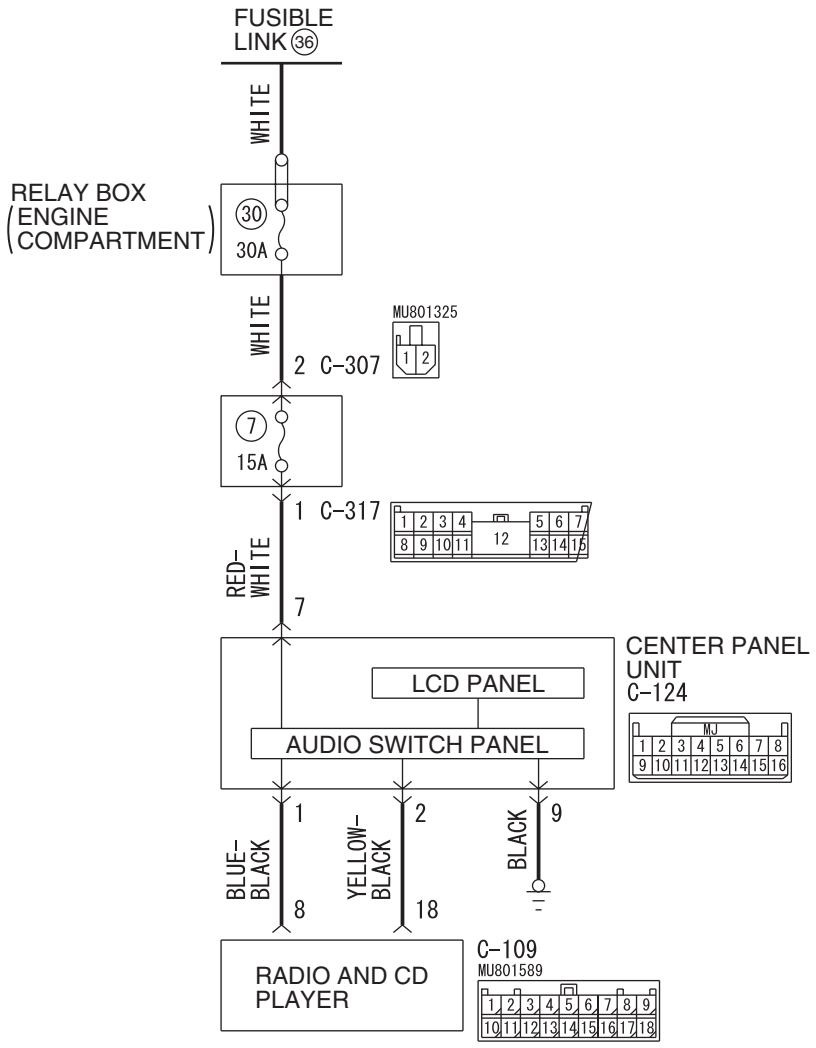
Q: Is the check result normal?

YES : Replace the audio amplifier.
NO : Replace the radio and CD player.

Inspection Procedure 4: The audio does not operate normally by operating the radio and CD player of the center panel unit.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Center Panel Unit Power Supply Circuit



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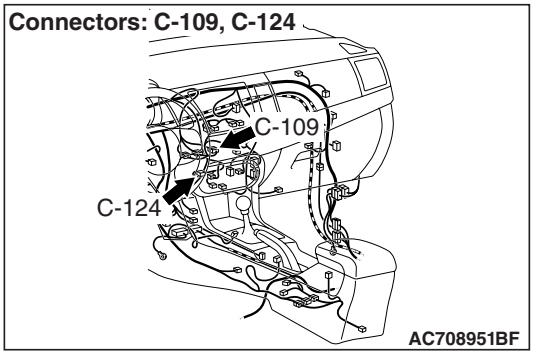

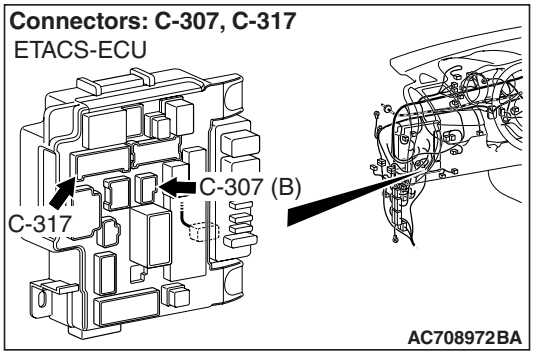

COMMENTS ON TROUBLE SYMPTOM

When the audio does not operate normally by operating the audio control unit of the center panel unit, the radio and CD player, center panel unit, or the power supply circuit system of center panel unit may be faulty.

PROBABLE CAUSES

- The radio and CD player may be defective.
- The center panel unit may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check center panel unit connector C-124 and radio and CD player connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are center panel unit connector C-124 and radio and CD player connector C-109 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 2. Check the wiring harness between center panel unit connector C-124 (terminal 1, 2) and radio and CD player connector C-109 (terminal 8, 18).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 1, 2) and radio and CD player connector C-109 (terminal 8, 18) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

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STEP 3. Check the ground circuit to the center panel unit. Measure the resistance at center panel unit connector C-124.

(1) Disconnect the connector, and measure at the wiring harness side.

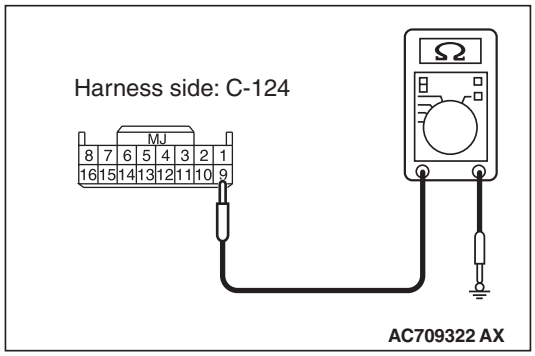
(2) Measure resistance between terminal 9 and ground.

OK: The resistance should be 2 ohm or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between center panel unit connector C-124 (terminal 9) and ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 9) and ground in good condition?

YES : Check the trouble symptom.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check the power supply circuit to the center panel unit. Measure the voltage at center panel unit connector C-124.

(1) Disconnect the connector, and measure at the harness side connector.

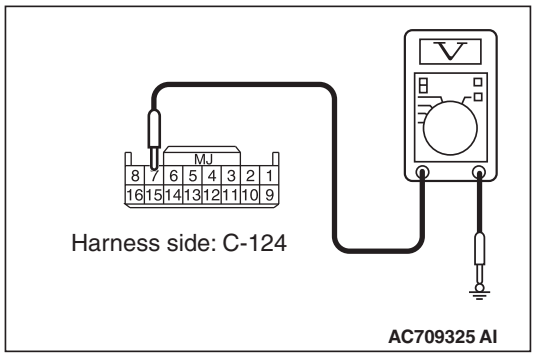
(2) Measure voltage between terminal 7 and ground.

OK: Battery voltage

Q: Is the measured voltage battery voltage?

YES : Go to Step 7.

NO : Go to Step 6.



STEP 6. Check the wiring harness between center panel unit connector C-124 (terminal 7) and fusible link 34.

- Check the power supply line for open circuit and short circuit.

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

Q: Is the wiring harness between center panel unit connector C-124 (terminal 7) and fusible link 34 in good condition?

YES : Check the trouble symptom.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Replace the center panel unit temporarily, and check the trouble symptom.

Replace the center panel unit temporarily, and check that the audio works normally.

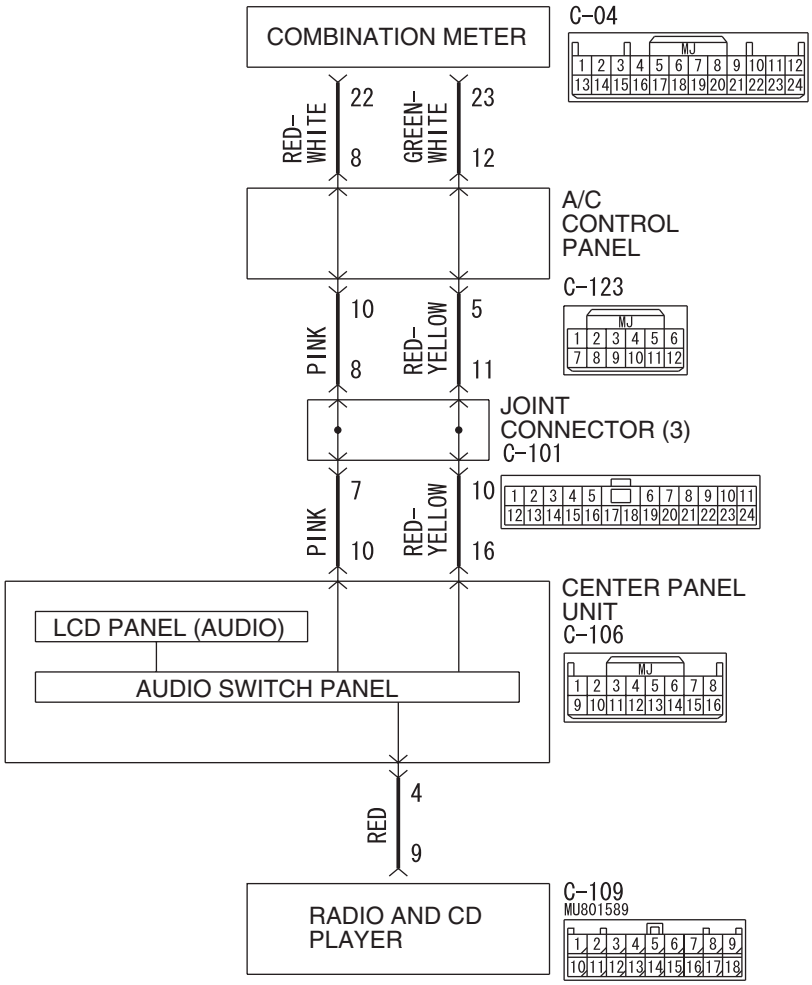
Q: Is the check result normal?

YES : Replace the center panel unit.
NO : Replace the radio and CD player.

Inspection Procedure 5: Audio illuminations does not work normally.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Center Panel Unit Communication Circuit



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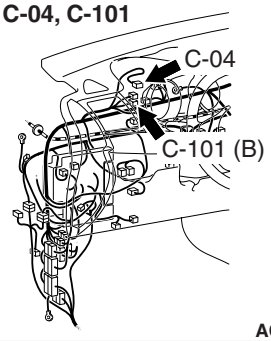
Connectors: C-04, C-101



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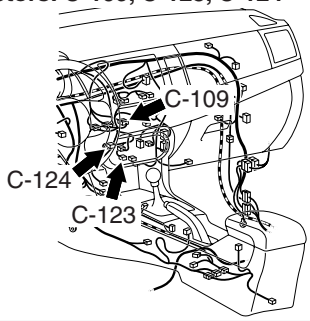
Connectors: C-109, C-123, C-124



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OPERATION

- When the position light is illuminated, the audio illumination is switched to the nighttime illumination.
- When the brightness is adjusted using the combination meter rheostat switch, the audio illumination brightness is also adjusted.

COMMENTS ON TROUBLE SYMPTOM

The center panel unit, radio and CD player, combination meter, or communication line from the radio and CD player to the combination meter may have a problem.

PROBABLE CAUSES

- The combination meter may be defective.
- The radio and CD player may be defective.
- The center panel unit may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Operation check of the center panel unit

Operate the audio control switch of the center panel unit, and check if the audio operates normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 4 "The audio does not operate normally by operating the radio and CD player of the center panel unit." P.54A-340.

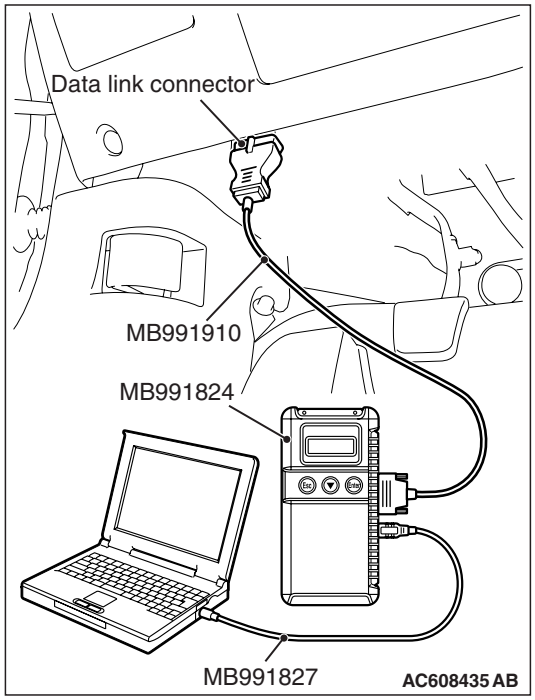
STEP 2. Check the combination meter.

Check whether the combination meter works normally.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Diagnose the combination meter (Refer to P.54A-28).



STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check again if the DTC is set to the combination meter.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54A-285".
(2) Turn the ignition switch to the "ON" position.
(3) Check for combination meter DTCs.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to P.54A-28).
NO : Go to Step 4.

STEP 4. Check center panel unit connector C-124 and combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are center panel unit connector C-124 and combination meter connector C-04 in good condition?

YES : Go to Step 5.
NO : Repair the connector concerned.

STEP 5. Check the wiring harness between center panel unit connector C-124 (terminal 10, 16) and combination meter connector C-04 (terminal 22, 23).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check A/C control panel connector C-123 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If iA/C control panel connector C-123 and joint connector C-101 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 10, 16) and combination meter connector C-04 (terminal 22, 23) in good condition?

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

STEP 6. Check radio and CD player connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is radio and CD player connector C-109 in good condition?

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

STEP 7. Check the wiring harness between center panel unit connector C-124 (terminal 4) and radio and CD player connector C-109 (terminal 9).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 4) and radio and CD player connector C-109 (terminal 9) in good condition?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Replace the center panel unit temporarily, and check the trouble symptom.

Replace the center panel unit temporarily, and check that the audio illumination works normally.

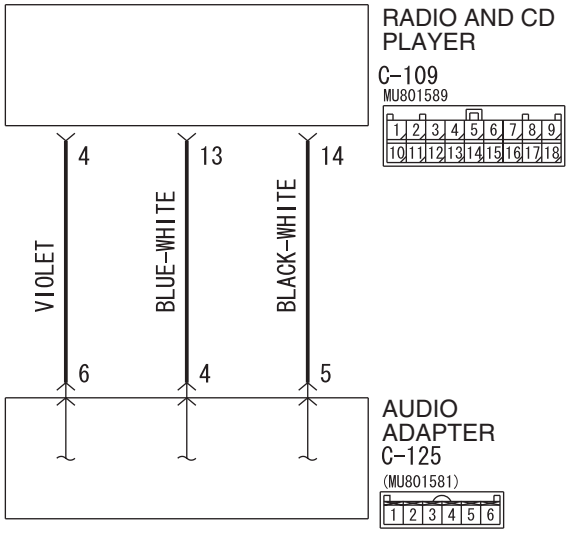
Q: Is the check result normal?

YES : Replace the center panel unit.
NO : Replace the radio and CD player.

Inspection Procedure 6: The sound of external input are not played.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Audio and Video Adapter Communication Circuit



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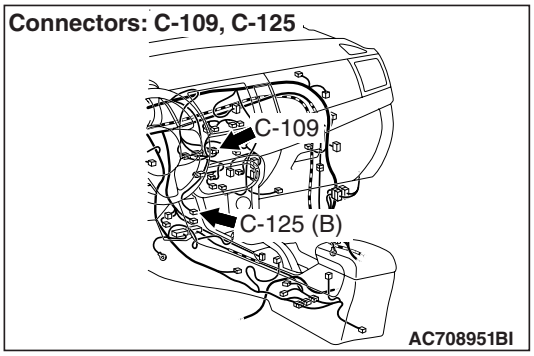

COMMENTS ON TROUBLE SYMPTOM

If the external input sound is not output, the radio and CD player, audio communication line of radio and CD player, or audio adapter may have a problem.

PROBABLE CAUSES

- The audio adapter may be defective.
- The radio and CD player may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the Radio and CD player.

Check that the Radio and CD player operates normally, and the sound is output.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Troubleshoot the radio and CD player (Refer to P.54A-317).

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STEP 2. Check the external sound input mode.
Check if the external sound input mode of the radio and CD player is set.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Set the external sound input mode.

STEP 3. Check the audio adapter.
Check if the audio adapter is normal. (Refer to P.54A-365.)

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the Audio adapter.

STEP 4. Check audio adapter connector C-125 and radio and CD player connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are audio adapter connector C-125 and radio and CD player connector C-109 in good condition?

YES : Go to Step 5.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 5. Check the wiring harness between audio adapter connector C-125 (terminal 5, 4, 6) and radio and CD player connector C-109 (terminal 14, 13, 4).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between audio adapter connector C-125 (terminal 5, 4, 6) and radio and CD player connector C-109 (terminal 14, 13, 4) in good condition?

YES : Replace the audio adapter, and go to Step 6.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 6. Retest the system.
Check that the external input is normal.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the radio and CD player.

Inspection Procedure 7: Noise is present while moving (AM).

DIAGNOSIS

STEP 1. Ask the driver about the noise.
(1) Find out the following information from the owner.
(2) Place where the noise occurs.
(3) Locality conditions (valley, mountain, etc.)
(4) Name and frequency of stations affected by noise

Q: What type of noise is detected, vehicle noise or external noise?
Vehicle noise : It may not be possible to prevent noise if the signal is weak. Go to Step 2.
External noise : In almost all cases, prevention on the receiver side is next to impossible when the signal is weak. Go to Step 4.

STEP 2. Ask the driver about the location where the noise occurs

Q: Does the noise occur when entering or near a particular structure (building, tunnel, mountain, etc.)?
YES : Go to Step 3.
NO : Go to Step 4.

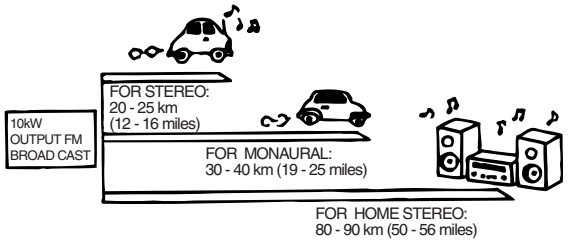
STEP 3. Check if the noise can be eliminated by adjusting the radio.
(1) Adjust the radio as follows.
(2) Change to a different station with a stronger signal. This will boost the systems resistance to outside interference.
(3) Suppress high tones to reduce noise.

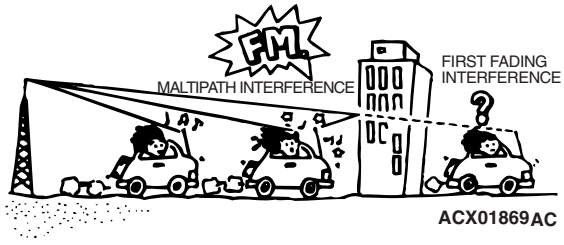
Q: Has the noise been eliminated?
YES : The noise has now been eliminated. Inform the customer that it is normal to hear noise while receiving a weak station.
NO : Go to Step 4.

STEP 4. Check for the noise.

Q: Does noise still exist?
YES : If there is still more noise than on other similar radio's find out the type of noise. Ask the owner for the name and frequency of the affected stations, and consult with the radio manufacturer service center.
NO : System is operating normally.

Inspection Procedure 8: Noise is present while moving (FM).





DIAGNOSIS

NOTE: FM waves have the same properties as light, and can be deflected and blocked. FM signal reception is severely degraded in the shadow of obstructions such as buildings or mountains. An FM receiver will then only receive a reflected signal.

1. The signal becomes weak as the distance from the station's transmission antenna increases. The signal strength received depends on the signal strength of the transmitting station and intervening obstructions such as buildings and hills. Generally speaking, the area of good reception is approximately 20 –25 km (12 –16 miles) for stereo reception, and 30 –40 km (19 –25 miles) for monaural reception.

2. The signal will becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the station transmitter and the vehicle), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. When moving, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitive buzzing.>
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

After taking measures to prevent the noise, check that no noise occurs.

5. Change to a different station with a stronger wave to boost resistance to interference.
6. Suppress high tones to reduce noise.
7. Does vehicle have an antenna which extends? If not eliminate this step.

If there is noise, the following causes can be considered.

8. If due to vehicle noise: It may not be possible to prevent noise if the signal is weak.
9. If due to external noise: In almost all cases, prevention on the receiver side is not possible. Weak signals especially are susceptible to interference.

If there is more noise than on radios in other vehicles, find out the noise condition and the name and frequency of the receiving stations from the owner, and consult with the radio manufacturer's service center.

Inspection Procedure 9: Sound mixed with noise, only at night (AM).

The following can be considered as possible causes of noise appearing only at night.

1. It is significantly easier to receive long-distance signals at night. This means that even stations that are received without a problem during the day may experience problems at night. Remember that the weaker station is more susceptible to interference. The appearance of a beat sound may occur in the evening. A beat sound is created when two signals close in frequency interfere with each other. A common sign of this type of interference is a repetitious high-pitched sound that may over power the desired radio station. This sound is generated not only by sound signals but electrical waves as well.
2. The changing system may also be a source of noise. When diagnosing radio noise, do not over look the possibility of a problem with the vehicles generator.

DIAGNOSIS

STEP 1. Check the vehicles lighting system.

Q: Does the noise disappear when the vehicles headlights are turned "OFF"?
YES : Go to Step 2.
NO : Go to Step 3.

STEP 2. Check that the following actions disappear the noise.
Tune to a station with a stronger signal.

Q: Is there more noise than on radio in other vehicles?
YES : Consult the radio manufacturer's service center.
NO : Check that there is no noise.

STEP 3. Check that the noise fades away when the vehicle harness is moved away from the radio (if the harness is not in the proper position).

Q: Does the noise fade away when the vehicle harness is moved any from the radio (If the harness is not in the proper position)?
YES : Consult the radio manufacturer's service center.
NO : If there is more noise than other radios, consult the radio manufacturer's service center.

Inspection Procedure 10: Noise is overpowering both AM and FM.

DIAGNOSIS

STEP 1. Check the state of the antenna.

Q: Is the antenna assembled?
YES : Go to Step 2.
NO : Assemble the antenna. Check to see that the noise is gone.

STEP 2. Verify that the noise occur when the engine is stopped or the engine is running.

Q: Does noise occur when the engine is stopped or the engine is running?
When the engine is stopped : Go to Step 3.
When the engine is running : Check the vehicle's noise suppressor. (Refer to Inspection Procedure 12 P.54A-353).

STEP 3. Verify that the following actions disappear the noise.

(1) Tune to a station with a stronger wave.
(2) Adjust the sound quality to suppress high tones.

Q: Is the noise eliminated?
YES : Consult the radio manufacturer's service center.
NO : Go to Step 4.

STEP 4. Verify that the radio is correctly grounded

The radio is connected to the ground with an assembling screw.

Q: Is the radio correctly grounded?
YES : Go to Step 5.
NO : Consult the radio manufacturer's service center.

STEP 5. Check the connection of the antenna plug and radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?
YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Verify that the noise is eliminated when the antenna plug is properly attached.

Q: Is the noise eliminated?
YES : Consult the radio manufacturer's service center.
NO : Go to Step 7.

STEP 7. Verify that the antenna is in good condition and is it properly mounted.

Q: Is the antenna in good condition and is it properly mounted?
YES : Consult the radio manufacturer's service center.
NO : Either repair or replace the antenna assembly. Check to see that the noise is gone.

Inspection Procedure 11: Excessive noise on AM and FM.

DIAGNOSIS

Radio reception can be affected by Radio Frequency (RF) emissions from a variety of sources. The disturbance is even greater if the station is weak or poorly tuned. FM reception is not as sensitive to disturbances as AM. AM reception is sensitive to electrical disturbances such as power lines, lightening and other types of similar electrical phenomena.

STEP 1. Check if the customer heard the noise under any of the following conditions.

- A motorcycle was passing.
- Lighting was flashing.
- Passed beneath a power line.
- Passed beneath a telephone line.
- Passed by a signal generator.
- Passed by any other sources of electrical noise.
- Passed under a bridge or through a tunnel.

Q: Did the noise occur during any of the circumstances listed above?
YES : The observed noise is normal.
NO : Go to Step 2.

STEP 2. Compare the customers radio to another identical model.

Operate the radio in a vehicle with a known good audio system of the same type as the customer's.

Q: Is there more noise on the customers radio?

YES : Check all power and ground connections. If all connections are in good condition, consult the radio manufacturers service center.

NO : The observed noise is normal.

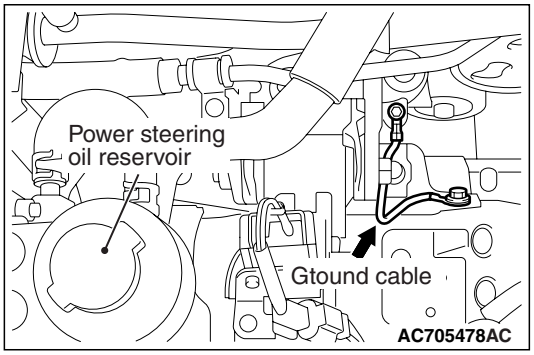
Inspection Procedure 12: Noise is detected with engine running.

DIAGNOSIS

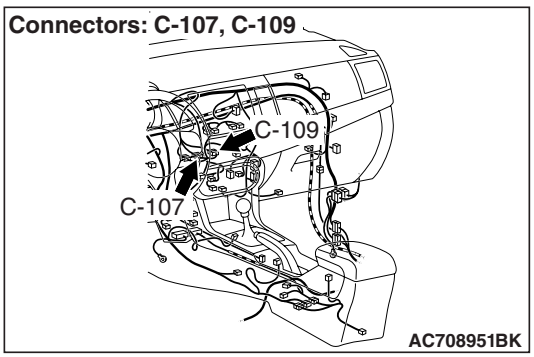
⚠ CAUTION

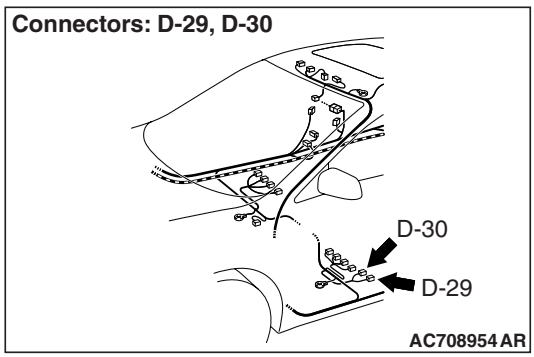
- **Never connect a noise filter to the high tension cable (spark plug wire). Spark plug wires incorporate resistors which have the effect of suppressing noise. If a spark plug wire is found to be causing noise, it must be replaced.**
- **Confirm that the noise is not from an external source.**
- **Noise prevention should be performed by suppressing strong sources of noise first.**

Description of noise	Condition	Cause	Solution
AM, FM: ignition noise (popping, snapping, cracking, buzzing)	• Increasing the engine speed causes the generator whine to speed up and the volume to decrease. • Disappears when the ignition switch turned to "ACC", and engine is off.	• Electrical interference from the spark plugs. • Engine noise.	• Check or replace the ground cable. • Check or replace spark plug wires. • Check or replace the noise capacitor.
Other electrical components	-	• Noise may intensify due to aging electrical components.	• Repair or replace the electrical components.
Static electricity (cracking, crinkling)	Noise disappears when the vehicle is completely stopped.	• Noise occurs when parts or wiring move and contact vehicle body.	• Return parts or wiring to their proper position.
Static electricity (cracking, crinkling)	• Various noises are produced depending on the body part of the vehicle.	• This may be due to the recent removal of the front hood, bumpers, exhaust pipe and muffler, suspension, etc.	• Properly ground parts. • Properly ground all body parts.



Inspection Procedure 13: Noise appears during vibration or shocks.





DIAGNOSIS

STEP 1. Check the fit of the antenna.

Q: Is the antenna base fitted securely?

YES : Go to Step 2.

NO : Install the antenna, and tighten the mounting nut (Refer to P.54A-567). Check that there is no noise.

STEP 2. Check the fit of antenna feeder cable.

Q: Is the antenna feeder cable fitted securely?

YES : Go to Step 3.

NO : Ensure that the antenna base and the radio and CD player are fitted securely. Check that there is no noise.

STEP 3. Check radio and CD player connector C-107, C-109 and amplifier connector D-29, D-30 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are radio and CD player connector C-107, C-109 and amplifier connector D-29, D-30 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that there is no noise.

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STEP 4. Check that noise appears when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station.

NOTE: Body static electricity from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. Since no measures can be taken to discharge the static electricity of the vehicle body. Check that there is no noise.

Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?

YES : Go to Step 5.
NO : It may be static electricity noise.

STEP 5. Verify that the radio is correctly grounded.

The radio is connected to the ground with an assembling screw.

Q: Is the radio correctly grounded?

YES : Go to Step 6.
NO : Tighten the screw securely. Check that there is no noise.

STEP 6. Check by replacing radio and CD player.

Q: Do the other radio and CD player work normally?

YES : Either repair or replace the original radio and CD player. Check that there is no noise.
NO : Either repair or replace the antenna assembly. Check that there is no noise.

Inspection Procedure 14: Noise is present while moving (FM).

DIAGNOSIS

STEP 1. Check the state of the antenna.

Q: Is the antenna assembled?

YES : Go to Step 2.
NO : Assemble the antenna. Check that there is no noise.

STEP 2. Check the radio after adjusting it.

Q: Readjust the radio. Is the noise eliminated?

YES : Check that there is no noise.
NO : Go to Step 3.

STEP 3. Check with several broad casting.

NOTE: Multipath noise and fading noise: Because of the frequency of FM waves in extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

- *Multipath noise*
  This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).
- *Fading noise*
  This is a buzzing noise that occurs when the broadcast signal is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

Q: Is the problem station or location specific?
YES : The effect of an electrical field condition (multipath noise, fading noise) could be the cause. Check that there is not noise.
NO : Go to Step 4.

STEP 4. Check that noise appears when the radio switch is turned on while the vehicle is stopped.

NOTE: Body static electricity from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. There is no measures to discharge the static electricity of the vehicle body. Check that there is no noise.

Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?
YES : Go to Step 5.
NO : It may be static electricity noise.

STEP 5. Verify that the radio is correctly grounded.

The radio is connected to the ground with an assembling screw.

Q: Is the radio correctly grounded?
YES : Go to Step 6.
NO : Tighten the screw securely. Check that there is no noise.

STEP 6. Check by replacing radio and CD player.

Q: Do the other radio and CD player work normally?
YES : Either repair or replace the original radio and CD player. Check that there is no noise.
NO : Either repair or replace the antenna assembly. Check that there is no noise.

Inspection Procedure 15: Constant noise.

DIAGNOSIS

Use the Symptom Chart to diagnose the possible cause(s) of the noise. Noise is often created by the following factors:

- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions
- Time period

If there are still problems with noise, even after performing inspection procedures 7 to 14, obtain information on the factors listed above. Determine whether the problem occurs on AM or FM, the station names, frequencies, etc. and contact the radio manufacturer's service center.

Inspection Procedure 16: No reception (AM).

DIAGNOSIS

STEP 1. Check the state of the antenna.

Q: Is the antenna assembled?
YES : Go to Step 2.
NO : Assemble the antenna. The radio should sound normally.

STEP 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?
YES : Go to Step 3.
NO : Go to Step 4.

STEP 3. Move the vehicle and check the radio.

Move the vehicle to a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?
YES : There is no action to be taken.
NO : Go to Step 4.

STEP 4. Tune the radio, and then check it.

Q: Did the sensitivity improve after tuning?
YES : There is no action to be taken.
NO : Go to Step 5.

STEP 5. Check the connection of the antenna plug and radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?
YES : Go to Step 6.
NO : Thoroughly connect the antenna plug and the radio and CD player. The radio should sound normally.

STEP 6. Check by replacing radio and CD player.

Q: Do the other radio and CD player work normally?
YES : Either repair or replace the original radio and CD player. The radio should sound normally.
NO : Either repair or replace the antenna assembly. The radio should sound normally.

Inspection Procedure 17: Poor reception.

DIAGNOSIS

STEP 1. Check the state of the antenna.

Q: Is the antenna assembled?
YES : Go to Step 2.
NO : Assemble the antenna. Check that a poor reception is resolved.

STEP 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?
YES : Go to Step 3.
NO : Go to Step 4.

STEP 3. Move the vehicle and check the radio.
Move the vehicle to a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?
YES : Check that a poor reception is resolved.
NO : Go to Step 4.

STEP 4. Tune the radio, and then check it.

Q: Did the sensitivity improve after tuning?
YES : Check that a poor reception is resolved.
NO : Go to Step 5.

STEP 5. Check with several broadcasting stations.

NOTE: Two types of noise are addressed in this procedure, multipath and fading noise. The frequency of FM waves is extremely high. This makes them susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in many ways.

- *Multipath noise is the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*
- *A fading or buzzing noise may occur when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates within a narrow range.*

Q: Is the abnormality in reception generated only within a certain range?
YES : Check that a poor reception is resolved.
NO : Go to Step 6.

STEP 6. Check the connection of the antenna plug and radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?
YES : Go to Step 7.
NO : Thoroughly connect the antenna plug and the radio and CD player. Check that a poor reception is resolved.

STEP 7. Check by replacing radio and CD player.

Q: Do the other radio and CD player work normally?
- **YES :** Either repair or replace the original radio and CD player. Check that a poor reception is resolved.
- **NO :** Either repair or replace the antenna assembly. Check that a poor reception is resolved.

Inspection Procedure 18: Distortion on AM and/or FM.

DIAGNOSIS

STEP 1. Check the level of distortion.

Q: How much distortion is there?
- **Occasional distortion :** Go to Step 2.
- **Constant distortion :** Go to Step 3.

STEP 2. Check the location of the distortion.

Q: Is there distortion when the vehicle is near the radio station?
- **YES :** The antenna is receiving too strong a signal.
- **NO :** Go to Step 3.

STEP 3. Check the wires at each speaker.

Q: Are the speaker wires contacting the paper speaker cone?
- **YES :** Move the speaker wires away from the paper speaker cone. The speaker should now be free of distortion.
- **NO :** Go to Step 4.

STEP 4. Remove the speakers, and check the paper cone for foreign material or damage.

Q: Is there foreign material or damage on the paper cone of the speaker?
- **YES :** Repair or replace the speakers. The speaker should now be free of distortion.
- **NO :** Go to Step 5.

STEP 5. Check for distortion with the speaker installed.

Q: Does a distortion occur?
- **YES :** Install the speaker securely. The speaker should now be free of distortion.
- **NO :** Repair or replace the radio and CD player. The speaker should now be free of distortion.

Inspection Procedure 19: Distortion on FM Only.

DIAGNOSIS

STEP 1. Check that the distortion is present when the radio is tuned to another station.

Q: Does the distortion persist when the radio is tuned to another station?
YES : Go to Step 2.
NO : The signal from that station is too weak.

STEP 2. Relocate the reception area and check the radio.

Q: When relocating the reception area does the distortion increase or decrease?
YES : The cause may be multipath or fading noise. Multipath noise is the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing). A fading or buzzing noise may occur when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates within a narrow range.
NO : Replace the radio and CD player. Check that a distortion is resolved.

Inspection Procedure 20: Auto select function inoperative, too few automatic stations are selected.

DIAGNOSIS

STEP 1. Check the state of the antenna.

Q: Is the antenna assembled?
YES : Go to Step 2.
NO : Assemble the antenna. The auto-select function should operate normally.

STEP 2. Check the number of radio stations.

Q: Are there sufficient numbers of radio stations within the area?
YES : Go to Step 3.
NO : Go to Step 4.

STEP 3. Check the distance from the transmission antenna.

Q: Is there a transmission antenna within a range of 2 miles?
YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. The check if there are not that many radio stations and when there is no transmission antenna in the vicinity.
Execute automatic selection and check to see that the strongest radio frequency is receivable within the area.

Q: Is reception of the strongest radio frequency possible within the area?
YES : There is no action to be taken.
NO : Go to Step 5.

STEP 5. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?
YES : Go to Step 6.
NO : Go to Step 7.

STEP 6. Relocate and check.
Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?
YES : There is no action to be taken.
NO : Go to Step 7.

STEP 7. Check the connection of the antenna feeder cable and radio and CD player.

Q: Is the antenna feeder cable thoroughly connected to the radio and CD player?
YES : Repair or replace the radio and CD player. The auto-select function should operate normally.
NO : Thoroughly connect the antenna feeder cable and the radio and CD player. The auto-select function should operate normally.

Inspection Procedure 21: Preset stations are erased.

CIRCUIT OPERATION
Power is continuously supplied to the radio and CD player.

TECHNICAL DESCRIPTION (COMMENT)
The cause is probably a faulty radio and CD player memory backup power supply system circuit.

TROUBLESHOOTING HINTS
- Damaged wiring harness or connector
- Malfunction of the radio and CD player

DIAGNOSIS
Refer to Inspection Procedure 1P.54A-318.

Inspection Procedure 22: CD can not be inserted.

DIAGNOSIS

STEP 1. Check that a CD has been already loaded.

Q: Has a CD been already loaded?
YES : Take out the CD (If the CD can not be ejected, refer to inspection Procedure 26 P.54A-362). Check that a CD can be inserted.
NO : Go to Step 2.

STEP 2. Check how a CD is inserted.
Ensure that the ignition switch is at 'ACC' or 'ON'.

NOTE: If you try to load a CD when the ignition switch is at the positions other than 'ACC' or 'ON,' the CD will not be inserted completely and then rejected.

Q: If you try to load the CD, does the CD stops halfway and then rejected?
YES : Refer to inspection Procedure 26 P.54A-362.
NO : Go to Step 3.

STEP 3. Check after the CD is loaded.

NOTE: Even though the CD is loaded, 'E01' (vehicles with center display low type) or 'ERROR 01' (vehicles with center display middle type) sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.

Q: Though the CD is inserted completely, is "ERROR " displayed and the CD ejected?
YES : Go to Step 4.
NO : There is no action to be taken.

STEP 4. Check the CD.
Check the CD for the conditions below:
- Is the CD loaded with its label facing down?
- Is the recorded face dirty or scratched?
- Is there dew on the recorded face?

Q: Is the CD in good condition?
YES : Go to Step 5.
NO : The original CD is defective. Check that a CD can be inserted.

STEP 5. Check again using a normal CD, which is not dirty or scratched.

- Load another normal CD.
- Check that the CD player recognizes and play the CD.

Q: When you substitute another normal CD, is the CD loaded correctly?

YES : The original CD is defective. Check that a CD can be inserted.

NO : Replace or repair the radio and CD player. Check that a CD can be inserted.

Inspection Procedure 23: No sound. (CD Only)

DIAGNOSIS

STEP 1. Check again using another CD, which is not dirty or scratched.

Q: When you substitute another normal CD, is the CD played normally?

YES : The original CD is defective. The radio and CD player should sound normally.

NO : Go to Step 2.

STEP 2. Check power supply to the radio and CD player when the ignition switch is at "ACC" or "ON" position.

Q: Is the radio and CD player energized when the ignition switch is turned to the "ACC" or "ON" position?

YES : Replace the radio and CD player. The radio and CD player should sound normally.

NO : Check the memory backup power supply circuit. Refer to Inspection Procedure 1 P.54A-318.

Inspection Procedure 24: CD Sound Skips.

DIAGNOSIS

STEP 1. Check the state in which the sound on the CD jumps.

Q: Does the sound jump when the car is parked?

YES : Go to Step 2.

NO : Go to Step 4.

STEP 2. Check the surface of the CD.

Q: Are there any scratches or soiling on the CD?

YES : The CD is defective if there are any scratches. Clean the CD surface if it is dirty. Check that a CD sound skip is resolved.

NO : Go to Step 3.

STEP 3. Check when replacing with a CD that can be played normally without any scratches or soiling.

Q: Does the CD play normally when replaced with a CD that is not scratched or dirty and can play normally?

YES : Defective CD used. Check that a CD sound skip is resolved.

NO : Go to Step 4.

STEP 4. Check by tapping the radio and CD player.

NOTE: Check by using a known-good CD which is free from scratches, dirt or any other abnormality.

Q: Does the sound jump when tapping the radio and CD player?

YES : Securely mount the radio and CD player. Check that a CD sound skip is resolved.

NO : Either replace the audio system or take the following measures if a servicing shop is nearby.

1. Investigate in detail the conditions when the sound jumps while driving the car.
2. Describe these conditions to the service shop for consultation.
3. Either replace the audio according to the instructions of the service shop.

Check that a CD sound skip is resolved.

Inspection Procedure 25: Sound quality is poor.

DIAGNOSIS

Check to see that the CD can be played normally and that it is free of any scratches or soiling.

Replace with better sound quality CD.

Q: Is the sound quality better replacing the CD with a clean CD without any scratches that can be played?

YES : The CD is defective. The sound quality should return to normal.

NO : Replace the radio and CD player. The sound quality should return to normal.

Inspection Procedure 26: CD can not be Ejected.

DIAGNOSIS

Check the power of ignition switch "ACC".

Q: Does the radio and CD player power turn ON when the ignition switch is in the "ACC" or "ON" position?

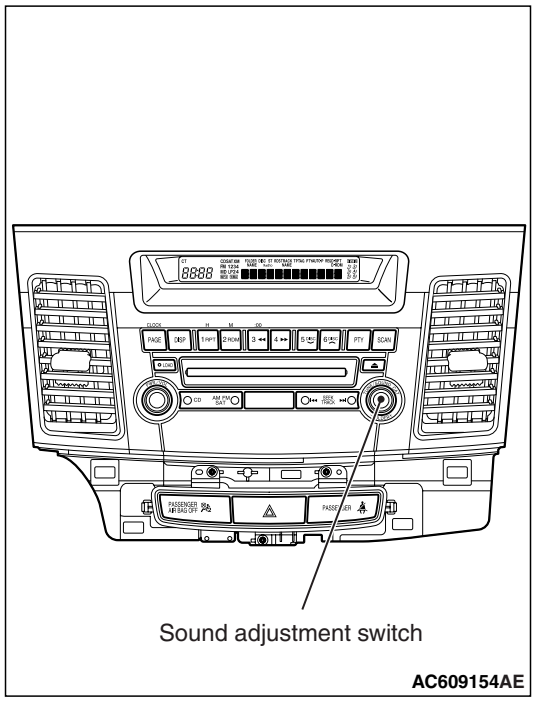
YES : Either replace the radio and CD player. Check that a CD can be ejected normally.

NO : Check the memory backup power supply circuit. Refer to Inspection Procedure 1 P.54A-318.

ON-VEHICLE SERVICE

ADJUSTMENT OF VOLUME AND SOUND QUALITY AUTOMATIC CORRECTION FUNCTION

M1544014200196



When the following operations are performed with the audio power ON, the sound volume during driving and the ON/OFF of sound quality automatic correction function are switched.

1. Press and hold (approximately 2 seconds) the sound adjustment switch.
2. Press the sound adjustment switch (approximately 1.5 seconds or less) to switch to the SCV setting screen.
3. SCV ON (when the automatic correction function is ON) or SCV OFF (when the automatic correction function is OFF) is displayed.
4. Turn the sound adjustment switch knob to switch between SCV ON and OFF.
5. Press the sound adjustment switch or leave as it is for 10 seconds or more.
6. Go back to the audio normal screen.

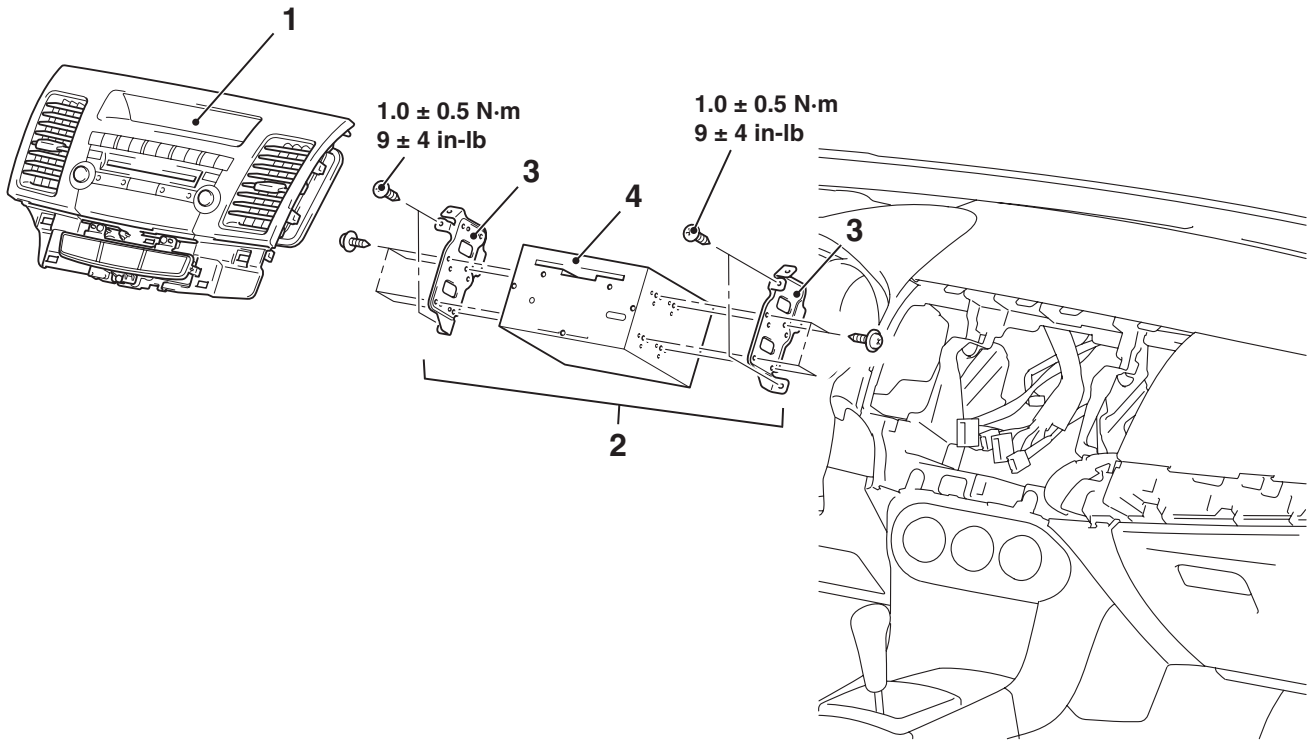
SERVICE DATA

M1544014100069

Item No.	Scan tool display	Check condition	Normal condition
1	RADIO remoto SW (SEEK-)	When the "CH down" switch is pushed	ON
2	RADIO remoto SW (SEEK+)	When the "CH up" switch is pushed	ON
3	RADIO remoto SW (MODE)	When the "Mode" switch is pushed	ON
4	RADIO remoto SW (VOL-)	When the "VOL down" switch is pushed	ON
5	RADIO remoto SW (VOL+)	When the "VOL up" switch is pushed	ON
10	On hook switch	When the "Hang-up" switch is pushed	ON
11	Off hook switch	When the "Pick-up" switch is pushed	ON
13	RV switch	When the "Speech" switch is pushed	ON

REMOVAL AND INSTALLATION

M1544010900267



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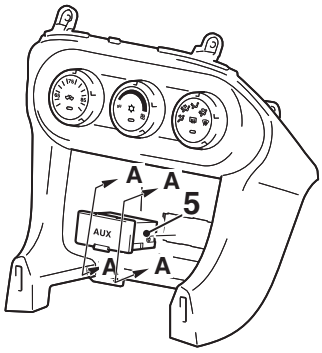

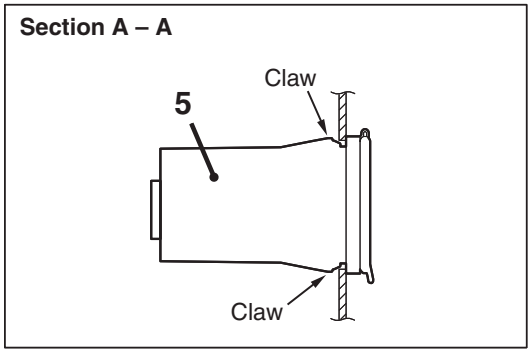

AC608893AB

Audio Unit Removal Steps

1. Instrument center panel (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7).
2. Radio and CD player assembly
3. Audio equip bracket (LH/RH)
4. Radio and CD player

Audio Adaptor Removal Steps

- Instrument console box (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7).

5. Audio adaptor <Vehicles with audio amplifier>

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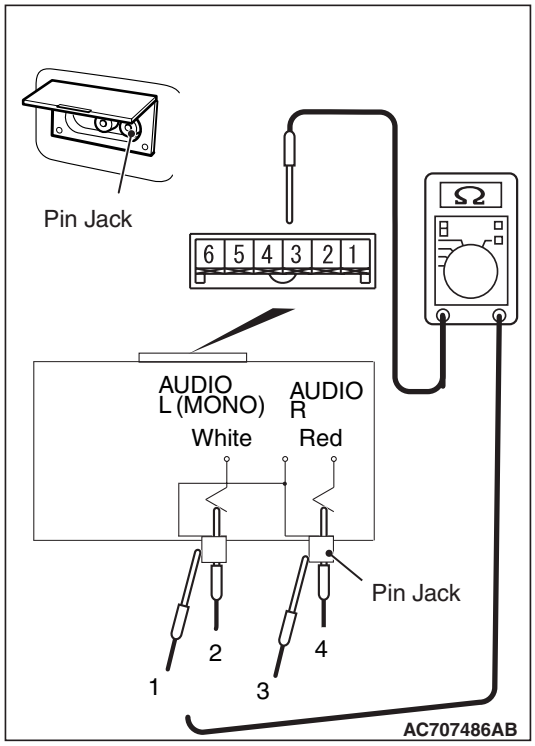
INSPECTION

AUDIO ADAPTER INSPECTION

M1544019000012

1. Remove the audio adapter.(Refer to P.54A-364)
2. Check the continuity between terminals of audio adapter and pin jack.

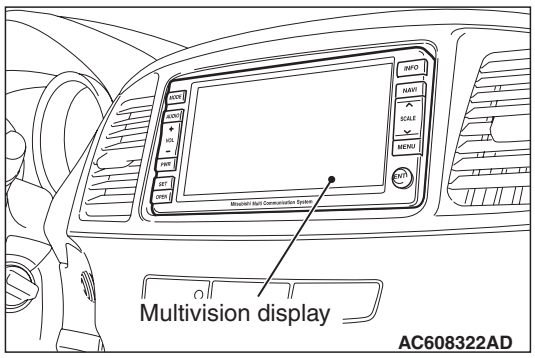


The connecting position of pin jack side circuit tester	Terminal number	Measurement value
1	5	Continuity exists. (2 Ω or less)
2	4	
3	5	
4	6	

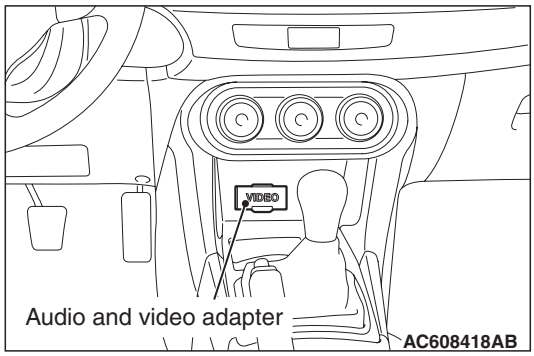
MMCS

MITSUBISHI MULTI COMMUNICATION SYSYEM

M1546000100095



For Mitsubishi multi-communication system (MMCS), the multi-vision display (7-inch liquid crystal display of wide 2 DIN size) with hard disk drive (30 GB) and the CD/DVD drive is established.



The audio and video adapter has been established to the center tray in order to connect visual equipment such as game machine and video player.

Display (function)	Contents
Navigation	Displays the navigation functions including the map display, search, guidance, information search. Also, calculates Carpool/HOV lane.
Vehicle position information	Displays the position information of current location. (Longitude and latitude, altitude, GPS reception status)
CD/DVD	Plays the CD or DVD inserted to the drive (for MP3/WMA)
Music server	Plays back the music data on hard disk drive, and records the music CD.
Radio	Displays the receiving station information. Also, the operation of receiving channel can be performed.
Drive information	Displays the average fuel consumption, instantaneous fuel consumption, possible cruising distance, driving time, and lap time.
Environmental data	Displays the atmospheric pressure and ambient temperature.
Maintenance information	Displays the maintenance information for engine oil, oil filter, tire rotation, clean air filer, and brake system.
A/C information	Displays the A/C information.
ETACS function customization	Function for ETACS-ECU customization
Calendar	Displays the calendar.

- The storage of very large map data is now possible, and the following contents have been adopted.
  - Map type navigation
  - NAVTEQ map database
  - Map data stored in hard disk drive
- U.S. English, French, and Spanish are available to select.
- By attaching the hands free module, the hands free cellular phone system becomes available.
- By attaching the satellite radio tuner, the SIRIUS™ satellite radio broadcasting becomes available.

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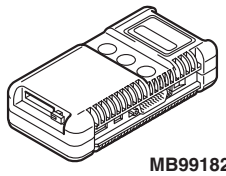
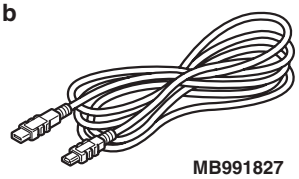
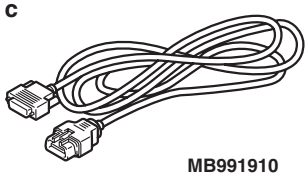
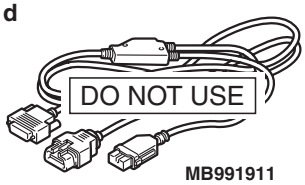
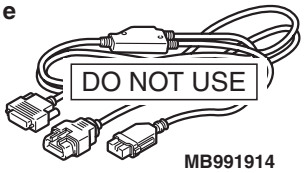
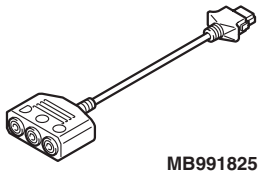
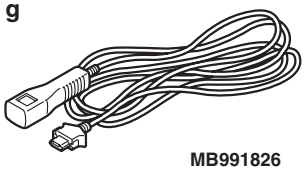
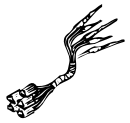
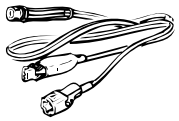
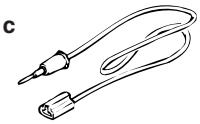
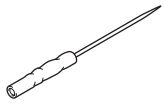
SPECIAL TOOLS

M1540200300277

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1546001500137

Refer to GROUP 00, Troubleshooting contents P.00-7.

PRECAUTIONS ON SERVICING MMCS

M1546003000194

PRIOR TO DISCONNECTING THE VEHICLE BATTERY

The MMCS stores a lot of information which your customer registers in its memory. All of this information will be cleared when the battery terminals are disconnected. Therefore, the preset channels must be stored before the vehicle battery is disconnected. Vehicle's current position and destinations must be stored if the vehicle battery remains disconnected for long periods.

DIAGNOSIS TIPS CONCERNING THE ENTIRE SYSTEM

1. If at least two system functions are defective at the same time, it is possible that communication between the system components is abnormal. Check the system using the communication and wire connection check in the service mode.
2. If an error is displayed, check that relevant wiring harness connectors are engaged correctly. If a failure is found, repair the connectors and check the trouble symptom again.
3. If the wiring harness connectors are engaged correctly, check the wiring harness. If the wiring harness is in good condition, replace relevant component(s). Now the error code and the service mode data must be stored.

NOTE: If a system communication related failure is suspected, diagnose the system.

DIAGNOSIS TIPS CONCERNING THE NAVIGATION FUNCTION

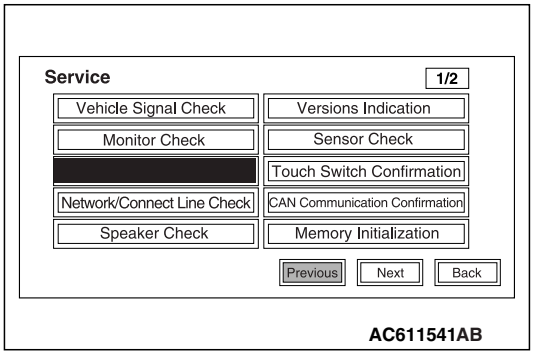
1. The precision of the GPS positioning is limited due to its operation principles. So, some of customer reports do not mean that the system is defective.
   Prior to troubleshooting, question your customer about how the navigation system is used and where he/she drives. If you determine that the system is OK, explain to your customer about how the system works and how the customer should operate it.
2. If the system is not OK, diagnose the system according to the trouble symptom chart.

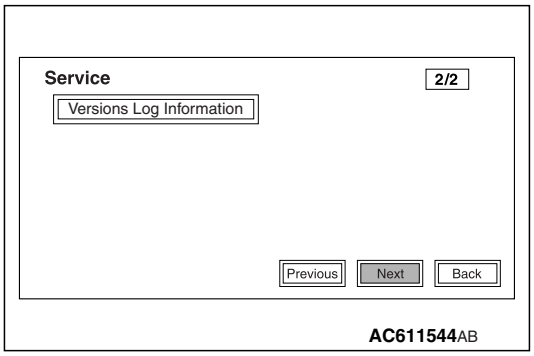
SERVICE MODE

M1546016600260

HOW TO INITIATE THE SERVICE MODE

1. With the navigation system active, press and hold both the "NAVI" and "SET" buttons for 3.5 seconds.
2. The service mode will be initiated. Then "Service" screen will be displayed.





HOW TO TERMINATE THE SERVICE MODE

If the operations below are done, the service mode will be terminated.

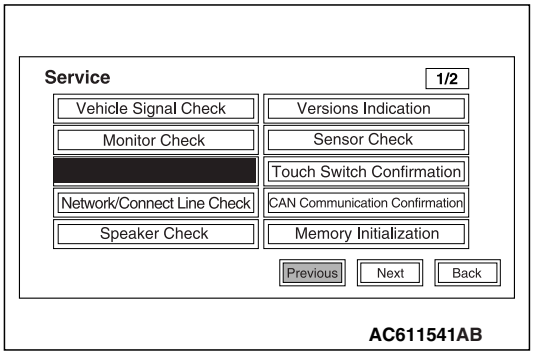
- If "Back" button is selected on "Service" screen, the service mode will terminate and then return to the previous screen.
- If "NAVI" button is pressed with the service mode active, the service mode will terminate and change to the navigation screen.

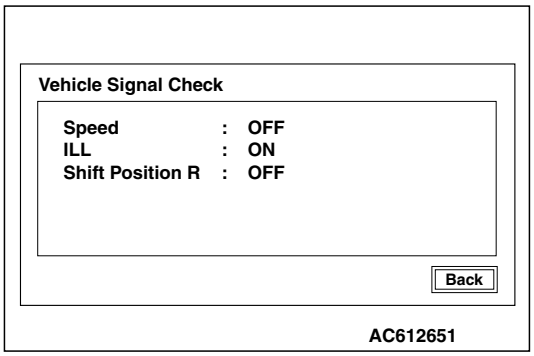
  NOTE: If "NAVI" button is pressed, the following functions of the service mode will terminate.

  - *Vehicle Signal Check*
  - *Monitor Check*
  - *Network/Connect Line Check*
  - *Speaker Check*
  - *Versions Indication*
  - *Sensor Check*
  - *Touch Switch Confirmation*
  - *CAN communication Confirmation*
  - *Memory Initialization*
  - *Versions Log Information*

VEHICLE SIGNAL CHECK

1. Select "Vehicle Signal Check" on "Service" screen.



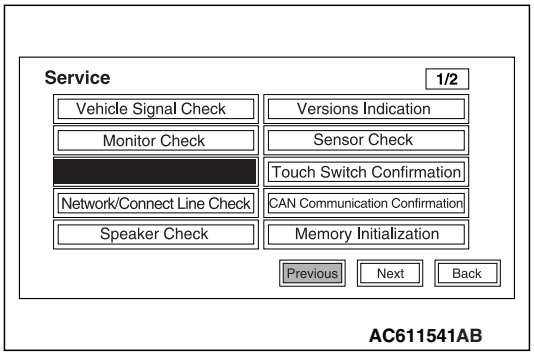


AC612651

2. The check results will be displayed for the items below.
   - "Speed": "ON" when the vehicle speed is 6 km/h or more, and "OFF" when the vehicle speed is 4 km/h or less.
   - "ILL": "ON" when the lighting switch is on (headlight position), and "OFF" when they are off (except headlight position).
   - "Shift Position R": "ON" when the selector lever is at R position, and "OFF" when it is at the other position.

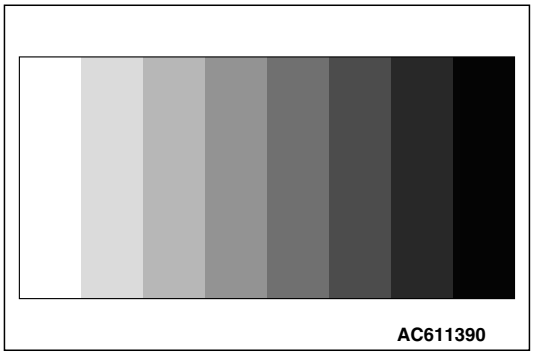
MONITOR CHECK

1. Select "Monitor Check" on "Service" screen.

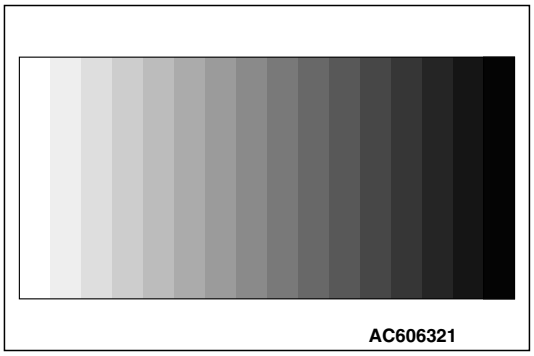


AC611541AB

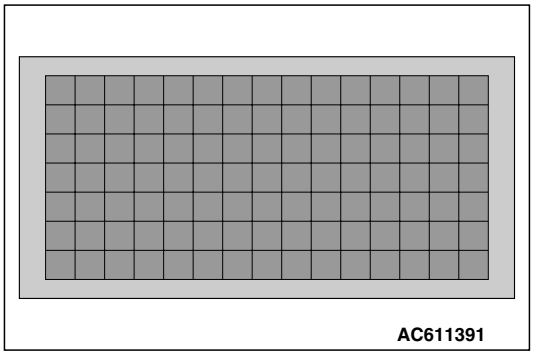
2. Eight color bars will be displayed.

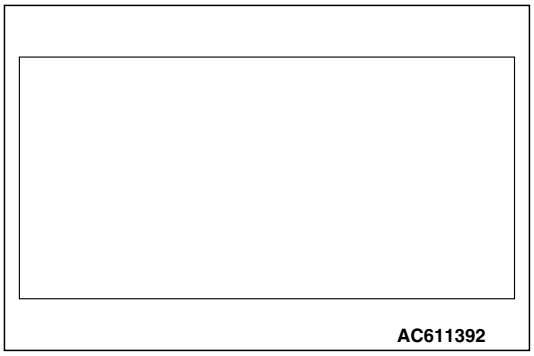

AC611390

3. When "Enter" is pressed on the navigation unit joystick while the eight color bars are shown, gray scale will be displayed with a 16-step gradation.


AC606321

4. When "Enter" is pressed while the gray scale is shown with a 16-step gradation, a crosshatch pattern will be displayed (Each cell should be square).

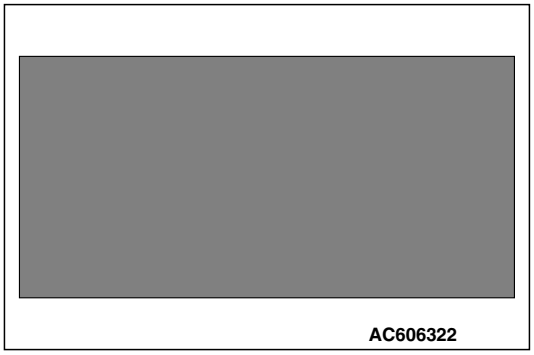

AC611391


AC611392

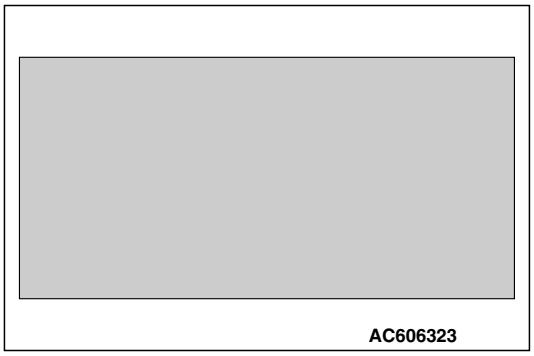
5. When "Enter" is pressed on the navigation unit joystick while the crosshatch pattern is shown, the screen will turn white.


AC611393

6. When "Enter" is pressed on the navigation unit joystick while the screen is white, it will turn black.


AC606322

7. When "Enter" is pressed on the navigation unit joystick while the screen is black, the screen will turn red.


AC606323

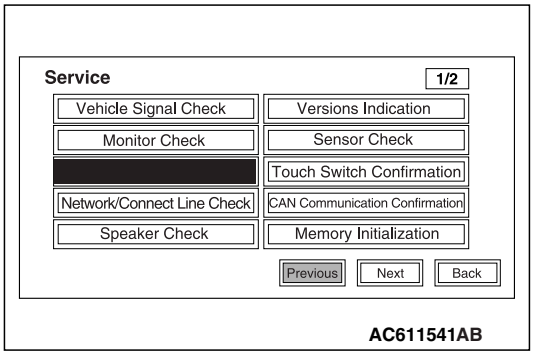
8. When "Enter" is pressed on the navigation unit joystick while the screen is red, it will turn green.


AC606324

9. When "Enter" is pressed on the navigation unit joystick while the screen is green, it will turn blue.
10. When "Enter" is pressed on the navigation unit joystick while the screen is green, it will return to the "Service" screen.

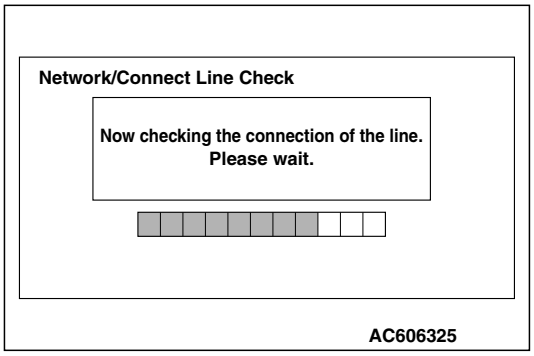
NETWORK AND CONNECT LINE CHECK

1. Select "Network/Connect Line Check" on "Service" screen.



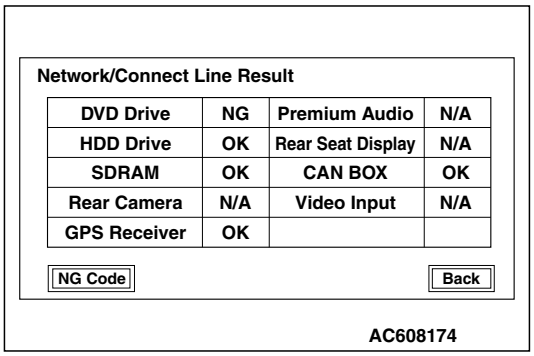
AC611541AB

2. A network and connect line check will be initiated. The "Network/Connect Line Check" screen will display how the check is in progress.



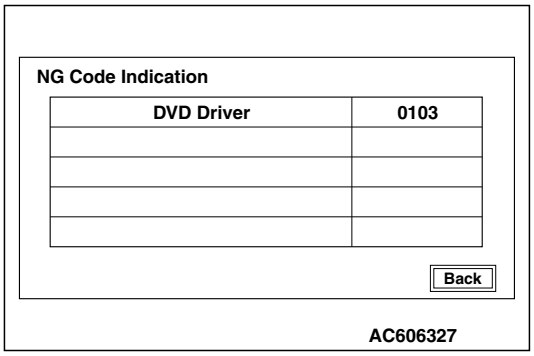
AC606325

3. When the network and connect line check is finished, the screen will change to "Network/Connect Line Result" to show the check results.



AC608174

NOTE: If there is "NG" or "N/A" as the check results, select "NG Code" on the "Network/Connect Line Result" screen. Then "NG code Indication" screen will show the NG code.

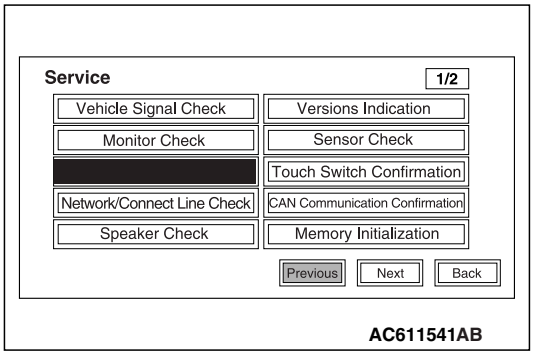


AC606327

4. If "Back" is selected on "Network/Connect Line Result", the screen will return to "Service" screen.

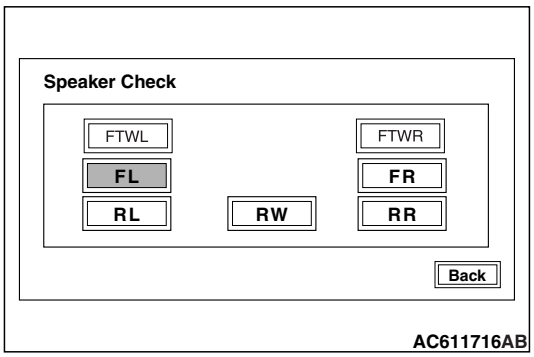
SPEAKER CHECK

1. Select "Speaker Check" on "Service" screen.



2. Select a speaker to be checked, and play test tone through the speaker.

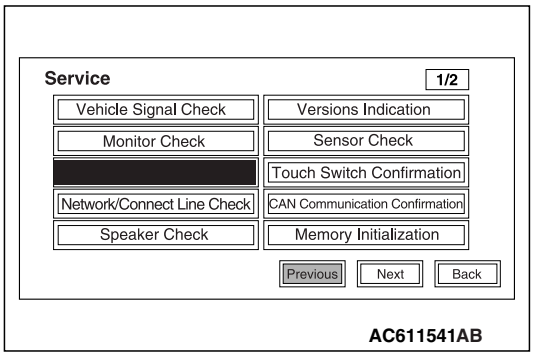
   NOTE:
   - *The number of the speakers being displayed depends on how many speakers are connected.*
   - *Volume cannot be adjusted while test tone is being played.*
   - *During the test, only the selected speaker sounds. If "Back" is selected during the test, the test tone will disappear.*



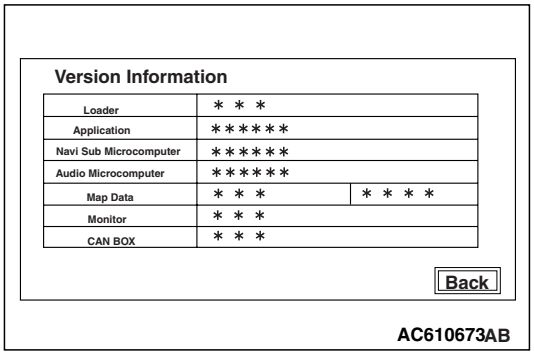
VERSIONS INDICATION

Displays versions indication (Loader, Application, Audio Microcomputer, Navi Sub Microcomputer, Map Data, Monitor, and CAN BOX).

1. Select "Versions Indication" on "Service" screen.



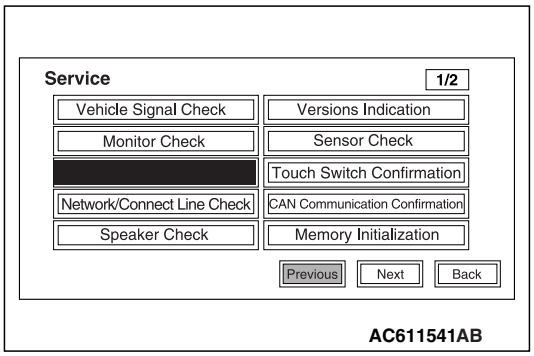
2.3. Versions indication is displayed.



SENSOR CHECK

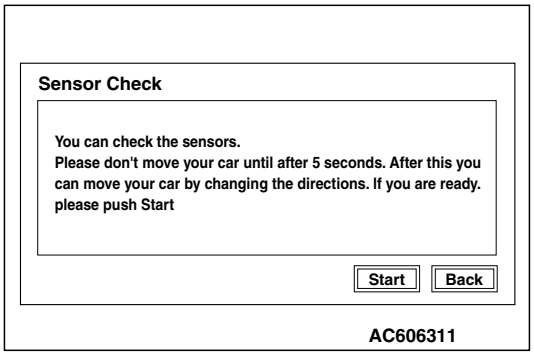
The speed sensor and gyro sensor will be checked, depending on the vehicle conditions such as driving condition, stationary condition and travel direction change.

1. Select "Sensor Check" on "Service" screen.

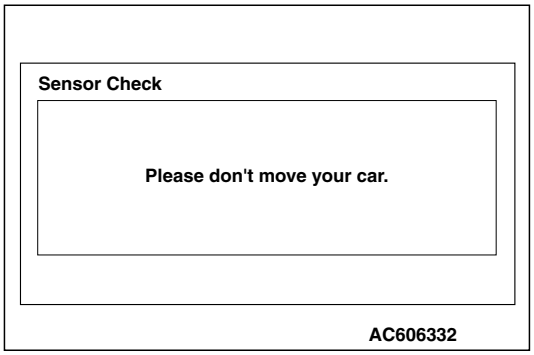


AC611541AB

2. The sensor check with the vehicle stationary will be executed in accordance with the screen.

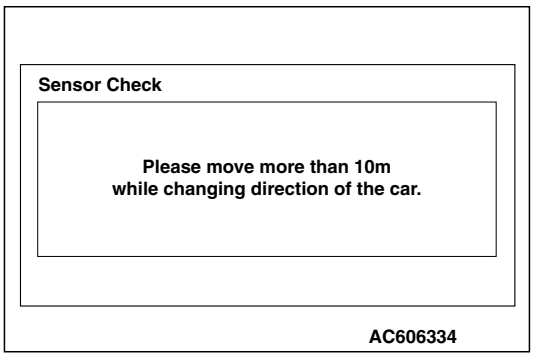


AC606311

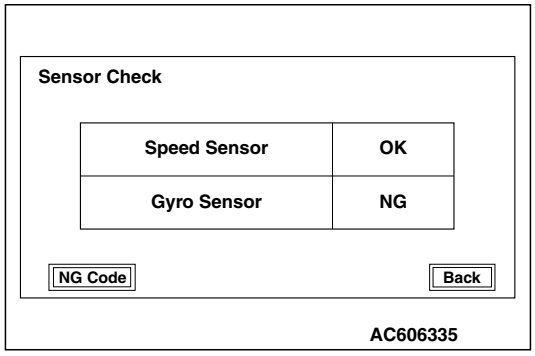


AC606332

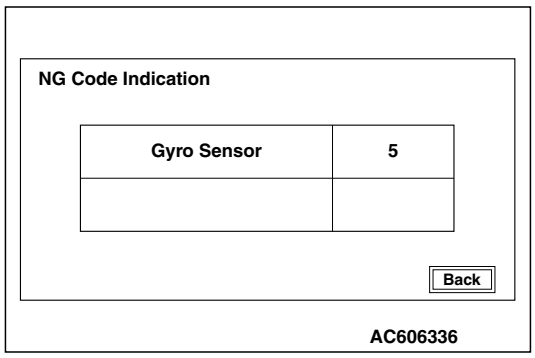
3. The sensor check with the vehicle in motion will be executed in accordance with the screen.



AC606334



4. When the sensor checks are complete, the screen will display the check results.



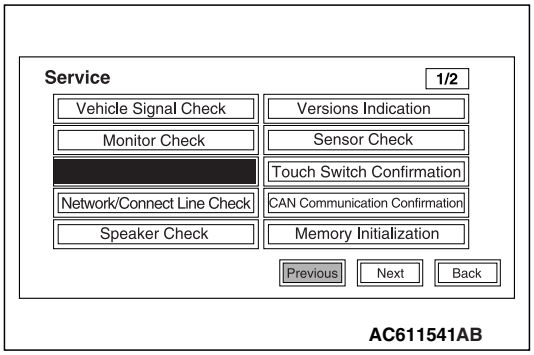
NOTE: If there is "NG" or "N/A" as the check results, select "NG Code" on the "Sensor Check" screen. Then "NG code Indication" screen will show the NG code.

NG CODE REFERENCE TABLE FOR SENSOR CHECK

Sensor classification	NG code No.	Error items
Gyro sensor	1	Offset error while the vehicle is stationary (lower limit error)
	2	Offset error while the vehicle is stationary (upper limit error)
	5	Output error during driving
Speed sensor	6	Output error while the vehicle is stationary

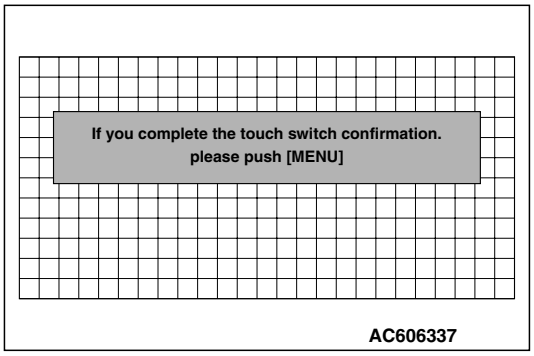
TOUCH SWITCH CONFIRMATION

1. Select "Touch Switch Confirmation" on "Service" screen.

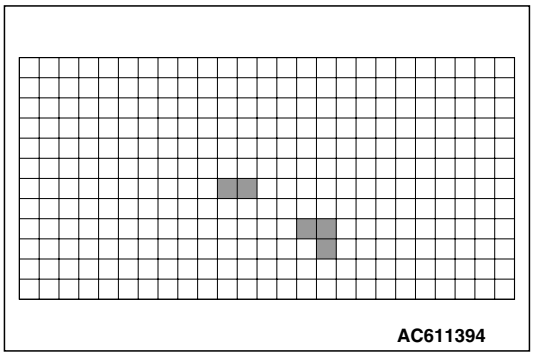


AC611541AB

2. If you touch the screen, the color of the dotted coordinate at the touched area will be changed.



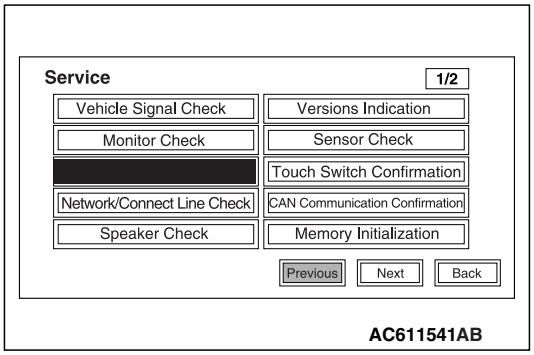
AC606337



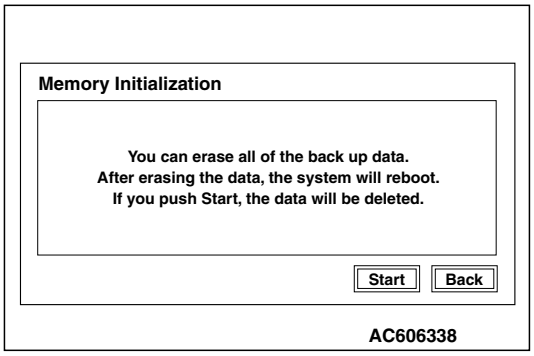
AC611394

MEMORY INITIALIZATION

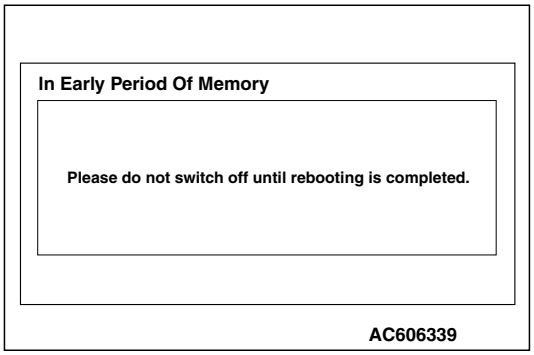
1. Select "Memory Initialization" on "Service" screen.



AC611541AB



AC606338



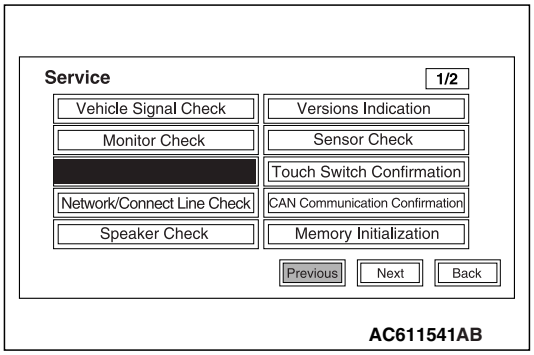
AC606339

2. If you select "Start" on "Memory Initialization" screen, the settings such as registered locations and music server will be erased (initialized) from the memory.

   NOTE: If the ignition switch is turned to "LOCK" (OFF) position during the initialization, the initialization will be suspended. If the ignition switch is turned to "ACC" or "ON" position, the initialization will be resumed.
3. After the memory initialization is complete, the navigation system will restart automatically.

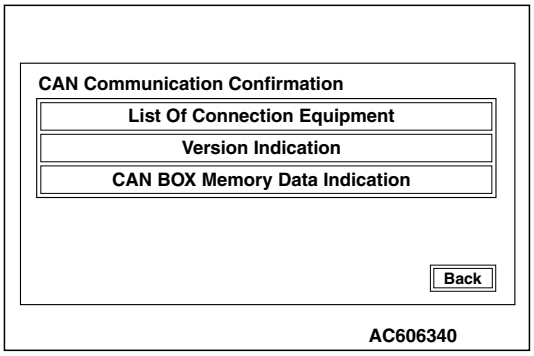
CAN COMMUNICATION CONFIRMATION

1. Select "CAN Communication Confirmation" on "Service" screen.



AC611541AB

2. If "List Of Connection Equipment" is selected on "CAN Communication Confirmation" screen, the system will determine which equipment is installed according to the connected equipment reference table. Then the equipment which are connected to the CAN box unit will be displayed.



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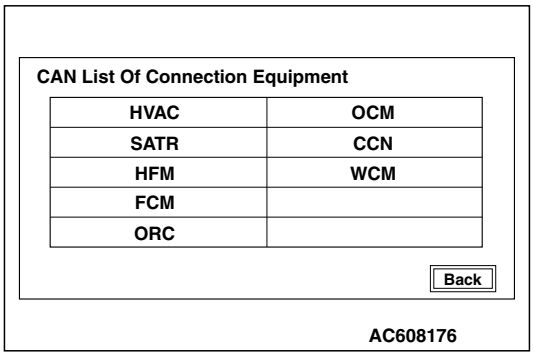
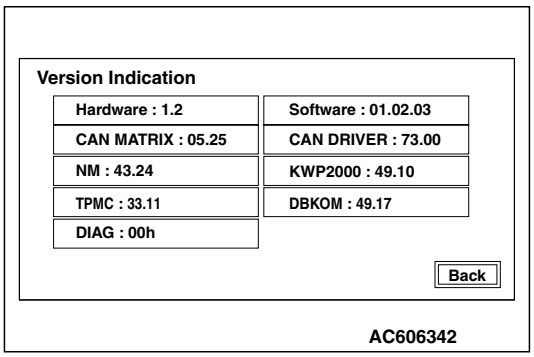
CAN BOX UNIT-CONNECTED EQUIPMENT REFERENCE TABLE

Screen indication	Equipment
HVAC	A/C-ECU
SATR	Satellite radio tuner
HFM	Hands free module
FCM	ETACS-ECU
ORC	SRS-ECU
OCM	Occupant classification-ECU
CNN	Combination meter
WCM	Wireless control module



AC608176

3. If "Version Indication" is selected on "CAN Communication Confirmation" screen, the version for each item is displayed.



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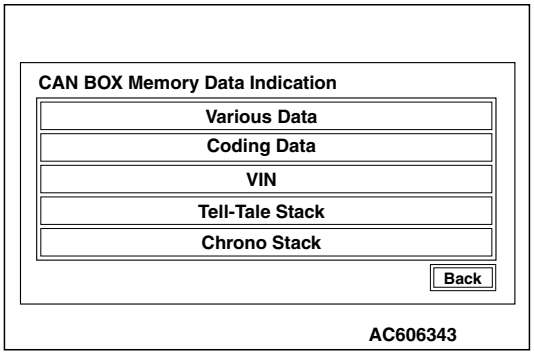
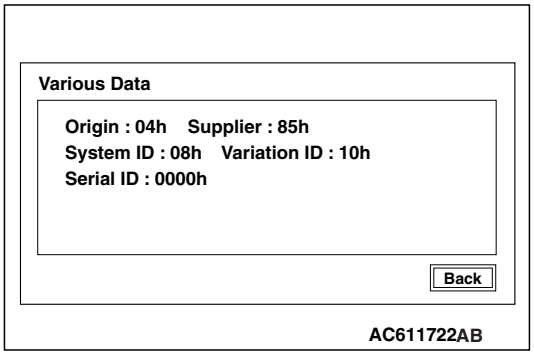


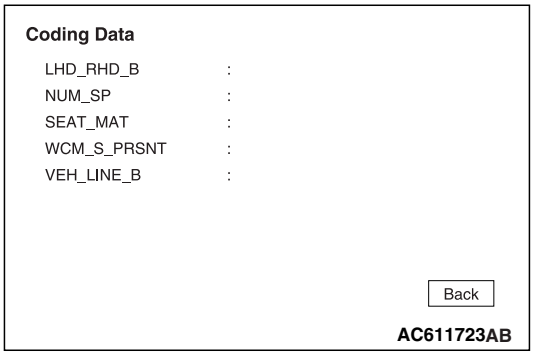
AC606343

4. If "CAN BOX Memory Data Indication" is selected on "CAN Communication Confirmation" screen, "CAN BOX Memory Data Indication" will be displayed.
5. If any item is selected on "CAN BOX Memory Data Indication" screen, its relevant information is displayed.



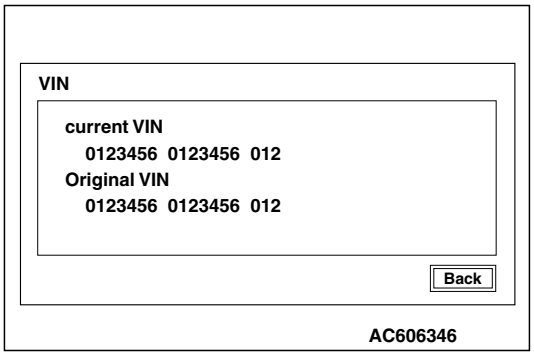
AC611722AB

- Various Data



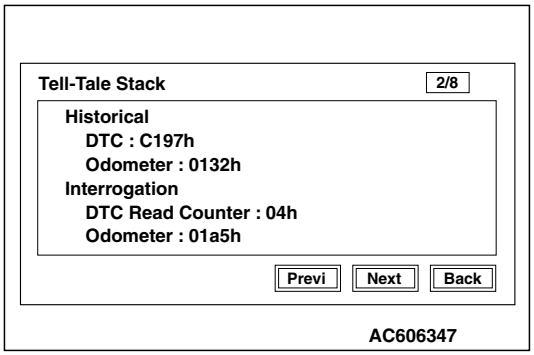
AC611723AB

- Coding Data



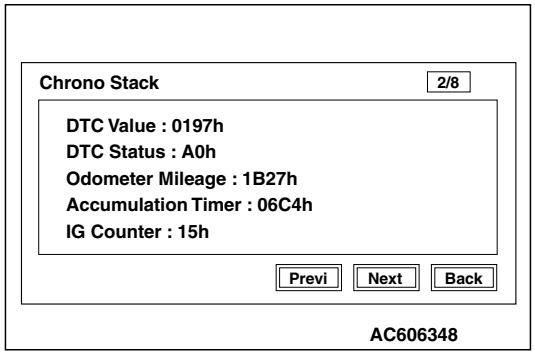
AC606346

- VIN



AC606347

- Tell-Tale Stack

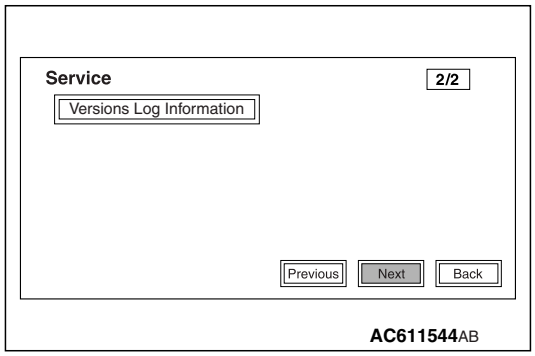


- Chrono Stack

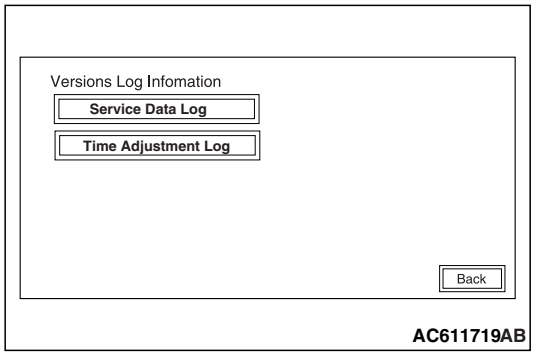
VERSIONS LOG INFORMATION

Displays logs for drive and HDD.

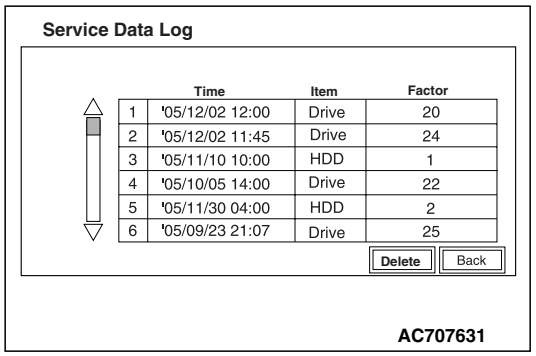
Service Data Log



1. Select "Versions Log Information" on "Service" screen.



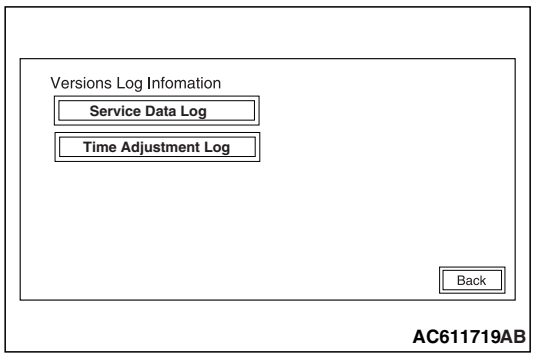
2. Select "Service Data Log" on the "Versions Log Information" screen.



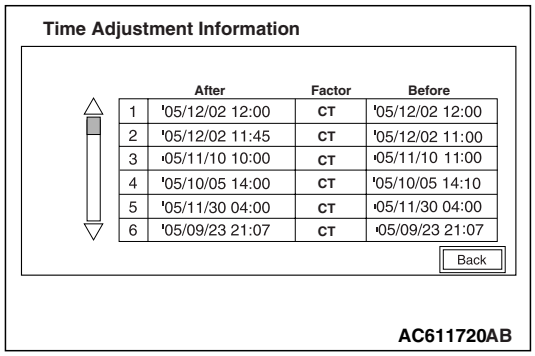
3. The logs are displayed from the latest one.
4. The log data is erased by pressing "Delete."

EACH LOG INFORMATION: FACTOR CODE TABLE

Item	Factor number	Produced log
Drive	20	Log concerning focus
	21	Log concerning disk type
	22	Log concerning disc
	25	Log concerning SEEK
	26	Log concerning servo start-up
	27	Log concerning power-On
	28	Log concerning loading / eject operation
	29	Log concerning pick-up operation
	30	Log concerning state of mechanism
	52	Log concerning TOC reading
HDD	1	Log concerning high temperature
	2	Log concerning low temperature
Monitor	1	Log concerning high temperature
AMP	0	Log concerning connection
	15	Log concerning communication
SP*1	1,2,4,8	Log concerning number of speakers unexpected
CAR*2	0 -12, 128 -131, 133,160, 192,255	Log concerning vehicle model unexpected



1. Select "Time Adjustment Log" on the "Versions Log Information" screen.



2. The time adjustment logs are displayed.
   As for Factor, the following two types are displayed.
   CT: Automatic adjustment
   MAN: Manual adjustment

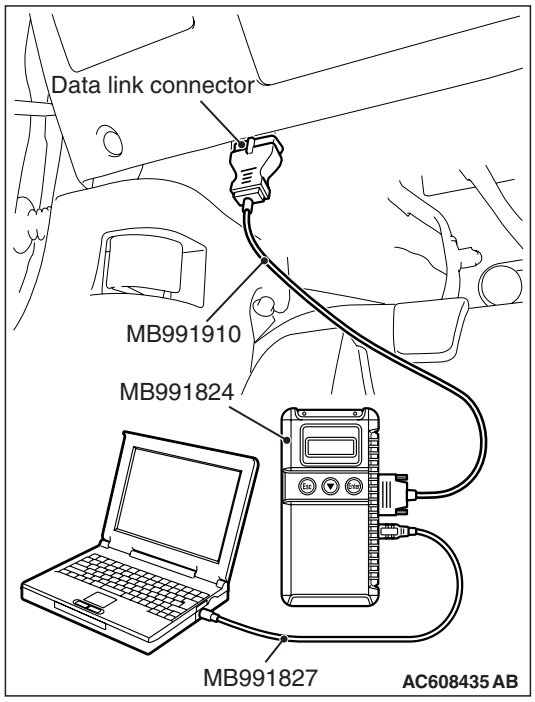
DIAGNOSIS FUNCTION

M1546001600231

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

Required Special Tools:

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



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "Meter" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using scan tool MB991958.

When detecting fault and storing the diagnostic trouble code, the ECU connected to CAN bus line obtains the data before the determination of the diagnostic trouble code and the data when the diagnostic trouble code is determined, and then stores the ECU status of that time. By analyzing each data from scan tool MB991958, the troubleshooting can be performed more efficiently. The displayed items are as the table below.

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the diagnostic trouble code is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
4	Accumulated minute	Cumulative time for current malfunction of diagnostic trouble code	min

DIAGNOSTIC TROUBLE CODE CHART

M1546001700197

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

DTC No.	Description	Reference page
B2226	AND error	P.54A-385
B2240	Communication error with CAN Box	P.54A-387
B2477	VIN not programmed	P.54A-390
U0019	Bus off (CAN-B)	P.54A-391
U0141	ETACS CAN timeout	P.54A-392
U0151	SRS-ABG CAN timeout	P.54A-394
U0154	OCM CAN timeout	P.54A-396
U0155	Meter CAN timeout	P.54A-397
U0164	A/C CAN timeout	P.54A-399
U0168	WCM CAN timeout	P.54A-400
U0195	Satellite radio CAN timeout	P.54A-402
U0197	Hands free module CAN timeout	P.54A-403
U1415	Coding not completed/Data fail	P.54A-405
U1417	Implausible coding data	P.54A-406

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B2226: AND error

⚠ CAUTION

- **If DTC B2226 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

TROUBLE JUDGMENT

When the CAN box unit receives the signal to indicate an abnormality (service data) occurred in the multivision display, the CAN box unit sets DTC B2226.

TROUBLESHOOTING HINT

- The CAN box unit may be defective
- The multivision display may be defective

DIAGNOSIS

Required Special Tools:

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

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

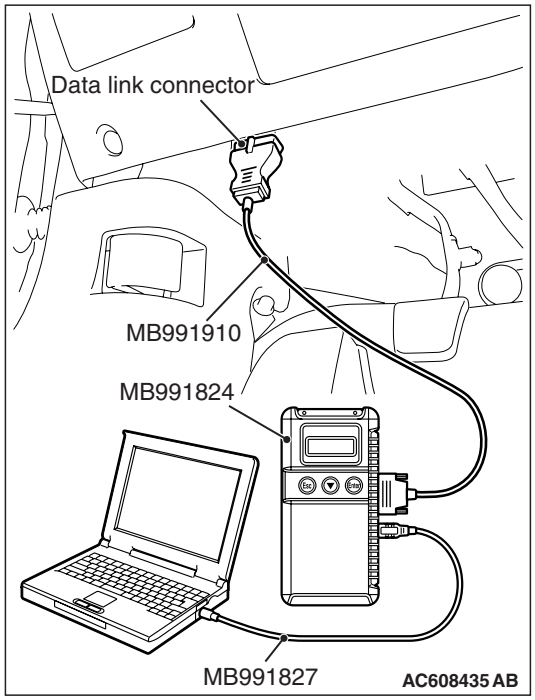
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2.Check that the of the MMCS service mode.
Check that the FACTOR CODE is set to the service data log in the MMCS service mode "Versions Log Information." (Refer to P.54A-369.)

Q: Is the FACTOR CODE set?

YES : Carry out the diagnosis for the corresponding code.(Refer to Trouble symptom chart P.54A-408)
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 4.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

STEP 4. Recheck for diagnostic trouble code.
Temporarily replace the multivision display, and check if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

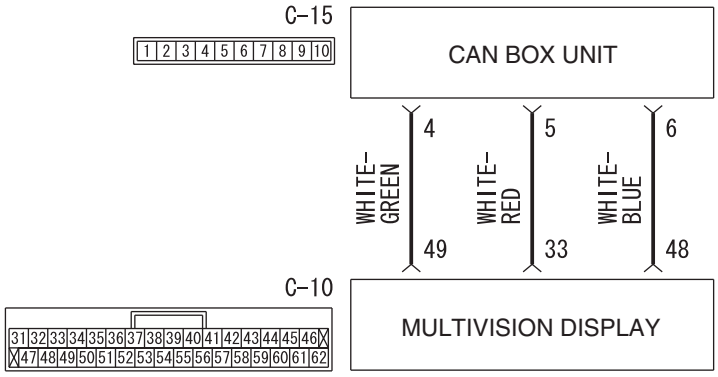
YES : Replace the CAN box unit.
NO : Replace the multivision display.

DTC B2240: Communication error with CAN Box

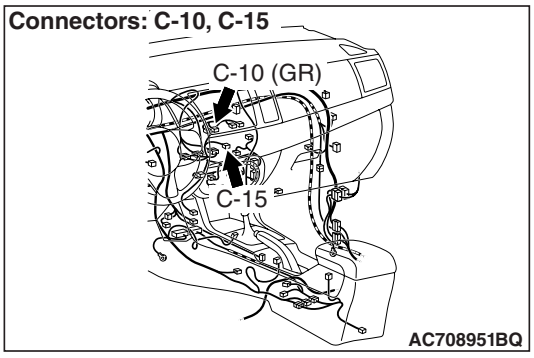
⚠ CAUTION

- **If DTC B2240 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

CAN Box Unit Communication Circuit



W8G54M113A



TROUBLE JUDGMENT

When the abnormality occurs in the transmission/reception data between the CAN box unit and multivision display, the CAN box unit sets DTC B2240.

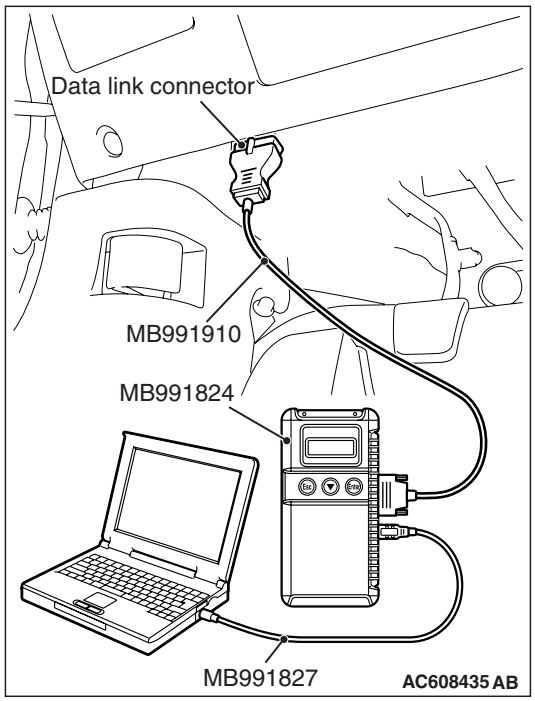
PROBABLE CAUSES

- multivision display may be malfunction
- CAN box unit may be malfunction
- Damaged wiring harness and connectors

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Perform "Network/Connect Line Check" of the MMCS service mode.

Perform "Network/Connect Line Check" of the MMCS service mode, and check that the communication between the CAN box unit and the multivision display is normal. (Refer to P.54A-369.)

NOTE: The communication is not possible, "CAN BOX" is not displayed.

Q: Is "CAN BOX OK" displayed?

YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Check CAN box unit connector C-15 and multivision display connector C-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are CAN box unit connector C-15 and multivision display connector C-10 in good condition?

YES : Go to Step 4.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The steering remote control switch should work normally.

TSB Revision

STEP 4. Check the wiring harness between CAN box unit connector C-15 (terminal 4, 5, 6) and multivision display connector C-10 (terminal 49, 33, 38).

Q: Is the wiring harness between CAN box unit connector C-15 (terminal 4, 5, 6) and multivision display connector C-10 (terminal 49, 33, 48) in good condition?

YES : Go to Step 5.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.

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

Q: Is the DTC set?

YES : Go to Step 6.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

STEP 6. Recheck for diagnostic trouble code.

Temporarily replace the multivision display, and check if the DTC is set to the CAN box unit.

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

Q: Is the DTC set?

YES : Replace the CAN box unit.

NO : Replace the multivision display.

DTC B2477: VIN not programmed

⚠ CAUTION

- **If DTC B2477 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

TROUBLE JUDGMENT

With the ignition switch at the ON position, if the VIN code is not written to the CAN box unit, DTC B2477 is stored.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The CAN box unit may be defective.

DIAGNOSIS

Required Special Tools:

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

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

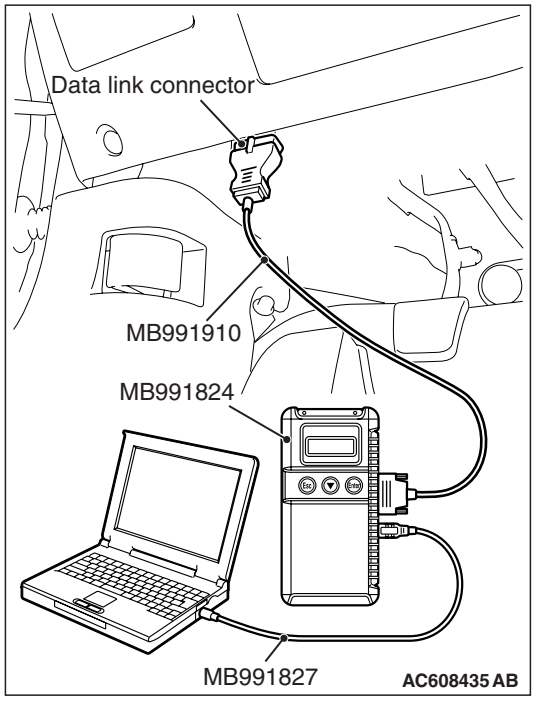
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

TSB Revision

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0019: Bus off (CAN-B)

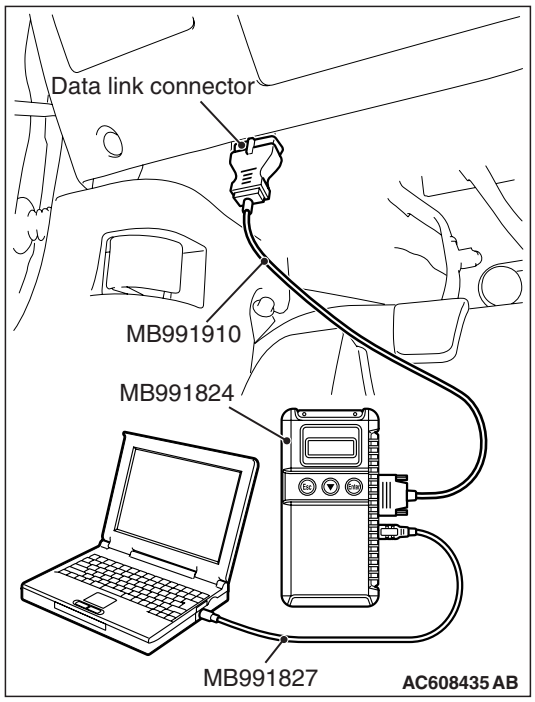
⚠ CAUTION
- **If DTC U0019 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
If the CAN-B circuit malfunction occurs, the CAN box unit sets DTC U0019.

JUDGMENT CRITERIA
With the ignition switch at the ON position and the system voltage at 10 –16 volts (data from ETACS-ECU), if the CAN box unit becomes unable to transmit data normally due to the CAN-B bus circuit malfunction, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
The CAN bus line may be defective

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



STEP 1. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 2.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.
(1) Turn the ignition switch to the "ON" position.
(2) Diagnose the CAN bus line.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

DTC U0141: ETACS CAN timeout

⚠ CAUTION
- **If DTC U0141 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
If the signal from ETACS-ECU cannot be received, the CAN box unit sets the DTC U0141.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with ETACS-ECU cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

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TROUBLESHOOTING HINTS

- The CAN bus line may be defective
- The CAN box unit may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

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

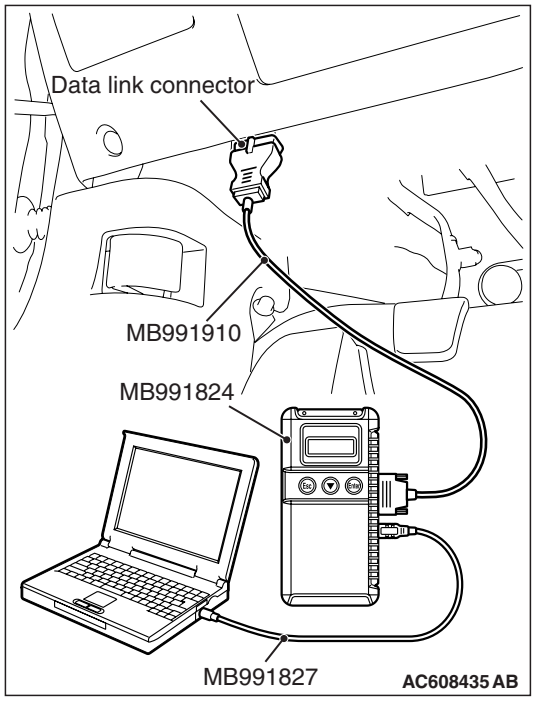
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-AGB CAN timeout

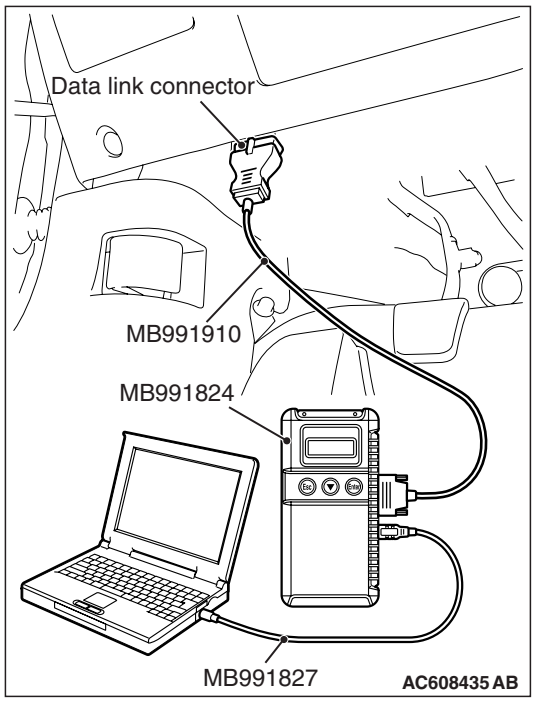
⚠ CAUTION
- **If DTC U0151 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
If the signal from SRS-ECU cannot be received, the CAN box unit sets DTC U0151.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with SRS-ECU cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective
- The SRS-ECU may be defective
- The CAN box unit may be defective

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Troubleshooting P.52B-31).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0154: OCM CAN timeout

⚠ CAUTION

- **If DTC U0154 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION

When the signals from occupant classification-ECU cannot be received, the CAN box unit sets DTC U0154.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with occupant classification-ECU cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The CAN box unit may be defective.
- The occupant classification-ECU may be defective.

DIAGNOSIS

Required Special Tools:

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

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

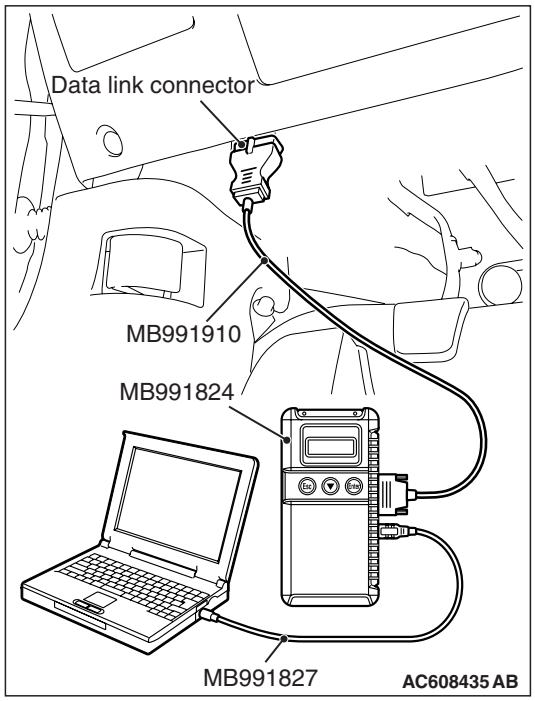
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.
Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0155: Meter CAN timeout

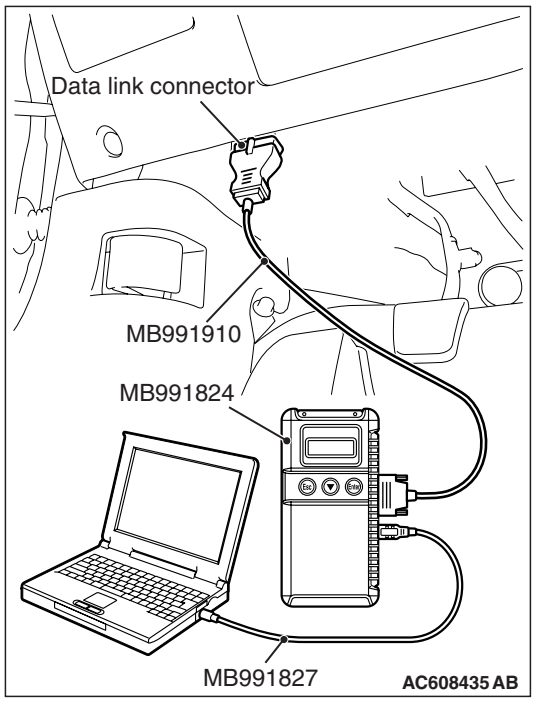
⚠ CAUTION
- **If DTC U0155 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
When the signals from combination meter cannot be received, the CAN box unit sets DTC U0155.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with combination meter cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The CAN box unit may be defective.
- The combination meter may be defective.

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check whether a combination meter DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for combination meter DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to combination meter, Diagnosis P.54A-28).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

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DTC U0164: A/C CAN timeout

⚠ CAUTION

- **If DTC U0164 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION

If the signal from A/C-ECU cannot be received, the CAN box unit sets DTC U0164.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with A/C-ECU cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

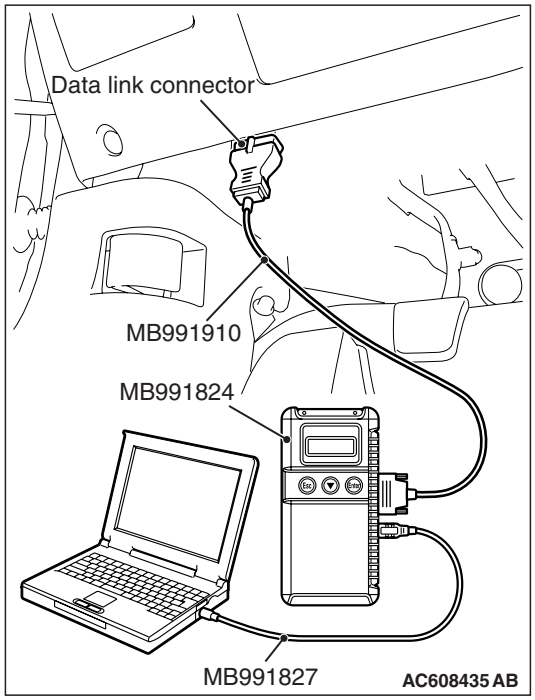
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The A/C-ECU may be defective.
- The CAN box unit may be defective.

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-384."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the A/C diagnostic trouble code.
Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Diagnosis P.55-9).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0168: WCM CAN timeout

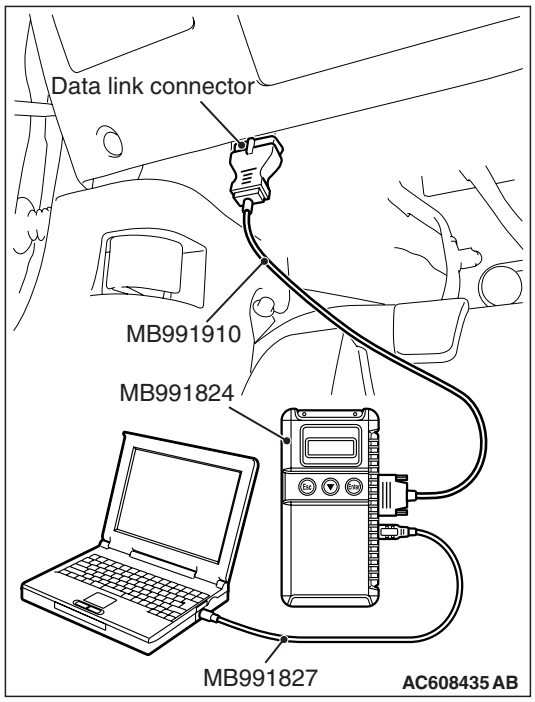
⚠ CAUTION
- **If DTC U0168 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
If the signal from KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be received, the CAN box unit sets DTC U0168.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 V (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
- Malfunction of CAN bus line may be defective.
- Malfunction of the KOS-ECU may be defective. <vehicles with KOS>
- Malfunction of the WCM may be defective. <vehicles with WCM>
- Malfunction of CAN box unit may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-25."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> diagnostic trouble code.

Check again if the DTC is set to the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM>.

Q: Is the DTC set?

YES : Troubleshoot the KOS or WCM (Refer to GROUP 42B, Diagnosis P.42B-20 <KOS> or GROUP 42C, Diagnosis P.42C-14 <WCM>).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

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DTC U0195: Satellite radio CAN timeout

⚠ CAUTION

- **If DTC U0195 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION

When the signals from satellite radio tuner cannot be received, the CAN box unit sets DTC U0195.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with satellite radio tuner cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

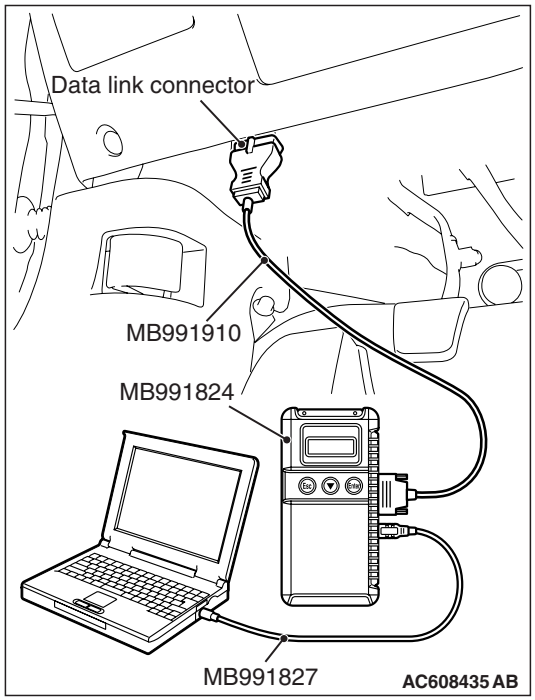
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The CAN box unit may be defective.
- The satellite radio tuner may be defective.

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958 read the satellite radio tuner diagnostic trouble code.
Check whether a satellite radio tuner DTC are set or not.

Q: Is the DTC set?

YES : Diagnose the satellite radio tuner. (Refer to P.54A-540).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0197: Hands free module CAN timeout

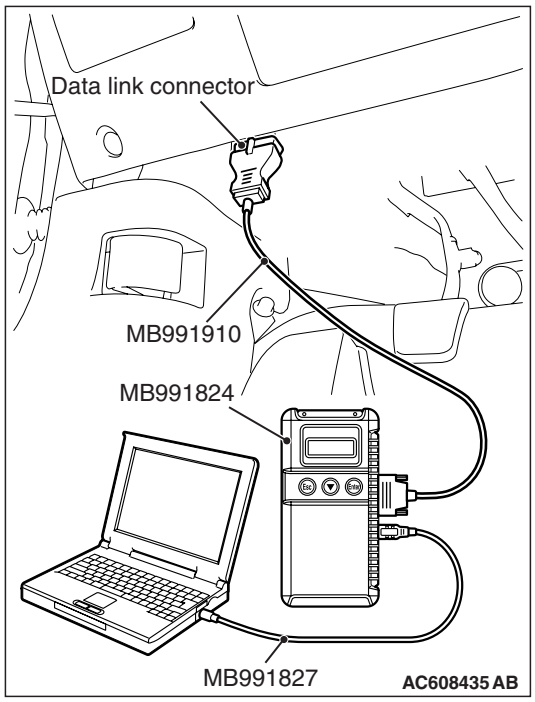
⚠ CAUTION
- **If DTC U0197 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

DIAGNOSTIC FUNCTION
When the signals from hands free module cannot be received, the CAN box unit sets DTC U0197.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with hands free module cannot be established for 2,500 ms or more, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The CAN box unit may be defective.
- The hands free module may be defective.

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the hands free module.

Q: Is the DTC set?

YES : Troubleshoot the hands-free cellular phone system.
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U1415: Coding not completed/Data fail

⚠ CAUTION
- **If DTC U1415 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal. (Check that the voltage is 10 V or more.)**

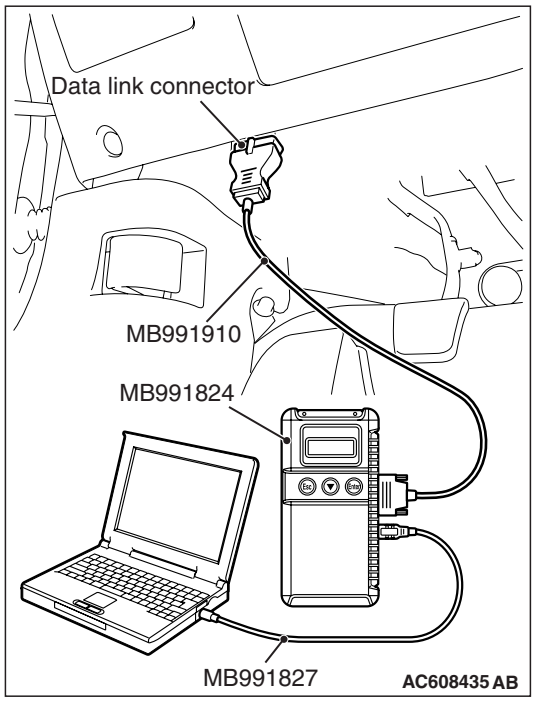
DIAGNOSTIC FUNCTION
If the vehicle information data is not registered to the CAN box unit, the CAN box unit sets DTC U1415.

JUDGMENT CRITERIA
With the global coding counter value "0," if all the global coding data (vehicle information) are not stored, the CAN box unit determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The CAN box unit may be defective.
- The ETACS-ECU may be defective.

DIAGNOSIS

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.
Check if DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U1417: Implausible coding data

⚠ CAUTION

- **If diagnostic trouble code U1417 is set in CAN box unit, always diagnose the CAN bus lines. If there is any fault in the CAN bus lines, an incorrect diagnostic trouble code may be set. In this case, the set diagnostic trouble code is not highly reliable.**
- **Before replacing the ECU, ensure that the communication circuit is normal. (Check that the voltage is 10 V or more.)**
- **When the diagnostic trouble code U1417 is set in CAN box unit, the diagnostic trouble code may also be set in ETACS-ECU. When the diagnostic trouble code is set in ETACS-ECU, carry out the diagnosis of the diagnostic trouble code for ETACS-ECU first.**

CIRCUIT OPERATION

CAN box unit receives the vehicle information stored in the ETACS-ECU via CAN bus lines.

DTC SET CONDITIONS

CAN box unit communicates with ETACS-ECU via CAN bus lines. This diagnostic trouble code is set when the vehicle information received from the ETACS-ECU is invalid.

PROBABLE CAUSES

- Malfunction of ETACS-ECU
- ETACS-ECUs have been interchanged between two vehicles.
- CAN box unit malfunction
- External noise interference

DIAGNOSIS

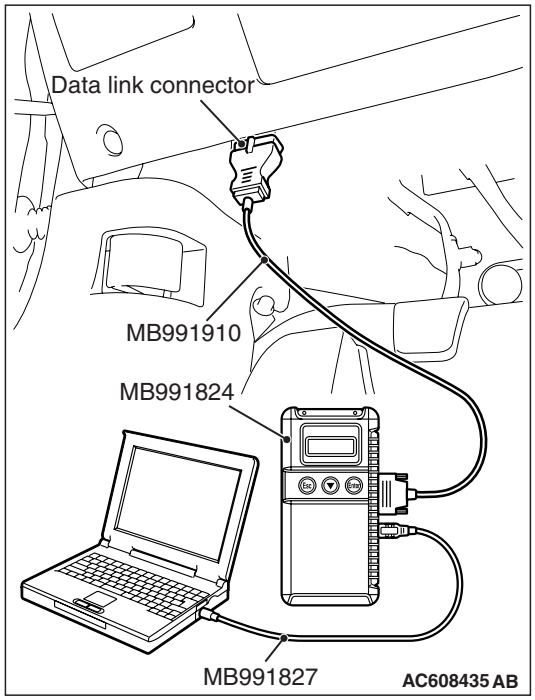
Required Special Tools:

- 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, diagnose the CAN bus line.

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

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TROUBLE SYMPTOM CHART

M1546001800592

Inspection procedure No.	Trouble symptom	Reference page
1	No navigation screen is displayed.	P.54A-409
2	No sound is heard. <Vehicles with audio amplifier>	P.54A-415
3	No sound is heard from one of the speakers. <vehicles with audio amplifier>	P.54A-424
4	The navigation system can be operated while the vehicle is driven.	P.54A-432
5	The screen is not normal in the navigation mode. (The displayed position of the vehicle mark deviates.)	P.54A-434
6	Poor reception.	P.54A-437
7	GPS signal can not be received.	P.54A-438
8	CD (compact disk)/DVD (Video Disk) cannot be played.	P.54A-439
9	Image of a DVD (video disk) is played, but no sound is played.	P.54A-440
10	Sound of a DVD (video disk) can be played, but no image is played.	P.54A-441
11	The picture and sound of external input are not played.	P.54A-443
12	Check the CAN box unit power supply circuit.	P.54A-445

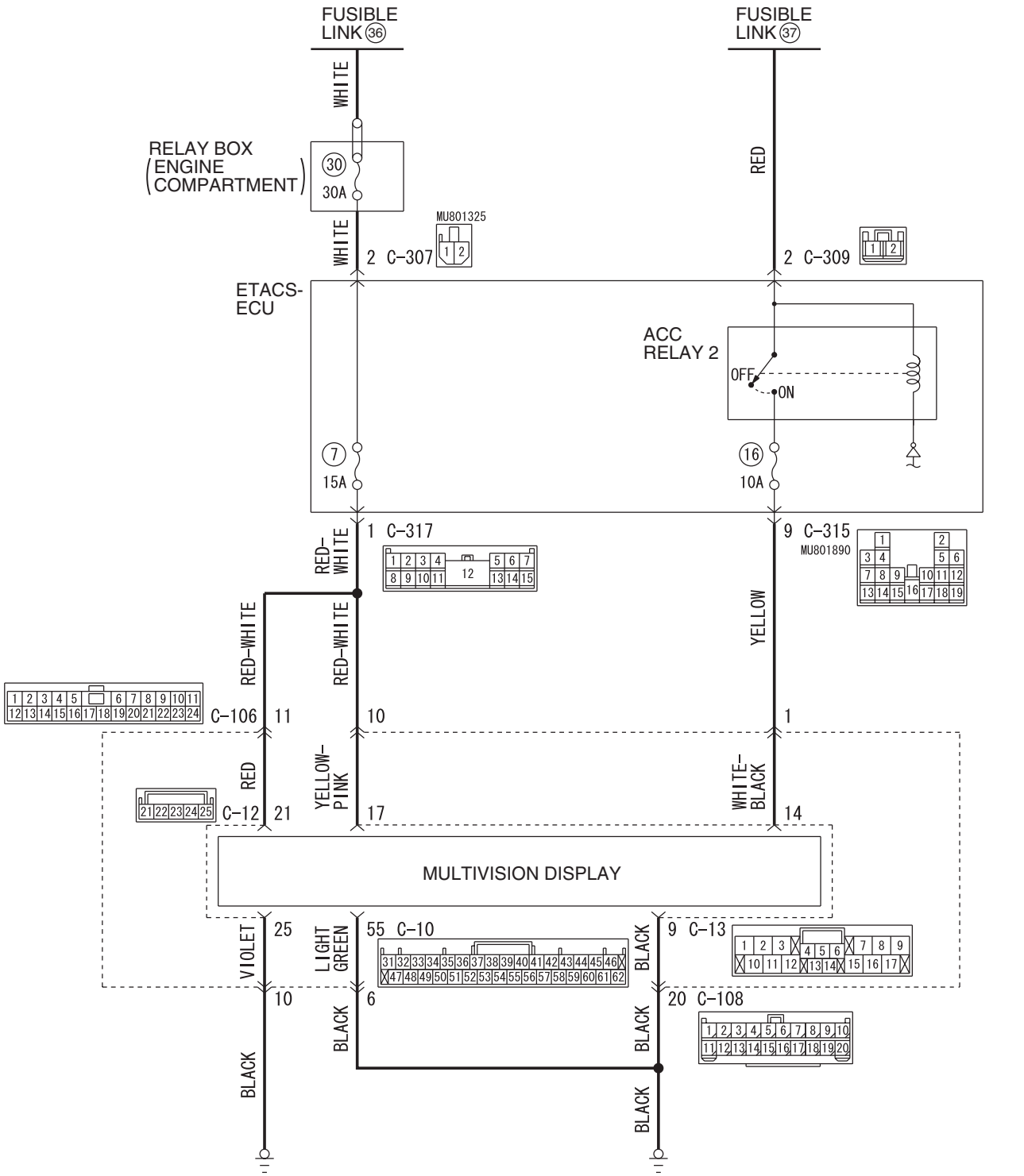
SYMPTOM PROCEDURES

Inspection Procedure 1: No navigation screen is displayed.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

Multivision Display Power Supply Circuit



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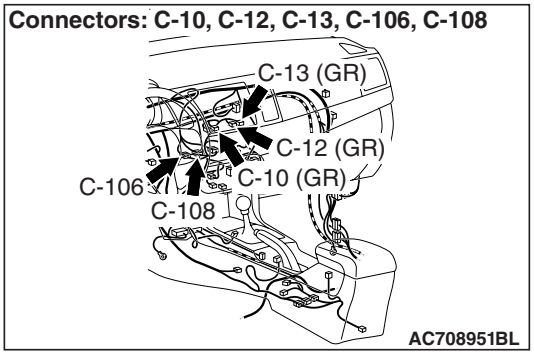
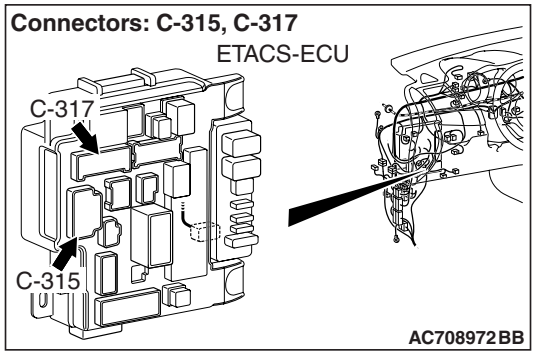




DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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. Check multivision display connector C-10, C-12, C-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is multivision display connector C-10, C-12, C-13 in good condition?

YES : Go to Step 2.

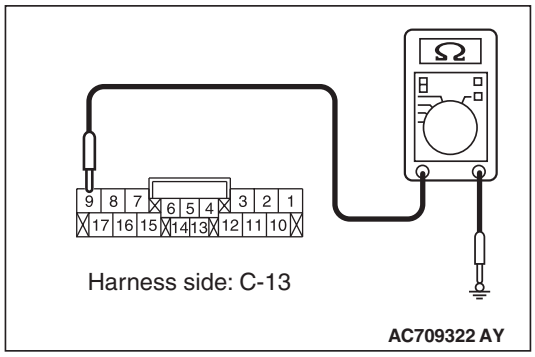
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

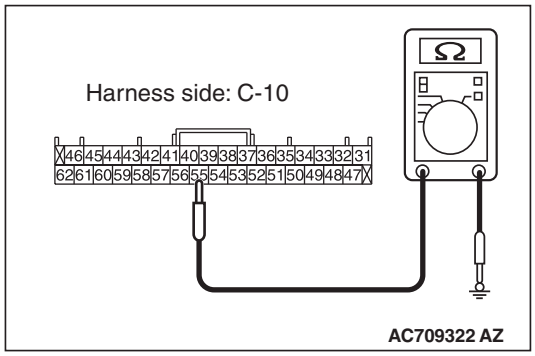
STEP 2. Check the ground circuit to the multivision display connector. Measure the resistance at multivision display connector C-10, C-12, C-13.

(1) Disconnect multivision display connectors C-10, C-12, C-13, and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance between multivision display connector C-13 terminal 9 and ground.

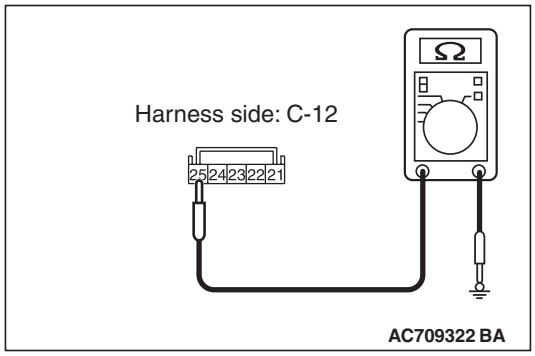
OK: The resistance should be 2 ohms or less





(3) Measure the resistance between multivision display connector C-10 terminal 55 and ground.

OK: The resistance should be 2 ohms or less



(4) Measure the resistance between multivision display connector C-12 terminal 25 and ground.

OK: The resistance should be 2 ohms or less

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between multivision display connector C-13 (terminal 9), C-10 (terminal 55), C-12 (terminal 25) and ground.

- Check the ground wires for open circuit.

NOTE: Also check intermediate connector C-108, C-106 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108, C-106 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between multivision display connector C-13 (terminal 9), C-10 (terminal 55), C-12 (terminal 25) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.

Check if the diagnostic trouble code is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU. Refer to GROUP 54A, Diagnosis P.54A-582.
NO : Go to Step 5.

STEP 5. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 6.

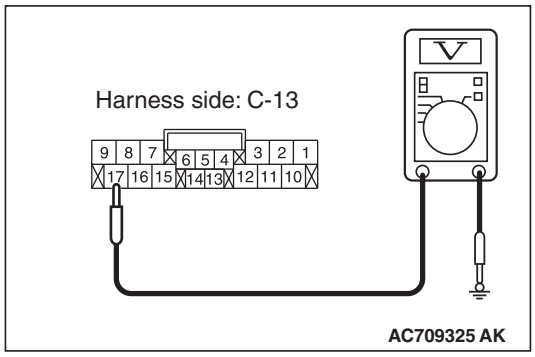
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check the power supply circuit to the muitivision display. Measure the voltage at muitivision display connector C-13, C-12.

(1) Disconnect the connector, and measure at the wiring harness-side connector.

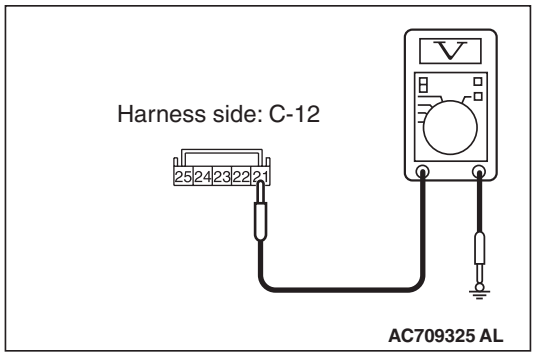
(2) Measure the voltage between muitivision display connector C-13 terminal 17 and ground.

OK: Battery voltage



(3) Measure the voltage between muitivision display connector C-12 terminal 21 and ground.

OK: Battery voltage



Q: Is the measured voltage battery voltage?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the wiring harness between ETACS-ECU connector C-317 (terminal 1) and multivision display connector C-13 (terminal 17) or multivision display connector C-12 (terminal 21).

- Check the power supply lines (battery supply) for open circuit and short circuit.

NOTE: Also check intermediate connector C-108, C-106 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108, C-106 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-317 (terminal 1) and multivision display connector C-13 (terminal 17) or multivision display connector C-12 (terminal 21) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Using scan tool MB991958, check data list.

Check the input signal of ACC relay.

- Turn the ignition switch to the ACC position.

Item No.	Item name	Normal conditions
Item 288	ACC switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 9.

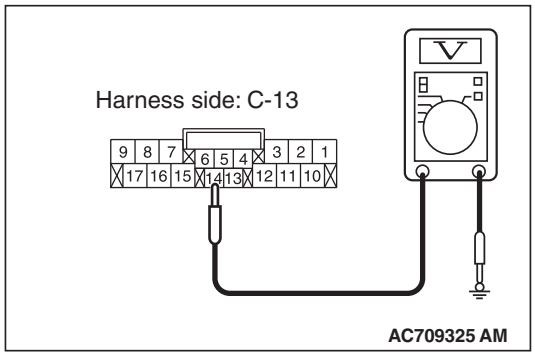
NO : Refer to GROUP 54A, ETACS, Diagnosis –Inspection Procedure 1 "The ignition switch (ACC) signal is not received P.54A-640."

STEP 9. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 10.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 10. Check the power supply circuit to the multivision display. Measure the voltage at multivision display connector C-13.

(1) Disconnect the connector, and measure at the wiring harness-side connector.
(2) Measure the voltage between multivision display connector C-13 terminal 14 and ground.

OK: Battery voltage

Q: Is the measured voltage battery voltage?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between multivision display connector C-13 (terminal 14) and ETACS-ECU connector C-315 (terminal 9).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between multivision display connector C-13 (terminal 14) and ETACS-ECU connector C-315 (terminal 9) in good condition?

YES : Go to Step 12.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 12. Retest the system

Check if the multivision display power is turned ON.

Q: Is the check result normal?

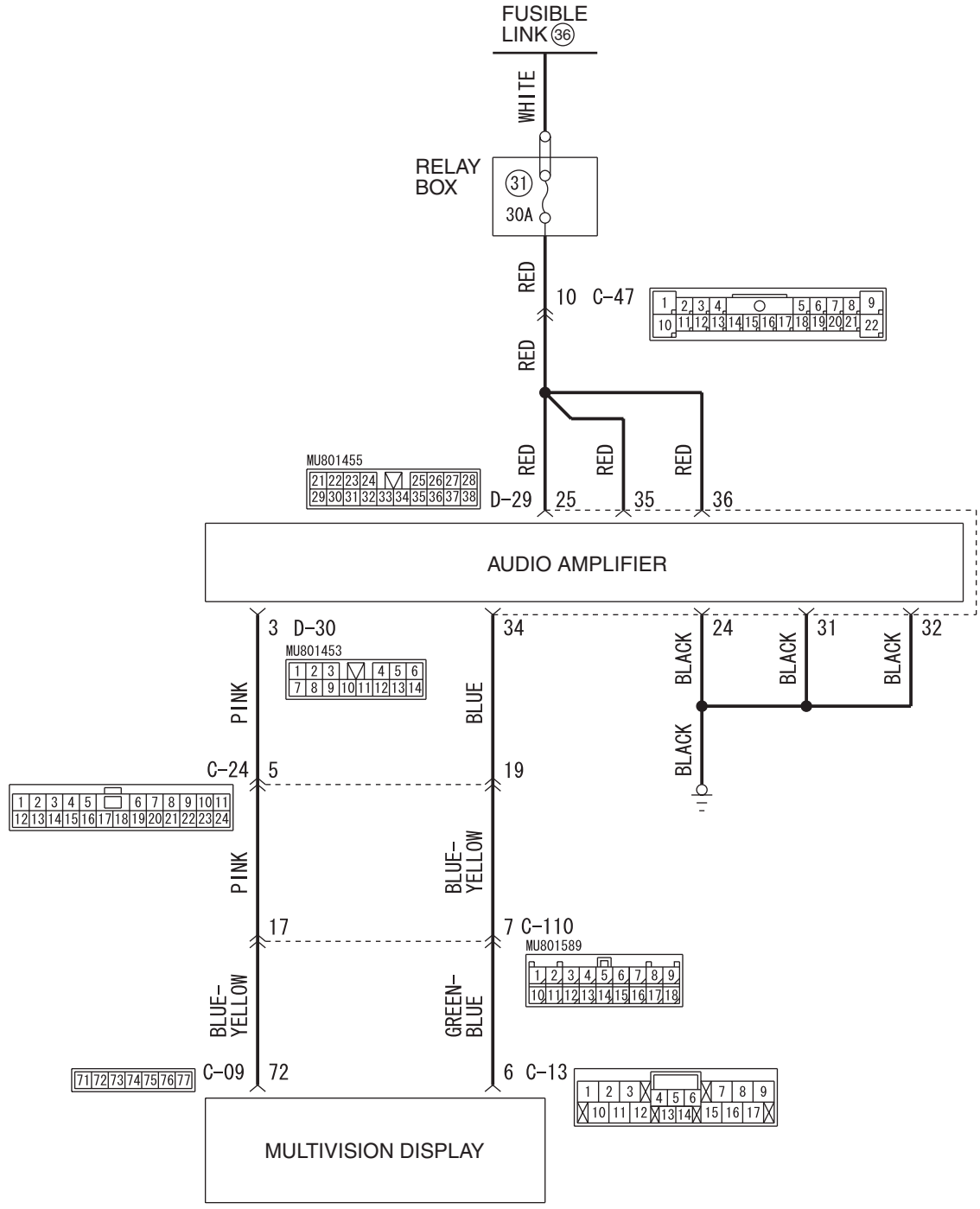
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the multivision display.

Inspection Procedure 2: No sound is heard. <Vehicles with audio amplifier>

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

Multivision Display System Circuit



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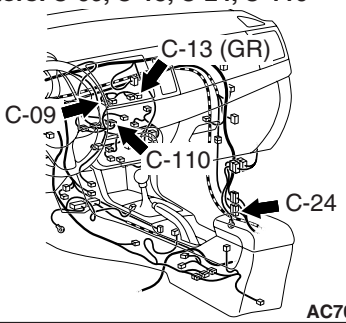
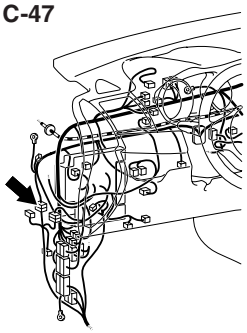
Connectors: C-09, C-13, C-24, C-110



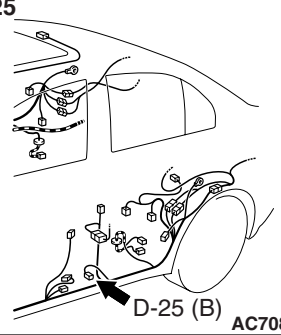
AC708951BN

Connector: C-47



AC708950AE

Connector: D-25



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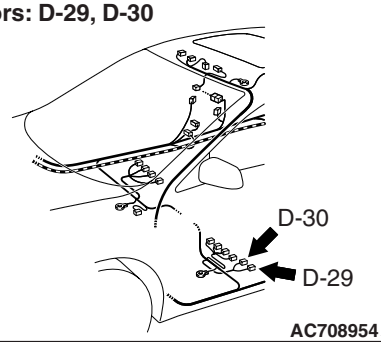
Connectors: D-29, D-30



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COMMENTS ON TROUBLE SYMPTOM

If the audio sound is not output, the multivision display, audio amplifier, or power supply circuit of audio amplifier may have a problem, or the option coding information may be inconsistent.

PROBABLE CAUSES

- The multivision display may be defective
- The audio amplifier may be defective
- Option coding information inconsistency
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the multivision display operation.

Q: Check the sources from which the sound is not output.

No sound only from radio : Perform Inspection Procedure 6 "Poor Reception." (Refer to P.54A-437.)

No sound only when the CD is played : Perform Inspection Procedure 8 "No CD (compact disk)/DVD (Video Disk) cannot be Played." (Refer to P.54A-439.)

No sound only when the DVD is played : Perform Inspection Procedure 8 "No CD (compact disk)/DVD (Video Disk) cannot be Played."(Refer to P.54A-439.) or Inspection Procedure 9 "Image of a DVD (Video Disk) is Played, but no Sound is Played." (Refer to P.54A-440.)

No sound only when the music server is used : Go to Step 8.

No sound from any of the sources : Go to Step 2.

STEP 2. Check the ETACS-ECU coding data.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

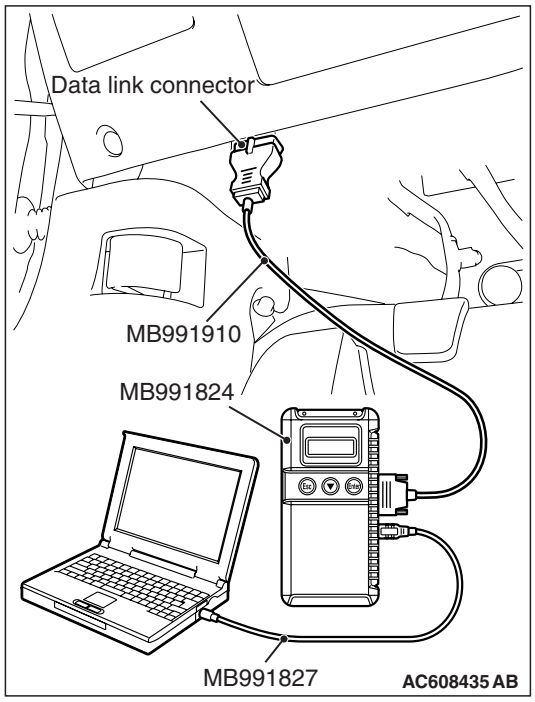
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to "ON" position.
(3) Operate the scan tool MB991958 to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).
(4) Check that the "Speaker" is set to "Premium."

Q: Is the check result normal?

YES : Go to Step 3.

NO : Operate scan tool MB991958 to set the option coding "Speaker" to "Premium," and check the trouble symptom.



STEP 3. Check the MMCS service mode, CAN communication confirmation, and coding data.

(1) Display the CAN Communication Confirmation and Coding Data of the MMCS service mode. (Refer to P.54A-369)
(2) Check if PREMIUM is displayed.

Q: Is the check result normal?

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

STEP 4. Check the service data log for the MMCS service mode.

With the service data log of MMCS service mode displayed, check if the service data log for SP (speaker) is displayed. (Refer to P.54A-369)

Q: Is the service data log for SP (speaker) displayed?

YES : Go to Step 5.
NO : Go to Step 8.

STEP 5. Using scan tool MB991958, diagnose the CAN bus line.

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

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the CAN bus line.

STEP 6. Using scan tool MB991958, read the CAN box unit diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.

Q: Is the DTC set?

YES : Troubleshoot the MMCS (Refer to P.54A-384).
NO : Go to Step 7.

STEP 7. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.

Check if the diagnostic trouble code is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to GROUP 54A – ETACS-ECU –Troubleshooting P.54A-582).
NO : Go to Step 8.

STEP 8. Check the service data log for the MMCS service mode.

(1) Display the service data log for the MMCS service mode. (Refer to P.54A-369)
(2) Check if the service data log for drive and HDD is displayed.

Q: Is the service data log displayed?

YES (The service data log for drive is displayed.) : Perform Inspection Procedure 8 "No CD (compact disk)/DVD (Video Disk) cannot be Played."(Refer to P.54A-439.) or Inspection Procedure 9 "Image of a DVD (Video Disk) is Played, but no Sound is Played." (Refer to P.54A-440.) Go to Step 9.

YES (The service data log for HDD is displayed.) : Abnormalities relating to high or low temperature may be present. Check if the multivision display can output the sound at the operable temperature. If it cannot output the sound, go to Step 9.

YES (The service data log for AMP is displayed.) : Go to Step 9.

NO : Go to Step 9.

STEP 9. Perform "Network/Connect Line Check" in the MMCS service mode.

(1) Display "Network/Connect Line Check" in the MMCS service mode. (Refer to P.54A-369)
(2) Check if "DVD Drive OK" is displayed.
(3) Check if "HDD Drive OK" is displayed.
(4) Check if "Premium Audio OK" is displayed.

Q: Is the check result normal?

YES : Go to Step 17.

NO : Go to Step 10.

STEP 10. Check audio amplifier connector D-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is audio amplifier connector D-29 in good condition?

YES : Go to Step 11.

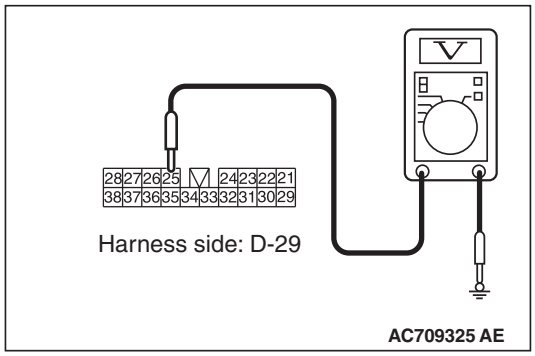
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 11. Check the power supply circuit to the audio amplifier. Measure the voltage at audio amplifier connector D-29.

(1) Disconnect audio amplifier connector D-29, and measure the voltage available at the wiring harness-side connector.

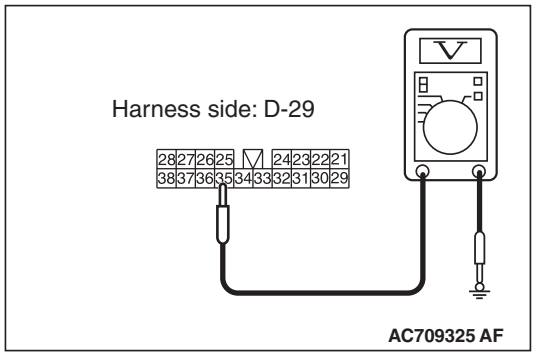
(2) Measure the voltage between terminal 25 and ground.

OK:Battery voltage.



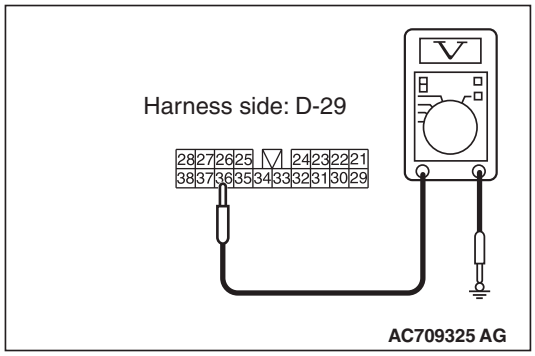
(3) Measure the voltage between terminal 35 and ground.

OK:Battery voltage.



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

OK:Battery voltage.



Q: Is the measured voltage battery voltage?

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

STEP 12. Check the wiring harness between audio amplifier connector D-25 (terminal 25, 35, 36) and fusible link (36).

NOTE: Also check intermediate connector C-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-47 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between audio amplifier connector D-29 (terminal 25, 35, 36) and fusible link (36) in good condition?

YES : Go to Step 13.

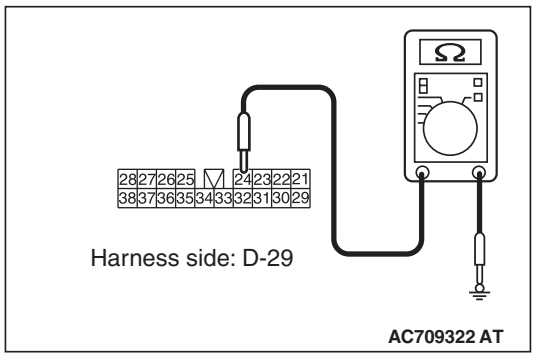
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 13. Check the ground circuit to the audio amplifier. Measure the resistance at audio amplifier connector D-29.

(1) Disconnect audio amplifier connector D-29, and measure the resistance available at the wiring harness side of the connector.

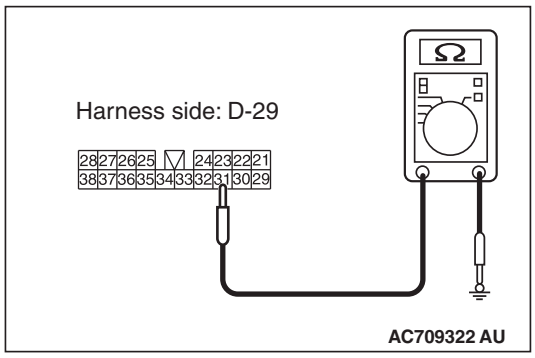
(2) Measure the resistance between terminal 24 and ground.

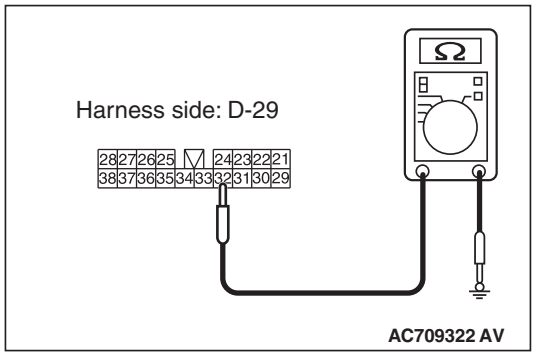
OK: The resistance should be 2 ohms or less



(3) Measure the resistance between terminal 31 and ground.

OK: The resistance should be 2 ohms or less





(4) Measure the resistance between terminal 32 and ground.

OK: The resistance should be 2 ohms or less

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 15.
NO : Go to Step 14.

STEP 14. Check the wiring harness between audio amplifier connector D-29 (terminal 24, 31, 32) and ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between audio amplifier connector D-25 (terminal 24, 31, 32) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 15. Check multivision display connector C-09, C-13 and audio amplifier connector D-30 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is multivision display connector C-09, C-13 and audio amplifier connector D-30 in good condition?

YES : Go to Step 16.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 16. Check the wiring harness between multivision display connector C-09 (terminal 72) and audio amplifier connector D-30 (terminal 3)

NOTE: Also check intermediate connectors C-110 and C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 or C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between multivision display connector C-09 (terminal 72) and audio amplifier connector D-30 (terminal 3) in good condition?

YES : Go to Step 17.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 17. Check the wiring harness between multivision display connector C-13 (terminal 6) and audio amplifier connector D-29 (terminal 34)

NOTE: Also check intermediate connectors C-110 and C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 or C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between multivision display connector C-13 (terminal 6) and audio amplifier connector D-29 (terminal 34) in good condition?

YES : Go to Step 18.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 18. Retest the system

Check that the audio sound is output.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Go to Step 19.

STEP 19. Retest the system

Temporarily replace the multivision display, and check if the sound is output.

Q: Is the check result normal?

YES : Replace the multivision display.

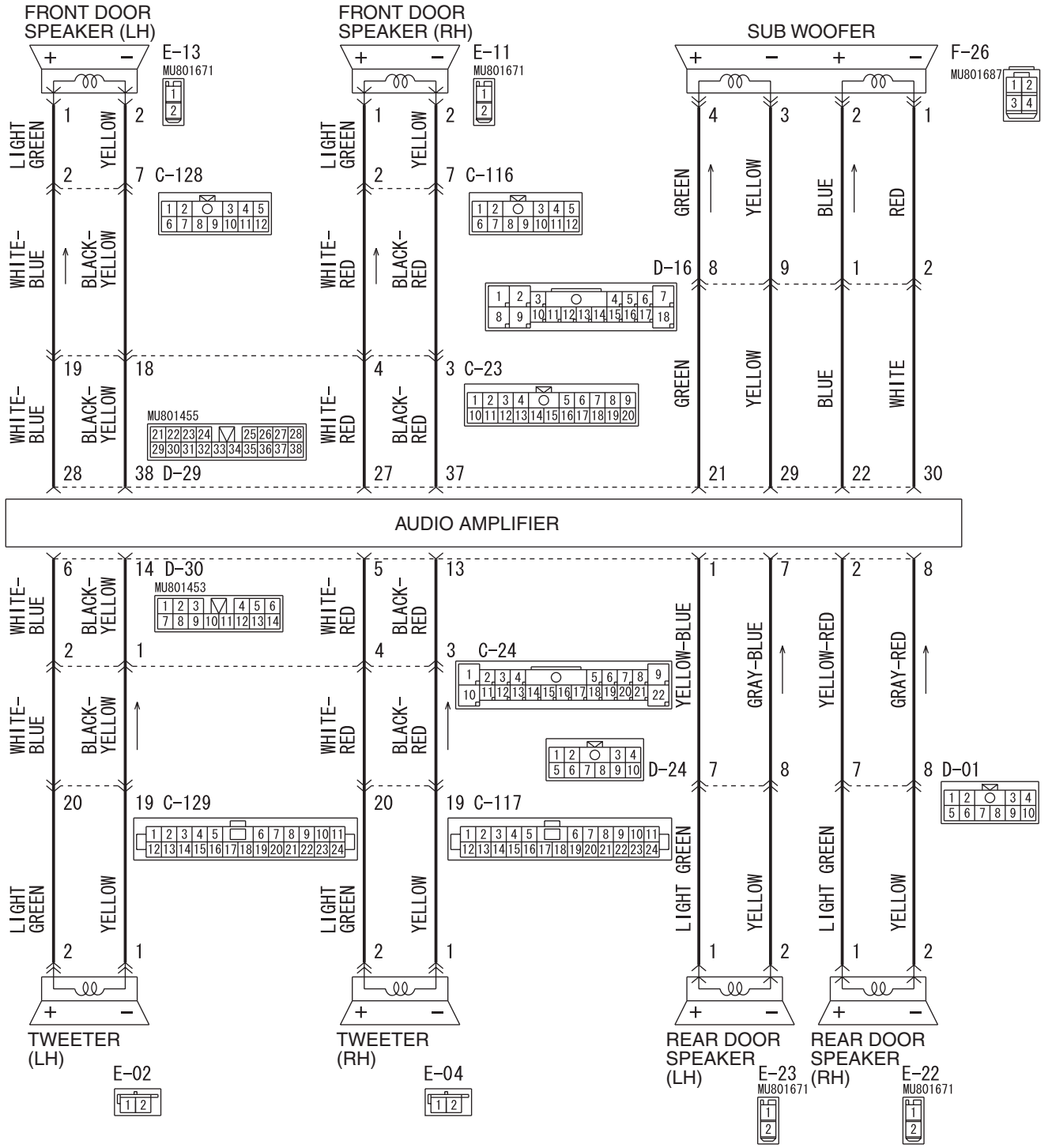
NO : Replace the audio amplifier.

Inspection Procedure 3: No sound is heard from one of the speakers. <Vehicles with audio amplifier>

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

Speaker System Circuit



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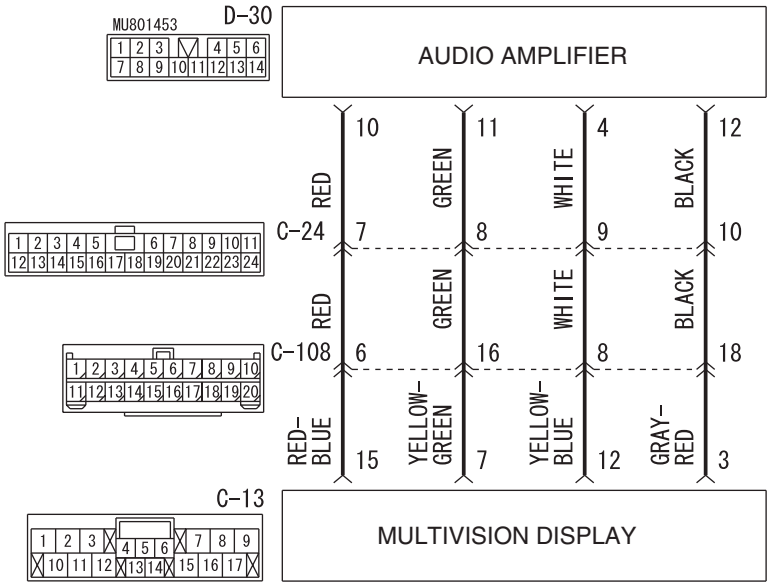

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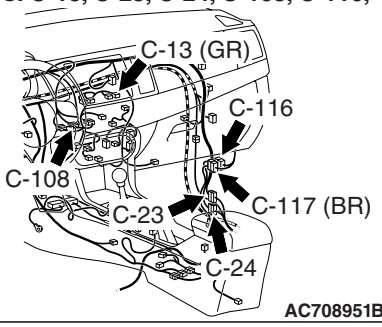
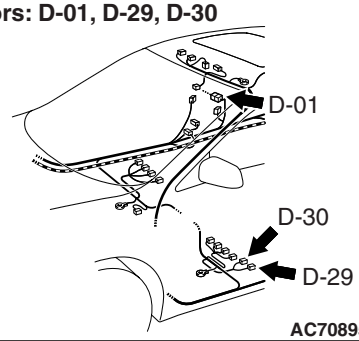
Connectors: C-13, C-23, C-24, C-108, C-116, C-117



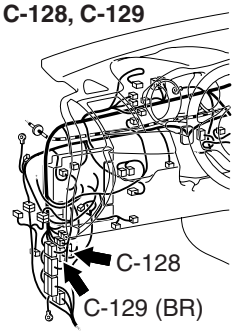
AC708951BO

Connectors: D-01, D-29, D-30



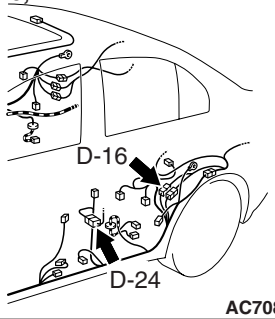
AC708954AS

Connectors: C-128, C-129



AC708950BH

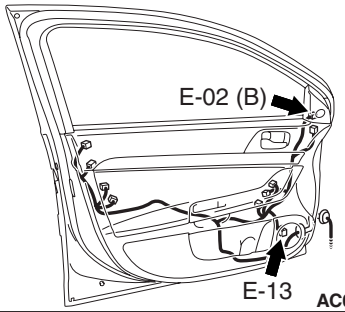
Connectors: D-16, D-24



AC708955AV

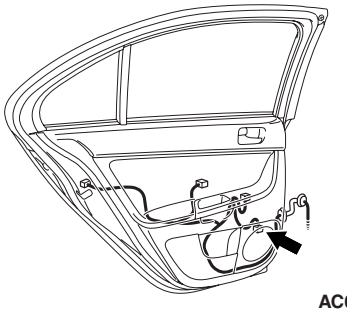
TSB Revision

Connectors: E-02, E-13



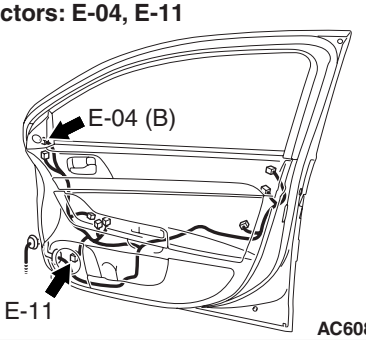
AC608167 AB

Connector: E-23



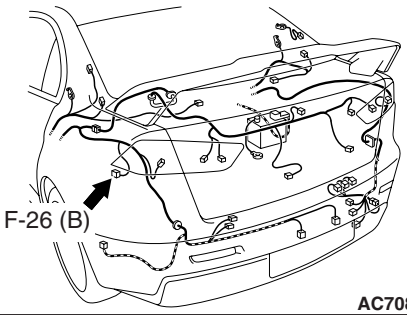
AC608169 AH

Connectors: E-04, E-11



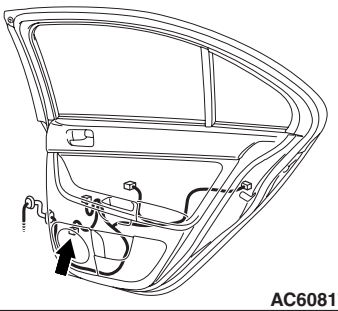
AC608168 AJ

Connector: F-26



AC708970 AP

Connector: E-22



AC608170 AI

COMMENTS ON TROUBLE SYMPTOM

If the sound is not heard from one of the speakers, the speaker, multivision display, audio amplifier, communication line from the multivision display to the audio amplifier, or communication line from the audio amplifier to the speaker may have a problem. Also, the option coding information may be inconsistent.

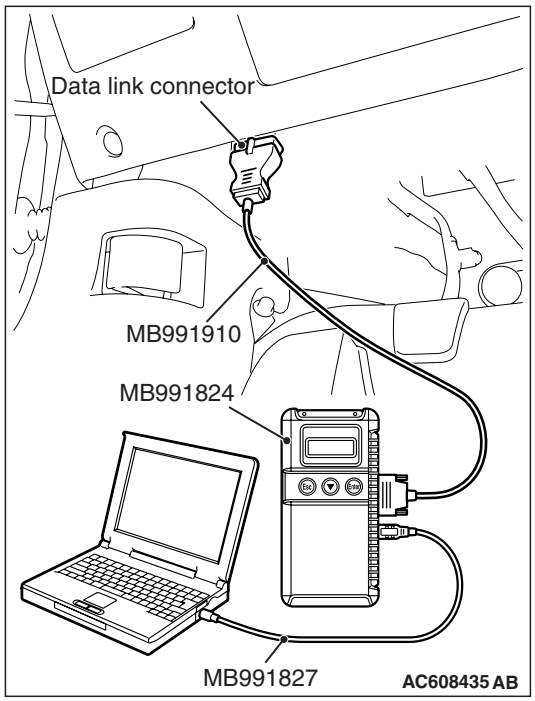
PROBABLE CAUSES

- The speaker may be defective
- The multivision display may be defective
- The audio amplifier may be defective
- Option coding information inconsistency
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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



STEP 1. Check the ETACS-ECU coding data.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-382."
(2) Turn the ignition switch to "ON" position.
(3) Operate the scan tool MB991958 to read the ETACS-ECU option coding information (Refer to GROUP 00, Coding Table P.00-39).
(4) Check that the "Speaker" is set to "Premium."

Q: Is the check result normal?

YES : Go to Step 2.
NO : Operate scan tool MB991958 to set the option coding "Speaker" to "Premium," and check the trouble symptom.

STEP 2. Check the MMCS service mode, CAN communication confirmation, and coding data.

(1) Display the CAN Communication Confirmation and Coding Data of the MMCS service mode. (Refer to P.54A-369)
(2) Check if PREMIUM is displayed.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Go to Step 4.

STEP 3. Check the service data log for the MMCS service mode.

With the service data log of MMCS service mode displayed, check if the service data log for SP (speaker) is displayed. (Refer to P.54A-369.)

Q: Is the service data log for SP (speaker) displayed?

YES : Go to Step 4.
NO : Go to Step 7.

STEP 4. Using scan tool MB991958, diagnose the CAN bus line.

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

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the CAN bus line.

STEP 5. Using scan tool MB991958, read the CAN box unit diagnostic trouble code.

Check again if the DTC is set to the CAN box unit.

Q: Is the DTC set?

YES : Troubleshoot the MMCS (Refer to P.54A-384).
NO : Go to Step 6.

STEP 6. Using scan tool MB991958, read the ETACS-ECU diagnostic trouble code.

Check if the diagnostic trouble code is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to GROUP 54A – ETACS-ECU –Troubleshooting P.54A-582).
NO : Go to Step 7.

STEP 7. Checking with audio speaker check

Perform the audio speaker check, and check which speaker does not output the sound (Refer to P.54A-369).

NOTE: In the following procedure, check the speaker, tweeter or subwoofer that is abnormal.

Q: Is the check result normal?

YES (normal for all) : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).
NO (Either a speaker, a tweeter or a subwoofer is abnormal) : Go to Step 8.

STEP 8. Check door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH>, or subwoofer connector F-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door speaker connector E-13 <front-LH>, E-11 <front-RH>, E-23 <rear-LH> or E-22 <rear-RH>, or tweeter connector E-02 <LH> or E-04 <RH>, or subwoofer connector F-26 in good condition?

YES : Go to Step 9.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 9. Check the speaker, tweeter or subwoofer.

(1) Remove the speaker, tweeter or subwoofer (Refer to P.54A-575).
(2) Check that the speaker or tweeter outputs the noise when the voltage of 5 V is applied to the speaker or tweeter connector terminal. <speaker or tweeter>
(3) Check that the subwoofer outputs the noise when the voltage of 5 V is applied to the subwoofer connector terminal. <subwoofer>

Q: Does the speaker, tweeter or subwoofer output the noise?

YES : Go to Step 10.
NO : Replace the speaker, tweeter or subwoofer.

STEP 10. Check audio amplifier connector D-29 <front door speaker or sub woofer> or D-30 <tweeter or rear door speaker> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is audio amplifier connector D-29 <front door speaker or sub woofer> or D-30 <tweeter or rear door speaker> in good condition?

YES : Go to Step 11.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 11. Check the wiring harness between the speaker or tweeter connector terminal and the audio amplifier connector terminal.

Check the communication lines for open circuit and short circuit.

- <Front door speaker (LH)> Check the wiring harness between front door speaker (LH) connector E-13 (terminal 1, 2) and audio amplifier connector D-29 (terminal 28, 38).

  NOTE: . Also check intermediate connectors C-23 and C-128 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or C-128 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Front door speaker (RH)> Check the wiring harness between front door speaker (RH) connector E-11 (terminal 1, 2) and audio amplifier connector D-29 (terminal 27, 37).

  NOTE: . Also check intermediate connectors C-23 and C-116 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- <Rear door speaker (LH)> Check the wiring harness between rear door speaker (LH) connector E-23 (terminal 1, 2) and audio amplifier connector D-30 (terminal 1, 7).

  NOTE: . Also check intermediate connector D-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Rear door speaker (RH)> Check the wiring harness between rear door speaker (RH) connector E-22 (terminal 1, 2) and audio amplifier connector D-30 (terminal 2, 8).

  NOTE: . Also check intermediate connector D-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Tweeter (LH)> Check the wiring harness between tweeter (LH) connector E-02 (terminal 1, 2) and audio amplifier connector D-30 (terminal 14, 6).

  NOTE: Also check intermediate connectors C-24 and C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or C-129 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Tweeter (RH)> Check the wiring harness between tweeter (RH) connector E-04 (terminal 1, 2) and audio amplifier connector D-30 (terminal 13, 5).

  NOTE: Also check intermediate connectors C-24 and C-117 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or C-117 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.
- <Subwoofer> Check the wiring harness between subwoofer connector F-26 (terminal 1, 2, 3, 4) and audio amplifier connector D-29 (terminal 30, 22, 29, 21).

  NOTE: Also check intermediate connector D-16 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-16 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between the speaker, tweeter or subwoofer connector terminal and the audio amplifier connector terminal in good condition?

YES <front door speaker> : Go to Step 12.
YES <except front door speaker> : Go to Step 14.
NO (harness wire is abnormal) : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

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STEP 12. Check multivision display connector C-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is multivision display connector C-13 in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 13. Check the wiring harness between multivision display connector C-13 (terminal 3, 7, 12, 15) and audio amplifier connector D-30 (terminal 12, 11, 4, 10).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connectors C-24 and C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between multivision display connector C-13 (terminal 3, 7, 12, 15) and audio amplifier connector D-30 (terminal 12, 11, 4, 10) in good condition?

YES : Check the trouble symptom, go to Step 14.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 14. Replace the multivision display temporarily, and check the trouble symptom.

Replace the multivision display temporarily, and check that the sound is output from the speaker.

Q: Is the check result normal?

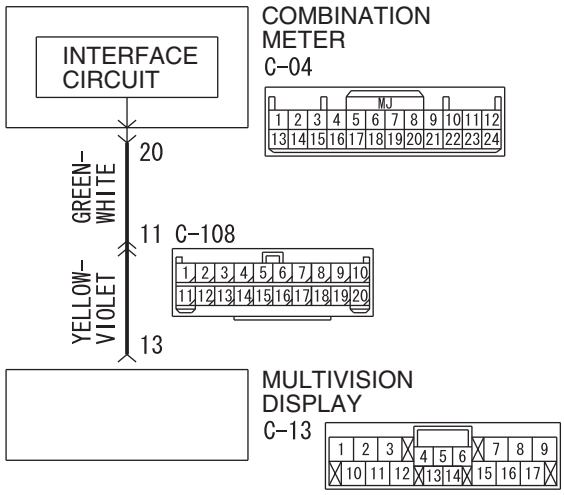
YES : Replace the multivision display.

NO : Replace the audio amplifier.

Inspection Procedure 4: The navigation system can be operated while the vehicle is driven.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

Multivision Display Communication Circuit



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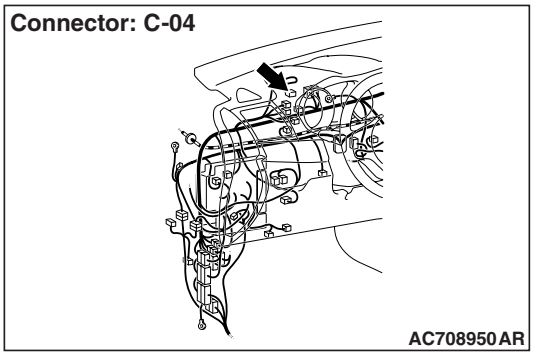

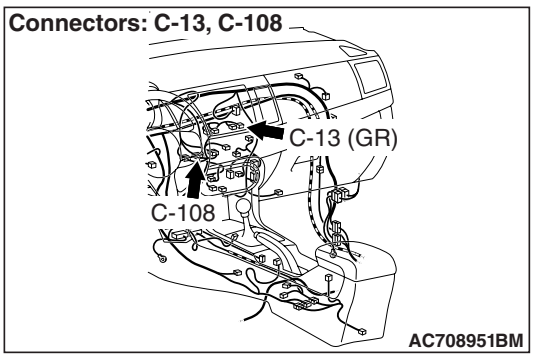

COMMENTS ON TROUBLE SYMPTOM

There is a failure in the wiring harness between the combination meter and the multivision display, the respective connector(s), the combination meter or the multivision display.

PROBABLE CAUSES

- The combination meter may be defective
- The multivision display may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)

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

STEP 1. Perform "Vehicle Signal Check" in the MMCS service mode.
Perform "Vehicle Signal Check" in the MMCS service mode to check whether vehicle speed signal is normal (Refer to P.54A-369).

Q: Is the vehicle speed signal transmitted normally?
YES : Replace the multivision display.
NO : Go to Step 2.

STEP 2. Check the speedometer.
Check whether the speedometer works normally.

Q: Does the speedometer work normally?
YES : Go to Step 3.
NO : Diagnose the combination meter (Refer to Combination meter –Troubleshooting P.54A-59).

STEP 3. Check combination meter connector C-04 and multivision display connector C-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 and multivision display connector C-13 in good condition?
YES : Go to Step 4.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 4. Check the wiring harness between combination meter connector C-04 (terminal 20) and multivision display connector C-13 (terminal 13).
- Check the communication lines for open circuit and short circuit..

NOTE: Also check intermediate connector C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector C-04 (terminal 20) and multivision display connector C-13 (terminal 13) in good condition?
YES : Go to Step 5.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Substitute a known good multivision display, and check the trouble symptom.
Check that no menus are active during driving.

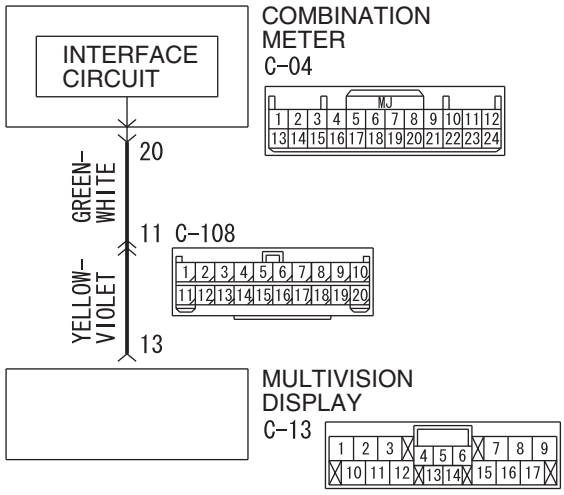
Q: Is the check result normal?

YES : Replace the multivision display.
NO : Replace the combination meter.

Inspection Procedure 5: The screen is not normal in the navigation mode. (The own vehicle mark is dislocated.)

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

Multivision Display Communication Circuit



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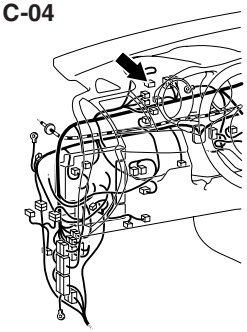
Connector: C-04



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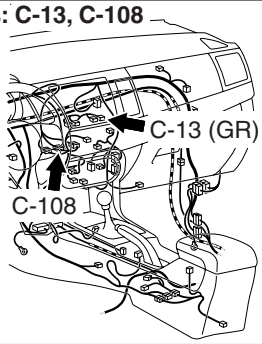
Connectors: C-13, C-108



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TSB Revision

COMMENTS ON TROUBLE SYMPTOM

There is a failure in the wiring harness between the combination meter and the multivision display, the GPS antenna, the respective connector(s), the combination meter or the multivision display.

PROBABLE CAUSES

- The GPS antenna may be defective
- The combination meter may be defective
- The multivision display may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Confirmation in MMCS service mode

Check the items below in the MMCS service mode. (Refer to P.54A-369.)

- Perform "Network/Connect Line Check" in the MMCS service mode to check that the communication and wire connection with the GPS are in good condition.
- Perform "Vehicle Signal Check", and then check the status of the vehicle speed signal.
- Perform "Sensor Check", and then check the status of the vehicle speed sensor and the gyro sensor.

Q: Is the check result normal?

YES (OK for all) : Go to Step 6.
NO <GPS is not OK> : Go to Step 2.
NO <The vehicle speed sensor is not OK, or vehicle speed pulse does not increase after starting from a standstill> : Go to Step 3.
NO <Gyro sensor is not OK> : Go to Step 6.

STEP 2. GPS reception check

(1) Start the multivision display.
(2) Press the [INFO] button.
(3) Select [Vehicle Position].
(4) Check if the GPS signals are received.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Perform Inspection procedure 7 "GPS signal cannot be received."(Refer to P.54A-438.) Then, go to Step 6.

STEP 3. Check the speedometer.

Check whether the speedometer works normally.

Q: Does the speedometer work normally?

YES : Go to Step 4.
NO : Diagnose the combination meter (Refer to Combination meter –Diagnosis P.54A-59).

STEP 4. Check combination meter connector C-04 and multivision display connector C-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 and multivision display connector C-13 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 5. Check the wiring harness between combination meter connector C-04 (terminal 20) and multivision display connector C-13 (terminal 13).

- Check the communication lines for open circuit and short circuit..

NOTE: Also check intermediate connector C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector C-04 (terminal 20) and multivision display connector C-13 (terminal 13) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 6. Retest the system.

Drive the vehicle for some time with the GPS signals being received, and check if the own vehicle mark is dislocated.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the multivision display.

Inspection Procedure 6: Poor reception.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

COMMENTS ON TROUBLE SYMPTOM

In case of poor reception, the roof antenna (antenna rod, antenna base), antenna feeder, or multivision display may have a problem.

NOTE: The radio wave may not be received if the vehicle is placed in the area which is exposed to a special electric field. Thus, check that the radio broadcasting can be received using the radio of another vehicle before carrying out diagnosis.

PROBABLE CAUSES

- The roof antenna (antenna rod, antenna base) may be defective
- The antenna feeder may be defective
- The multivision display may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Check the state of the roof antenna.

Q: Is the roof antenna assembled?
YES : Go to Step 2.
NO : Assemble the antenna. Check that a poor reception is resolved.

STEP 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?
YES : Go to Step 3.
NO : Go to Step 4.

STEP 3. Move the vehicle and check the radio.
Move the vehicle to a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?
YES : Check that a poor reception is resolved.
NO : Go to Step 4.

STEP 4. Tune the radio, and then check it.

Q: Did the sensitivity improve after tuning?
YES : Check that a poor reception is resolved.
NO : Go to Step 5.

STEP 5. Check with several broadcasting stations.

NOTE: Two types of noise are addressed in this procedure, multipath and fading noise. The frequency of FM waves is extremely high. This makes them susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in many ways.

- *Multipath noise is the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*
- *A fading or buzzing noise may occur when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates within a narrow range.*

Q: Is the abnormality in reception generated only within a certain range?
YES : Check that a poor reception is resolved.
NO : Go to Step 6.

STEP 6. Check the connection of the antenna plug and multivision display.

Q: Is the antenna plug thoroughly connected to the multivision display?
YES : Go to Step 7.
NO : Thoroughly connect the antenna plug and the multivision display. Check that a poor reception is resolved.

STEP 7. Check by replacing multivision display.

Q: Do the other multivision display work normally?
YES : Either repair or replace the original multivision display. Check that a poor reception is resolved.
NO : Either repair or replace the antenna assembly. Check that a poor reception is resolved.

Inspection Procedure 7: GPS signal can not be received.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit and the grounding circuit are normal. (Check that the voltage is 10 V or more.)

COMMENTS ON TROUBLE SYMPTOM

The GPS antenna or the multivision display may be defective.

PROBABLE CAUSES

- The GPS antenna may be defective
- The multivision display may be defective

DIAGNOSIS

STEP 1. Confirmation in MMCS service mode
Perform "Network/Connect Line Check" in the MMCS service mode to check that the communication and wire connection with the GPS antenna are OK. (Refer to P.54A-369.)

Q: Is the check result normal?

YES : Go to Step 2.
NO : Check that the GPS antenna is correctly connected to the multivision display, and go to Step 3.

STEP 2. Check for the vehicle's current position.
Check that the vehicle is parked on a well-ventilated place.

Q: Is the vehicle parked on a well-ventilated place?

YES : Go to Step 3.
NO : Move the vehicle to a well-ventilated area.

STEP 3. Confirming GPS signal reception
(1) Start the multivision display.
(2) Press the [INFO] button.
(3) Select [Vehicle Position].
(4) Wait for 5 minutes, and then check whether GPS signal can be received.

Q: Can GPS signal be received?

YES : The diagnosis is complete. (There is no failure)
NO : Go to Step 4.

STEP 4. Substitute a known good multivision display, and check the trouble symptom.
(1) Temporarily replace the multivision display.
(2) Start the multivision display.
(3) Press the [INFO] button.
(4) Select [Vehicle Position].
(5) Check if the GPS signals are being received after 5 minutes have elapsed.

Q: Is the check result normal?

YES : Replace the multivision display.
NO : Replace the GPS antenna.

Inspection Procedure 8: CD (compact disk)/DVD (Video Disk) cannot be played.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

COMMENTS ON TROUBLE SYMPTOM

The CD (compact disk)/DVD (Video Disk) or the multivision display may be defective.

PROBABLE CAUSES

- Defective DVD (video disk)
- The multivision display may be defective

DIAGNOSIS

STEP 1. Check the CD (compact disk)/DVD (video disk) insertion surface.
Check if the CD (compact disk)/DVD (video disk) is inserted with its correct surface facing upward.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Confirm the disk face, and insert it again. (If the disk is single-sided, its label should face up)

STEP 2. Check the CD (compact disk)/DVD (video disk).
- Check that the DVD (video disk) has the correct region code.
- Check if the CD (compact disk) corresponds with the multivision display.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Use the DVD (video disk) with a correct region code. Or use the CD (compact disk) which corresponds with the multivision display.

STEP 3. Check the CD (compact disk)/DVD (video disk).
Check that the CD (compact disk)/DVD (video disk) is free of dirt or scratch.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Clean the disk, use a disk without scratches and burrs, or remove the burrs from the disk. Then, reinsert the disk.

STEP 4. Temporarily replace the CD (compact disk)/DVD (video disk) with another one, and check the trouble symptom.
Check if another CD (compact disk)/DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : Replace the used CD (compact disk)/DVD (video disk).
NO : Go to Step 5.

STEP 5. Check the service data log for the MMCS service mode.
(1) Display the service data log for the MMCS service mode. (Refer to P.54A-369.)
(2) Check if the service data log for drive and HDD is displayed.

Q: Is the service data log displayed?
YES (The service data log for drive is displayed.) : Check for foreign materials or condensation. Repair if there is an abnormality, and then go to Step 6.
YES (The service data log for HDD is displayed.) : Abnormalities relating to high or low temperature may be present. Check if the multivision display can be played at the operable temperature. If it cannot be played, go to Step 6.
NO : Go to Step 6.

STEP 6. Perform "Network/Connect Line Check" in the MMCS service mode.
(1) Display "Network/Connect Line Check" in the MMCS service mode. (Refer to P.54A-369.)
(2) Check if "DVD Drive OK" is displayed.
(3) Check if "HDD Drive OK" is displayed.

Q: Is the check result normal?
YES : Go to Step 7.
NO : Replace the multivision display.

STEP 7. Retest the system.
Check if the CD (compact disk)/DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : The diagnosis is complete.
NO : Go to Step 8.

TSB Revision

STEP 8. Temporarily replace the multivision display, and check the trouble symptom.
After temporary replacement of the multivision display, check that the CD (compact disk)/DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : Replace the multivision display.
NO : Replace the CD (compact disk)/DVD (video disk).

Inspection Procedure 9: Image of a DVD (Video Disk) is played, but no sound is played.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

COMMENTS ON TROUBLE SYMPTOM
The DVD (video disk) or the multivision display may be defective.

PROBABLE CAUSES
- Defective DVD (video disk)
- The multivision display may be defective

DIAGNOSIS

STEP 1. Check whether other sounds are emitted.
Check whether sound other than DVD (video disk) is emitted.
(1) Check if the sound is output when the music server is used.
(2) Check if the sound is output when the radio is used.
(3) Check if the sound is output when a CD (compact disk) is used.

Q: Is sound other than DVD (video disk) emitted?
YES : Go to Step 2.
NO : Diagnose the MMCS. (Refer to P.54A-408.)

STEP 2. Check a DVD (video disk) to be inserted.
Check if the sound is recorded in the DVD (video disk), using other DVD players.

Q: Is sound data recorded in the DVD (video disk)?
YES : Go to Step 3.
NO : Use a DVD (video disk) containing sound data.

STEP 3. Check the DVD (video disk).
Check that the DVD (video disk) is free of dirt or scratch.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Clean the disk, use a disk without scratches and burrs, or remove the burrs from the disk. Then, reinsert the disk.

STEP 4. Temporarily replace the DVD (video disk) with another DVD, and check the trouble symptom.
Check if the DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : Replace the used DVD (video disk).
NO : Go to Step 5.

STEP 5. Check the service data log for the MMCS service mode.
(1) Display the service data log for the MMCS service mode. (Refer to P.54A-369.)
(2) Check if the service data log for drive and HDD is displayed.

Q: Is the service data log displayed?
YES (The service data log for drive is displayed.) : Check for foreign materials or condensation. Repair if there is an abnormality, and then go to Step 6.
YES (The service data log for HDD is displayed.) : Abnormalities relating to high or low temperature may be present. Check if the multivision display can be played at the operable temperature. If it cannot be played, go to Step 6.
NO : Go to Step 6.

TSB Revision

STEP 6. Perform "Network/Connect Line Check" in the MMCS service mode.
(1) Display "Network/Connect Line Check" in the MMCS service mode. (Refer to P.54A-369.)
(2) Check if "DVD Drive OK" is displayed.
(3) Check if "HDD Drive OK" is displayed.

Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 8.

STEP 7. Check the playing method.
Check whether the disk was played normally and not with special playback (fast rewind, fast forward, slow, pause). Also, check whether the mute mode was selected. After that, check if the DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : This diagnosis is complete.
NO : Go to Step 8.

STEP 8. Temporarily replace the multivision display, and check the trouble symptom.
After temporary replacement of the multivision display, check that the DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : Replace the multivision display.
NO : Replace the DVD (video disk).

Inspection Procedure 10: Sound of a DVD (Video Disk) can be played, but no image is played.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit and the grounding circuit are normal. (Check that the voltage is 10 V or more.)

COMMENTS ON TROUBLE SYMPTOM
The DVD (video disk) or the multivision display may be defective.

PROBABLE CAUSES
- Defective DVD (video disk)
- The multivision display may be defective

DIAGNOSIS

STEP 1. Check the DVD (video disk).
Check that the DVD (video disk) is free of dirt or scratch.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Clean the disk, use a disk without scratches and burrs, or remove the burrs from the disk. Then, reinsert the disk.

STEP 2. Temporarily replace the DVD (video disk) with another DVD (video disk), and check the trouble symptom.
Check if the new DVD (video disk) is played normally when it is inserted.

Q: Is the check result normal?
YES : Replace the used DVD (video disk).
NO : Go to Step 3.

STEP 3. Check the service data log for the MMCS service mode.

(1) Display the service data log for the MMCS service mode. (Refer to P.54A-369.)
(2) Check that the service data log for drive is displayed.
(3) Check that the service data log for monitor is displayed.
(4) Check that the service data log for HDD is displayed.

Q: Is the service data log displayed?

YES (The service data log for drive is displayed.) : Check for foreign materials or condensation. Repair if there is an abnormality, and then go to Step 4.

YES (The service data log for monitor or HDD is displayed.) : Abnormalities relating to high or low temperature may be present. Check if the DVD (video disk) image is displayed on the monitor within the temperature range where the navigation and menu screens can be displayed. If the image is not displayed, go to Step 4.

NO : Go to Step 4.

STEP 4. Perform "Network/Connect Line Check" in the MMCS service mode.

(1) Display "Network/Connect Line Check" in the MMCS service mode. (Refer to P.54A-369.)
(2) Check if "DVD Drive OK" is displayed.
(3) Check if "HDD Drive OK" is displayed.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the multivision display.

STEP 5. Temporarily replace the multivision display, and check the trouble symptom.

After temporary replacement of the multivision display, check if the DVD (video disk) image is displayed.

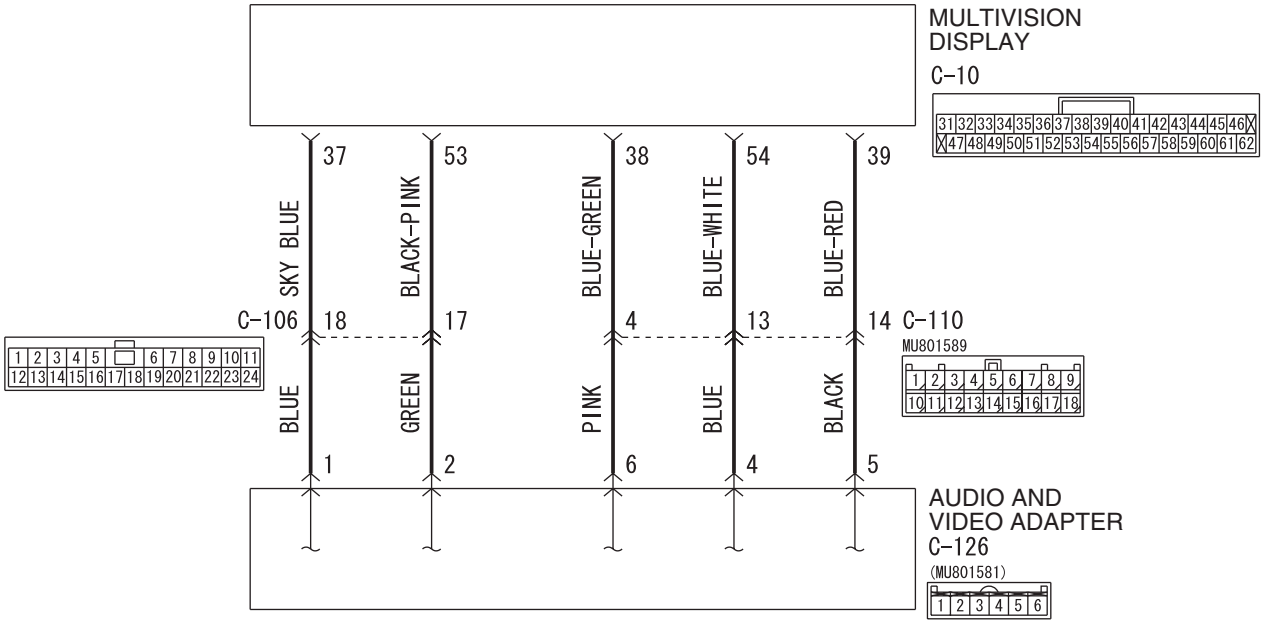
Q: Is the check result normal?

YES : Replace the multivision display.
NO : Replace the DVD (video disk).

Inspection Procedure 11: The picture and sound of external input are not played.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the power supply circuit and the grounding circuit are normal. (Check that the voltage is 10 V or more.)

Audio and Video Adapter Communication Circuit



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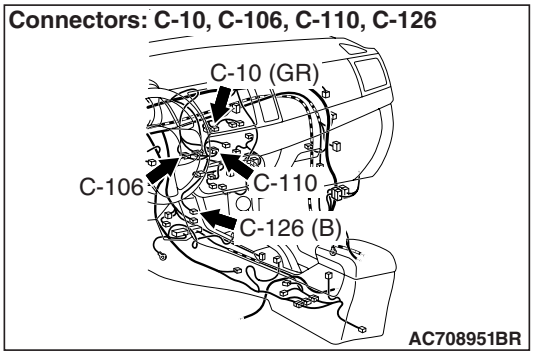


COMMENTS ON TROUBLE SYMPTOM

The wiring harness between audio and video adapter and multivision display, audio and video adapter, or multivision display may have a problem.

NOTE: Problem of the device to be connected and the connection problem between the audio and video adapter and the device is suspected. Thus, check the operation condition and connecting method of the devices to be connected to the multivision display and audio and video adapter before diagnosis.

PROBABLE CAUSES

- The multivision display may be defective
- The audio and video adaptor may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

TSB Revision

STEP 1. Check of DVD picture
Check that the DVD picture is displayed normally.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Perform the troubleshooting related to the MMCS (Refer to P.54A-408).

STEP 2. Check the audio and video adapter.
Inspect the audio and video adapter. (Refer to P.54A-455.)

Q: Is the check result normal?
YES : Go to Step 3.
NO : Replace the audio and video adapter.

STEP 3. Check multivision display connector C-10 and audio and video adaptor connector C-126 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are multivision display connector C-10 and audio and video adaptor connector C-126 in good condition?
YES : Go to Step 4.
NO : Repair the connector concerned.

STEP 4. Check the wiring harness between multivision display connector C-10 (terminal 37, 53, 38, 54, 39) and audio and video adaptor connector C-126 (terminal 1, 2, 6, 4, 5).
- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connectors C-106 and C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-106 or C-110 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between multivision display connector C-10 (terminal 37, 53, 38, 54, 39) and audio and video adaptor connector C-126 (terminal 1, 2, 6, 4, 5) in good condition?
YES : Go to Step 5.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Temporarily replace the multivision display, and check the trouble symptom.
Check that the external input is normal.

Q: Is the check result normal?
YES : Replace the multivision display.
NO : Replace the audio and video adapter.

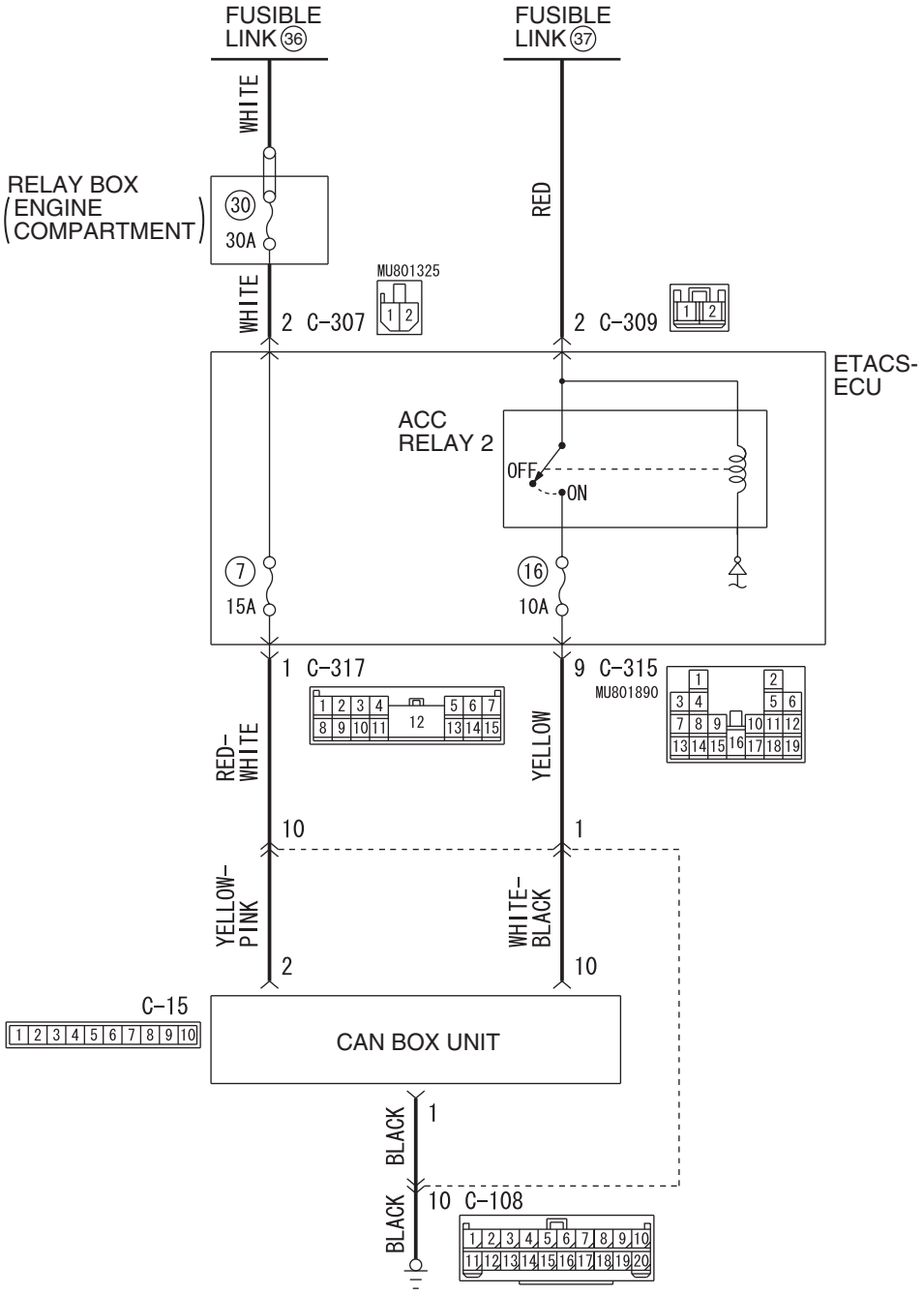
TSB Revision

Inspection Procedure 12: Check the CAN box unit power supply circuit.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal. (Check that the voltage is 10 V or more.)

CAN Box Unit Power Supply Circuit



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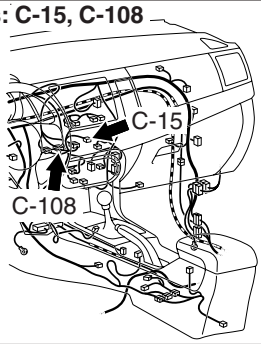
TSB Revision

Connectors: C-15, C-108



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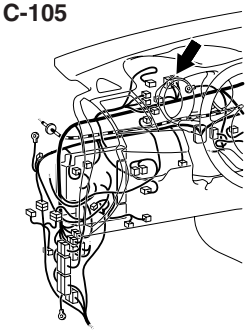
Connector: C-105



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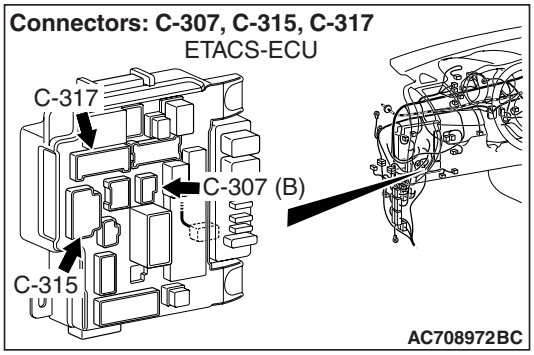
Connectors: C-307, C-315, C-317



AC708972BC

TECHNICAL DESCRIPTION (COMMENT)

If the CAN box unit functions do not work at all, the CAN box unit power supply system, ground system, or CAN box unit may have a problem.

PROBABLE CAUSES

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The CAN box unit may be defective

DIAGNOSIS

Required Special Tools:

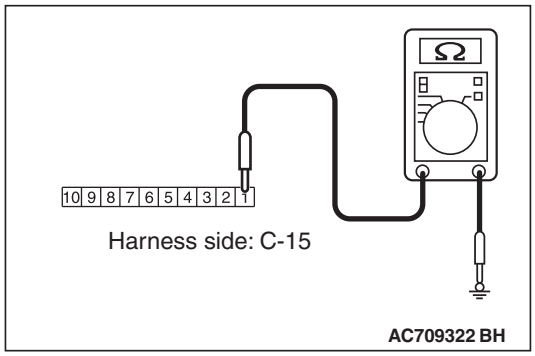
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Check CAN box unit connectors C-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is CAN box unit connectors C-15 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 2. Check the ground circuit to the CAN box unit. Measure the resistance at CAN box unit connector C-15.

(1) Disconnect CAN box unit connector C-15 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between CAN box unit connector C-15 terminal 1 and ground.

OK: The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between CAN box unit connector C-15 (terminal 1) and the ground.

- Check the ground wires for open circuit.

NOTE: Also check intermediate connector C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between CAN box unit connector C-15 (terminal 1) and the ground in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check the battery power supply circuit to the CAN box unit. Measure the voltage at CAN box unit connectors C-15.

(1) Disconnect CAN box unit connectors C-15 measure the voltage available at the wiring harness side of the connector.

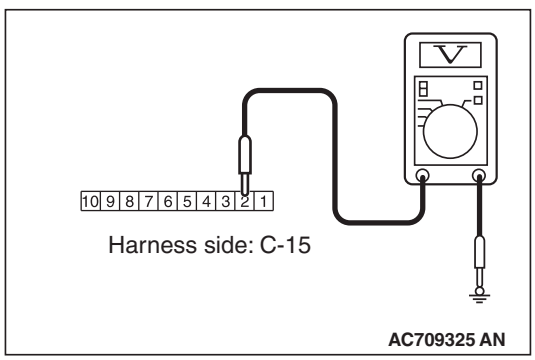
(2) Measure the voltage between CAN box unit connector C-15 terminal 2 and ground.

OK:Battery voltage.

Q: Is the measured voltage battery voltage?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between CAN box unit connector C-15 (terminal 2) and fusible link (36).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-105 and ETACS-ECU connectors C-307 and C-317 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 or ETACS-ECU connector C-307 or C-317 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between CAN box unit connector C-15 (terminal 2) and fusible link (36) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the CAN box unit normally.

STEP 6. Using scan tool MB991958, check data list.

Check the input signal of ACC relay.

- Turn the ignition switch to the ACC position.

Item No.	Item name	Normal conditions
Item 288	ACC switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 7.

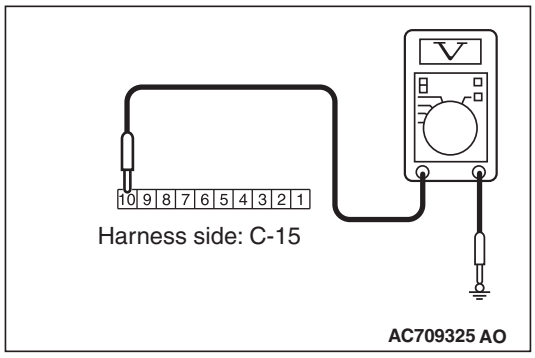
NO : Refer to GROUP 54A, ETACS, Diagnosis –Inspection Procedure 1 "The ignition switch (ACC) signal is not received P.54A-640."

STEP 7. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 8. Check the battery power supply circuit to the CAN box unit. Measure the voltage at CAN box unit connectors C-15.

(1) Disconnect CAN box unit connectors C-15 measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between CAN box unit connector C-15 terminal 10 and ground.

OK:Battery voltage.

Q: Is the measured voltage battery voltage?

YES : No action is necessary and testing is complete.

NO : Go to Step 9.

STEP 9. Check the wiring harness between CAN box unit connectors C-15 (terminal 10) and ETACS-ECU connector C-315 (terminal 9).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-108 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between CAN box unit connectors C-15 (terminal 10) and ETACS-ECU connector C-315 (terminal 9) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the CAN box unit normally.

ETACS FUNCTION CUSTOMIZATION FUNCTION

M1546023000066

The following ETACS functions can be customized by selecting "Equipment" on the "Settings" screen of the multivision display.

Group name	Setting item	Setting value
Keyless Entry System	Turn Signal Lights Answerback	Lock:Once Unlock:Twice (default)
		Lock:Once Unlock:Off
		Lock:Off Unlock:Twice
		Lock:Twice Unlock:Once
		Lock:Off Unlock:Once
		Lock:Twice Unlock:Off
		Lock:Off Unlock:Off
	Horn Answerback Sounds at Keyless Entry Lock <Vehicles without auto light>	Off
		One Button Push
		Two Button Pushes (default)
	Horn Answerback Sounds at Keyless Entry Lock <Vehicles with auto light>	Off
		One Button Push
		One Button Push at Daytime
		Two Button Pushes at Daytime (default)
	Duration of Horn Answerback Sounds	Short (default)
		Long
Keyless Operation System	Turn Signal Lights Answerback	Lock:Once Unlock:Twice (default)
		Lock:Once Unlock:Off
		Lock:Off Unlock:Twice
		Lock:Twice Unlock:Once
		Lock:Off Unlock:Once
		Lock:Twice Unlock:Off
		Lock:Off Unlock:Off
	Horn Answerback Sounds at Keyless Entry Lock <Vehicles without auto light>	Off
		One Button Push
		Two Button Pushes (default)
	Horn Answerback Sounds at Keyless Entry Lock <Vehicles with auto light>	Off
		One Button Push
		One Button Push at Daytime
		Two Button Pushes at Daytime (default)
	Duration of Horn Answerback Sounds	Short (default)
		Long

Group name	Setting item	Setting value
Keyless Operation System	Door Entry and Engine Start Function	Both Function On (default)
		Door Entry Function On
		Engine Start Function On
		Both Function Off
	Keyless Operation Answerback Beep Sounds	Off
		Sound at Keyless Operation (default)
		Sound at Keyless Entry
		Sound at both Keyless Entry and Keyless Operation
	Keyless Operation Auto Lock when Leaving	On (default)
		Off
	Time for Remote Unlock Inactivation after Locking	Off
		3 seconds (default)
		5 seconds
Wipers	Windshield Wipers Intermittent Operation <Vehicles without auto light >	4 seconds
		Variable
		Variable & Speed Sensitive (default)
	Windshield Wipers Intermittent Operation <Vehicles with auto light >	4 seconds
		Variable
		Variable & Speed Sensitive
		Variable & Rain Sensitive (default)
	Wipers Linked to Washer	Off
		On (default)

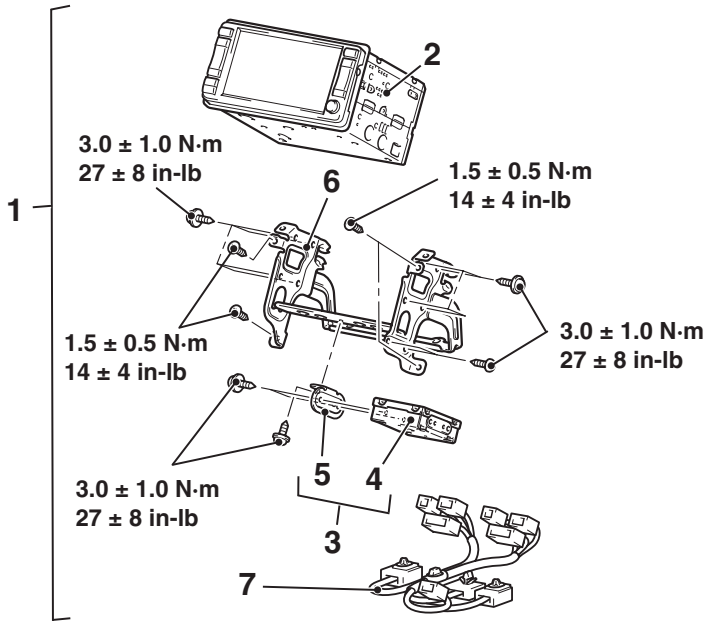
Group name	Setting item	Setting value
Exterior Lights/Interior Lights	Headlight Auto-cutout Function	Off
		On (default)
	Sensitivity for Auto Light	Early
		Somewhat Early
		Normal (default)
		Somewhat Late
		Late
	Interior Light Auto-cutout Time	Off
		3 minutes
		30 minutes (default)
		60 minutes
	Duration Dome Light Remains In after Door is Closed	0 seconds
		7.5 seconds
		15 seconds
		30 seconds (default)
		60 seconds
		120 seconds
		180 seconds
Theft Alarm	Panic Alarm	Off
		On (default)
Turn Signal	Operation in Key Position	Ignition Switch On or Accessory
		Ignition Switch On (default)
	Lane-change Signals (Flash Three Times with 1 Touch)	Off
		On (default)
Power Door Locks	Automatic Relocking after Unlocked by Remote	30 seconds (default)
		60 seconds
		120 seconds
		180 seconds
	Unlock Operation	All Doors
		Only Driver Door (default)
	Automatic Unlock when Transaxle Shifted to Park <Vehicles with TC-SST>	Off (default)
		On
Others	Auto Cut of ACC Power	No Auto Cut (default)
		Auto Cut after 30 minutes
		Auto Cut after 60 minutes

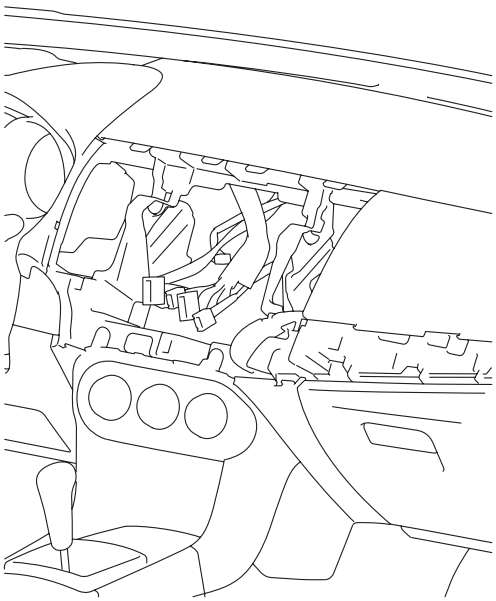
REMOVAL AND INSTALLATION

M1546001000240

Multivision display

Pre-removal operation	Post-installation operation
• Removal of Instrument center panel (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7)	• Installation of Instrument center panel (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7)





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Removal Step

1. Multivision display assembly
2. Multivision display
3. CAN box unit assembly
4. CAN box unit

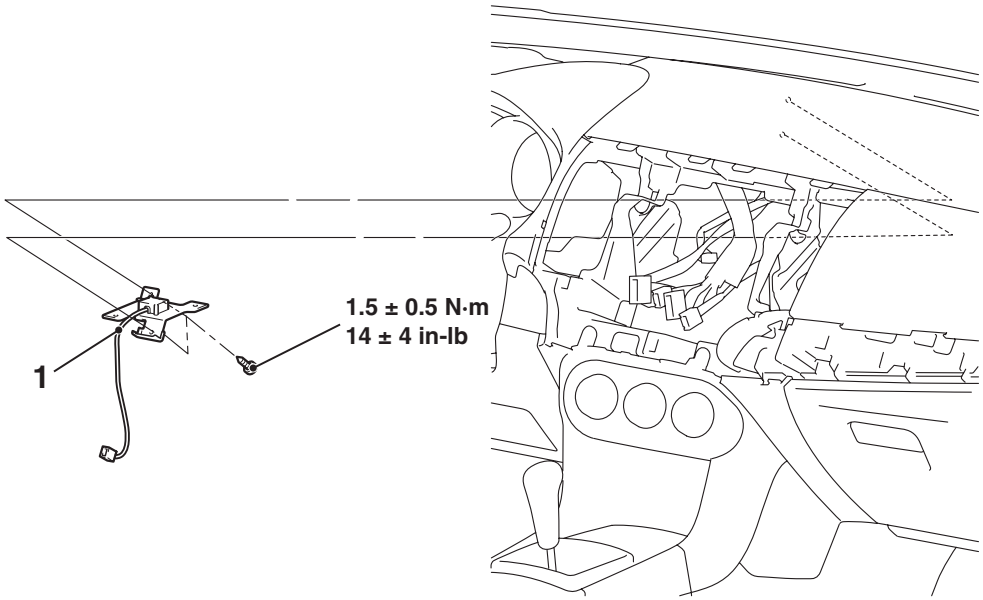
Removal Step (Continued)

5. CAN box unit bracket
6. Bracket (LH/RH)
7. Navigation harness

TSB Revision

GPS antenna

Pre-removal operation	Post-installation operation
• Removal of multivision display assembly	• Installation of multivision display assembly



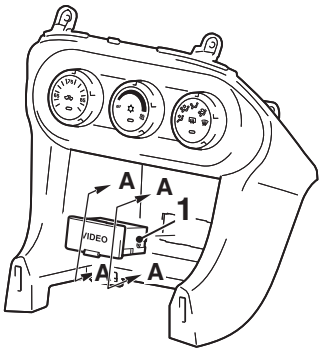
AC709281

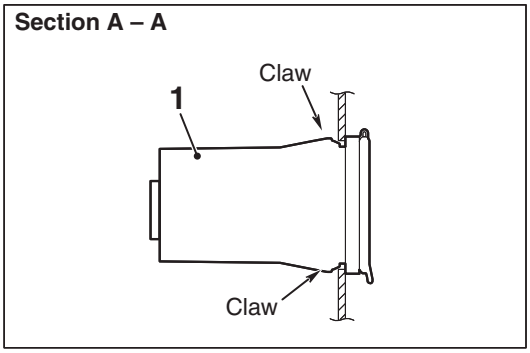
Removal Step

1. GPS antenna

Audio and video adaptor

Pre-removal operation	Post-installation operation
• Removal of instrument panel center lower (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7)	• Installation of instrument panel center lower (Refer to GROUP 52A –Instrument Center Panel assembly P.52A-7)





AC608892AE

Removal Step

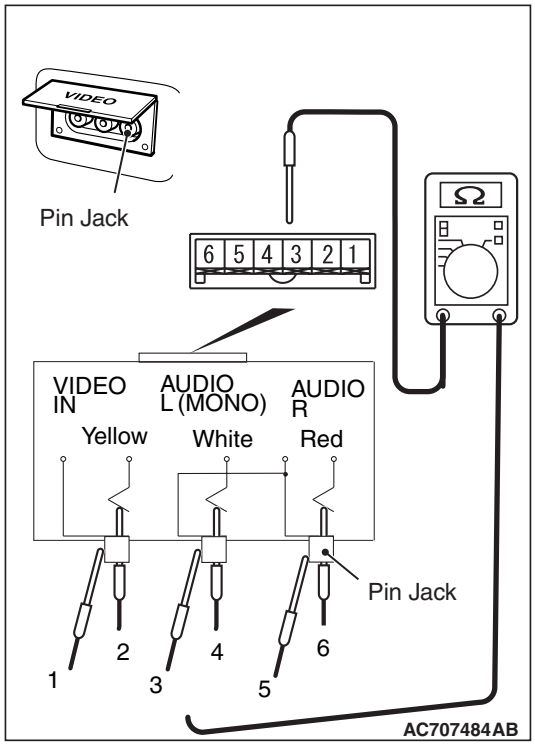
1. Audio and video adaptor

INSPECTION

AUDIO AND VIDEO ADAPTER INSPECTION

M1546312900011

1. Remove the audio and video adapter. (Refer to P.54A-453.)
2. Check that continuity exists between the terminal and the pin jack of audio and video adapter.



The connecting position of pin jack side circuit tester	Terminal number	Measurement value
1	2	Continuity exists (2 Ω or less)
2	1	
3	5	
4	4	
5	5	
6	6	

HANDS-FREE CELLULAR PHONE SYSTEM

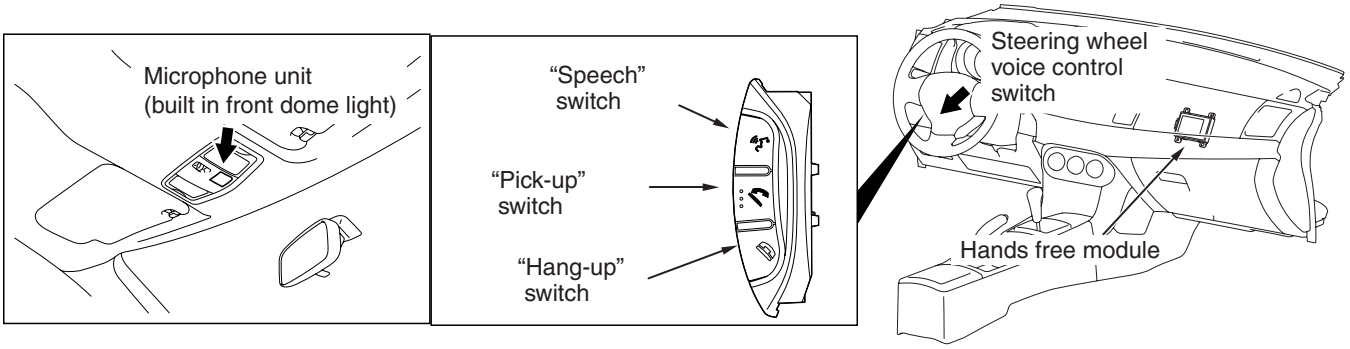
GENERAL INFORMATION

M1544401200031

With the hands free cellular phone system by registering a cellular phone for Bluetooth™* with voice recognition to the hands free module, the telephone function becomes available without operating the cellular phone directly. The hands free cellular phone system can be used without connecting the cellular phone to the vehicle via wiring cable.

*NOTE: *: Bluetooth™ is the short-distance digital wireless communication technology using 2.45 GHz frequency band. The communication effective area is within 10 m, and the feature is that the communication can be achieved even when an obstacle is present between the communicating devices.*

Construction diagram



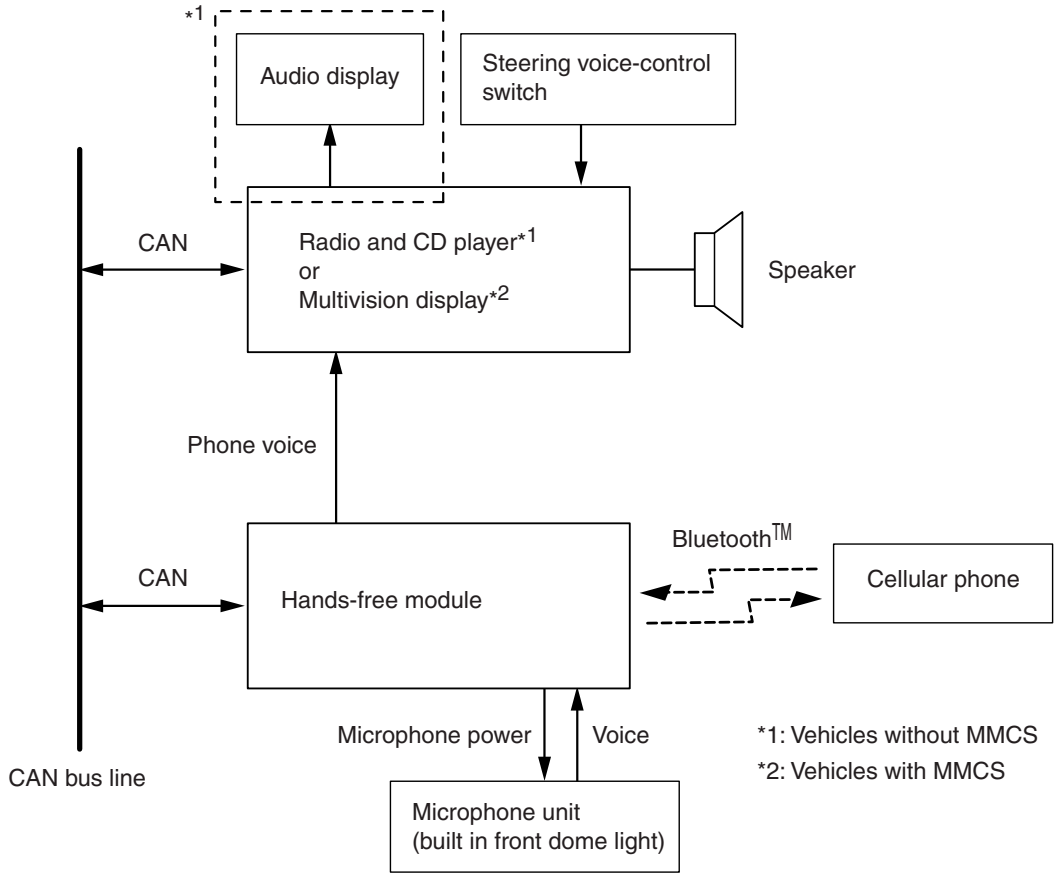
AC700417AE

When the registered cellular phone is inside the vehicle, the hands free cellular phone system operates as follows.

NOTE: The owner's manual contains details on pairing a cellular phone with the Bluetooth system, speaker enrollment, and other functions.

- When the cellular phone receives a call, the occupant can start conversation by pressing "Pick-up" in the steering voice control switches on the steering wheel. When the conversation ends, the occupant can finish the call by pressing "Hang-up" in the steering voice-control switches.
- To make a call, press "Speech" in the steering voice control switches on the steering wheel, call up the registered receiver's information in the voice input mode, press "Pick-up". Then, the transmission starts to call the receiver. Also, when the conversation ends, the occupant can finish the call by pressing "Hang-up" in the steering voice control switches.
- The communication directly via a cellular phone can be switched to the communication via a hands free device. Also, the communication via a hands free device can be switched to the communication directly via a cellular phone.
- The voice input mode corresponds to the following languages: English, American Spanish, Canadian French.
- The voice of occupant is picked up by the microphone unit incorporated in the front dome light, and then transmitted to the cellular phone via hands free module. Also, the receiver's voice is transmitted from the cellular phone to radio and CD player <vehicles without MMCS> or Multivision display <vehicles with MMCS> via hands free module, and then output from the vehicle-mounted speaker.
- Using the steering audio remote control switch, the volume can be adjusted.
- The reception state of the cellular phone is indicated on the display section of radio and CD player <vehicles without MMCS> or Multivision display <vehicles with MMCS>.

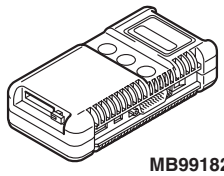
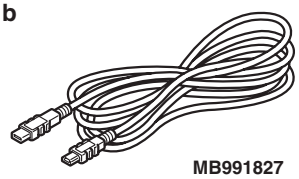
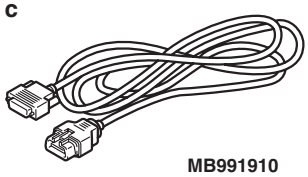
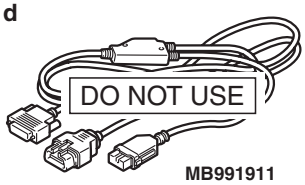
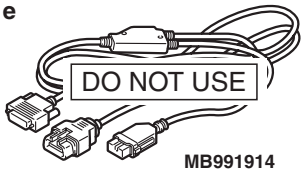
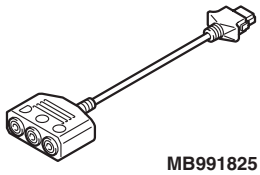
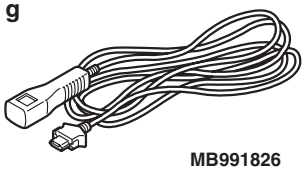
System block diagram

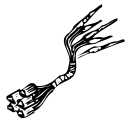
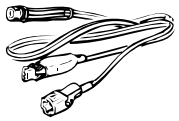
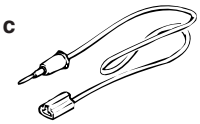
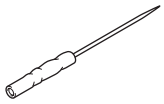


AC613221AH

SPECIAL TOOLS

M1544403500038

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540203800011

Refer to GROUP 00 –Contents of troubleshooting P.00-7.

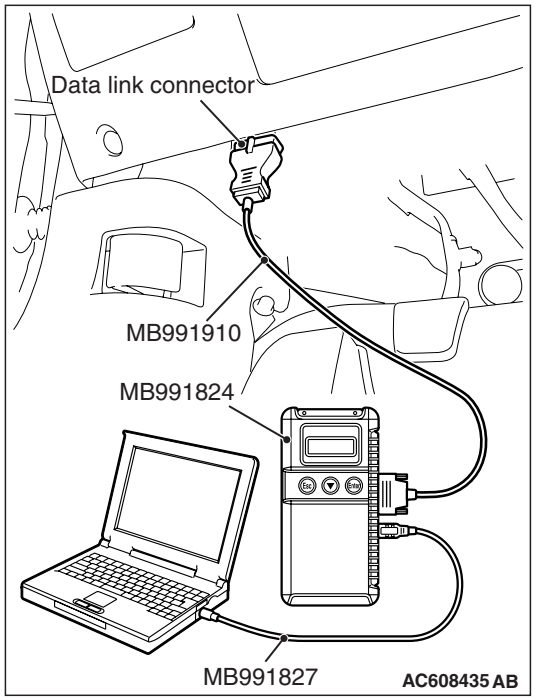
DIAGNOSIS FUNCTION

M1544403100041

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

Required Special Tools:

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



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "Meter" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using M.U.T.-III.

When detecting fault and storing the diagnostic trouble code, the ECU connected to CAN bus line obtains the data before the determination of the diagnostic trouble code and the data when the diagnostic trouble code is determined, and then stores the ECU status of that time. By analyzing each data from M.U.T.-III, the troubleshooting can be performed more efficiently. The displayed items are as the table below.

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the diagnostic trouble code is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
4	Accumulated minute	Cumulative time for current malfunction of diagnostic trouble code	min

DIAGNOSTIC TROUBLE CODE CHART

M1544403200015

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

DTC No.	Description	Reference page
B2468	Microphone input short to BATT	P.54A-463
B2470	Microphone input short to ground	
B2471	On hook button stuck	P.54A-466
B2472	Off hook button stuck	
B2473	VR button stuck	
B2475	VIN not programmed	P.54A-472
U0019	Bus off (CAN-B)	P.54A-473
U0141	ETACS CAN timeout	P.54A-475
U0151	SRS-ABG CAN timeout	P.54A-476
U0154	OCM CAN timeout	P.54A-478
U0155	Meter CAN timeout	P.54A-479
U0164	A/C CAN timeout	P.54A-481
U0168	WCM CAN timeout	P.54A-482
U0184	AUDIO CAN timeout	P.54A-484
U0195	Satellite radio CAN timeout	P.54A-485
U0245	AND CAN timeout	P.54A-487

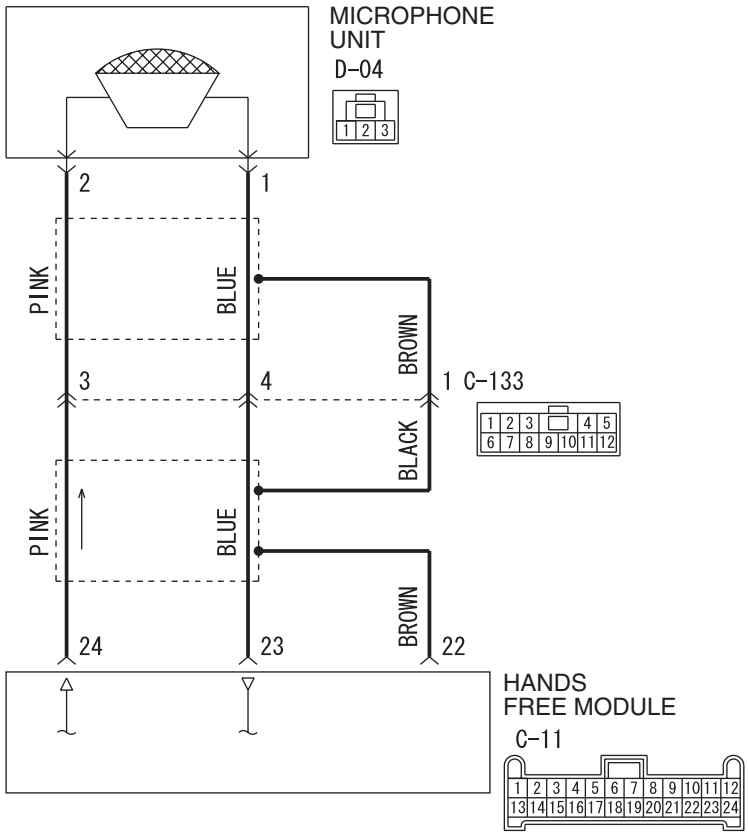
DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B2468: Microphone input short to BATT
DTC B2470: Microphone input short to ground

⚠ CAUTION

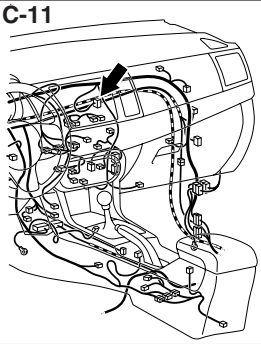
Before replacing the ECU, ensure that the communication circuit is normal.

Hands Free Cellular Phone System Circuit



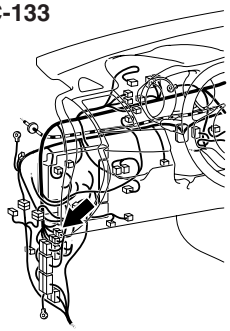
W8G54M125A

Connector: C-11



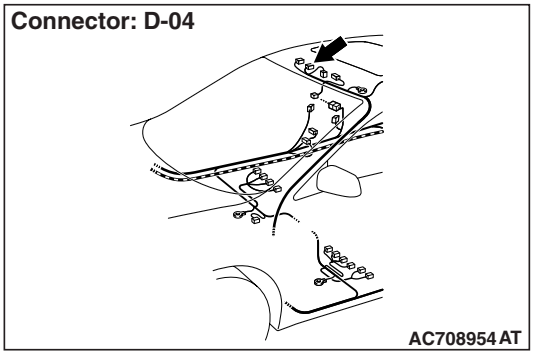
AC708951BT

Connector: C-133



AC708950AF

TSB Revision



JUDGMENT CRITERIA

When the hands free module judges that the connection with microphone unit is abnormal for 5 seconds or more, it stores diagnostic trouble code B2468 or B2470.

PROBABLE CAUSES

- The hands free module may be defective.
- The microphone unit may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

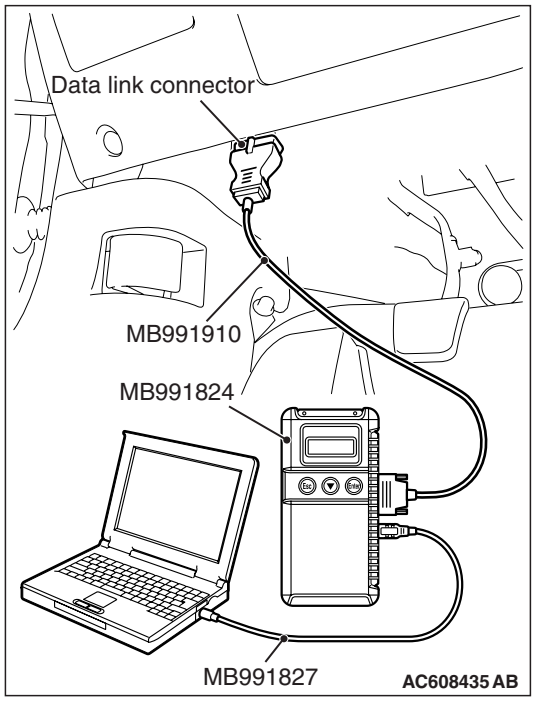
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Check microphone unit connector D-04 and hands free module connector C-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are microphone unit connector D-04 and hands free module connector C-11 in good condition?

YES : Go to Step 3.
NO : Repair the defective connector.

STEP 3. Check the wiring harness between microphone unit connector D-04 (terminal 1, 2) and hands free module connector C-11 (terminal 23, 24).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-133 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-133 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between microphone unit connector D-04 (terminal 1, 2) and hands free module connector C-11 (terminal 23, 24) in good condition?

YES : Go to Step 4.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Go to Step 5.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Temporarily replace the microphone unit, and check whether the diagnostic trouble code.

(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : Replace the microphone unit.

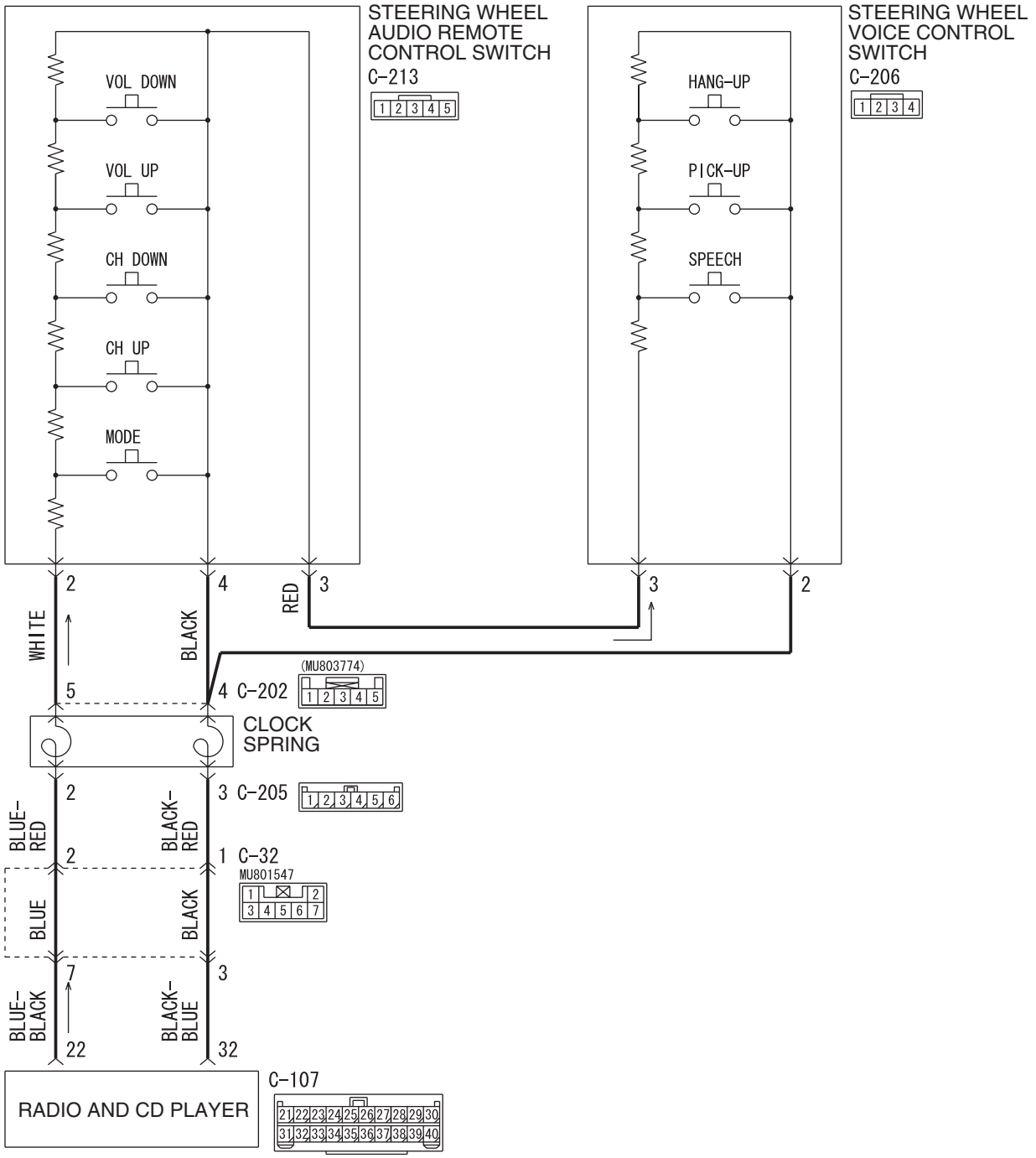
TSB Revision

DTC B2471: On hook button stuck
DTC B2472: Off hook button stuck
DTC B2473: VR button stuck

⚠ CAUTION

- **Before replacing the ECU, ensure that the communication circuit is normal.**

Steering Wheel Voice Controln Switch Circuit



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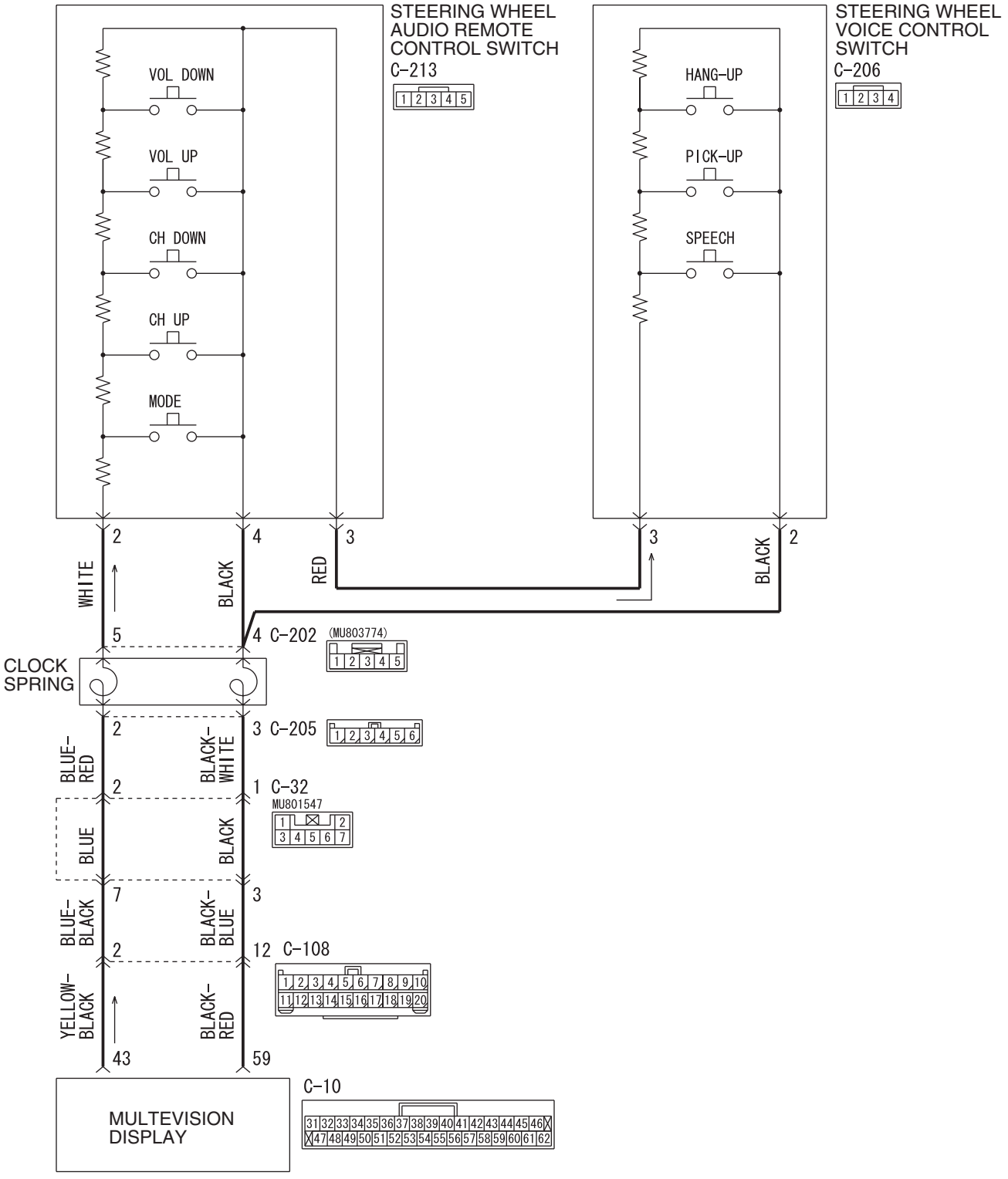
TSB Revision

Steering Wheel Voice Controln Switch Circuit



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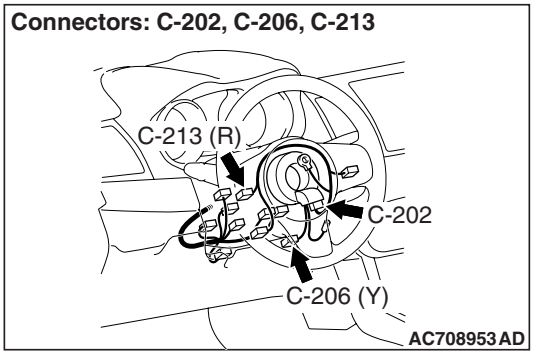
TSB Revision



JUDGMENT CRITERIA

When the hands free module receives any switch signal from the speech switch, pick-up switch, hang-up switch of steering wheel voice control switch for approximately 1 or 2 minutes continuously, it stores diagnostic trouble code B2471 (hang-up switch), B2472 (pick-up switch) or B2470 (speech switch) for each switch.

PROBABLE CAUSES

- Damaged harness wires and connectors
- The hands free module may be defective.
- The microphone unit may be defective.
- The CAN bus line may be defective.
- The steering wheel voice control switch may be defective.
- The radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>.

Check that the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> works normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Diagnose the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> (Refer to Radio and CD player –Diagnosis P.54A-317 <vehicles without MMCS> or MMCS –Diagnosis P.54A-408 <vehicles with MMCS>).

STEP 2. Check the steering wheel audio remote control switch.

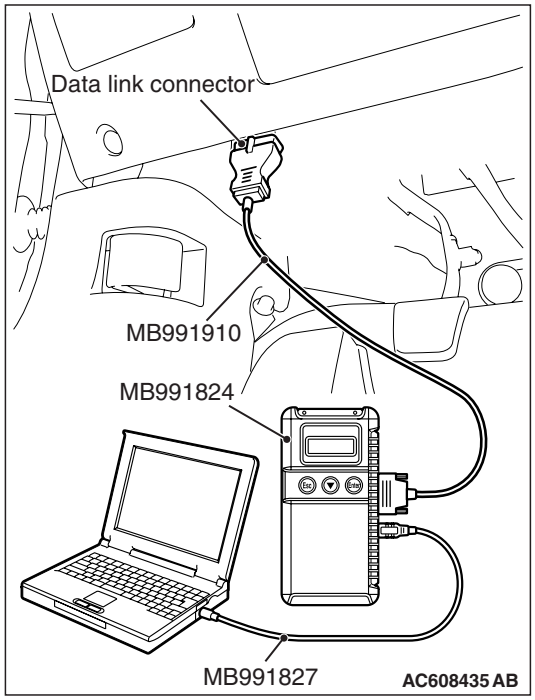
Check that the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> can be operated normally using the steering wheel audio remote control switch.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Diagnose the steering wheel audio remote control switch (Refer to P.54A-522 <vehicles without MMCS> or P.54A-527 <vehicles with MMCS>).

TSB Revision



STEP 3. Using scan tool MB991958, diagnose the CAN bus line.

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 4. Using scan tool MB991958 read the radio and CD player <vehicles without MMCS> or CAN box unit <vehicles with MMCS> diagnostic trouble code.

Check the diagnostic trouble code is set to the radio and CD player <vehicles without MMCS> or CAN box unit <vehicles with MMCS>.
Check whether a radio and CD player <vehicles without MMCS> or CAN box unit <vehicles with MMCS> DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for combination meter DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> (Refer to Radio and CD player –Diagnosis P.54A-288 <vehicles without MMCS> or MMCS –Diagnosis P.54A-384 <vehicles with MMCS>).
NO : Go to Step 5.

STEP 5. Check the steering wheel voice control switch.
Refer to P.54A-518.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the steering wheel voice control switch.

STEP 6. Check the steering wheel audio remote control switch.
Refer to P.54A-535.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the steering wheel audio remote control switch.

STEP 7. Check steering wheel audio remote control switch connector C-213 and steering wheel voice control switch connector C-206 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are wheel audio remote control switch connector C-213 and steering wheel voice control switch connector C-206 in good condition?

YES : Go to Step 8.
NO : Repair the defective connector.

STEP 8. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 3) and steering wheel audio remote control switch connector C-213 (terminal 3).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between steering wheel voice control switch connector C-206 (terminal 3) and steering wheel audio remote control switch connector C-213 (terminal 3) in good condition?

YES : Go to Step 9.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 2) and clock spring connector C-202 (terminal 4).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between steering wheel voice control switch connector C-206 (terminal 2) and clock spring connector C-202 (terminal 4) in good condition?

YES : Go to Step 10.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 10. Recheck for diagnostic trouble code.

Check again if the DTC is set to the hands free module.

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

Q: Is the DTC set?

YES : Go to Step 11.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

STEP 11. Temporarily replace the hands free module, and check whether the diagnostic trouble code is reset.

Check again if the DTC is set to the hands free module.

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

Q: Is the DTC set?

YES : Replace the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>.

NO : Replace the hands free module.

DTC B2475: VIN not programmed

⚠ CAUTION

- **If diagnostic trouble code B2475 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

TROUBLE JUDGMENT

With the ignition switch at the "ON" position, if the VIN is not written to the hands free module, diagnostic trouble code B2475 is stored.

TROUBLESHOOTING HINTS

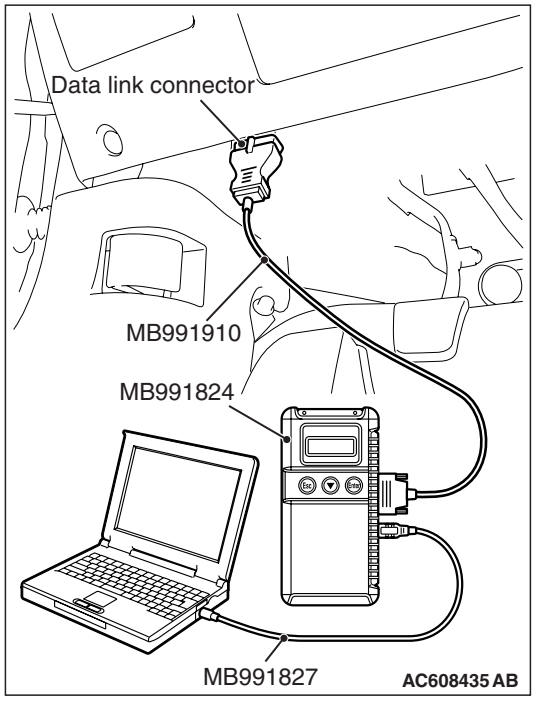
- The CAN bus line may be defective
- The hands free module may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

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



⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

TSB Revision

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the hands free module.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0019: Bus off (CAN-B)

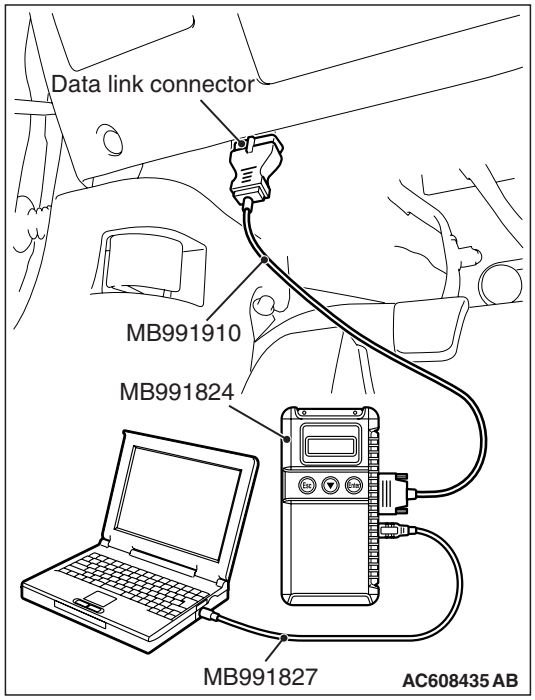
⚠ CAUTION
- **If DTC U0019 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

TROUBLE JUDGMENT
When the hands free module is returned from the bus off state, or when the bus error is indicated to the hands free module state, the DTC U0019 (CAN-B) is set.

COMMENTS ON TROUBLE SYMPTOM
The hands free module, power supply for the hands free module, ground circuit, or CAN bus line may have a problem.

PROBABLE CAUSES
- The hands free module may be defective.
- The CAN bus line may be defective.

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set to the hands free module.

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

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0141: ETACS CAN timeout

⚠ CAUTION

- **If the DTC U0141 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from ETACS-ECU cannot be received, the hands free module sets the diagnostic trouble code No. U0141.

PROBABLE CAUSES

- The CAN bus line may be defective
- The hands free module may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

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

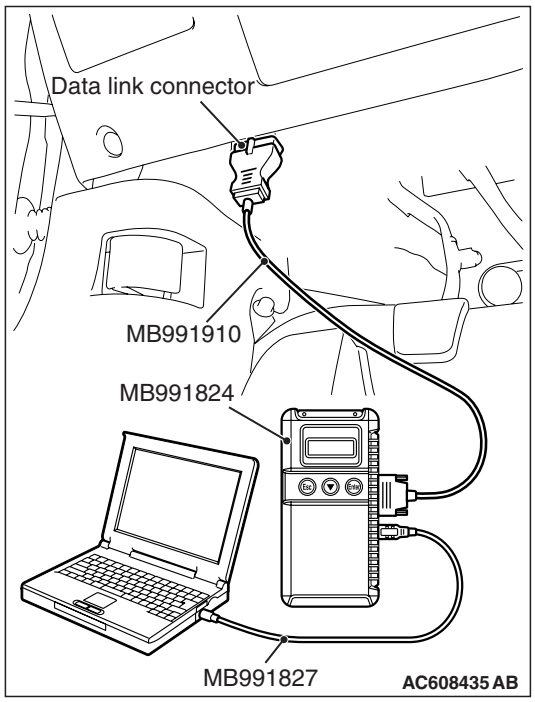
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

TSB Revision

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the hands free module.
(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-ABG CAN timeout

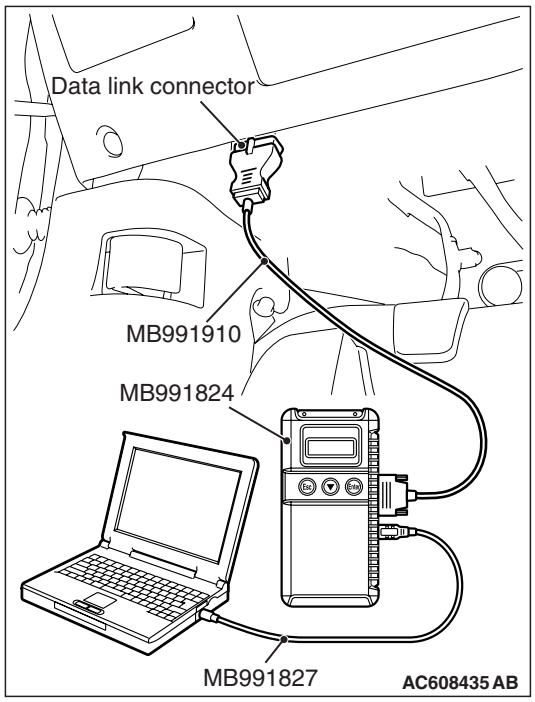
⚠ CAUTION
- **If DTC U0151 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from SRS-ECU cannot be received, the hands free module sets the DTC U0151.

PROBABLE CAUSES
- The CAN bus line may be defective
- The hands free module may be defective
- The SRS-ECU may be defective

DIAGNOSIS

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Troubleshooting P.52B-31).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0154: OCM CAN timeout

⚠ CAUTION
If DTC U0154 is set, be sure to diagnose the CAN bus line.

⚠ CAUTION
When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

When the signals from occupant classification-ECU cannot be received, the hands free module sets DTC U0154.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The hands free module may be defective.
- The occupant classification-ECU may be defective.

DIAGNOSIS

Required Special Tools:

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

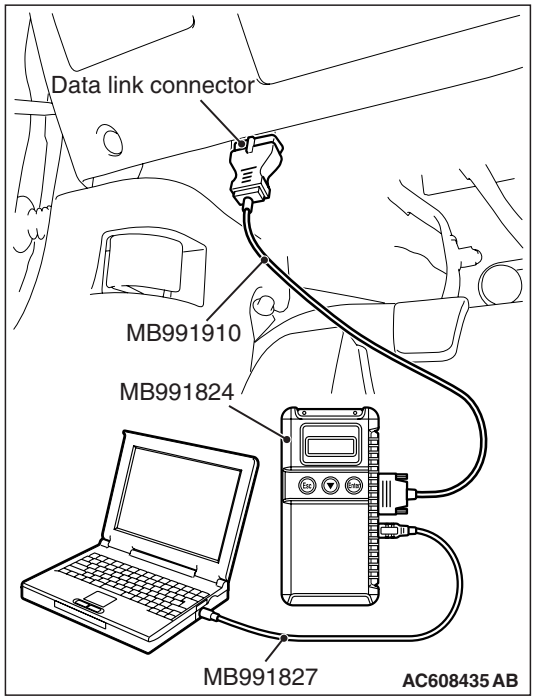
STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.
Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the hands free module.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0155: Meter CAN timeout

⚠ CAUTION
If DTC U0155 is set in the hands free module, diagnose the CAN main bus line.

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

DIAGNOSTIC FUNCTION

If the signal from combination meter cannot be received, the hands free module sets the DTC U0155.

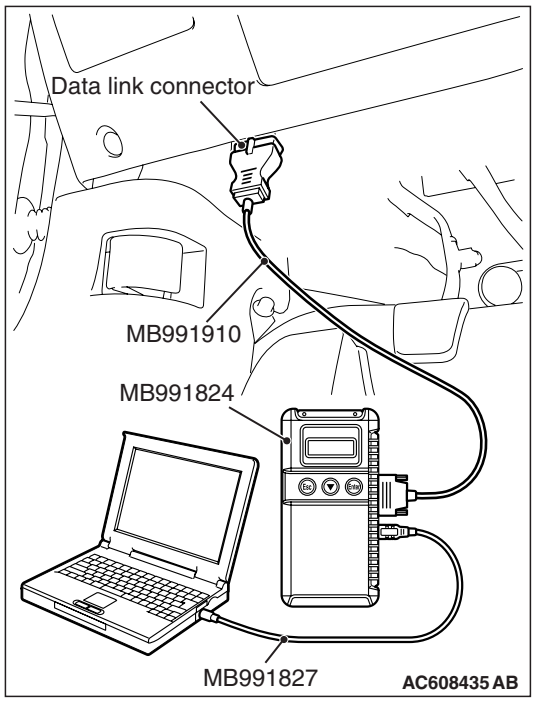
PROBABLE CAUSES

- The CAN bus line may be defective.
- The hands free module may be defective.
- The combination meter may be defective.

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check whether a combination meter DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for combination meter DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to combination meter, Diagnosis P.54A-28).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0164: A/C CAN timeout

⚠ CAUTION

- **If DTC U0164 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from A/C-ECU cannot be received, the hands free module sets the DTC U0164.

PROBABLE CAUSES

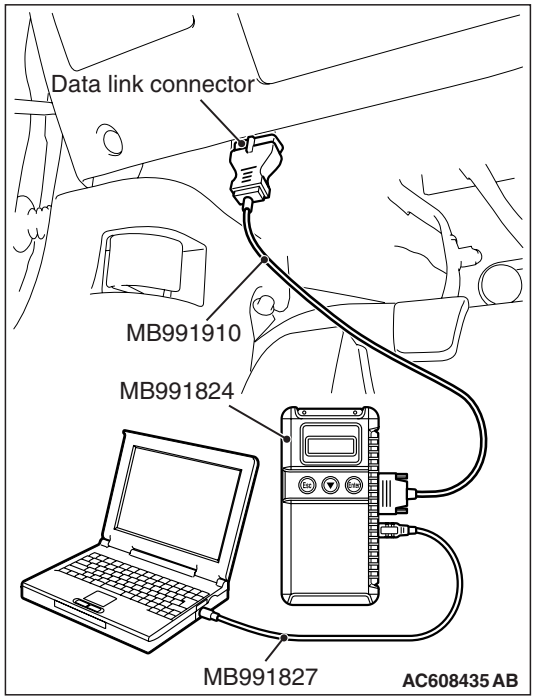
- The CAN bus line may be defective.
- The A/C-ECU may be defective.
- The hands free module may be defective.

DIAGNOSIS

Required Special Tools:

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

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



⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Automatic A/C Diagnosis P.55-9).
NO : Go to Step 3.

TSB Revision

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the hands free module.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

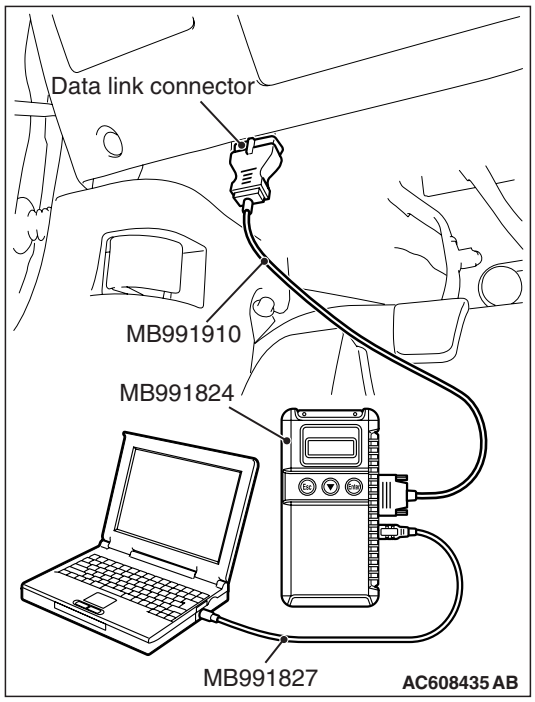
DTC U0168: WCM CAN timeout

⚠ CAUTION
- **If DTC U0168 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be received, the hands free module sets DTC U0168.

PROBABLE CAUSES
- The CAN bus line may be defective.
- The KOS-ECU may be defective. <vehicles with KOS>
- The WCM may be defective. <vehicles with WCM>
- The hands free module may be defective.

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> diagnostic trouble code.

Check again if the DTC is set to the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM>.

Q: Is the DTC set?

YES : Troubleshoot the KOS or WCM (Refer to GROUP 42B, Diagnosis P.42B-20 <KOS> or GROUP 42C, Diagnosis P.42C-14 <WCM>).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

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

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

Code No.U0184 AUDIO CAN timeout

⚠ CAUTION

- **If DTC U0184 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from the radio and CD player cannot be received, the hands free module sets the diagnostic trouble code No. U0184.

PROBABLE CAUSES

- The radio and CD player may be defective.
- The hands free module may be defective.
- The CAN bus may be defective.

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 (Vehicles with CAN communication system)

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

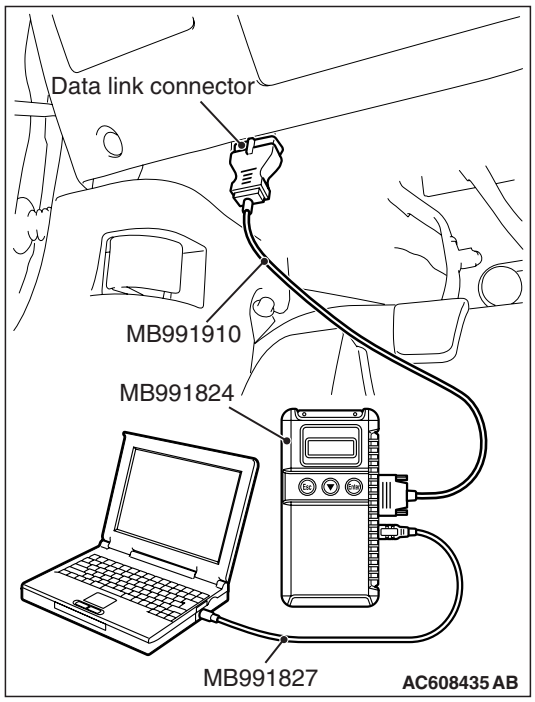
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the radio and CD player diagnostic trouble code.
Check if DTC is set to the radio and CD player.

Q: Is the DTC set?

YES : Troubleshoot the radio and CD player (Refer to P.54A-288).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the diagnostic trouble code is set to the hands free module.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0195: Satellite radio CAN timeout

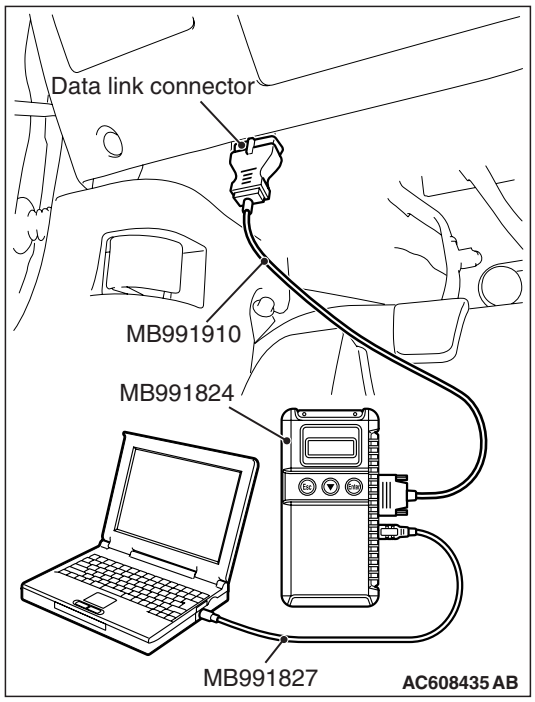
⚠ CAUTION
- **If DTC U0195 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
When the signals from satellite radio tuner cannot be received, the hands free module sets DTC U0195.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The hands free module may be defective.
- The satellite radio tuner may be defective.

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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958 read the satellite radio tuner diagnostic trouble code.

Check whether a satellite radio tuner DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for satellite radio tuner DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the satellite radio tuner.
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the hands free module.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0245 AND CAN timeout

⚠ CAUTION

- **If DTC U0245 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from CAN box unit (multivision display) cannot be received, the hands free module sets the diagnostic trouble code No. U0245.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The hands free module may be defective.
- The CAN box unit may be defective.

DIAGNOSIS

Required Special Tools:

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

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

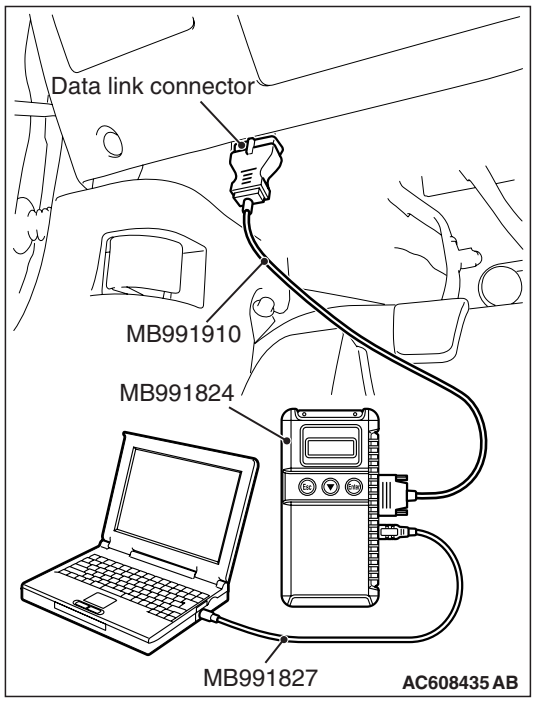
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the CAN box unit diagnostic trouble code

Check the DTC is set to the CAN box unit .

Q: Is the DTC set?

YES : Troubleshoot the CAN box unit (Refer to MMCS – Diagnostic Trouble Code Chart P.54A-384).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the diagnostic trouble code is set to the hands free module.

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.

Q: Is the diagnostic trouble code set?

YES : Replace the hands free module.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TROUBLE SYMPTOM CHART

M1546001800570

NOTE: Several Bluetooth™ cellular phones may not be compatible with the hands free module

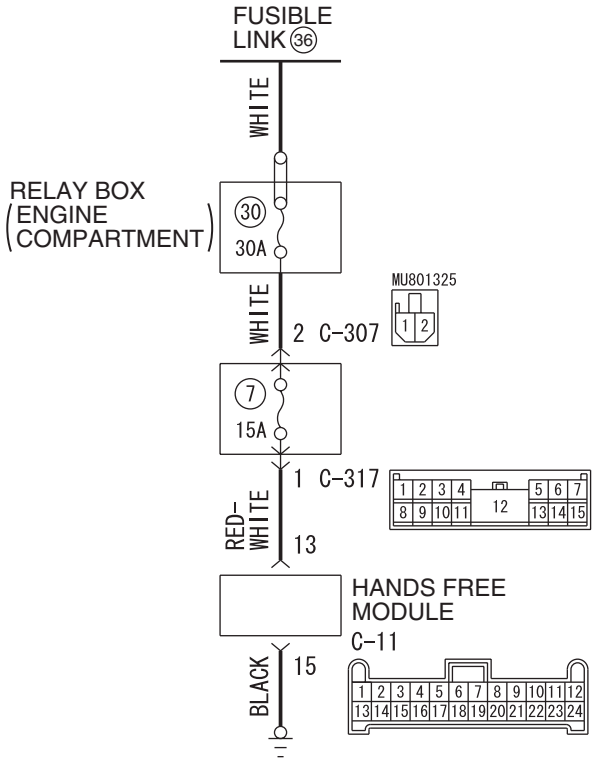
Inspection Procedure No.	Trouble symptom	Reference page
1	Hands free cellular phone system does not work normally.	P.54A-489
2	During the conversation with the hands free cellular phone system, the speaker's voice cannot be heard by the other party.	P.54A-497
3	During the conversation with the hands free cellular phone system, the voice of other party cannot be heard.	P.54A-500
4	Even when the steering wheel voice control switch is operated, the conversation is not possible.	P.54A-501
5	The cellular phone is not recognized or the connection cannot be established.	P.54A-506
6	Steering wheel voice control switch illumination does not come on.	P.54A-507
7	Check the hands free module power supply circuit.	P.54A-511

SYMPTOM PROCEDURES

Inspection Procedure 1: Hands free cellular phone system does not work normally.

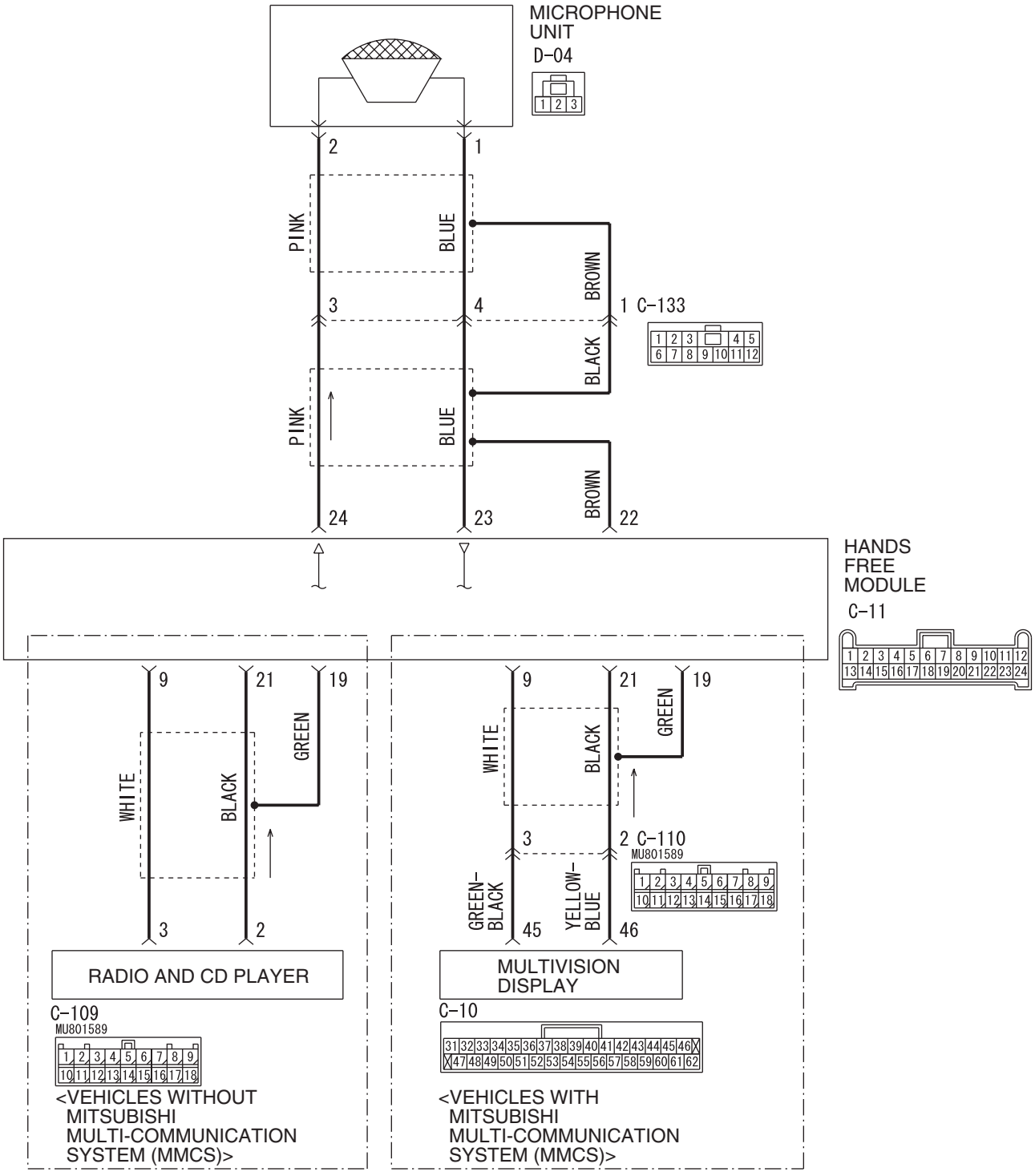
⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Hands Free Module Power Supply Circuit



W8G54M128A

Hands Free Cellular Phone System Circuit



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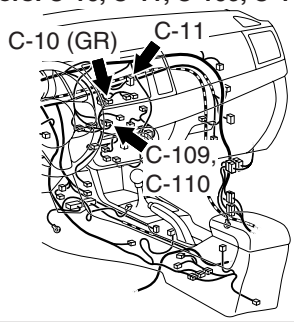
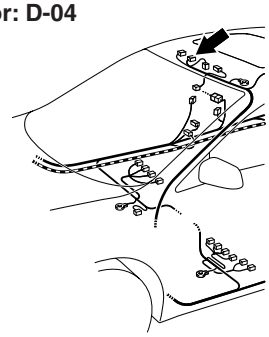
TSB Revision

Connectors: C-10, C-11, C-109, C-110



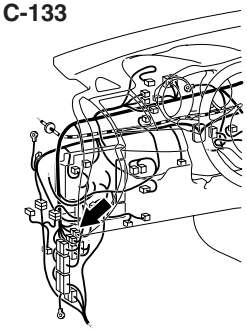
AC708951BS

Connector: D-04



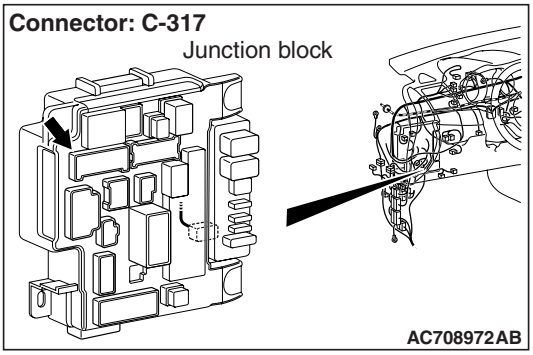
AC708954 AT

Connector: C-133



AC708950AF

Connector: C-317



AC708972AB

FUNCTION

During the conversation with the hands free cellular phone system, the signal of speaker's voice is transmitted from the microphone unit to the hands free module. Then the signal is transmitted from the hands free module to the cellular phone. The voice of other party is transmitted from the cellular phone to the hands free module. Then, the voice is transmitted from the hands free module to the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>, and output from the speaker.

TROUBLE JUDGMENT CONDITIONS

If the hands free cellular phone system cannot be used normally, the hands free module, microphone unit, steering wheel voice control switch, or radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.

TROUBLESHOOTING HINTS

- The hands free module may be defective.
- The microphone unit may be defective.
- The steering wheel voice control switch may be defective.
- The radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the cellular phone.
Check that the cellular phone can be used normally as a unit.

Q: Is it possible to use the cellular phone normally?

YES : Go to Step 2.
NO : Repair or replace the cellular phone.

STEP 2. Temporarily replace the cellular phone, and check the trouble symptom.
Temporarily register a separate Bluetooth™-supported cellular phone, and check that the hands-free cellular phone system operates normally.

Q: Is the normal conversation possible with the hands free cellular phone system?

YES : Ask the customer to have the cellular phone repaired or replaced. Then, delete the temporarily registered cellular phone. Once the customer prepares the normally-working cellular phone, register the cellular phone to the hands free module.
NO : Go to Step 3.

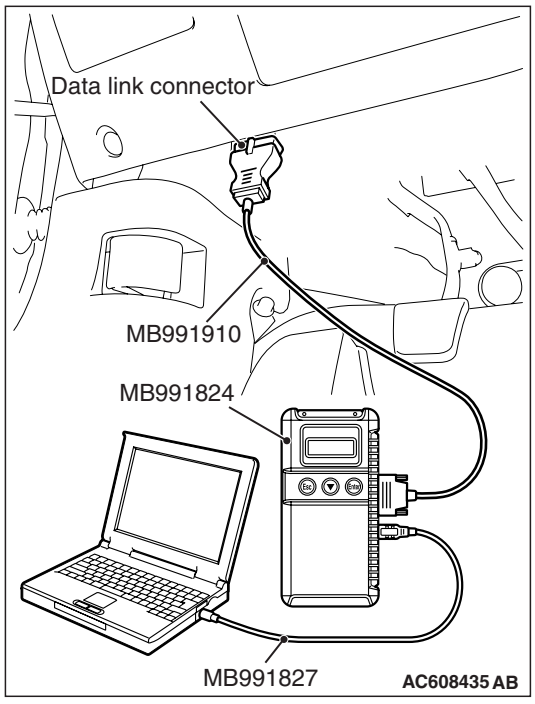
STEP 3. Using scan tool MB991958, diagnose the CAN bus line.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to "LOCK" (OFF) position.

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

YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 4. Check hands free module connector C-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are hands free module connector C-11 in good condition?

YES : Go to Step 5.

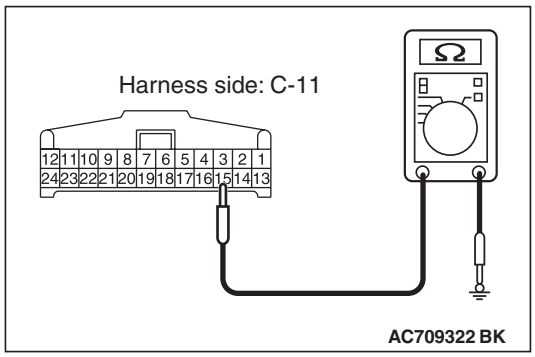
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Check the ground circuit to the hands free module. Measure the resistance at hands free module connector C-11.

(1) Disconnect hands free module connector C-11, and measure at the wiring harness side.

(2) Measure resistance between terminal 15 and ground.

OK: The resistance should be 2 ohm or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

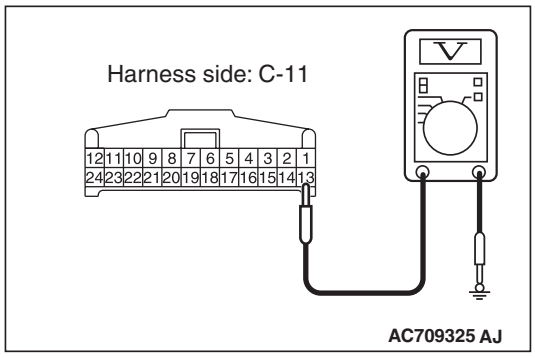
STEP 6. Check the wiring harness between hands free module connector C-11 (terminal 15) and ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between hands free module connector C-11 (terminal 15) and ground in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



STEP 7. Check the power supply circuit to the hands free module. Measure the voltage at hands free module connector C-11.

(1) Disconnect hands free module connector C-11, and measure the voltage available at the hands free module side of the connector.

(2) Measure the voltage between terminal 13 and ground.

OK: The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 9.

NO : Go to Step 8.

STEP 8. Check the wiring harness between hands free module connector C-11 (terminal 13) and ETACS-ECU connector C-317 (terminal 1).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between hands free module connector C-11 (terminal 13) and ETACS-ECU connector C-317 (terminal 1) in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Check microphone unit connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is microphone unit connector D-04 in good condition?

YES : Go to Step 10.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 10. Check the wiring harness between hands free module connector C-11 and microphone unit connector D-04.

- Check the communication lines for open circuit and short circuit.

(1) Disconnect hands free module connector C-11 and microphone unit connector D-04, and check the wiring harness.

NOTE: Also check intermediate connector C-133 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-133 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

(2) Check the wiring harness between hands free module connector C-11 (terminal 24) and microphone unit connector D-04 (terminal 2)

(3) Check the wiring harness between hands free module connector C-11 (terminal 23) and microphone unit connector D-04 (terminal 1)

Q: Is the wiring harness between hands free module connector C-11 and microphone unit connector D-04 in good condition?

YES : Go to Step 11.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 11. Check radio and CD player connector C-109 <vehicles without MMCS> or multivision display connector C-10 <vehicles with MMCS> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is radio and CD player connector C-109 <vehicles without MMCS> or multivision display connector C-10 <vehicles with MMCS> in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 12. Check the wiring harness between hands free module connector C-11 and radio and CD player connector C-109 <vehicles without MMCS> or multivision display connector C-10 <vehicles with MMCS>.

- Check the communication lines for open circuit and short circuit.

(1) Disconnect hands free module connector C-11 and radio and CD player connector C-109 <vehicles without MMCS> or multivision display connector C-10 <vehicles with MMCS>, and check the wiring harness.

NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2. <vehicles with MMCS>

(2) Check the wiring harness between hands free module connector C-11 (terminal 9) and radio and CD player connector C-109 (terminal 3) <vehicles without MMCS>

(3) Check the wiring harness between hands free module connector C-110 (terminal 21) and radio and CD player connector C-109 (terminal 2) <vehicles without MMCS>

(4) Check the wiring harness between hands free module connector C-11 (terminal 9) and multivision display connector C-10 (terminal 35) <vehicles without MMCS>

(5) Check the wiring harness between hands free module connector C-11 (terminal 21) and multivision display connector C-10 (terminal 36) <vehicles without MMCS>

Q: Is the wiring harness between hands free module connector C-11 and radio and CD player connector C-109 <vehicles without MMCS> or multivision display connector C-10 <vehicles with MMCS> in good condition?

YES : Go to Step 13.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 13. Temporarily replace the microphone unit, and check the trouble symptom.

Check that the normal conversation is possible with the hands free cellular phone system.

Q: Is the normal conversation possible with the hands free cellular phone system?

YES : Replace the microphone unit.
NO : Go to Step 14.

STEP 14. Temporarily replace the hands free module, and check the trouble symptom.

Check that the normal conversation is possible with the hands free cellular phone system.

Q: Is the normal conversation possible with the hands free cellular phone system?

YES : Replace the hands free module.

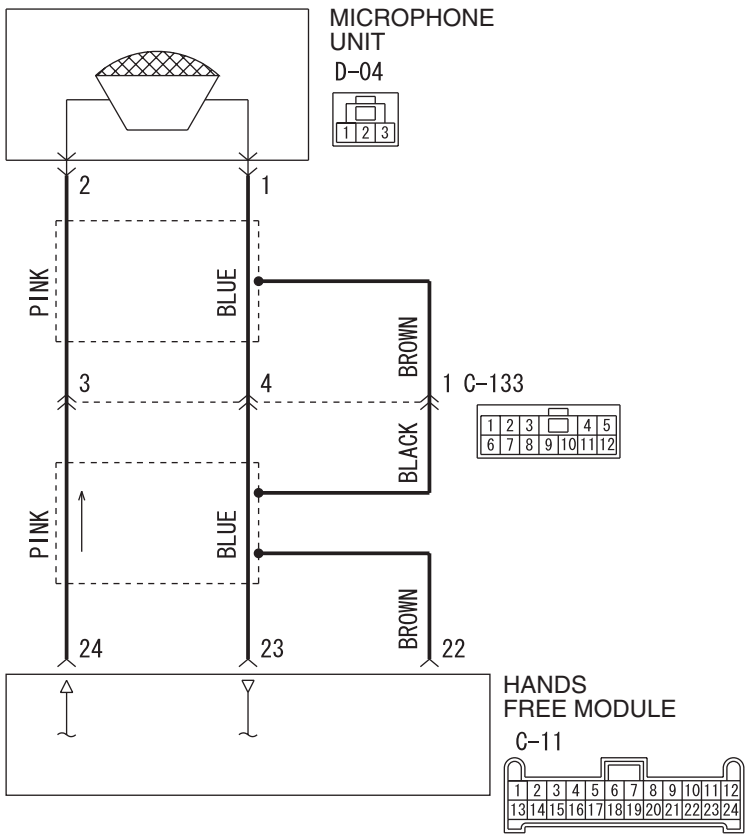
NO : Replace the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>.

Inspection Procedure 2: During the conversation with the hands free cellular phone system, the speaker's voice cannot be heard by the other party.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Hands Free Cellular Phone System Circuit



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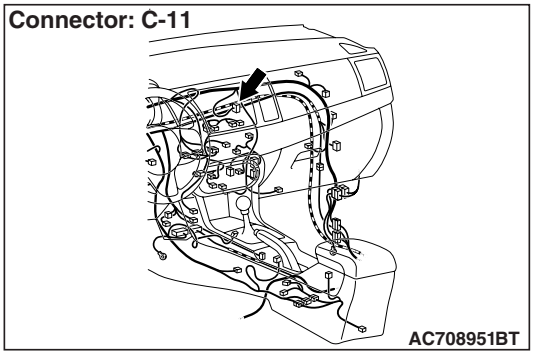
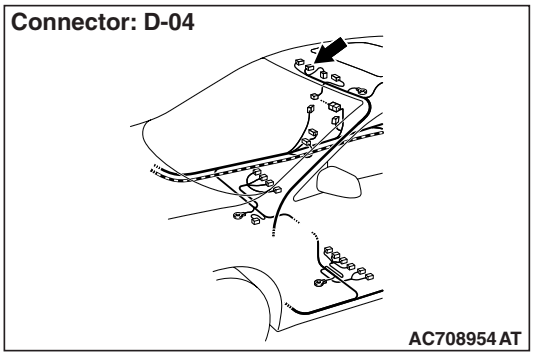




FUNCTION

During the conversation with the hands free cellular phone system, the signal of speaker's voice is transmitted from the microphone unit to the hands free module. Then the signal is transmitted from the hands free module to the cellular phone.

TROUBLE JUDGMENT CONDITIONS

During the conversation with the hands free cellular phone system, if the speaker's voice cannot be heard by the other party, the hands free module or microphone unit may be defective.

TROUBLESHOOTING HINTS

- The hands free module may be defective.
- The microphone unit may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the cellular phone.

Check that the cellular phone can be used normally as a unit.

Q: Is it possible to use the cellular phone normally?

YES : Go to Step 2.

NO : Repair or replace the cellular phone.

STEP 2. Check hands free module connector C-11 and microphone unit connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are hands-free module connector C-11 and microphone unit connector D-04 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Check the wiring harness between hands free module connector C-11 and microphone unit connector D-04.

- Check the communication lines for open circuit and short circuit.

(1) Disconnect hands free module connector C-11 and microphone unit connector D-04, and check the wiring harness.
(2) Check the wiring harness between hands-free module connector C-11 (terminal 24) and microphone unit connector D-04 (terminal 2)
(3) Check the wiring harness between hands-free module connector C-11 (terminal 23) and microphone unit connector D-04 (terminal 1)

Q: Is the wiring harness between hands free module connector C-11 and microphone unit connector D-04 in good condition?

YES : Go to Step 4.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Temporarily replace the microphone unit, and check the trouble symptom.

Check that the normal conversation is possible with the hands-free system.

Q: Is the normal conversation possible with the hands free system?

YES : Replace the microphone unit.
NO : Replace the hands free module.

Inspection Procedure 3: During the conversation with the hands free cellular phone system, the voice of other party cannot be heard.

FUNCTION

During the conversation with the hands free cellular phone system, the voice signal of other party is transmitted from the cellular phone to the hands free module. Then, the signal is transmitted from the hands free module to the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>, and then output from the speaker.

TROUBLE JUDGMENT CONDITIONS

During the conversation with the hands free cellular phone system, if the voice of other party cannot be heard, the hands free module, or the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.

TROUBLESHOOTING HINTS

- The hands free module may be defective.
- The radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.

DIAGNOSIS

STEP 1. Check the cellular phone.
Check that the cellular phone can be used normally as a unit.

Q: Is it possible to use the cellular phone normally?

YES : Go to Step 2.
NO : Repair or replace the cellular phone.

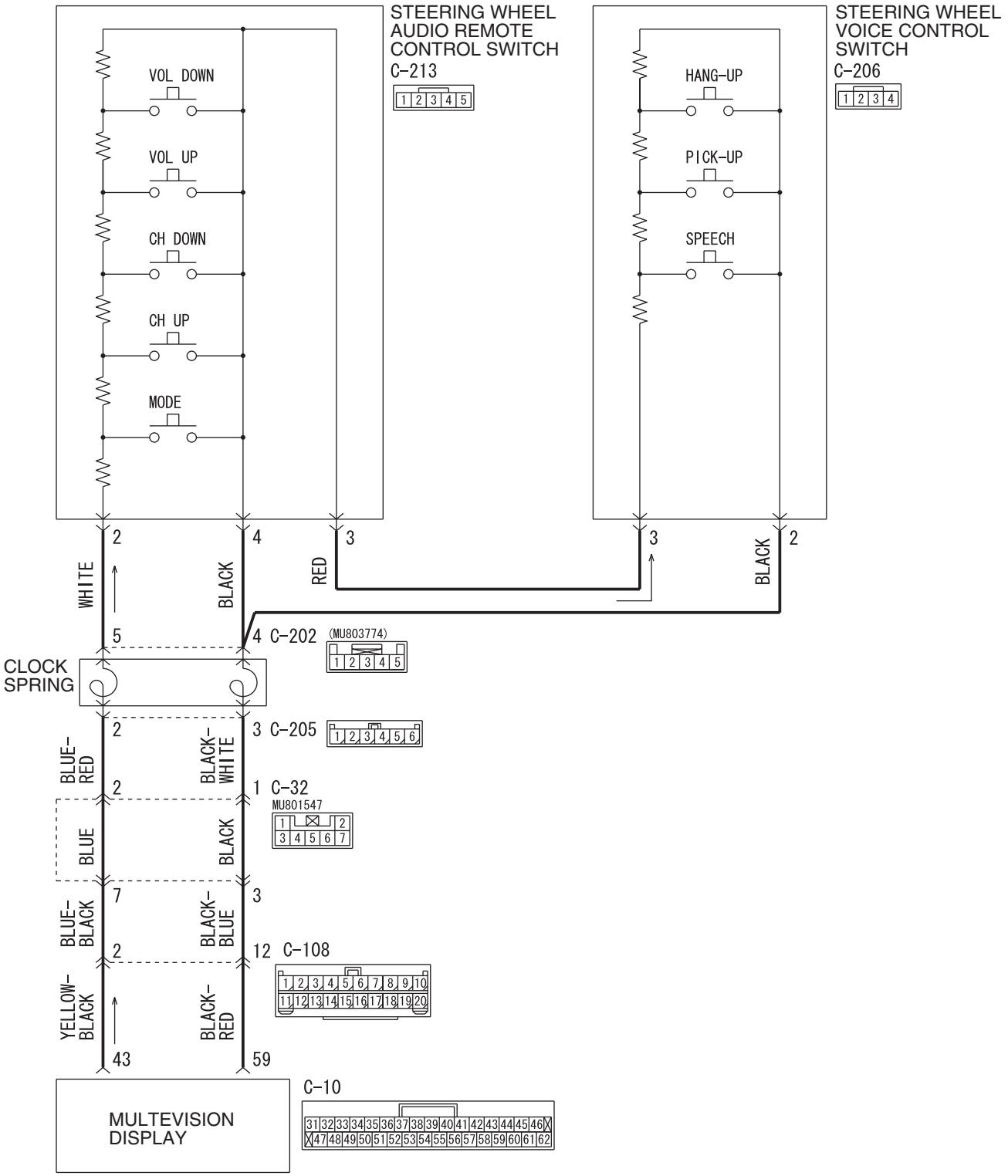
STEP 2. Check the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>.
Check that the sound of radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> is output normally from the speaker.

Q: Is the sound of radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> output normally from the speaker?

YES : Replace the hands free module.
NO : Diagnose the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> (Refer to P.54A-317 <vehicles without MMCS> or P.54A-408 <vehicles with MMCS>).

Inspection Procedure 4: Even when the steering wheel voice control switch is operated, the conversation is not possible.

Steering Wheel Voice Controln Switch Circuit



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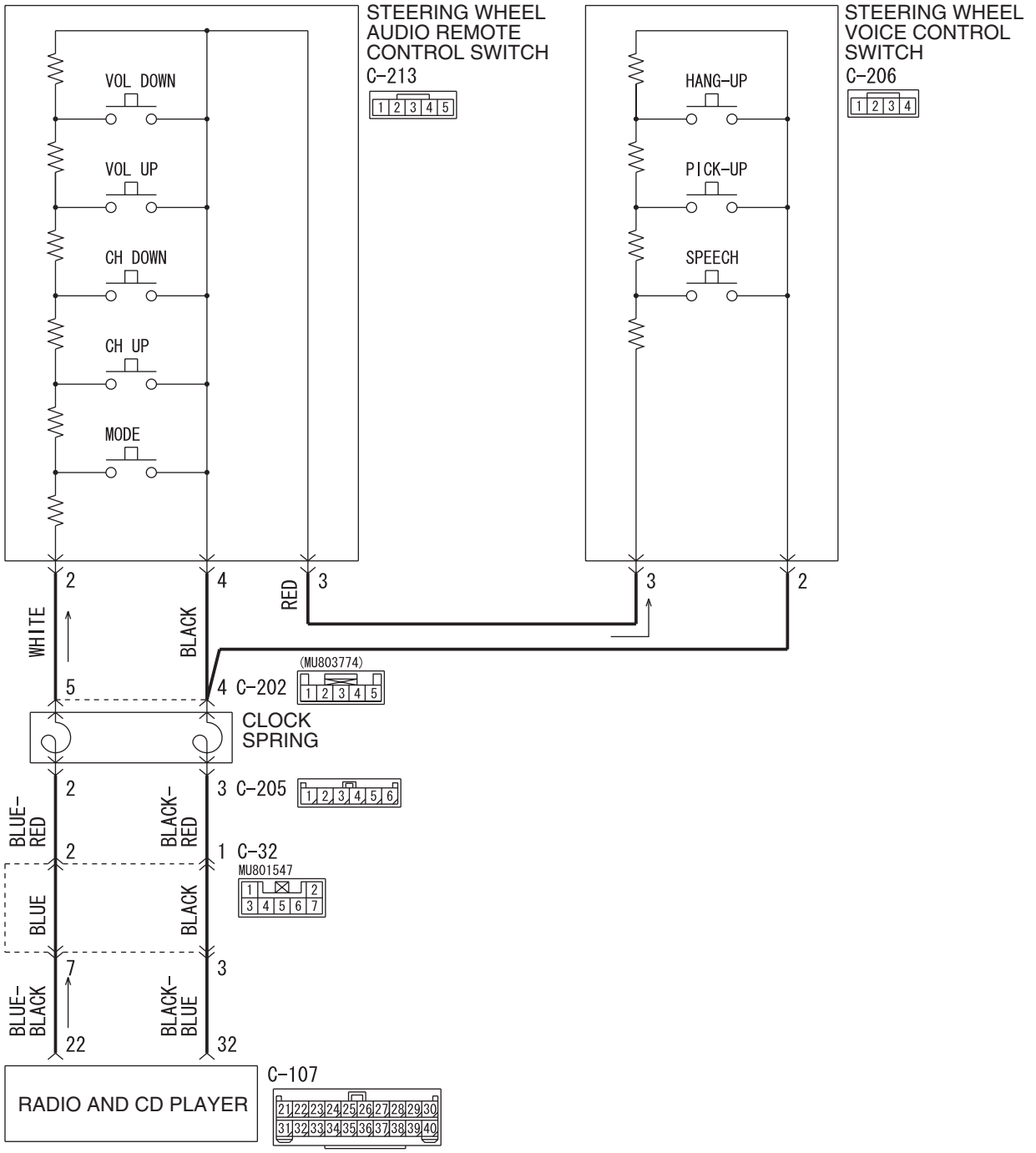
TSB Revision

Steering Wheel Voice Controln Switch Circuit



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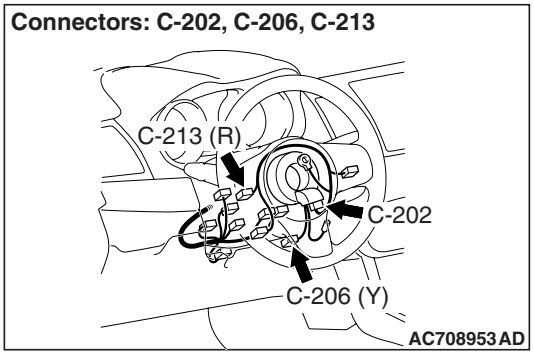
TSB Revision



FUNCTION

When the steering wheel voice control switch is operated, the switch signal is transmitted to the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>. Then, via the CAN communication, the signal is transmitted from the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> to the hands free module.

TROUBLE JUDGMENT CONDITIONS

If the conversation is not possible even when the steering wheel voice control switch is operated, the steering wheel voice control switch or radio and CD player <vehicles without MMCS> or the multivision display <vehicles with MMCS> may be defective.

TROUBLESHOOTING HINTS

- The steering wheel voice control switch may be defective.
- The hands free module may be defective.
- The radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

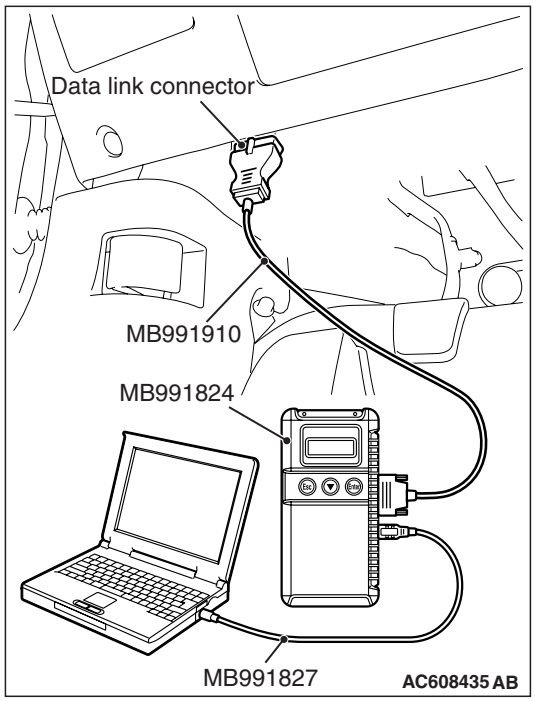
STEP 1. Check the steering wheel audio remote control switch.

Check that the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> can be operated normally using the steering wheel audio remote control switch.

Q: Is it possible to normally operate the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS> using the steering wheel audio remote control switch?

YES : Go to Step 2.

NO : Diagnose the steering wheel audio remote control switch (Refer to P.54A-317 <vehicles without MMCS> or P.54A-408 <vehicles with MMCS>.)



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-459."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 3. Check the steering wheel voice control switch.

Remove the steering wheel voice control switch. Then check continuity between the switch terminals.(Refer to P.54A-518)

Q: Is the steering wheel voice control switch in good condition?

YES : Go to Step 4.
NO : Replace the steering wheel voice control switch.

STEP 4. Check the steering wheel audio remote control switch.

Remove the steering wheel audio remote control switch. Then check continuity between the switch terminals. (Refer to P.54A-535)

Q: Is the steering wheel audio remote control switch in good condition?

YES : Go to Step 5.
NO : Replace the steering wheel audio remote control switch.

STEP 5. Check steering wheel voice control switch connector C-206 and steering wheel audio remote control switch connector C-213 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are steering wheel voice control switch connector C-206 and steering wheel audio remote control switch connector C-213 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The steering remote control switch should work normally.

STEP 6. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 3) and steering wheel audio remote control switch connector C-213 (terminal 3).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between steering wheel voice control switch connector C-206 (terminal 3) and steering wheel audio remote control switch connector C-213 (terminal 3) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 2) and clock spring connector C-202 (terminal 4).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between steering wheel voice control switch connector C-206 (terminal 2) and clock spring connector C-202 (terminal 4) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Retest the system
Check that the hands-free cellular phone system works normally when the steering wheel voice control switch is operated.

Q: Check that the hands-free cellular phone system works normally when the steering wheel voice control switch is operated.
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the radio and CD player <vehicles without MMCS> or multivision display <vehicles with MMCS>.

Inspection Procedure 5: The cellular phone is not recognized or the connection cannot be established.

FUNCTION
With the hands free cellular phone system, the cellular phone and hands free module communicate with each other by using Bluetooth™.

TROUBLE JUDGMENT CONDITIONS
When the cellular phone cannot be recognized or the communication cannot be established, the cellular phone or hands-free module may be defective.

TROUBLESHOOTING HINTS
- The cellular phone may be defective.
- The hands free module may be defective.

DIAGNOSIS

STEP 1. Check the cellular phone.
Check that the cellular phone can be used normally as a unit.

Q: Is it possible to use the cellular phone normally?
YES : Go to Step 2.
NO : Repair or replace the cellular phone.

STEP 4. Temporarily replace the cellular phone, and check the trouble symptom.
Temporarily register a separate Bluetooth™-supported cellular phone, and check that the hands free cellular phone system operates normally.

Q: Is the normal conversation possible with the hands free system?
YES : Ask the customer to have the cellular phone repaired or replaced. Then, delete the temporarily registered cellular phone. Once the customer prepares the normally-working cellular phone, register the cellular phone to the hands free module.
NO : Replace the hands free module.

STEP 2. Check the position of cellular phone.
Check that the function becomes normal when the cellular phone is moved closer to the hands free module.

Q: Does the function become normal when the cellular phone is moved closer to the hands free module?
YES : No action is necessary and testing is complete.
NO : Go to Step 3.

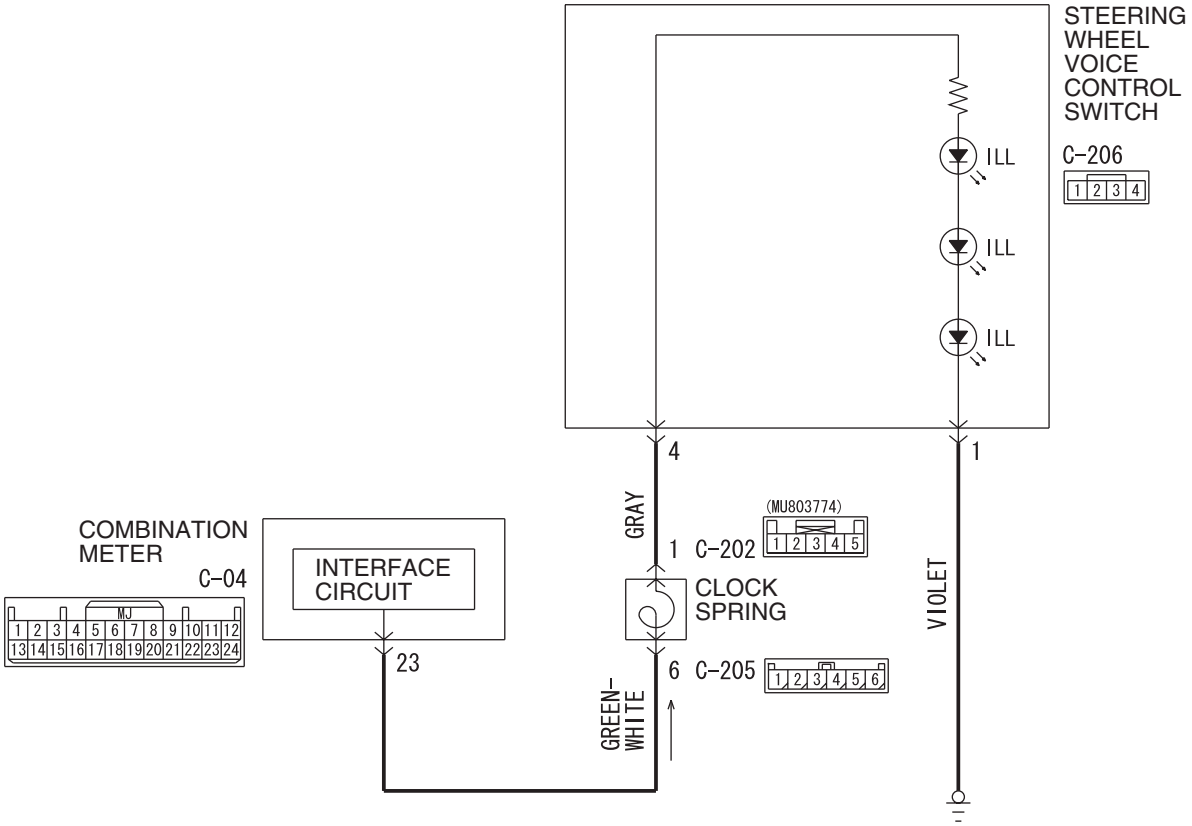
STEP 3. Check the registration method of cellular phone.
Check that the cellular phone was registered to the hands free module by following the normal procedure.

Q: Was the cellular phone registered by following the normal procedure?
YES : Check the trouble symptom, and finish when it is normal. When the abnormality is present, go to Step 4.
NO : Register a cellular phone according to a regular procedure.

Inspection Procedure 6: Steering wheel voice control switch illumination does not come on.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Steering Wheel Voice Control Switch Illumination Circuit



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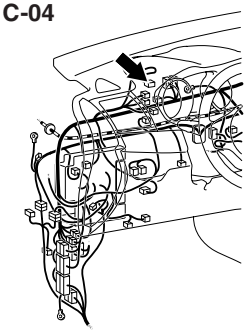
Connector: C-04



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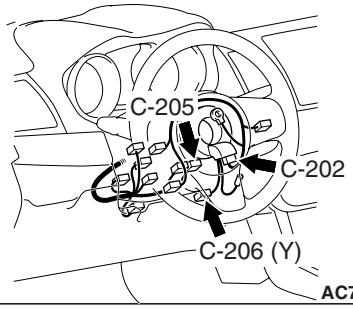
Connectors: C-202, C-205, C-206



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TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel voice-control switch, the steering wheel voice control switch, the combination meter, or the clock spring may be defective.

TROUBLESHOOTING HINTS

- The steering wheel voice control switch may be defective.
- The combination meter may be defective.
- The clock spring may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the combination meter.

Check whether the combination meter works normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Diagnose the combination meter (Refer to P.54A-28).

STEP 2. Check steering wheel voice control switch connector C-206 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is steering wheel voice-control switch connector C-206 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering remote control switch should work normally.

STEP 3. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 1) and the ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between steering wheel voice-control switch connector C-206 (terminal 1) and the ground in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check clock spring connectors C-202 and C-205 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are clock spring connectors C-202 and C-205 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering remote control switch should work normally.

STEP 5. Check the clock spring.

Check whether the clock spring is in good condition (Refer to GROUP 52B –Driver's air bag module and clock spring P.52B-392).

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the clock spring.

STEP 6. Check the wiring harness between steering wheel voice control switch connector C-206 (terminal 4) and clock spring connector C-202 (terminal 1).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between steering wheel voice-control switch connector C-206 (terminal 4) and clock spring connector C-202 (terminal 1) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering remote control switch should work normally.

STEP 8. Check the wiring harness between combination meter connector C-04 (terminal 23) and clock spring connector C-205 (terminal 6).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between combination meter connector C-04 (terminal 23) and clock spring connector C-205 (terminal 6) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Check whether the illumination of the steering remote control switch comes on normally.

Q: Doe the illumination of the steering remote control switch comes on normally?

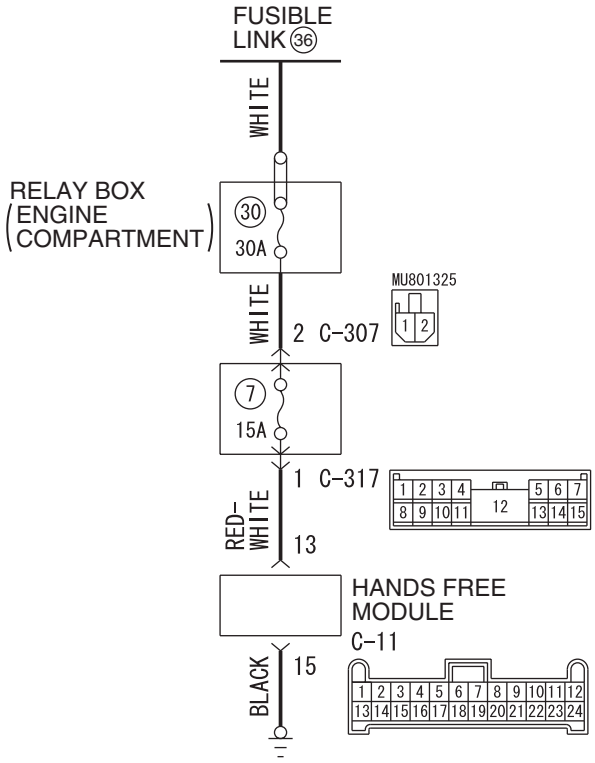
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the steering wheel voice control switch.

Inspection Procedure 7: Check the hands free module power supply circuit.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Hands Free Module Power Supply Circuit



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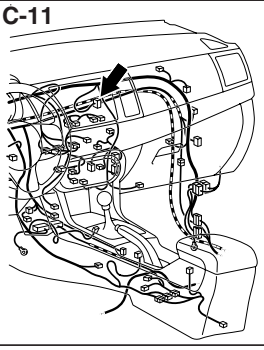
Connector: C-11



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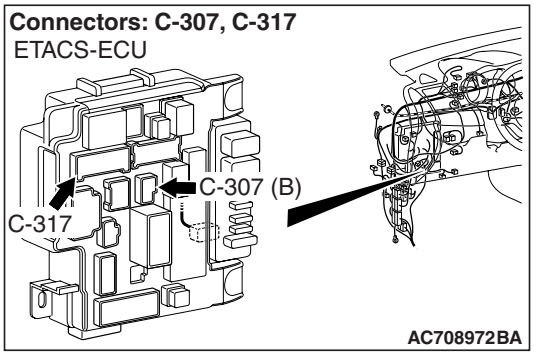
Connectors: C-307, C-317



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TSB Revision

CIRCUIT OPERATION

The power supply to the hands free module is provided by the fusible link (36).

TECHNICAL DESCRIPTION (COMMENT)

If the hands free cellular phone system don't work, power supply and ground system to the hands free module, or the hands free module itself may be defective.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The hands free module may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check hands free module connector C-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is hands free module connector C-11 in good condition?

YES : Go to Step 2.

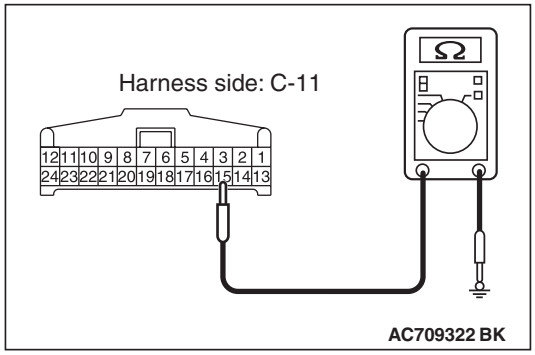
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 2. Check the ground circuit to the hands free module. Measure the resistance at hands free module connector C-11.

(1) Disconnect hands-free module connector C-11, and measure at the wiring harness side.

(2) Measure the resistance value between terminal 15 and ground.

OK: The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between hands-free module connector C-11 (terminal 15) and ground.

- Check the ground wires for open circuit.

Q: Is the wiring harness between hands free module connector C-11 (terminal 15) and ground in good condition?

YES : Replace the hands free module. The system should communicate with the hands free module normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check the wiring harness between hands free module connector C-11 (terminal 13) and fusible link (36).

- Check the power supply line for open circuit and short circuit.

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

Q: Is the wiring harness between hands-free module connector C-11 (terminal 13) and fusible link (36) in good condition?

YES : Replace the hands free module. The system should communicate with the hands free module normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

ON-VEHICLE SERVICE

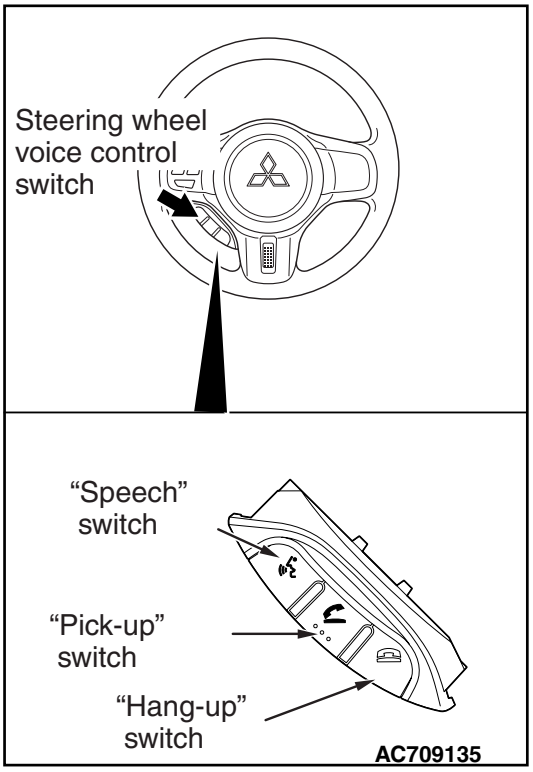
PAIRING A CELLULAR PHONE OR DELETING A PHONE

M1544403700010

NOTE:

- *Several Bluetooth™ cellular phones may not be compatible with the hands free-ECU*
- *A maximum of seven Bluetooth™ cellular phones can be registered.*
- *The hands free cellular phone system can not be used when a battery of Bluetooth™ cellular phone was exhausted.*

PAIRING A CELLULAR PHONE



1. Shift the selector lever to "P" (parking) position <TC-SST> or shift lever to "N" (neutral) position <M/T> and pull the parking brake lever.
2. Turn the ignition switch to "ACC" or "ON" position.
3. Press the "Speech" switch.
4. Say "Setup."
5. Say "Pairing options."
6. The voice guide will say "Do you want to Pair a phone, delete a phone or list paired phones?"
7. Say "Pair a phone."
8. The voice guide will say "Please say a 4-digit pin number."
9. Say a 4 digit number. The 4 digit number will be registered as a pin number for the phone.
   - When the confirmation function is on, the system will confirm whether the number said is acceptable. Answer "Yes" to go Step 10. Say "No" to return to pin number selection.

   NOTE:
   - *The pin number entered here is only used for the Bluetooth™ connection certification. It is any 4-digit number the user would like to select.*
   - *Remember the pin number as it needs to be keyed into the phone later in the pairing process.*
   - *Depending on the selected Bluetooth™ connection settings, entry of the paring code may be required each time the Bluetooth™ cellular phone attempts to connect to the hands free cellular phone system. Refer to your cellular phone owner's manual for connection defaults and settings.*
10. The voice guide will say "Start pairing procedure on phone. See phone's manual for instructions." Refer to the owner's manual for your cellular phone and enter into the phone the pin number that was registered in Step 9.
11. When the hands free cellular phone system finds a Bluetooth™ cellular phone, the voice guide will say "Please say the name of the phone after the beep."
12. After you hear the beep, name the phone by saying a name of your preference.

    NOTE:
    - *When the hands free cellular phone system cannot recognize the Bluetooth™ cellular phone, the pairing process will end and the system will beep and then return to normal status.*
    - *Try the pairing process again after reconfirming whether or not the Hands free cellular phone system supports your Bluetooth™ compatible cellular phone.*
13. The voice guide will say "Assign a priority level between 1 and 7. 1 is the highest priority."
14. Say a number between 1 and 7 to set a priority level for the cellular phone.

TSB Revision

- If you selected a priority level that has already been set for a different phone, the hands free cellular phone system will ask you whether you wish to overwrite that priority level. To overwrite the priority level, answer "Yes." Answer "No" to return to the priority level selection in Step 13.

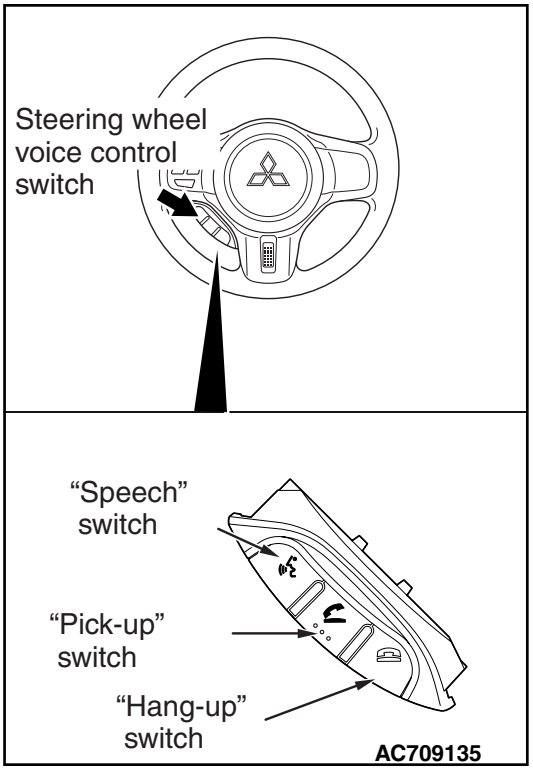
15. After the voice guide says "<phone tag> set to priority <priority>," the hands free cellular phone system will start the pairing process. Wait a moment for the pairing process to complete.
    - When the confirmation function is "ON", the hands free cellular phone system will confirm the assigned phone name and priority again. Answer "Yes" to go to next step, or answer "No" to return to the priority level selection in Step 13.
16. When the pairing process is completed, the voice guide will say "Pairing Complete." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated.

DELETING A PHONE

1. Turn the ignition switch to "ACC" or "ON" position.
2. Press the "Speech" switch.
3. Say “Setup.”
4. Say “Pairing options”
5. The voice guide will say “Do you want to Pair a phone, delete a phone or list paired phones?”
6. Say “Delete a phone.”
7. After the voice guide says "Please say," it will read out each priority number and phone name pair in order, starting with the phone that has the highest priority level (from 1 to 7). After it completes reading all pairs, the voice guide will say "or all."
8. Say the priority number of the phone that you want to delete from the hands free cellular phone system. If you want to delete all paired phones from the hands free cellular phone system, say "All."
9. For confirmation purposes, the voice guide will say "Removing <phone tag> (all) is this correct?" Answer "Yes" to delete the phone(s). If you answer "No," the voice guide will ask "Which phone please?" Say again the priority number of the phone that you want to delete from the hands free cellular phone system.
10. When the phone deletion process is completed, the voice guide will say "Deleted." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated.
    - If the phone deletion process fails for some reason, the voice guide will say "Delete failed." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated. Start over again from Step 1.

ERASE THE PASSCODE

M1544403800028



The 4-digit passcode set by security function can be erased by operating the hang-up switch.

1. Turn the ignition switch to the "ON" or "ACC" position, and check if the radio and CD player, or the multivision display is activated.
2. Check that the hands free cellular phone system is not in voice recognition mode.
3. Press and hold the hang-up switch for approximately 2 seconds (1.5 seconds or more).
4. Within approximately 10 seconds after performing step 3, press and hold the hang-up switch for approximately 2 seconds (1.5 seconds or more) twice again.

NOTE: Even if the passcode is erased, guidance such as voice guide is not provided.

5. After the operation, check if the lock with the passcode is unlocked. If the lock is not unlocked, repeat from step 2.

SERVICE DATA

M1544401300016

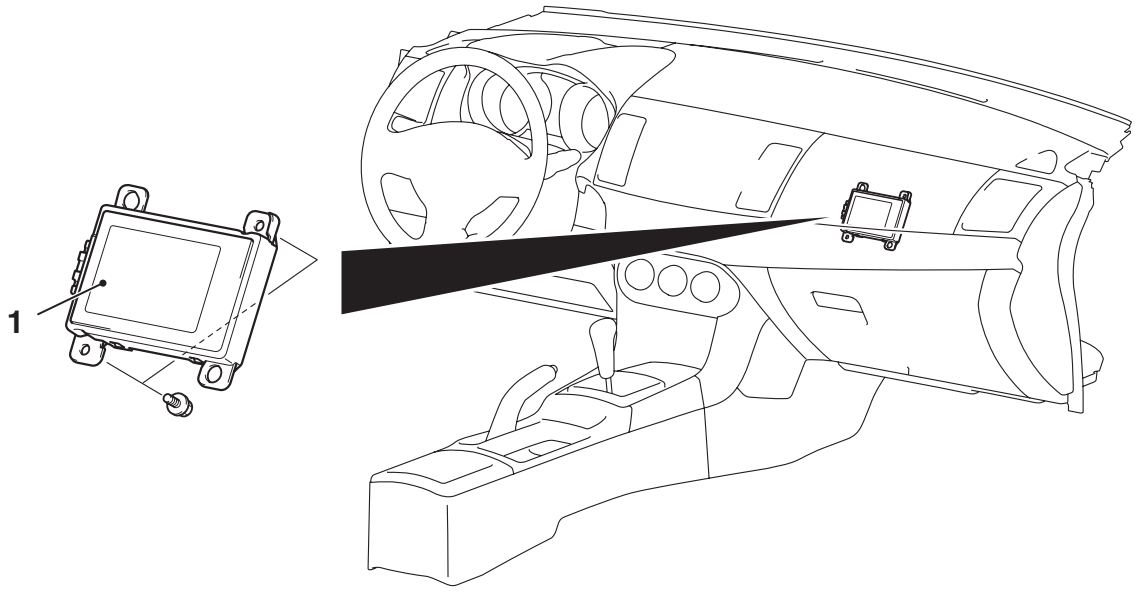
Item No.	Scan tool display	Check condition	Normal condition
1	RV switch	When the "Speech" switch is pushed	ON
2	On hook switch	When the "Hang-up" switch is pushed	ON
3	Off hook switch	When the "Pick-up" switch is pushed	ON

REMOVAL AND INSTALLATION

M1544401000112

HANDS FREE MODULE

Pre-removal operation	Post-installation operation
• Removal of glove box upper cover (Refer to GROUP 52A –Glove Box Assembly P.52A-6.)	• Installation of glove box upper cover (Refer to GROUP 52A –Glove Box Assembly P.52A-6.)



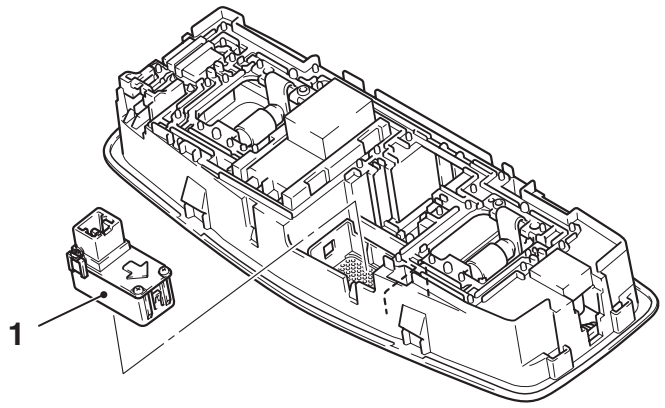
AC709148AB

Hands Free Module Removal Step

1. Hands free module

MICROPHONE UNIT

Pre-removal operation	Post-installation operation
• Removal of front dome light assembly (Refer to GROUP 54A –Dome light P.54A-259)	• Installation of front dome light assembly (Refer to GROUP 54A –Dome light P.54A-259)



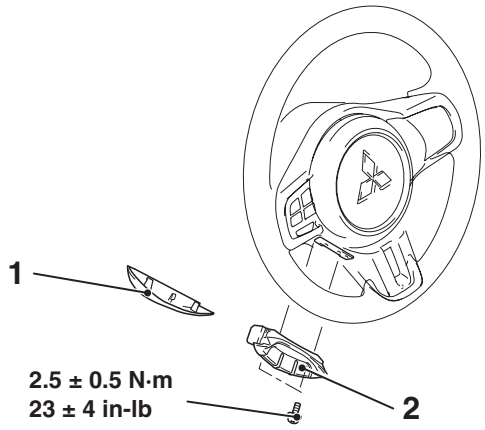
AC606269AB

Microphone Unit Removal Step

1. Microphone unit

TSB Revision

STEERING WHEEL VOICE CONTROL SWITCH



AC709152AB

Steering Wheel Voice Control Switch Removal Step

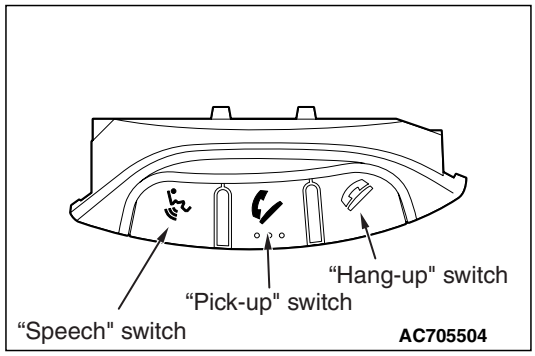
1. Steering wheel voice control switch cover
2. Steering wheel voice control switch

STEERING WHEEL VOICE CONTROL SWITCH CONTINUITY CHECK

M1544401100108

Use an ohmmeter to measure the resistance value between the terminal.

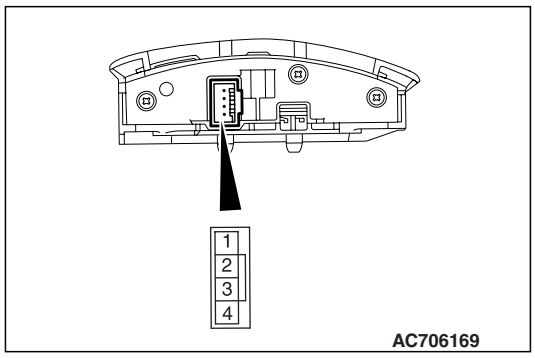
Switch position	Tester connection	Measurement value
No push	2 –3	Approximately 74 kΩ
"Speech" switch		Approximately 1.5 kΩ
"Pick-up" switch		Approximately 3.3 kΩ
"Hang-up" switch		Approximately 6.0 kΩ



AC705504

Checks whether there is a continuity between terminal No.4 and 1.

Tester connection	Specified condition
4 –1	Continuity exists (2 Ω or less)



AC706169

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH

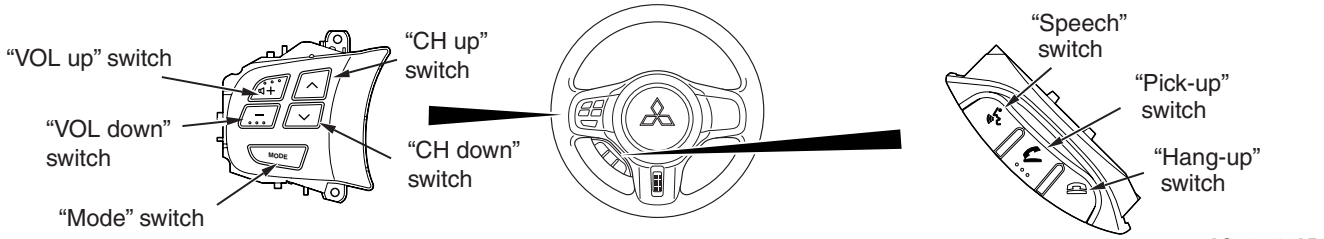
GENERAL INFORMATION

M1544000100419

On the steering wheel spoke, the steering wheel audio remote control switch and steering wheel voice control switch have been established.

<Steering wheel audio remote control switch>

<Steering wheel voice control switch>



AC705510AB

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH

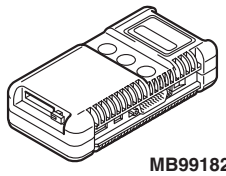
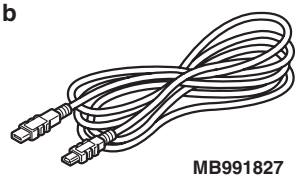
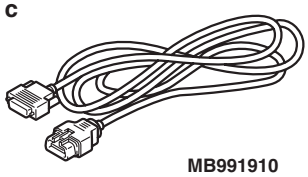
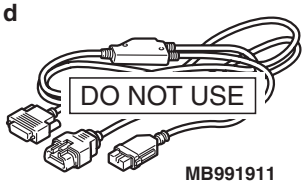
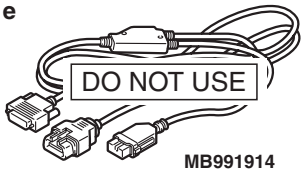
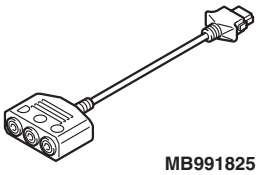
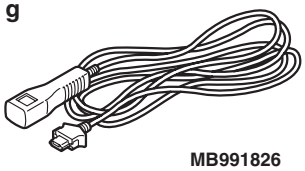
With the steering wheel audio remote control switch, the sound volume adjustment, mode changeover, CD track up/down and other operation of multivision display, radio, and CD player are available.

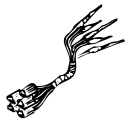
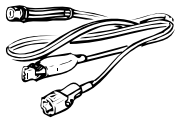
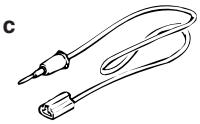
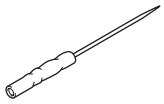
STEERING WHEEL VOICE CONTROL SWITCH

With the steering wheel voice control switch, the hands free cellular phone system can be operated.(Refer to P.54A-455.)

SPECIAL TOOLS

M1544000600566

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

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1544004800584

Refer to GROUP 00, Troubleshooting contents
P.00-7.

TROUBLE SYMPTOM CHART

M1544004901324

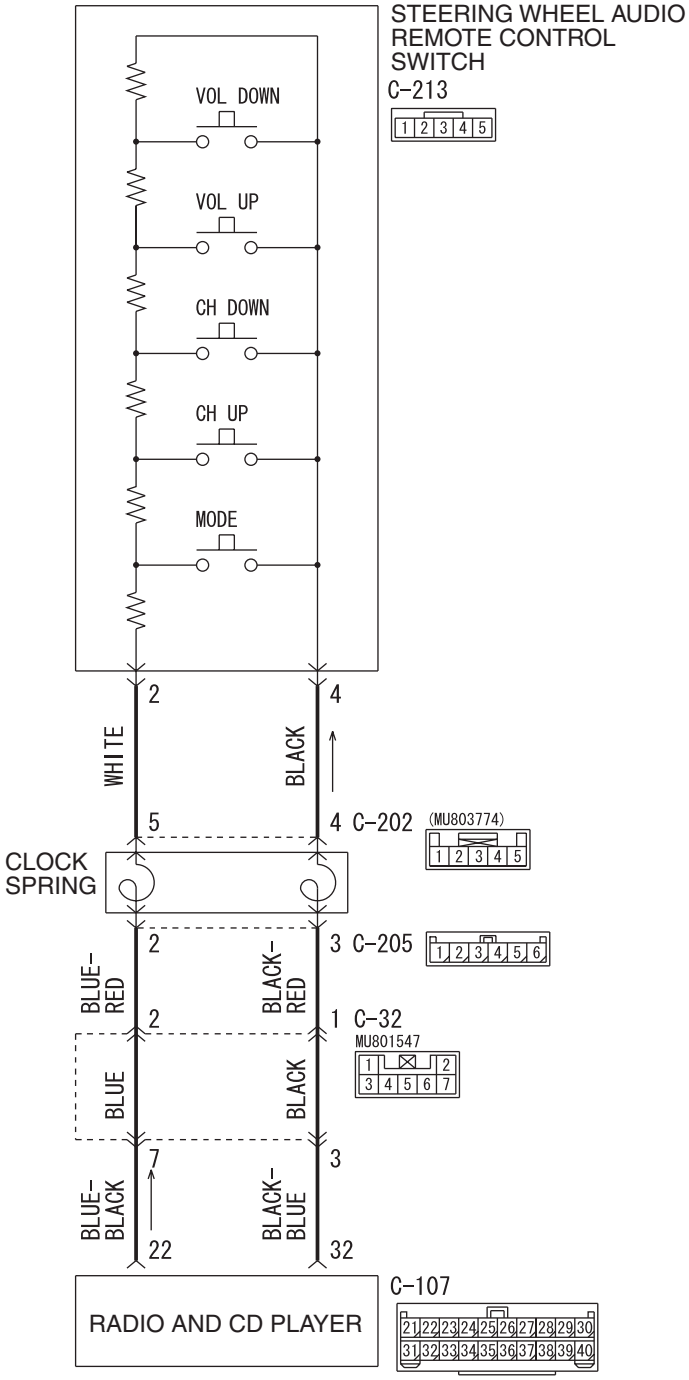
Inspection Procedure No.	Trouble symptom		Reference page
1	Steering wheel audio remote control switch does not function.	<vehicles with radio and CD player>	P.54A-522
2		<vehicles with MMCS>	P.54A-527
3	Steering wheel audio remote control switch illumination does not come on.		P.54A-531

SYMPTOM PROCEDURES

Inspection Procedure 1: Steering wheel audio remote control switch does not Function. <Vehicles with radio and CD player>

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

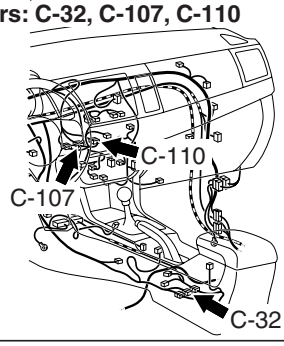
Steering Wheel Audio Remote Control Switch Circuit



W8G54M138A

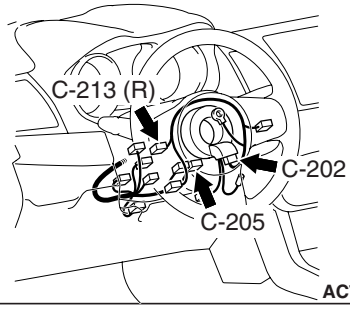
TSB Revision

Connectors: C-32, C-107, C-110



AC708951BU

Connectors: C-202, C-205, C-213



AC708953AF

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel audio remote control switch, the steering wheel audio remote control switch, the radio and CD player, or the clock spring may be defective.

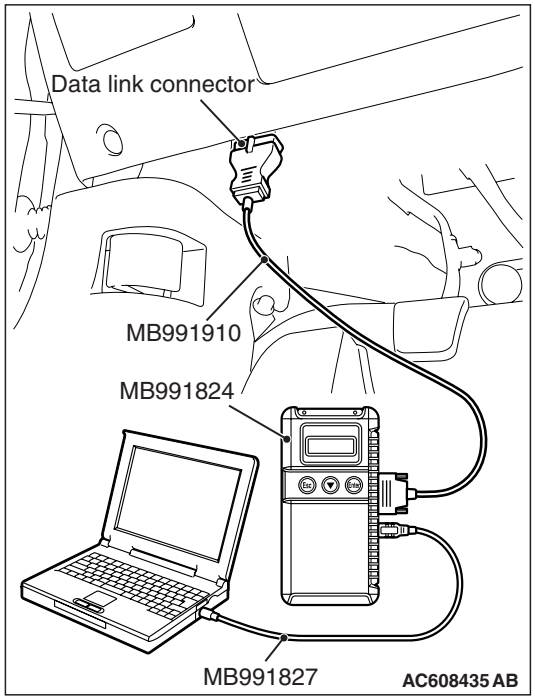
TROUBLESHOOTING HINTS

- The steering wheel audio remote control switch may be defective.
- The radio and CD player may be defective.
- The clock spring may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: 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, check data list.

Check whether the service data below are normal.

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

(2) Operate each switch of the steering remote control. Check whether the normal conditions listed below are displayed. (Refer to P.54A-363.)

Item No.	Item name	Normal condition
Item 1	RADIO remoto SW (SEEK-)	ON
Item 2	RADIO remoto SW (SEEK+)	ON
Item 3	RADIO remoto SW (MODE)	ON
Item 4	RADIO remoto SW (VOL-)	ON
Item 5	RADIO remoto SW (VOL+)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Replace the radio and CD player.

NO : Go to Step 2.

STEP 2. Check the steering wheel audio remote control switch.

Remove the steering wheel audio remote control switch. Then check continuity between the switch terminals.

Switch Position	Tester Connection	Measurement Value
No push	2 –4	Approximately 71 kΩ
Mode		Approximately 270 Ω
CH up		Approximately 740 Ω
CH down		Approximately 1.3 kΩ
VOL up		Approximately 2.1 kΩ
VOL down		Approximately 3.1 kΩ

Q: Is the steering wheel audio remote control switch in good condition?

YES : Go to Step 3.

NO : Replace the steering wheel audio remote control switch.

STEP 3. Check clock spring connector C-202 and C-205 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are clock spring connector C-202 and C-205 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The steering remote control switch should work normally.

STEP 4. Check the clock spring.

Check whether the clock spring is in good condition (Refer to GROUP 52B, Driver's air bag module and clock spring P.52B-392).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the clock spring.

STEP 5. Check radio and CD player connector C-107 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is radio and CD player connector C-107 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The steering remote control switch should work normally.

STEP 6. Check the wiring harness between radio and CD player connector C-107 (terminal 22, 32) and clock spring connector C-205 (terminal 2, 3).

NOTE: Also check intermediate connector C-32 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication lines for open or short circuit.

Q: Is the wiring harness between radio and CD player connector C-107 (terminal 22, 32) and clock spring connector C-205 (terminal 2, 3) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check steering remote control switch connector C-213 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is steering remote control switch connector C-213 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The steering remote control switch should work normally.

STEP 8. Check the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 2, 4) and clock spring connector C-202 (terminal 5, 4).

- Check the communication lines for open or short circuit.

Q: Is the wiring harness between steering remote control switch connector C-213 (terminal 2, 4) and clock spring connector C-202 (terminal 5, 4) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Check whether you can operate the radio and CD player by using the steering remote control.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

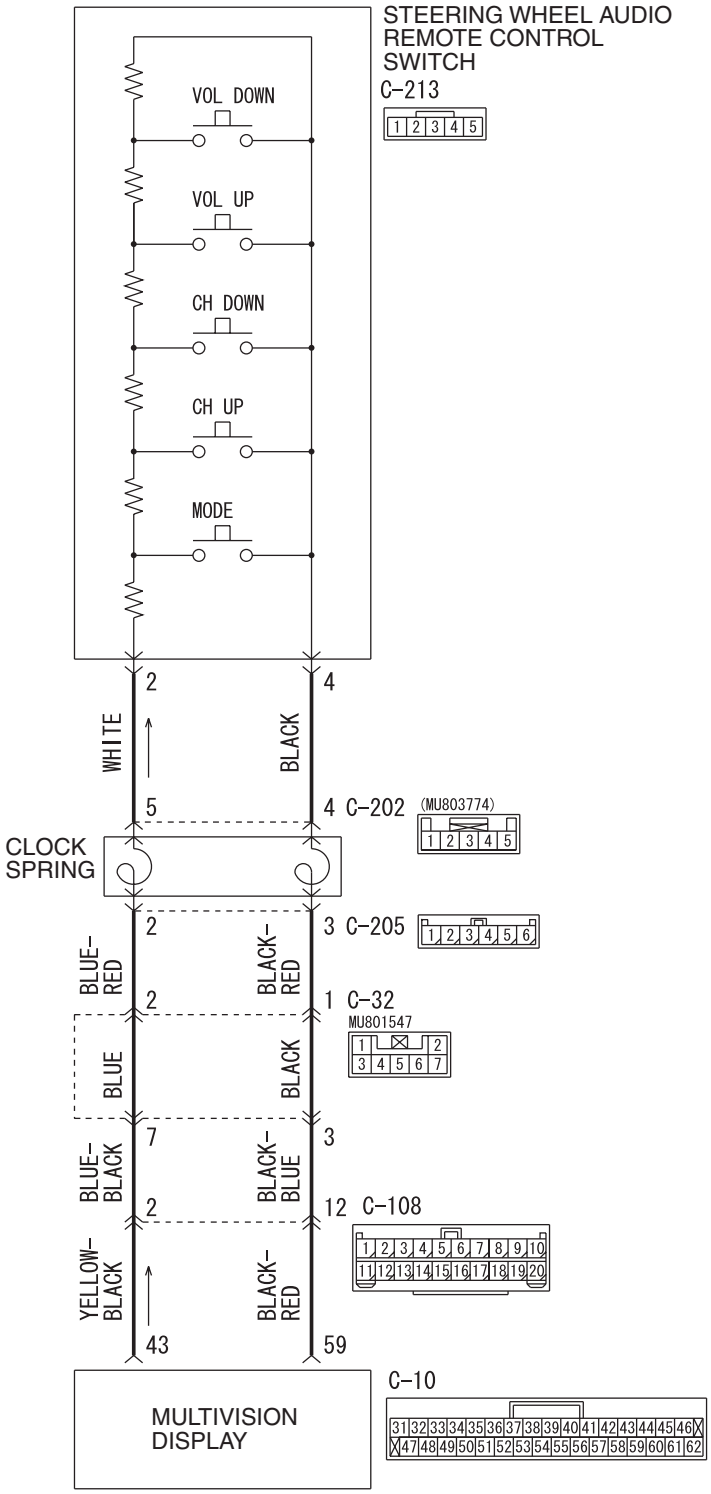
NO : Replace the radio and CD player.

Inspection Procedure 2: Steering Wheel Audio Remote Control Switch does not Function. <Vehicles with MMCS>

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

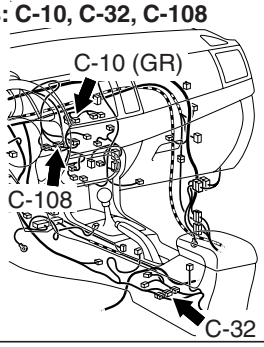
Steering Wheel Audio Remote Control Switch Circuit



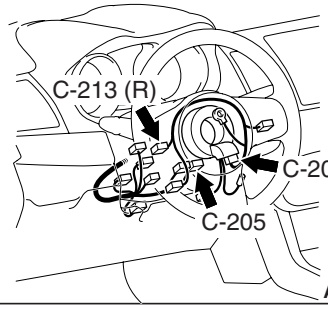
W8G54M137A

TSB Revision

Connectors: C-10, C-32, C-108



Connectors: C-202, C-205, C-213



TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel audio remote control switch, the steering wheel audio remote control switch, the multivision display, or the clock spring may be defective.

TROUBLESHOOTING HINTS

- The steering wheel audio remote control switch may be defective.
- The multivision display may be defective.
- The clock spring may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the steering wheel audio remote control switch.

Remove the steering wheel audio remote control switch. Then check continuity between the switch terminals. (Refer to P.54A-535.)

Switch Position	Tester Connection	Measurement Value
No push	2 –4	Approximately 71 kΩ
Mode		Approximately 270 Ω
CH up		Approximately 740 Ω
CH down		Approximately 1.3 kΩ
VOL up		Approximately 2.1 kΩ
VOL down		Approximately 3.1 kΩ

Q: Is the steering wheel audio remote control switch in good condition?

YES : Go to Step 2.

NO : Replace the steering wheel audio remote control switch.

STEP 2. Check clock spring connector C-202 and C-205 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are clock spring connector C-202 and C-205 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering wheel audio remote control switch should work normally.

STEP 3. Check the clock spring.

Check whether the clock spring is in good condition (Refer to GROUP 52B, Driver's air bag module and clock spring P.52B-392).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the clock spring.

STEP 4. Check multivision display connector C-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is multivision display connector C-10 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering wheel audio remote control switch should work normally.

STEP 5. Check the wiring harness between multivision display connector C-10 (terminal 43, 59) and clock spring connector C-205 (terminal 2, 3).

NOTE: Also check intermediate connector C-108, C-32 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-108, C-32 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the communication lines for open or short circuit.

Q: Is the wiring harness between multivision display connector C-10 (terminal 43, 59) and clock spring connector C-205 (terminal 2, 3) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 6. Check steering wheel audio remote control switch connector C-213 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is steering wheel audio remote control switch connector C-213 in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). The steering wheel audio remote control switch should work normally.

STEP 7. Check the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 2, 4) and clock spring connector C-202 (terminal 5, 4).

- Check the communication lines for open or short circuit.

Q: Is the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 2, 4) and clock spring connector C-202 (terminal 5, 4) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Retest the system

Check whether you can operate the multivision display by using the steering remote control.

Q: Is the check result normal?

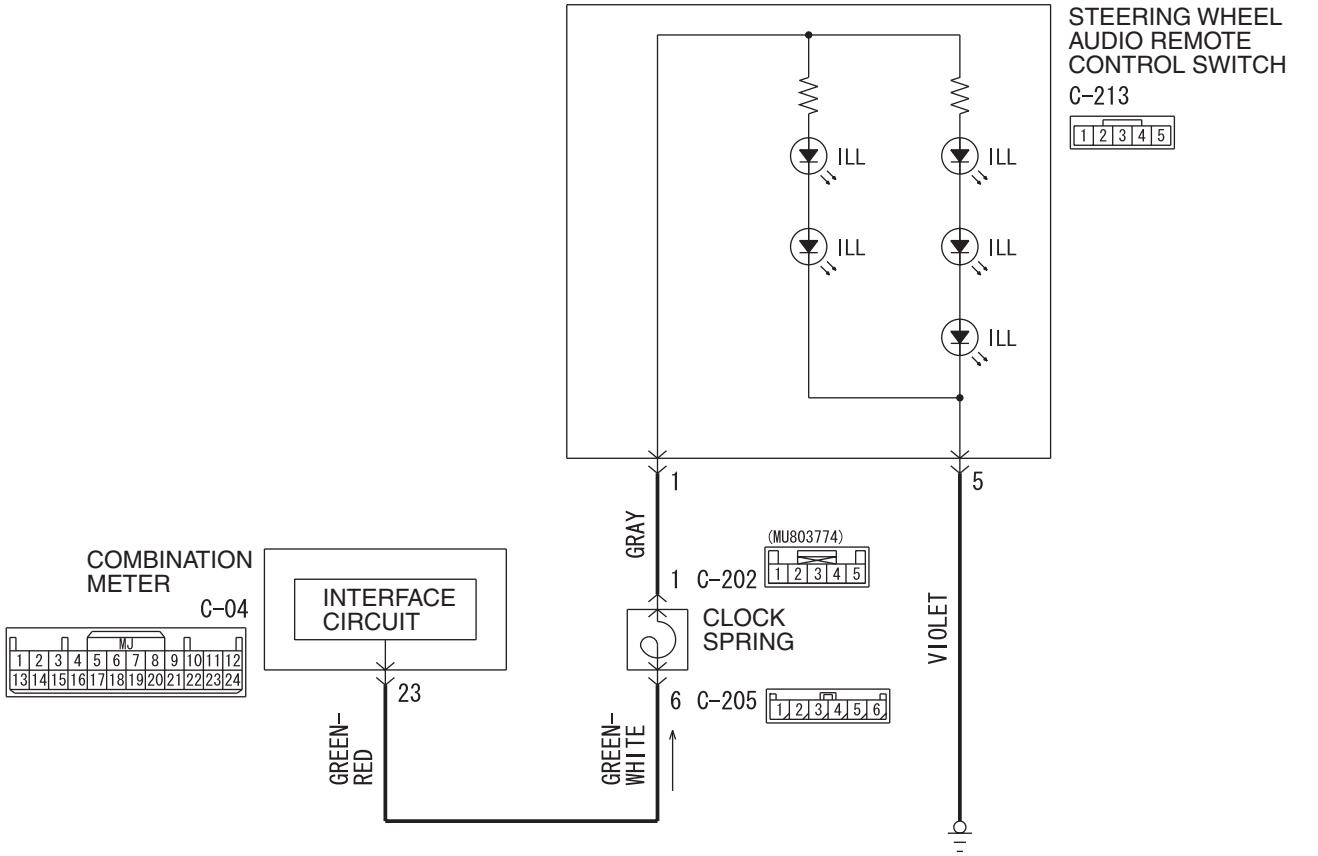
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the multivision display.

Inspection Procedure 3: Steering wheel audio remote control switch illumination does not come on.

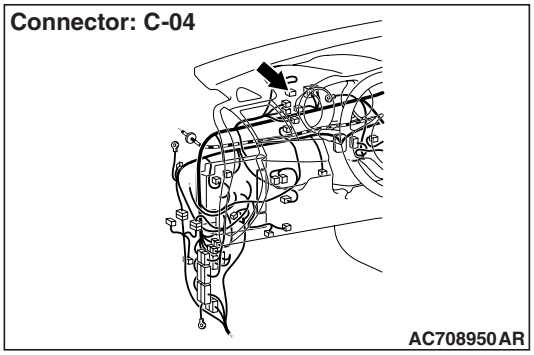
⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Steering Wheel Audio Remote Control Switch Illumination Circuit



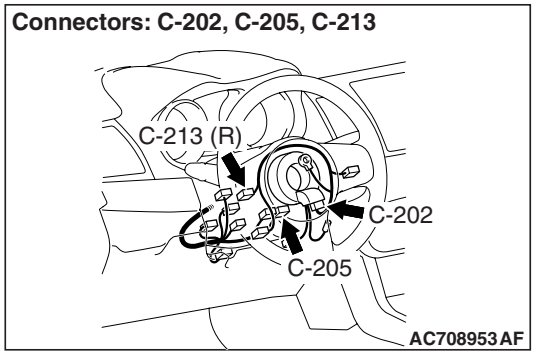
W8G54M142A

Connector: C-04



AC708950AR

Connectors: C-202, C-205, C-213



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TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel audio remote control switch, the steering wheel audio remote control switch, the combination meter, or the clock spring may be defective.

TROUBLESHOOTING HINTS

- The steering wheel audio remote control switch may be defective.
- The clock spring may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the combination metre.

Check whether the combination meter works normally.

Q: Does the combination meter operate normally?

YES : Go to Step 2.

NO : Diagnose the combination meter (Refer to P.54A-28).

STEP 2. Check steering wheel audio remote control switch connector C-213 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is steering wheel audio remote control switch connector C-213 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 3. Check the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 5) and ground.

- Check the ground wire.

Q: Is the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 5) and ground in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check clock spring connectors C-202 and C-205 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are clock spring connectors C-202 and C-205 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 5. Check the clock spring.
Check whether the clock spring is in good condition (Refer to GROUP 52B, Driver's air bag module and clock spring P.52B-392).

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the clock spring.

STEP 6. Check the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 1) and clock spring connector C-202 (terminal 1).

- Check the power supply lines.

Q: Is the wiring harness between steering wheel audio remote control switch connector C-213 (terminal 1) and clock spring connector C-202 (terminal 1) in good condition?

YES : Go to Step 7.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-04 in good condition?

YES : Go to Step 8.
NO : Repair or replace the damaged component (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

STEP 8. Check the wiring harness between combination meter connector C-04 (terminal 23) and clock spring connector C-205 (terminal 6).

- Check the power supply lines.

Q: Is the wiring harness between combination meter connector C-04 (terminal 23) and clock spring connector C-205 (terminal 6) in good condition?

YES : Go to Step 9.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 9. Retest the system

Check whether the illumination of the steering wheel audio remote control switch comes on normally.

Q: Doe the illumination of the steering wheel audio remote control switch comes on normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the steering wheel audio remote control switch.

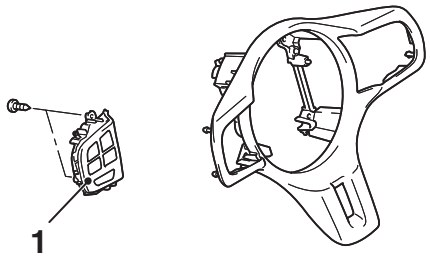
REMOVAL AND INSTALLATION

M1544015600119

⚠ CAUTION

- **To remove the driver air bag module, refer to GROUP 52B –Service Precautions P.52B-25 and Driver's Air Bag Module and Clock Spring P.52B-386.**
- **When the steering wheel sensor is replaced, always carry out calibration to make ASC-ECU learn the neutral point. (Refer to GROUP 35C –On-vehicle Service-Steering Wheel Sensor Calibration P.35C-267.)**

Pre-removal operation	Post-installation operation
• Removal of garnish (Refer to GROUP37 –Steering wheel P.37-22.)	• Installation of garnish (Refer to GROUP37 –Steering wheel P.37-22.)



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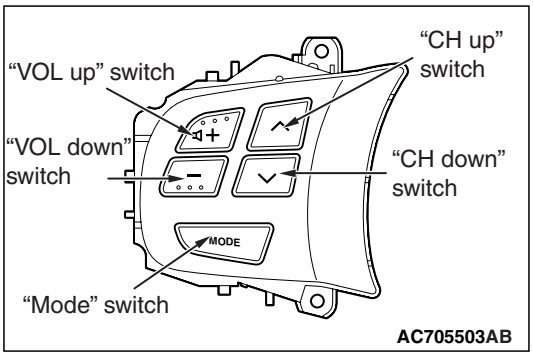
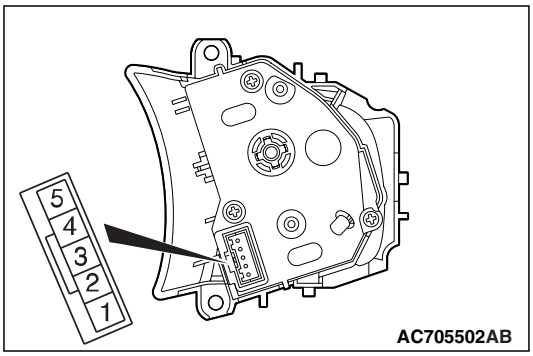
Removal Step

1. Steering wheel audio remote control switch





STREERING WHEEL AUDIO REMOTE CONTROL SWITCH INSPECTION

M1544015700127

Use an ohmmeter to measure the resistance value between the terminal.

Switch Position	Tester Connection	Measurement Value
No push	2 –3	Approximately 3.1 kΩ
	2 –4	Approximately 71 kΩ
"Mode" switch		Approximately 270 Ω
"CH up" switch		Approximately 740 Ω
"CH down" switch		Approximately 1.3 kΩ
"VOL up" switch		Approximately 2.1 kΩ
"VOL down" switch		Approximately 3.1 kΩ

On the steering wheel audio remote control switch connector, check the continuity between terminals.

Tester Connection	Normal condition
1 –5	Continuity exists (2 ohms or less)

SATELLITE RADIO TUNER

GENERAL INFORMATION

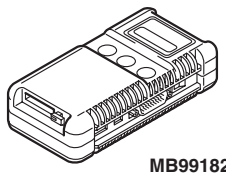
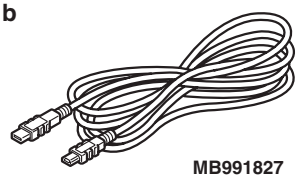
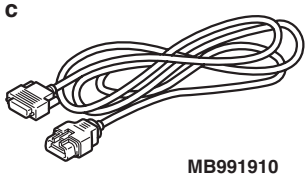
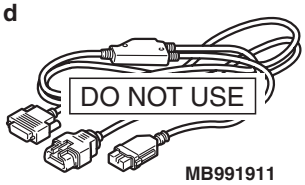
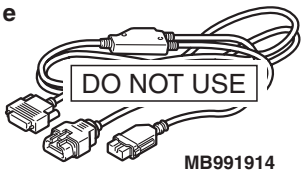
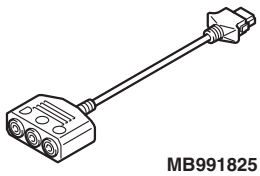
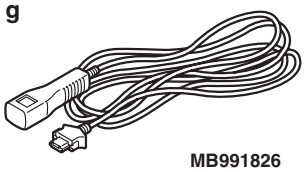
M1544000100271

SATELLITE RADIO

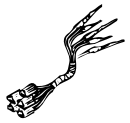
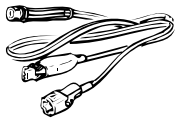
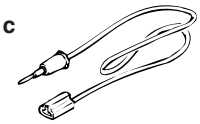
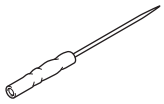
- The satellite radio is a broadcast technology that offers a clear digital sound directly by using satellites.
- The registered service provider is SIRIUS™ satellite radio.
- This service offers listeners more than 100 programs such as news, sports, music, and entertainment.

SPECIAL TOOLS

M1544000600577

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

TSB Revision

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

INTRODUCTION TO SATELLITE RADIO DIAGNOSIS

M1544004700361

ERROR CODE (SIRIUS SATELLITE RADIO)

The display displays the error codes if an abnormality related to the satellite radio is detected. (Refer to P.54A-283.)

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1544016500041

Refer to GROUP 00, Troubleshooting contents P.00-7.

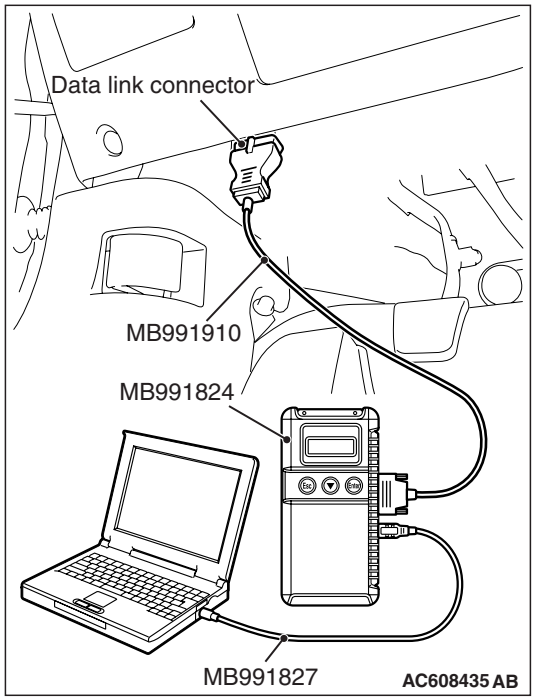
DIAGNOSIS FUNCTION

M1544013200193

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

Required Special Tools:

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



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "Meter" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using scan tool MB991958.

When detecting fault and storing the diagnostic trouble code, the ECU connected to CAN bus line obtains the data before the determination of the diagnostic trouble code and the data when the diagnostic trouble code is determined, and then stores the ECU status of that time. By analyzing each data from scan tool MB991958, the troubleshooting can be performed more efficiently. The displayed items are as the table below.

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the diagnostic trouble code is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
4	Accumulated minute	Cumulative time for current malfunction of diagnostic trouble code	min

DIAGNOSTIC TROUBLE CODE CHART

M1544012900229

Diagnostic trouble code number	Trouble content	Reference page
B2222	Radio receiver internal fail	P.54A-540
U0019	Bus off (CAN-B)	P.54A-542
U0141	ETACS CAN timeout	P.54A-543
U0151	SRS-ABG CAN timeout	P.54A-545
U0154	OCM CAN timeout	P.54A-546
U0155	Meter CAN timeout	P.54A-548
U0164	A/C CAN timeout	P.54A-549
U0168	WCM CAN timeout	P.54A-551
U0184	Audio CAN timeout	P.54A-552
U0197	Hands free module CAN timeout	P.54A-554

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B2222: Radio receiver internal fail

⚠ CAUTION
If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, always diagnose the CAN bus lines.

⚠ CAUTION
Before replacing the satellite radio tuner, be sure to check that the power supply circuit, ground circuit, and communication circuit are normal.

TROUBLE JUDGMENT

When the ignition switch is ON and the system voltage is from 10 V to 16 V (data from ETACS-ECU), if the satellite radio tuner receives abnormal status by signal conditioning 10 times consecutively, DTC B2222 is stored.

COMMENTS ON TROUBLE SYMPTOM

The satellite radio tuner or CAN bus line may have a problem.

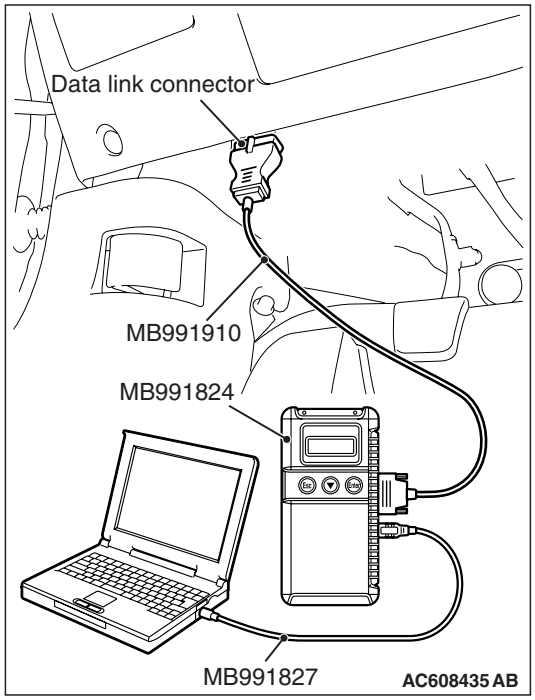
PROBABLE CAUSES

- The satellite radio tuner may be defective.
- The CAN bus line may be defective

DIAGNOSIS

Required Special Tools:

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14.) On completion, go to Step 2.

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set to the satellite radio tuner.

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

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

DTC U0019: Bus off (CAN-B)

⚠ CAUTION
If DTC U0019 is set, be sure to diagnose the CAN bus line.

⚠ CAUTION
When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

If the CAN-B circuit malfunction occurs, the satellite radio tuner sets DTC U0019.

JUDGMENT CRITERIA

With the ignition switch at the ON position and the system voltage at 10 –16 volts (data from ETACS-ECU), if the Satellite radio tuner becomes unable to transmit data normally due to the CAN-B bus circuit malfunction, the satellite radio tuner determines that a problem has occurred.

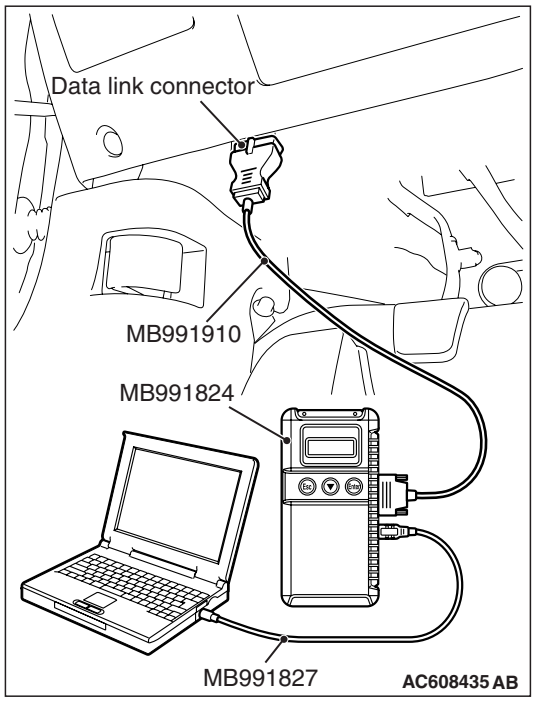
TROUBLESHOOTING HINTS

The satellite radio tuner may be defective

DIAGNOSIS

Required Special Tools:

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



STEP 1. Recheck for diagnostic trouble code.
Check again if the DTC is set to the satellite radio tuner.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 2.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.
(1) Turn the ignition switch to the "ON" position.
(2) Diagnose the CAN bus line.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

DTC U0141: ETACS CAN timeout

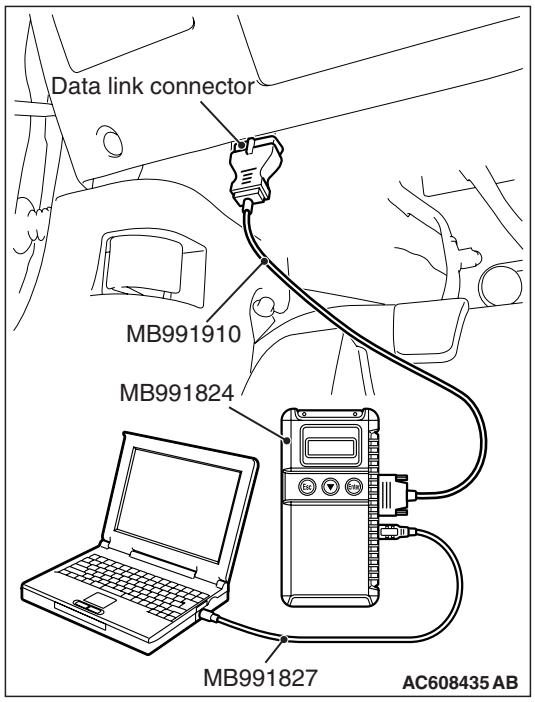
⚠ CAUTION
- **If the DTC U0141 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION
If the signal from ETACS-ECU cannot be received, the satellite radio tuner sets the DTC U0141.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with ETACS-ECU cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective
- The satellite radio tuner may be defective
- The ETACS-ECU may be defective

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the ETACS-ECU.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-ABG CAN timeout

⚠ CAUTION

- **If DTC U0151 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from SRS-ECU cannot be received, the satellite radio tuner sets DTC U0151.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with SRS-ECU cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

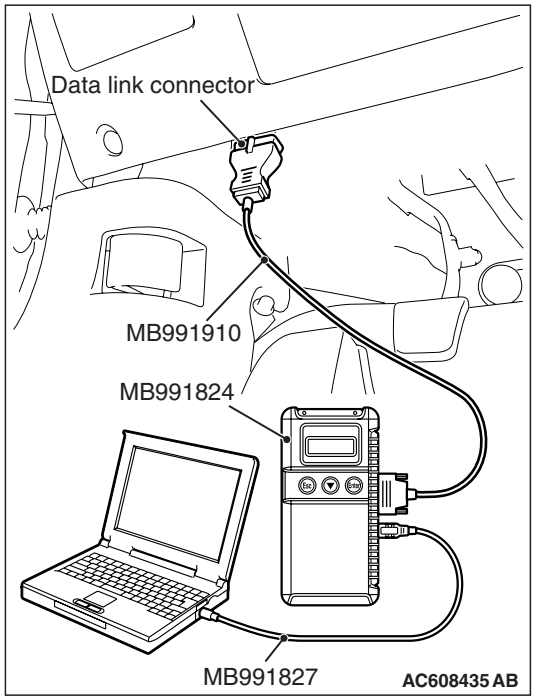
TROUBLESHOOTING HINTS

- The CAN bus line may be defective
- The satellite radio tuner may be defective
- The SRS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check again if the DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Troubleshooting P.52B-31).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the satellite radio tuner.

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

Q: Is the DTC set?

YES : Replace the satellite radio tuner.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0154: OCM CAN timeout

⚠ CAUTION
If DTC U0154 is set, be sure to diagnose the CAN bus line.

⚠ CAUTION
When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

When the signals from occupant classification-ECU cannot be received, the satellite radio tuner sets DTC U0154.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with occupant classification-ECU cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

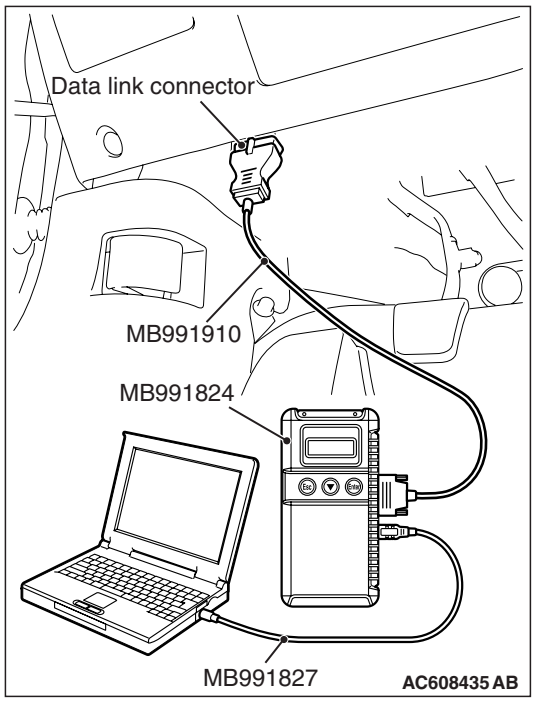
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The satellite radio tuner may be defective.
- The occupant classification-ECU may be defective.

DIAGNOSIS

Required Special Tools:

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.
Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0155: Meter CAN timeout

⚠ CAUTION
If DTC U0155 is set in the satellite radio tuner, diagnose the CAN main bus line.

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

DIAGNOSTIC FUNCTION
When the signals from combination meter cannot be received, the satellite radio tuner sets DTC U0155.

JUDGMENT CRITERIA
With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with combination meter cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

TROUBLESHOOTING HINTS
- The CAN bus line may be defective.
- The satellite radio tuner may be defective.
- The combination meter may be defective.

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

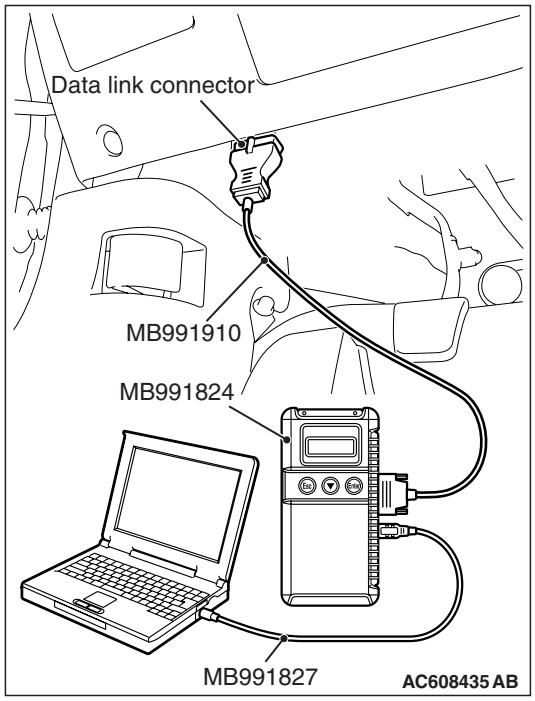
STEP 1. Using scan tool MB991958, diagnose the CAN bus line

⚠ 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. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check whether a combination meter DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for combination meter DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to combination meter, Diagnosis P.54A-28).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0164: A/C CAN timeout

⚠ CAUTION

- **If DTC U0164 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from A/C-ECU cannot be received, the satellite radio tuner sets DTC U0164.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10–16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with A/C-ECU cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

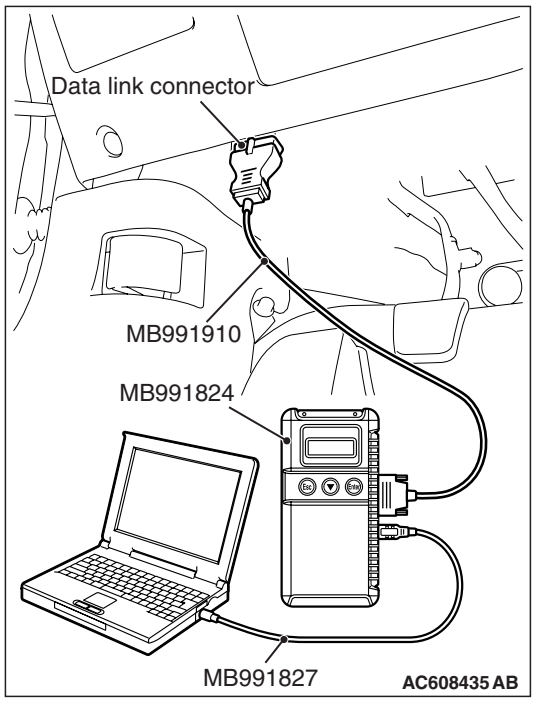
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The A/C-ECU may be defective.
- The satellite radio tuner may be defective.

DIAGNOSIS

Required Special Tools:

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



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the A/C diagnostic trouble code.
Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Automatic A/C Diagnosis P.55-9).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TSB Revision

DTC U0168: WCM CAN timeout

⚠ CAUTION

- **If DTC U0168 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

If the signal from KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be received, the satellite radio tuner sets DTC U0168.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 V (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The KOS-ECU may be defective. <vehicles with KOS>
- The WCM may be defective. <vehicles with WCM>
- The satellite radio tuner may be defective.

DIAGNOSIS

Required Special Tools:

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

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

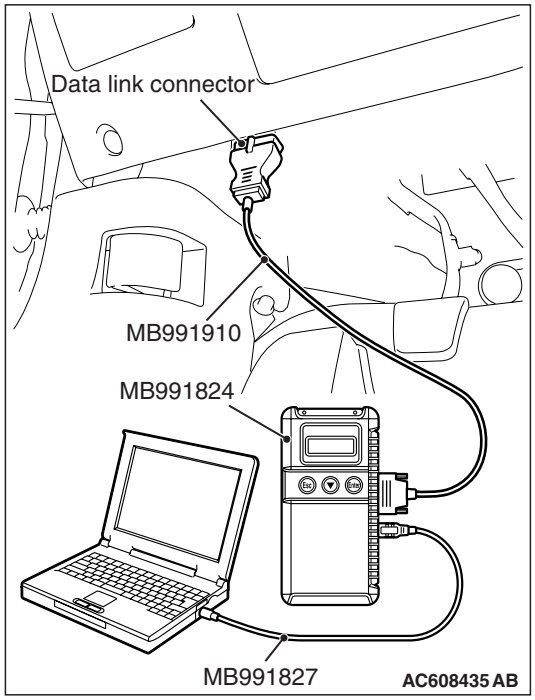
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM> diagnostic trouble code.
Check again if the DTC is set to the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM>.

Q: Is the DTC set?

YES : Troubleshoot the KOS or WCM (Refer to GROUP 42B, Diagnosis P.42B-20 <KOS> or GROUP 42C, Diagnosis P.42C-14 <WCM>).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0184: Audio CAN timeout

⚠ CAUTION
- **If DTC U0184 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from radio and CD player cannot be received, the satellite radio tuner sets DTC U0184.

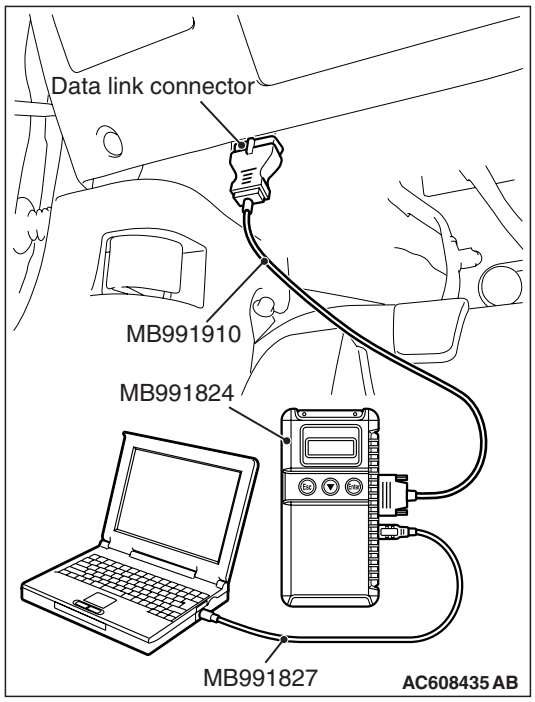
JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the radio and CD player cannot be established for 0.6 second or more, the satellite radio tuner determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The radio and CD player may be defective.
- The satellite radio tuner may be defective.
- The CAN bus may be defective.

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 (Vehicles with CAN communication system)

TSB Revision



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the radio and CD player.

Q: Is the DTC set?

YES : Troubleshoot the audio (Refer to P.54A-288).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

DTC U0197: Hands free module CAN timeout

⚠ CAUTION

- **If DTC U0197 is set, be sure to diagnose the CAN bus line.**
- **When replacing the ECU, always check that the communication circuit is normal.**

DIAGNOSTIC FUNCTION

When the signals from hands free module cannot be received, the satellite radio tuner sets DTC U0197.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse is OK, or odometer value is 80.5 km (50 miles) or more, and the communications with hands free module cannot be established for 2,500 ms or more, the satellite radio tuner determines that a problem has occurred.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The satellite radio tuner may be defective.
- The hands free module may be defective.

DIAGNOSIS

Required Special Tools:

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

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

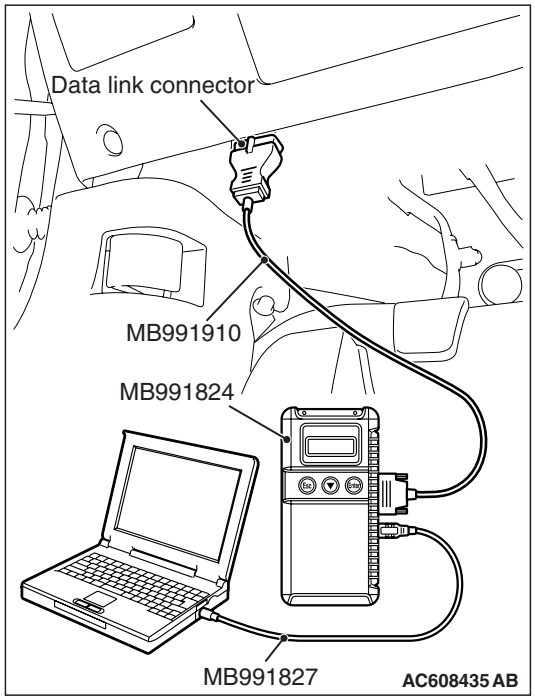
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the hands free module diagnostic trouble code.
Check again if the DTC is set to the hands free module.

Q: Is the DTC set?

YES : Troubleshoot the hands-free cellular phone system.
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the satellite radio tuner.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

TROUBLE SYMPTOM CHART

M1544016400033

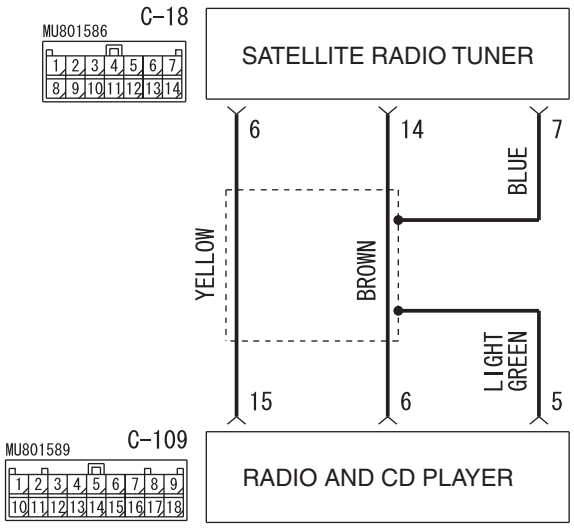
Inspection Procedure No.	Trouble symptom	Reference page
1	A satellite radio cannot be received.	P.54A-556
2	Check the satellite radio tuner power supply circuit.	P.54A-561
3	The error code "ANTENNA ERROR" is displayed on the display.	P.54A-564

SYMPTOM PROCEDURES

Inspection Procedure 1: A satellite radio cannot be received.

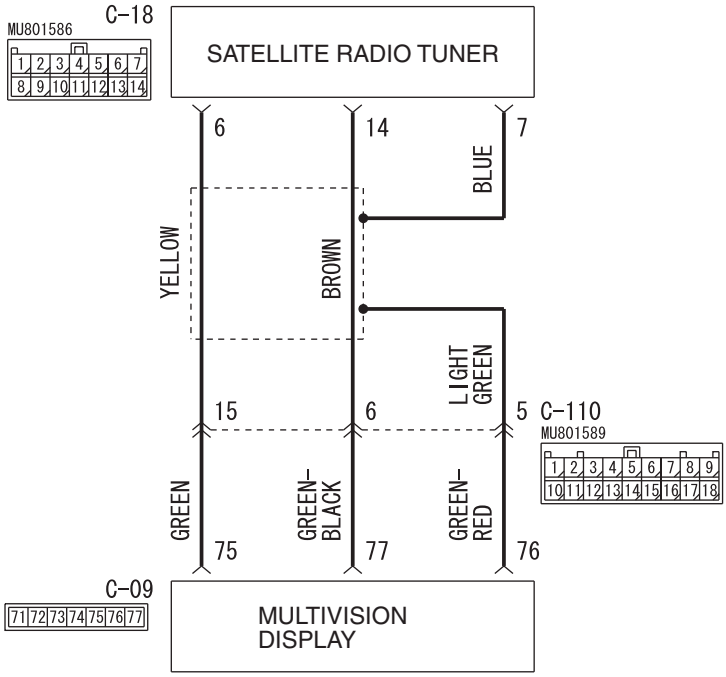
⚠ CAUTION
Before replacing the satellite radio tuner, antenna feeder, radio and CD player <vehicles with radio and CD player> or multivision display <vehicles with MMCS>, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Satellite Radio Tuner Communication Circuit <Vehicles with Radio and CD Player>

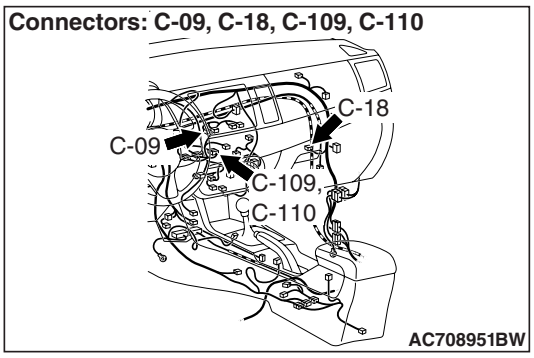


W8G54M139A

Satellite Radio Tuner Communication Circuit <Vehicles with MMCS>



W8G54M140A



COMMENTS ON TROUBLE SYMPTOM

There may be a failure in the wiring harness from the satellite radio tuner to the radio and CD player <vehicles with radio and CD player> or multivision display <vehicles with MMCS>, its respective connector(s), the satellite radio tuner, the CD changer <vehicles with radio and CD player> or the multivision display <vehicles with MMCS>.

PROBABLE CAUSES

- The satellite radio tuner may be defective.
- The radio and CD player <vehicles with radio and CD player> or multivision display <vehicles with MMCS> may be defective.
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

TSB Revision

STEP 1. Check whether AM or FM broadcast frequency is received.

Check whether AM or FM broadcast frequency is received.

Q: Is AM or FM broadcast frequency received?

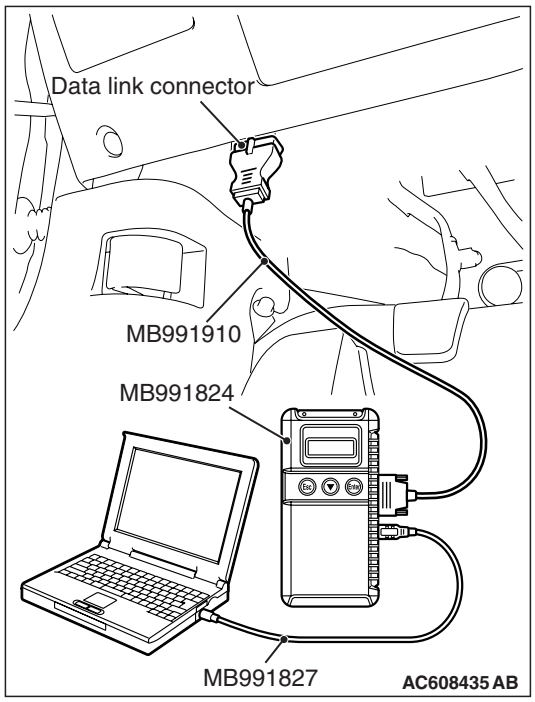
YES : Go to Step 2.

NO : Diagnose the radio <vehicles with radio and CD player> or the multivision display <vehicles with MMCS> (Refer to P.54A-317 <vehicles with radio and CD player> or P.54A-408 <vehicles with MMCS>).

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-537."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES <vehicles with radio and CD player> : Go to Step 3.

YES <vehicles with MMCS> : Go to Step 6.

NO <vehicles with radio and CD player or MMCS> : Repair the CAN bus line. (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 3. Check satellite radio tuner connector C-18 and radio and CD player connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is satellite radio tuner connector C-18 or radio and CD player connector C-109 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 4. Check the wiring harness between satellite radio tuner connector C-18 (terminal 6, 14, 7) and radio and CD player connector C-109 (terminal 15, 6, 5).

- Check the communication lines for open circuit or short circuit.

Q: Is the wiring harness between satellite radio tuner connector C-18 (terminal 6, 14, 7) and radio and CD player connector C-109 (terminal 15, 6, 5) in good condition?

YES : Go to Step 5.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Substitute a known good radio and CD player, and check the trouble symptom.

Check whether satellite radio broadcast can be received.

Q: Can a satellite radio be received?

YES : Replace the radio and CD player.
NO : Replace the satellite radio tuner.

STEP 6. Check satellite radio tuner connector C-18 and multivision display connector C-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is satellite radio tuner connector C-18 or multivision display connector C-09 in good condition?

YES : Go to Step 7.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 7. Check the wiring harness between satellite radio tuner connector C-18 (terminal 6, 14, 7) and multivision display connector C-09 (terminal 75, 77, 76).

- Check the communication lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between satellite radio tuner connector C-18 (terminal 6, 14, 7) and multivision display connector C-09 (terminal 75, 77, 76) in good condition?

YES : Go to Step 8.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 8. Substitute a known good multivision display, and check the trouble symptom.

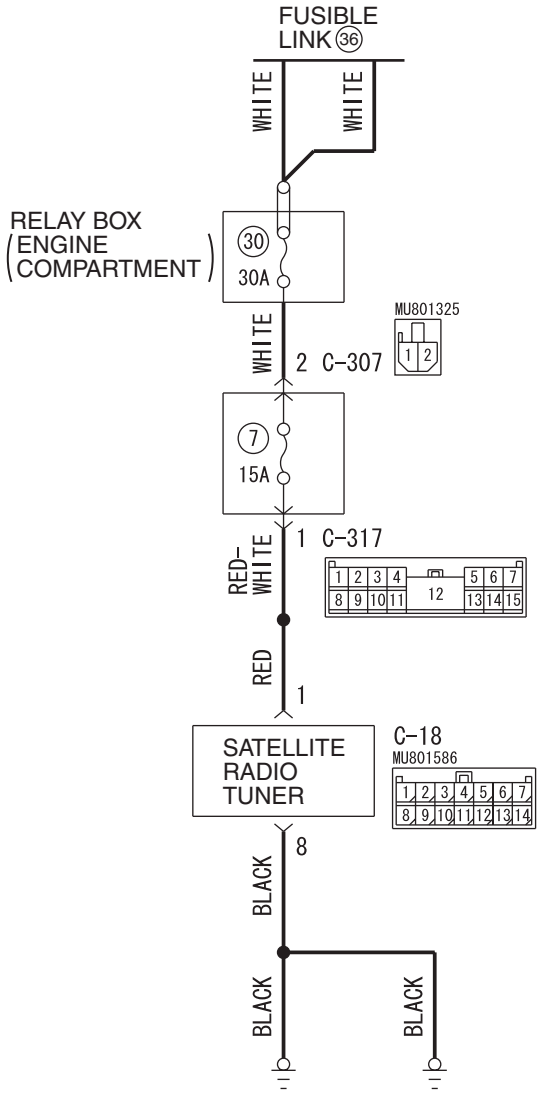
Check whether satellite radio broadcast can be received.

Q: Can a satellite radio be received?

YES : Replace the multivision display.
NO : Replace the satellite radio tuner.

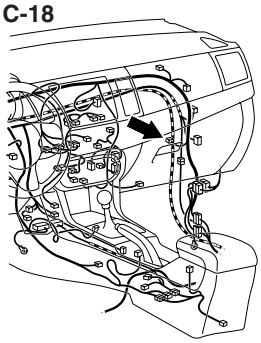
Inspection Procedure 2: Check the satellite radio tuner power supply circuit.

Satellite Radio Tuner Supply Circuit



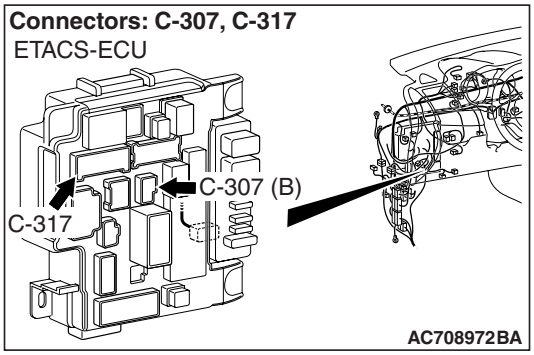
W8G54M141A

Connector: C-18



AC708951BX

Connectors: C-307, C-317



AC708972BA

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

If the satellite radio tuner functions do not work at all, the satellite radio tuner power supply system, ground system, or satellite radio tuner may have a problem.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The satellite radio tuner may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check satellite radio tuner connectors C-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is satellite radio tuner connectors C-18 in good condition?

YES : Go to Step 2.

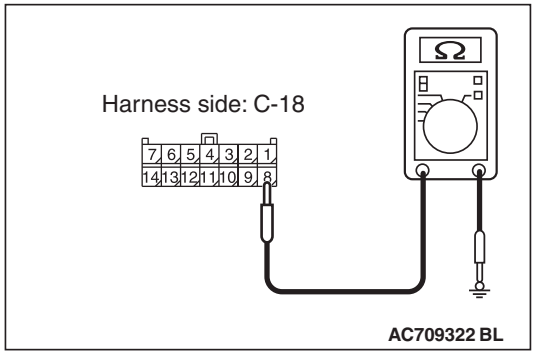
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 2. Check the ground circuit to the satellite radio tuner. Measure the resistance at satellite radio tuner connectors C-18.

(1) Disconnect satellite radio tuner connector C-18 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between satellite radio tuner connector C-18 terminal 8 and ground.

- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

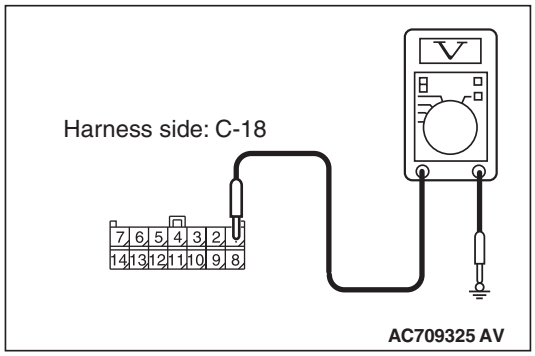
NO : Go to Step 3.

STEP 3. Check the wiring harness between satellite radio tuner connector C-18 (terminal 8) and ground.

Q: Is the wiring harness between satellite radio tuner connector C-18 (terminal 8) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



STEP 4. Check the power supply circuit to the satellite radio tuner. Measure the voltage at satellite radio tuner connector C-18.

(1) Disconnect the connector, and measure at the wiring harness-side connector.
(2) Measure the voltage between terminal 1 and ground.

OK: Battery voltage

Q: Is the measured voltage battery voltage?

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

STEP 5. Check the wiring harness between satellite radio tuner connector C-18 (terminal 1) and fusible link (36).

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

Q: Is the wiring harness between satellite radio tuner connector C-18 (terminal 1) and fusible link (36) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the satellite radio tuner normally.

STEP 6. Retest the system

Check if the satellite radio tuner works normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the satellite radio tuner.

Inspection Procedure 3: The error code "ANTENNA ERROR" is displayed on the display.

TECHNICAL DESCRIPTION (COMMENT)

When there is a failure in the antenna base, antenna rod, or there is an open circuit or improper connection in the antenna feeder, and the satellite radio tuner cannot receive normal voltage value or current value, the error code "ANTENNA ERROR" is displayed on the display.

TROUBLESHOOTING HINTS

- Malfunction of the antenna rod.
- Malfunction of the antenna base.
- Malfunction of the antenna feeder cable.
- Malfunction of the satellite radio tuner.

DIAGNOSIS

STEP 1. Check if the antenna base or antenna rod are damaged.

Q: Are the antenna base or antenna rod damaged?

YES : Replace the antenna base or antenna rod.
NO : Go to Step 2.

STEP 2. Check the connection between the antenna base and the antenna feeder.

Q: Is the connection between the antenna base and the antenna feeder normal?

YES : Go to Step 3.
NO : Repair the connection.

STEP 3. Check if the antenna feeder is damaged.

Q: Is the antenna feeder damaged or bent?

YES : Repair or replace the antenna feeder.
NO : Go to Step 4.

STEP 4. Check the connection between the antenna feeder cable and the satellite radio tuner.

Q: Is the connection between the antenna feeder and the satellite radio tuner normal?

YES : Go to Step 5.
NO : Repair the connection.

STEP 5. Temporarily replace the antenna base, and check if "ANTENNA ERROR" is displayed on the display.

Q: Is "ANTENNA ERROR" displayed on the display?

YES : Replace the satellite radio tuner.
NO : Replace the antenna base.

ON-VEHICLE SERVICE

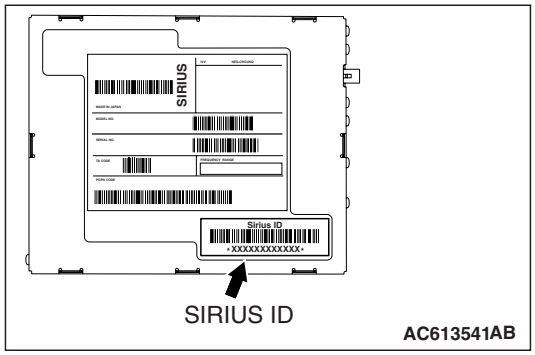
HOW TO READ SIRIUS ID

M1544018300021

READ THE SIRIUS ID DIRECTLY FROM THE SATELLITE RADIO TUNER.

When the SIRIUS ID (12 digits) cannot be displayed by operating the multivision display, or radio and CD player, it can be read directly by the satellite radio tuner.

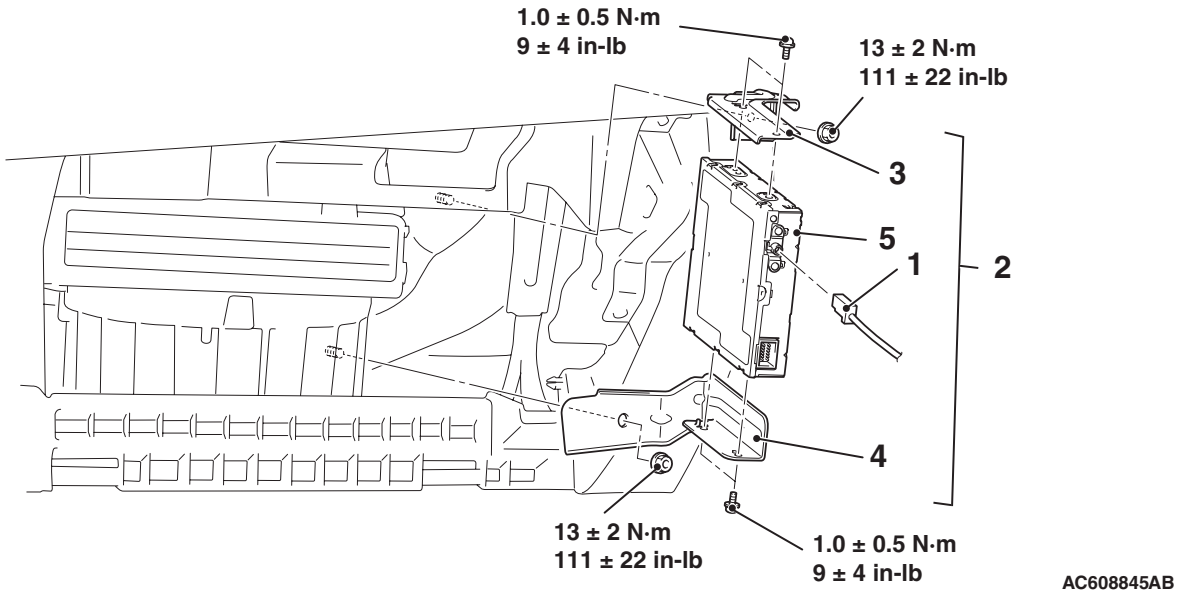
1. Remove the satellite radio tuner. Refer to P.54A-565.
2. Read the SIRIUS ID (12 digits) from the satellite radio tuner.



REMOVAL AND INSTALLATION

M1544016100043

Pre-removal operation	Post-installation operation
• Removal of glove box, bottom cover (Refer to GROUP 52A –Glove Box P.52A-6.)	• Installation of glove box, bottom cover (Refer to GROUP 52A –Glove Box P.52A-6.)



Removal Steps

1. Satellite radio tuner connector
2. Satellite radio tuner assembly
3. Audio equip bracket (upper)

Removal Steps (Continued)

4. Audio equip bracket (lower)
5. Satellite radio tuner

TSB Revision

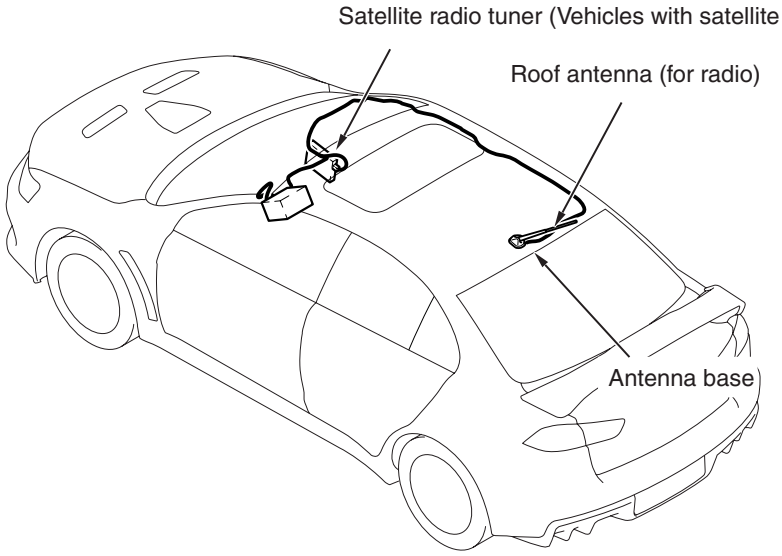
ANTENNA

GENERAL INFORMATION

M1544200500024

The roof antenna has been adopted for the radio. The antenna base incorporates the radio amplifier. When the satellite radio tuner is installed, the antenna base that also corresponds to the satellite radio is installed.

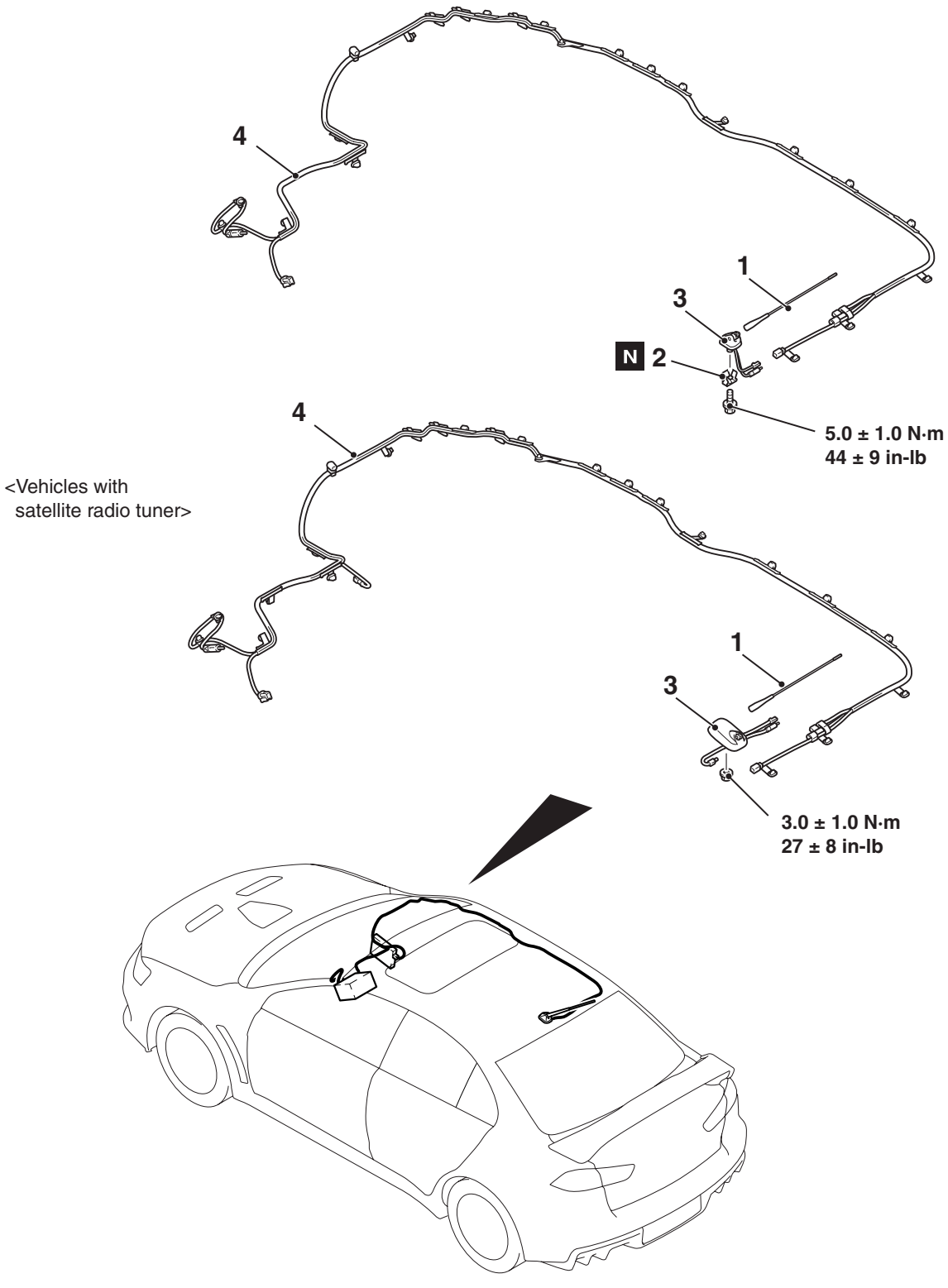
CONSTRUCTION DIAGRAM



AC708816AB

REMOVAL AND INSTALLATION

M1544200200294



AC708876AB

Removal Steps

1. Antenna rod

• Headlining (Refer to GROUP 52A – Headlining P.52A-17).

Removal Steps (Continued)

2. Antenna spring <Vehicles without satellite radio tuner>
3. Antenna base

TSB Revision

Removal Steps (Continued)

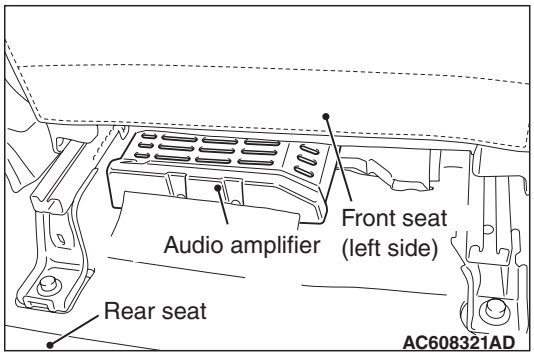
- Radio and CD player (Refer to P.54A-364). <Vehicles with radio and CD player>
- Multivision display assembly (Refer to P.54A-364). <Vehicles with MMCS>
- Glove box cover (Refer to GROUP 52A –Glove Box P.52A-6).
- Rear side roof energy absorption box (RH) <Vehicle with sunroof>(Refer to GROUP 52A – Headlining P.52A-17).

4. Antenna feeder

AMPLIFIER

GENERAL INFORMATION

M1544000100390



The 8-ch high-power audio amplifier with integrated DSP (total maximum output of 650 W) equipped with the front seat (left side) has been combined with the 9-speaker 7-position system, adopting the Rockford Fosgate ® premium sound system. The audio amplifier offers the clear treble without distortion.

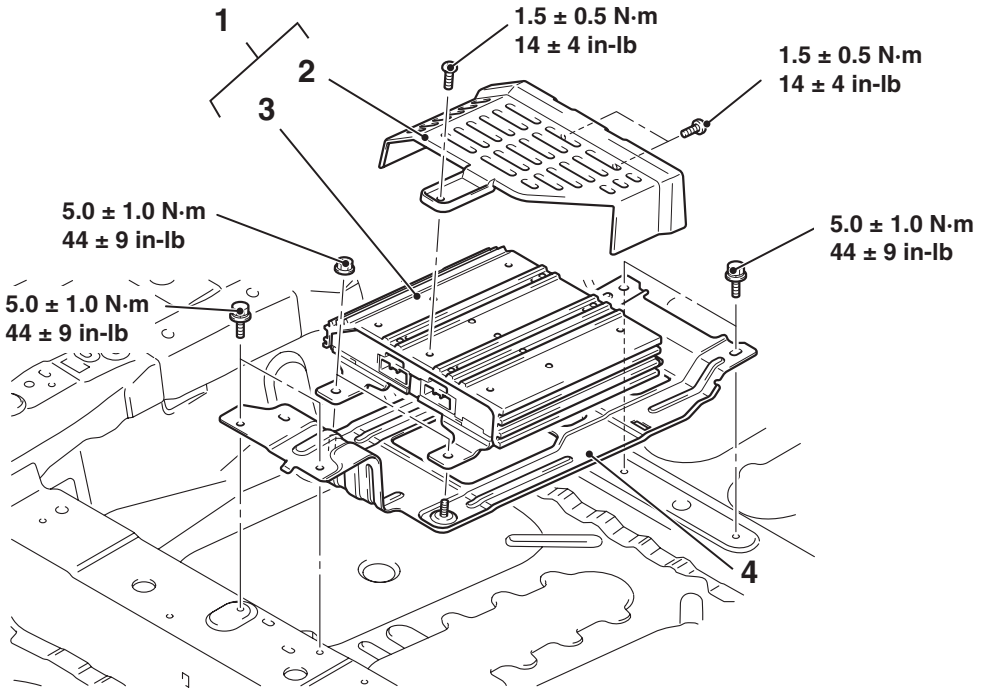
REMOVAL AND INSTALLATION

M1544004100477

⚠ CAUTION

To remove the front seat assembly of vehicle with side air bag, refer to GROUP 52B –Service Precautions P.52B-25 and Curtain Air Bag Module(s) P.52B-409.

Pre-removal operation	Post-installation operation
Removal of front seat assembly (Refer to GROUP 52A – Front Seat Assembly P.52A-20).	Installation of front seat assembly (Refer to GROUP 52A – Front Seat Assembly P.52A-20).



AC608802 AB

Removal Steps

1. Audio amplifier assembly
2. Audio amplifier cover

<<A>>

Removal Steps (Continued)

3. Audio amplifier
4. Audio amplifier box bracket

REMOVAL SERVICE POINT

<<A>> REMOVAL OF AUDIO AMPLIFIER BOX BRACKET

Turn up the carpet, and remove the audio amplifier box bracket.

TSB Revision

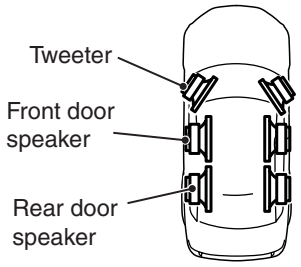
SPEAKER

GENERAL INFORMATION

M1544101000047

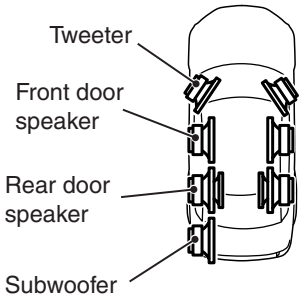
The following two types of speakers are available.

<6 speakers>



- 6 speakers (tweeter: 3.5 cm, front door: 16 cm, rear door: 16 cm)

<9 speakers 7 position system>



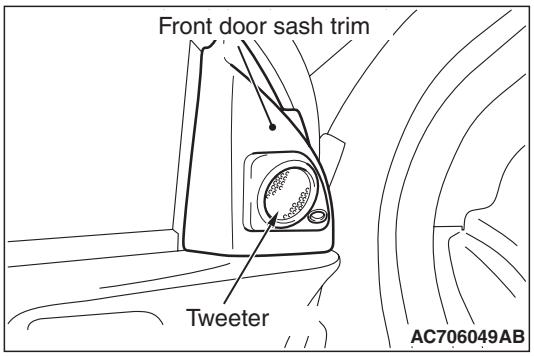
AC705512AB

- 9 speakers 7 position system (tweeter: 3.5 cm, front door: 16 cm, rear door: 2-way coaxial 16 cm, subwoofer: 25 cm) <Rockford Fosgate® premium sound system>

Specification

Item	<Vehicles with6 speakers>		<Vehicles with 9 speakers 7 position system>	
	Allowable input power	Rated input power	Allowable input power	Rated input power
Front tweeter	25W	3W	50W	25W
Front door speaker	35W	15W	75W	50W
Rear door speaker	35W	15W	50W	25W
Subwoofer	–	–	150W/150W	75W/75W

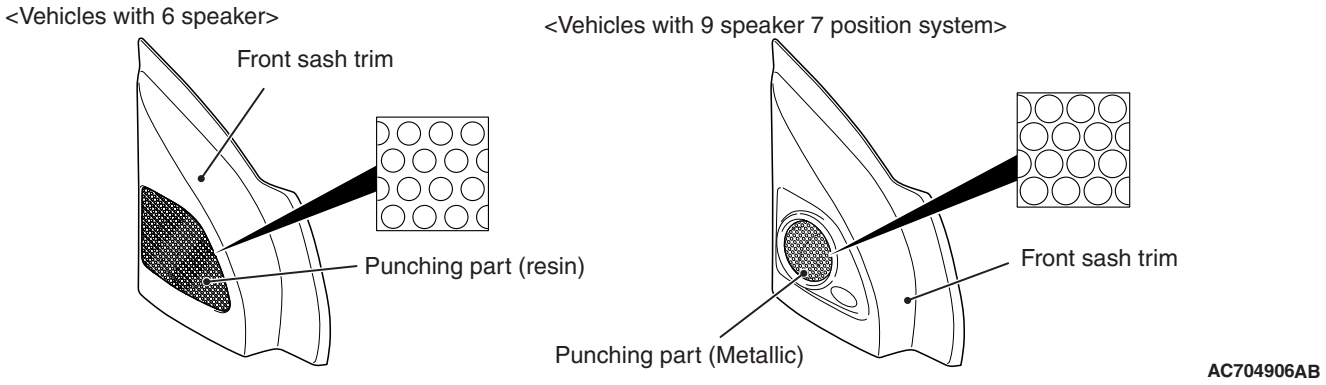
TWEETER



AC706049AB

For the front door sash trim, two types of tweeters, the balance dome tweeter <Vehicles with 6 speakers> and soft dome tweeter <Vehicles with 9 speakers 7 position system>, have been established. The soft dome tweeter can play clearer treble with less distortion compared to the balance dome tweeter.

TSB Revision



Also, two types of front sash trim, a resin type <vehicles with 6 speakers> and punching metal type <vehicles with 9 speaker 7 position system>, are available. With the punching metal type, the metal is adopted for the punching part to enlarge the punching opening, enabling the playback of cleaner treble.

DOOR SPEAKER

Front door speaker

- For vehicles with 6-speaker, the 16-cm paper cone speaker has been established.
- For vehicles with 9-speaker 7-position system, the 16-cm PP (polypropylene) cone speaker has been established.

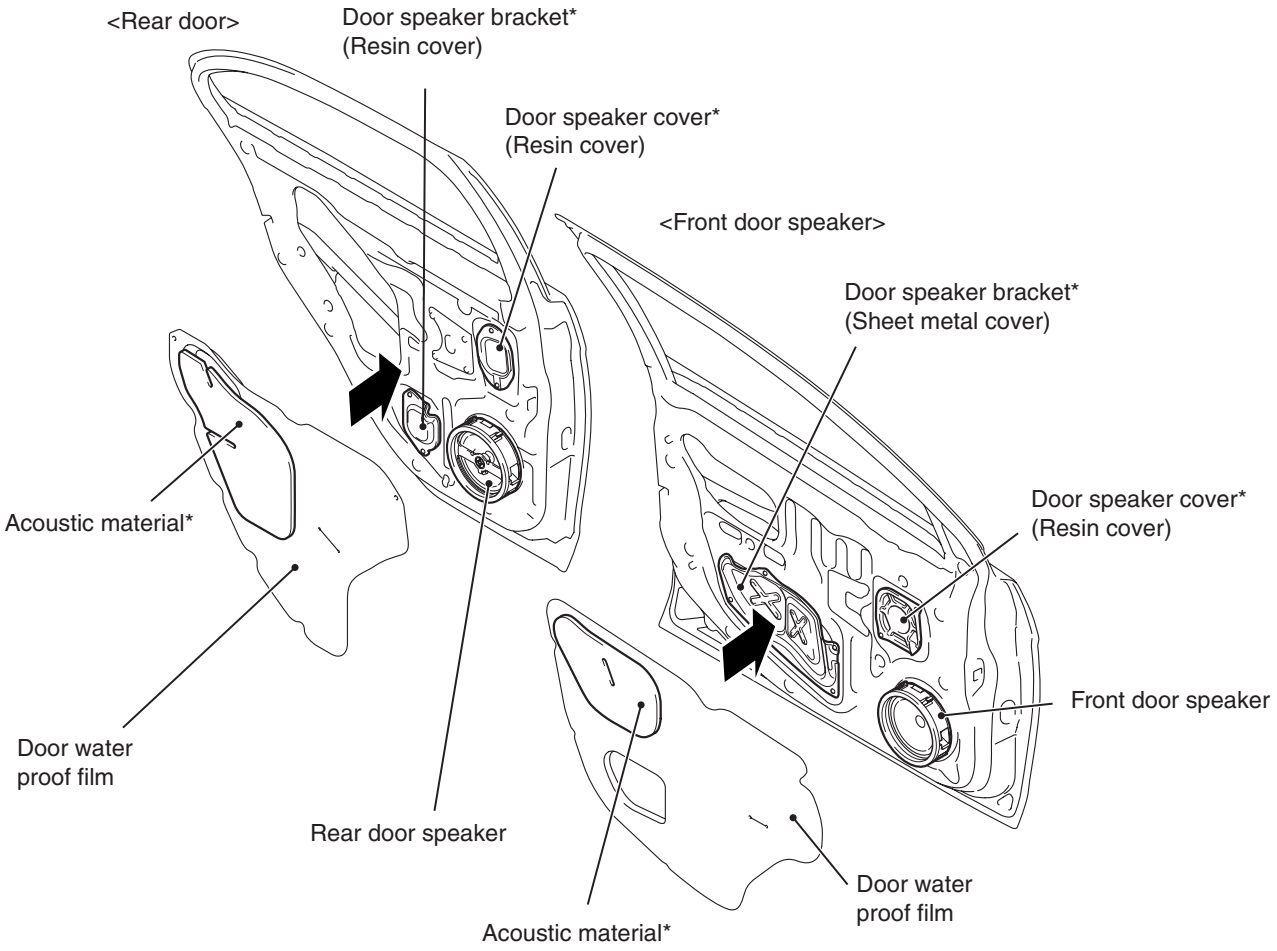
Compared to the paper cone speakers, the PP (polypropylene) cone speakers can playback crisper bass.

Rear door speaker

- For vehicles with 6-speaker, the 16-cm paper cone speaker has been established.
- For vehicles with 9-speaker 7-position system, the 16-cm PP (polypropylene) cone 2-way coaxial speaker has been established.

As for the PP (polypropylene) cone 2-way coaxial speaker, high/low-pitched speakers have been arranged on the same axle, corresponding to the well-balanced and wide pitch ranges.

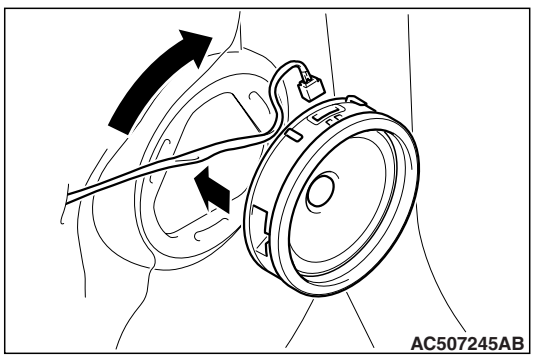
Door speaker box



NOTE: The parts with "" are installed exclusively to the vehicles with 9 speaker 7 position system (Rockford Fosgate premium sound system).*

For vehicles with 9-speaker 7-position system, the door opening of the vehicle has been blocked by the door speaker bracket (front: sheet metal cover, rear: resin cover), door speaker cover (resin cover), and acoustic material of door water proof film to make the door into a speaker box, thus improving the sound quality. As an advantage of the door speaker bracket (sheet metal cover), the rigidity of the areas around the speaker has been increased, and the higher sound pressure, suppression of high harmonic, and suppression of dumping are achieved to improve sound quality.

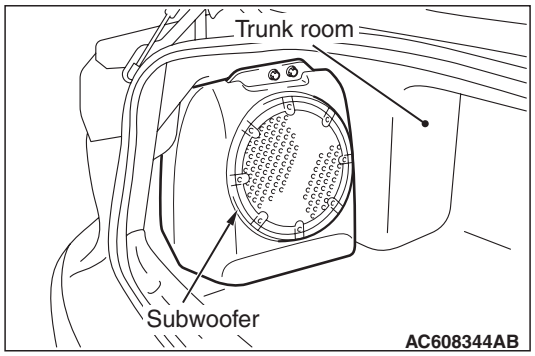
Serviceability



The one-touch installable speaker (with 3 tabs, fixed by rotating) has been adopted to improve service-ability.

TSB Revision

SUBWOOFER <VEHICLES WITH 9 SPEAKER 7 POSITION SYSTEM>



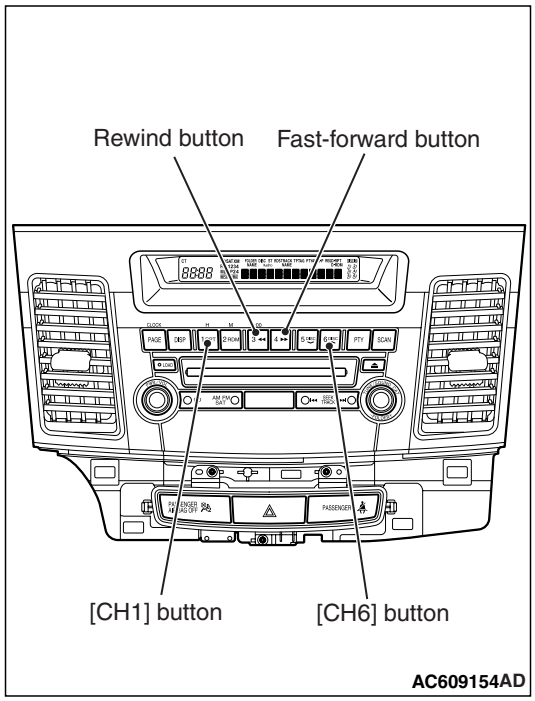
To the trunk room, a 25-cm dual voice coil subwoofer and a 20-liter subwoofer sealed box are installed. The punched sound with dynamic deep bass and rhythm can be played back.

ON-VEHICLE SERVICE

SPEAKER TEST <VEHICLES WITH RADIO AND CD PLAYER>

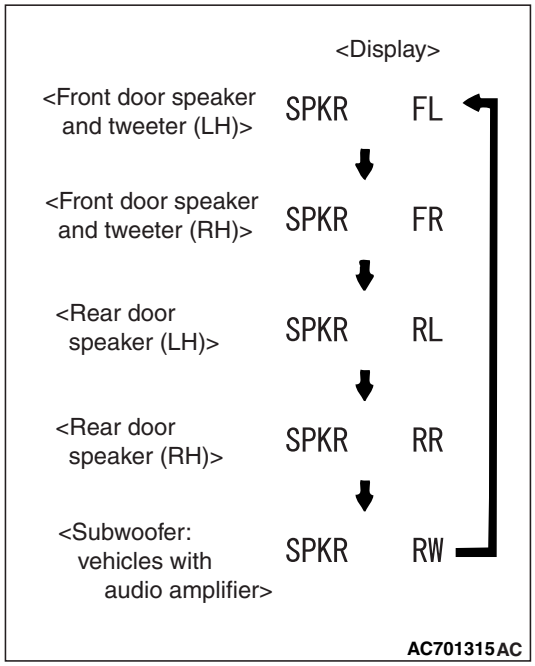
M1544100500191

SPEAKER CONNECTION CHECK MODE



Enter the speaker connection check mode according to the following steps:

1. Turn the Ignition switch to the "ACC" or "ON" position and switch off the radio and CD player.
2. Press the following buttons in that order within sixty seconds from step (1).
   (1) [CH1] button
   (2) Rewind button
   (3) Fast-forward button
   (4) [CH6] button



3. Check that the speaker, which is displayed on the center panel display, sounds (If the [CH6] button is pressed, the speaker will be changed).

NOTE: The display of "FL", "FR", "RL", "RR","RW"blinks.

4. If a button other than the [CH6] button is pressed, or the ignition switch is turned to "LOCK" (OFF) position, you will exit from the speaker connection check mode.

BUZZ NOISE CHECK MODE

Inserting a CD during the speaker connection check mode shifts the mode to the buzz noise check mode, and the buzz noise sound of each speaker can be checked.
As with the speaker connection check mode, press the [CH6] button to switch the output speaker of the buzz noise check sound.
Check that the buzz noise sound is output from the output speaker of buzz noise check sound.

NOTE: "SPKR" is displayed as "BUZZ" during buzz noise check mode.

SPEAKER TEST <VEHICLES WITH MMCS>

M1544100500209

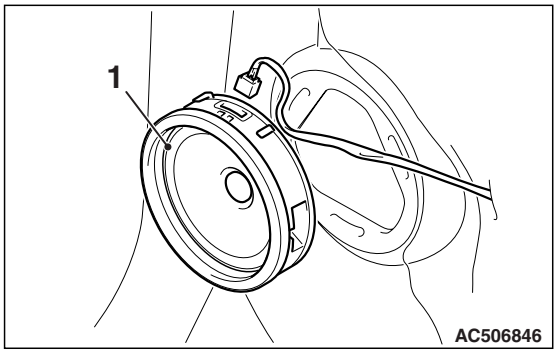
Refer to P.54A-369

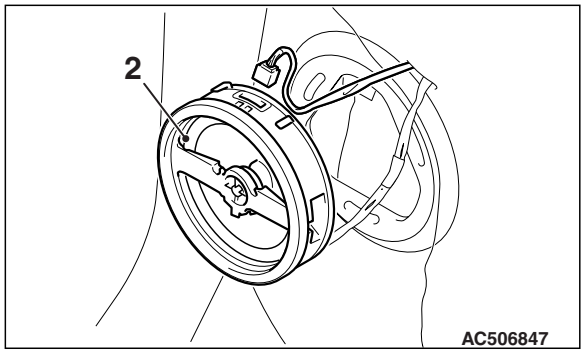
REMOVAL AND INSTALLATION

M1544100300205

DOOR SPEAKER

Pre-removal Operation
Learning of the power window fully closed position (Refer to GROUP 42A –Door, On-vehicle service P.42A-117).





AC507216 AB

Front Door Speaker Removal Steps

- Front door trim (Refer to GROUP 52A –Door Trim P.52A-15).

<<A>> 1. Front door speaker

Rear Door Speaker Removal Steps

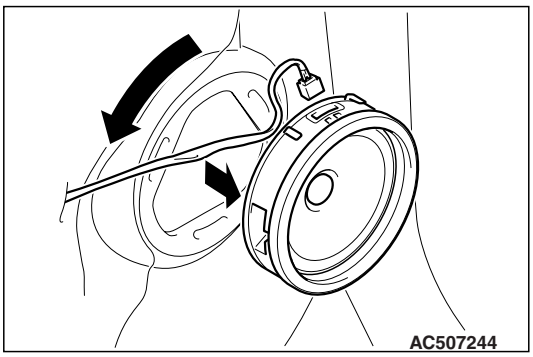
- Rear door trim (Refer to GROUP 52A –Door Trim P.52A-15).

<<A>> 2. Rear door speaker

REMOVAL SERVICE POINT

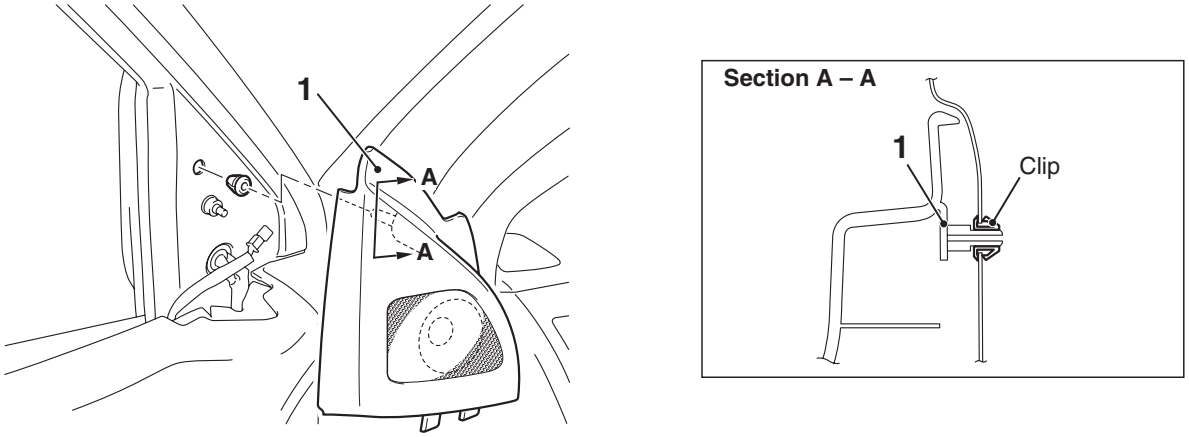
<<A>> REMOVAL OF FRONT DOOR SPEAKER AND REAR DOOR SPEAKER

Disconnect the connector, and remove by twisting as shown in the figure.

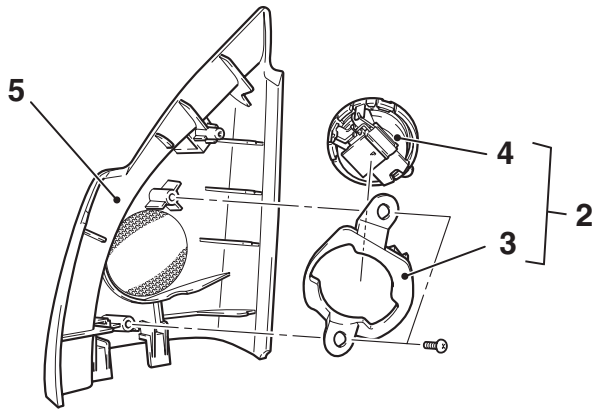


TSB Revision

TWEETER



AC608780AB



AC608782AB

Removal Steps

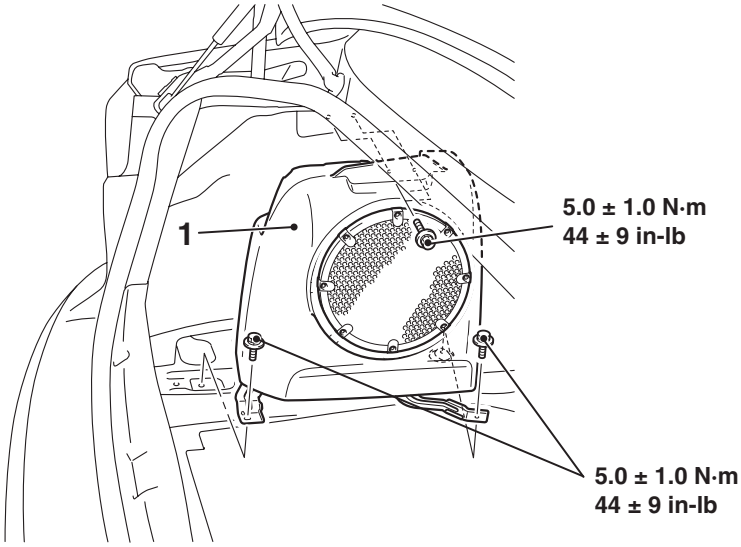
1. Front door sash trim assembly
2. Tweeter bracket and Tweeter
3. Tweeter bracket

Removal Steps (Continued)

4. Tweeter
5. Front door sash trim

TSB Revision

SUBWOOFER



AC608803AB

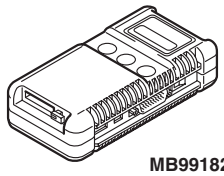
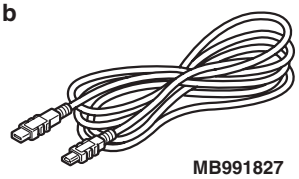
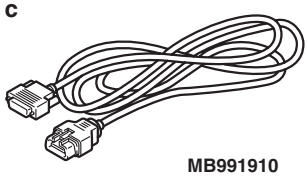
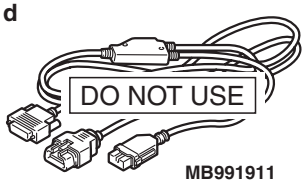
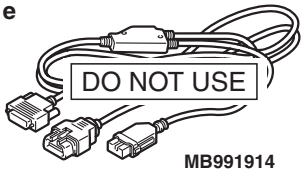
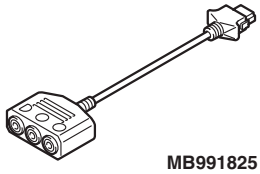
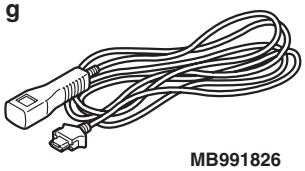
Removal Step

1. Rear speaker box assembly

ETACS

SPECIAL TOOL

M1545000600105

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

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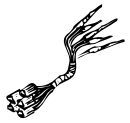
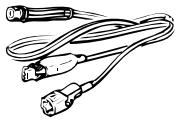
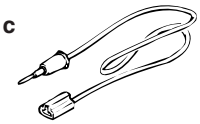
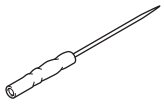
Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Test harness b. LED harness c. LED harness adaptor d. Probe	General service tools	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector. a. Connector pin contact pressure inspection b. Power circuit inspection c. Power circuit inspection d. Commercial tester connection
 MB992006	MB992006 Extra fine probe	–	Making voltage and resistance measurement during troubleshooting

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1545000900076

Refer to GROUP 00, Contents of troubleshooting P.00-7.

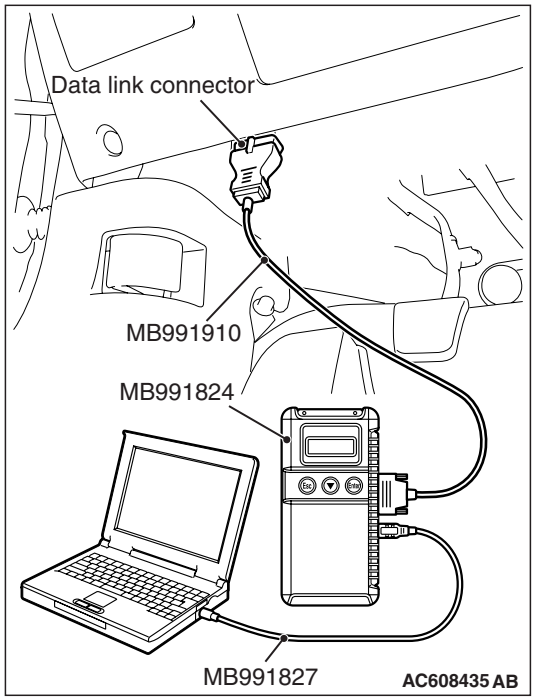
DIAGNOSTIC FUNCTION

M1545001000195

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When 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.

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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

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 (Vehicles with CAN communication system)

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

CHECK OF FREEZE FRAME DATA

The freeze frame data can be checked by using the scan tool (GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

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

DISPLAY ITEM LIST

Item No.	Item name	Data item	Unit
01	Odometer	Total driving distance after the diagnostic trouble code is generated	km*1
02	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition	Number of counts is displayed.
03	Elapsed time after failure	Total elapsed time after a diagnostic trouble code is generated	min*2
04	Current trouble accumulative time	Cumulative time for current malfunction of diagnostic trouble code	min

NOTE:

- **1: If a failure occurs to both the ASC-ECU and ETACS-ECU, 0000 km or FFFF km is displayed to the scan tool MB991958.*
- **2: Total elapsed time can be stored up to 65,534 minutes (45.5 days). The display of scan tool is fixed to 65,534 minutes after 65,534 minutes have elapsed. Or, if the battery is disconnected, the total elapsed time cannot be measured prop-*

erly. Thus, 65,535 minutes (null value) is displayed. Because it is calculated based on the ETACS-ECU information, the correct display may not be shown if the ETACS-ECU has had a time-out.

DIAGNOSTIC TROUBLE CODE CHART

M1545001100459

Diagnostic trouble code number	Trouble content	Reference page
U0001	Bus off (CAN-C)	P.54A-584
U0019	Bus off (CAN-B)	
U0100	Engine control module CAN timeout	P.54A-585
U0101	TC-SST-ECU CAN timeout	P.54A-587
U0103	Shift lever CAN timeout	P.54A-589
U0121	ASC-ECU CAN timeout	P.54A-591
U0126	Steering wheel sensor CAN timeout	P.54A-593
U0136	S-AWC-ECU CAN timeout	P.54A-595
U0151	SRS-ECU CAN timeout	P.54A-597
U0154	Occupant classification-ECU CAN timeout	P.54A-599
U0155	Combination meter CAN timeout	P.54A-601
U0164	A/C-ECU CAN timeout	P.54A-603
U0168	WCM or KOS-ECU CAN timeout	P.54A-605
U0184	Audio CAN timeout	P.54A-607
U0195	Satellite radio tuner CAN timeout	P.54A-609
U0197	Hands free module CAN timeout	P.54A-611
U0245	CAN box unit CAN timeout	P.54A-613
U1108	Excess CAN-B ECU detection	P.54A-615
U1120	Bus line (CAN-C) low input	P.54A-617
U1121	Bus line (CAN-C) high input	
U0169	Sunroof LIN timeout <Vehicles with sunroof>	Refer to GROUP 54B, Diagnosis P.54B-5.
U0215	P/W SW (DR) LIN timeout	
U0231	Rain light sensor LIN timeout <Vehicles with auto light function>	
U1109	Column SW LIN timeout	
U150B	Column SW checksum error	
U150C	P/W SW (DR) checksum error	
U1511	Sunroof checksum error <Vehicles with sunroof>	
U1512	Rain light sensor checksum error <Vehicles with auto light function>	
U1514	Bit error (LIN)	
U1515	No-Bus activity error (LIN)	
U0331*	ECU internal error	P.54A-618

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Diagnostic trouble code number	Trouble content	Reference page
B1034	Ambient air temperature sensor system (short circuit)	Refer to GROUP 55, Auto A/C Diagnosis P.55-9.
B1035	Ambient air temperature sensor system (open circuit)	
B16A0	Taillight (RH) open circuit	P.54A-196
B16A1	Taillight (LH) open circuit	
B16A2	Blown turn-signal light (LH) bulb	P.54A-107
B16A3	Turn-signal light (LH) short circuit	
B16A4	Blown turn-signal light (RH) bulb	
B16A5	Turn-signal light (RH) short circuit	
B16A6	Turn-signal fuse blown	P.54A-265
B16A7	Taillight (RH) short circuit	P.54A-196
B16A8	Taillight (LH) short circuit	
B1761*	VIN not recorded	P.54A-619
B210A	+B power supply (low input)	P.54A-621
B210B	+B power supply (high input)	
B222C*	Coding incomplete	P.54A-625
B2206*	Chassis number does not match	P.54A-625
B2215*	ECU internal error	P.54A-627
B2350	Lighting switch	P.54A-276
B2351	Wiper switch	
B2353	Ignition power supply (low input)	P.54A-627
B2354	Ignition power supply (high input)	

*NOTE: *: If diagnostic trouble codes No. U0331, B1761, B222C, B2206, or B2215 is set, there may be an error with the coding data stored in the ETACS-ECU.*

DIAGNOSIS TROUBLE CODE PROCEDURES

DTC U0001: Bus off (CAN-C)
DTC U0019: Bus off (CAN-B)

⚠ CAUTION
- **If DTC U0001 or U0019 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGEMENT

When the ETACS-ECU is returned from the bus off state, or when the bus off error is indicated to the ETACS-ECU state, the DTC U0001 (CAN-C) or U0019 (CAN-B) is stored.

TECHNICAL DESCRIPTION (COMMENT)

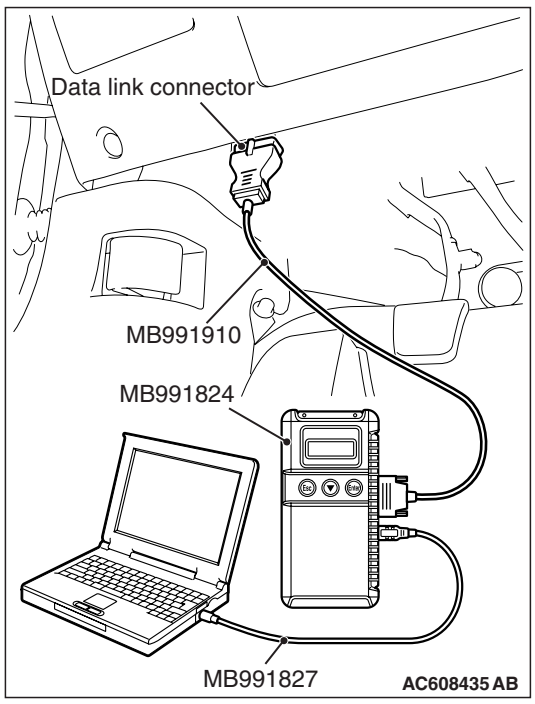
The ETACS-ECU may have a malfunction, or the ETACS-ECU power supply or earth circuit may have a problem.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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STEP 2. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0100: Engine control module CAN timeout

⚠ CAUTION
- **If DTC U0100 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

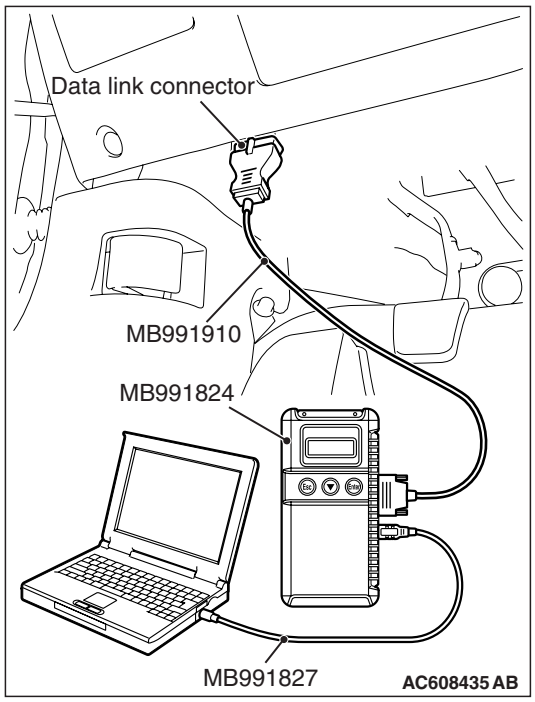
TROUBLE JUDGMENT
If the signal from engine control module cannot be received, the ETACS-ECU sets DTC U0100.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the engine control module cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The Engine control module may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

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 (Vehicles with CAN communication system)



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the engine control module.

Q: Is the DTC set?

YES : Troubleshoot the engine (Refer to GROUP 13A, Diagnostic Trouble Code Chart P.13A-44).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check if DTC U0100 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the engine control module.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0101: TC-SST-ECU CAN timeout

⚠ CAUTION
- **If DTC U0101 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from TC-SST-ECU cannot be received, the ETACS-ECU sets the DTC U0101.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the TC-SST-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The TC-SST-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

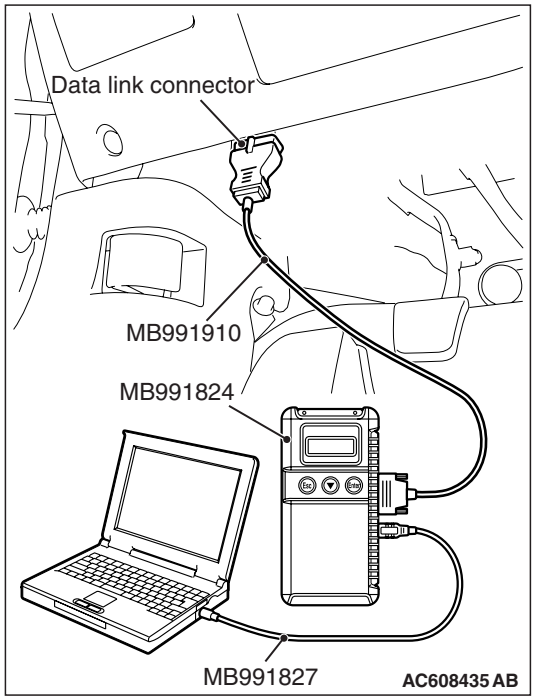
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the TC-SST diagnostic trouble code.

Check if DTC is set to the TC-SST-ECU (Refer to GROUP 22C, Diagnosis P.22C-10).

Q: Is the DTC set?

YES : Troubleshoot the TC-SS.
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the engine control module diagnostic trouble code.

Check if the DTC U0101 is set to the engine control module.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the TC-SST-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the TC-SST-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the TC-SST-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0103: Shift lever CAN timeout

⚠ CAUTION
- **If DTC U0103 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from shift lever cannot be received, the ETACS-ECU sets DTC U0103.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the shift lever cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The shift lever may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

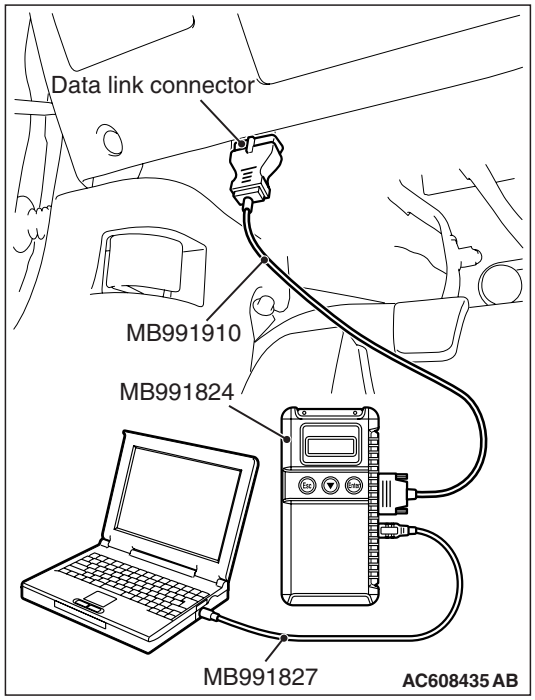
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the shift lever diagnostic trouble code.

Check if DTC is set to the shift lever (Refer to GROUP 22C, Diagnosis P.22C-302).

Q: Is the DTC set?

YES : Troubleshoot the shift lever.
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the TC-SST-ECU diagnostic trouble code.

Check if the DTC U0103 is set to the TC-SST-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the shift lever.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the shift lever and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the shift lever and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0121: ASC-ECU CAN timeout

⚠ CAUTION
- **If DTC U0121 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from ASC-ECU cannot be received, the ETACS-ECU sets DTC U0121.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the ASC-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The ASC-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

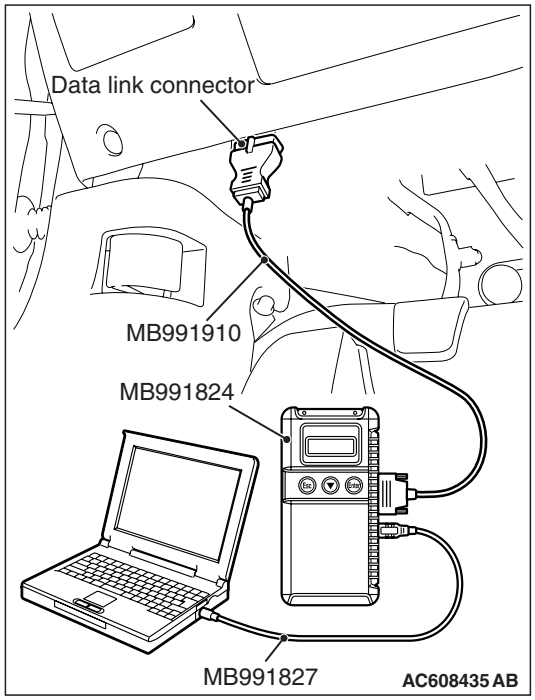
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the ASC-ECU.

Q: Is the DTC set?

YES : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis P.35C-20).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the TC-SST diagnostic trouble code.

Check if the DTC U0121 is set to the TC-SST-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ASC-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the ASC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the ASC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0126: Steering wheel sensor CAN timeout

⚠ CAUTION
- **If DTC U0126 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from steering wheel sensor cannot be received, the ETACS-ECU sets DTC U0126.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the steering wheel sensor cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.
- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The steering wheel sensor may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

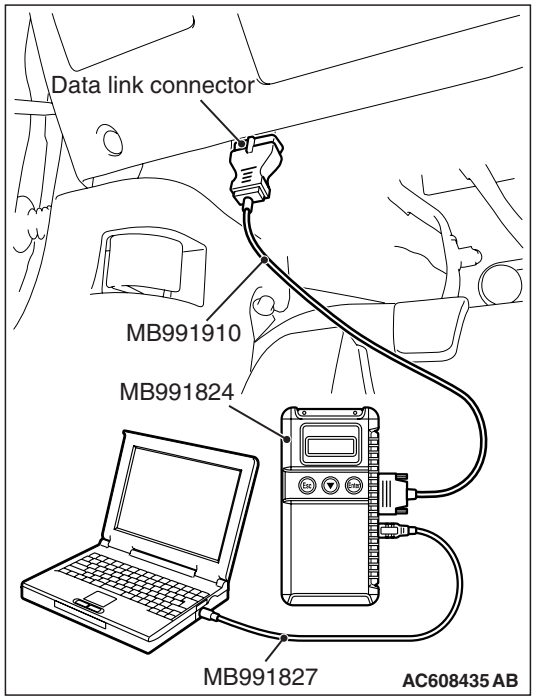
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the steering wheel sensor diagnostic trouble code.

Check if DTC is set to the steering wheel sensor.

Q: Is the DTC set?

YES : Troubleshoot the steering wheel sensor (Refer to GROUP 35C, Diagnosis P.35C-20).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the ASC-ECU diagnostic trouble code.

Check if the DTC U0126 is set to the ASC-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the steering wheel sensor.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the steering wheel sensor and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the steering wheel sensor and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0136: S-AWC-ECU CAN timeout

⚠ CAUTION
- **If DTC U0136 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from S-AWC-ECU cannot be received, the ETACS-ECU sets DTC U0136.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the S-AWC-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The S-AWC-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

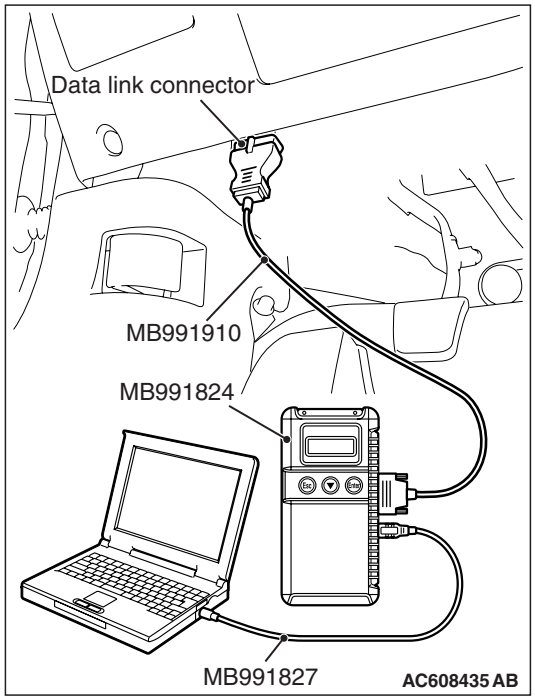
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the S-AWC-ECU diagnostic trouble code.

Check if DTC is set to the S-AWC-ECU.

Q: Is the DTC set?

YES : Troubleshoot the S-AWC (Refer to GROUP 22A, Diagnosis P.22A-11).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the ASC-ECU diagnostic trouble code.

Check if the DTC U0136 is set to the ASC-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the S-AWC-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the S-AWC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the S-AWC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0151: SRS-ECU CAN timeout

⚠ CAUTION
- **If DTC U0151 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGEMENT
If the signal from SRS-ECU cannot be received, the ETACS-ECU sets DTC U0151.

JUDGEMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the SRS-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The SRS-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

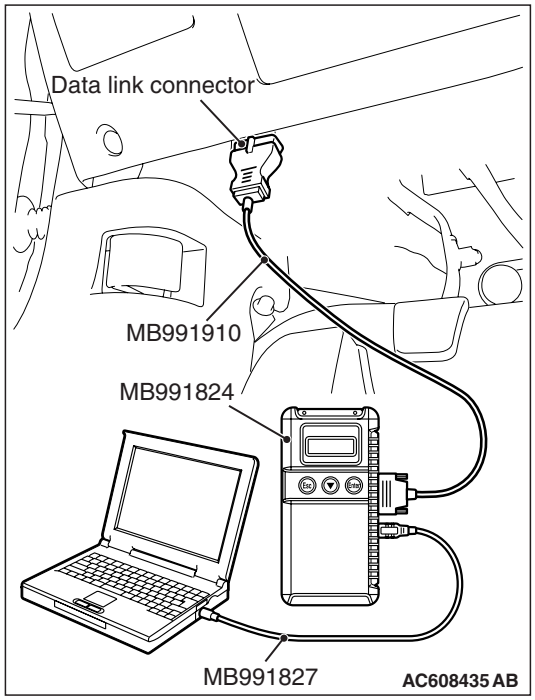
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the SRS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis P.52B-31).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the A/C-ECU diagnostic trouble code.

Check if the DTC U0151 is set to the A/C-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the SRS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the SRS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the SRS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0154: Occupant classification-ECU CAN timeout

⚠ CAUTION
- **If DTC U0154 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from occupant classification-ECU cannot be received, the ETACS-ECU sets DTC U0154.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the occupant classification-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The occupant classification-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

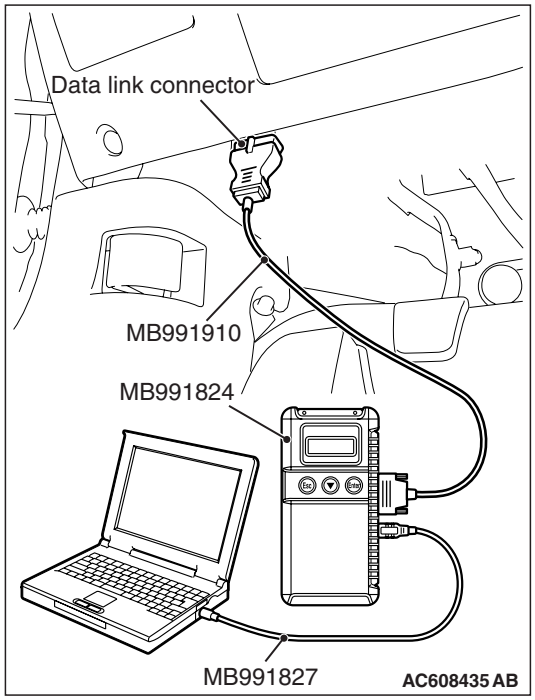
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the occupant classification-ECU diagnostic trouble code.

Check if DTC is set to the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the occupant classification-ECU (Refer to GROUP 52B, Diagnosis P.52B-297).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check if the DTC U0154 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the occupant classification-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the occupant classification-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the occupant classification-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0155: Combination meter CAN timeout

⚠ CAUTION
- **If DTC U0155 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGEMENT
If the signal from combination meter cannot be received, the ETACS-ECU sets DTC U0155.

JUDGEMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the combination meter cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The combination meter may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

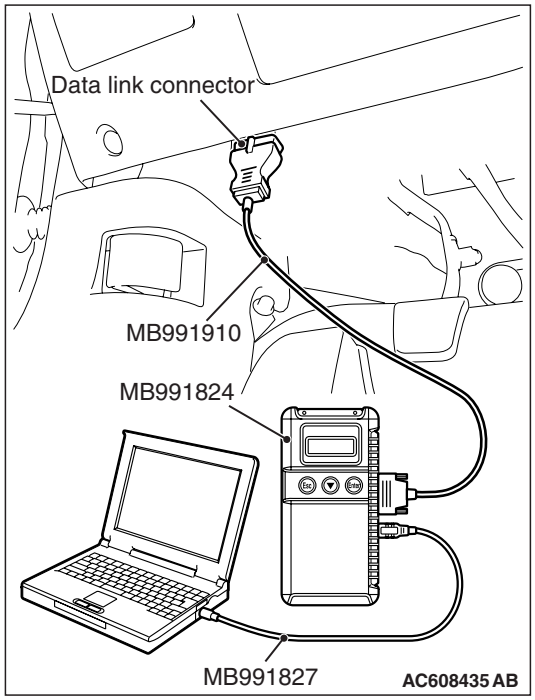
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the combination meter.

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to P.54A-28).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the A/C-ECU diagnostic trouble code.

Check if the DTC U0155 is set to the A/C-ECU.

Q: Is the DTC set?

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

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STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0164: A/C-ECU CAN timeout

⚠ CAUTION
- **If DTC U0164 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGEMENT
If the signal from A/C-ECU cannot be received, the ETACS-ECU sets DTC U0164.

JUDGEMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the A/C-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The A/C-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

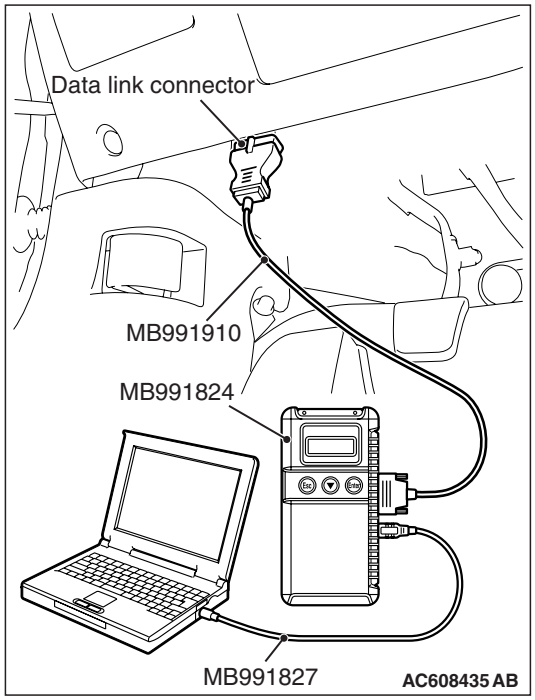
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the A/C-ECU diagnostic trouble code.

Check if DTC is set to the A/C-ECU.

Q: Is the DTC set?

YES : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis P.55-9).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check if the DTC U0164 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the A/C-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0168: WCM or KOS-ECU CAN timeout

⚠ CAUTION
- **If DTC U0168 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from WCM or KOS-ECU cannot be received, the ETACS-ECU sets DTC U0168.

JUDGEMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the WCM or KOS-ECU cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The WCM may be defective.
- The KOS-ECU may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

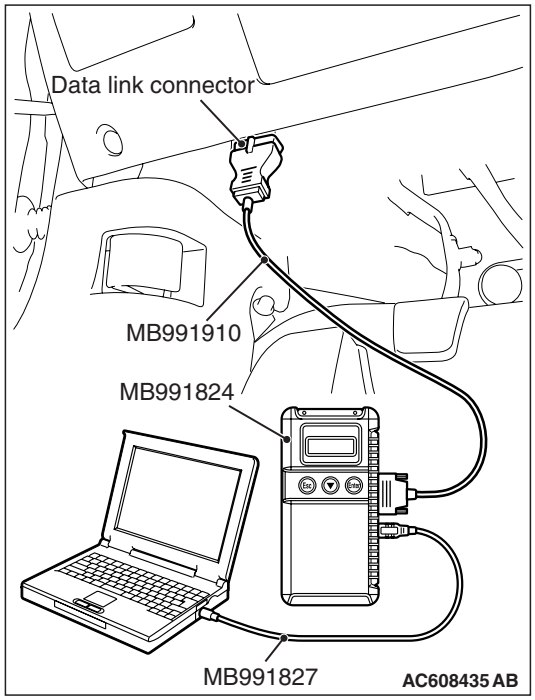
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the WCM or KOS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the WCM or KOS (Refer to GROUP 42B, Diagnosis P.42B-20 <KOS> or GROUP 42C, Diagnosis P.42C-14 <WCM>).
NO : Go to Step 3.

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

Check if the DTC U0168 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the WCM or KOS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the WCM or KOS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the WCM or KOS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0184: Audio CAN timeout

⚠ CAUTION
- **If DTC U0184 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGEMENT
If the signal from radio and CD player or CD changer cannot be received, the ETACS-ECU sets DTC U0184.

JUDGEMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the radio and CD player or CD changer cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.
- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The radio and CD player or CD changer may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

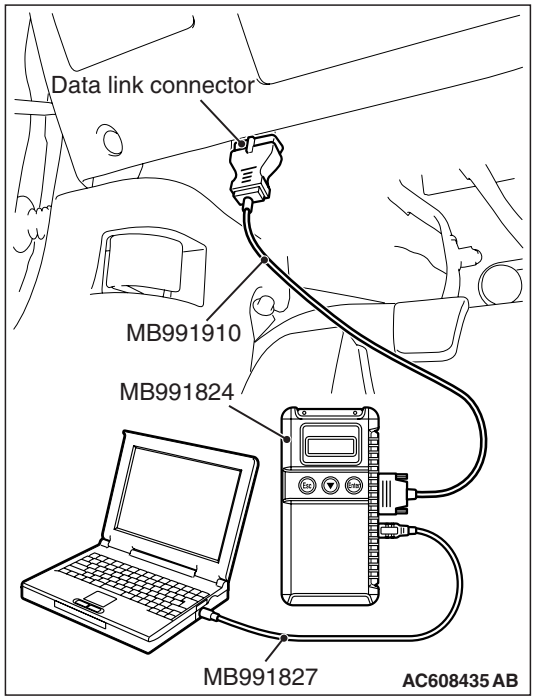
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the audio.

Q: Is the DTC set?

YES : Troubleshoot the audio (Refer to P.54A-288).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check if the DTC U0184 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the radio and CD player or CD changer.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the radio and CD player or CD changer and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the radio and CD player or CD changer and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0195: Satellite radio tuner CAN timeout

⚠ CAUTION
- **If DTC U0195 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from satellite radio tuner cannot be received, the ETACS-ECU sets DTC U0195.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the satellite radio tuner cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The satellite radio tuner may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

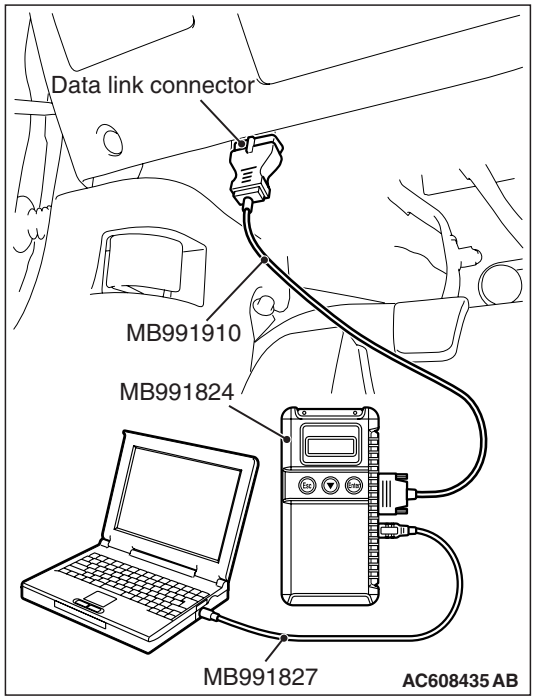
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, read the satellite radio tuner diagnostic trouble code.

Check if DTC is set to the satellite radio tuner.

Q: Is the DTC set?

YES : Troubleshoot the satellite radio (Refer to P.54A-555).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the SRS-ECU diagnostic trouble code.

Check if the DTC U0195 is set to the SRS-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the satellite radio tuner.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the satellite radio tuner and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the satellite radio tuner and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0197: Hands free module CAN timeout

⚠ CAUTION
- **If DTC U0197 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from hands free module cannot be received, the ETACS-ECU sets DTC U0197.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the hands free module cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The hands free module may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

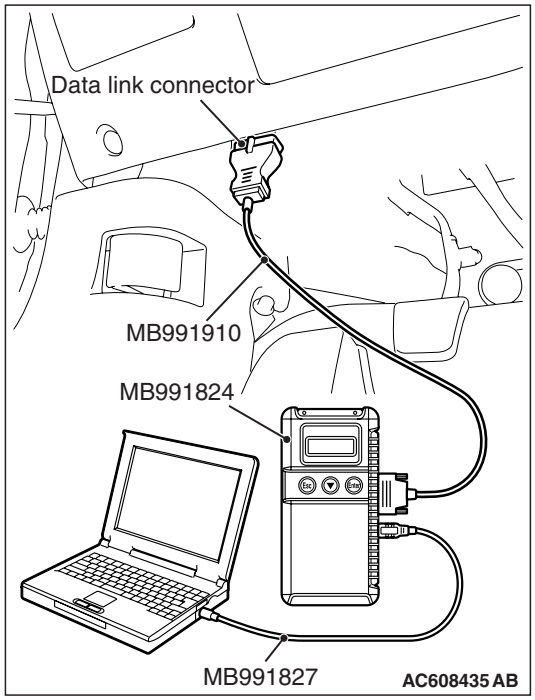
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the hands free module.

Q: Is the DTC set?

YES : Troubleshoot the hands free telephone system (Refer to P.54A-462).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the SRS-ECU diagnostic trouble code.

Check if the DTC U0197 is set to the SRS-ECU.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the hands free module.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the hands free module and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the hands free module and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U0245: CAN box unit CAN timeout

⚠ CAUTION
- **If DTC U0245 is set to the ETACS-ECU, always diagnose the CAN bus line.**
- **Before replacing the ECU, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT
If the signal from CAN box unit (MMCS) cannot be received, the ETACS-ECU sets DTC U0245.

JUDGMENT CRITERIA
After the following statuses continue to be true for 5 seconds, if the communication with the CAN box unit (MMCS) cannot be established for 0.6 second or more, the ETACS-ECU determines that a problem has occurred.

- No abnormality is present to the network.
- Ignition switch is in the ON position.
- No abnormality is present to the power supply fuse, or the odometer value is at 80.5 km (50.0 miles) or more.
- ETACS-ECU system voltage is at 10–16 volts.

TROUBLESHOOTING HINTS
- The CAN box unit may be defective.
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

DIAGNOSIS

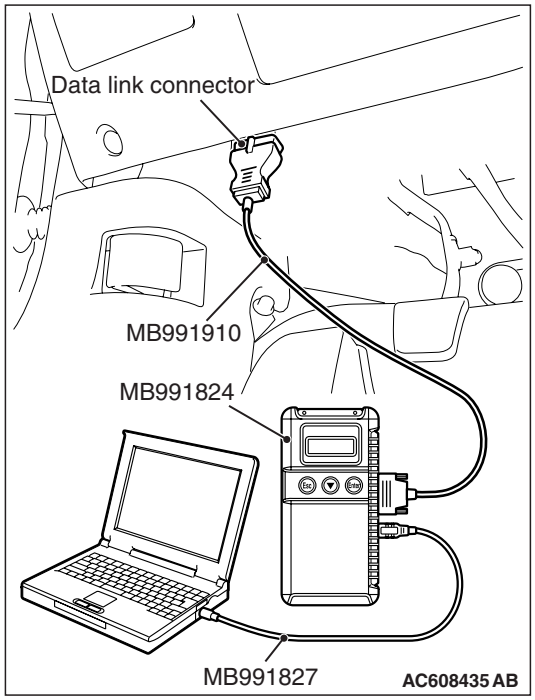
Required Special Tools:

- 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 (Vehicles with CAN communication system)

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

⚠ CAUTION

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



(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

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

Check if DTC is set to the MMCS.

Q: Is the DTC set?

YES : Troubleshoot the MMCS (Refer to P.54A-384).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

Check if the DTC U0245 is set to the combination meter.

Q: Is the DTC set?

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

STEP 4. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the CAN box unit (MMCS).
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the CAN box unit (MMCS) and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

STEP 5. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction such as a poor connection or open circuit in the CAN bus lines between the CAN box unit (MMCS) and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC U1108: Excess CAN-B ECU Detection

⚠ CAUTION
If the DTC U1108 is set to the ETACS-ECU, always diagnose the CAN bus line.

TROUBLE JUDGEMENT

If the ETACS-ECU receives the signal from the CAN-B line ECU which does not exist in the written variant code information, the ETACS-ECU sets DTC U1108.

TROUBLESHOOTING HINTS

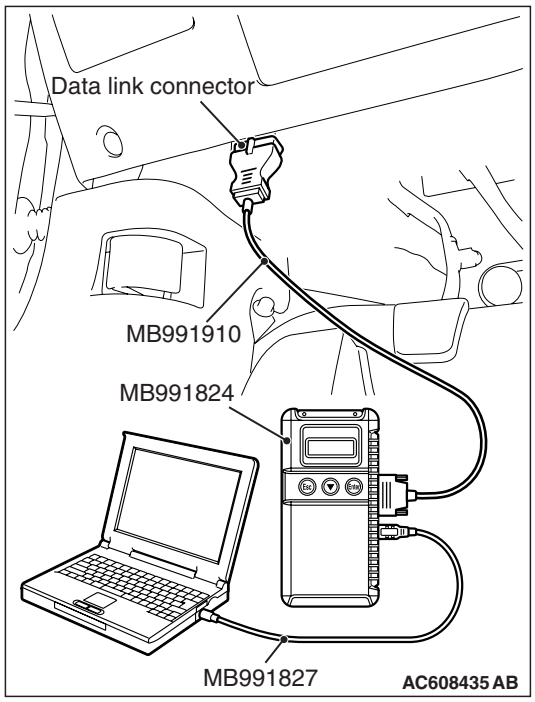
- The ETACS-ECU may be defective.
- The CAN bus may be defective.

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 (Vehicles with CAN communication system)

TSB Revision



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Variant code check.

Check the variant code written to the ETACS-ECU, and check whether it matches the ECU connected to the CAN-B line.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Make a correction so that the ECU connected to the CAN-B line matches with the variant code information, and then go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : This diagnosis is complete.

DTC U1120: Bus line (CAN-C) low input
DTC U1121: Bus line (CAN-C) high input

TROUBLE JUDGEMENT

When the CAN bus line voltage is in the following states, the ETACS-ECU set the DTC.

- If the CAN bus line voltage is 0.3 volt or less, DTC U1120 is set.
- If the CAN bus line voltage is 4.7 volts or more, DTC U1121 is set.

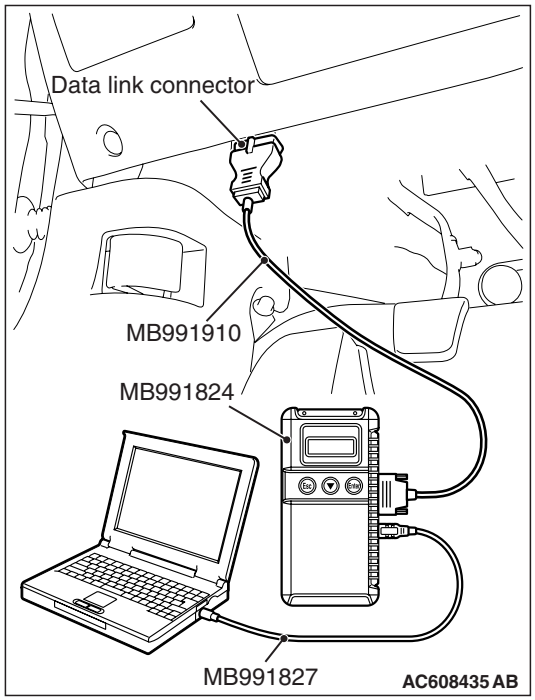
TROUBLESHOOTING HINTS

- The CAN bus line may be defective.

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 (Vehicles with CAN communication system)



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

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?
YES : Replace the ETACS-ECU.
NO : The diagnosis is complete.

DTC U0331: ECU internal error

TROUBLE JUDGEMENT

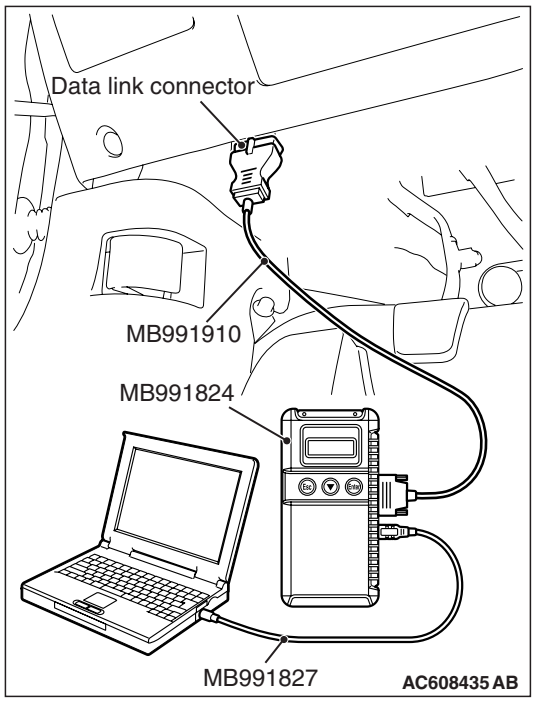
If the ETACS-ECU error counter value is detected to be "255," DTC U0331 is set, and the ETACS-ECU is reset. The DTC U0331 exists only as past trouble.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective.

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 (Vehicles with CAN communication system)



Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.
(6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The diagnosis is complete.

DTC B1761: VIN not recorded

TROUBLE JUDGEMENT

If the VIN is not written to the ETACS-ECU, the ETACS-ECU sets DTC B1761.

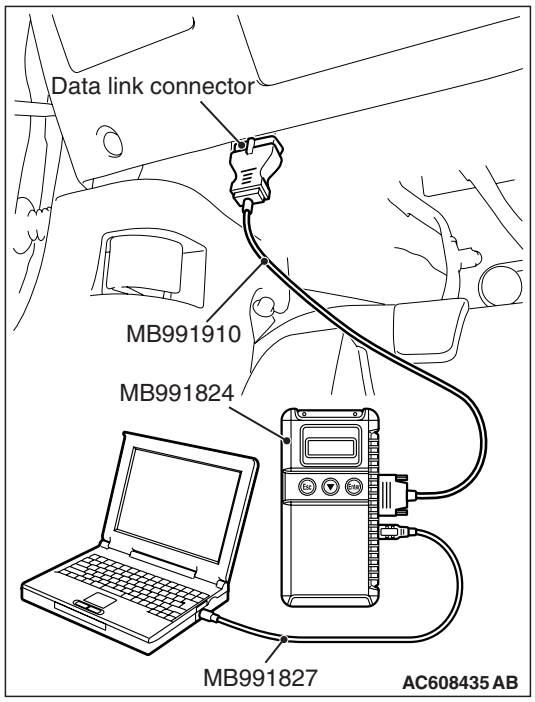
TROUBLESHOOTING HINTS

- Chassis number not recorded
- The ETACS-ECU may be defective.

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 (Vehicles with CAN communication system)



Recheck for diagnostic trouble code.

Check again if the DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Erase the DTC.
(4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(5) Check if DTC is set.
(6) Turn the ignition switch to the "LOCK" (OFF) position.

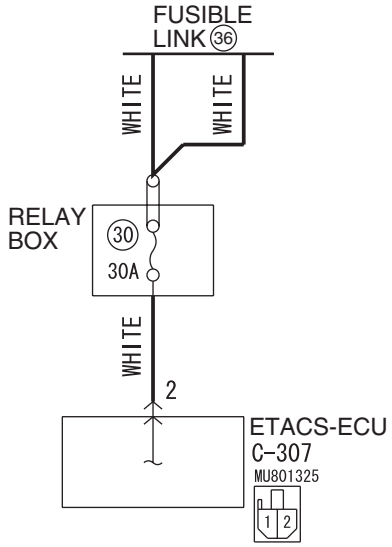
Q: Is the DTC set?

YES : Replace with the coded ETACS-ECU.
NO : The diagnosis is complete.

DTC B210A: +B power supply (low input)
DTC B210B: +B power supply (high input)

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

ETACS-ECU Power Supply Circuit



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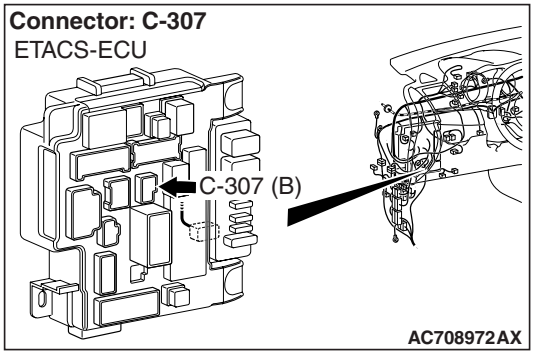


TROUBLE JUDGMENT

The ETACS-ECU sets DTC B210A if the power supply fuse voltage decreases to the specified value or less, and sets DTC B210B if the power supply fuse voltage increases to the specified value or more. However, when the status returns to normal, the ETACS-ECU automatically erases DTCs B210A and B210B.

TECHNICAL DESCRIPTION (COMMENT)

The power supply fuse or the ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- The power supply fuse may be defective.
- The ETACS-ECU may be defective.
- The battery may be defective.
- The generator may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

STEP 1. Power supply fuse check.

Q: Is the fuse in good condition?

YES : Go to Step 3.
NO : Go to Step 2.

STEP 2. Wiring harness check between C-307 ETACS-ECU connector and fuse No. 30.

(1) Disconnect ETACS-ECU connector C-307.
(2) Remove fuse No. 30.
(3) Check the continuity (short to ground) between C-307 ETACS-ECU connector terminal No. 2 and the ground.

OK: No continuity

Q: Is the check result normal?

YES : Replace the fuse No.30.
NO : A short circuit may be present in the power supply circuit. Check the wiring harness between ETACS-ECU connector C-307 terminal No. 2 and fuse No. 30, and repair if necessary and replace fuse No. 30.

STEP 3. Battery check

Refer to P.54A-9.

Q: Is the battery in good condition?

YES : Go to Step 4.
NO : Charge or replace the battery.

STEP 4. Charging system check

Refer to GROUP 16 –Output Current Test P.16-8.

Q: Is the charging system in good condition?

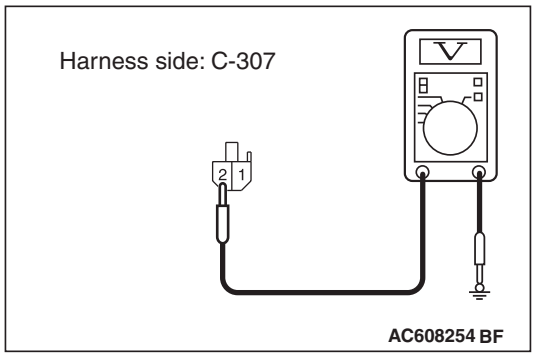
YES : Go to Step 5.
NO : Repair or replace the charging system component(s).

STEP 5. Check ETACS-ECU connector C-307 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-307 in good condition?

YES : Go to Step 6.
NO : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

TSB Revision



STEP 6. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-307.

(1) Disconnect ETACS-ECU connector C-307 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 8.

NO : Go to Step 7.

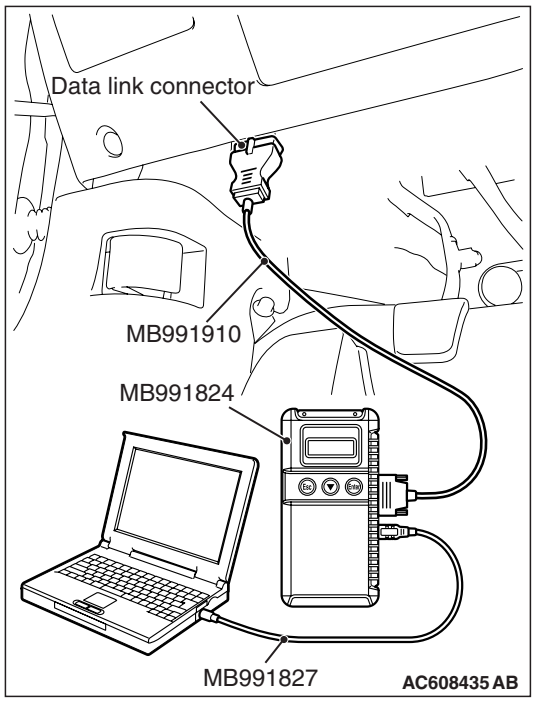
STEP 7. Check the wiring harness between ETACS-ECU connector C-307 (terminal 2) and the fusible link (36).

Check the power supply line for open circuit.

Q: Is the wiring harness between ETACS-ECU connector C-307 (terminal 2) and the fusible link (36) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



STEP 8. Using scan tool MB991958, check data list.

Check the power supply fuse voltage.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."

(2) Check the ETACS data list.

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

Item No.	Item name	Normal condition
Item 253	Voltage sensing of IOD Line	Approximately 12 volts (battery positive voltage)

Q: Do the scan tool MB991958 display the item "voltage sensing of IOD Line" is normal condition?

YES : Go to Step 9.

NO : Replace the ETACS-ECU.

STEP 9. Recheck for diagnostic trouble code.

Check again if the DTC is set to the ETACS-ECU.

(1) Erase the DTC.

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

(3) Check if DTC is set.

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

Q: Is the DTC set?

YES : Replace the ETACS-ECU.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

DTC B222C: Coding incomplete

TROUBLE JUDGEMENT

If the ETACS-ECU is in the initial state or the variant coding is incomplete, the ETACS-ECU sets DTC B222C.

TROUBLESHOOTING HINTS

- Variant code not written
- The ETACS-ECU may be defective.

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 (Vehicles with CAN communication system)

Recheck for diagnostic trouble code.

Check again if the DTC is set to the ETACS-ECU.

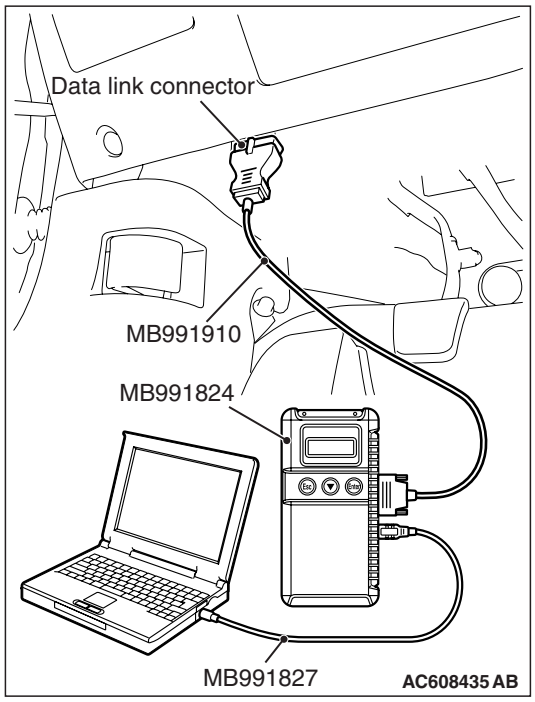
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Perform the variant coding to the ETACS-ECU.
(4) Erase the DTC.
(5) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(6) Check if DTC is set.
(7) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace with the coded ETACS-ECU.
NO : The diagnosis is complete.



DTC B2206: Chassis number does not match

⚠ CAUTION

If DTC B2206 is set, always diagnose the CAN bus line.

TROUBLE JUDGEMENT

If the registered chassis number is different from the chassis number transmitted on the CAN bus lines, the ETACS-ECU sets DTC B2206.

JUDGEMENT CRITERIA

If the chassis number registered to ETACS-ECU and the chassis number on CAN bus lines do not match, the ETACS-ECU determines that a problem has occurred.

TSB Revision

TROUBLESHOOTING HINTS

- Chassis number not written
- The ETACS-ECU may be defective.
- The engine control module may be defective.
- The CAN bus line may be defective.

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 (Vehicles with CAN communication system)

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

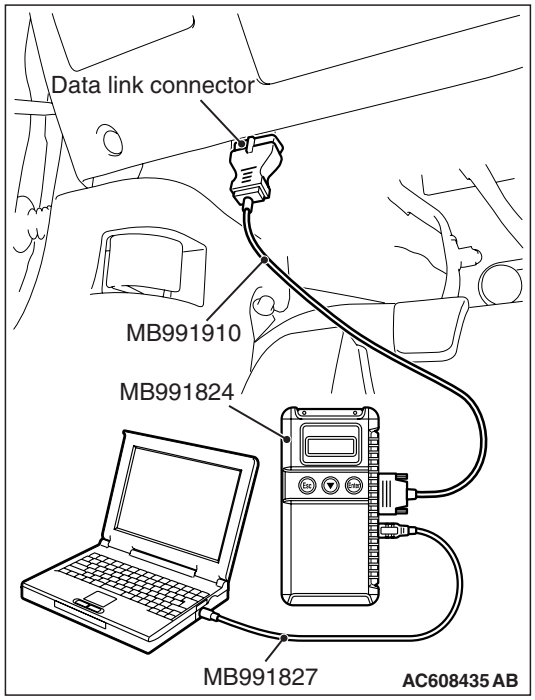
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

Check if DTC is set to the engine control module.

Q: Is the DTC set?

YES : Troubleshoot the engine (Refer to GROUP 13A, Diagnostic Trouble Code Chart P.13A-44).
NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace with the coded ETACS-ECU.
NO : The diagnosis is complete.

DTC B2215: ECU internal error

TROUBLE JUDGEMENT

When the ETACS-ECU internal error count reaches "255," DTC B2215 is set.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective.

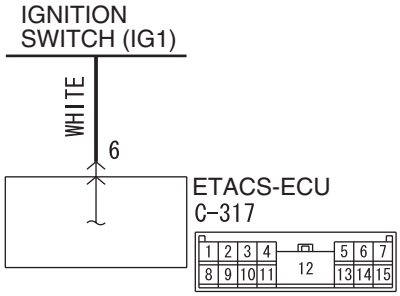
DIAGNOSIS

Replace the ETACS-ECU.

DTC B2353: Ignition power supply (low input)
DTC B2354: Ignition power supply (high input)

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Ignition Switch (IG1) Input Circuit



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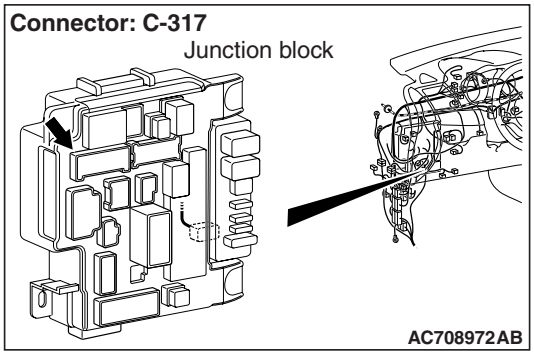


TROUBLE JUDGMENT

These DTCs are set when the ignition power supply voltage decreases to the specified value or less (DTC B2353) or increases to the specified value or more (DTC B2354). However, when the status returns to normal, the DTCs B2353 and B2354 are automatically erased.

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit or the ETACS-ECU may have a problem.

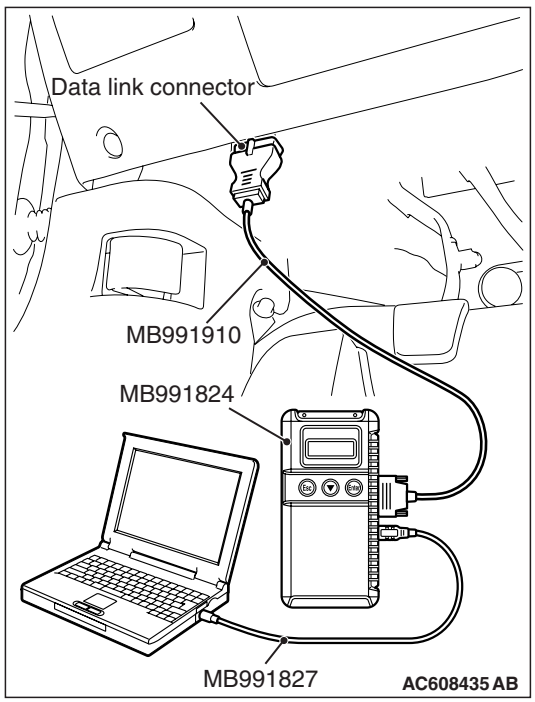
TROUBLESHOOTING HINTS

- The power supply circuit may be defective.
- The battery may be defective.
- The generator may be defective.
- The ETACS-ECU may be defective.
- The ignition switch may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

DIAGNOSIS

Required Special Tools:

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



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

Check the ignition power supply voltage.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."

(2) Check the ETACS data list.

- Turn the ignition switch to the "ON" position.

Item No.	Item name	Normal condition
Item 254	IG voltage	Approximately 12 volts (battery positive voltage)

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

Q: Do the scan tool MB991958 display the item "IG voltage" is normal condition?

YES : Go to Step 7.

NO : Go to Step 2.

TSB Revision

STEP 2. Battery check
Refer to P.54A-9.

Q: Is the battery in good condition?
YES : Go to Step 3.
NO : Charge or replace the battery.

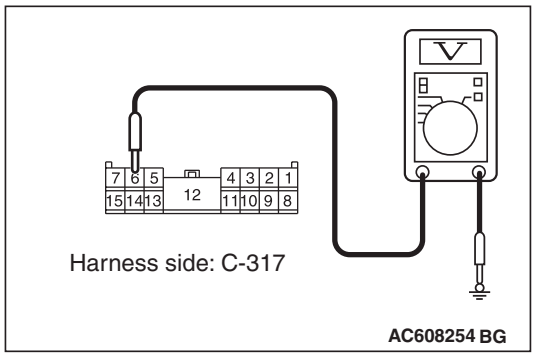
STEP 3. Charging system check
Refer to GROUP 16 –Output Current Test P.16-8.

Q: Is the charging system in good condition?
YES : Go to Step 4.
NO : Repair or replace the charging system component(s).

STEP 4. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-317 in good condition?
YES : Go to Step 5.
NO : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Check the ignition switch (IG1) circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-317.
(1) Disconnect ETACS-ECU connector C-317 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?
YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between ETACS-ECU connector C-317 (terminal 6) and the ignition switch (IG1).
Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-317 (terminal 6) and the ignition switch (IG1) in good condition?
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

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STEP 7. Recheck for diagnostic trouble .
Check again if the DTC is set to the ETACS-ECU.
(1) Erase the DTC.
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-15).

SERVICE DATA

M1545001300293

NOTE: For some information result read out by the ECU, the specific items may not be displayed.

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
1	CAN-H voltage (CAN-C)	–	2.0–4.5 V
2	CAN-L voltage (CAN-C)	–	0.5–3.0 V
200	Original VIN writing status	When writing status is normal	Comp/Unperformed or Comp and locked
		When writing status is abnormal	ECU internal Err
201	Current VIN writing status	When writing status is normal	Comp/Unperformed
		When writing status is abnormal	ECU internal Err
202	Internal error	When no error is present	No error
		When an error is present	EEPROM error or Boot loader Err or EEPROM/Boot or ADC Error or ADC/EEPROM error or ADC/Boot error or ADC/Boot/EEPROM or PLL Error or PLL/EEPROM error or PLL/EEPROM error or PLL/Boot/EEPROM or PLL/ADC error or PLL/ADC/EEPROM or PLL/ADC/Boot or PLL/ADC/Boot/ROM
203	Process error	When no error is present	No error
		When an error is present	Interrupt error or Switch error or Sequence error or Stck pointer Err or Dispatch call Er or Other error
204	Coding counter	–	0–255 times

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
205	Coding counter Option	–	0–255 times
206	Headlight LO ON duty	When low-beam headlights are on	100 %
		When low-beam headlights are off	0 %
207	Fan control relay ON duty	When the fan is in operation	100 %
		When the fan is stopped	0 %
208	Dome light ON duty	When the room light is turned from ON to OFF	When the light is dimmed from 100% (when ON) to 0%
209	Gate light ON duty	When the trunk is opened	100 %
		When the trunk is closed	0 %
210	IG key illumination	When the door is opened	100 %
		When the door is closed	0 %
211	Headlight Hi	When high-beam headlights are on	ON
		When high-beam headlights are off	OFF
212	Front fog light	When fog lights are on	ON
		When fog lights are off	OFF
213	Horn theft horn	When the security alarm is active	ON
		When the security alarm is not active	OFF
215	Security indicator	When the security alarm is active	ON
		When the security alarm is not active	OFF
216	IG1-2 fuel pump	Ignition switch: ON position	ON
		Ignition switch: Other than ON	OFF
218	Taillight	When taillights and position lights are on	ON
		When taillights and position lights are off	OFF
219	Turn RH/LH light	When turn-signal lights are on	ON
		When turn-signal lights are off	OFF
220	Blower fan	Ignition switch: ON position	ON
		Ignition switch: Other than ON	OFF
221	Defogger	1. Engine: ON 2. Defogger switch: ON	ON
		Other than above	OFF

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
222	Interior light cut	When the interior light is ON	ON
		When the light is turned off by the activation of interior light automatic cut function	OFF
224	Door lock	When locking is performed by the central door lock	ON
		Other than above	OFF
227	Door unlock	When unlocking is performed by the central door lock	ON
		Other than above	OFF
228	Dr door unlock	When unlocking is performed by the central door lock	ON
		Other than above	OFF
230	Trunk/gate opener	Trunk open switch: ON	ON
		Other than above	OFF
232	ACC Relay	Ignition switch: ACC or ON	ON
		Ignition switch: Other than ACC or ON	OFF
233	Fan Lo	When the fan is in Lo operation	ON
		When the fan is stopped	OFF
234	Fan Hi	When the fan is in Hi operation	ON
		When the fan is stopped	OFF
235	Front wiper ACT	When the windshield wiper is in operation	ON
		Other than above	OFF
236	Front wiper Lo/Hi	When the windshield wiper is in high-speed operation	ON
		Other than above	OFF
237	Front washer	The windshield washer is in operation	ON
		Other than above	OFF
240	Power window	Ignition switch: ON position	ON
		Ignition switch: 30 seconds after turned to the OFF position	ON →OFF
252	Ambient temperature sensor	Ignition switch: ON position	0-5 V
253	Voltage sensing of IOD Line	Always	Battery positive voltage
254	IG voltage	Ignition switch: ON position	Battery positive voltage
256	Dr door ajar switch	Driver's door: Open	Open
		Driver's door: Closed	Close
257	As door ajar switch	Front passenger's door: Open	Open
		Front passenger's door: Closed	Close

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
258	RR door ajar switch	Rear right door: Open	Open
		Rear right door: Closed	Close
259	RR door ajar switch	Rear left door: Open	Open
		Rear left door: Closed	Close
260	Trunk/gate trunk ajar switch	Trunk lid: Open	Open
		Trunk lid: Closed	Close
264	Handle lock switch	When the ignition key is inserted into the ignition key cylinder	Key in
		When the ignition key is removed from the ignition key cylinder	Key out
265	Hazard switch	While the hazard switch is pressed	ON
		Other than above	OFF
266	Hood switch	Hood: Open	ON
		Hood: Closed	OFF
268	Trunk/gate opener switch	Not used	OFF
270	Dr door lock switch	When the driver's door is locked	Lock
		Other than above	Not lock
271	Dr door unlock switch	When the driver's door is unlocked	Unlock
		Other than above	Not Unlock
272	As door unlock switch	When the front passenger's door is unlocked	Unlock
		Other than above	Not Unlock
273	Except Dr/As door unlock switch	Not used	OFF
274	Door key lock switch	Not used	OFF
275	Dr door key unlock switch	Not used	OFF
276	Door key unlock switch	Not used	OFF
277	Power lock switch	Not used	OFF
278	Power unlock switch	Not used	OFF
279	Brake fluid switch	When the brake fluid level is normal	ON
		When the brake fluid level is low	OFF
281	ASC/TCL OFF switch	ASC OFF switch: During ON operation	ON
		Other than above	OFF
287	Starter switch	Ignition switch: START position	ON
		Ignition switch: Other than the START position	OFF

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
288	ACC switch	Ignition switch: ACC or ON	ON
		Ignition switch: Other than ACC or ON	OFF
289	Backup light or shift reveres SW	The shift lever is in the reverse position.	ON
		Other than above	OFF
290	Stoplight switch	Brake pedal depressed	ON
		Other than above	OFF
291	Front wiper auto stop switch	When the windshield wiper is in operation	ON
		Other than above	OFF
293	Process error information	–	–
294	Process error counter	–	0–255 times
340	Headlight switch(tail)	Lighting switch: Position light position	ON
		Other than above	OFF
341	Headlight switch	Lighting switch: Headlight position	ON
		Other than above	OFF
342	Headlight switch(Dimmer)	Lighting switch: During dimmer switch operation	ON
		Other than above	OFF
343	Turn switch left	Turn-signal light switch: LH position	ON
		Other than above	OFF
344	Turn switch right	Turn-signal light switch: RH position	ON
		Other than above	OFF
345	Fog light ON	Fog light switch: During ON operation	ON
		Other than above	OFF
346	Fog light OFF	Fog light switch: During OFF operation	ON
		Other than above	OFF
347	Switch type	–	LHD
348	Headlight switch(auto)	Lighting switch: AUTO position	ON
		Other than above	OFF
349	Headlight cleaner	Not used	OFF
350	Headlight switch(flasher)	Lighting switch: During dimmer switch operation	ON
		Other than above	OFF

Item No.	Display on M.U.T.-III	Check conditions	Normal conditions
351	Column ECU sleep	Ignition switch: Other than ON or START position	OK
		Ignition switch: ON or START position	NG
352	Front wiper(INT)	Wiper switch: INT position	ON
		Other than above	OFF
353	Front wiper(LO)	Wiper switch: LO position	ON
		Other than above	OFF
354	Front wiper(HI)	Wiper switch: HI position	ON
		Other than above	OFF
355	Front wiper(washer)	Wiper switch: During washer operation	ON
		Other than above	OFF
356	Rear wiper	Not used	OFF
357	Rear wiper(washer)	Not used	OFF
358	Front wiper(MIST)	Wiper switch: During MIST operation	ON
		Other than above	OFF
359	Front wiper(interval volume)	Variable intermittent wiper control switch is switched from (+) to (−).	The value changes from 0 (+) to 254 (−).
360	Wiper switch lever fail	When normal	No fail
		When abnormality is present	Fail
361	Turn/Light switch lever fail	When normal	No fail
		When abnormality is present	Fail

TROUBLE SYMPTOM CHART

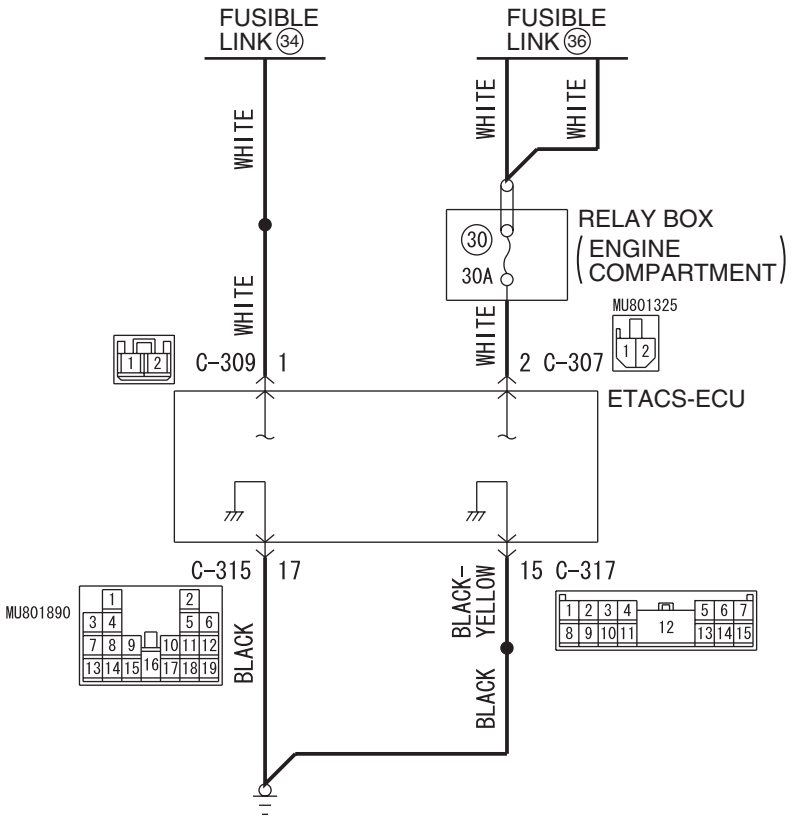
M1545001200111

Trouble symptom	Reference page
Malfunction of ETACS-ECU power supply circuit	P.54A-636

SYMPTOM PROCEDURES

Malfunction of ETACS-ECU power supply circuit

ETACS-ECU Power Supply Circuit



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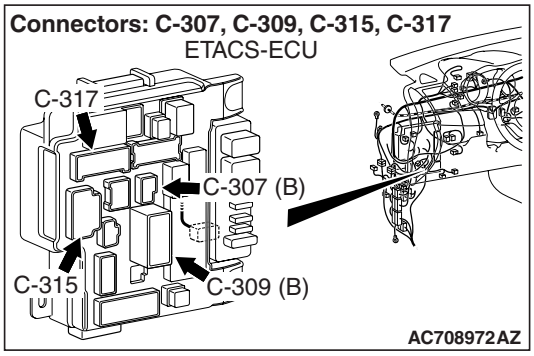


TECHNICAL DESCRIPTION (COMMENT)

If the ETACS-ECU functions do not work at all, the ETACS-ECU power supply system, ground system, or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

TSB Revision

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connectors C-315 and C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

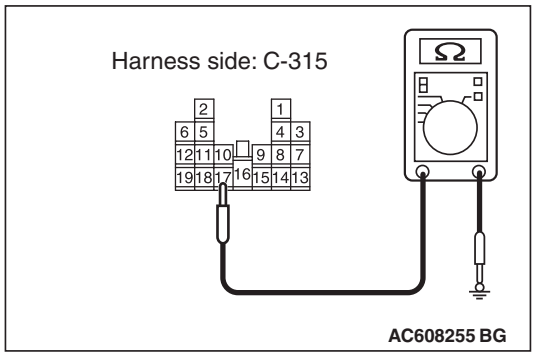
Q: Is ETACS-ECU connectors C-315 and C-317 in good condition?

YES : Go to Step 2.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

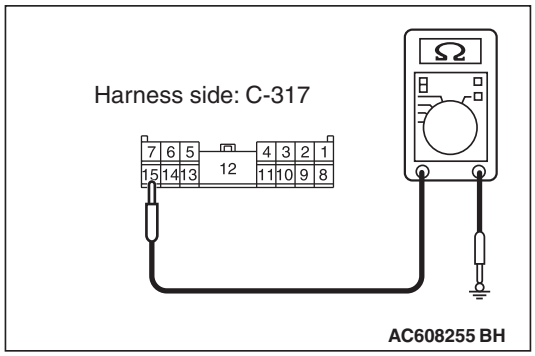
STEP 2. Check the ground circuit to the ETACS-ECU. Measure the resistance at ETACS-ECU connectors C-315 and C-317.

(1) Disconnect ETACS-ECU connector C-315 and C-317 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between ETACS-ECU connector C-315 terminal 17 and ground.
- The resistance should be 2 ohms or less.



(3) Measure the resistance value between ETACS-ECU connector C-317 terminal 15 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-315 (terminal 17) or C-317 (terminal 15) and the ground.

Q: Is the wiring harness between ETACS-ECU connector C-315 (terminal 17) or C-317 (terminal 15) and the ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 4. Check ETACS-ECU connectors C-307 and C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

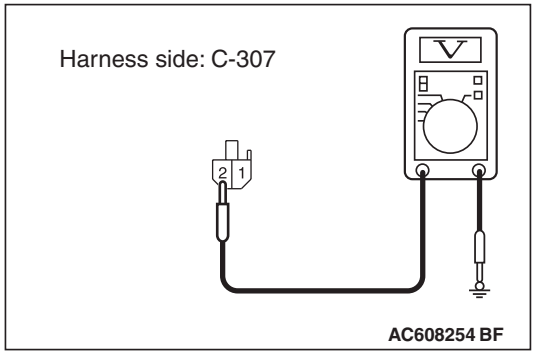
Q: Is ETACS-ECU connectors C-307 and C-309 in good condition?

YES : Go to Step 5.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2).

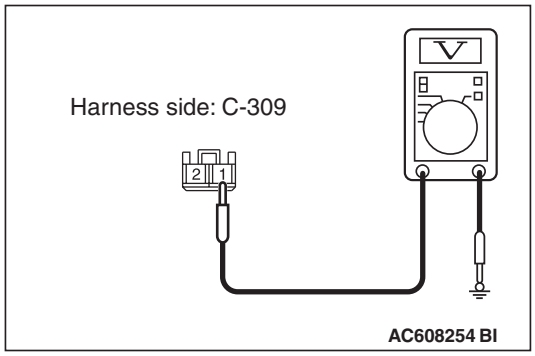
STEP 5. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connectors C-307 and C-309.

(1) Disconnect ETACS-ECU connectors C-307 and C-309 measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between ETACS-ECU connector C-307 terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



(3) Measure the voltage between ETACS-ECU connector C-309 terminal 1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between ETACS-ECU connectors C-307 (terminal 2) or C-309 (terminal 1) and the fusible link (36) or (34).

Q: Is the wiring harness between ETACS-ECU connectors C-307 (terminal 2) or C-309 (terminal 1) and the fusible link (36) or (34) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the ETACS-ECU normally.

STEP 7. Retest the system

Check that the ETACS-ECU functions work normally.

Q: Is the check result satisfactory?

YES : The procedure is complete (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

TROUBLE SYMPTOM CHART FOR INPUT SIGNAL

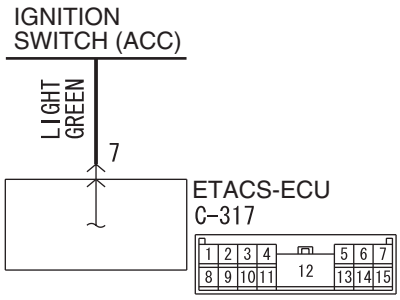
M1545004900249

Trouble symptom	Inspection Procedure No.	Reference page
ETACS-ECU does not receive any signal from the ignition switch (ACC).	1	P.54A-640
ETACS-ECU does not receive any signal from the ignition switch (IG1).	2	P.54A-642
ETACS-ECU does not receive any signal from the key reminder switch.	3	P.54A-644
ETACS-ECU does not receive any signal from the front door lock actuator.	4	P.54A-647
ETACS-ECU does not receive any signal from the front door switch (LH).	5	P.54A-654
ETACS-ECU does not receive any signal from the front door switch (RH).	6	P.54A-656
ETACS-ECU does not receive any signal from the rear door switch (LH).	7	P.54A-658
ETACS-ECU does not receive any signal from the rear door switch (RH).	8	P.54A-661
ETACS-ECU does not receive any signal from the trunk lid latch.	9	P.54A-663
ETACS-ECU does not receive any signal from the hazard warning light switch.	10	P.54A-667
ETACS-ECU does not receive any signal from the column switch signal.	11	P.54A-669
ETACS-ECU does not receive any signal from the hood switch.	12	P.54A-670

INPUT SIGNAL PROCEDURES

Inspection Procedure 1: ETACS-ECU does not receive any signal from the ignition switch (ACC).

Ignition Switch (ACC) Input Circuit



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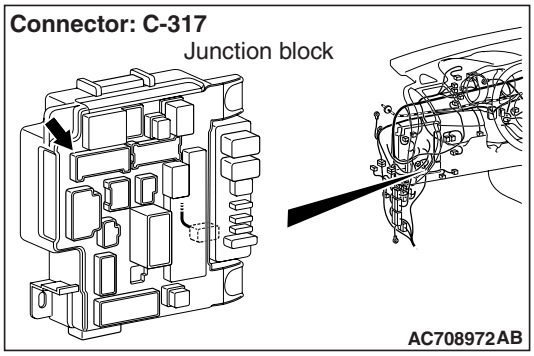


TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the ignition switch (ACC) input signal, or the ACC relay inside the ETACS-ECU does not operate, the ignition switch (ACC) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- The ignition switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

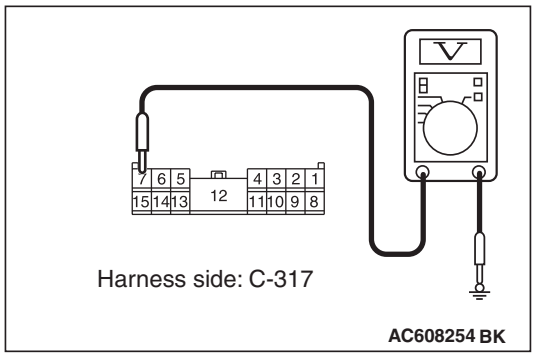
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of ignition switch (ACC) is normal.



STEP 2. Check the ignition switch (ACC) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-317.

(1) Disconnect ETACS-ECU connector C-317 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ACC" position.
(3) Measure the voltage between terminal 7 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the ETACS-ECU. Check that the input signal of ignition switch (ACC) is normal.
NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-317 (terminal 7) and the ignition switch (ACC).

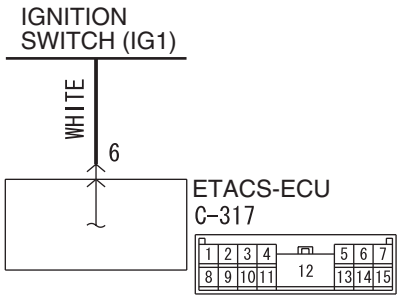
Check the power supply line (ACC) for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-317 (terminal 7) and ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of ignition switch (ACC) is normal.

Inspection Procedure 2: ETACS-ECU does not receive any signal from the ignition switch (IG1).

Ignition Switch (IG1) Input Circuit



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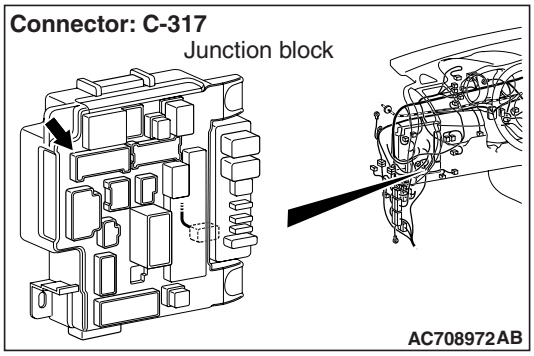


TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the ignition switch (IG1) input signal, or the IG1 relay inside the ETACS-ECU does not operate, the ignition switch (IG1) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The ignition switch may be defective
- The ETACS-ECU may be defective
- The fuse may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

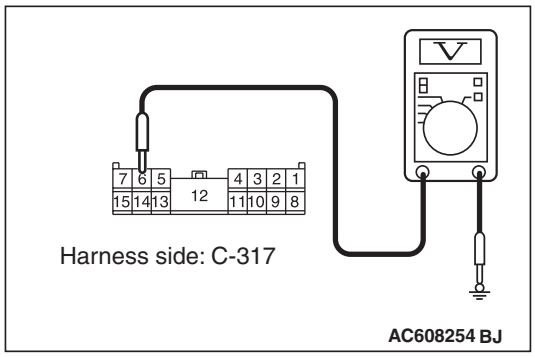
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of ignition switch (IG1) is normal.



STEP 2. Check the ignition switch (IG1) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-317.

(1) Disconnect ETACS-ECU connector C-317 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the ETACS-ECU. Check that the input signal of ignition switch (IG1) is normal.
NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-317 (terminal 6) and the ignition switch (IG1).

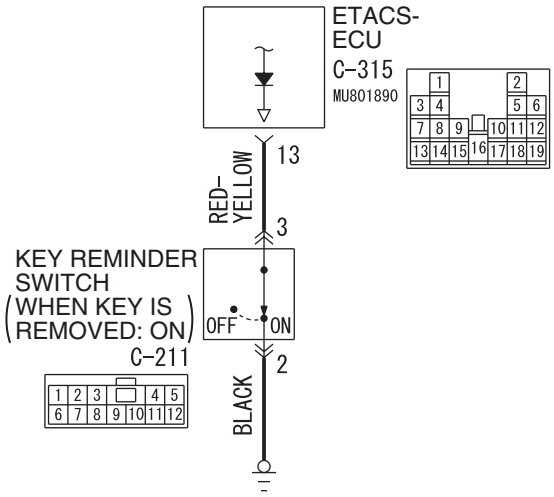
Check the power supply line (IG1) for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-317 (terminal 6) and ignition switch (IG1) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of ignition switch (IG1) is normal.

Inspection Procedure 3: ETACS-ECU does not receive any signal from the key reminder switch.

Key Reminder Switch Input Circuit



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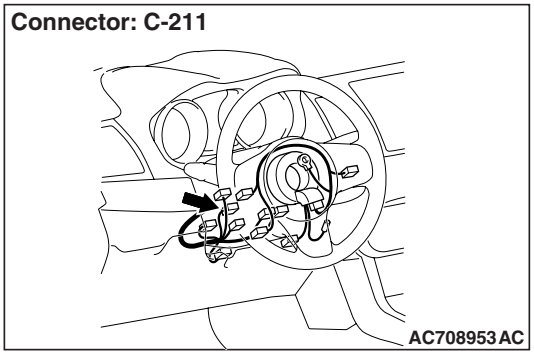
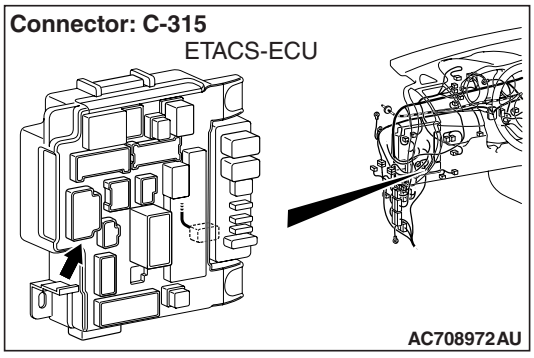
Connector: C-211



Connector: C-315
ETACS-ECU



COMMENTS ON TROUBLE SYMPTOM

The key reminder switch input signal is used for the operation judgment of the functions below. If the signal is abnormal, these functions will not work.

- Ignition key reminder function
- Central door locking
- Keyless entry system
- KOS
- Ignition key cylinder illumination light
- Interior light

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

TSB Revision

STEP 1. Check key reminder switch connector C-211 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector C-211 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of key reminder switch is normal.

STEP 2. Check the key reminder switch.

Disconnect key reminder switch connector C-211. Then check continuity between terminals.

Ignition key	Tester connection	Specified condition
Removed	2 –3	Open circuit
Inserted	2 –3	Continuity exists (2 ohms or less)

Q: Is the key reminder switch in good condition?

YES : Go to Step 3.

NO : Replace the key reminder switch. Check that the input signal of key reminder switch is normal.

STEP 3. Check the ground circuit to the key reminder switch. Measure the resistance at key reminder switch connector C-211.

(1) Disconnect key reminder switch connector C-211 and measure the resistance available at the wiring harness side of the connector.

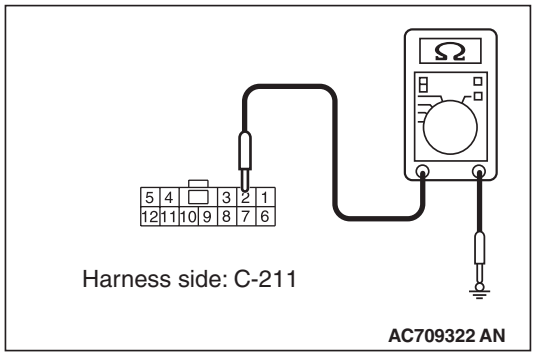
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between key reminder switch connector C-211 (terminal 2) and ground.
Check the ground wires for open circuit.

Q: Is the wiring harness between key reminder switch connector C-211 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of key reminder switch is normal.

STEP 5. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of key reminder switch is normal.

STEP 6. Check the wiring harness between key reminder switch connector C-211 (terminal 3) and ETACS-ECU connector C-315 (terminal 13).
Check the output lines for open circuit and short circuit.

Q: Is the wiring harness between key reminder switch connector C-211 (terminal 3) and ETACS-ECU connector C-315 (terminal 13) in good condition?

YES : Go to Step 7.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of key reminder switch is normal.

STEP 7. Check for continuity between key reminder switch connector C-211 terminal 2 and each of the other terminals as well as terminal 3 and each of the other terminals.
(1) Disconnect key reminder switch connector C-211 and measure the resistance available at the equipment side of the connector.
(2) Check for continuity between key reminder switch connector C-211 terminal 2 and each of the other terminals as well as terminal 3 and each of the other terminals.

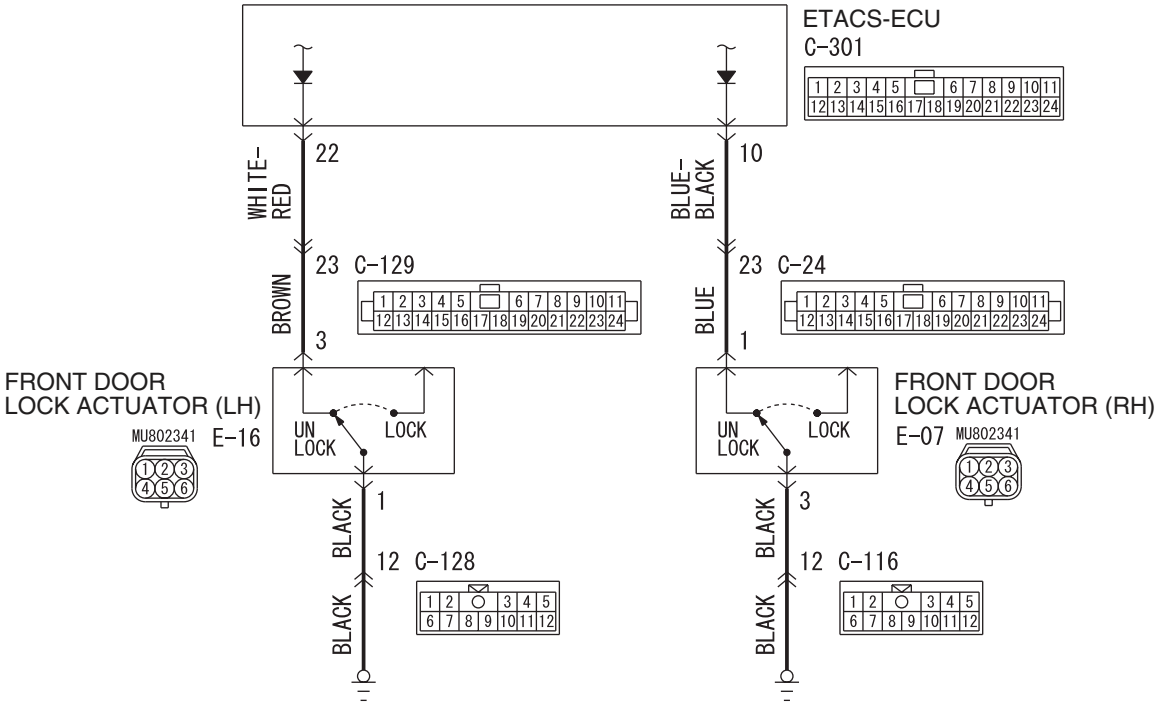
Q: Does continuity exist between the terminals?

NO : Replace the ETACS-ECU. Check that the input signal of key reminder switch is normal.
YES : Replace the key reminder switch. Check that the input signal of key reminder switch is normal.

TSB Revision

Inspection Procedure 4: ETACS-ECU does not receive any signal from the front door lock actuator.

Door Look Actuator Input Circuit



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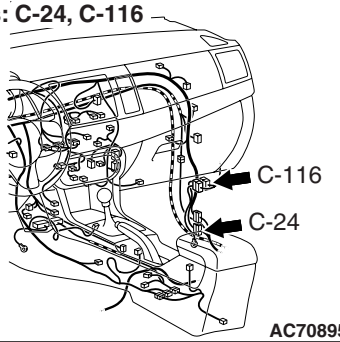
Connectors: C-24, C-116



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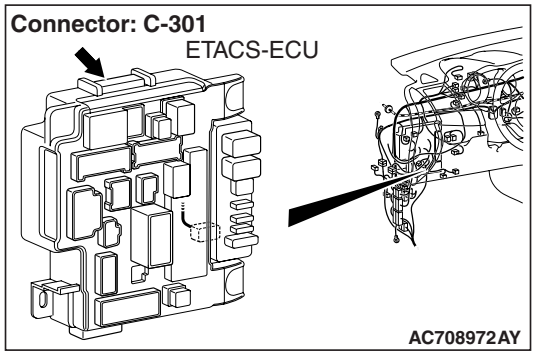
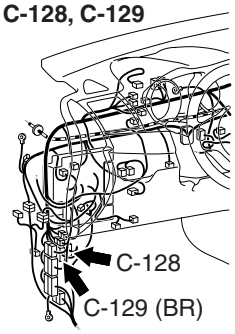
Connector: C-301



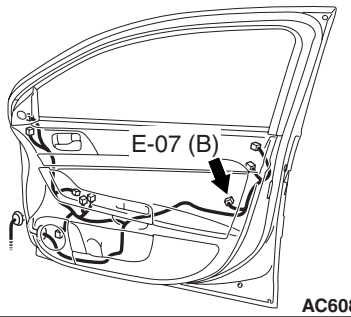
AC708972AY

Connectors: C-128, C-129



AC708950BH

Connector: E-07



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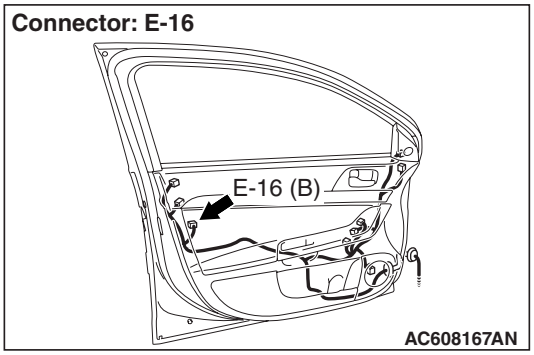
TSB Revision



COMMENTS ON TROUBLE SYMPTOM

The front door lock actuator (LH) or front door lock actuator (RH) <vehicles with KOS> input signal is used for the operation judgment of the functions below. If the signal is abnormal, these functions will not work normally.

- Key reminder function
- Central door locking
- KOS
- Keyless entry system
- Interior light

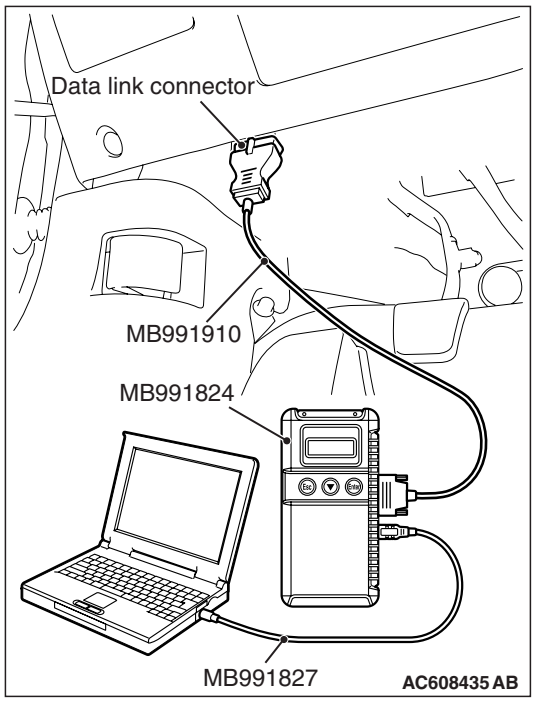
PROBABLE CAUSES

- The front door lock actuator (LH) may be defective
- The front door lock actuator (RH) may be defective <vehicles with KOS>
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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, check data list.

Check the input signals from the front door lock actuators.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."

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

(3) Check the ETACS data list.

- Set the driver's door to "UNLOCK."

Item No.	Item name	Normal condition
Item 271	Dr door unlock switch	Unlock

- Set the front passenger's door to "UNLOCK." <vehicles with KOS>

Item No.	Item name	Normal condition
Item 272	As door unlock switch	Unlock

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

Q: Are normal conditions displayed on the "Dr door unlock switch" and "As door unlock switch"?

YES <Normal conditions are displayed for all the items> : No action is necessary and testing is complete.

NO <Normal condition is not displayed for item No.271> : Go to Step 2.

NO <Normal condition is not displayed for item No.272> : Go to Step 8.

STEP 2. Check front door lock actuator (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door lock actuator (LH) connector E-16 in good condition?

YES : Go to Step 3.

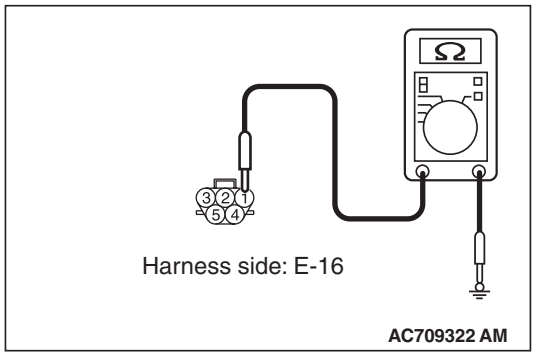
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door lock actuator (LH) is normal.

STEP 3. Check the front door lock actuator (LH).
Disconnect front door lock actuator (LH) connector E-16. Then check continuity between the terminals.

Lever position	Tester connection	Specified condition
UNLOCK	1 –3	Continuity exists (2 ohms or less)
LOCK	1 –3	Open circuit

Q: Is the front door lock actuator (LH) in good condition?
YES : Go to Step 4.
NO : Replace the front door lock actuator (LH). Check that the input signal of front door lock actuator (LH) is normal.

STEP 4. Check the ground circuit to the front door lock actuator (LH). Measure the resistance at front door lock actuator (LH) connector E-16.
(1) Disconnect front door lock actuator (LH) connector E-16 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?
YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between front door lock actuator (LH) connector E-16 (terminal 1) and ground.
Check the ground wires for open circuit.

NOTE: Also check intermediate connector C-128 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-128 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front door lock actuator (LH) connector E-16 (terminal 1) and ground in good condition?
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door lock actuator (LH) is normal.

STEP 6. Check ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-301 in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door lock actuator (LH) is normal.

STEP 7. Check the wiring harness between front door lock actuator (LH) connector E-16 (terminal 3) and ETACS-ECU connector C-301 (terminal 22).

Check the input lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front door lock actuator (LH) connector E-17 (terminal 3) and ETACS-ECU connector C-301 (terminal 22) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of front door lock actuator (LH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door lock actuator (LH) is normal.

STEP 8. Check front door lock actuator (RH) connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door lock actuator (RH) connector E-07 in good condition?

YES : Go to Step 9.

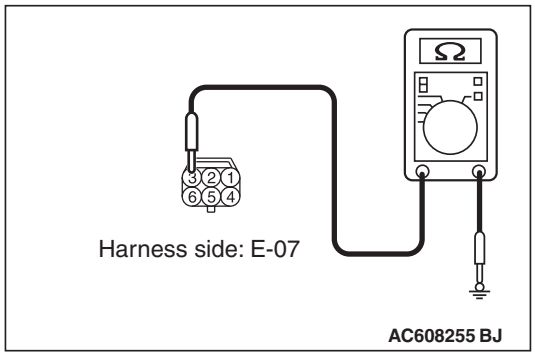
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door lock actuator (RH) is normal.

STEP 9. Check the front door lock actuator (RH).
Disconnect front door lock actuator (RH) connector E-07. Then check continuity between the terminals.

Lever position	Tester connection	Specified condition
UNLOCK	1 –3	Continuity exists (2 ohms or less)
LOCK	1 –3	Open circuit

Q: Is the front door lock actuator (RH) in good condition?
YES : Go to Step 10.
NO : Replace the front door lock actuator (RH). Check that the input signal of front door lock actuator (RH) is normal.

STEP 10. Check the ground circuit to the front door lock actuator (RH). Measure the resistance at front door lock actuator (RH) connector E-07.
(1) Disconnect front door lock actuator (RH) connector E-07 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?
YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between front door lock actuator (RH) connector E-07 (terminal 3) and ground.
Check the ground wires for open circuit.

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

Q: Is the wiring harness between front door lock actuator (RH) connector E-07 (terminal 3) and ground in good condition?
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door lock actuator (RH) is normal.

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STEP 12. Check ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-301 in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door lock actuator (RH) is normal.

STEP 13. Check the wiring harness between front door lock actuator (RH) connector E-07 (terminal 1) and ETACS-ECU connector C-301 (terminal 10).

Check the input lines for open circuit and short circuit.

NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

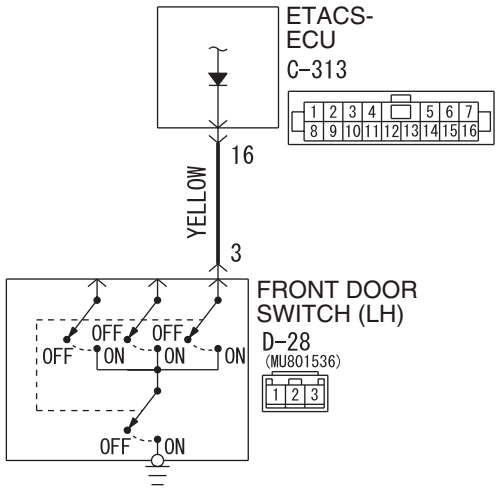
Q: Is the wiring harness between front door lock actuator (RH) connector E-07 (terminal 1) and ETACS-ECU connector C-301 (terminal 10) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of front door lock actuator (RH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door lock actuator (RH) is normal.

Inspection Procedure 5: ETACS-ECU does not receive any signal from the front door switch (LH).

Front Door Switch (LH) Input Circuit



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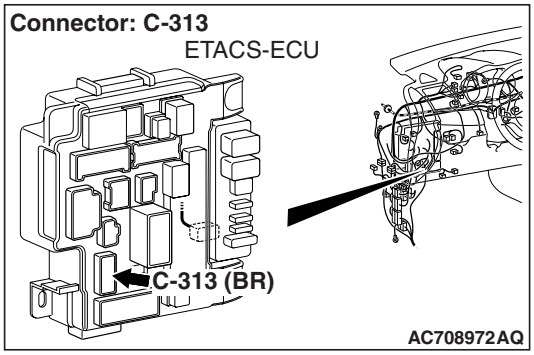

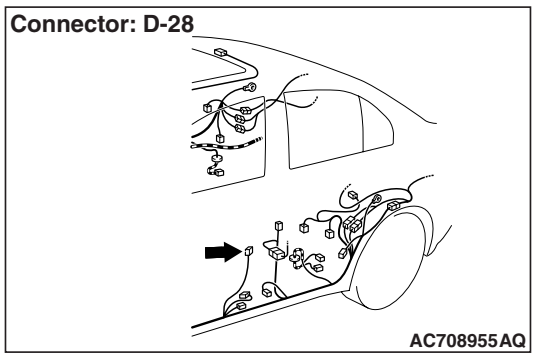

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the front door switch (LH) input signal, the front door switch (LH) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The front door switch (LH) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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STEP 1. Check front door switch (LH) connector D-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door switch (LH) connector D-28 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door switch (LH) is normal.

STEP 2. Check the front door switch (LH).

Remove the front door switch (LH). Then check the continuity between the switch terminals and the switch body.

Switch position	Tester connection	Specified condition
Released	3 –switch body	Continuity exists (2 ohms or less)
Pressed	3 –switch body	Open circuit

Q: Is the driver's door switch in good condition?

YES : Go to Step 3.

NO : Replace the front door switch (LH). Check that the input signal of front door switch (LH) is normal.

STEP 3. Measure at the lower metal part of the front door switch (LH) in order to check the ground circuit to the front door switch (LH).

NOTE: Check that the front door switch (LH) is grounded to the vehicle body by means of its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Check the fit of the switch, and repair if necessary. Check that the input signal of front door switch (LH) is normal.

STEP 4. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of front door switch (LH) is normal.

STEP 5. Check the wiring harness between driver's door switch connector D-28 (terminal 3) and ETACS-ECU connector C-313 (terminal 16).

Check the input lines for open circuit and short circuit.

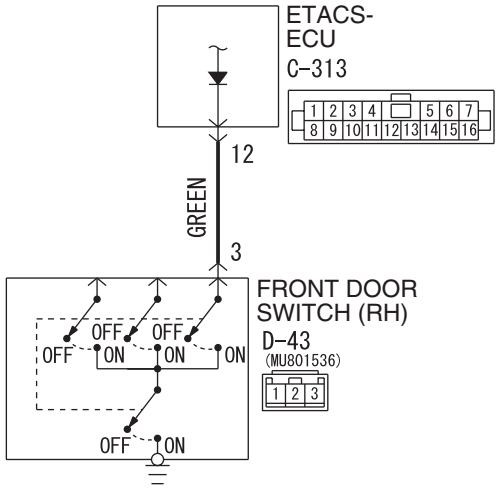
Q: Is the wiring harness between driver's door switch connector D-28 (terminal 3) and ETACS-ECU connector C-313 (terminal 16) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of front door switch (LH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door switch (LH) is normal.

Inspection Procedure 6: ETACS-ECU does not receive any signal from the front door switch (RH).

Front Door Switch (RH) Input Circuit



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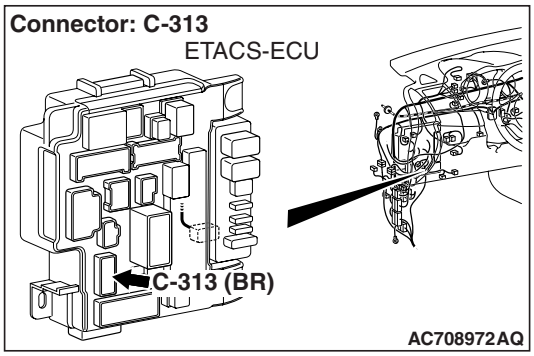

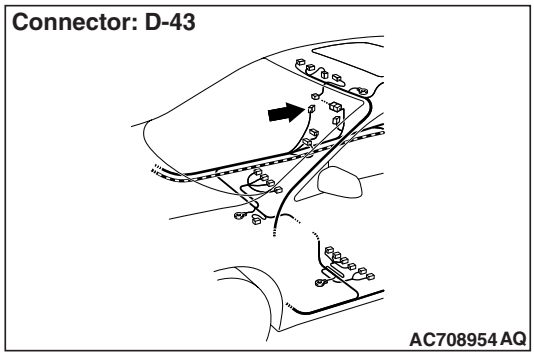

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the front door switch (RH) input signal, the front door switch (RH) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The front door switch (RH) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check front door switch (RH) connector D-43 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door switch (RH) connector D-43 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the input signal of front door switch (RH) is normal.

STEP 2. Check the front door switch (RH).

Remove the front door switch (RH). Then check the continuity between the switch terminals and the switch body.

Switch position	Tester connection	Specified condition
Released	3 –switch body	Continuity exists (2 ohms or less)
Pressed	3 –switch body	Open circuit

Q: Is the front door switch (RH) in good condition?

YES : Go to Step 3.

NO : Replace the front door switch (RH). Check that the input signal of front door switch (RH) is normal.

STEP 3. Measure at the lower metal part of the front door switch (RH) in order to check the ground circuit to the front door switch (RH).

NOTE: Check that the front door switch (RH) is grounded to the vehicle body by means of its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Check the fit of the switch, and repair if necessary. Check that the input signal of front door switch (RH) is normal.

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STEP 4. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the input signal of front door switch (RH) is normal.

STEP 5. Check the wiring harness between front door switch (RH) connector D-43 (terminal 3) and ETACS-ECU connector C-313 (terminal 12).

Check the input lines for open circuit and short circuit.

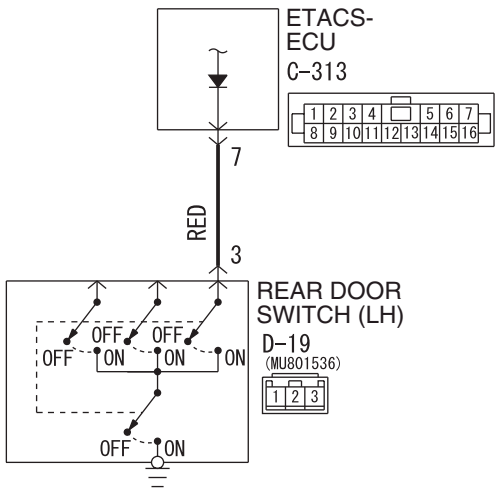
Q: Is the wiring harness between driver's door switch connector D-43 (terminal 3) and ETACS-ECU connector C-313 (terminal 12) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of front door switch (RH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of front door switch (RH) is normal.

Inspection Procedure 7: ETACS-ECU does not receive any signal from the rear door switch (LH).

Rear Door Switch (LH) Input Circuit



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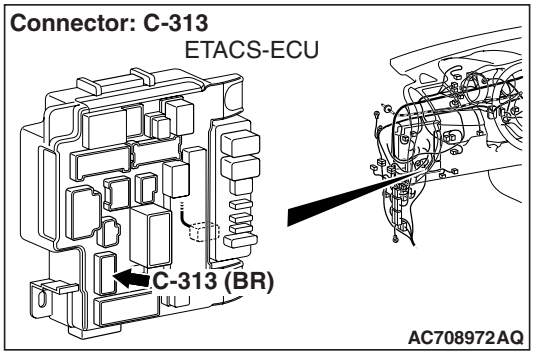

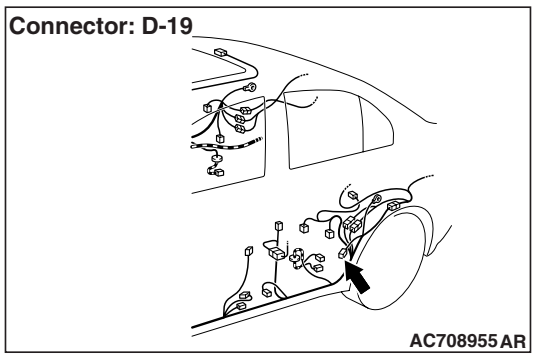

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the rear door switch (LH) input signal, the rear door switch (LH) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The rear door switch (LH) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check rear door switch (LH) connector D-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door switch (LH) connector D-19 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of rear door switch (LH) is normal.

STEP 2. Check the rear door switch (LH).

Remove the rear door switch (LH). Then check the continuity between the switch terminals and the switch body.

Switch position	Tester connection	Specified condition
Released	3 –switch body	Continuity exists (2 ohms or less)
Pressed	3 –switch body	Open circuit

Q: Is the rear door switch in good condition?

YES : Go to Step 3.

NO : Replace the rear door switch (LH). Check that the input signal of rear door switch (LH) is normal.

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STEP 3. Measure at the lower metal part of the rear door switch (LH) in order to check the ground circuit to the rear door switch (LH).

NOTE: Check that the rear door switch (LH) is grounded to the vehicle body by means of its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Check the fit of the switch, and repair if necessary. Check that the input signal of rear door switch (LH) is normal.

STEP 4. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of rear door switch (LH) is normal.

STEP 5. Check the wiring harness between driver's door switch connector D-19 (terminal 3) and ETACS-ECU connector C-313 (terminal 7).

Check the input lines for open circuit and short circuit.

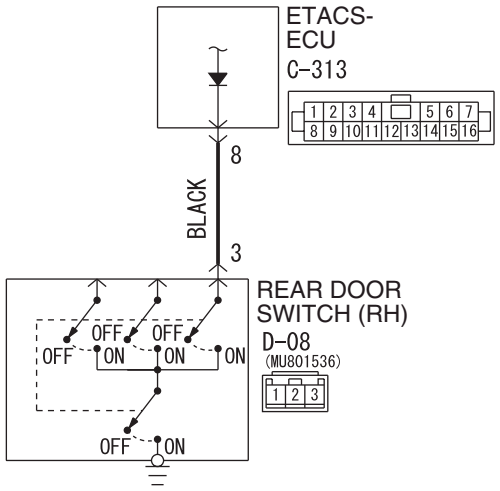
Q: Is the wiring harness between rear door switch connector D-19 (terminal 3) and ETACS-ECU connector C-313 (terminal 7) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of rear door switch (LH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of rear door switch (LH) is normal.

Inspection Procedure 8: ETACS-ECU does not receive any signal from the rear door switch (RH).

Rear Door Switch (RH) Input Circuit



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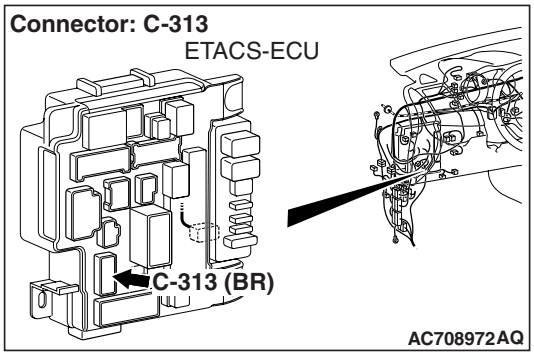
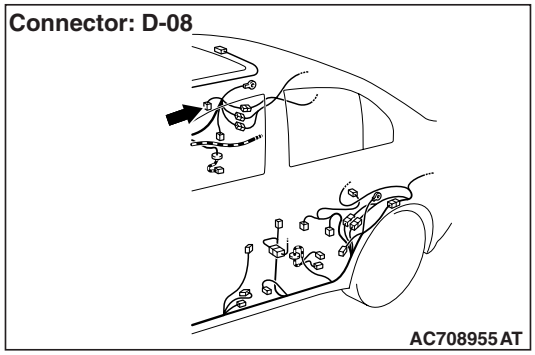




TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the rear door switch (RH) input signal, the rear door switch (RH) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The rear door switch (RH) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check rear door switch (RH) connector D-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door switch (RH) connector D-08 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of rear door switch (RH) is normal.

STEP 2. Check the rear door switch (RH).

Remove the rear door switch (RH). Then check the continuity between the switch terminals and the switch body.

Switch position	Tester connection	Specified condition
Released	3 –switch body	Continuity exists (2 ohms or less)
Pressed	3 –switch body	Open circuit

Q: Is the rear door switch in good condition?

YES : Go to Step 3.

NO : Replace the rear door switch (RH). Check that the input signal of rear door switch (RH) is normal.

STEP 3. Measure at the lower metal part of the rear door switch (RH) in order to check the ground circuit to the rear door switch (RH).

NOTE: Check that the rear door switch (RH) is grounded to the vehicle body by means of its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 4.

NO : Check the fit of the switch, and repair if necessary. Check that the input signal of rear door switch (RH) is normal.

STEP 4. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of rear door switch (RH) is normal.

STEP 5. Check the wiring harness between driver's door switch connector D-08 (terminal 3) and ETACS-ECU connector C-313 (terminal 8).

Check the input lines for open circuit and short circuit.

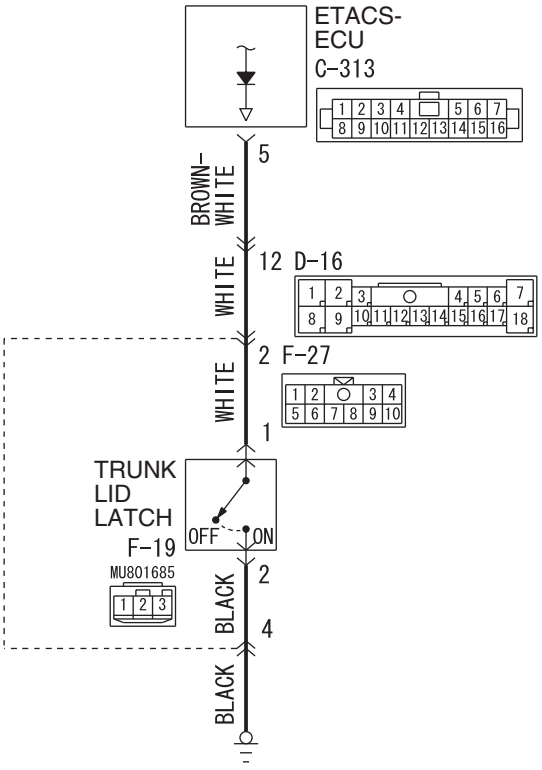
Q: Is the wiring harness between rear door switch connector D-08 (terminal 3) and ETACS-ECU connector C-313 (terminal 8) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of rear door switch (RH) is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of rear door switch (RH) is normal.

Inspection Procedure 9: ETACS-ECU does not receive any signal from the trunk lid latch.

Trunk Lid Actuator and Switch Input Circuit



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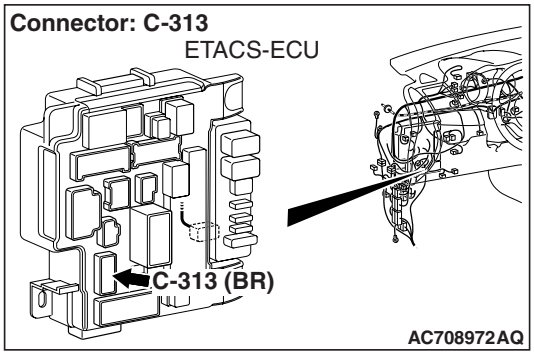
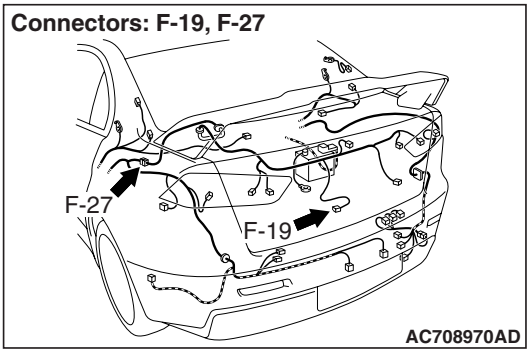
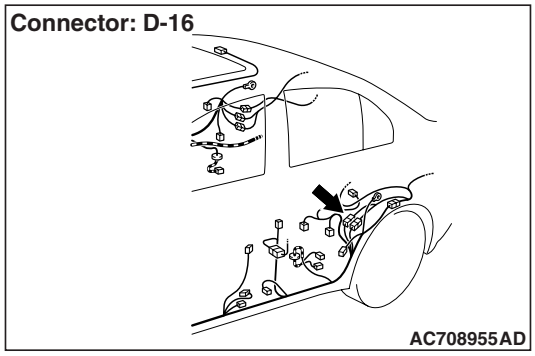
TSB Revision







TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the trunk lid latch input signal, the trunk lid latch signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The trunk lid latch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check trunk lid latch connector F-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is trunk lid latch connector F-19 in good condition?

YES : Go to Step 2.

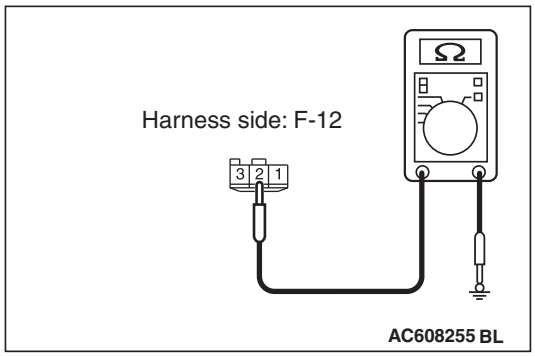
NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of trunk lid latch is normal.

STEP 2. Check the trunk lid latch.
Disconnect trunk lid latch connector F-19. Then check continuity between terminals.

Ignition key	Tester connection	Specified condition
Released	1 –2	Continuity exists (2 ohms or less)
Pressed	1 –2	Open circuit

Q: Is the trunk lid latch in good condition?
YES : Go to Step 3.
NO : Replace the trunk lid latch. Check that the input signal of trunk lid latch is normal.

STEP 3. Check the ground circuit to the trunk lid latch.
Measure the resistance at trunk lid latch connector F-19.
(1) Disconnect trunk lid latch connector F-19 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?
YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check the wiring harness between trunk lid latch connector F-19 (terminal 2) and ground.
Check the ground wires for open circuit.

NOTE: Also check intermediate connector F-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between trunk lid latch connector F-19 (terminal 2) and ground in good condition?
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of trunk lid latch is normal.

STEP 5. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of trunk lid latch is normal.

STEP 6. Check the wiring harness between trunk lid latch connector F-19 (terminal 1) and ETACS-ECU connector C-313 (terminal 5).

Check the output lines for open circuit and short circuit.

NOTE: Also check intermediate connectors F-27and D-16 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-27 or D-16 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

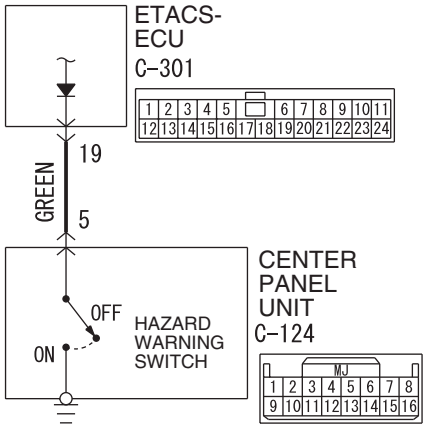
Q: Is the wiring harness between trunk lid latch connector F-19 (terminal 1) and ETACS-ECU connector C-313 (terminal 5) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of trunk lid latch is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of trunk lid latch is normal.

Inspection Procedure 10: ETACS-ECU does not receive any signal from the hazard warning light switch.

Hazard Warning Switch Input Circuit



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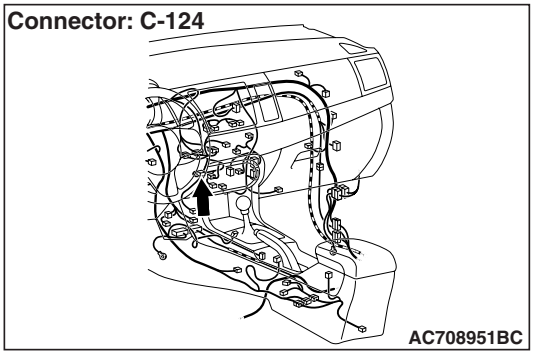
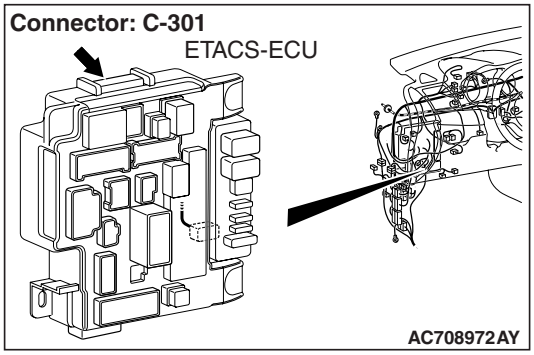
Connector: C-124



AC708951BC

Connector: C-301



AC708972AY

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the hazard warning light switch input signal, the hazard warning light switch signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The center panel unit may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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STEP 1. Check center panel unit connector C-124 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is center panel unit connector C-124 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of hazard warning light switch is normal.

STEP 2. Check the hazard warning light switch.

Remove the center panel unit. Then check continuity between the switch terminal and switch body.

Switch position	Tester connection	Specified condition
Released	5 –switch body	Continuity exists (2 ohms or less)
Pressed	5 –switch body	Open circuit

Q: Is the hazard warning light switch in good condition?

YES : Go to Step 3.

NO : Replace the center panel unit. Check that the input signal of hazard warning light switch is normal.

STEP 3. Check ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-301 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s) (Refer to GROUP 00E, Harness Connector Inspection P.00E-2). Check that the input signal of hazard warning light switch is normal.

STEP 4. Check the wiring harness between center panel unit connector C-124 (terminal 5) and ETACS-ECU connector C-301 (terminal 19).

Check the input lines for open circuit and short circuit.

Q: Is the wiring harness between center panel unit connector C-124 (terminal 5) and ETACS-ECU connector C-301 (terminal 19) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of hazard warning light switch is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of hazard warning light switch is normal.

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Inspection Procedure 11: ETACS-ECU does not receive any signal from the column switch signal.

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU receives the column switch signal via the LIN communication. If there is an abnormality to column switch or LIN bus line, the lights and wiper/washer do not work normally.

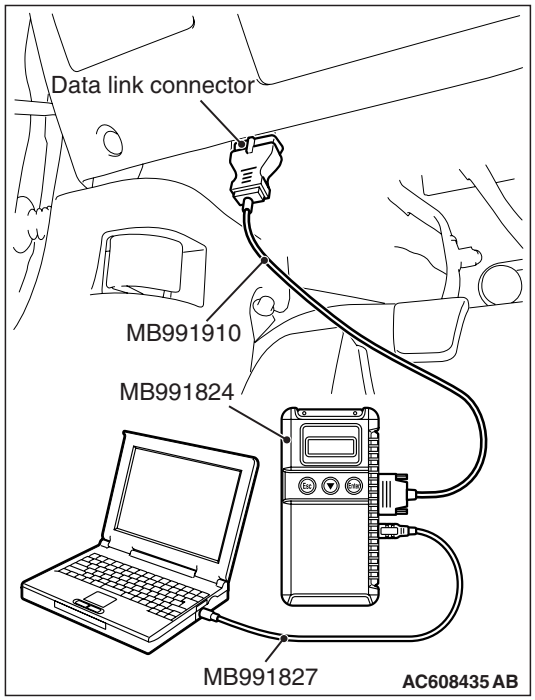
TROUBLESHOOTING HINTS

- The column switch may be defective
- The LIN bus line may be defective

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 (Vehicles with CAN communication system)



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

Check the DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-579."
(2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
(3) Check if DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 2.

STEP 2. Column switch check

- Check the continuity for windshield wiper and windshield washer switch (Refer to P.54A-279).
- Check the continuity for column switch (switch body part) (Refer to P.54A-280).

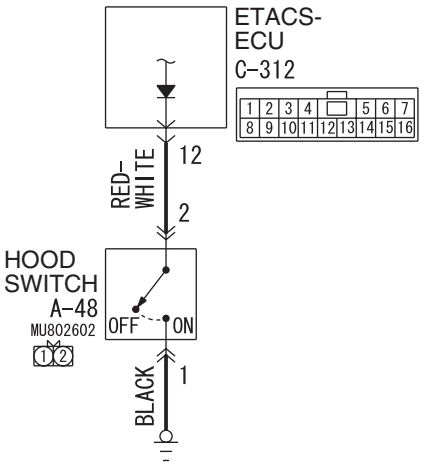
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the column switch.

Inspection Procedure 12: ETACS-ECU does not receive any signal from the hood switch.

Hood Switch Input Circuit



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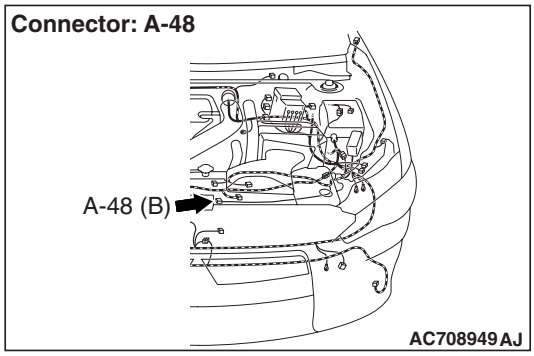
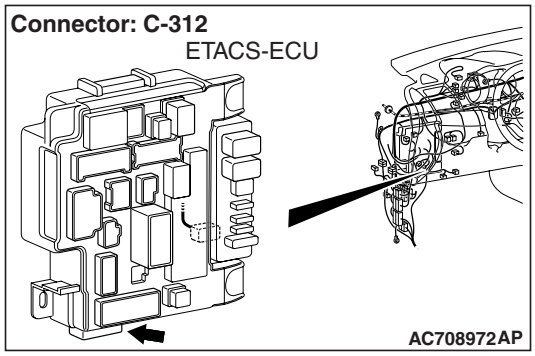
Connector: A-48



Connector: C-312



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TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the hood switch input signal, the hood switch signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The hood switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check hood switch connector A-48 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is hood switch connector A-48 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the input signal of hood switch is normal.

STEP 2. Check the hood switch.

Remove the hood switch. Then check continuity between the switch terminals.

Switch position	Tester connection	Specified condition
Released	1 –2	Less than 2 ohms
Pressed	1 –2	Open circuit

Q: Is the hood switch in good condition?

YES : Go to Step 3.

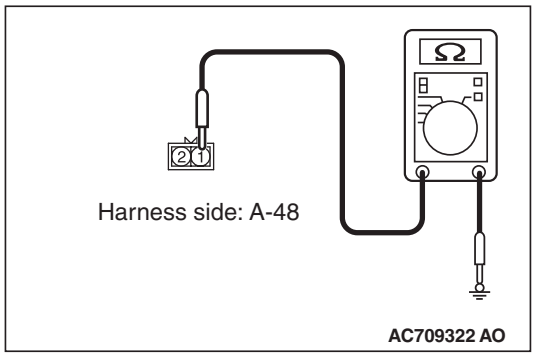
NO : Replace the hood switch. Check that the input signal of hood switch is normal.

STEP 3. Check the ground circuit to the hood switch. Test at hood switch connector A-48.

(1) Disconnect hood switch connector A-48 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between hood switch connector A-48 (terminal 1) and ground.
Check the ground wires for open circuit.

Q: Is the wiring harness between hood switch connector A-48 (terminal 1) and the ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of hood switch is normal.

STEP 5. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the input signal of hood switch is normal.

STEP 6. Check the wiring harness between driver's door switch connector A-48 (terminal 2) and ETACS-ECU connector C-312 (terminal 12).
Check the input lines for open circuit and short circuit.

Q: Is the wiring harness between driver's door switch connector A-48 (terminal 2) and ETACS-ECU connector C-312 (terminal 12) in good condition?

YES : Replace the ETACS-ECU. Check that the input signal of hood switch is normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the input signal of hood switch is normal.

ON-VEHICLE SERVICE

CUSTOMIZATION FUNCTION

M1545002500331

By operating the ETACS system or MMCS of scan tool MB991958, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool MB991958 display)	**Adjustment item**	**Adjusting contents (scan tool MB991958 display)**	**Adjusting contents**
ACC power auto cut	Time to ACC power cut-off when the ignition switch is in the ACC position	Disable	No function (default)
		30 min	30 minutes
		60 min	60 minutes
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (default)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (default)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 seconds (default)
		Long	0.8 seconds
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (default)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
Front wiper operation	Adjustment of the intermittent windshield wiper operation <vehicles without auto light>	Normal INT	Intermittent wiper interval is fixed to 4 seconds.
		Variable INT	Intermittent wiper interval is calculated only by the wiper volume control.
		Speed Sensitive	Intermittent wiper interval is calculated according to the intermittent wiper volume control and vehicle speed (default).
	Adjustment of the intermittent windshield wiper operation <vehicles with auto light>	Normal INT	Intermittent wiper interval is fixed to 4 seconds.
		Variable INT	Intermittent wiper interval is calculated only by the wiper volume control.
		Speed Sensitive	Intermittent wiper interval is calculated according to the intermittent wiper volume control and vehicle speed.
		Rain Sensitive	Intermittent wiper interval is calculated according to the intermittent wiper volume control and lighting control sensor (default).
Front wiper washer	Disabling or enabling washer-linked wiper function	Only washer	No function
		Washer&wiper	With function (default)
Sensitivity for auto light	Lighting control sensor sensitivity (illumination intensity) <vehicles with auto light>	Level 1 (+)bright	High-high ambient brightness
		Level 2	High ambient brightness
		Level 3	Standard ambient brightness (default)
		Level 4(−)dark	Low ambient brightness
		Level 5(−)dark	Low-low ambient brightness
Dome light delay timer with door	Adjustment of interior light delay shutdown time	0 sec	0 second (no delay shutdown time)
		7.5 sec	7.5 seconds
		15 sec	15 seconds
		30 sec	30 seconds (default)
		60 sec	60 seconds
		120 sec	120 seconds
		180 sec	180 seconds
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (default)
Interior light auto cut timer	Adjustment of interior light automatic shutdown function operation time	Disable	No function
		3 min	3 minutes
		30 min	30 minutes (default)
		60 min	60 minutes

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Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
Door unlock mode	Door lock system	All doors unlock	All the doors are unlocked when the driver's side door is unlocked.
		Dr door unlock	Only the driver's side door is unlocked when the driver's side door is unlocked. (default)
Auto door unlock by P position	Auto door unlock by P position function <Vehicles with TC-SST>	Disable	No function (default)
		Always enabled	Always with function
Duration of horn chirp	Horn sounding time during horn answer back	Short	0.01 second (default)
		Long	0.02 second
Horn chirp by keyless	Horn chirp by keyless entry system <vehicles without auto light>	Not sound horn	No horn answerback function
		Lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed once.
		W lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed twice. (default)
	Horn chirp by keyless entry system <vehicles with auto light>	Not sound horn	No horn answerback function
		Lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed once.
		Lock/auto ON	During daytime, while the lighting switch is in the AUTO position, the horn sounds once when the lock is pressed once.
		W lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed twice. (default)
Tone alarm answer back <Vehicles with KOS>	Adjusts the tone alarm answer back function	Not sound tone alarm	No function
		At keyless	Sounds when the keyless entry system is activated.
		At F.A.S.T.	Sounds when KOS is activated (default).
		At Both	Sounds when the keyless entry system or KOS is activated.
Timer lock timer	Timer lock period adjustment	30 sec	30 seconds (default)
		60 sec	60 seconds
		120 sec	120 seconds
		180 sec	180 seconds
Panic alarm switch	With/without panic alarm function	Disable	No function
		Enable	With function (default)
F.A.S.T. key out of car	With/without KOS key exterior detection function	Enable	No function
		Disable	With function (default)

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
F.A.S.T. feature	KOS function adjustment	Both enable	All KOS functions are enabled (default).
		DoorEntry enable	Only door entry function is enabled.
		ENG strt enable	Only engine starting function is enabled.
		Both disabled	All KOS functions are disabled.
F.A.S.T. unlock disable time	Adjusts the door unlock inhibition period after door lock is activated	0 sec	0 seconds
		3 sec	3 seconds (default)
		5 sec	5 seconds

ETACS-ECU

REMOVAL AND INSTALLATION

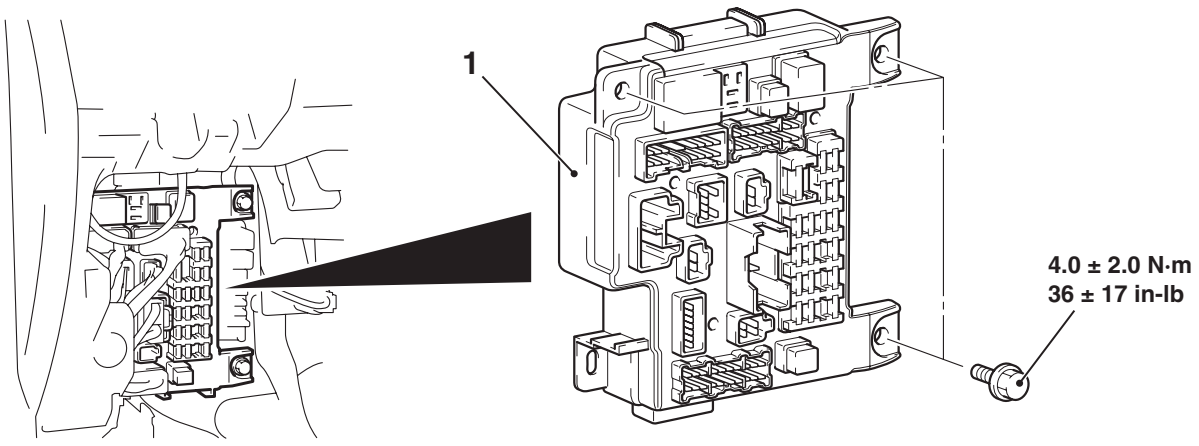
M1545004700182

⚠ *WARNING*

- ***Before removing the ETACS-ECU and knee air bag module, refer to GROUP 52B, Service Precautions P.52B-25 and Knee Air Bag Module P.52B-398.***
- ***When removing and installing the ETACS-ECU, do not let it bump against the knee air bag module.***

⚠ CAUTION

When replacing the ETACS-ECU, use the ETACS-ECU to which the chassis number is written and the coding is implemented. Also, if diagnostic trouble code No. B1761 "VIN not programmed" or No. B222C "Coding not completed" is set to the ETACS-ECU, replace with the ETACS-ECU to which the chassis number same as that of vehicle is written and the coding is implemented.



AC610001AB

Removal Steps

- Instrument panel cover assembly (Refer to GROUP 52A, Instrument Lower Panel P.52A-8).

Removal Steps (Continued)

- Knee air bag module (Refer to GROUP 52B, Knee Air Bag Module P.52B-398).

1. ETACS-ECU

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CHECK WITH TERMINAL VOLTAGE

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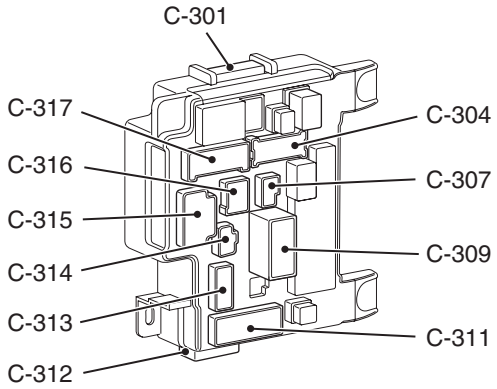

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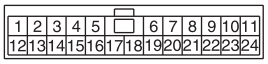
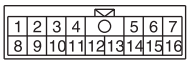
CONNECTOR: C-301



AC507030AB

Terminal No.	Check item	Check condition	Normal condition
1	–	–	–
2	Input from power window main switch or front power window sub switch (central door lock switch)	central door lock switch: Locked	0 volt
3–9	–	–	–
10	Input from front passenger's door lock actuator (unlock)	Front passenger's door lock: Unlocked	0 volt
11	–	–	–
12	Output to defogger switch	Defogger switch: ON	0 volt
13–18	–	–	–
19	Input from hazard warning light switch	Hazard warning light switch: ON	0 volt
20	–	–	–
21	Input from windshield wiper backup switch	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 volt
22	Input from driver's door lock actuator (unlock)	Driver's door lock: Unlocked	0 volt
23, 24	–	–	–

CONNECTOR: C-304



AC507031AB

Terminal No.	Check item	Check condition	Normal condition
1	Stop light switch power supply	Stop light switch: ON	Battery voltage
2	–	–	–
3	Output to position light (LH)	When position light is illuminated	Battery voltage
4	–	–	–
5	Output to windshield wiper (HI)	When windshield wipers are operating at high speed	Battery voltage
6	Output to windshield wiper (LO)	When windshield wipers are operating at low speed	Battery voltage
7	Output position light (RH)	When position light illuminated	Battery voltage
8	Input from windshield wiper auto stop switch	When windshield wipers are operating	Battery voltage
9	Output to front and side turn-signal light (LH)	When front and side turn-signal light (LH) is illuminated	Battery voltage
10	Output to engine control module (IG1)	Ignition switch: ON	Battery voltage
11	Input from engine control module (fuel control)	Engine: Started	0 volt
12	Output to windshield wiper (ACC)	Ignition switch: ACC	Battery voltage
13	Output to windshield washer	When windshield washer is operating	Battery voltage
14	–	–	–
15	Output to engine control module (START)	Ignition switch: START	Battery voltage
16	Output to front and side turn-signal light (RH)	When front and side turn-signal light (RH) is illuminated	Battery voltage

CONNECTOR: C-307

AC507032AB

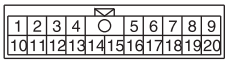
Terminal No.	Check item	Check condition	Normal condition
1	Fuel pump power supply	Ignition switch: ON	Battery voltage
2	Battery power supply	Always	Battery voltage

CONNECTOR: C-309

AC507033AB

Terminal No.	Check item	Check condition	Normal condition
1	Battery power supply	Always	Battery voltage
2	Battery power supply	Always	Battery voltage

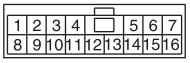
CONNECTOR: C-311



AC507035AB

Terminal No.	Check item	Check condition	Normal condition
1	Output to trunk lid lock actuator	When trunk is locked	Battery voltage
2	Backup light power supply	When backup light is illuminated	Battery voltage
3	Input from luggage compartment light	When luggage compartment light is illuminated	0 volt
4, 5	–	–	–
6	Output to rear door lock actuator (unlock)	When rear door is unlocked	Battery voltage
7, 8	–	–	–
9	Output to rear door lock actuator (lock)	When rear door is locked	Battery voltage
10	Output to taillight (LH) and side maker light (LH) and license plate light	When taillight (LH) and side maker light (LH) and license plate light are illuminated	Battery voltage
11	–	–	–
12	Rear power window motor power supply	Ignition switch: ON	Battery voltage
13	Output to taillight (RH) and side maker light (RH) and glove box light	When taillight (RH) and side maker light (RH) and glove box light are illuminated	Battery voltage
14, 15	–	–	–
16	Output to accessory socket 1	Ignition switch: ACC	Battery voltage
17	Output to luggage compartment light	When luggage compartment light is illuminated	Battery voltage
18	Output to rear turn-signal light (LH)	When rear turn-signal light (LH) is illuminated	Battery voltage
19	Output to rear turn-signal light (RH)	When rear turn-signal light (RH) is illuminated	Battery voltage
20	–	–	–

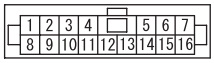
CONNECTOR: C-312



AC507034AB

Terminal No.	Check item	Check condition	Normal condition
1	Input from brake fluid level switch	Brake fluid level switch: ON	0 volt
2	Output to radiator fan relay	When radiator fan is operating	0 volt
3	–	–	–
4	Output to fog lights	Fog light switch: ON	0 volt
5	–	–	–
6	Output to headlight (LO)	Headlight switch: ON	0 volt
7	Input from ambient temperature sensor	Always	0.2 –2.72 volts
8	Output to condenser fan relay	When condenser fan is operating	0 volt
9	Output to fan control relay	When fan control is operating	0 volt
10	Output to daytime running light	Ignition switch: ON	0 volt
11	Output to horn	When horn sounds	0 volt
12	Input from hood switch	Hood switch: ON (hood open)	0 volt
13	Output to Headlight (HI)	Dimmer switch: ON	0 volt
14	Ground (ambient temperature sensor)	Always	0 volt
15	Output to theft-alarm horn	When theft-alarm horn sounds	0 volt
16	Input from stoplight switch	Stoplight switch: ON	Battery voltage

CONNECTOR: C-313



AC610017

Terminal No.	Check item	Check condition	Normal condition
1	–	–	–
2	Ignition switch (IG1) power supply	Ignition switch: ON	Battery voltage
3	–	–	–
4	Ignition switch (IG1) power supply	Ignition switch: ON	Battery voltage
5	Input from trunk lid actuator and switch	Trunk lid actuator and switch: ON (trunk lid open)	0 volt
6	–	–	–
7	Input from rear door switch (LH)	Rear door switch (LH): ON (door open)	0 volt
8	Input from rear door switch (RH)	Rear door switch (RH): ON (door open)	0 volt
9–11	–	–	–

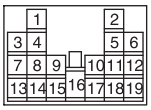
Terminal No.	Check item	Check condition	Normal condition
12	Input from front door switch (RH)	Front door switch (RH): ON (door open)	0 volt
13–15	–	–	–
16	Input from front door switch (LH)	Front door switch (LH): ON (door open)	0 volt

CONNECTOR: C-314

AC507037AB

Terminal No.	Check item	Check condition	Normal condition
1	Output to fuel pump	Engine: Started	Battery voltage
2	–	–	–

CONNECTOR: C-315



AC507029AB

Terminal No.	Check item	Check condition	Normal condition
1	–	–	–
2	Output to front door lock actuator (LH) (unlock)	When front door (LH) is unlocked	Battery voltage
3	–	–	–
4	Battery power supply	Always	Battery voltage
5	Output to front door lock actuator (RH) (unlock)	When front door (RH) is unlocked	Battery voltage
6	Output to central door locking (for locking the doors)	When the door lock actuators lock the doors	Battery voltage
7	Ignition switch (START) power supply	Ignition switch: START	Battery voltage
8	Power window motor power supply	Ignition switch: ON	Battery voltage
9	Ignition switch (ACC) power supply	Ignition switch: ACC	Battery voltage
10	Power window main switch power supply	Ignition switch: ON	Battery voltage
11	Output to accessory socket 2	Ignition switch: ACC	Battery voltage
12	Output to accessory socket 3	Ignition switch: ACC	Battery voltage
13	Input from key reminder switch	Key reminder switch: ON (ignition key removed)	0 volt
14	–	–	–

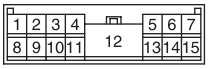
Terminal No.	Check item	Check condition	Normal condition
15	Input from power window main switch or front power window sub switch (central door lock switch)	Central door lock switch: Unlocked	0 volt
16	Output to blower motor	Blower motor in operation	Battery voltage
17	Ground (signal)	Always	0 volt
18	Output to ignition key cylinder illumination light	When ignition key cylinder illumination is ON	Battery voltage
19	Input from horn switch	Horn switch: ON	0 volt

CONNECTOR: C-316

AC507038AB

Terminal No.	Check item	Check condition	Normal condition
1	–	–	–
2	Sunroof motor assembly power supply	Always	Battery voltage
3, 4	–	–	–
5	Input from dome light	When dome light is illuminated	0 volt
6	Output to dome light output	When dome light is illuminated	Battery voltage

CONNECTOR: C-317



AC507028AB

Terminal No.	Check item	Check condition	Normal condition
1	Battery power supply	Always	Battery voltage
2	Battery power supply	Always	Battery voltage
3, 4	–	–	–
5	Ignition switch (IG1) power supply	Ignition switch: ON	Battery voltage
6	Input from ignition switch (IG1)	Ignition switch: ON	Battery voltage
7	Input from ignition switch (ACC)	Ignition switch: ACC	Battery voltage
8	–	–	–
9	Output to theft-alarm indicator light	When theft-alarm indicator light is illuminated	0 volt
10	Battery power supply	Always	Battery voltage
11–14	–	–	–
15	Ground	Always	0 volt

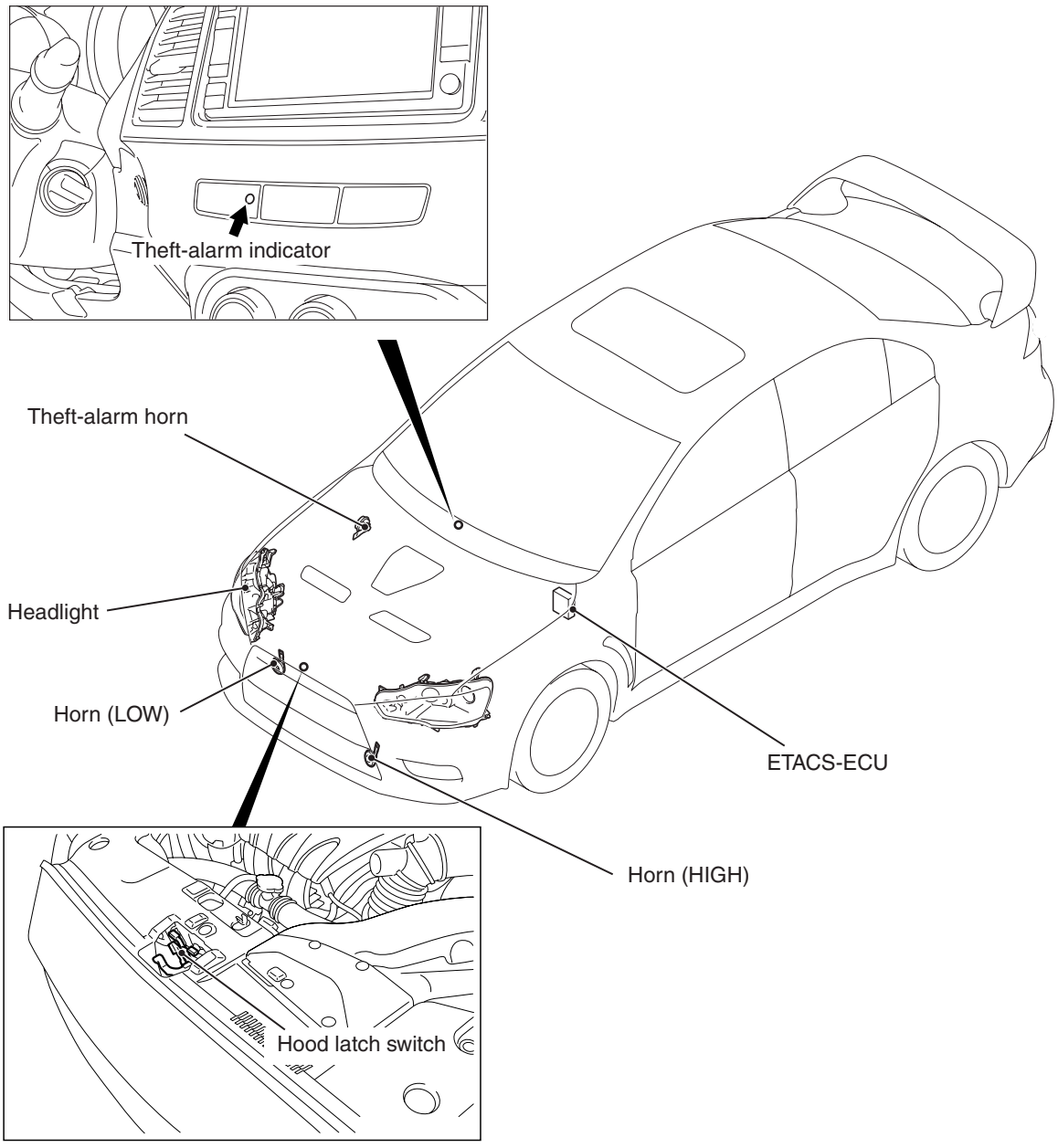
THEFT ALARM

GENERAL INFORMATION

M1547000100139

When the doors are locked using the keyless entry function or KOS (except when locked by using the key cylinder or door lock switch), the improper opening of door or trunk causes the ETACS-ECU function and control to give off an alarm with the flashing of headlights and the intermittent sounding of horns. Also, the ETACS-ECU warns that the theft-alarm system is being set by flashing the theft-alarm indicator

Construction diagram



AC705524AB

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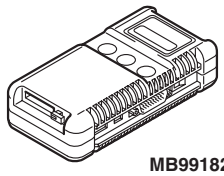
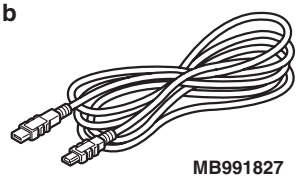
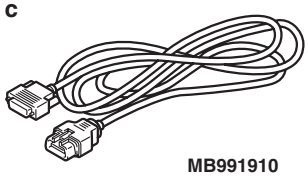
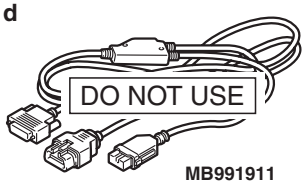
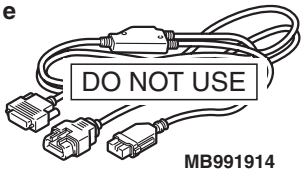
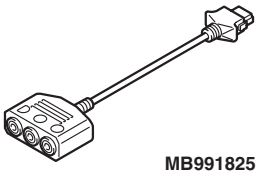
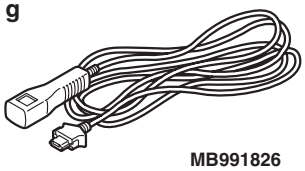
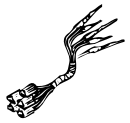
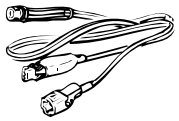
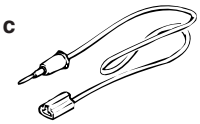
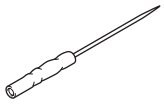
SPECIAL TOOLS

M1547000600145

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub-assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.** Reading diagnostic trouble code.

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1547001200173

Refer to GROUP 00 –Contents of troubleshooting P.00-7.

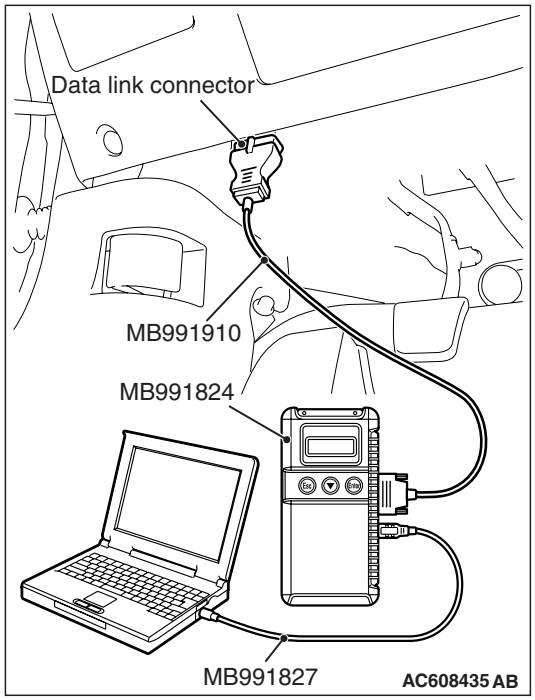
DIAGNOSTIC FUNCTION

M1547001300040

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

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HOW TO DIAGNOSE THE CAN BUS LINES

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 (Vehicles with CAN communication system)

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being 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 being diagnosed.
   - If they match, go to Step 8.
   - If not, go to Step 5.
8. Select 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.

TROUBLE SYMPTOM CHART

M1547001500260

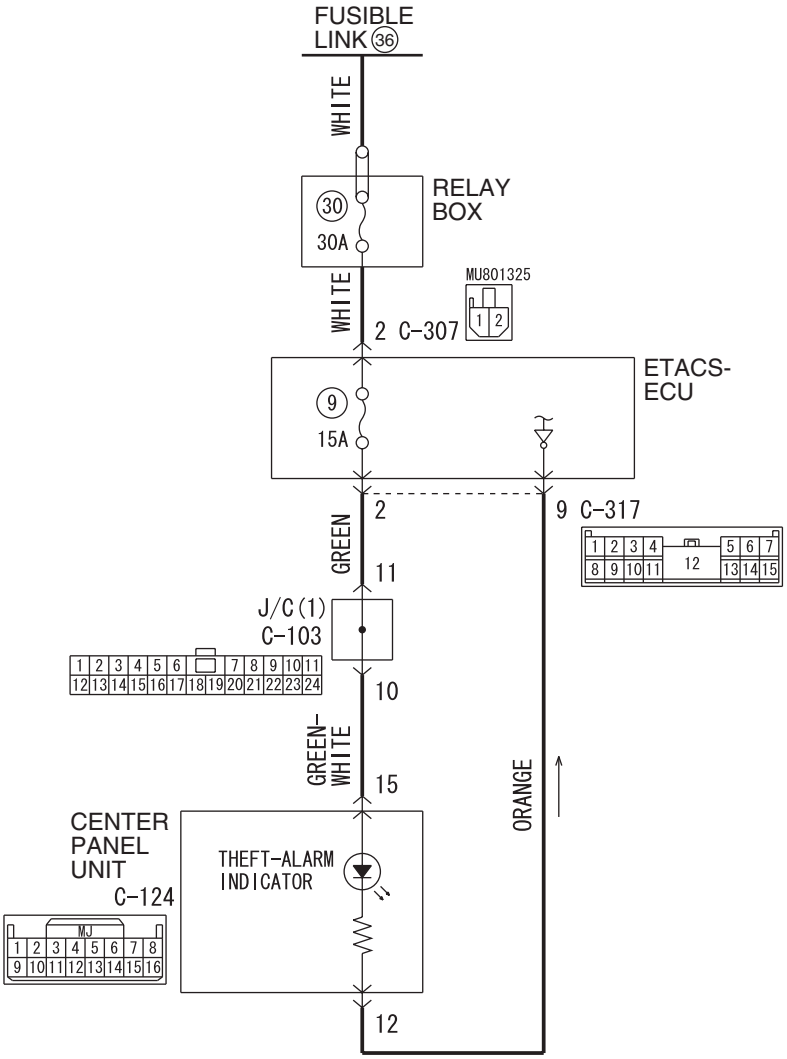
Trouble symptom	Inspection Procedure No.	Reference page
The theft-alarm is not armed (the theft-alarm indicator does not illuminate).	1	P.54A-688
The interior alarm does not work normally while the theft-alarm is triggered.	2	P.54A-694
Theft-alarm horn does not sound while the theft-alarm system is triggered.	3	P.54A-701
Horn (HIGH or LOW) does not sound while the theft-alarm system is triggered.	4	P.54A-701

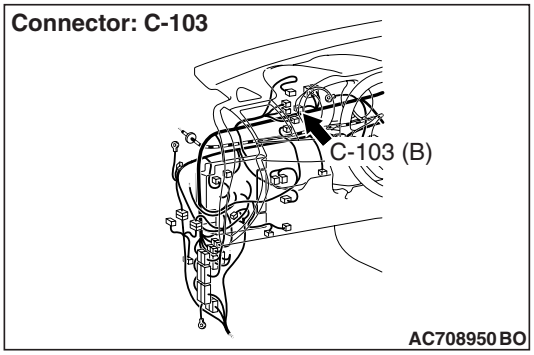
SYMPTOM PROCEDURES

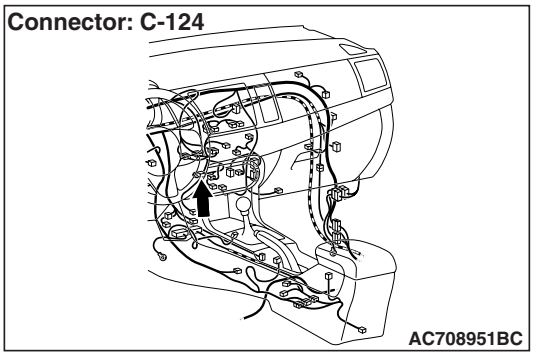
Inspection Procedure 1: The theft-alarm is not armed (the theft-alarm indicator does not illuminate).

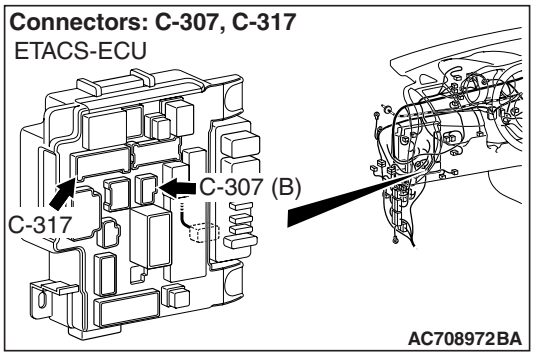
⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Theft-alarm Indicator Circuit









TECHNICAL DESCRIPTION (COMMENT)

If this function does not work normally, the input signal circuits to the components below, the theft-alarm indicator, the ETACS-ECU or the CAN bus line may have a problem.

- Keyless entry transmitter
- Key reminder switch
- Ignition switch (ACC)
- Hood switch
- Door switches
- Trunk latch switch

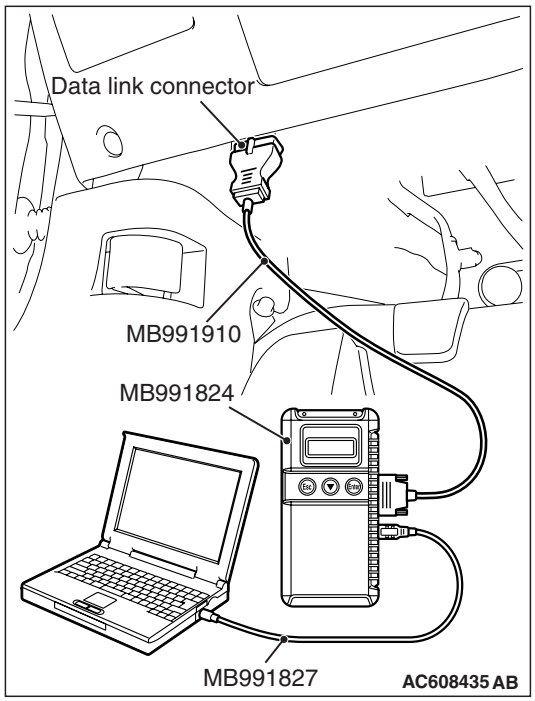
TROUBLESHOOTING HINTS

- CAN bus line may be defective
- Theft-alarm indicator may be defective
- Keyless entry transmitter may be defective
- The key reminder switch may be defective
- Door switch may be defective
- Trunk latch switch may be defective
- Hood switch may be defective
- The KOS-ECU may be defective
- The WCM may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



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

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54A-685."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

STEP 2. Using scan tool MB991958, check for any diagnostic trouble code.

Check if DTC is set to the KOS-ECU <vehicles with KOS> or WCM <vehicles with WCM>.
(1) Turn the ignition switch to the "ON" position.
(2) Check whether the KOS or WCM related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES <vehicles with KOS> : Troubleshoot the KOS (Refer to GROUP 42B, KOS P.42B-20).
YES <vehicles with WCM> : Troubleshoot the WCM (Refer to GROUP 42C, WCM P.42C-14).
NO : Go to Step 3.

STEP 3. Check the keyless operation key <KOS> or keyless entry transmitter <WCM>.

Q: is the keyless operation key <KOS> or keyless entry transmitter <WCM> normally?

YES : Go to Step 4.
NO <vehicles with KOS> : Troubleshoot the KOS (Refer to GROUP 42B, KOS P.42B-20).
NO <vehicles with WCM> : Troubleshoot the WCM (Refer to GROUP 42C, WCM P.42C-14).

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STEP 4. Using scan tool MB991958, check data list.

Use the ETACS-ECU data list to check the signals related to the theft-alarm function.

- Turn the ignition switch to the "ACC" position.
- Open the hood.
- Turn the ignition switch to the "LOCK" (OFF) position (with ignition key <vehicles with WCM> or emergency key <vehicles with KOS> inserted).
- Open each door.
- Open the Trunk.

Item No.	Item name	Normal condition
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 260	Trunk/gate trunk ajar switch	Open
Item 264	Handle lock switch	Key in
Item 266	Hood switch	OFF
Item 288	ACC switch	ON

Q: Does scan tool MB991958 display the items "Dr door ajar switch", "As door ajar switch", "RR door ajar switch", "RL door ajar switch", "Trunk/gate trunk ajar switch" , "Handle lock switch", "Hood switch" and "ACC switch" as normal condition?

YES <Normal conditions are displayed for all items.> : Go to Step 5.

NO <Normal condition is not displayed for item No. 256.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P.54A-654.

NO <Normal condition is not displayed for item No. 257.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front door switch (RH)" P.54A-656.

NO <Normal condition is not displayed for item No. 258.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 7 "ETACS-ECU does not receive any signal from the rear door switch (LH)" P.54A-658.

NO <Normal condition is not displayed for item No. 259.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 8 "ETACS-ECU does not receive any signal from the rear door switch (RH)" P.54A-661.

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NO <Normal condition is not displayed for item No. 260.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 9 "ETACS-ECU does not receive any signal from the trunk lid actuator and switch" P.54A-663.

NO <Normal condition is not displayed for item No. 264.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 3 "ETACS-ECU does not receive any signal from key reminder switch" P.54A-644.

NO <Normal condition is not displayed for item No. 266.> : Troubleshoot the ETACS-ECU. Refer to Inspection Procedure 10 "ETACS-ECU does not receive any signal from the hood switch" P.54A-670.

NO <Normal condition is not displayed for item No. 288.> : Troubleshoot the ETACS-ECU. Refer to diagnosis - Inspection Procedure 1 "ETACS-ECU does not receive any signal from the ignition switch (ACC) signal" P.54A-640.

STEP 5. Check center panel unit connector C-124 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is center panel unit connector C-124 in good condition?

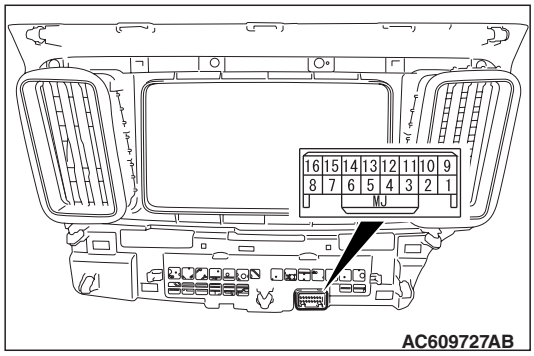
YES : Go to Step 6.
NO : Repair the damaged parts.

STEP 6. Check the theft-alarm indicator.

Refer to P.54A-706.

Q: Is the theft-alarm indicator in good condition?

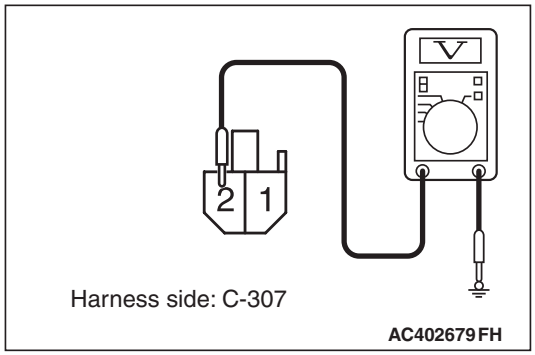
YES : Go to Step 7.
NO : Replace the center panel unit.



STEP 7. Check ETACS-ECU connector C-307 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the ETACS-ECU connector C-307 in good condition?

YES : Go to Step 8.
NO : Repair the damaged parts.



STEP 8. Measure the voltage at ETACS-ECU connector C-307.

(1) Disconnect ETACS-ECU connector C-307, and measure the voltage wiring harness side.
(2) Measure the voltage between ETACS-ECU connector-307 (terminal No. 2) and the body ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 10.
NO : Go to Step 9.

STEP 9. Check the Wiring harness between ETACS-ECU connector C-307 (terminal No. 2) and fusible link (36).

- Check the power supply line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Repair the wiring harness between ETACS-ECU connector C-307 and fusible link (36).

STEP 10. Check ETACS-ECU connector C-317 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 11.
NO : Repair the damaged parts.

STEP 11. Check the Wiring harness between ETACS-ECU connector C-317 (terminal No. 2,9) and center panel unit connector C-124 (terminal No. 15,12).

NOTE: Also check joint connector C-103 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-103 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

- Check the input/output lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness between ETACS-ECU connector C-317 and center panel unit connector C-124.

STEP 12. Retest the system.

Q: Does the theft-alarm work normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The interior alarm does not work normally while the theft-alarm is triggered.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If the interior alarm does not work normally, the input signal circuits to the components below, ETACS-ECU, or combination meter built-in tone alarm may have a problem.

- Hood switch
- All of the door switches
- Trunk latch switch

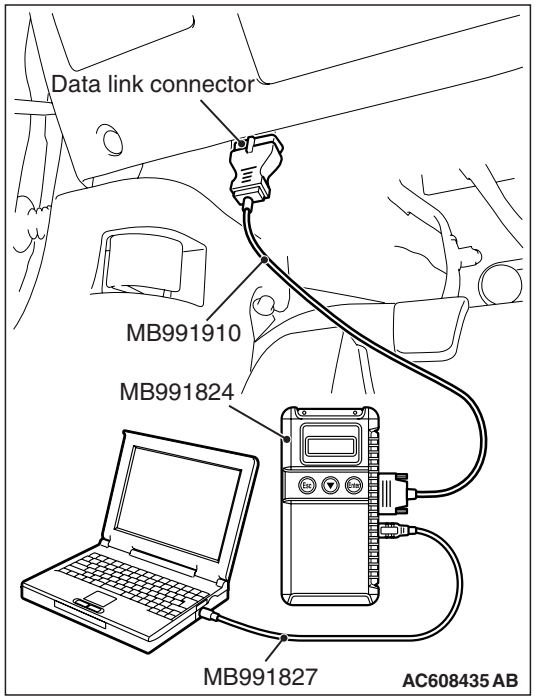
TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- Combination meter may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

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 (Vehicles with CAN communication system)



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

Check if DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-685."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU (Refer to P.54A-582).
NO : Go to Step 2.

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

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Set scan tool MB991958 to the actuator test mode.
- Item 12: Tone alarm

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

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the combination meter.

STEP 3. Retest the system.

Check that the theft-alarm works normally.

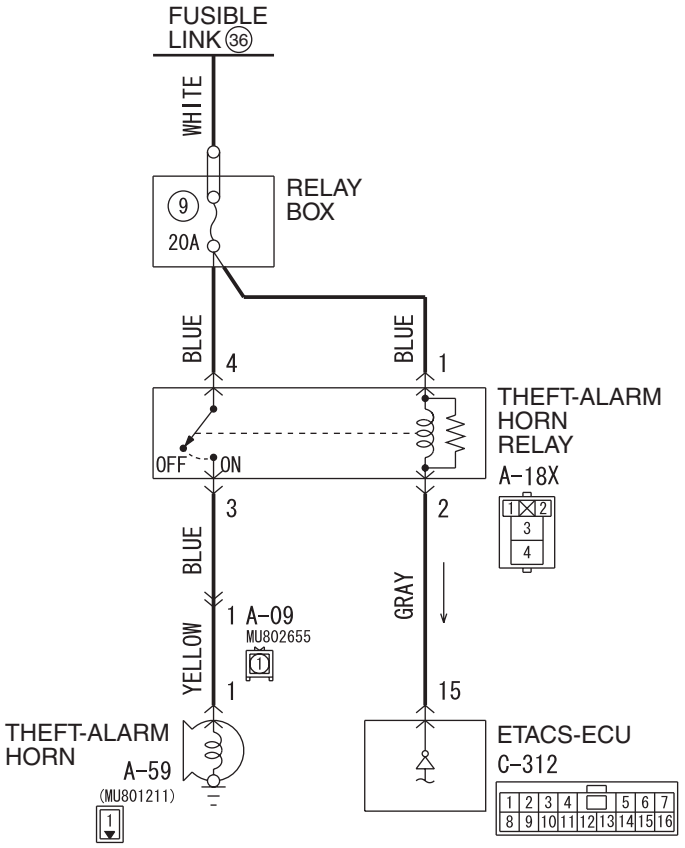
Q: Does the theft-alarm work normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the ETACS-ECU.

Inspection Procedure 3: Theft-alarm horn does not sound while the theft-alarm system is triggered.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Theft-alarm Horn Circuit



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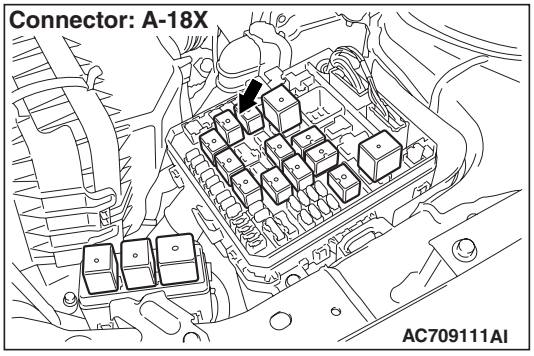
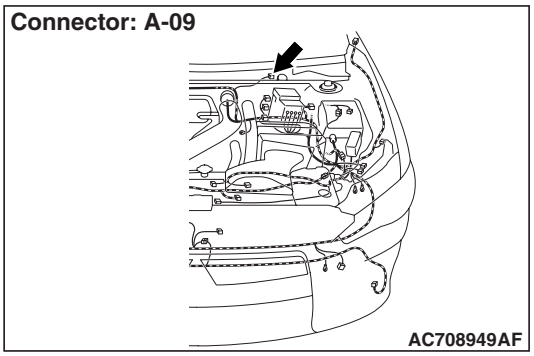
Connector: A-18X



Connector: A-09



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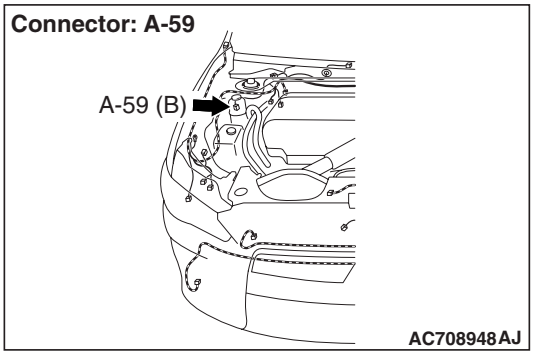
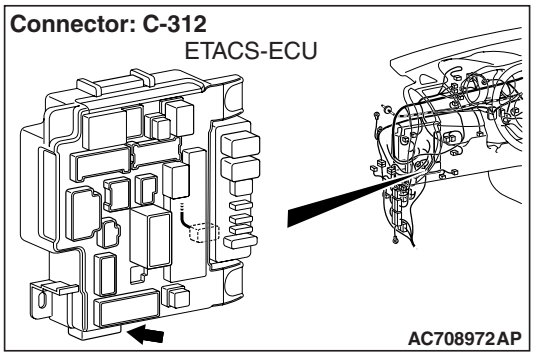




TECHNICAL DESCRIPTION (COMMENT)

If theft-horn does not sound, the theft-horn input signal circuit or the ETACS-ECU may be defective. Also, the theft-alarm function and horn may have been disabled with a configuration function.

TROUBLESHOOTING HINTS

- Theft-alarm horn may be defective
- Theft-alarm horn relay may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

Check if DTC is set to the ETACS-ECU.

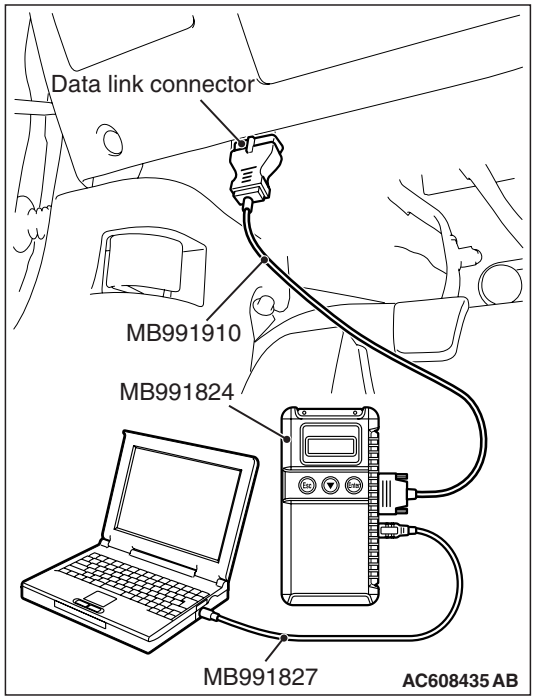
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-685."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.54A-582.
NO : Go to Step 2.

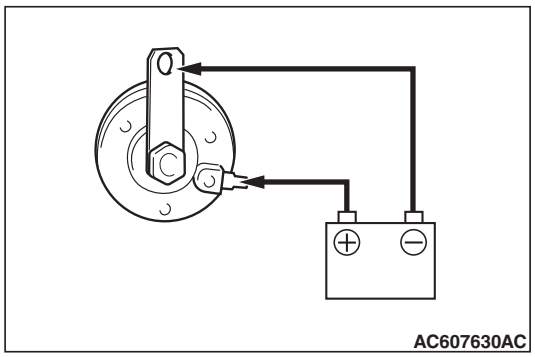


STEP 2. Check the theft-alarm horn work normally.

Connect the battery as shown, and verify that the theft-alarm horn sounds.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the theft-alarm horn. go to Step 3.



STEP 3. Check theft-alarm horn connector A-59 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is theft-alarm horn connector A-59 in good condition?

YES : Go to Step 4.
NO : Repair the damaged parts.

STEP 4. Check theft-alarm horn relay connector A-18X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is theft-alarm horn relay connector A-18X in good condition?

YES : Go to Step 5.
NO : Repair the damaged parts.

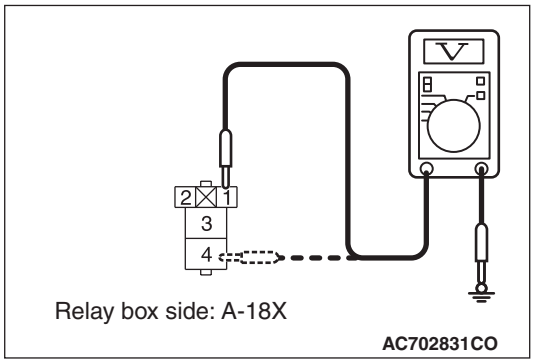
STEP 5. Check the theft-alarm horn relay.
Refer to P.54A-706.

Q: Is the theft-alarm horn relay in good condition

YES : Go to Step 6.
NO : Replace the theft-alarm horn relay.

STEP 6. Measure the voltage at theft-alarm horn relay A-18X.

(1) Remove the relay, and measure at the relay box side.
(2) Measure the voltage between theft-alarm horn relay connector A-18X (terminal No. 1,4) and the body ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



Relay box side: A-18X
AC702831CO

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

STEP 7. Check the Wiring harness between theft-alarm horn relay connector A-18X (terminal No. 1,4) and fusible link (36).
Check the power supply line for open circuit and short circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Repair the wiring harness between theft-alarm horn relay connector A-18X and fusible link (36).

STEP 8. Check theft-alarm horn connector A-59 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is theft-alarm horn connector A-59 in good condition?

YES : Go to Step 9.
NO : Repair the damaged parts.

STEP 9. Check the Wiring harness between theft-alarm horn connector A-59 (terminal No. 1) and theft-alarm horn relay connector A-18X (terminal No. 3).
Check the output lines for open circuit and short circuit.

NOTE: Before the wiring harness check, check intermediate connector A-09, and then repair them if necessary.

Q: Is the check result normal?

YES : Go to Step 10.
NO : Repair the wiring harness between theft-alarm horn connector A-59 and theft-alarm horn relay connector A-18X.

STEP 10. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 11.
NO : Repair the damaged parts.

STEP 11. Check the Wiring harness between theft-alarm horn relay connector A-18X (terminal No. 2) and ETACS-ECU connector C-312 (terminal No. 15).
Check the output lines for open circuit or short circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness between theft-alarm horn relay connector A-18X and ETACS-ECU connector C-312.

STEP 12. Replace theft-alarm horn.
(1) Replace the theft-alarm horn.

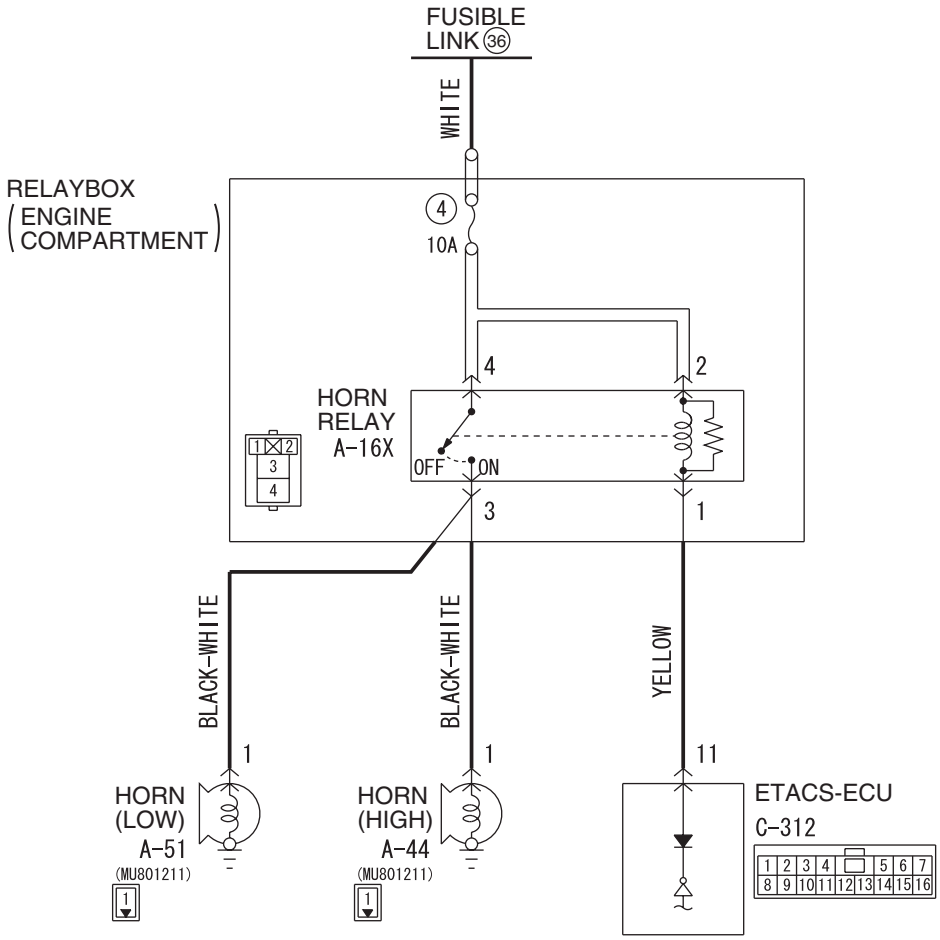
Q: Does the theft-alarm work normally?

YES : he trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the ETACS-ECU.

Inspection Procedure 4: Horn (HIGH or LOW) does not sound while the theft-alarm system is triggered.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Horn Circuit



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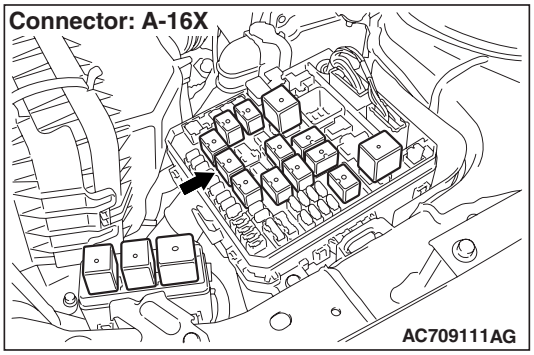

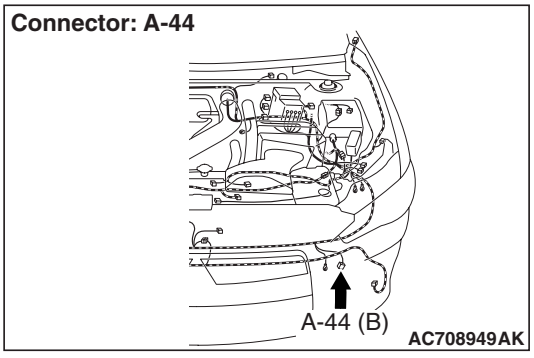

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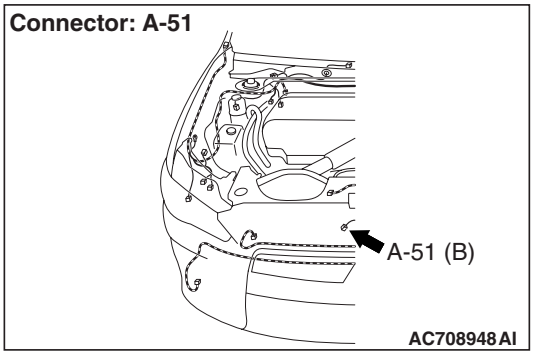
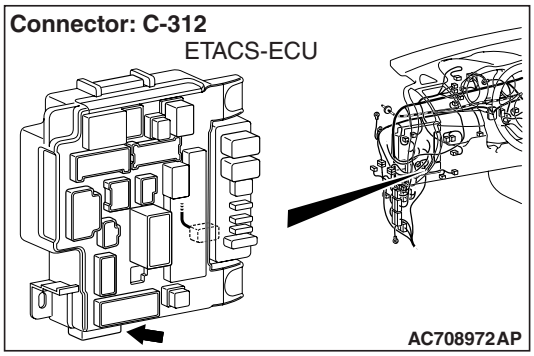




TECHNICAL DESCRIPTION (COMMENT)

If horns do not sound, the horn input signal circuit or the ETACS-ECU may be defective.

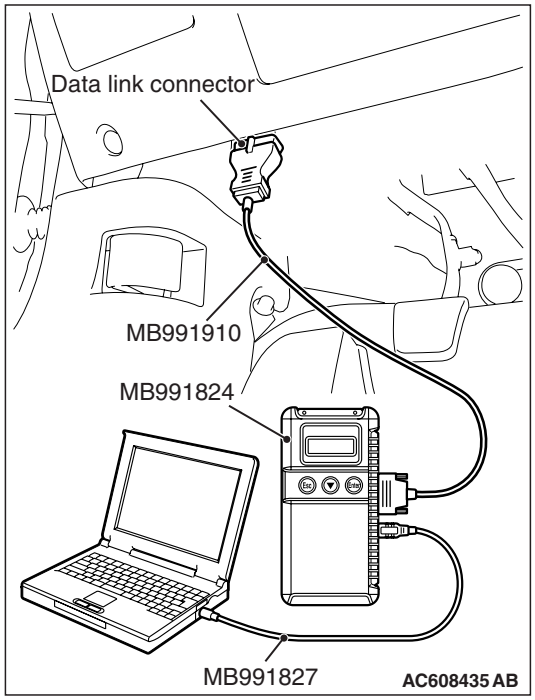
TROUBLESHOOTING HINTS

- Horns may be defective
- Horn relay may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



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

Check if DTC is set to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-685."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.54A-582.
NO : Go to Step 2.

STEP 2. Check horn relay connector A-16X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-16X in good condition?

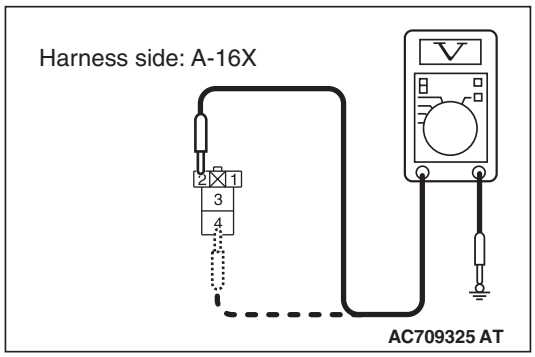
YES : Go to Step 3.
NO : Repair the damaged parts.

STEP 3. Check the horn relay.

Refer to P.54A-706.

Q: Is the horn relay in good condition

YES : Go to Step 4.
NO : Replace the theft-alarm horn relay.



STEP 4. Measure the voltage at horn relay A-16X.

(1) Remove the relay, and measure at the relay box side.
(2) Measure the voltage between horn relay connector A-16X (terminal No. 2,4) and the body ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

STEP 5. Check the Wiring harness between horn relay connector A-16X (terminal No. 2,4) and fusible link (36).

Check the power supply line for open circuit and short circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).
NO : Repair the wiring harness between horn relay connector A-12X and fusible link (36).

STEP 6. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES : Go to Step 7.
NO : Repair the damaged parts.

STEP 7. Check the Wiring harness between theft-alarm horn relay connector A-16X (terminal No. 1) and ETACS-ECU connector C-312 (terminal No. 11).

Check the output lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness between horn relay connector A-12X and ETACS-ECU connector C-312.

STEP 8. Check horn (HIGH) connector A-44 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is Horn (HIGH) connector A-44 in good condition?

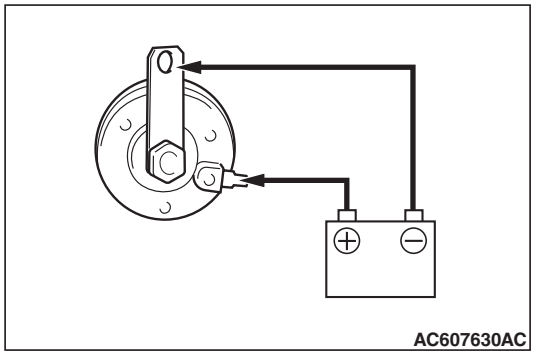
YES : Go to Step 9.
NO : Repair the damaged parts.

STEP 9. Check the Wiring harness between horn (HIGH) connector A-44 (terminal No. 1) and horn relay connector A-16X (terminal No. 3).
Check the output lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 10.
NO : Repair the wiring harness between horn (HIGH) connector A-44 and horn relay connector A-16X.

STEP 10. Check the horn (HIGH) work normally.
Connect the battery as shown, and verify that the horn sounds.



Q: Is the check result normal?

YES : Go to Step 11.
NO : Replace the horn (HIGH). go to Step 11.

STEP 11. Check horn (LOW) connector A-51 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is Horn (LOW) connector A-51 in good condition?

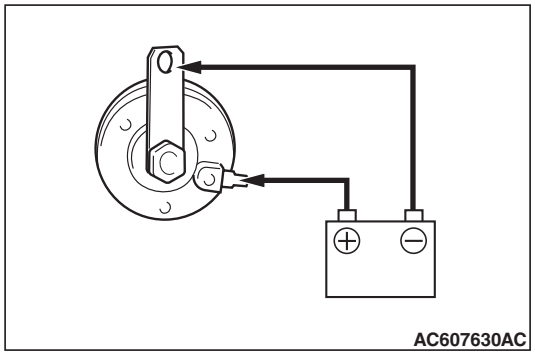
YES : Go to Step 12.
NO : Repair the damaged parts.

STEP 12. Check the Wiring harness between horn (LOW) connector A-51 (terminal No. 1) and horn relay connector A-16X (terminal No. 3).
Check the output lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 13.
NO : Repair the wiring harness between horn (LOW) connector A-51 and horn relay connector A-16X.

STEP 13. Check the horn (LOW) work normally.
Connect the battery as shown, and verify that the horn sounds.



Q: Is the check result normal?

YES : Go to Step 14.
NO : Replace the horn (LOW). go to Step 14.

STEP 14.Retest the theft-alarm system.

Q: Does the theft-alarm system work normally?

YES : he trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

REMOVAL AND INSTALLATION

M1547001000351

Theft-alarm system component parts

- Headlight assembly (Refer to P.54A-184).
- Horn (Refer to P.54A-268).
- Door switch (Refer to GROUP 42A –Door, Door Assembly P.42A-121).
- Front and rear door lock actuator (Refer to GROUP 42A –Door, Door Handle and Latch P.42A-129).
- Trunk lid latch assembly (Refer to GROUP 42A – Trunk Lid P.42A-147).
- Hood latch (Refer to GROUP 42A –Hood P.42A-7 <LHD> or P.42A-7 <RHD>).
- Key reminder switch (Refer to P.52A-7).
- Theft-alarm indicator (Refer to GROUP 52A – Instrument Center Panel P.52A-2).

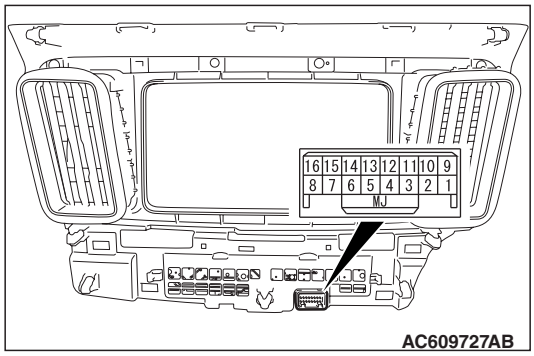
Panic alarm system component parts

- Headlight assembly (Refer to P.54A-184).
- Horn (Refer to P.54A-268).

INSPECTION

THEFT-ALARM INDICATOR CHECK

M1547001100206



1. Remove the center panel.
2. Connect the battery (+) terminal with the center panel connector (terminal No. 15). Then, check if the theft-alarm indicator is illuminated when the battery (–) terminal and the center panel connector (terminal No. 12) are connected.
3. If the theft-alarm indicator is illuminated, it is judged good.

PANIC ALARM

GENERAL INFORMATION

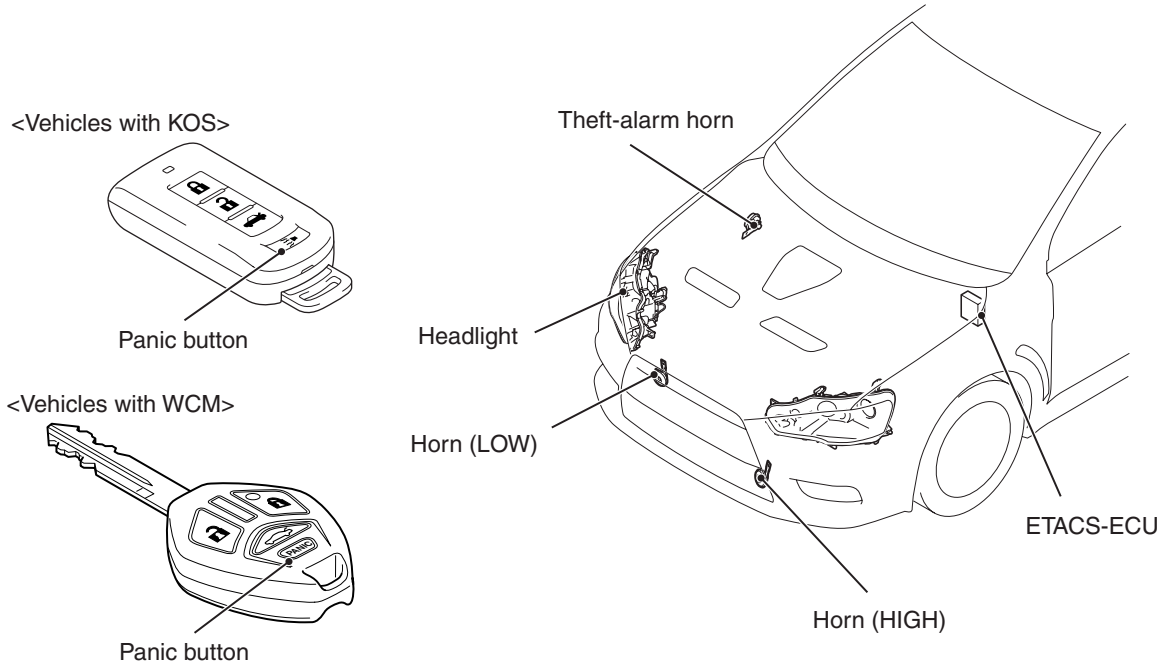
M1547000100140

If danger is perceived near the vehicle and if the ignition switch is in the OFF position or the key has been removed, press the panic button on the ignition key or the keyless operation key for one second, then the headlights flash and the horn sounds for approximately 3 minutes.

Panic alarm system operation table

Operation of keyless operation key or transmitter		System operation
Panic button	Press once	Starts the panic alarm (headlights flash and horn honks for abut three minutes)
Lock button, Unlock button, Trunk button, Panic button	Press again	Stops the panic alarm in progress

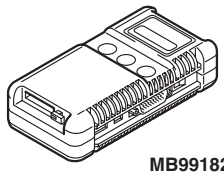
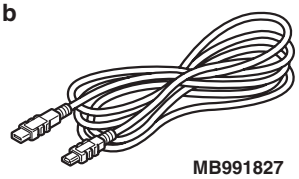
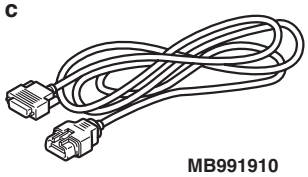
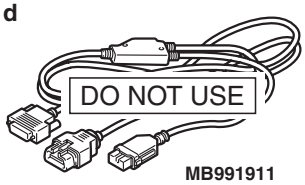
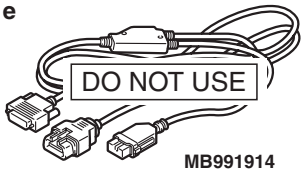
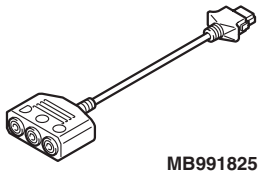
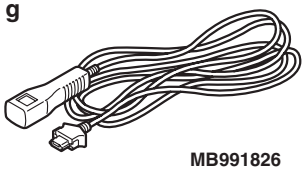
Construction diagram



AC709446AB

SPECIAL TOOLS

M1547000600242

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub-assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.** Reading diagnostic trouble code.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1547001200184

Refer to GROUP 00 –Contents of troubleshooting P.00-7.

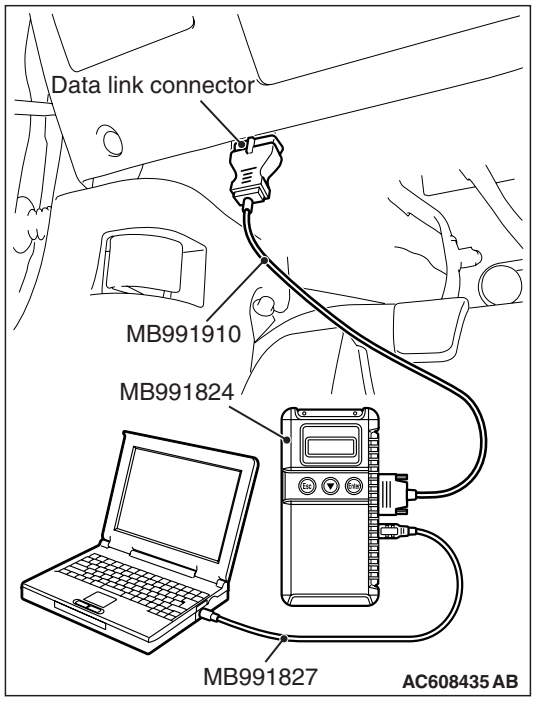
DIAGNOSTIC FUNCTION

M1547001300051

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 (Vehicles with CAN communication system)



⚠ CAUTION

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

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool 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 AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TROUBLE SYMPTOM CHART

M1547001500282

Trouble symptom	Reference page
Panic alarm does not work normally.	P.54A-688

SYMPTOM PROCEDURES

Panic alarm does not work normally.

TECHNICAL DESCRIPTION (COMMENT)

If keyless operation system <KOS> or keyless entry system <WCM> is normal, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Keyless operation system <KOS> or keyless entry system <WCM> may be defective
- The ETACS-ECU may be defective
- Function is not set with the customization.

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 (Vehicles with CAN communication system)

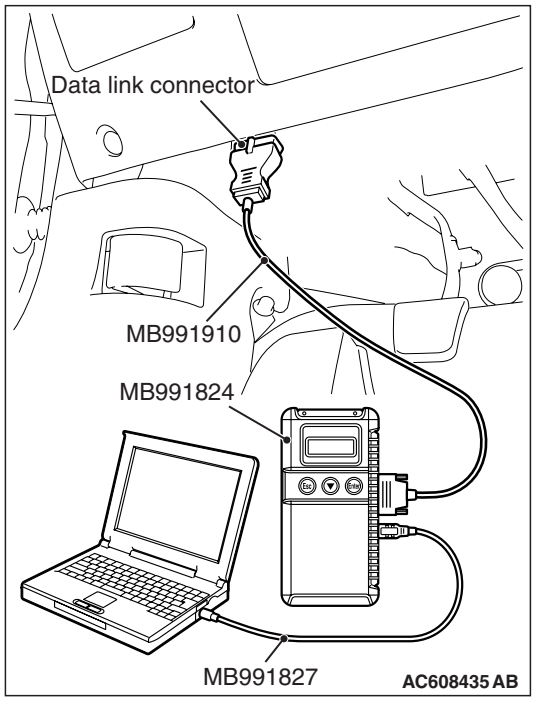
STEP 1. Check if the theft-alarm is normally set and the exterior protection can be executed.
Check that the theft-alarm works normally.

Q: Does the theft-alarm work normally?

YES : Go to Step 2.
NO : Troubleshoot the theft-alarm (Refer to P.54A-687).

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.
Check if DTC is set to the KOS-ECU <Vehicles with KOS> or WCM <Vehicles with WCM>.

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



(1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54A-709."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the KOS or WCM related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES <vehicles with KOS> : Troubleshoot the KOS (Refer to GROUP 42B, KOS P.42B-20).
YES <vehicles with WCM> : Troubleshoot the WCM (Refer to GROUP 42C, WCM P.42C-14).
NO : Go to Step 3.

STEP 3. Check keyless operation system <KOS> or keyless entry system <WCM>.

Q: Do keyless operation system <KOS> or keyless entry system <WCM> work normally?

YES : Go to Step 4.
NO <vehicles with KOS> : Troubleshoot the KOS (Refer to GROUP 42B, KOS P.42B-172).
NO <vehicles with WCM> : Troubleshoot the WCM (Refer to GROUP 42C, WCM P.42C-84).

STEP 4. Using scan tool MB991958, check the configuration function.
(1) Turn the ignition switch to the "ON" position.
(2) Use the ETACS-ECU customization function to check that the "Panic alarm switch" is set to "Enable".
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the "Panic alarm switch" set to "Enable"?

YES : Replace the ETACS-ECU.
NO : Use the ETACS-ECU customization function to set the "Panic alarm switch" to "Enable"(Refer to P.54A-712).

REMOVAL AND INSTALLATION

M1547002600044

Panic alarm system component parts

- Headlight assembly (Refer to P.54A-184).
- Horn (Refer to P.54A-268).
- Key reminder switch (Refer to P.52A-7).

ON-VEHICLE SERVICE

CUSTOMIZATION FUNCTION

M1547003400214

By operating the ETACS system or MMCS of scan tool MB991958, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjustment contents (scan tool display)	Adjusting contents
Panic alarm switch	With/without panic alarm function	Disable	Without function
		Enable	With function (default)

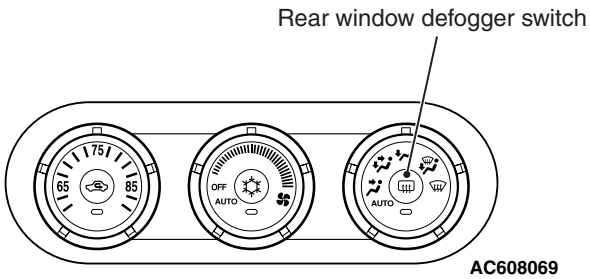
DEFOGGER

GENERAL INFORMATION

M1540500000017

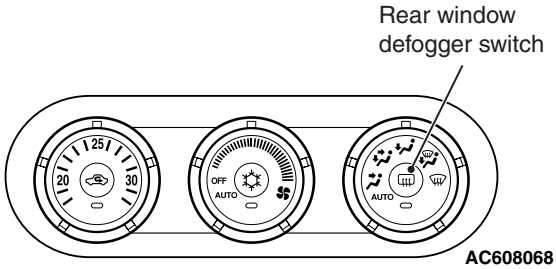
The rear window defogger has been established to the rear window glass. To prevent battery discharge, A/C-ECU controls the rear window defogger to be automatically turned off 20 minutes after the rear window defogger switch is turned ON. (Only when engine is running)

<Vehicles for USA>



AC608069

<Vehicles for CANADA>

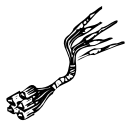
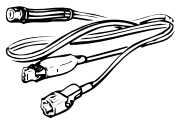
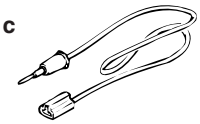


AC608068

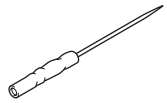
AC708613AC

SPECIAL TOOLS

M1547000600264

Tool	Tool number and name	Supersession	Application
a  b  c  d  DO NOT USE MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester

TSB Revision

Tool	Tool number and name	Supersession	Application
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540500700016

Refer to GROUP 00 –Contents of troubleshooting P.00-7.

SYMPTOM CHART

M1540500800013

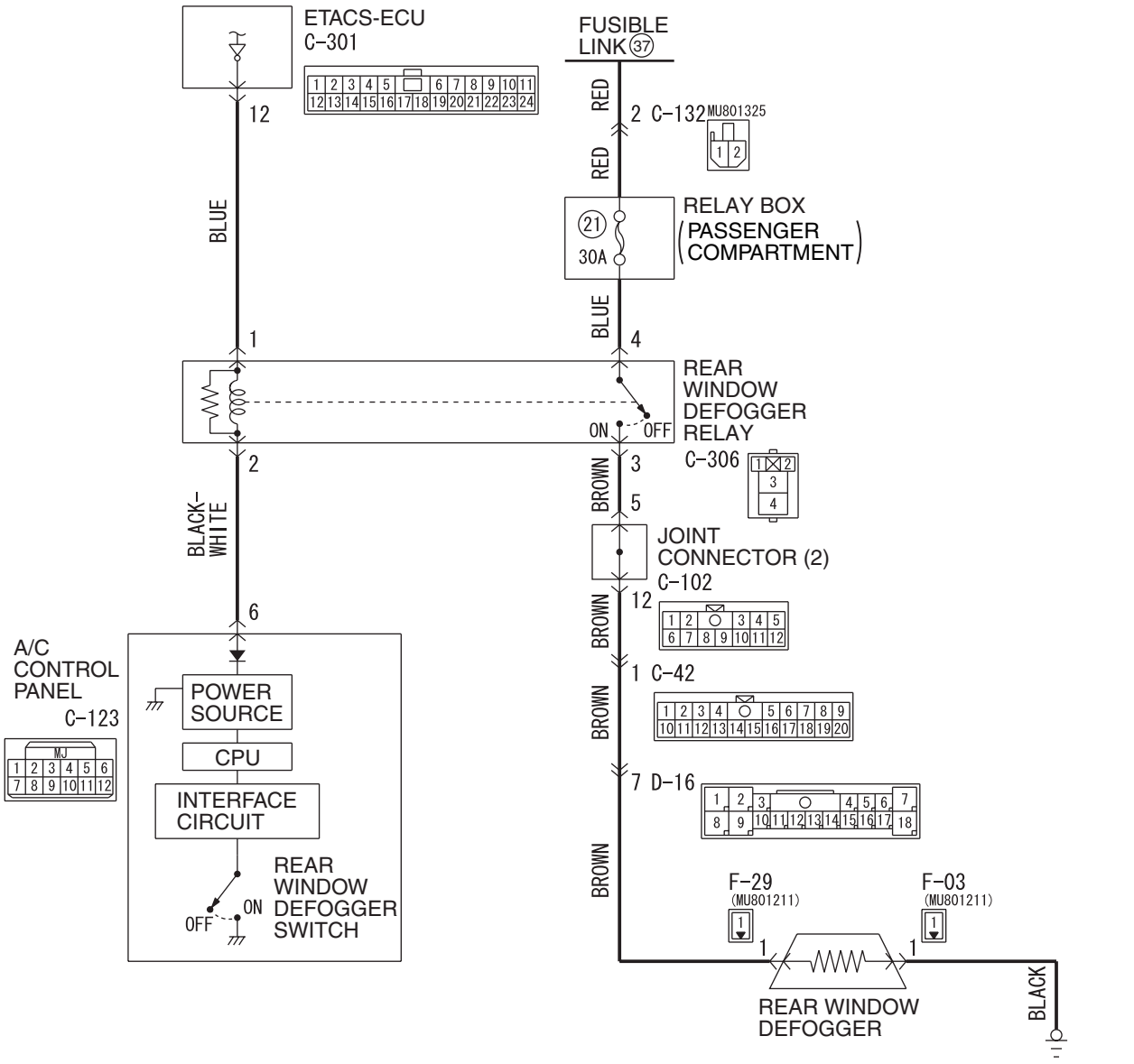
⚠ CAUTION
During diagnosis, a DTC code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

Symptom	Reference page
Rear window defogger does not operate.	P.54A-715

SYMPTOM PROCEDURES

Rear window defogger does not operate.

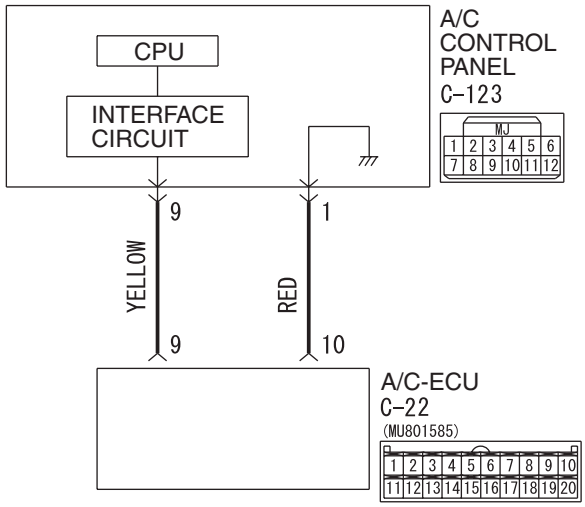
Rear Window Defogger Circuit



W8G54M143A

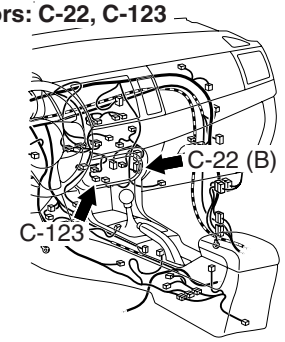
TSB Revision

A/C Control Panel Circuit



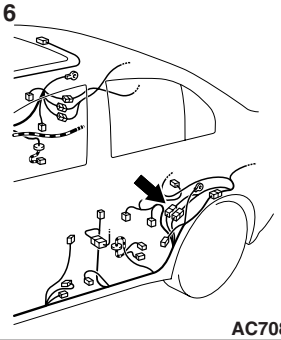
W8G55M001A
AC506471

Connectors: C-22, C-123



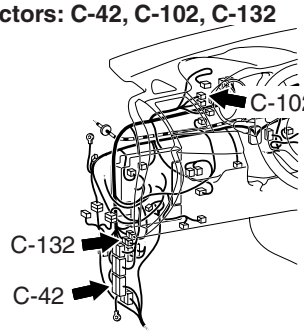
AC708951AJ

Connector: D-16



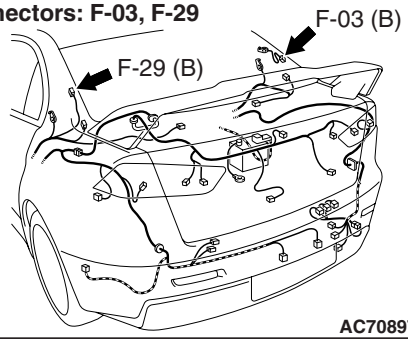
AC708955AD

Connectors: C-42, C-102, C-132



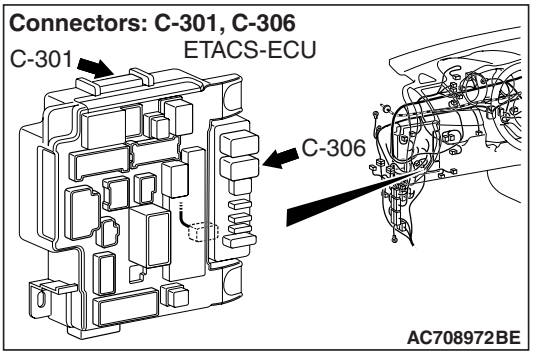
AC708950BN

Connectors: F-03, F-29



AC708970AQ

Connectors: C-301, C-306



AC708972BE

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

The rear window defogger is able to turn on while engine is running. If the defogger does not operate when the rear window defogger switch is turned on, the rear window defogger relay system may be defective.

TROUBLESHOOTING HINTS

- The A/C-ECU may be defective.
- The rear window defogger relay may be defective.
- The A/C control panel may be defective.
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the A/C and outside/inside air selection damper control motor operation.

(1) Turn the ignition switch to the "ON" position.
(2) Check the engine running.
(3) Check the operations of rear window defogger and A/C.

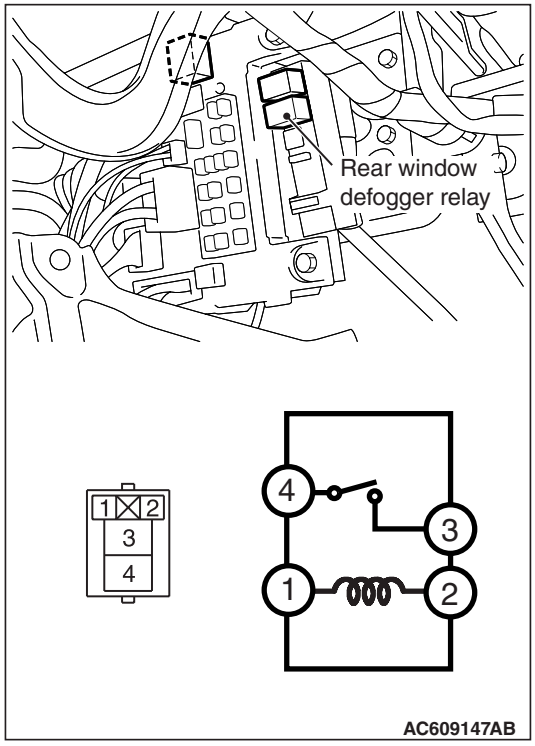
Q: Do the A/C and outside/inside air selection damper control motor work normally?

YES : Go to Step 2.
NO : Refer to GROUP 55 - Inspection procedure 2, "Malfunction of the A/C-ECU power supply system P.55-74."

STEP 2. Check rear window defogger relay connector C-306 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger relay connector C-306 in good condition?

YES : Go to Step 3.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear window defogger system should work normally.



STEP 3. Check the rear window defogger relay continuity.
Follow the table below to check the rear window defogger relay for continuity.

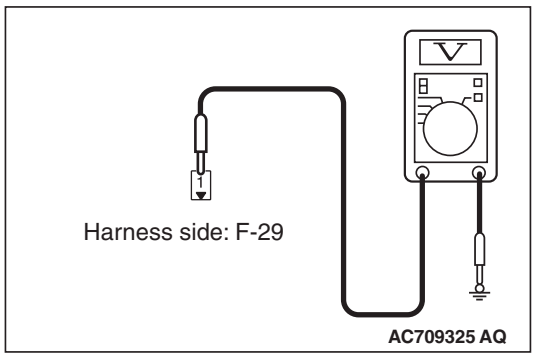
Battery voltage	Terminal number	Normal condition
With no current applied	3 –4	No continuity
With current applied [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 Ω or less)

Q: Is the rear window defogger relay in good condition?
YES : Go to Step 4.
NO : Replace the rear window defogger relay. The rear window defogger system should work normally.

STEP 4. Check rear window defogger connector F-29 and A/C control panel connector C-123 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear window defogger connector F-29 and A/C control panel connector C-123 in good condition?
YES : Go to Step 5.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear window defogger system should work normally.

STEP 5. Measure the voltage at rear window defogger connector F-29.
(1) Disconnect rear window defogger connector F-29, and measure the voltage at the harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between rear window defogger connector F-29 terminal No.1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts?
YES : Go to Step 13.
NO : Go to Step 6.

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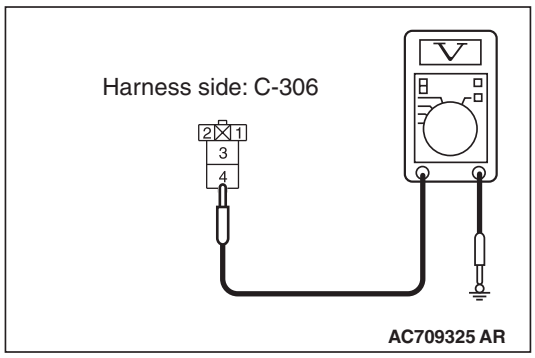


STEP 6. Measure the voltage at rear window defogger relay connector C-306.

(1) Disconnect rear window defogger relay connector C-306, and measure the voltage at the junction block side.
(2) Measure the voltage between terminal 4 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

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

STEP 7. Check the wiring harness between rear window defogger relay connector C-306 (terminal 4) and the fusible link (37).

NOTE: Also check intermediate connector C-132 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-132 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-306(terminal 4) and the fusible link (37) in good condition?

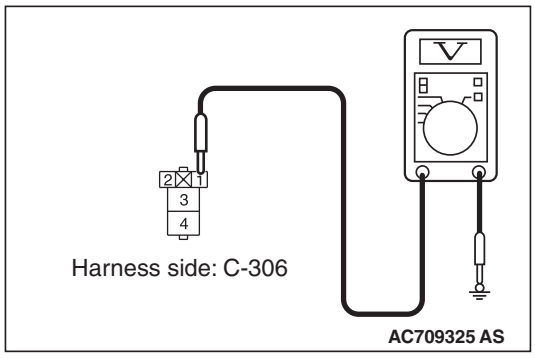
YES : Check that the rear window defogger system works normally.
NO : Repair the wiring harness. Check that the rear window defogger system works normally.

STEP 8. Measure the voltage at rear window defogger relay connector C-306.

(1) Disconnect rear window defogger relay connector C-306, and measure the voltage at the junction block side.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

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



STEP 9. Check ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-301 in good condition?

YES : Go to Step 10.

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

STEP 10. Check the wiring harness between rear window defogger relay connector C-306 (terminal 1) and ETACS-ECU C-301 (terminal 12).

Q: Is the wiring harness between rear window defogger relay connector C-306 (terminal 1) and ETACS-ECU connector C-301 (terminal 12) in good condition?

YES : Check that the rear window defogger system works normally.

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

STEP 11. Check the wiring harness between rear window defogger relay connector C-306 (terminal 2) and A/C-ECU connector C-123 (terminal 6).

Q: Is the wiring harness between rear window defogger relay connector C-306 (terminal 2) and A/C-ECU connector C-123 (terminal 6) in good condition?

YES : Go to Step 12.

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

STEP 12. Check the wiring harness between rear window defogger relay connector C-306 (terminal 3) and rear window defogger connector F-29 (terminal 1).

NOTE: Also check intermediate connectors C-42 and D-16, and joint connector C-102 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-42 and D-16, and joint connector C-102 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-306 (terminal 3) and rear window defogger connector F-29 (terminal 1) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-15.

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

STEP 13. Check rear window defogger connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger connector F-03 in good condition?

YES : Go to Step 14.

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

STEP 14. Measure the resistance at rear window defogger connector F-03.

(1) Disconnect rear window defogger connector F-03, and measure at the wiring harness side.

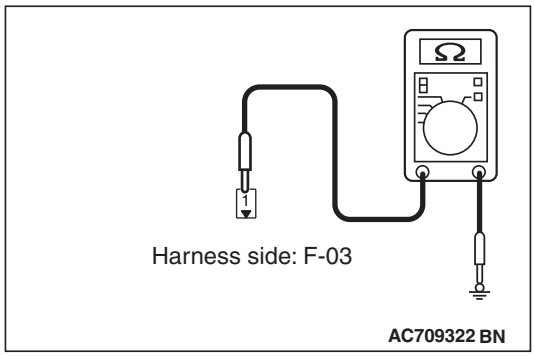
(2) Measure the resistance between terminal 1 and ground.

- The measured value should be 2 ohms or less.

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

YES : Go to Step 16.

NO : Go to Step 15.



STEP 15. Check the wiring harness between rear window defogger connector F-03 (terminal 1) and the ground.

Q: Is the wiring harness between rear window defogger connector F-03 (terminal 1) and the ground in good condition?

YES : Check that the rear window defogger system works normally.

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

STEP 16. Check A/C-ECU connector C-22 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C-ECU connector C-22 in good condition?

YES : Go to Step 17.

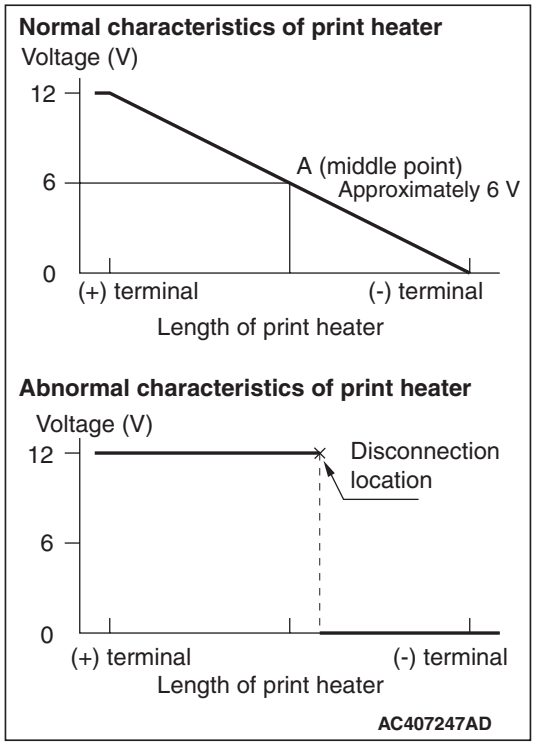
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the rear window defogger system works normally.

STEP 17. Check the wiring harness between A/C-ECU connector C-22 (terminals 9 and 10) and A/C control panel connector C-123 (terminals 1 and 9).

Q: Are the wiring harness between A/C-ECU connector C-22 (terminals 9 and 10) and A/C control panel connector C-123 (terminals 1 and 9) in good condition?

YES : Go to Step 18.

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



STEP 18. Check the rear window defogger.

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

Q: Does the rear window defogger work normally?

YES : Go to Step 19.
NO : Repair the rear window defogger.

STEP 19. Replace the A/C control panel and check the trouble symptom again

Check the trouble symptom again.

Q: Is the check result satisfactory?

YES : The procedure is complete.
NO : Replace the A/C-ECU.

REMOVAL AND INSTALLATION

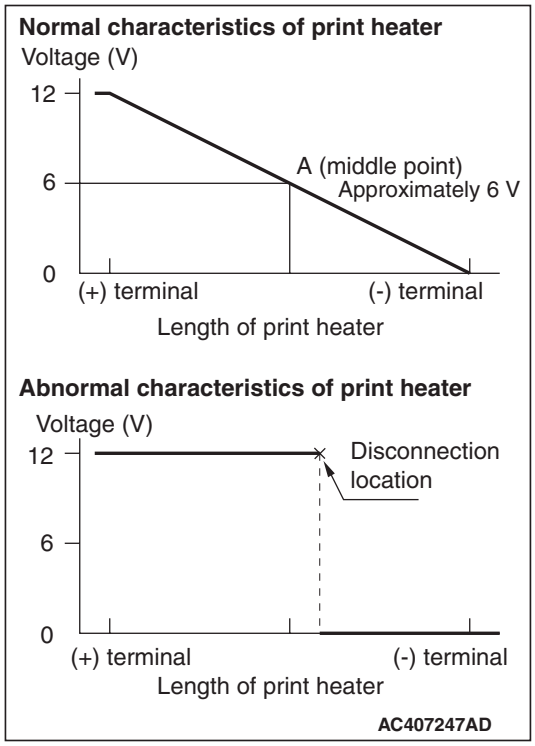
M1540600200171

Refer to GROUP 55 –Heater control unit P.55-119.

ON-VEHICLE SERVICE

PRINTED HEATER CHECK

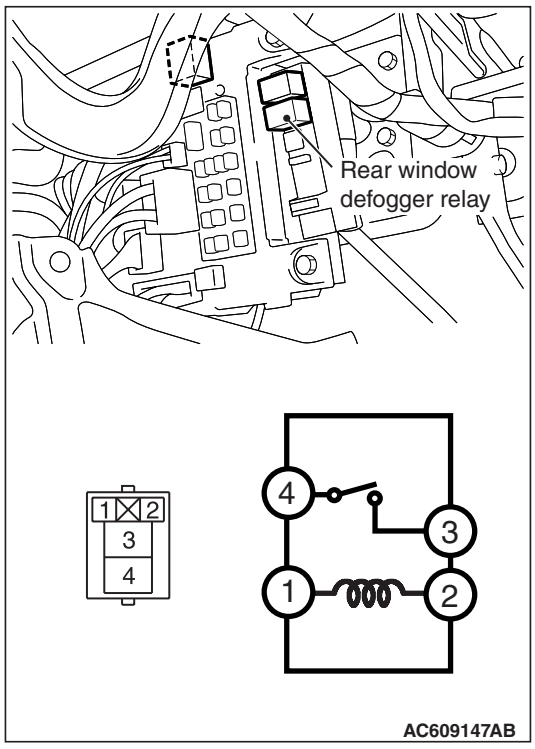
M1540500500175



1. Let the engine run (2,000 r/min), and check the printed heater with the battery fully charged.
2. With the rear window defogger switch "ON," use the circuit tester to measure the voltage of each printed heater at the rear window glass center A point. If approximately 6 V is indicated, it is judged good.
3. If the voltage of 12 V is indicated at the A point, there is an open circuit between the A point and negative terminal. Therefore, by moving the test bar slowly to the negative side, search and determine the location where the voltage changes suddenly (0 V). The location of voltage change indicates the open circuit position.
4. Also, if the voltage indicates 0 V at the A point, there is an open circuit between the A point and positive terminal. Therefore, search and determine the location of voltage change (12 V) using the above mentioned method.

REAR WINDOW DEFOGGER RELAY CHECK

M1540500600246



Battery voltage	Terminal number	Normal condition
At no energization	3 –4	No continuity
With current supply [terminal 1 (+), terminal 2 (–)]		Continuity exists (2 ohms or less)