

GROUP 54A

CHASSIS ELECTRICAL

CONTENTS

BATTERY	54A-7	TROUBLE SYMPTOM CHART ...	54A-15
GENERAL INFORMATION	54A-7	SYMPTOM PROCEDURES	54A-15
ON-VEHICLE SERVICE	54A-8	ON-VEHICLE SERVICE	54A-22
ELECTROLYTE LEVEL AND SPECIFIC GRAVITY CHECKS	54A-8	CHECK OF IGNITION KEY REMINDER WARNING FUNCTION (STEERING LOCK REMINDER TONE ALARM BY KOS) ..	54A-22
CHARGING	54A-8		
BATTERY TEST	54A-9		
REMOVAL AND INSTALLATION .	54A-10	REMOVAL AND INSTALLATION .	54A-23
IGNITION SWITCH*	54A-12	INSPECTION	54A-25
SPECIAL TOOLS	54A-12	IGNITION SWITCH CONTINUITY CHECK.....	54A-25
		KEY REMINDER SWITCH INSPECTION	54A-25
TROUBLESHOOTING	54A-13		
STANDARD FLOW OF DIAGNOSTIC TROUBLE SHOOTING	54A-13		
DIAGNOSIS FUNCTION	54A-13		

Continued on next page

⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead compounds. WASH HANDS AFTER HANDLING.

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

⚠ WARNING

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

NOTE

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

COMBINATION METER	54A-26	SERVICE PRECAUTIONS	
GENERAL INFORMATION	54A-26	<DISCHARGE HEADLIGHT>.	54A-115
SERVICE SPECIFICATIONS.	54A-27	DIAGNOSIS	54A-117
SPECIAL TOOLS.	54A-28	STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-117
TROUBLESHOOTING.	54A-29	DIAGNOSTIC FUNCTION	54A-117
STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-29	DIAGNOSTIC TROUBLE CODE CHART	54A-119
DIAGNOSIS FUNCTION	54A-29	DIAGNOSTIC TROUBLE CODE PROCEDURES	54A-120
DIAGNOSTIC TROUBLE CODE CHART	54A-32	TROUBLE SYMPTOM CHART	54A-140
DIAGNOSTIC TROUBLE CODE PROCEDURES	54A-33	SYMPTOM PROCEDURES	54A-141
TROUBLE SYMPTOM CHART	54A-67	DATA LIST REFERENCE TABLE	54A-192
SYMPTOM PROCEDURES	54A-68		
SERVICE DATA.	54A-88	ON-VEHICLE SERVICE	54A-193
ACTUATOR TEST TABLE.	54A-89	HEADLIGHT AIMING	54A-193
CHECK PROCEDURE FOR EACH MULTI INFORMATION DISPLAY SCREEN	54A-90	LUMINOUS INTENSITY MEASUREMENT	54A-196
CHECK AT ECU TERMINALS.	54A-96	REPLACE THE BULB	54A-197
ON-VEHICLE SERVICE.	54A-97	HEADLIGHT AUTOMATIC-SHUTDOWN FUNCTION CHECK	54A-200
SPEEDOMETER CHECK	54A-97	HEADLIGHT AUTO LIGHT FUNCTION CHECK	54A-200
TACHOMETER CHECK	54A-99	WELCOME LIGHT FUNCTION CHECK	54A-200
FUEL LEVEL SENSOR CHECK	54A-99	COMING-HOME LIGHT FUNCTION CHECK	54A-200
METER INFORMATION SWITCH CHECK	54A-100	CUSTOMIZATION FUNCTION	54A-200
SERVICE REMINDER FUNCTION SET	54A-101		
COMBINATION METER	54A-110	HEADLIGHT REMOVAL AND INSTALLATION	54A-202
REMOVAL AND INSTALLATION	54A-110	HEADLIGHT LEVELING SWITCH REMOVAL AND INSTALLATION .	54A-205
DISASSEMBLY AND ASSEMBLY.	54A-111	LIGHTING CONTROL SENSOR REMOVAL AND INSTALLATION .	54A-206
HEADLIGHT.	54A-111	INSPECTION	54A-208
GENERAL INFORMATION	54A-111	HEADLIGHT RELAY CHECK.	54A-208
SERVICE SPECIFICATIONS.	54A-112	HEADLIGHT LEVELING SWITCH CHECK <VEHICLES WITH HEADLIGHT MANUAL LEVELING SYSTEM>	54A-209
SPECIAL TOOLS.	54A-113	LIGHTING CONTROL SENSOR (LIGHT SENSOR) CHECK	54A-210
		BRACKET REPAIR OF HEADLIGHT ASSEMBLY	54A-210

Continued on next page

REAR COMBINATION LIGHT	54A-213	GENERAL INFORMATION	54A-260
GENERAL INFORMATION	54A-213	SPECIAL TOOLS	54A-261
SPECIAL TOOLS	54A-214	DIAGNOSIS	54A-262
DIAGNOSIS	54A-215	STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-262
STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-215	DIAGNOSTIC FUNCTION	54A-262
DIAGNOSTIC FUNCTION	54A-215	TROUBLE SYMPTOM CHART	54A-264
DIAGNOSTIC TROUBLE CODE CHART	54A-217	SYMPTOM PROCEDURES	54A-264
DIAGNOSTIC TROUBLE CODE PROCEDURES	54A-218	ON-VEHICLE SERVICE	54A-279
TROUBLE SYMPTOM CHART	54A-230	CUSTOMIZATION FUNCTION	54A-279
SYMPTOM PROCEDURES	54A-230	DOME LIGHT REMOVAL AND INSTALLATION	54A-279
REAR COMBINATION LIGHT REMOVAL AND INSTALLATION	54A-237	LUGGAGE COMPARTMENT LIGHT REMOVAL AND INSTALLATION .	54A-281
TAILLIGHT REMOVAL AND INSTALLATION	54A-237	HIGH-MOUNTED STOPLIGHT	54A-281
FOG LIGHT	54A-238	REMOVAL AND INSTALLATION .	54A-281
SERVICE SPECIFICATIONS	54A-238	LICENSE PLATE LIGHT	54A-282
SPECIAL TOOLS	54A-239	REMOVAL AND INSTALLATION .	54A-282
DIAGNOSIS	54A-240	HAZARD WARNING LIGHT SWITCH	54A-283
STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-240	SPECIAL TOOLS	54A-283
DIAGNOSTIC FUNCTION	54A-240	DIAGNOSIS	54A-284
TROUBLE SYMPTOM CHART	54A-242	STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING	54A-284
SYMPTOM PROCEDURES	54A-243	DIAGNOSTIC FUNCTION	54A-284
ON-VEHICLE SERVICE	54A-255	DIAGNOSTIC TROUBLE CODE CHART	54A-286
FRONT FOG LIGHT AIMING	54A-255	DIAGNOSTIC TROUBLE CODE PROCEDURES	54A-286
FRONT FOG LIGHT BULB REPLACEMENT	54A-256	TROUBLE SYMPTOM CHART	54A-287
REMOVAL AND INSTALLATION .	54A-257	SYMPTOM PROCEDURES	54A-287
INSPECTION	54A-258	REMOVAL AND INSTALLATION	54A-289
FRONT FOG LIGHT RELAY CHECK ..	54A-258	INSPECTION	54A-289
SIDE TURN-SIGNAL LIGHT ..	54A-258	HAZARD WARNING LIGHT SWITCH CHECK	54A-289
REMOVAL AND INSTALLATION	54A-258		
DOME LIGHT	54A-260		

HORN	54A-289	GENERAL INFORMATION	54A-315
REMOVAL AND INSTALLATION .	54A-289	SPECIAL TOOLS	54A-316
INSPECTION	54A-291	DIAGNOSIS	54A-317
HORN, THEFT-ALARM HORN RELAY		INTRODUCTION TO AUDIO SYSTEM	
CHECK	54A-291	DIAGNOSIS	54A-317
ACCESSORY SOCKET AND		STANDARD FLOW OF DIAGNOSTIC	
CIGARETTE LIGHTER	54A-291	TROUBLESHOOTING	54A-319
GENERAL INFORMATION	54A-291	DIAGNOSIS FUNCTION	54A-319
SPECIAL TOOLS	54A-292	DIAGNOSTIC TROUBLE CODE CHART	54A-322
DIAGNOSIS	54A-293	DIAGNOSTIC TROUBLE CODE	
STANDARD FLOW OF DIAGNOSTIC		PROCEDURES	54A-322
TROUBLESHOOTING	54A-293	TROUBLE SYMPTOM CHART	54A-356
TROUBLE SYMPTOM CHART	54A-293	SYMPTOM PROCEDURES	54A-357
SYMPTOM PROCEDURES	54A-294	ON-VEHICLE SERVICE	54A-407
REMOVAL AND INSTALLATION	54A-303	ADJUSTMENT OF VOLUME AND SOUND	
INSPECTION	54A-305	QUALITY AUTOMATIC CORRECTION	
COLUMN SWITCH*	54A-306	FUNCTION	54A-407
GENERAL INFORMATION	54A-306	SERVICE DATA	54A-407
SPECIAL TOOLS	54A-307	REMOVAL AND INSTALLATION .	54A-408
TROUBLESHOOTING	54A-308	INSPECTION	54A-409
STANDARD FLOW OF DIAGNOSTIC		AUDIO ADAPTER INSPECTION	54A-409
TROUBLESHOOTING	54A-308	MMCS	54A-409
DIAGNOSTIC FUNCTION	54A-308	MITSUBISHI MULTI COMMUNICATION	
DIAGNOSTIC TROUBLE CODE TABLE	54A-310	SYSTEM	54A-409
DIAGNOSTIC TROUBLE CODE		SPECIAL TOOLS	54A-411
PROCEDURES	54A-310	DIAGNOSIS	54A-412
REMOVAL AND INSTALLATION .	54A-312	STANDARD FLOW OF DIAGNOSTIC	
INSPECTION	54A-313	TROUBLESHOOTING	54A-412
WIPER/WASHER SWITCH CONTINUITY		PRECAUTIONS ON SERVICING	
CHECK	54A-313	MMCS	54A-412
COLUMN SWITCH (SWITCH BODY PART)		SERVICE MODE	54A-413
CONTINUITY CHECK	54A-314	ERROR MESSAGE	54A-426
RADIO AND CD PLAYER* . . .	54A-315	DIAGNOSIS FUNCTION	54A-428
		DIAGNOSTIC TROUBLE CODE CHART	54A-430
		DIAGNOSTIC TROUBLE CODE	
		PROCEDURES	54A-430
		TROUBLE SYMPTOM CHART	54A-457
		SYMPTOM PROCEDURES	54A-458
		ETACS FUNCTION CUSTOMIZATION	
		FUNCTION	54A-504
		REMOVAL AND INSTALLATION	54A-507

Continued on next page

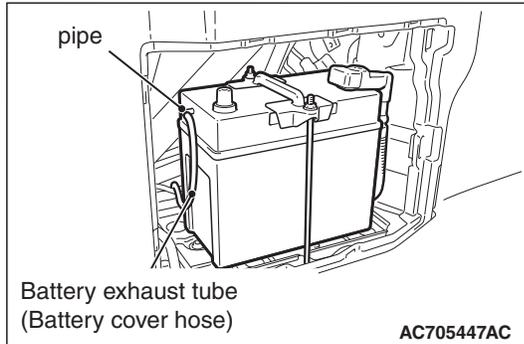
INSPECTION	54A-509	SATELLITE RADIO TUNER ..	54A-594
AUDIO AND VIDEO ADAPTER		GENERAL INFORMATION	54A-594
INSPECTION	54A-509	SPECIAL TOOLS	54A-594
HANDS FREE CELLULAR PHONE		DIAGNOSIS	54A-595
SYSTEM	54A-510	INTRODUCTION TO SATELLITE RADIO	
GENERAL INFORMATION	54A-510	DIAGNOSIS	54A-595
SPECIAL TOOLS	54A-512	STANDARD FLOW OF DIAGNOSTIC	
DIAGNOSIS	54A-513	TROUBLESHOOTING	54A-595
STANDARD FLOW OF DIAGNOSTIC		DIAGNOSIS FUNCTION	54A-595
TROUBLESHOOTING	54A-513	DIAGNOSTIC TROUBLE CODE CHART	54A-598
DIAGNOSIS FUNCTION	54A-513	DIAGNOSTIC TROUBLE CODE	
DIAGNOSTIC TROUBLE CODE		PROCEDURES	54A-598
CHART	54A-516	TROUBLE SYMPTOM CHART	54A-617
DIAGNOSTIC TROUBLE CODE		SYMPTOM PROCEDURES	54A-618
PROCEDURES	54A-517	ON-VEHICLE SERVICE	54A-628
TROUBLE SYMPTOM CHART	54A-546	HOW TO READ SIRIUS ID	54A-628
SYMPTOM PROCEDURES	54A-547	REMOVAL AND INSTALLATION .	54A-628
ON-VEHICLE SERVICE	54A-571	ANTENNA	54A-629
PAIRING A CELLULAR PHONE OR		GENERAL INFORMATION	54A-629
DELETING A PHONE	54A-571	REMOVAL AND INSTALLATION .	54A-630
ERASE THE PASSCODE	54A-574	AMPLIFIER	54A-631
SERVICE DATA	54A-574	GENERAL INFORMATION	54A-631
ACTUATOR TEST TABLE	54A-574	REMOVAL AND INSTALLATION .	54A-632
REMOVAL AND INSTALLATION	54A-575	SPEAKER	54A-633
STEERING WHEEL VOICE CONTROL		GENERAL INFORMATION	54A-633
SWITCH CONTINUITY CHECK	54A-576	ON-VEHICLE SERVICE	54A-636
STEERING WHEEL AUDIO REMOTE		SPEAKER TEST <VEHICLES WITH RADIO	
CONTROL SWITCH	54A-577	AND CD PLAYER>	54A-636
GENERAL INFORMATION	54A-577	SPEAKER TEST	
SPECIAL TOOLS	54A-578	<VEHICLES WITH MMCS>	54A-638
DIAGNOSIS	54A-579	REMOVAL AND INSTALLATION .	54A-638
STANDARD FLOW OF DIAGNOSTIC			
TROUBLESHOOTING	54A-579		
TROUBLE SYMPTOM CHART	54A-579		
SYMPTOM PROCEDURES	54A-580		
REMOVAL AND INSTALLATION	54A-592		
STEERING WHEEL AUDIO REMOTE			
CONTROL SWITCH INSPECTION	54A-593		

ETACS	54A-640	INSPECTION	54A-773
		THEFT-ALARM INDICATOR CHECK ..	54A-773
GENERAL INFORMATION	54A-640	PANIC ALARM	54A-774
SPECIAL TOOL	54A-642	GENERAL INFORMATION	54A-774
TROUBLESHOOTING	54A-643	SPECIAL TOOLS	54A-775
STANDARD FLOW OF DIAGNOSTIC		DIAGNOSIS	54A-776
TROUBLESHOOTING	54A-643	STANDARD FLOW OF DIAGNOSTIC	
DIAGNOSTIC FUNCTION	54A-643	TROUBLESHOOTING	54A-776
DIAGNOSTIC TROUBLE CODE		DIAGNOSTIC FUNCTION	54A-776
CHART	54A-646	TROUBLE SYMPTOM CHART	54A-777
DIAGNOSTIC TROUBLE CODE		SYMPTOM PROCEDURES	54A-777
PROCEDURES	54A-647	PANIC ALARM DOES NOT WORK	
SERVICE DATA	54A-694	NORMALLY	54A-777
TROUBLE SYMPTOM CHART	54A-699	REMOVAL AND INSTALLATION	54A-779
SYMPTOM PROCEDURES	54A-700	ON-VEHICLE SERVICE	54A-779
MALFUNCTION OF ETACS-ECU POWER		CUSTOMIZATION FUNCTION	54A-779
SUPPLY CIRCUIT	54A-700	DEFOGGER	54A-780
TROUBLE SYMPTOM CHART FOR INPUT		GENERAL INFORMATION	54A-780
SIGNAL	54A-703	SPECIAL TOOLS	54A-781
INPUT SIGNAL PROCEDURES	54A-704	TROUBLESHOOTING	54A-781
ON-VEHICLE SERVICE	54A-738	STANDARD FLOW OF DIAGNOSTIC	
CUSTOMIZATION FUNCTION	54A-738	TROUBLESHOOTING	54A-781
ETACS-ECU	54A-742	SYMPTOM CHART	54A-781
REMOVAL AND INSTALLATION	54A-742	SYMPTOM PROCEDURES	54A-782
CHECK WITH TERMINAL VOLTAGE ..	54A-742	REAR WINDOW DEFOGGER DOES	
THEFT ALARM	54A-750	NOT OPERATE	54A-782
GENERAL INFORMATION	54A-750	REMOVAL AND INSTALLATION	54A-791
SPECIAL TOOLS	54A-751	ON-VEHICLE SERVICE	54A-792
DIAGNOSIS	54A-752	PRINTED HEATER CHECK	54A-792
STANDARD FLOW OF DIAGNOSTIC		REAR WINDOW DEFOGGER RELAY	
TROUBLESHOOTING	54A-752	CHECK	54A-792
DIAGNOSTIC FUNCTION	54A-752		
TROUBLE SYMPTOM CHART	54A-754		
SYMPTOM PROCEDURES	54A-755		
REMOVAL AND INSTALLATION	54A-773		

BATTERY

GENERAL INFORMATION

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.

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.

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

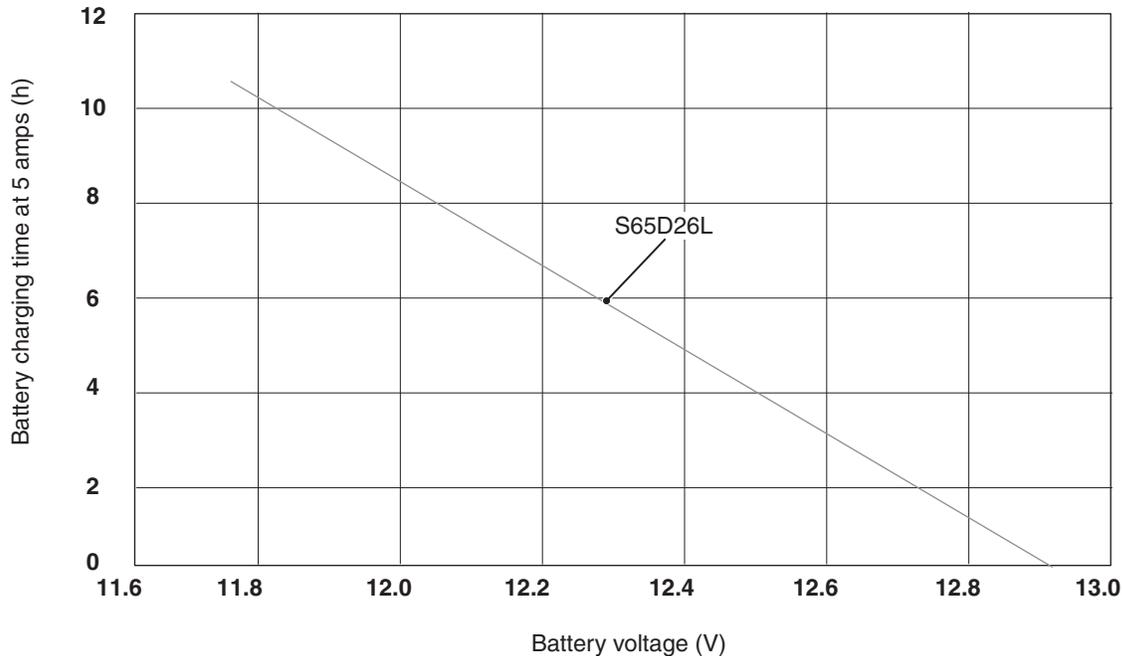
- Calcium alloy with superior characteristics of electrolyte decrease is used for the polar plate grille between the positive and negative poles in the battery container.

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.

M1541000100302

Item	Specification
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.

BATTERY TEST

M1541001201833

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. Then go to Step 4.
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

Charge the battery. (See CHARGE RATE CHART P.54A-8)

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.

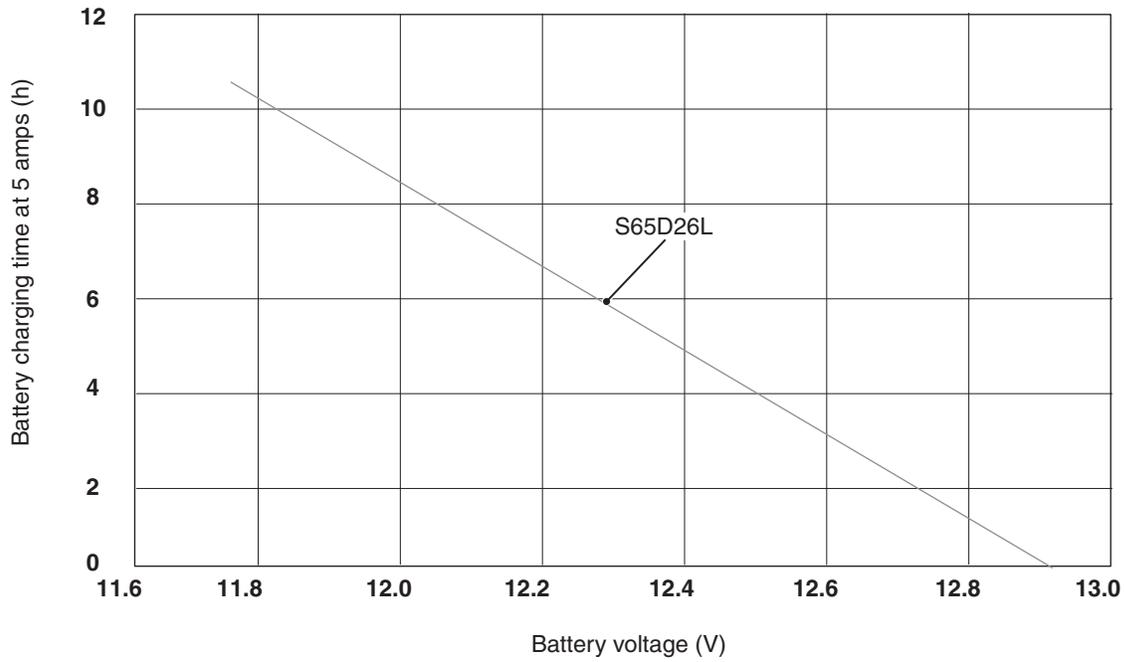
LOAD TEST CHART

Temperature °C (°F)	21 (70) AND ABOV E	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

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

Graph 1



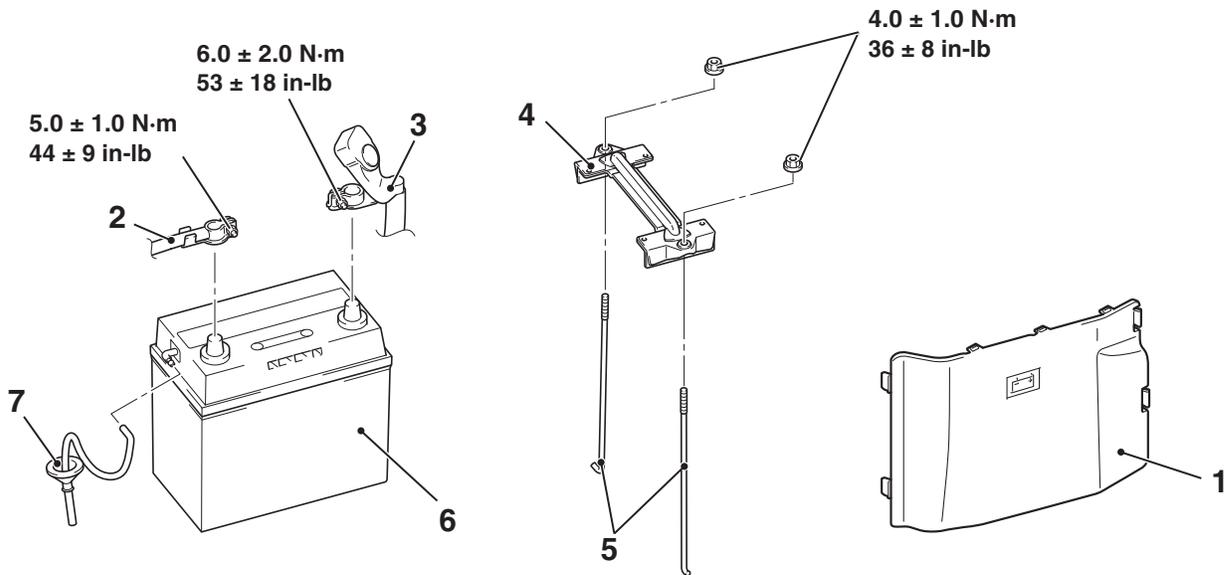
AC707780

**REMOVAL AND INSTALLATION
BATTERY**

M1541001300525

⚠ WARNING

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



AC708870AD

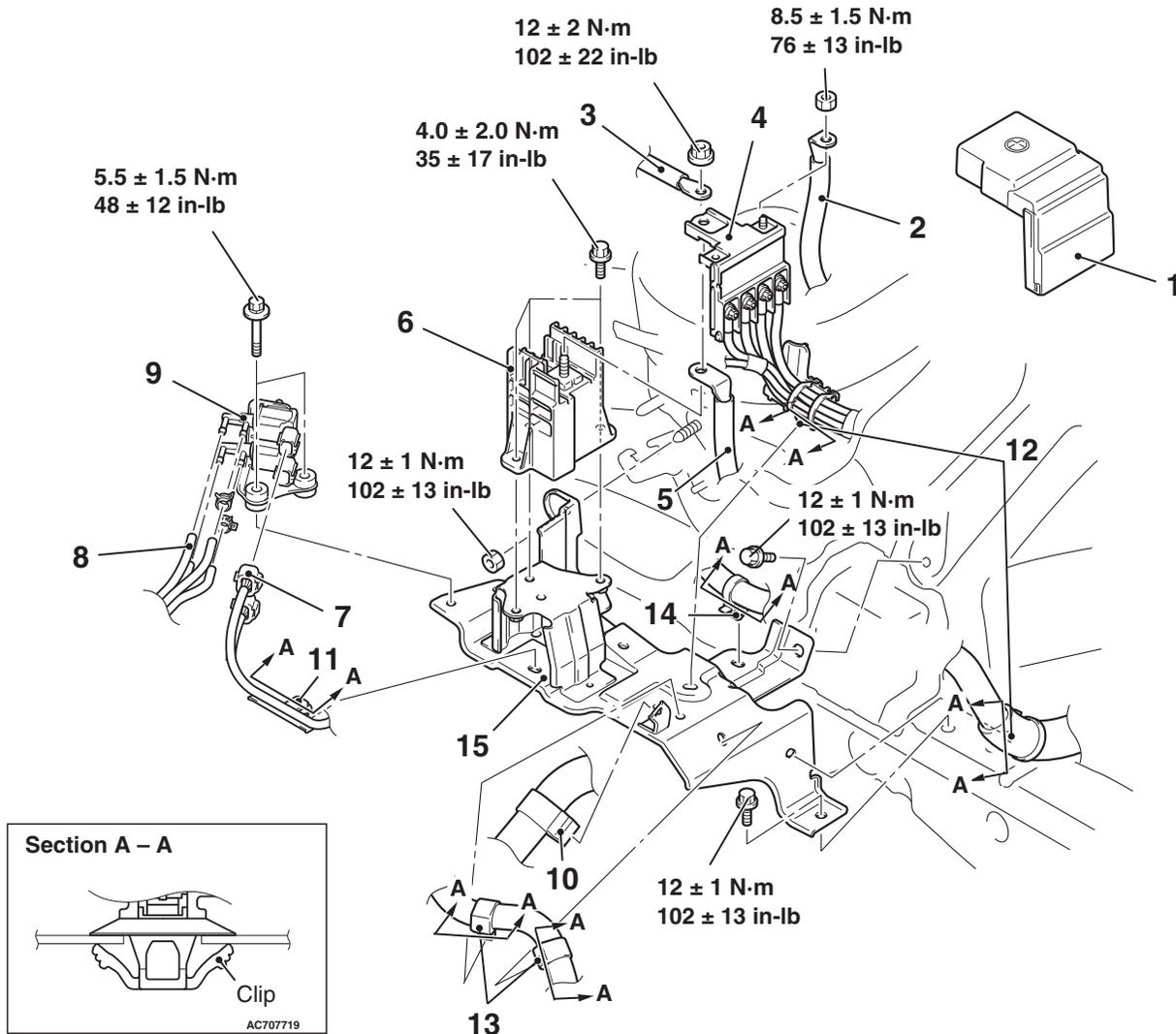
Removal steps

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

ENG CONTROL HARNESS CONNECTOR BRACKET



AC705562AC

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.15-11.)

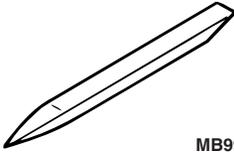
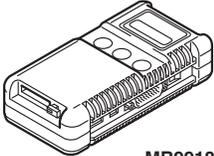
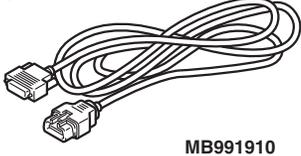
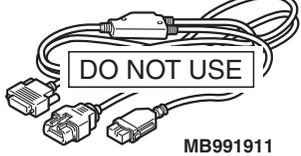
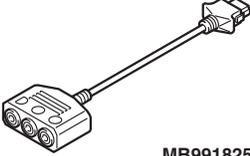
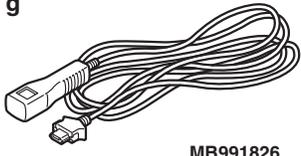
Removal steps (Continued)

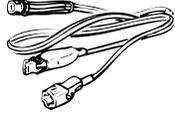
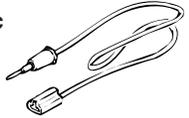
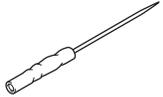
- Engine control modulator bracket (Refer to GROUP 13A-Engine Control Module P.13A-888)
- 10. Control harness connection by a clip
- 11. Chassis FR harness connection by a clip
- 12. Chassis FR harness connection by a clip
- 13. Battery harness connection by a clip
- 14. Control harness connection by a clip
- 15. ENG control harness connector bracket

IGNITION SWITCH

SPECIAL TOOLS

M1543000603498

Tool	Tool number and name	Supersession	Application
 <p>MB990784</p>	<p>MB990784 Ornament remover</p>	<p>General service tool</p>	<p>Removal of steering column cover</p>
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826</p> <p>M.U.T.-III sub assembly</p> <p>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 Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>Diagnostic code, service data and actuator test check.</p>

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

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLE SHOOTING

Refer to Group 00 –Contents of troubleshooting

[P.00-7.](#)

M1543006900937

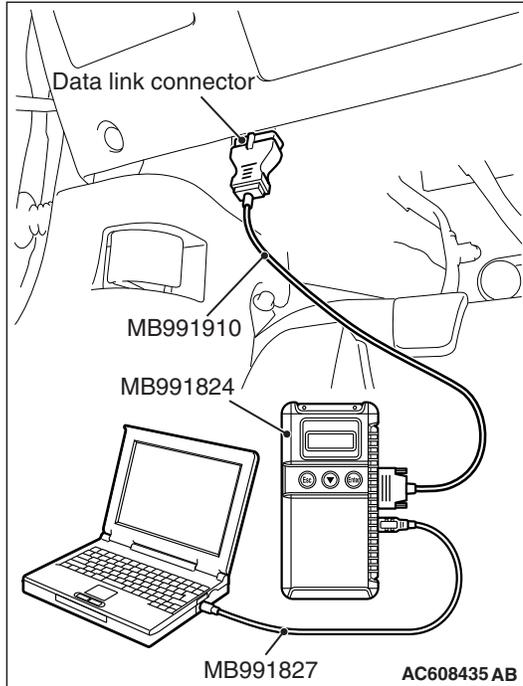
DIAGNOSIS FUNCTION

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

M1543007001093

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." to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TROUBLE SYMPTOM CHART

M1543007202700

Trouble symptom	Inspection Procedure No.	Reference page
Ignition key cylinder illumination light does not illuminate/extinguish normally.	1	P.54A-15
Defective power supply system of the ignition switch	2	P.54A-20

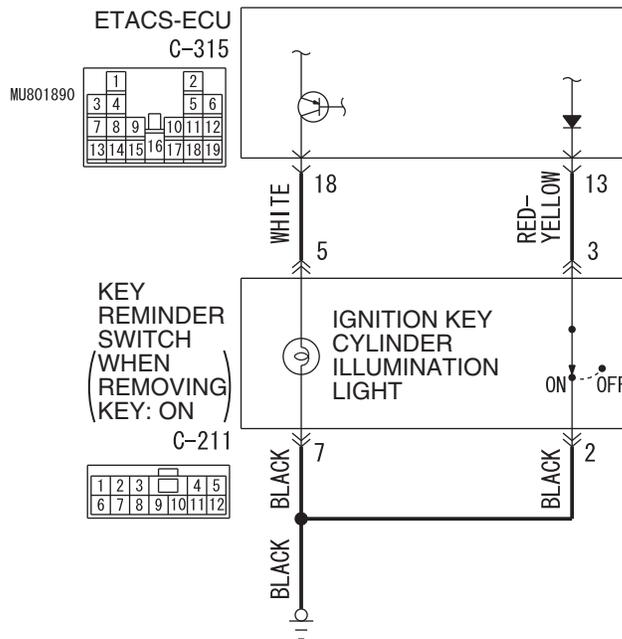
SYMPTOM PROCEDURES

Inspection Procedure 1: Ignition key cylinder illumination light does not illuminate/extinguish normally. <vehicles with WCM>

CAUTION

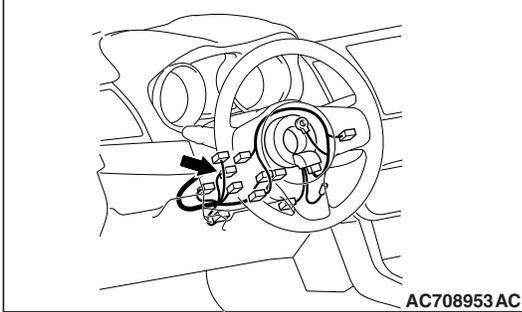
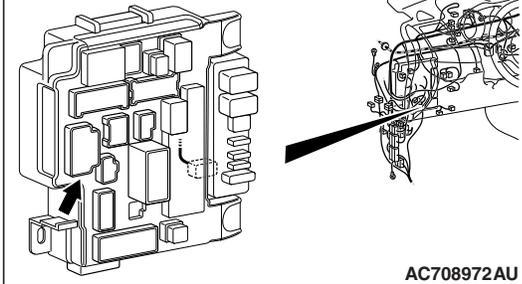
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

Ignition Key Cylinder Illumination Light Circuit <Vehicles with WCM>



W9H54M064A

Connector: C-211

Connector: C-315
ETACS-ECU**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

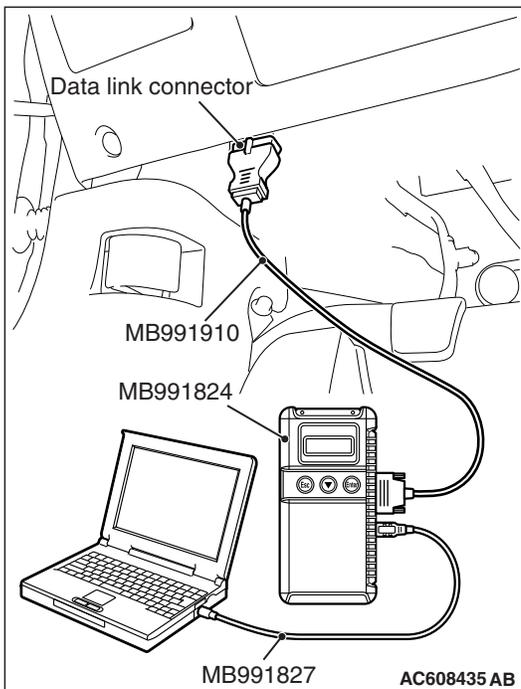
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (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-742.

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	1 V or less
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-712](#).

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-706](#).

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-721](#).

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-709](#).

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-712](#).

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.

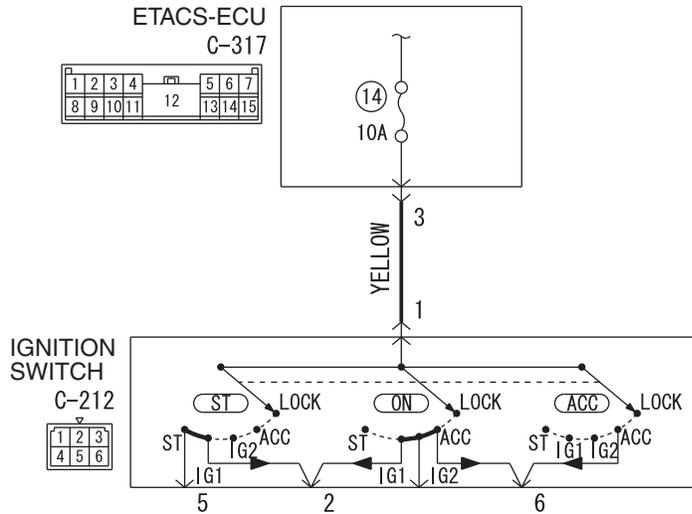
Q: Does the ignition key cylinder illumination light illuminate/extinguish in good condition?

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.

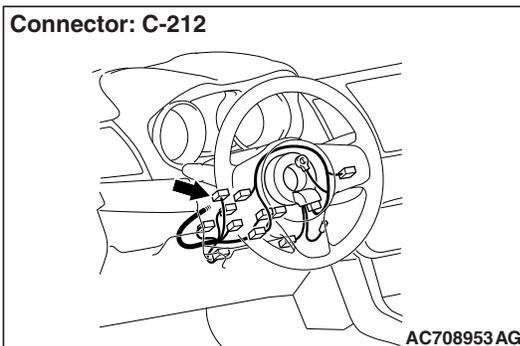
Inspection Procedure 2: Defective power supply system of the ignition switch

Ignition Switch Power Supply Circuit



WAH54M054A

Connector: C-212



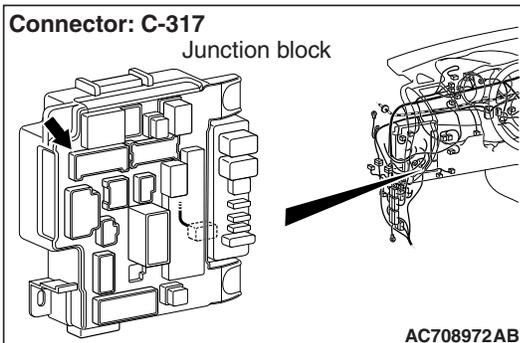
TECHNICAL DESCRIPTION (COMMENT)

When the power supply system of ignition switch has a problem, none of the equipment and system connected to the ignition switch works even if the ignition switch is operated.

TROUBLESHOOTING HINTS

- The ignition switch may be defective
- The fuse No.14 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

Connector: C-317



DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check ignition switch connector C-210 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ignition switch connector C-210 in good condition?

YES : Go to Step 2.

NO : Repair the defective connector.

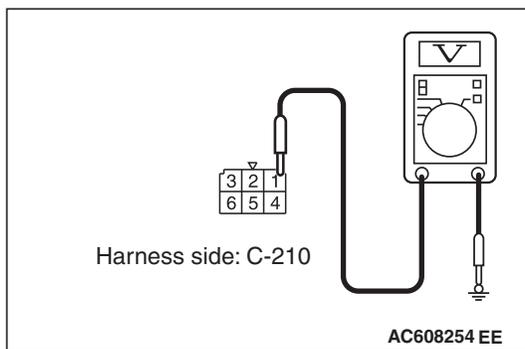
STEP 2. Check the battery power supply circuit to the ignition switch. Measure the voltage at ignition switch connector C-210.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the voltage between 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 6.

NO : Go to Step 3.



STEP 3. Check the fuse No.14.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the fuse No.14. (Check that there is not a short to ground in the circuit of lower reaches before replacing. If there are any problems, replace the fuse after the circuit of lower reaches is repaired.)

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 the damaged parts.

STEP 5. Check the Wiring harness between ignition switch connector C-210 (terminal No.1) and ETACS-ECU connector C-317 (terminal No.3).

- Check the battery power supply line for open circuit.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the wiring harness.

STEP 6. Check the ignition switch.

Remove the ignition switch. Then check continuity between the switch terminal.

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

Q: Is the ignition switch in good condition?

YES : Go to Step 7.

NO : Replace the ignition switch.

STEP 7. Retest the system.**Q: When the ignition switch is operated, do the equipment and system 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.

ON-VEHICLE SERVICE**CHECK OF IGNITION KEY REMINDER WARNING FUNCTION (STEERING LOCK REMINDER TONE ALARM BY KOS)**

M1541200700085

1. With the driver's door closed, release the steering lock, and turn the key (For vehicles with KOS, the emergency key is inserted to the keyless operation key in the inverted direction) to the LOCK (OFF) position (with the key inserted). <Vehicles with WCM and vehicles with KOS (When the emergency key is used)>
2. With the driver's door closed, release the steering lock, and turn the IG knob to the position other than the LOCK (OFF) position. <Vehicles with KOS (When the emergency key is not used)>
3. Change the driver's door state from closed to open.
4. Check that the tone alarm sounds normally.
5. If a malfunction is found, carry out the troubleshooting (Refer to [P.54A-67](#)).

REMOVAL AND INSTALLATION

CAUTION

Before removing the steering wheel assembly, refer to GROUP 52B –Service Precautions P.52B-24 and Driver’s Air Bag Module and Clock Spring P.52B-413 <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-289). <Vehicles with WCM and ASC>

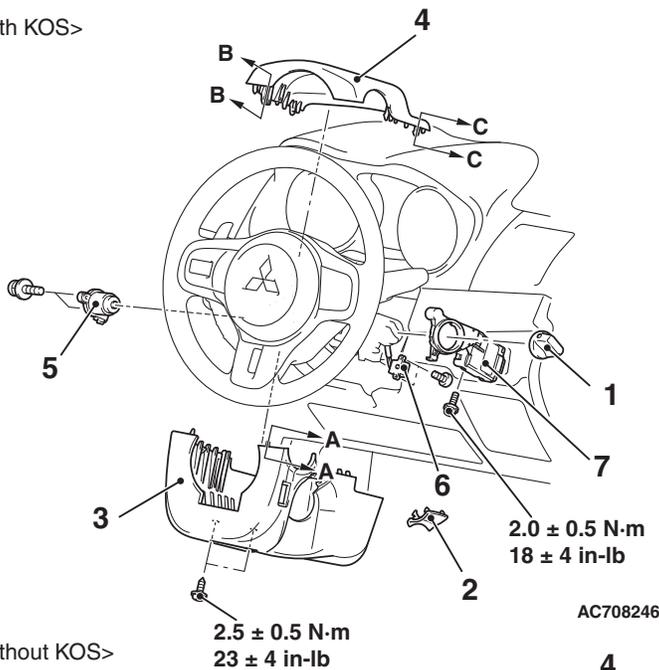
Pre-removal Operation

- Steering wheel straight-ahead position check. <Vehicles with WCM>
- Removal of steering wheel assembly (Refer to GROUP 37 –Steering Wheel P.37-29). <Vehicles with WCM>

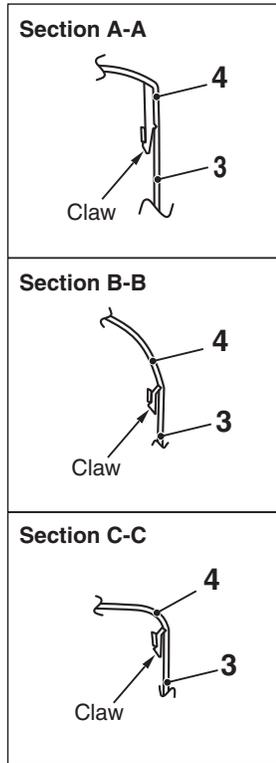
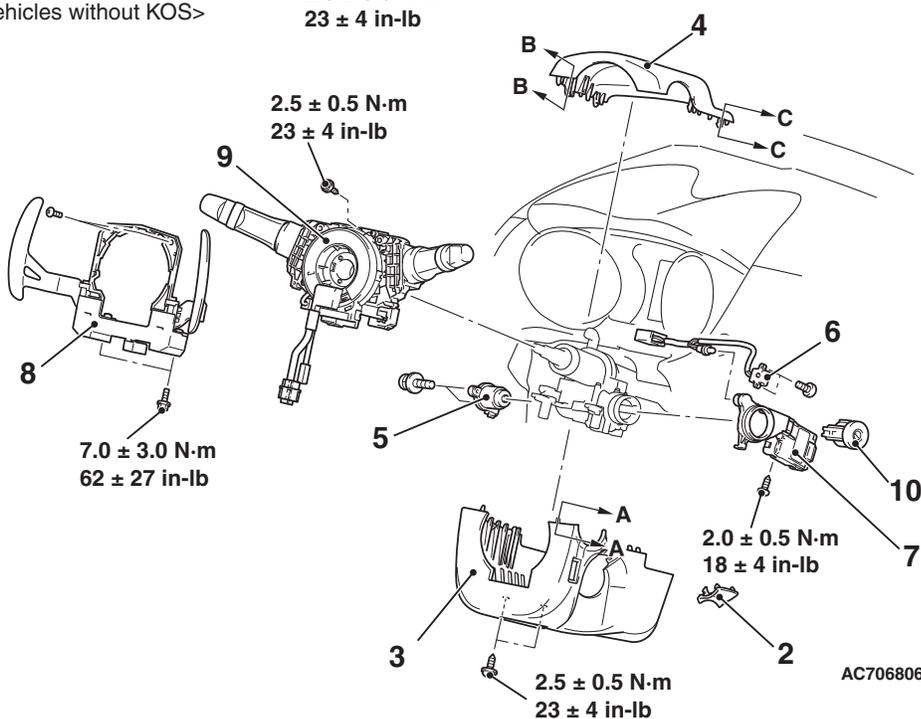
Post-installation Operation

- Installation of steering wheel assembly (Refer to GROUP 37 –Steering Wheel P.37-29). <Vehicles with WCM>
- Steering wheel straight-ahead position check. <Vehicles with WCM>

<Vehicles with KOS>



<Vehicles without KOS>



NOTE:
Claw position is symmetrical

Removal Steps

1. IG knob cap <Vehicles with KOS>
2. Ignition key cover
3. Steering column lower cover
4. Steering column upper cover
5. Ignition switch
6. Key reminder switch
- >>A<< 7. Wireless control module (WCM)
<Vehicles with WCM>/receiver
antenna module <Vehicles with
KOS>

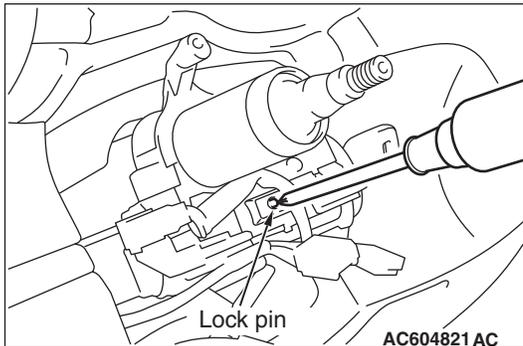
<<A>>

Removal Steps (Continued)

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

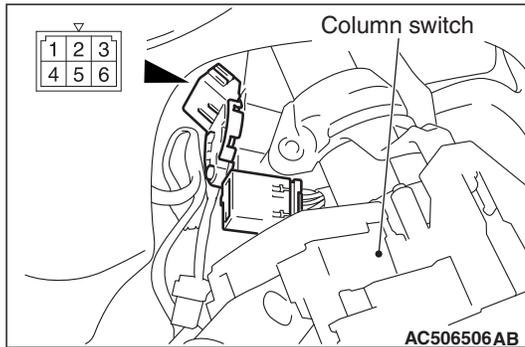
Check that the top claw of receiver antenna module is fixed securely to the boss of steering lock and the antenna is not floated on the key cylinder.

INSPECTION

IGNITION SWITCH CONTINUITY CHECK

M1541200400095

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

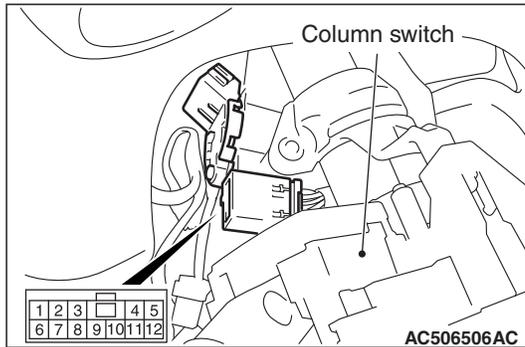


Ignition key position	Terminal number	Normal condition
LOCK	1 -2, 1 -4, 1 -5, 1 -6	No continuity
ACC	1 -6	Continuity exists (Less than 2 ohms)
ON	1 -2 -4 -6	Continuity exists (Less than 2 ohms)
START	1 -2 -5	Continuity exists (Less than 2 ohms)

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 (Less than 2 ohms)
Key inserted	2 -3	No continuity

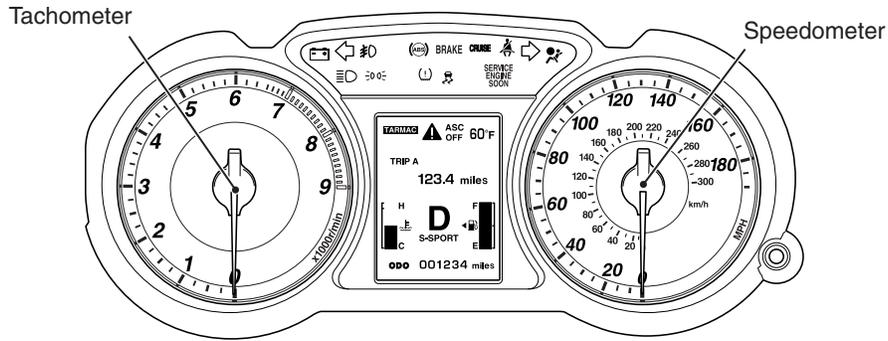
COMBINATION METER

GENERAL INFORMATION

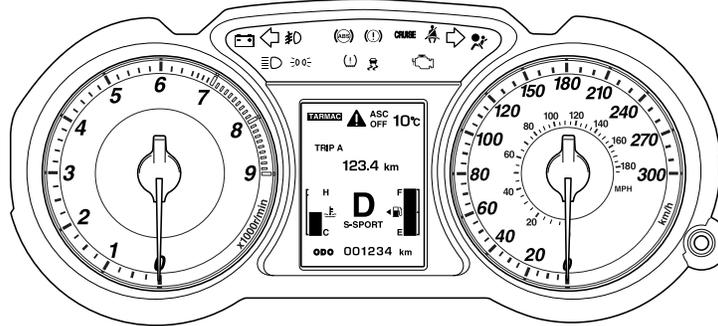
M1540208400386

CONSTRUCTION DIAGRAM

<Vehicles for USA and PHILIPPINES>



<Vehicles for CANADA and USA (Option)>



AC901785AB

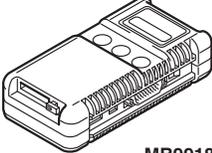
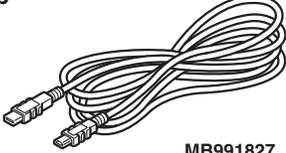
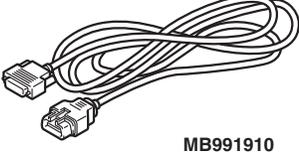
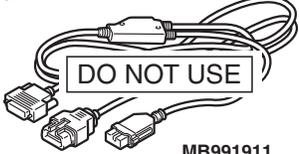
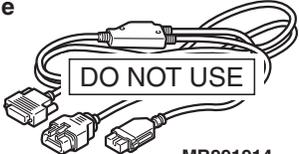
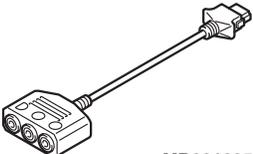
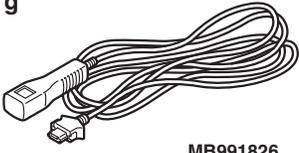
SERVICE SPECIFICATIONS

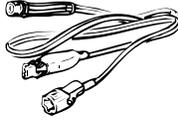
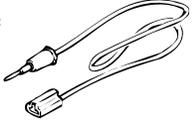
M1540200200407

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)

SPECIAL TOOLS

M1540200300147

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

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

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540203800152

Refer to GROUP 00, Contents of troubleshooting [P.00-7](#).

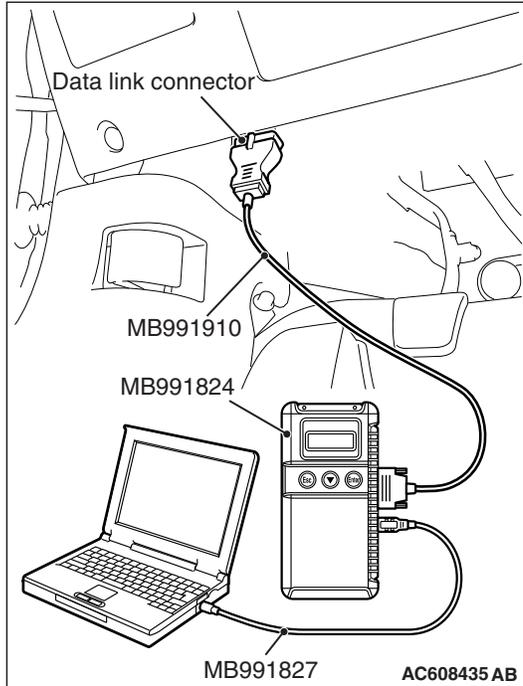
DIAGNOSIS FUNCTION

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" to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS 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
1	Odometer	Total driving distance after the diagnostic trouble code is generated	mile*
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

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

DIAGNOSTIC TROUBLE CODE CHART

⚠ 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-101](#). 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.

DTC No.	Diagnostic item	Reference page
B1200	Malfunction of odometer	P.54A-33
B1201	Abnormal fuel information	P.54A-34
B1208	Malfunction of LCD heater	P.54A-37
B1209	Test mode	P.54A-38
B2203	VIN not programmed	P.54A-38
B2463	The sticking of rheostat switch	P.54A-40
B2464	The sticking of meter information switch	P.54A-41
B2465	Ignition switch signal error	P.54A-44
U0019	Bus off (CAN-B)	P.54A-45
U0100	Engine control module CAN timeout	P.54A-47
U0141	ETACS CAN timeout	P.54A-49
U0151	SRS-ECU CAN timeout	P.54A-51
U0154	Occupant classification-ECU CAN timeout	P.54A-53
U0164	A/C-ECU or heater control unit CAN timeout	P.54A-55
U0168	KOS-ECU or WCM CAN timeout	P.54A-57
U0184	Audio CAN timeout	P.54A-59
U0197	Hands free module CAN timeout	P.54A-61
U0245	Audio visual navigation unit CAN timeout	P.54A-63
U1415	Coding not completed/Data fail	P.54A-65

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1200: Malfunction of odometer

TROUBLE JUDGMENT

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.

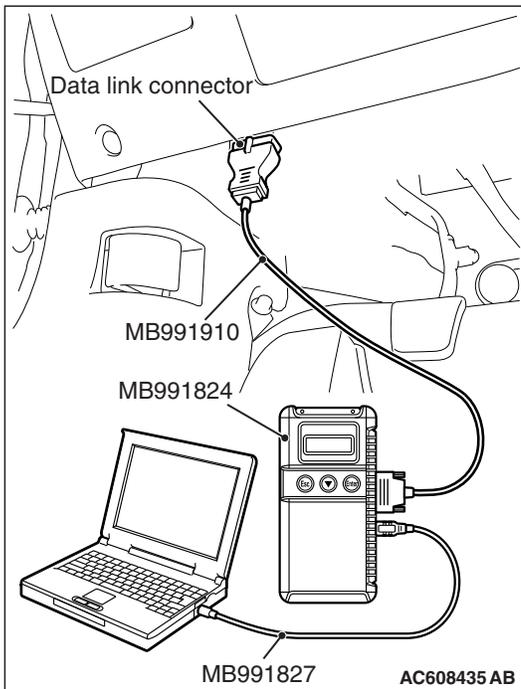
CAUTION

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-29."
- (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 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 diagnostic trouble code is set.

Q: Is the DTC set?

YES : Go to Step 1.

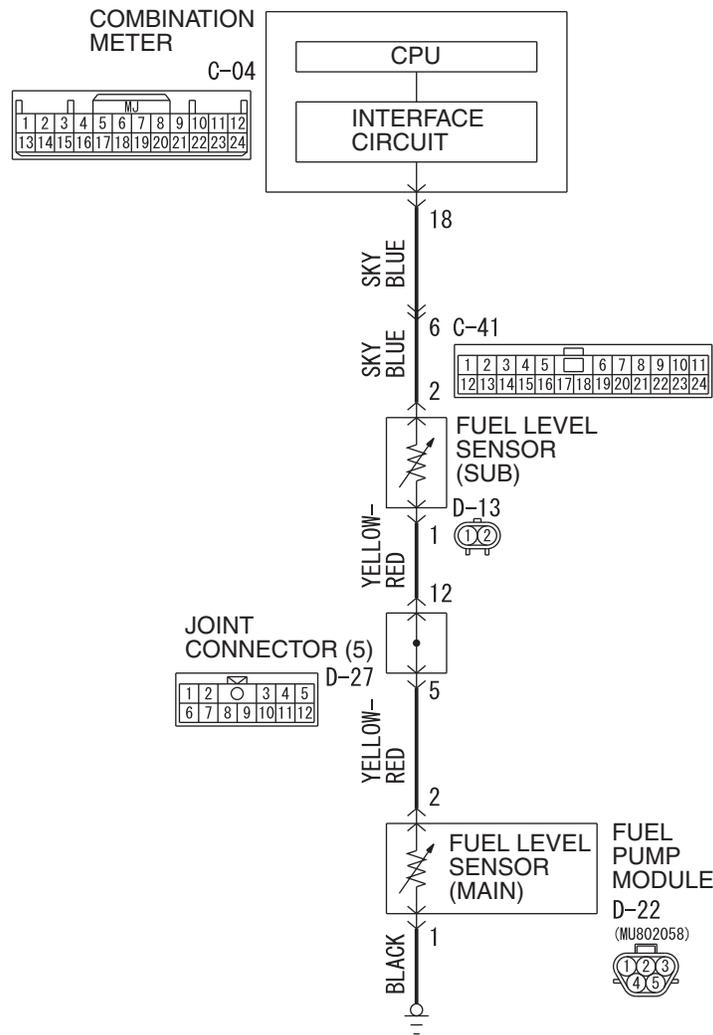
NO : The procedure is complete.

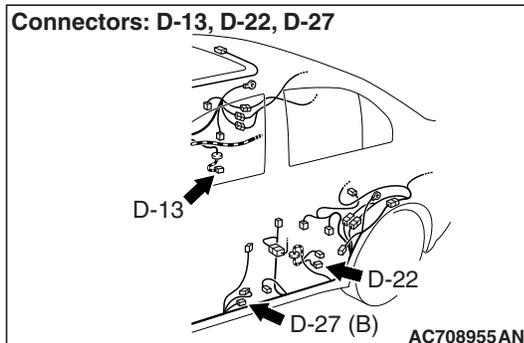
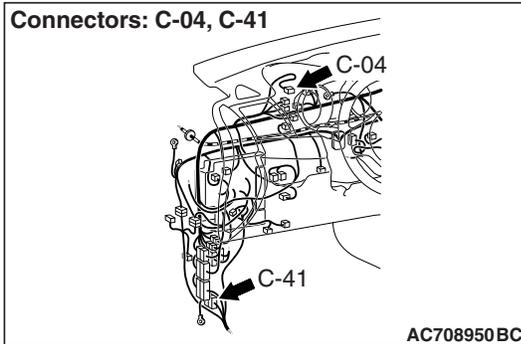
DTC B1201: Abnormal fuel information

CAUTION

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

Fuel Gauge Unit Circuit





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.

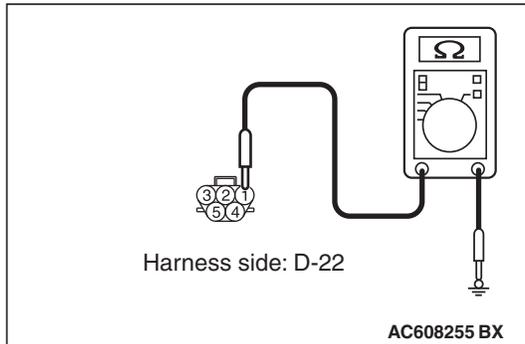
STEP 2. Check the fuel level sensor.

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.

- Check the ground wire for open circuit.

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).

- Check the communication lines for open circuit and short circuit.

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.

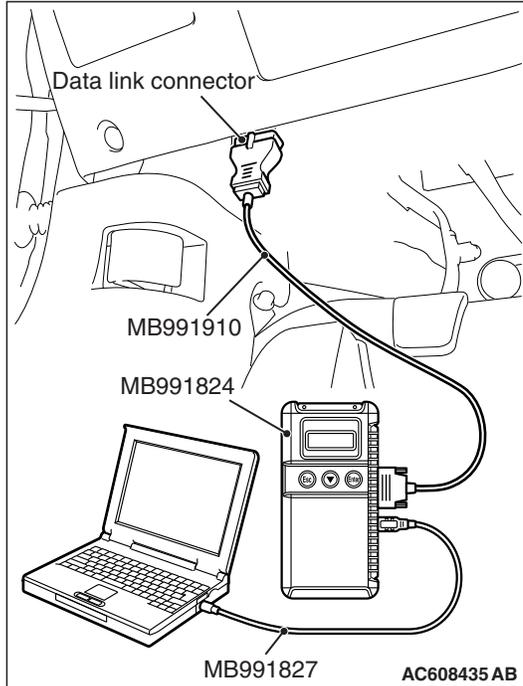
TROUBLESHOOTING HINTS

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-29."
- (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**

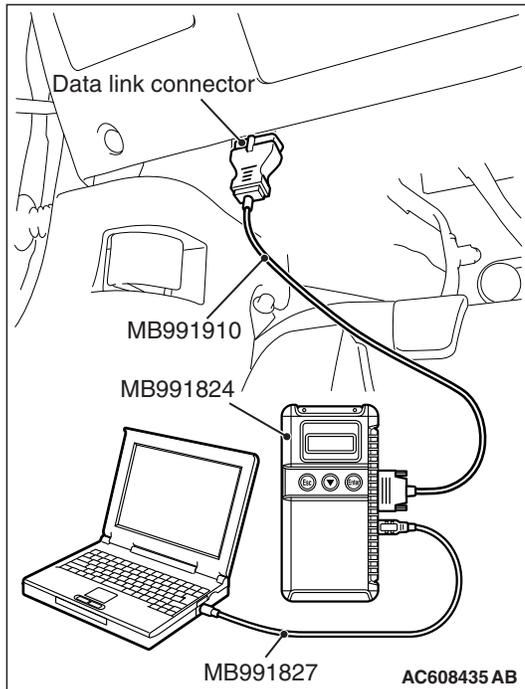
With the ignition switch at the ON position, if the VIN code is not written to the combination meter, DTC B2203 is stored.

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-29."
- (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-15).

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-646).

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).

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.

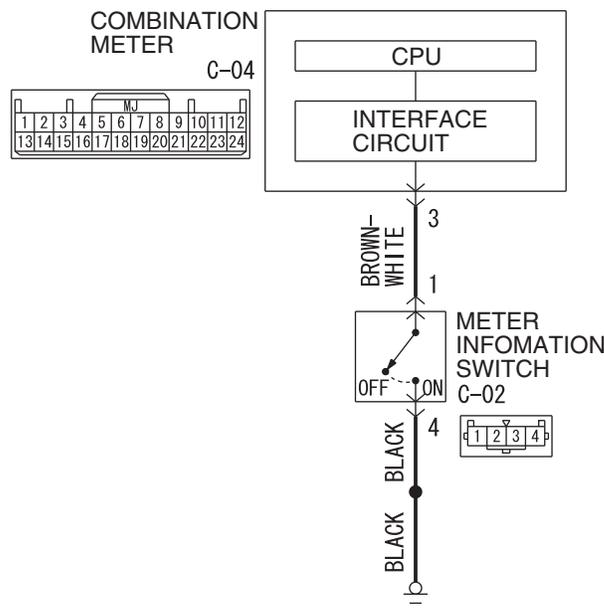
NO : The procedure is complete.

DTC B2464: The sticking of meter information switch

CAUTION

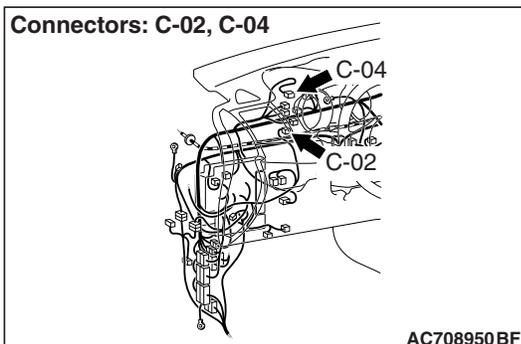
Whenever the ECU is replaced, ensure that the communication circuit is normal.

Meter Information Switch Circuit



W8G54M178A

Connectors: C-02, C-04



TROUBLE JUDGMENT

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

TROUBLESHOOTING HINTS

- The meter information 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)

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 meter information switch.

Check the meter information switch (Refer to [P.54A-100](#)).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the meter information switch.

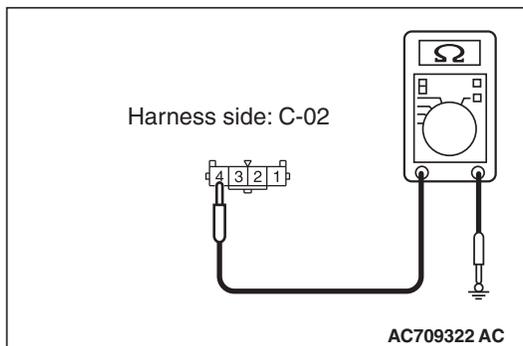
STEP 3. Measure at meter information switch connector C-02 in order to the ground circuit to the meter information switch.

- (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.

- Check the ground wire 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 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).

- Check the communication line for open circuit and short 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 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

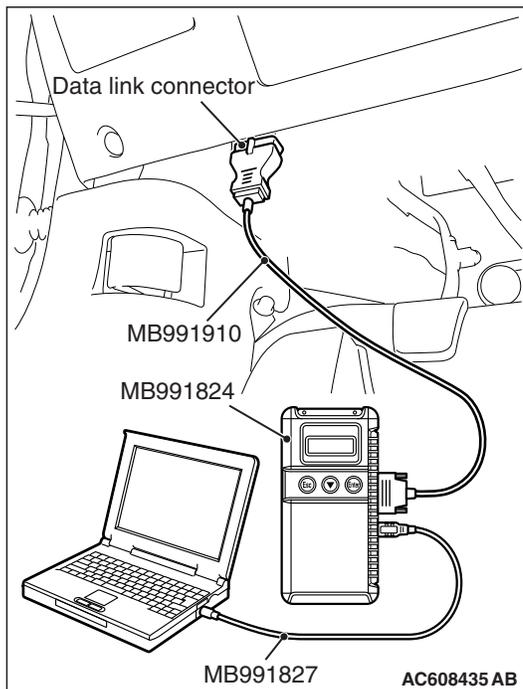
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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)

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

Check if DTC is set to the ETACS-ECU.

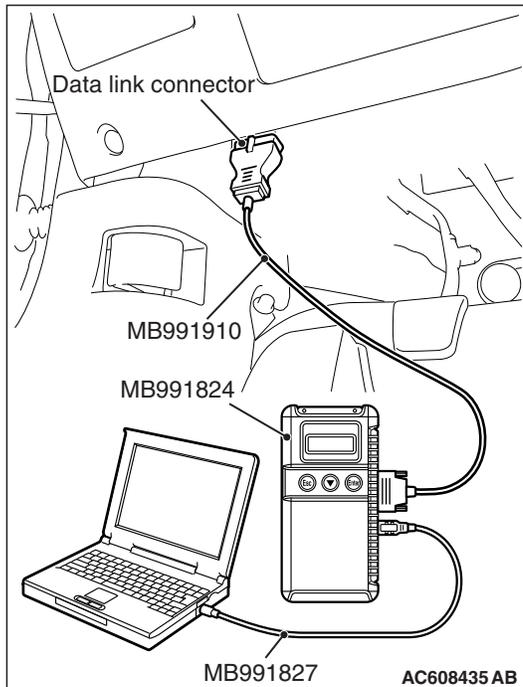
⚠ CAUTION

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-29."
- (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-646).
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-15).

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-68](#)).

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.

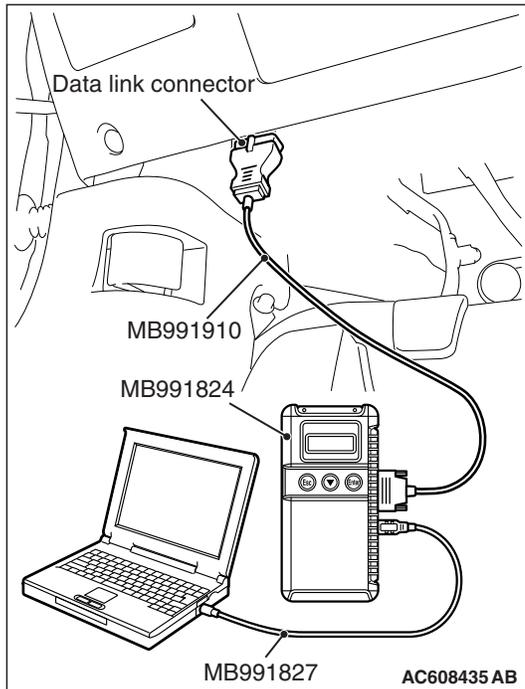
TROUBLESHOOTING HINTS

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-29."
- (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-15).

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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10-16 volts (data from ETACS-ECU), power supply fuse (IOD 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.

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

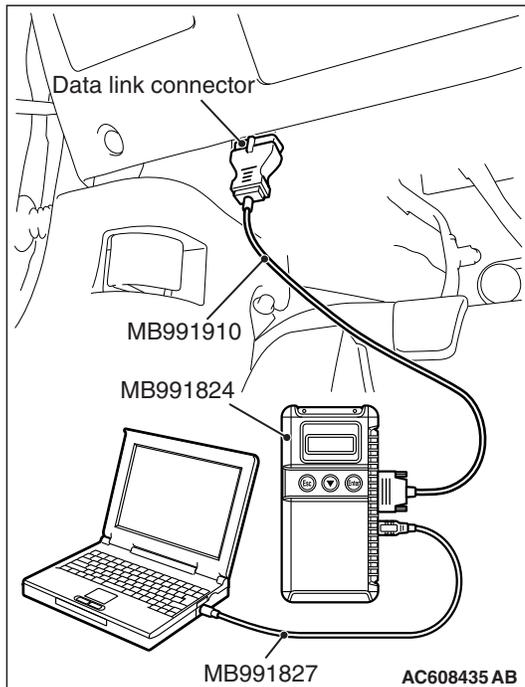
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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, Diagnosis [P.13A-48](#)).

NO : Go to Step 3.

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

Check if DTC U0100 is set to the ETACS-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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the engine control module and the combination meter (Refer to GROUP 00, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse (IOD 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

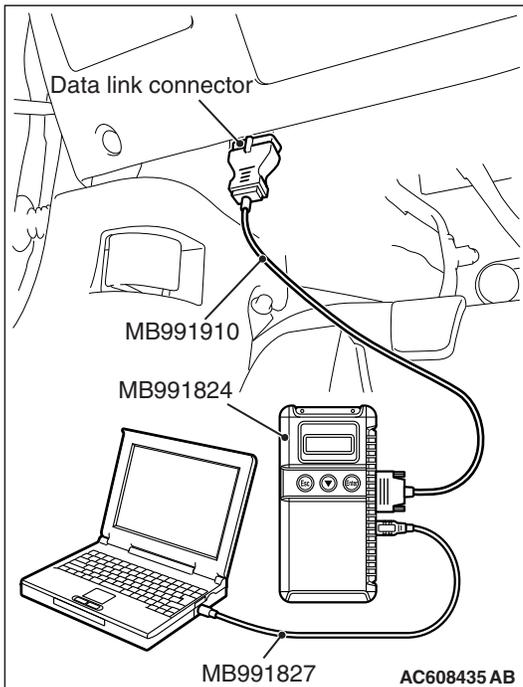
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-646](#)).

NO : Go to Step 3.

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

Check if DTC U0141 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 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 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 ETACS-ECU and the combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the ETACS-ECU and the combination meter (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, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10-16 volts (data from ETACS-ECU), power supply fuse (IOD 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

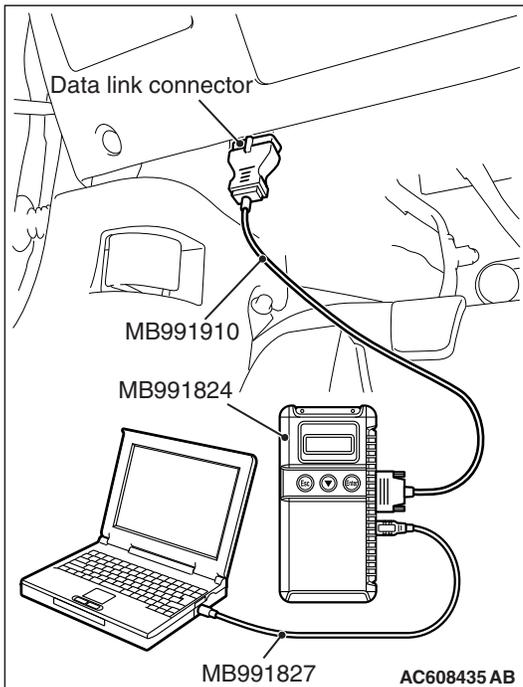
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-30](#)).

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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the SRS-ECU and the combination meter (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, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse (IOD 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

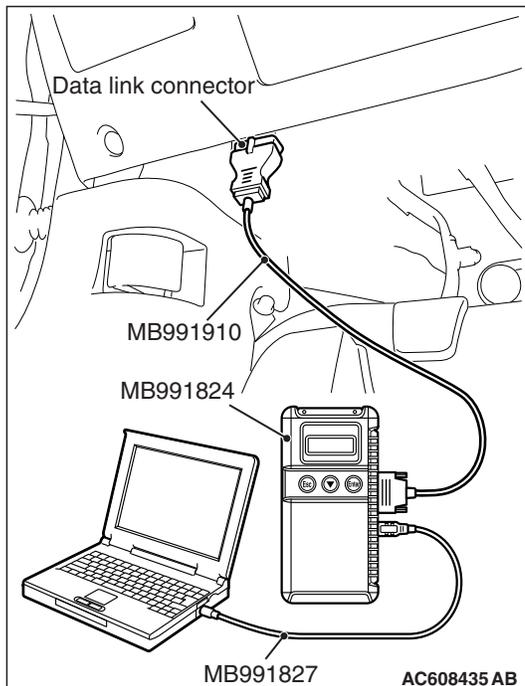
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-316](#)).

NO : Go to Step 3.

STEP 3. Using scan tool MB991958, read the A/C-ECU diagnostic trouble code.

Check if the DTC U0154 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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the occupant classification-ECU and the combination meter (Refer to GROUP 00, How to Cope with Intermittent Malfunction [P.00-15](#)).

DTC U0164: A/C-ECU or heater control unit 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 <vehicles with automatic A/C> or heater control unit <vehicles without automatic A/C> cannot be received, the combination meter 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 (IOD fuse) is OK, or odometer value is 80.5 km (50 miles) or more, and the communication with A/C-ECU or heater control 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 A/C-ECU may be defective.
- The heater control unit 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

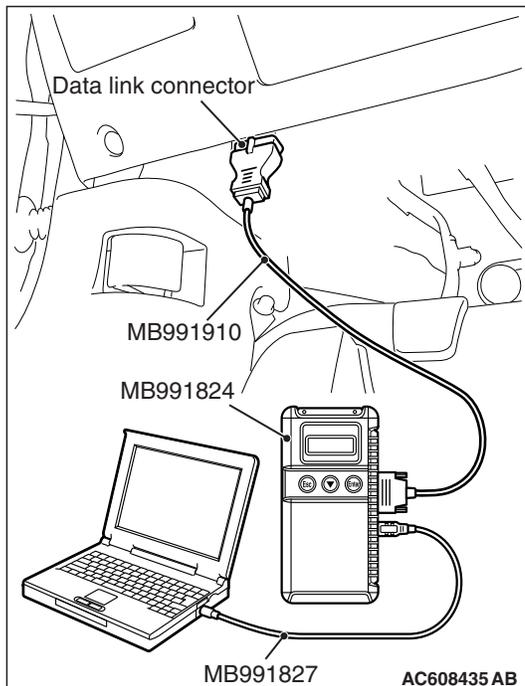
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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

Check if DTC is set to the A/C-ECU or heater control unit.

Q: Is the DTC set?

YES : Troubleshoot the A/C-ECU or heater control unit
(Refer to GROUP 55, A/C Diagnosis [P.55-10](#)).

NO : Go to Step 3.

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

Check if the DTC U0164 is set to the ETACS-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 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 A/C-ECU or heater control unit.

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 or heater control unit and the combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the A/C-ECU or heater control unit and the combination meter (Refer to GROUP 00, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 V (data from ETACS-ECU), power supply fuse (IOD 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

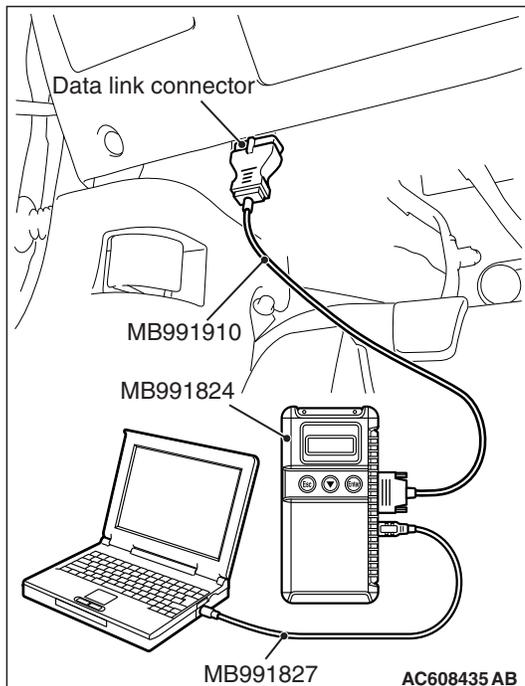
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-23](#) <KOS> or 42C, Troubleshooting [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 ETACS-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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the WCM or KOS-ECU and the combination meter (Refer to GROUP 00, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse (IOD 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

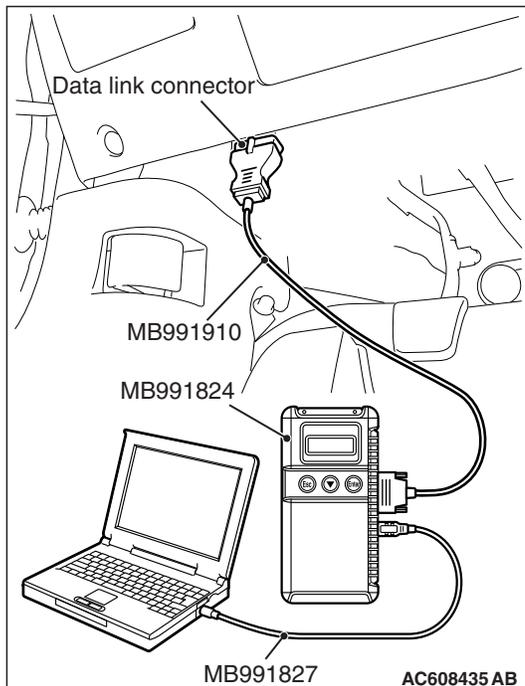
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-322](#)).

NO : Go to Step 3.

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

Check if the DTC U0184 is set to the ETACS-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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the radio and CD player or CD changer and the combination meter (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, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse (IOD 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

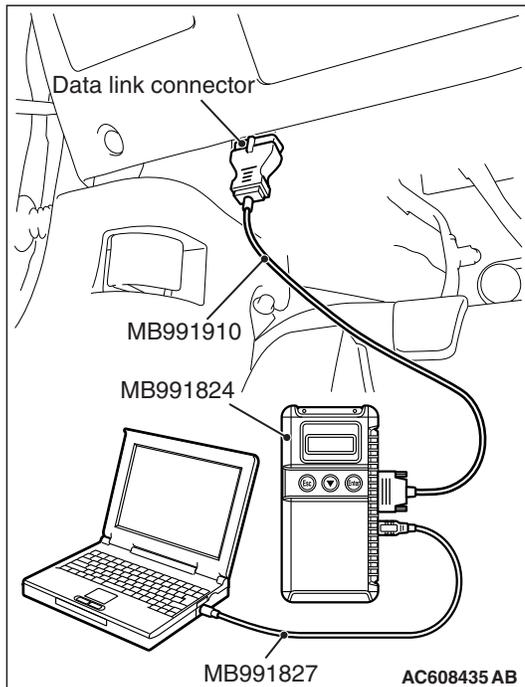
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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

Check if the DTC U0197 is set to the ETACS-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 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 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 combination meter (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 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 such as a poor connection or open circuit in the CAN bus lines between the hands free module and the combination meter (Refer to GROUP 00, 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.

JUDGMENT CRITERIA

With the ignition switch in the ON position, system voltage between 10 –16 volts (data from ETACS-ECU), power supply fuse (IOD 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

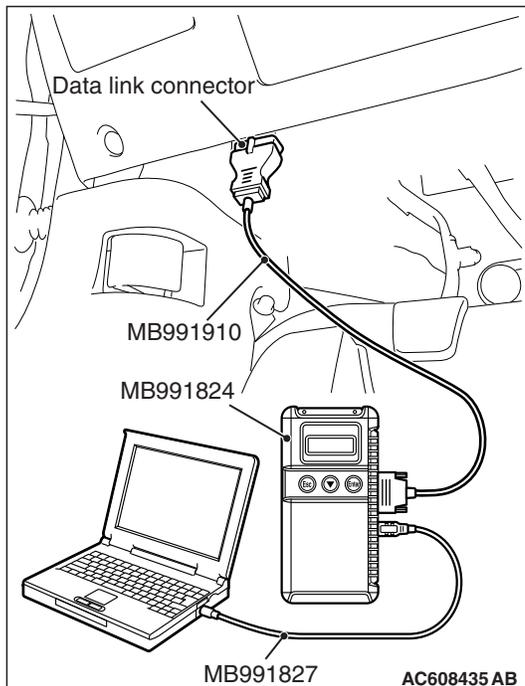
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-430](#)).

NO : Go to Step 3.

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

Check if the DTC U0245 is set to the ETACS-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 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 CAN box unit (audio visual navigation unit).

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 (audio visual navigation unit) and the combination meter (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 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 CAN box unit (audio visual navigation unit) and the combination meter (Refer to GROUP 00, 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

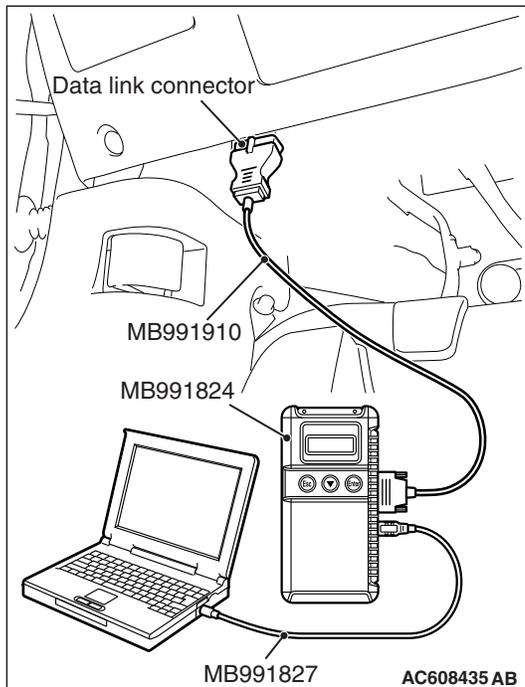
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-646](#)).

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

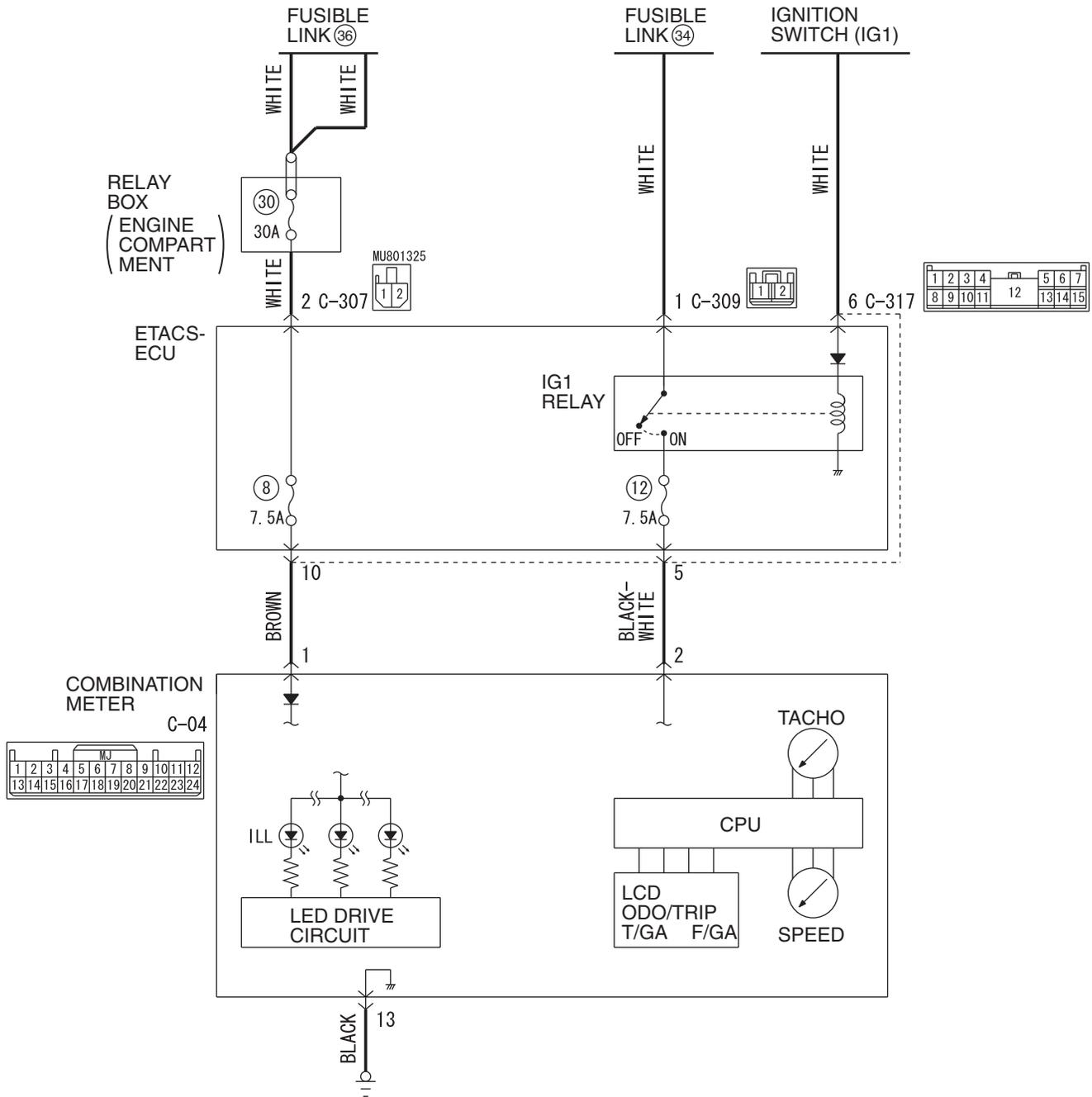
- During troubleshooting, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.
- When the combination meter is required to be replaced as a 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-101](#). 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-68
The speedometer does not work (the other meters work).	2	P.54A-74
The tachometer does not work (the other meters work).	3	P.54A-76
Tone alarm does not sound normally.	4	P.54A-78
The combination meter light does not illuminate normally or the multi information display is not displayed normally.	5	P.54A-81
The multi information display screen cannot be changed with the operation of the meter information switch.	6	P.54A-84

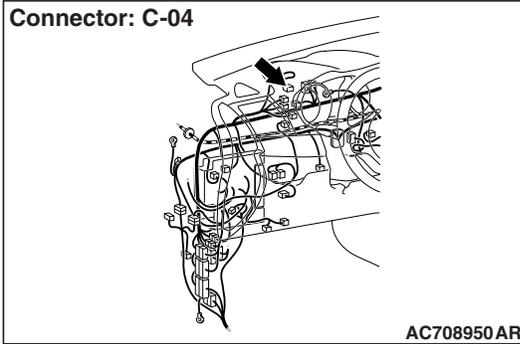
SYMPTOM PROCEDURES

Inspection Procedure 1: Power supply circuit check.

Combination Meter Power Supply Circuit



Connector: C-04



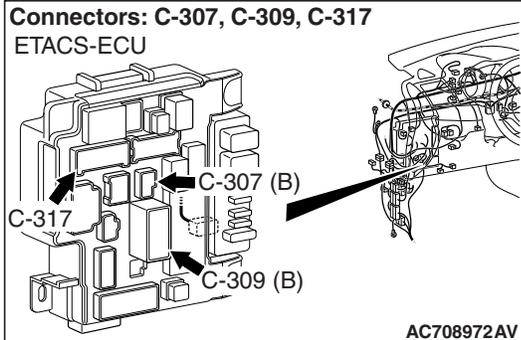
TECHNICAL DESCRIPTION (COMMENT)

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

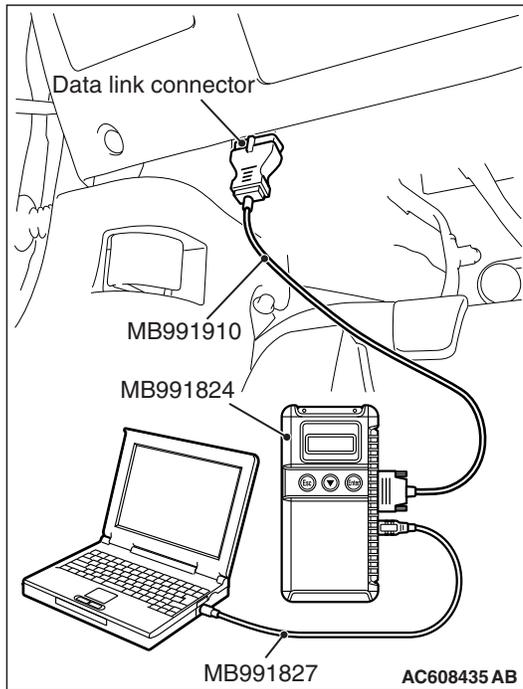
Connectors: C-307, C-309, C-317
ETACS-ECU



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-32).

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.

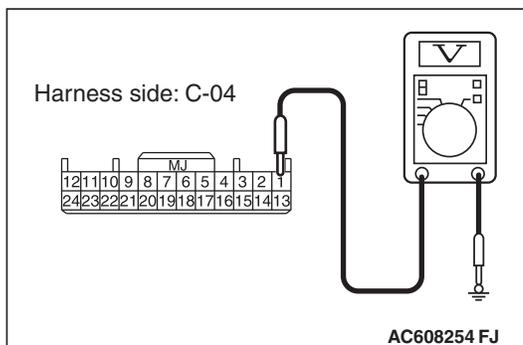
STEP 3. Check the battery power supply circuit to the combination meter. Measure the voltage at combination meter connector C-04.

- (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 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.



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

- Check the power supply line (battery supply) 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 connectors C-307 and 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 1) 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.

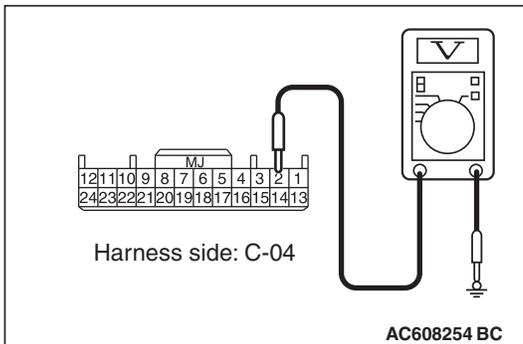
STEP 5. Check the battery power supply circuit to the combination meter. Measure the voltage at combination meter connector C-04.

- (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-706](#)."

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

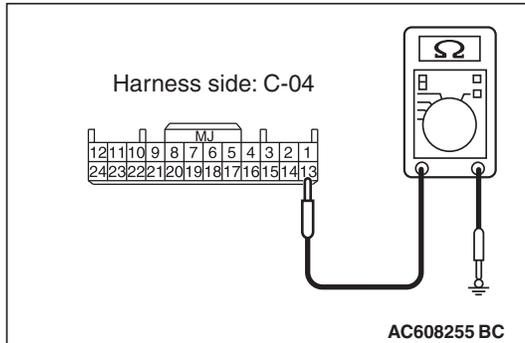
- Check the power supply line (battery supply) for open circuit and short circuit.

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.

- Check the ground wire for open circuit.

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
 - 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**

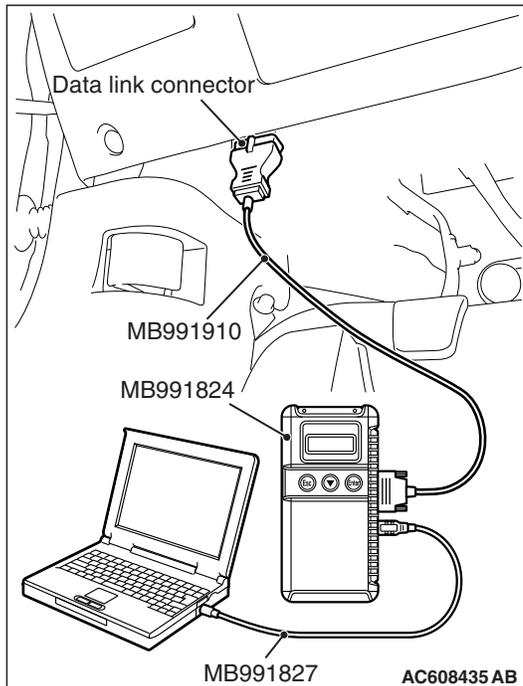
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) [P.54A-29](#)."
- (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-15](#)).

**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-32](#)).

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-22).

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**

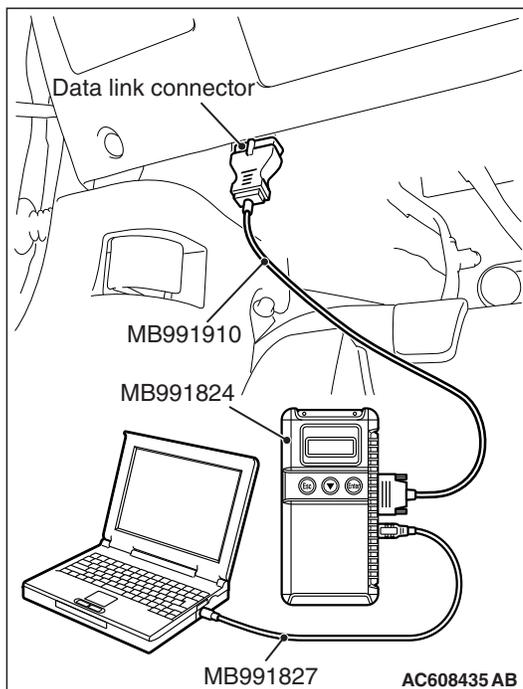
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).

**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-32).

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-48](#)).

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-48](#)). 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.)

Meter information meter switch operation tone alarm

- ON signal for combination meter 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

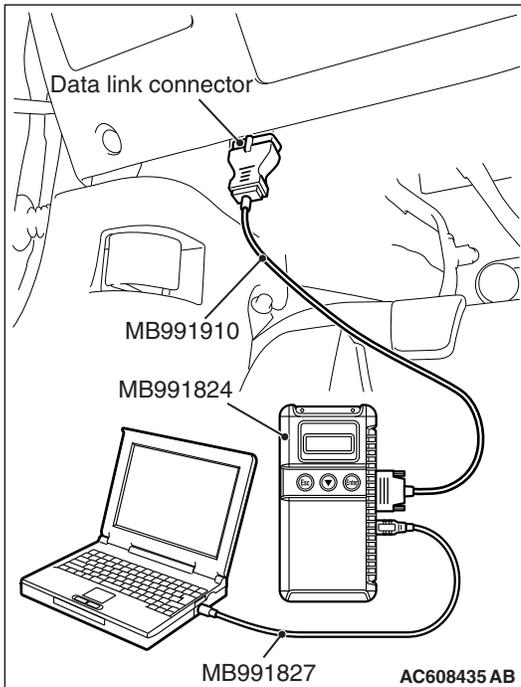
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) [P.54A-29](#)."
- (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-15](#)).



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-32](#)).

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-48](#)).
- YES <Set to the TC-SST-ECU.>** : Troubleshoot the TC-SST (Refer to GROUP 22C, Diagnosis [P.22C-15](#)).
- YES <Set to the ASC-ECU.>** : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis [P.35C-22](#)).
- YES <Set to the ETACS.>** : Troubleshoot the ETACS (Refer to [P.54A-646](#)).
- 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-23](#)).
- YES <Set to the audio.>** : Troubleshoot the audio (Refer to [P.54A-322](#)).
- YES <Set to the A/C.>** : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis [P.55-10](#)).
- NO <The diagnostic trouble code is not set.>** : Go to Step 4.

STEP 4. Check by scan tool MB991958 "Special Function"

Using scan tool MB991958, select "Test" from the special function of the combination meter. Execute the following item to check the tone alarm.

- Item 3: Buzzer(AUTO)

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

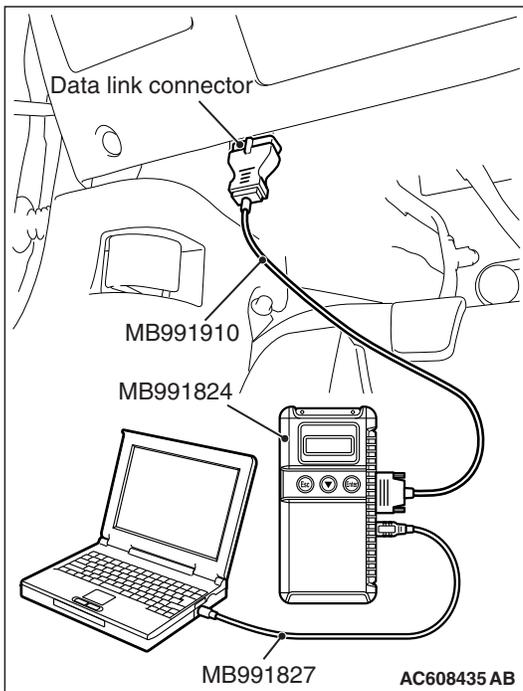
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54A-29."
- (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-15).



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-32](#)).

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-48](#)).

YES <Set to the TC-SST-ECU.> : Troubleshoot the TC-SST (Refer to GROUP 22C, Diagnosis [P.22C-15](#)).

YES <Set to the ASC-ECU.> : Troubleshoot the ASC (Refer to GROUP 35C, Diagnosis [P.35C-22](#)).

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-23](#)).

YES <Set to the SRS-ECU.> : Troubleshoot the SRS (Refer to GROUP 52B, Diagnosis [P.52B-30](#)).

YES <Set to the ETACS-ECU.> : Troubleshoot the ETACS (Refer to [P.54A-646](#)).

YES <Set to the A/C-ECU.> : Troubleshoot the A/C (Refer to GROUP 55, Auto A/C Diagnosis [P.55-10](#)).

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 10: Indicator4

(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. Check by scan tool MB991958 "Special Function"

Using scan tool MB991958, select "Test" from the special function of the combination meter. Execute the following item to check the liquid crystal display.

- Item 2: LCD(AUTO)

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the combination meter.

STEP 6. 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](#)).

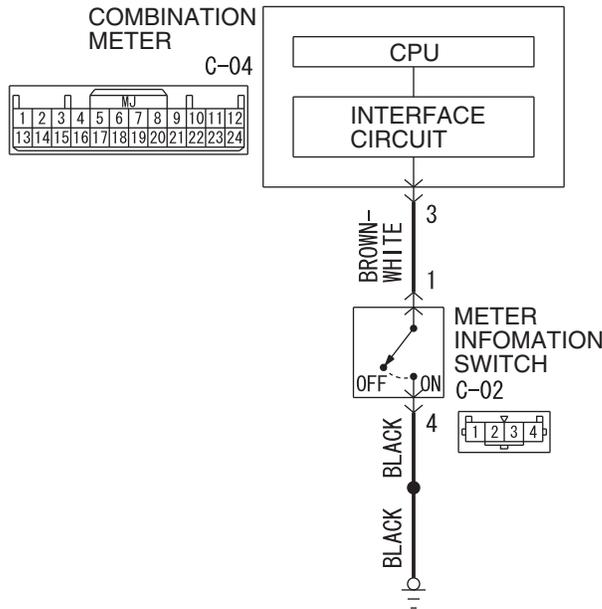
NO : Replace the combination meter.

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

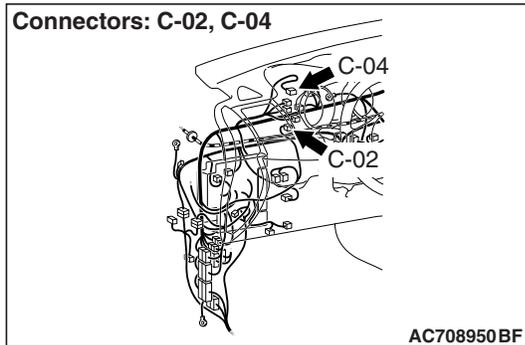
CAUTION

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



Connectors: C-02, C-04



W8G54M178A

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 meter 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)

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

Check if DTC is set to the combination meter.

⚠ CAUTION

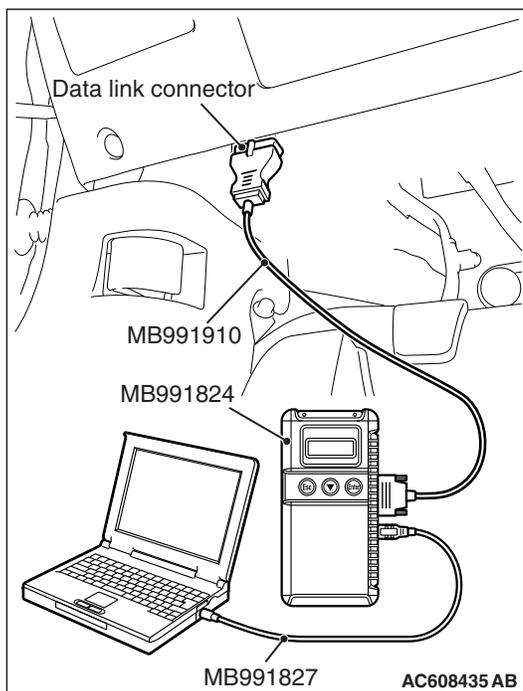
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) [P.54A-29](#)."
- (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-32](#)).

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 meter information meter switch.

Check the meter information meter switch (Refer to P.54A-100).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the meter information meter switch.

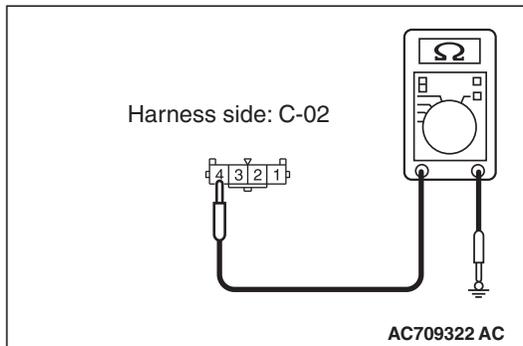
STEP 4. Measure at meter information switch connector C-02 in order to the ground circuit to the meter information switch.

- (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 meter 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

M1540201000633

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

Item No.	Check item	Check condition	Normal condition
01	Illumination	Taillight: Illuminates	ON
		Taillight: OFF	OFF
25	ASC/TCL failure indicator	Indicator illuminates	ON
		Indicator is extinguished	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	Fuel gauge unit resistance value and scan tool displayed value agree with each other. (Tolerance is $\pm 2 \Omega$)	
8A	Fuel gauge(Target)	Fuel gauge and scan tool displayed values 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 scan tool displayed change agree with each other.	
92	Trip meter A	Tripmeter 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 indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
A2	ABS indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
A4	Charge indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
A5	Check Engine indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
A7	Brake indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
A8	Driver seatbelt indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
AA	ASC/TCL Operation indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
AB	ASC/TCL OFF indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
B1	Turn signal indicator(Right)	Turn-signal light (RH): Illuminates	ON
		Turn-signal light (RH): OFF	OFF

Item No.	Check item	Check condition	Normal condition
B2	Turn signal indicator(Left)	Turn-signal light (LH): Illuminates	ON
		Turn-signal light (LH): OFF	OFF
B3	Front fog light indicator	1. Taillight: Illuminates 2. Fog light switch: ON	ON
		Fog light is not illuminated	OFF
B4	High beam indicator	Dimmer switch: ON	ON
		Dimmer switch: OFF	OFF
BA	Positionlight indicator	Taillight switch: ON	ON
		Taillight switch: OFF	OFF
D6	Head light auto leveling warning	Always	OFF
E1	Tire Pressure indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
F2	FL corner sensor indicator	Always	OFF
F3	FR corner sensor indicator	Always	OFF
F4	RL corner sensor indicator	Always	OFF
F5	RR corner sensor indicator	Always	OFF
F6	Back corner sensor	Always	OFF
F7	Cruise control indicator	Indicator illuminates	ON
		Indicator is extinguished	OFF
F8	Rear fog light indicator	Always	OFF
F10	Diesel GLOW indicator	Always	OFF
F17	AFS/ACL OFF indicator	Always	OFF
F27	PA. Seatbelt indicator	Always	OFF
F29	Inter cooler spray indicator	Always	OFF

ACTUATOR TEST TABLE

M1540201100607

ACTUATOR TEST

Item No.	Item name	Test item	Driven content or unit
1*	Speedometer	Pointer setting	-
2	Tachometer	Pointer setting	r/min
3	Fuel gauge	Status setting	ohm
5	Meter illumination	Status setting	%
7	Indicator1	By turning ON/OFF the item values, indicators can be illuminated/extinguished and tone alarm can be sounded.	ON/OFF
8	Indicator2		ON/OFF
9	Indicator3		ON/OFF
10	Indicator4		ON/OFF

*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.*

TEST (SPECIAL FUNCTION)

Item No.	Item name	Test content
2	LCD(AUTO)	The display screen will be changed in the following order. 1. A black full screen is displayed. 2. The version information is displayed. 3. A white full screen is displayed. 4. A screen with black and white gradation is displayed.
3	Buzzer(AUTO)	The tone alarm sounds.

CHECK PROCEDURE FOR EACH MULTI INFORMATION DISPLAY SCREEN

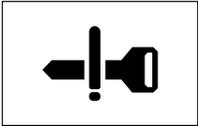
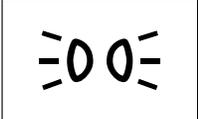
M1540201900722

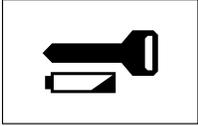
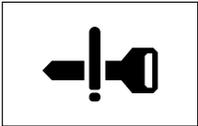
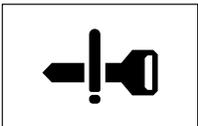
⚠ CAUTION

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.

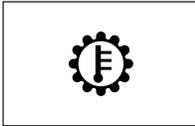
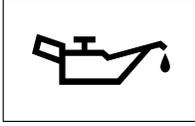
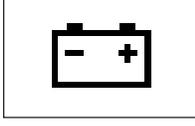
WARNING SCREEN

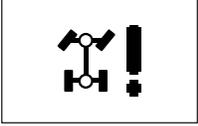
When malfunctions occur to the vehicle, the following warning screens are displayed. If these screens are not displayed normally or if they continue to be displayed even after the factor is eliminated, take measures according to the action procedure.

Display content	Message	Factor	Action procedure
 AC809615	REMOVE KEY	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-78).
 AC809612	TURN OFF LIGHTS	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-78).
 AC505679	ALARM ACTIVATING	Displayed while the theft alarm is in operation.	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-754.)

Display content	Message	Factor	Action procedure
 AC900961	-	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. <ul style="list-style-type: none"> • When the driver's door is opened • When the doors are closed and locked 	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-23).
 AC809614	KEY BATTERY LOW	Displayed when the KOS key battery is running low.	
 AC809615	KEY NOT DETECTED	<ul style="list-style-type: none"> • Displayed if carrying a KOS key with different ID code or the KOS key is outside the operative range. • Displayed when the keyless operation key is taken out of the car when the IG knob is in other than the LOCK position, and all the doors are closed. 	
 AC809615	KEY STILL IN VEHICLE	Displayed when the front door outside handle lock switch is turned to ON position while the keyless operation key is left in the vehicles.	
 AC809615	CHECK DOORS	Displayed when the door ajar prevention function is in operation.	
 AC809615	KEYLESS OPERATION SYSTEM SERVICE REQUIRED	Displayed when there is a malfunction to KOS.	

Display content	Message	Factor	Action procedure
 AC809643	LOW TIRE PRESSURE	Displayed when the tire air pressure is an abnormality. (except spare tire)	If the warning screen is not displayed normally or erased, carry out the troubleshooting for the TPMS (Refer to GROUP 42B, Diagnosis P.42B-23).
 AC809643	TPMS SERVICE REQUIRED	Displayed when the TPMS is an abnormality.	
 AC809617	BRAKE SYSTEM SERVICE REQUIRED	Displayed when the brake fluid amount is insufficient or a malfunction occurs to the brake device.	If the warning screen is not displayed normally or if the screen continues to be displayed, check the brake fluid or brake device. Refer to GROUP 35A, On-vehicle service P.35A-17 .
 AC809617	RELEASE PARKING BRAKE	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, check the parking brake. Refer to GROUP 36, On-vehicle service P.36-9 .
 AC809618	ABS SERVICE REQUIRED	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-232).
 AC900962	–	If any of the doors or liftgate 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-78 .
 AC809641	CLOSE HOOD	Displayed when the hood is open.	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-735 .
 AC809619	ENGINE OVERHEATING STOP SAFELY	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-53).

Display content	Message	Factor	Action procedure
 AC809620	TRANSMISSION OVERHEATING SLOW DOWN	Displayed when the transmission oil temperature becomes high.	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-15 .
 AC809621	TRANSMISSION SERVICE REQUIRED	Displayed when there is a malfunction to the TC-SST.	
 AC809622	FASTEN SEAT BELT	Displayed when the ignition switch is turned ON 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-81 .
 AC809623	FUEL SYSTEM SERVICE REQUIRED	Displayed when there is a malfunction to the fuel system.	If the warning screen is not displayed normally or if the screen continues to be displayed, check the combination meter diagnostic trouble code. Refer to P.54A-81 .
 AC809623	REFUEL	Displayed when the remaining fuel amount is small.	If the warning screen is not displayed normally or if the screen continues to be displayed, refuel immediately.
 AC809624	LOW OIL PRESSURE	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-53 .
 AC809625	CHARGING SYSTEM SERVICE REQUIRED	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 charging system. Refer to GROUP 16, On-vehicle service – Output current test P.16-8 and Regulated voltage test P.16-10 .
 AC809626	AIRBAG SYSTEM SERVICE REQUIRED	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, SRS Air Bag Diagnosis P.52B-30 .

Display content	Message	Factor	Action procedure
 <p>AC809630</p>	ASC SYSTEM SERVICE REQUIRED	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-232 .
 <p>AC809631</p>	4WD SYSTEM SERVICE REQUIRED	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 .
 <p>AC809632</p>	POSSIBLE ICY ROADS	Displayed with the sounding of tone alarm when the ambient temperature is 37 °F (3 °C) or less.	If the freeze warning tone alarm does not sound with the ambient temperature of 37 °F (3 °C) or less, perform the troubleshooting for the freeze warning tone alarm. Refer to P.54A-78 .
 <p>AC809634</p>	ENGINE SYSTEM SERVICE REQUIRED	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

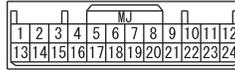
The screen displays the operation state of each system, periodic checkup timing, or timing for taking a rest during driving. If the screen display differs from the actual system operation state or if the screen is not displayed at the set timing, take measures according to the action procedure.

Display content	Message	System operation state	Action procedure
 AC809636	-	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, Symptom Chart P.35C-232 .
 AC809637	ROUTINE MAINTENANCE REQUIRED	Displayed when the set period elapses.	-
 AC809638	REST REMINDER	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	1 V or less
3	Meter information switch input	Meter information switch: ON	1 V or less
		Meter information switch: OFF	Battery positive voltage
4	Parking brake switch input	Parking brake switch: ON	1 V or less
		Parking brake switch: OFF	Battery positive voltage
5	Seat belt switch (driver's side) input	Seat belt switch (driver's side): ON	1 V or less
		Seat belt switch (driver's side): OFF	Battery positive voltage
6	Headlight leveling	During headlight leveling warning display	1 V or less
		Without headlight leveling warning display	Battery positive voltage
7 to 12	–	–	–
13	Ground (sensor)	Always	1 V or less
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	1 V or less
22	Illumination (-) output	With daytime lighting control	1 V or less
		With nighttime lighting control	In accordance with the rheostat switch operation, a pulse is generated.

Terminal No.	Check item	Check condition	Normal condition
23	Illumination (+) output	With lighting control	Battery positive voltage
24	Illumination (power supply)	Always	Battery positive voltage

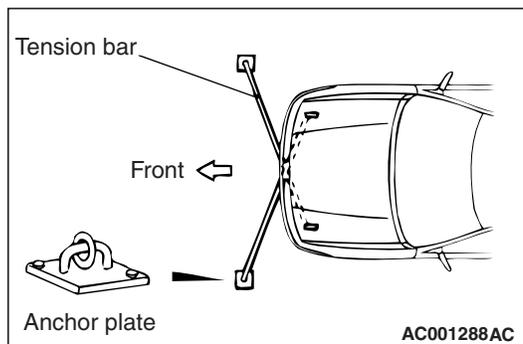
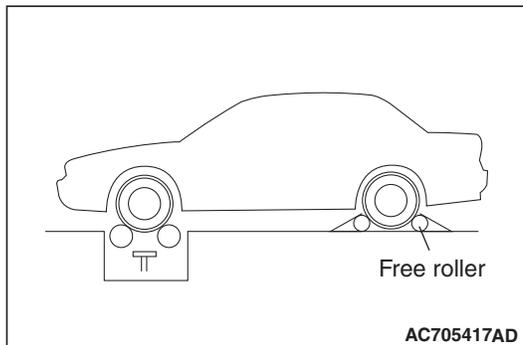
ON-VEHICLE SERVICE

SPEEDOMETER CHECK

M1540201400374

⚠ CAUTION

- Since the diagnostic trouble code may be stored in the ABS-ECU or ASC-ECU when checking the speedometer with speedometer tester, erase the diagnostic trouble code.
 - Do not accelerate or decelerate suddenly during servicing work.
1. Adjust the pressure of tires to the specified level (Refer to GROUP 31, On-vehicle Service P.31-7).
 2. Where applicable, ensure that the TPMS warning light is not illuminating or flashing.
 3. Press the ASC OFF switch for 3 seconds or more to stop the ASC operation.
 4. Set the vehicle onto a speedometer tester and place the rear wheels on a free roller.



5. 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.
6. 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.

7. Check if the speedometer indicator range is within the standard values.

Standard value <Except vehicles for CANADA>:

Standard indication {mph (km/h)}	Indication tolerance {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)}	Indication tolerance {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)

8. 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-22](#)).
 - Combination meter (refer to [P.54A-32](#)).

TACHOMETER CHECK

M1540201500177

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

NOTE: Values in () indicates the reference value.

Standard value:

Engine speed (r/min)	Indication tolerance (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

M1540201600709

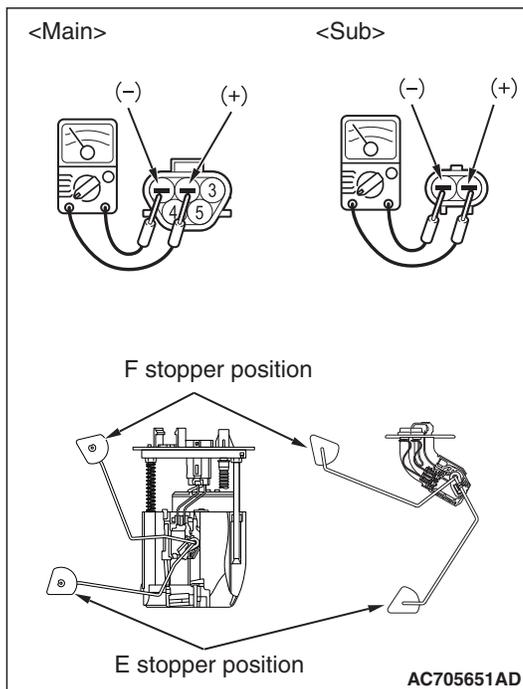
NOMINAL RESISTANCE OF THE FUEL LEVEL SENSOR

1. Remove the fuel pump module (Refer to GROUP 13B –Fuel Tank P.13B-10).
2. 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

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

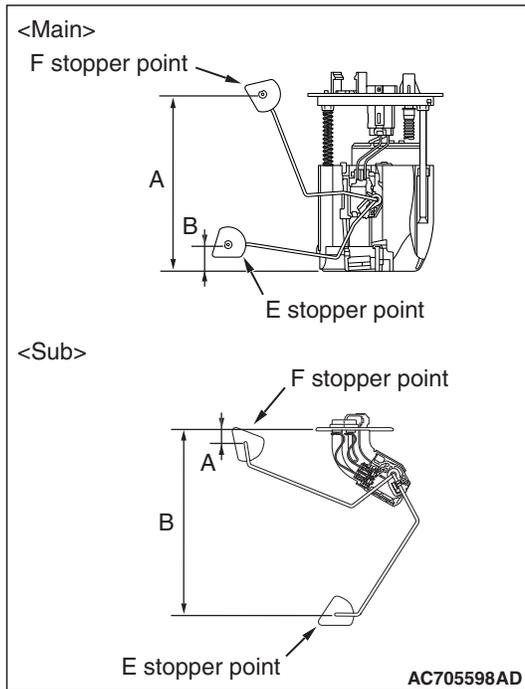


FUEL LEVEL SENSOR FLOAT HEIGHT

1. Remove the fuel pump module (Refer to GROUP 13B –Fuel Tank P.13B-10).
2. 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.

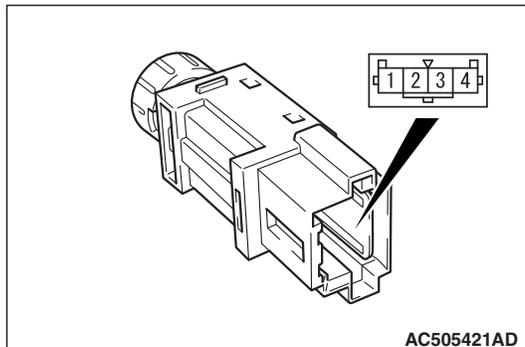
Standard value:

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)



METER INFORMATION 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**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

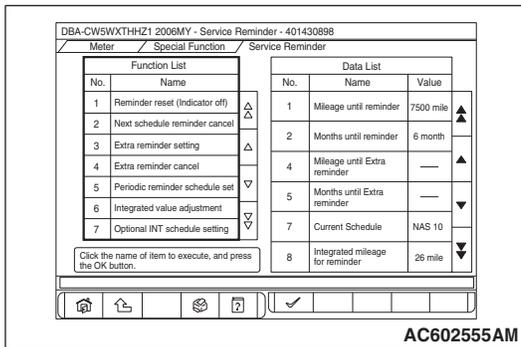
HOW TO OPERATE THE SCAN TOOL MB991958

⚠ 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 meter information 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-102](#)).
- 2 Next schedule reminder cancel (Refer to [P.54A-103](#)).
- 3 Extra reminder setting (Refer to [P.54A-104](#)).
- 4 Extra reminder cancel (Refer to [P.54A-104](#)).
- 5 Periodic reminder schedule set (Refer to [P.54A-105](#)).
- 6 Integrated value adjustment (Refer to [P.54A-106](#)).
- 7 Optional INT schedule setting (Refer to [P.54A-106](#)).



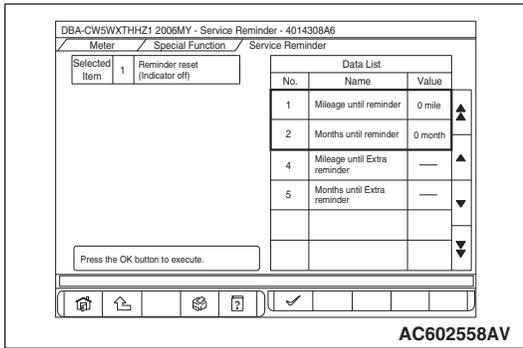
1. REMINDER RESET (INDICATOR OFF)

⚠ 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.

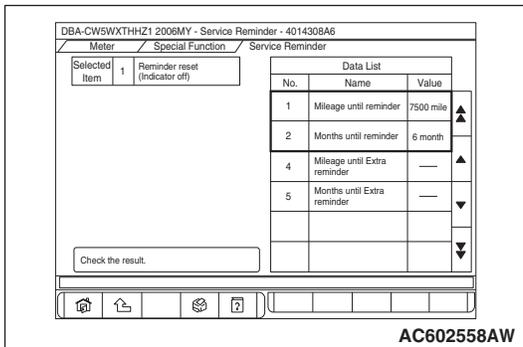
NOTE: In addition to the operation of the scan tool MB991958, the service reminder warning indicator can be cancelled by operating the meter information switch on the combination meter. Refer to [P.54A-108](#).



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.



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

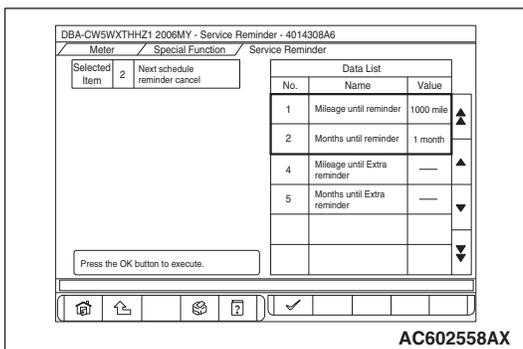
If the next warning period is cancelled by mistake, the cancelled warning period can be restored by executing "5 Periodic reminder schedule set" to set a schedule different from the current one once, and then returning it to the previous schedule.

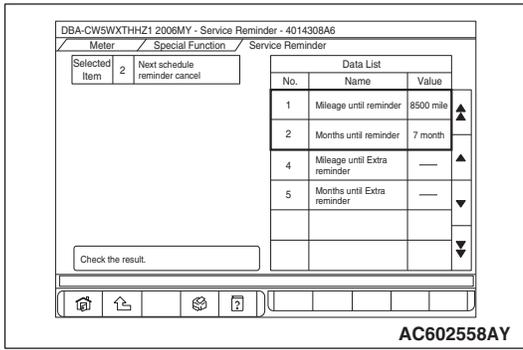
The next warning period is cancelled, and its following warning period can be set.

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.

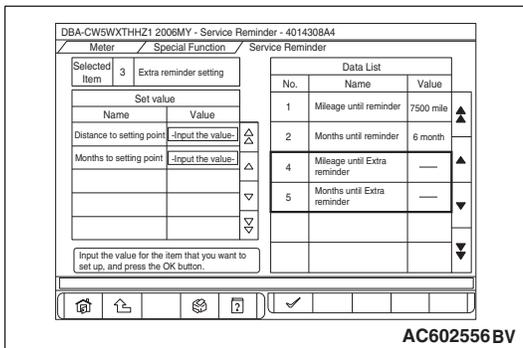




AC602558AY

- 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."



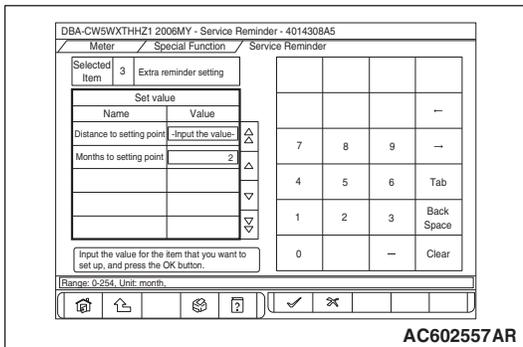
AC602556BV

3. EXTRA REMINDER SETTING

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

- 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.

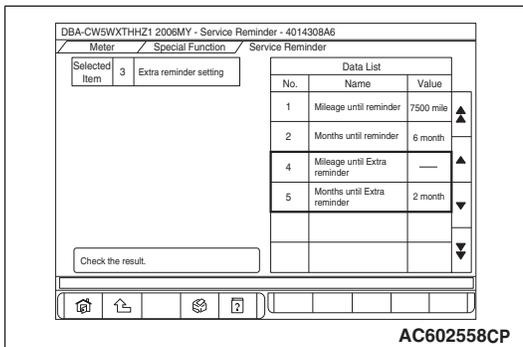


AC602557AR

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

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

- Press the "OK" button.



AC602558CP

- 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.

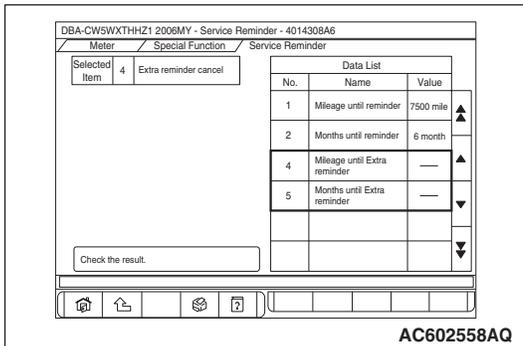
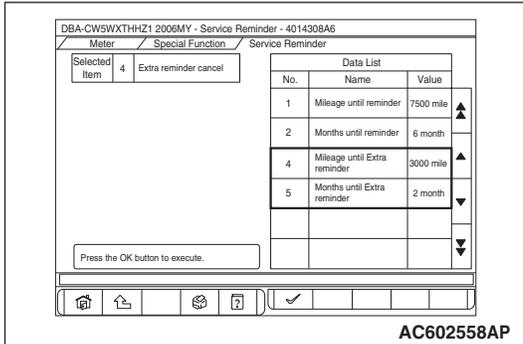
1. On the "Service Reminder" screen, select "4 Extra reminder cancel."

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.

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

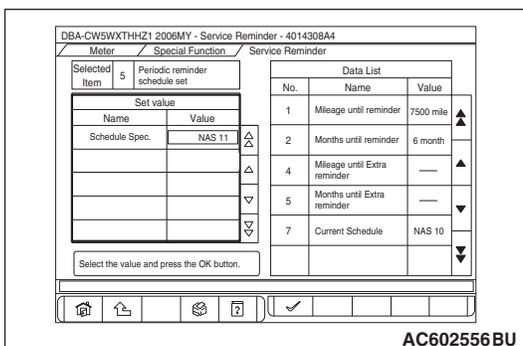
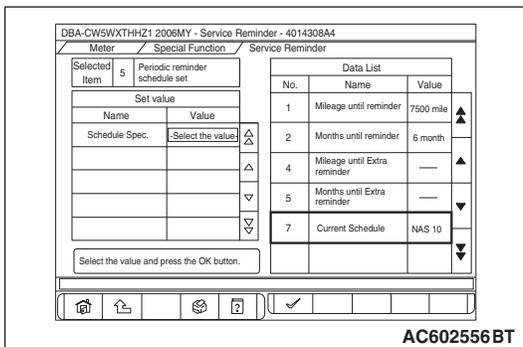
The service reminder schedule can be changed.

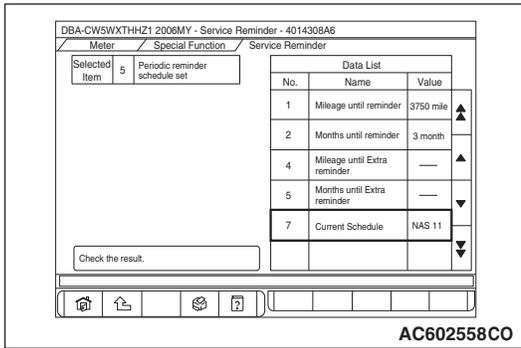
NOTE: In addition to the operation of the scan tool MB991958, the schedule can be changed by operating the meter information switch on the combination meter. Refer to P.54A-108.

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."

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





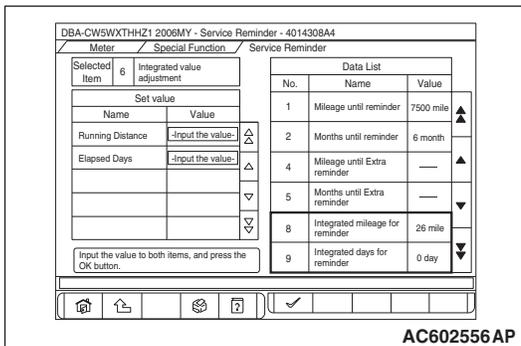
4. The schedule is changed.

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.

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

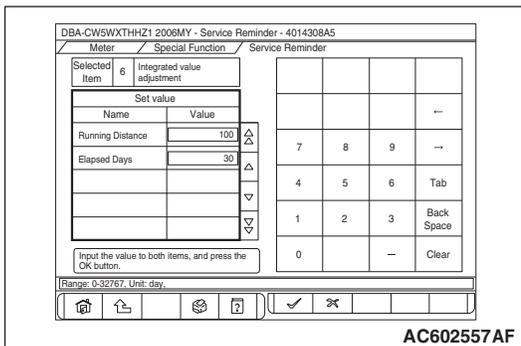


NOTE: The screen indicates that the current mileage and elapsed days (Nos. 8 and 9 in the data list) are "26 mile" and "0 day."

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

NOTE: Always input both the mileage and elapsed days.

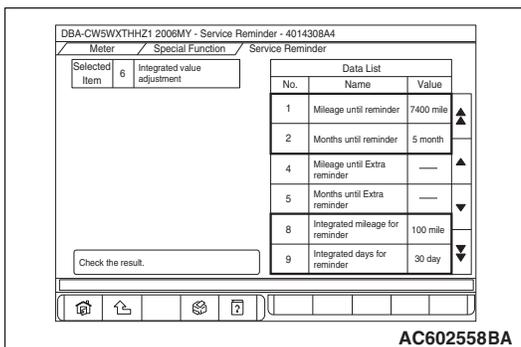
3. Press the "OK" button.



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.

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.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
8	Integrated mileage for reminder	26 mile
9	Integrated days for reminder	0 day
12	Optional interval for mileage	---
13	Optional interval for month	---

AC602556AK

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.

No.	Name	Value	
7	8	9	---
4	5	6	Tab
1	2	3	Back Space
0	---	Clear	

AC602557AG

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).

No.	Name	Value
1	Mileage until reminder	---
2	Months until reminder	2 month
8	Integrated mileage for reminder	26 mile
9	Integrated days for reminder	0 day
12	Optional interval for mileage	---
13	Optional interval for month	2 month

AC604401AC

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

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 meter information 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 meter information switch, the warning period is displayed on the multi information display.
3. Press the meter information switch once for 1.2 seconds or longer.
4. The service reminder indicator flashes.
5. While the service reminder indicator flashes, press the meter information 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 meter information switch, the warning period is displayed on the multi information display.
3. Press the meter information switch once for 1.2 seconds or longer.
4. The service reminder indicator flashes.
5. While the service reminder indicator flashes, press the meter information 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 meter information 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 meter information switch is pressed for less than 1.2 seconds, the schedule is shifted, and when the meter information 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 meter information 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 meter information switch operation, the service reminder screen is not displayed.

COMBINATION METER

REMOVAL AND INSTALLATION

M1540201700290

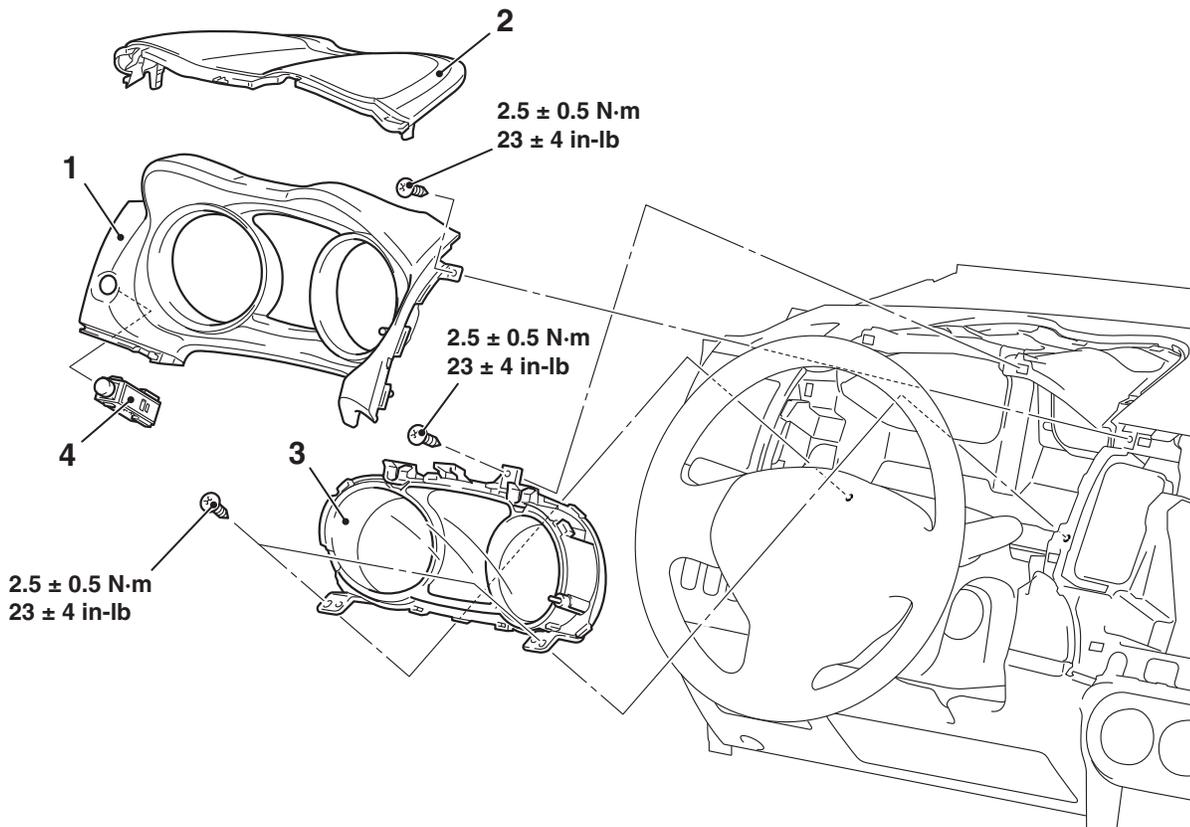
CAUTION

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-101](#). 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-8](#)).
- Instrument panel air outlet garnish lower (LH) (Refer to GROUP 52A, Instrument lower Panel [P.52A-9](#)).



AC709245AB

Removal Steps

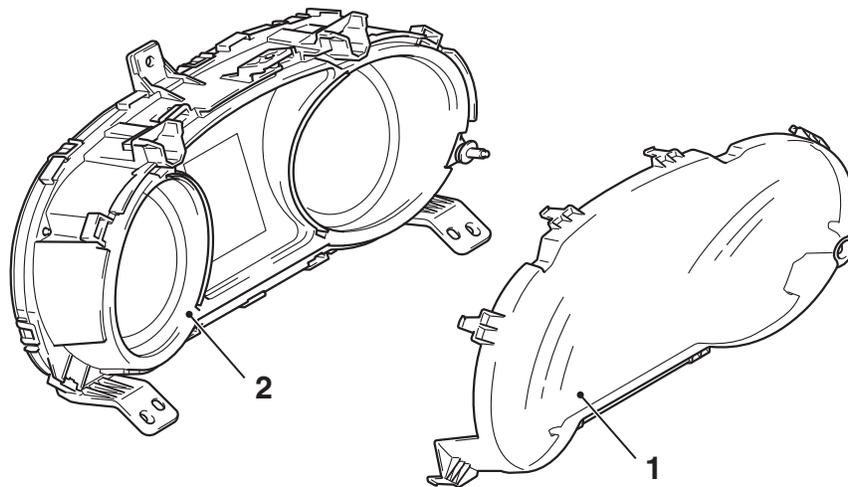
1. Combination meter bezel
2. Instrument meter cluster panel

Removal Steps (Continued)

3. Combination meter assembly
4. meter information switch

DISASSEMBLY AND ASSEMBLY

M1540201800220



AC707877AC

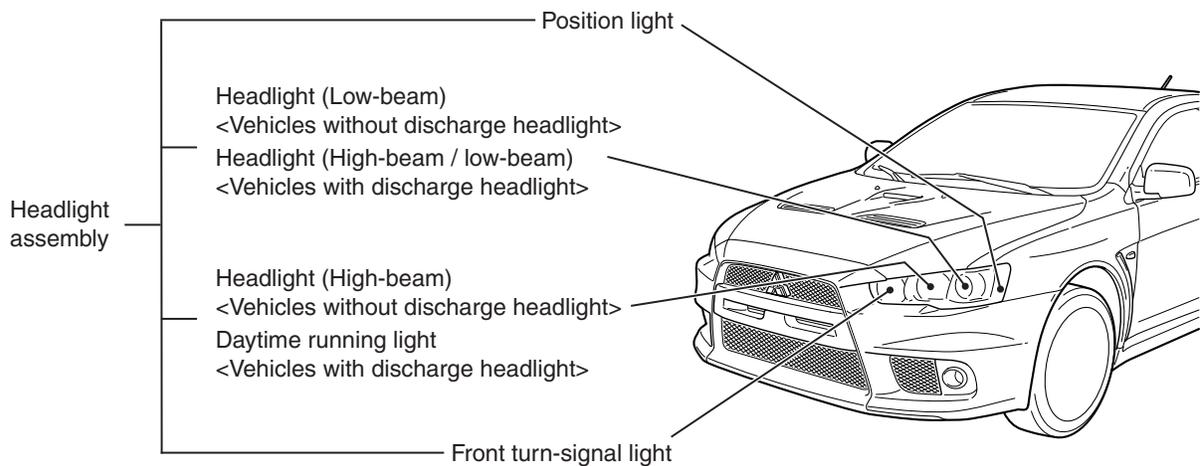
Disassembly steps

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.

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

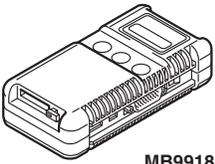
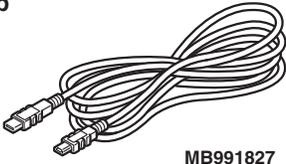
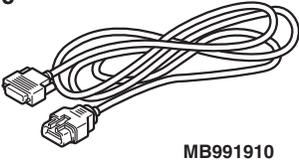
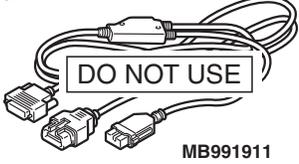
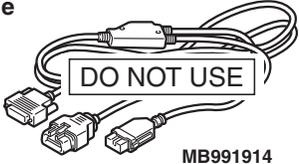
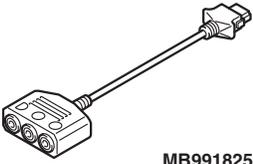
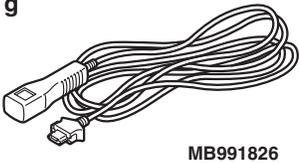
Be careful with the following items as resin lenses are used in the headlight assembly.

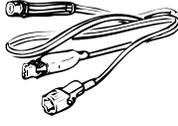
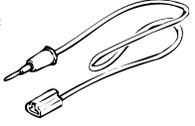
- Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.

- 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

M1540104400310

Tool	Tool number and name	Supersession	Application
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826</p> <p>M.U.T.-III sub-assembly</p> <p>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 Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>DTC, data list and actuator test check.</p>

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

SERVICE PRECAUTIONS <DISCHARGE HEADLIGHT>

Before checking the discharge headlight related parts, be sure to read the following warnings and precautions carefully, and then perform necessary operations.

 DANGER

- ***Do not touch the socket and the connector while the headlights are on. High voltage is applied to the bulb socket and connector during headlight operation. The operator may be burnt or dead due to an electric shock by high voltage.***
- ***Do not attempt to use a tester to check them. If the bulb socket and connectors should be inspected using a tester, the operator may be burnt or dead due to an electric shock by high voltage.***
- ***Do not turn ON the headlights while the controller or the bulb is removed. If the headlights are turned ON with the controller or bulb removed, the operator may get burned by the high temperature of the bulb. The operator may be burnt or dead due to an electric shock by high voltage.***
- ***Before service work, turn the lighting switch OFF and disconnect the battery terminal and the controller connector in a dry place. Do not touch the components with wet hands. If you work on the components with wet hands or in wet conditions, the operator may be burnt or dead due to an electric shock by high voltage.***

 WARNING

Do not illuminate the bare headlight bulb. (Do not illuminate the headlight using other than the vehicle power supply.) If the headlight bulb illuminates without fitting it in the headlight unit, it may burst due to rise in its internal pressure.

 CAUTION

When reusing the controller with the discharge headlight damaged, observe the inspection procedures for the related parts of the discharge headlight before determining the reusability of the controller. If you fail to observe "How to check discharge headlight components," the vehicle may be damaged.

**1. CHECKING PROCEDURE FOR DISCHARGE HEADLIGHT RELATED PARTS
(INSPECTION PROCEDURE WHEN REUSING THE CONTROLLER)****1 –1 VISUAL CHECK OF CONTROLLER (CASE)**

If any of the check items below are found, replace the controller.

Items to be checked	Why the controller should be replaced
Obvious deformation (warping, twisting, dents, nicks, chipped edges) of controller case	The printed circuit board or the element(s) may be cracked
Damaged connector (chipped or cracked plastics, or deformed terminal)	The damaged part(s) may cause poor connection or short circuit.

1 –2 CHECK OF WIRING HARNESS BETWEEN CONTROLLER AND BULB

If any of the check items below are found, replace the wiring harness between the controller and the bulb.

 DANGER

If the wiring harness between the controller and the bulb is damaged, always replace it. Attempting to repair the wiring harness may cause a melted harness wire, or may result in a burn or death due to an electric shock by high voltage.

Items to be checked	Why the controller should be replaced
Wiring harness shield damaged	Abnormal noise may cause.
Damaged connector (chipped or cracked plastics, or deformed terminal)	The damaged part(s) may cause poor connection or short circuit.

1 –3 CHECK OF CONTROLLER OPERATION

If any of the abnormalities below are found, replace the controller.

NOTE: Ensure that the headlight control system and its circuit (power supply control at engine start and during steady illumination, high-voltage generating circuit, etc.) are working normally. Then, check whether any internal breakage has occurred in the controller. However, some internal breakage may not be found.

Check item (Check of illumination operation)
With the headlight bulb in the cold state (with the light turned off for 10 minutes or more) and in warm state (after the light is illuminated for 15 minutes or more, it is turned off for 1 minute), turn ON and OFF the headlight several times, and then check that the headlight illuminates without fail.
Observe the headlights until they illuminate steadily (approximately 5 minutes after switching them on). Check that the headlights do not flash or flicker.
Turn on the headlights for 30 minutes. Check that the brightness is the same between right and left lights.
Turn on the headlights for 30 minutes. Check that the headlights do not flash or flicker for 30 minutes.

2. Troubleshooting procedure for discharge headlight (diagnostic procedure for malfunctions)

1. Check that the connectors are connected securely and the fuse has not been blown.
2. Before troubleshooting, read through the "Symptom chart" to understand what and how you should do. Follow all the procedures carefully.
3. The components should be checked with their connectors disconnected.

SYMPTOM CHART

Item to be checked	Trouble symptom		
	The headlights do not illuminate.	The headlights flicker.	The headlights are dim.
Fuse	1	-	-
Wiring harness and connector	2	1	-
Column switch	3	-	-
Bulb	4	2	1
Controller	5	3	2
ETACS-ECU	6	4	-

NOTE:

1. The numbers indicate the sequence in which the component is checked.
2. For the troubleshooting of other than the above, refer to Trouble Symptom Chart [P.54A-140](#).
3. If ETACS-ECU fails, only the low-beam headlights will illuminate as a fail-safe measure.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-7](#).

M1540104200167

DIAGNOSTIC FUNCTION

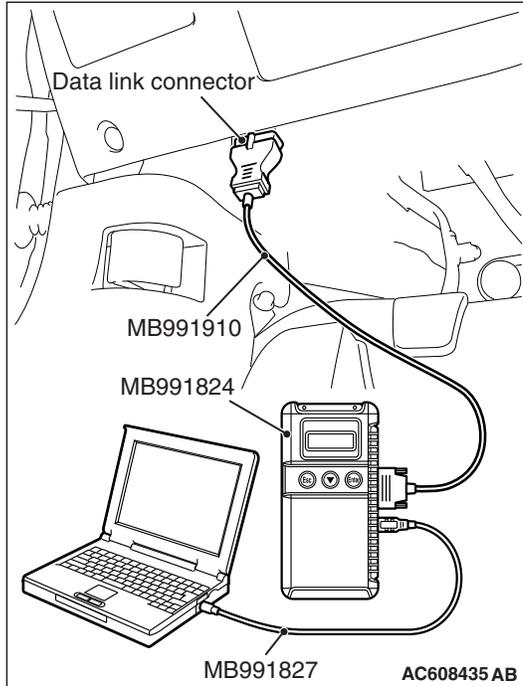
HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

M1540104300090

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." to read the DTC.
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-120
B16A3	Turn-signal light (LH) short circuit	P.54A-125
B16A4	Blown turn-signal light (RH) bulb	P.54A-129
B16A5	Turn-signal light (RH) short circuit	P.54A-134

LIN

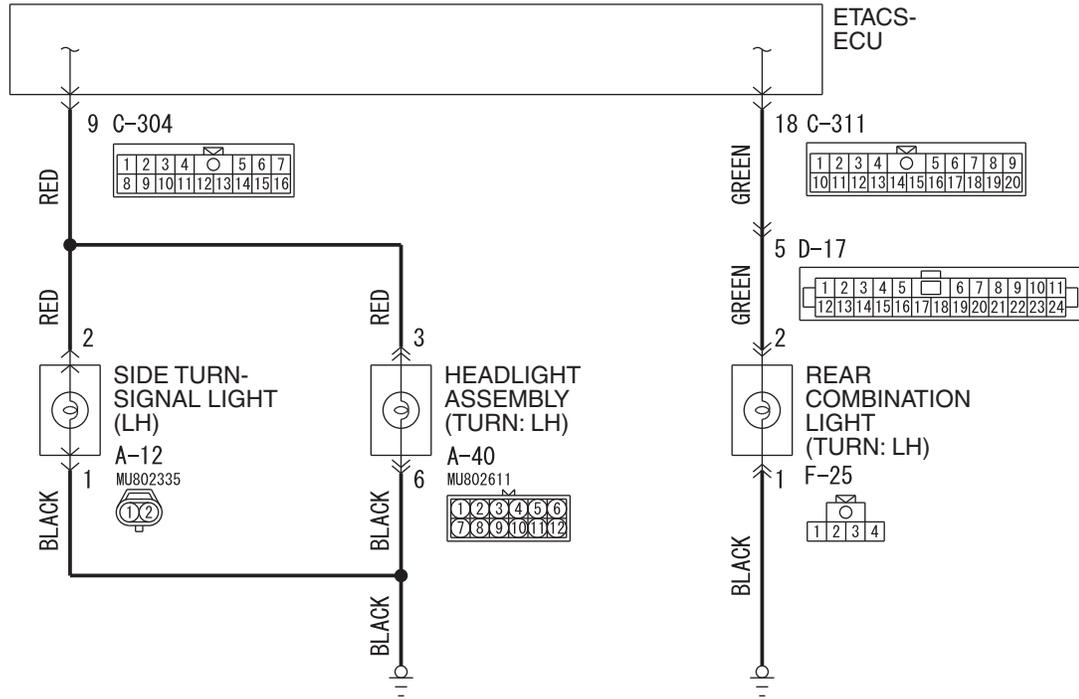
Diagnostic trouble code No.	Diagnostic item	Reference page
L0432	RLS* RS adaptation error	P.54A-137
L0434	RLS* rain sensor error	P.54A-139
L0436	RLS* light sensor error	

*NOTE: *: Rain light sensor (Lighting control sensor)*

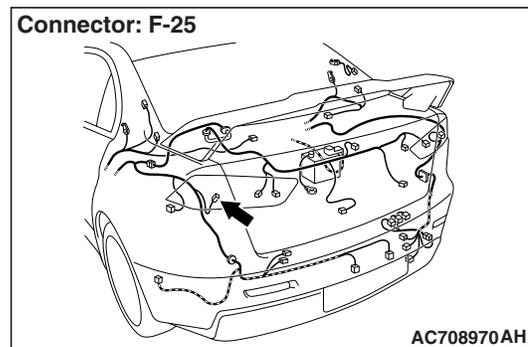
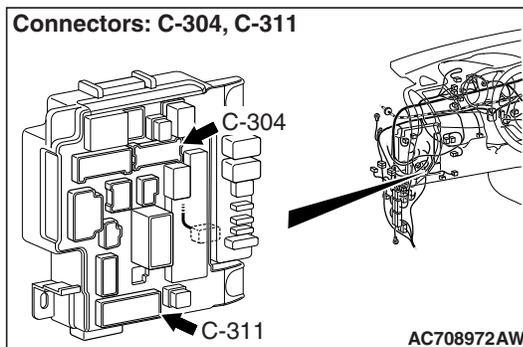
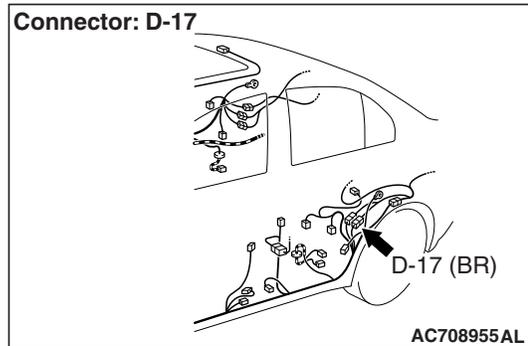
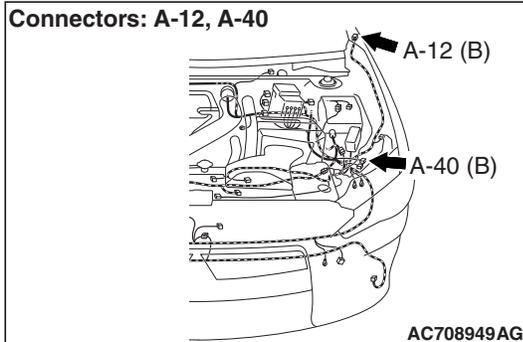
DIAGNOSTIC TROUBLE CODE PROCEDURES

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

Turn-Signal Lights (LH) Circuit



W8G54M150A



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.

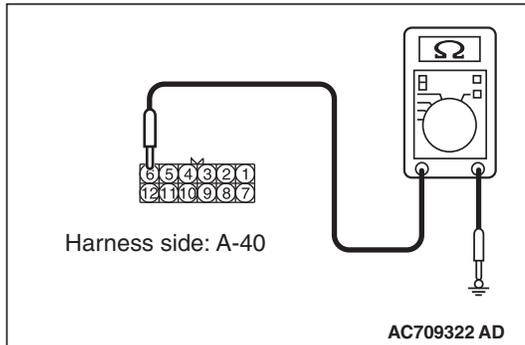
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

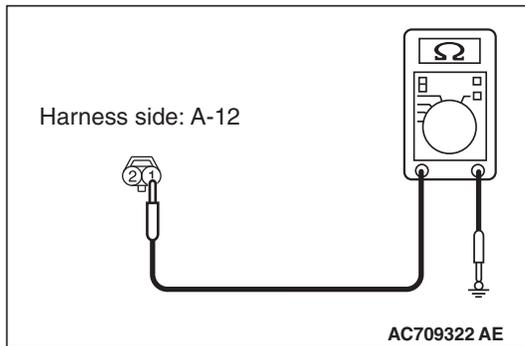
STEP 3. Resistance measurement at headlight assembly (LH) connector A-40 <front>, side turn-signal light (LH) connector A-12 <side>, and rear combination light (LH) connector F-25 <rear>.

- (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>



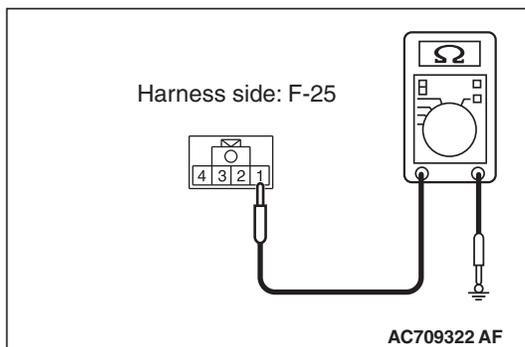
- Measure the resistance between rear combination light (LH) connector F-25 (terminal 1) and body ground. <Rear>

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

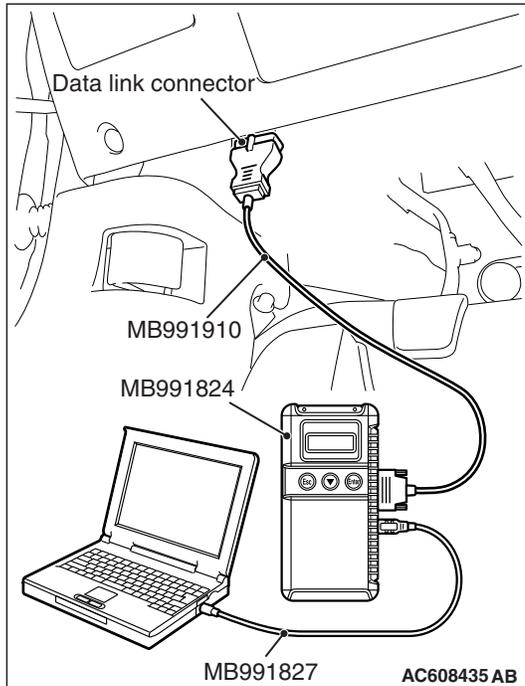
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool [P.54A-117](#)."
- (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?

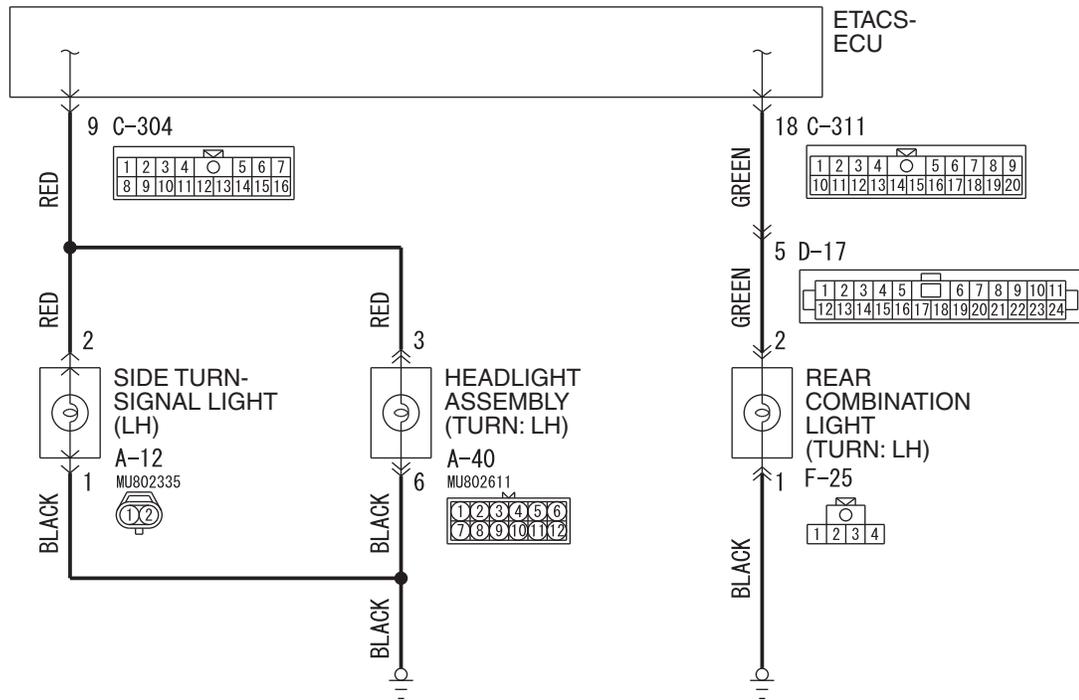
YES : Replace the ETACS-ECU.

NO : The procedure is complete.



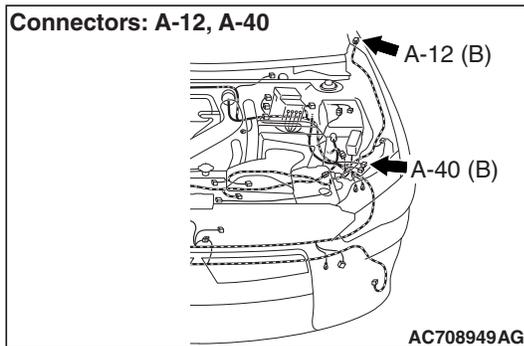
DTC B16A3: Turn-signal light (LH) short circuit

Turn-Signal Lights (LH) Circuit

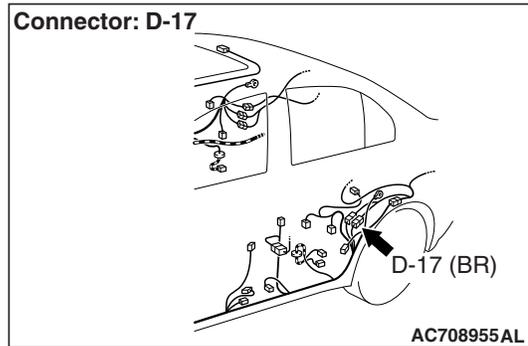


W8G54M150A

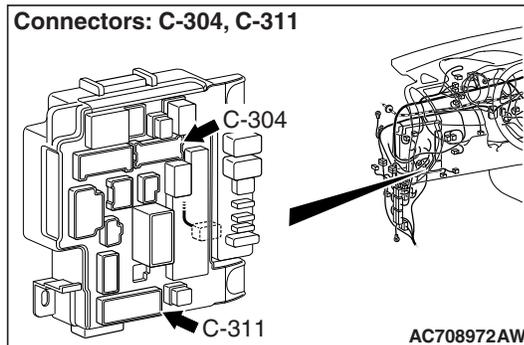
Connectors: A-12, A-40



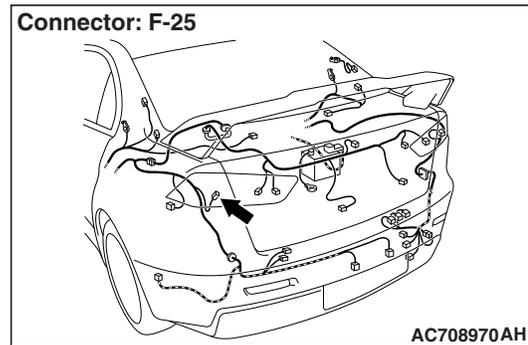
Connector: D-17



Connectors: C-304, C-311



Connector: F-25



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

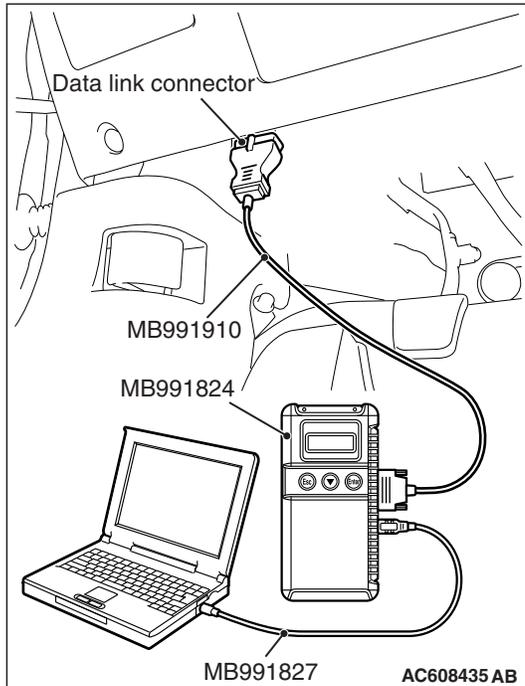
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool [P.54A-117](#)."
- (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?

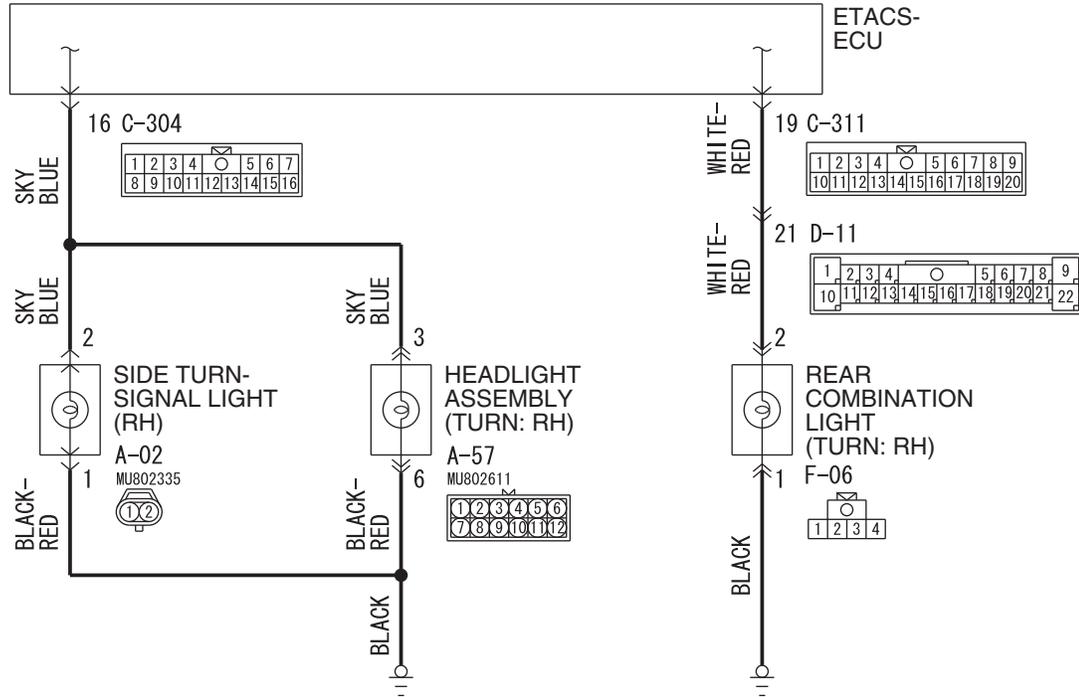
YES : Replace the ETACS-ECU.

NO : The procedure is complete.

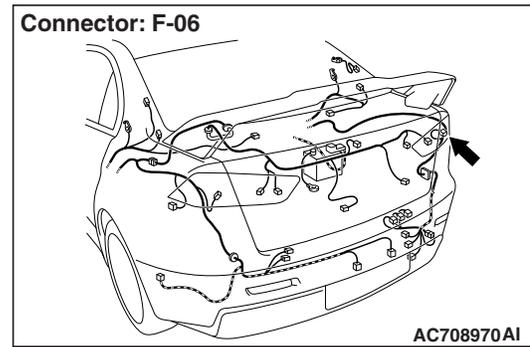
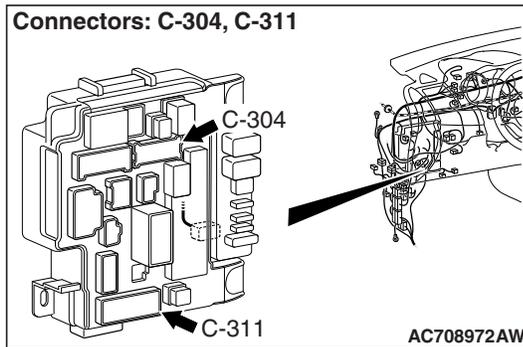
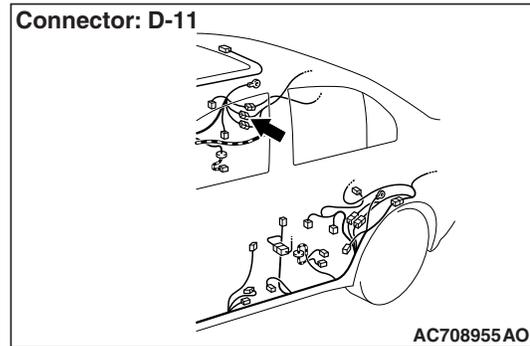
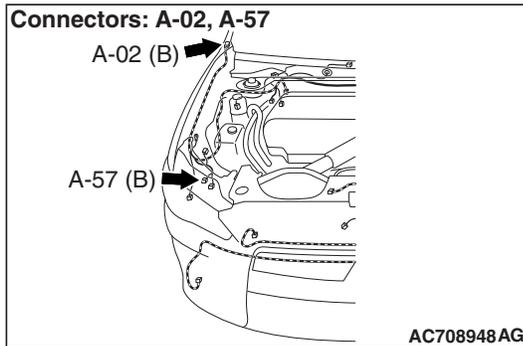


DTC B16A4: Blown turn-signal light (RH) bulb

Turn-Signal Lights (RH) Circuit



W8G54M151A



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?

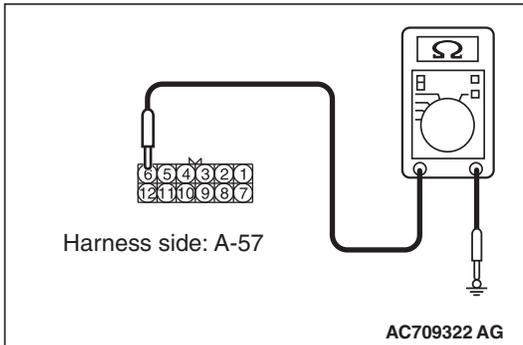
YES : Go to Step 3.

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

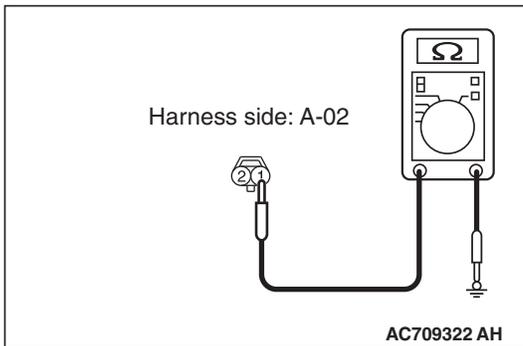
STEP 3. Resistance measurement at headlight assembly (RH) connector A-57 <front>, side turn-signal light (RH) connector A-02 <side>, and rear combination light (RH) connector F-06 <rear>.

- (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>



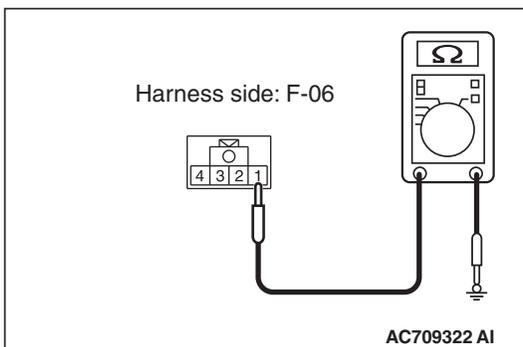
- Measure the resistance between the rear combination light (RH) connector F-06 (terminal 1) and body ground. <Rear>

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.

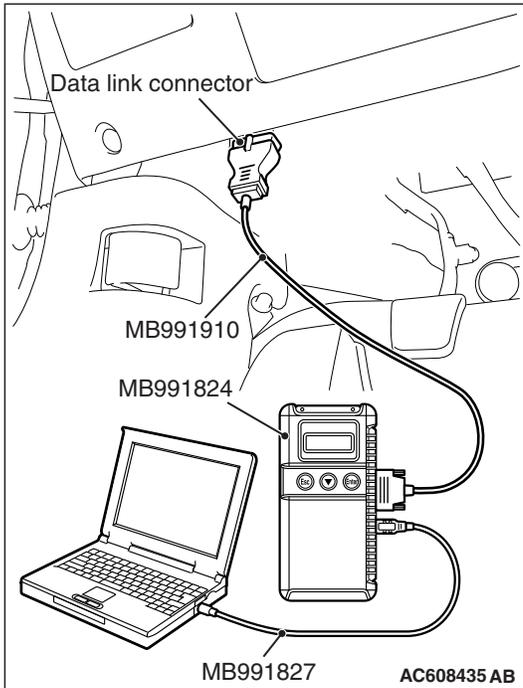
⚠ CAUTION

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-117](#)."
- (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.

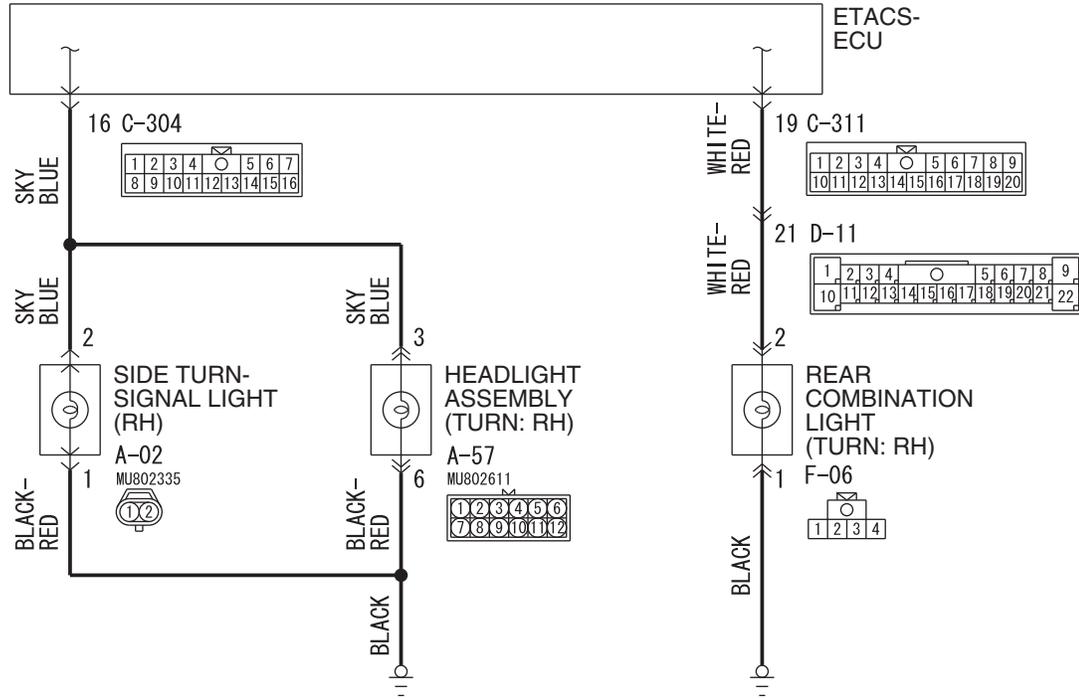
Q: Is the DTC set?

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

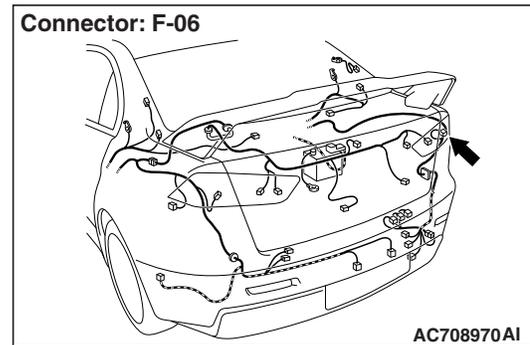
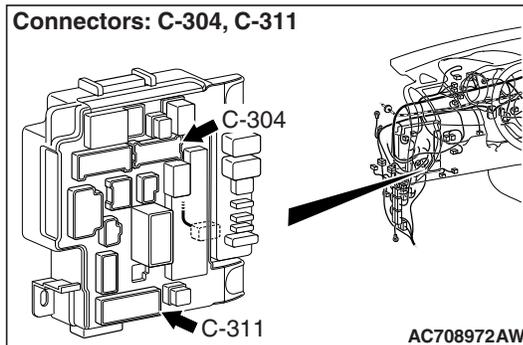
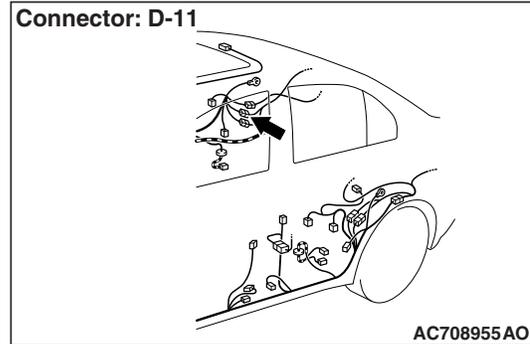
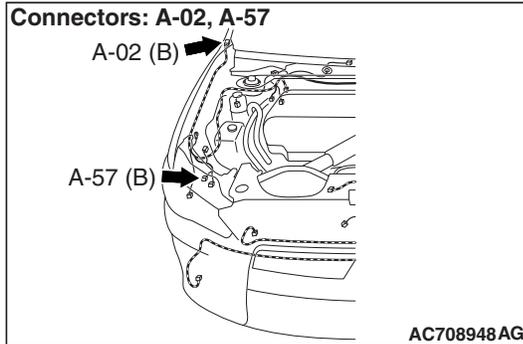


DTC B16A5: Turn-signal light (RH) short circuit

Turn-Signal Lights (RH) Circuit



W8G54M151A



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

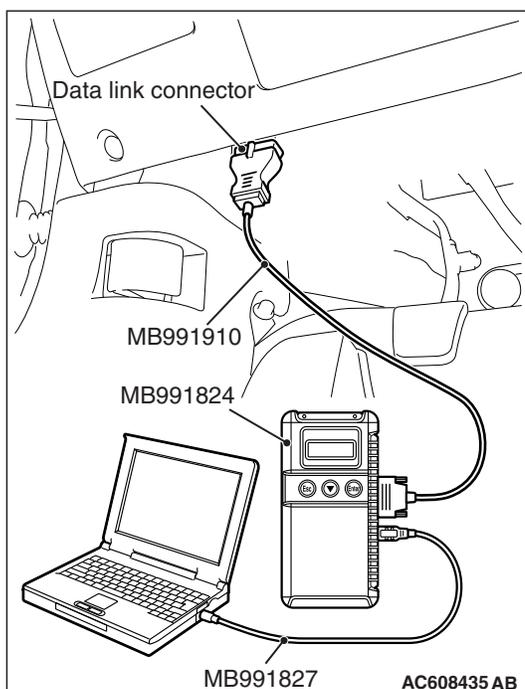
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool [P.54A-117](#)."
- (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-117."

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

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

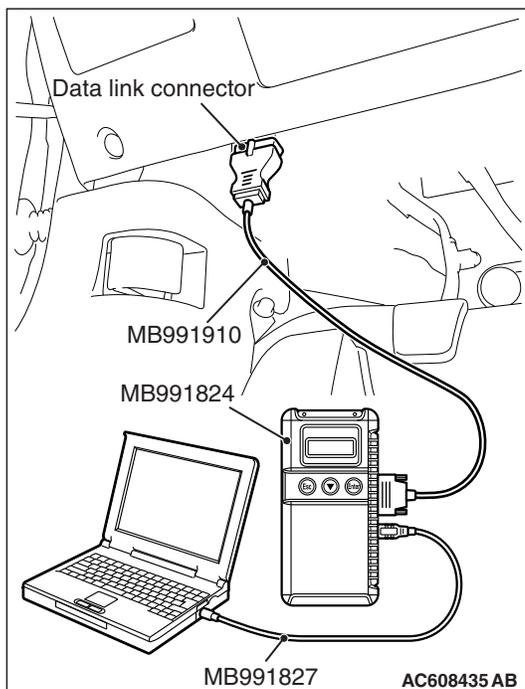
(3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.

(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.



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-18](#))

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.51-84](#)>.
- (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

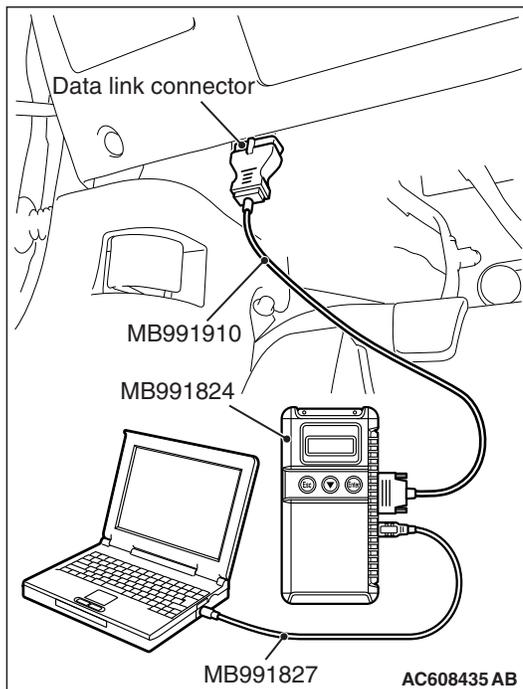
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool [P.54A-117](#)."
- (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

Trouble symptom		Inspection Procedure No.	Reference page	
Headlight and taillight	None of headlights (low-beam) illuminates.	1	P.54A-141	
	None of headlights (high-beam) illuminates.	2	P.54A-146	
	The headlights illuminate at low-beam (high-beam does not illuminate) regardless of the lighting switch positions.	3	P.54A-150	
	Headlights do not illuminate when the passing switch is operated.	4	P.54A-152	
	One of the headlights does not illuminate.	5	P.54A-154	
	High-beam indicator light does not illuminate normally.	6	P.54A-158	
	The headlight automatic shutdown function does not work normally.	7	P.54A-160	
	Daytime running light function does not work normally.	Halogen type headlight	8	P.54A-163
		Discharge type headlight		P.54A-167
	One of the tail lights, side marker lights or the license plate lights does not illuminate.	9	P.54A-174	
	The auto light function does not work normally.	10	P.54A-180	
Turn-signal light	None of turn-signal lights illuminates.	11	P.54A-182	
	The comfort flashing function does not work normally.	12	P.54A-184	
	The turn-signal indicator lights do not illuminate.	13	P.54A-186	
The welcome light function does not work normally.		14	P.54A-188	
The coming home light function does not work normally.		15	P.54A-190	

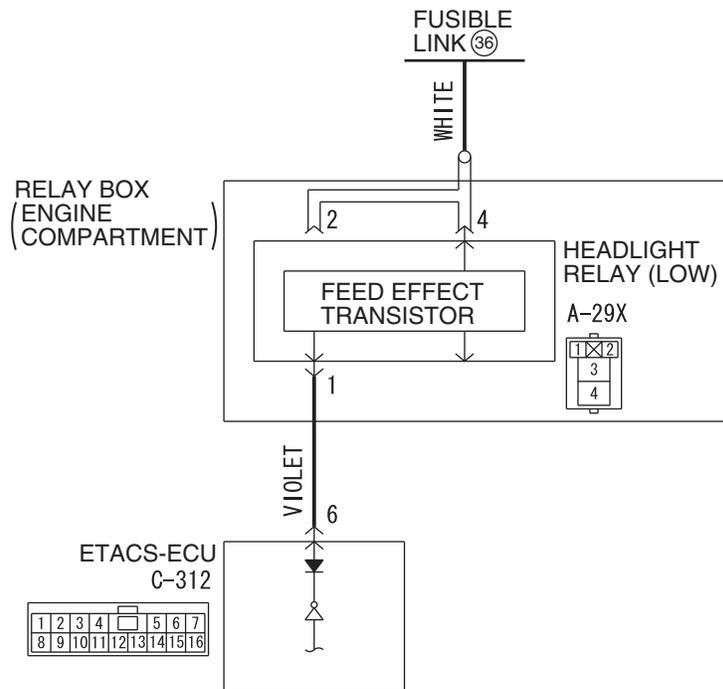
SYMPTOM PROCEDURES

Inspection Procedure 1: None of headlights (low-beam) illuminates.

CAUTION

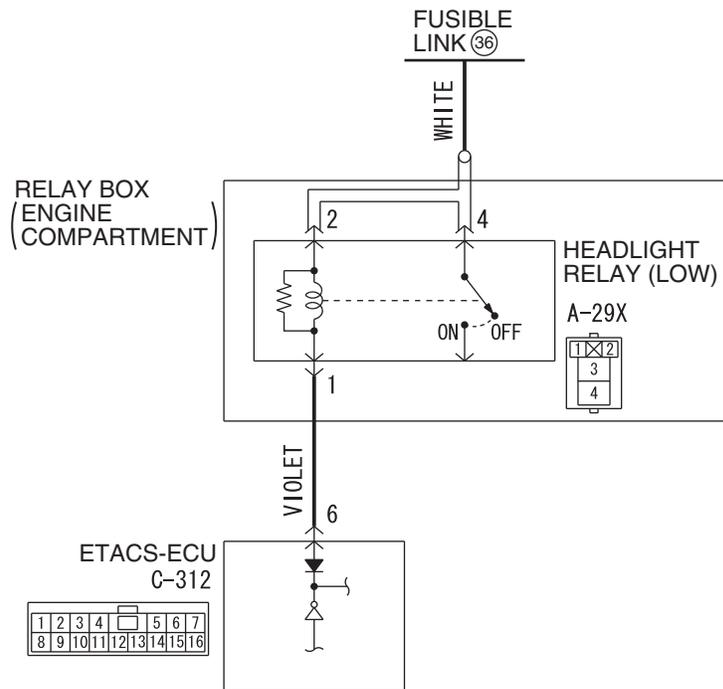
Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Headlight Relay (Low-Beam) Circuit <Halogen Type>

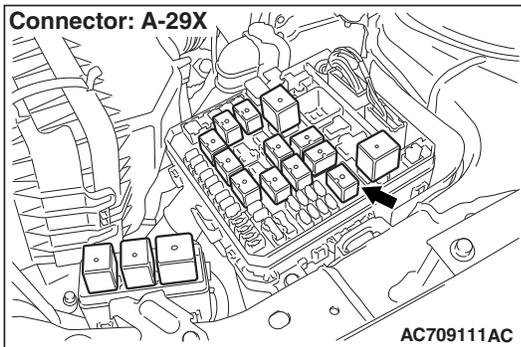


W8G54M152A

Headlight Relay (Low-Beam) Circuit <Discharge Type>



W8G54M153A

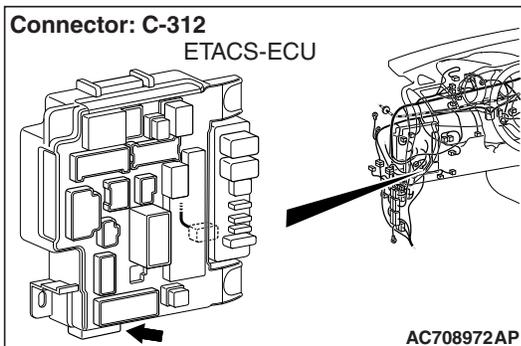


TECHNICAL DESCRIPTION (COMMENT)

If none of headlights (low-beam) illuminates, 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)
 - 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

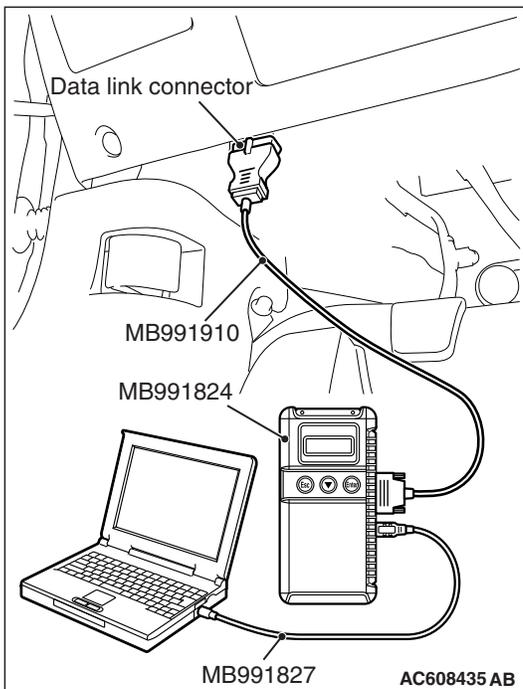
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (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-646.

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: Does 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-703.

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.

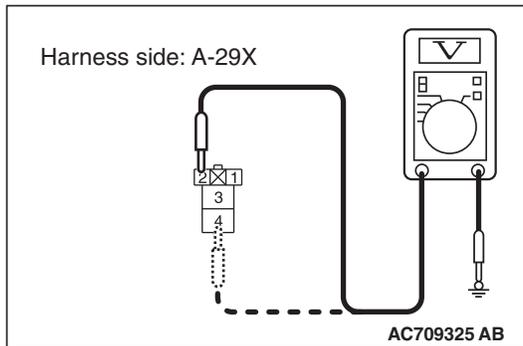
(2) Measure the voltage between terminal 2 or 4 and ground.

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.

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: Do the headlights (low-beam) 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-208](#).

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: Do headlights (low-beam) 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](#)).

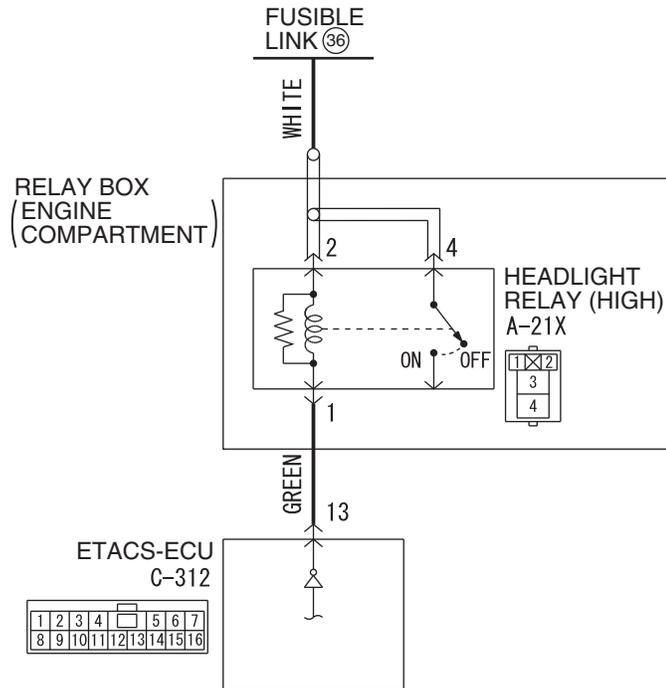
NO : Replace the ETACS-ECU.

Inspection Procedure 2: None of headlights (high-beam) illuminates.

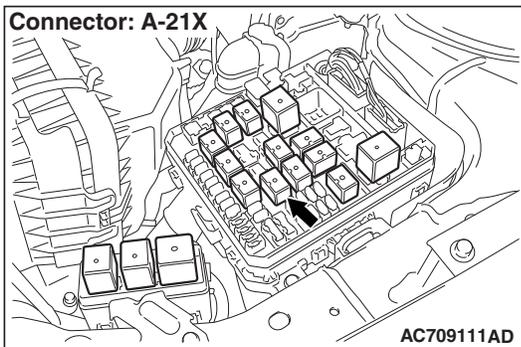
CAUTION

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



W8G54M154A

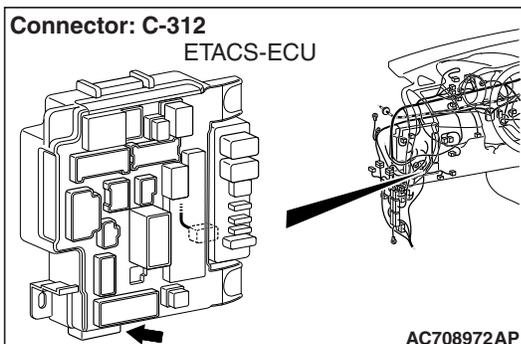


TECHNICAL DESCRIPTION (COMMENT)

If none of headlights (high-beam) illuminates, 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



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

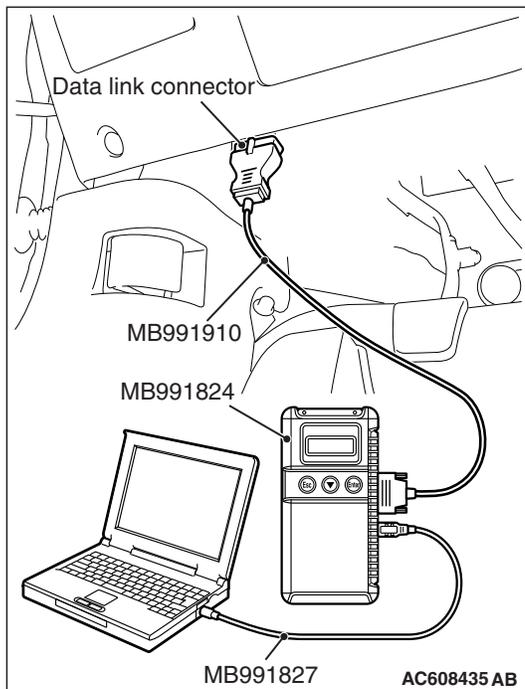
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (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-646.

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: Does 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-703](#).

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-208](#).

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: Do the headlights (high-beam) 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

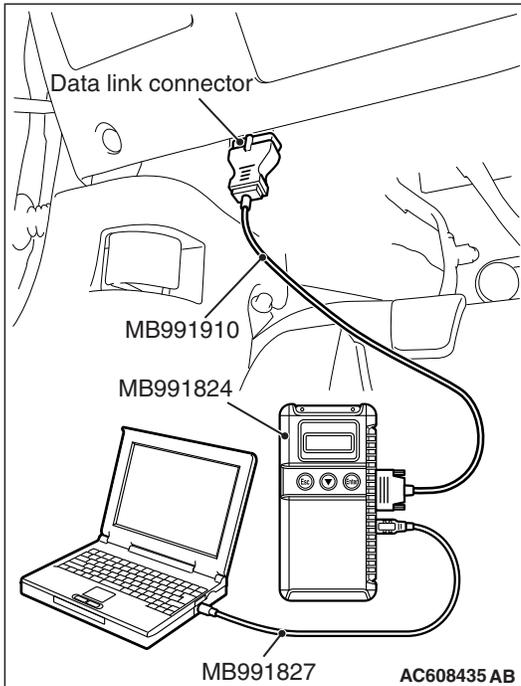
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (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-646.

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 "None of headlights (low-beam) illuminates." [P.54A-141](#) and Inspection Procedure 2 "None of headlights (high-beam) illuminates." [P.54A-146](#).

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

⚠ CAUTION

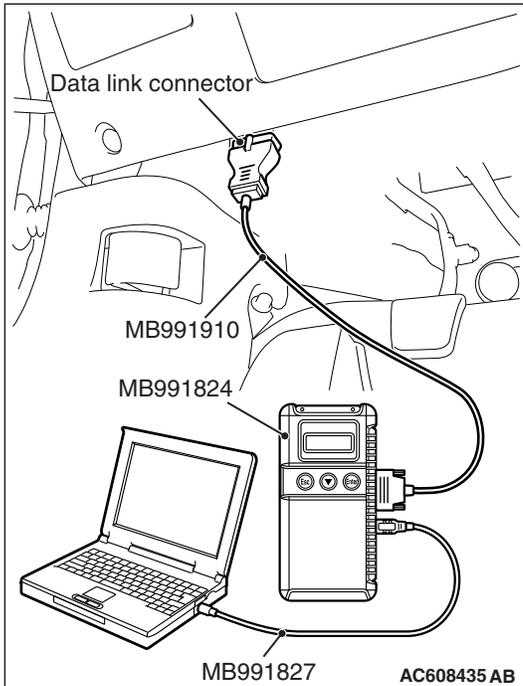
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) [P.54A-117](#)."
- (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-646](#).

NO : Go to Step 3.



STEP 3. Retest the system

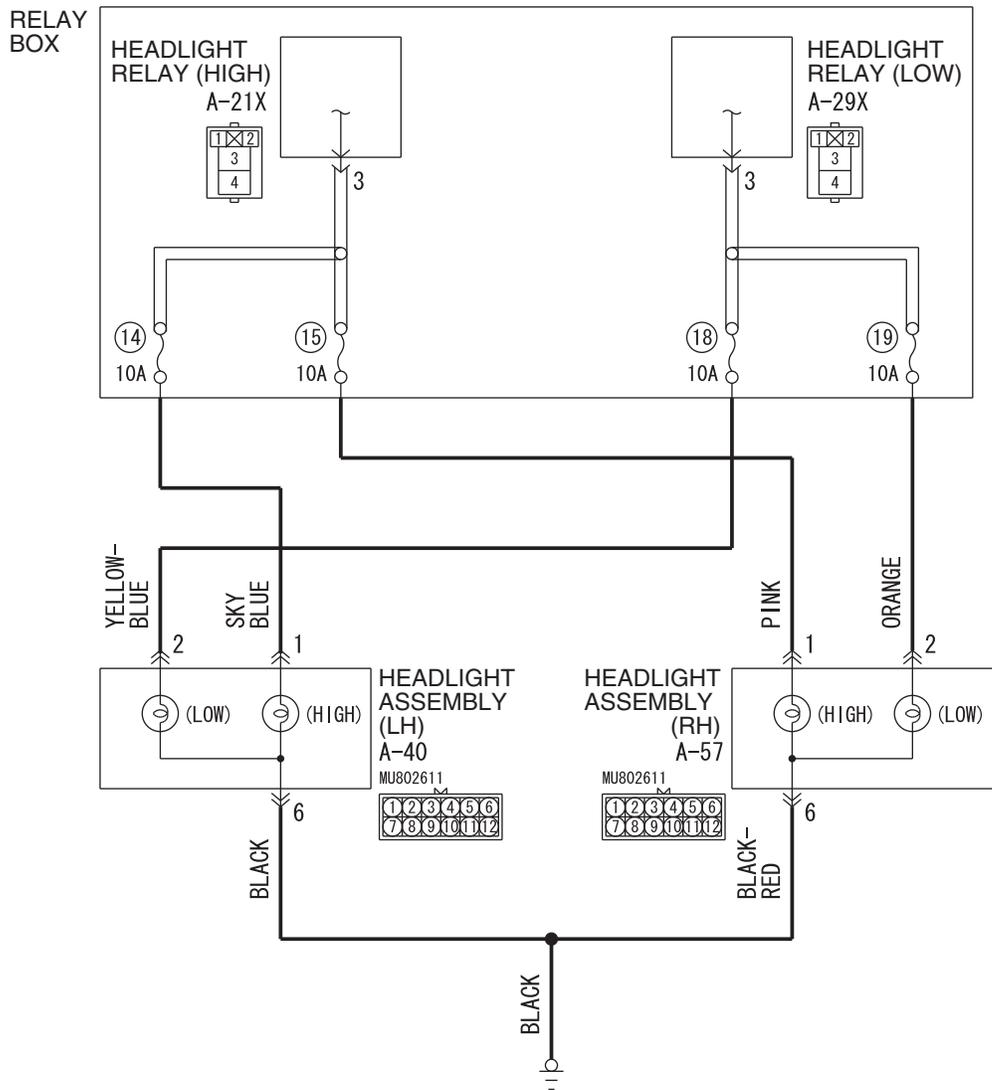
Q: Do the headlights (low-beam and high-beam) illuminate normally when turning ON the passing switch?

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.

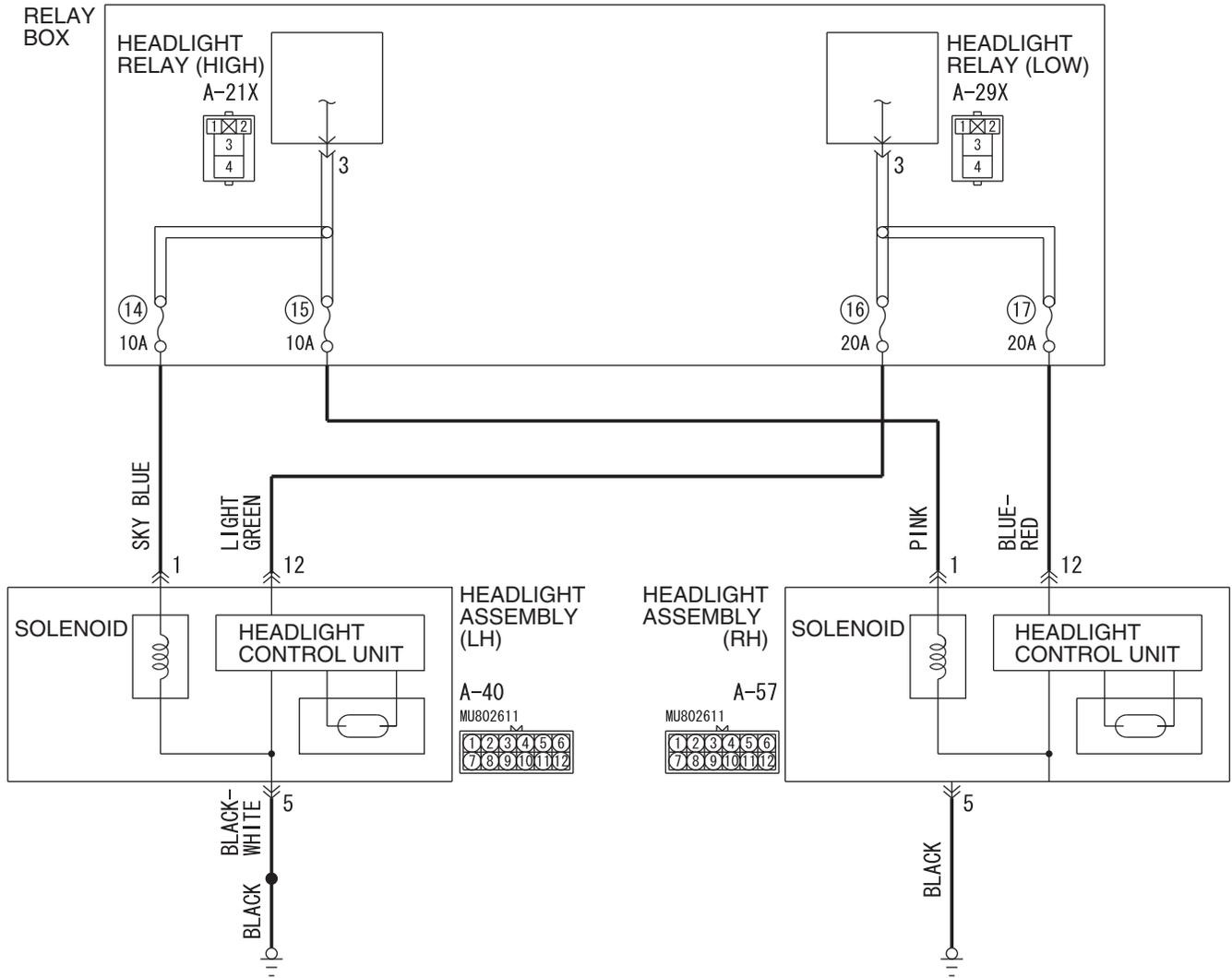
Inspection Procedure 5: One of the headlights does not illuminate.

Headlights Circuit <Halogen Type>

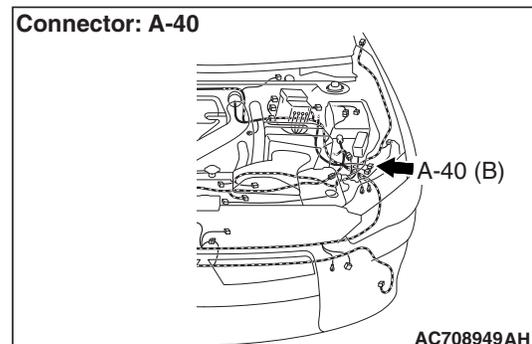
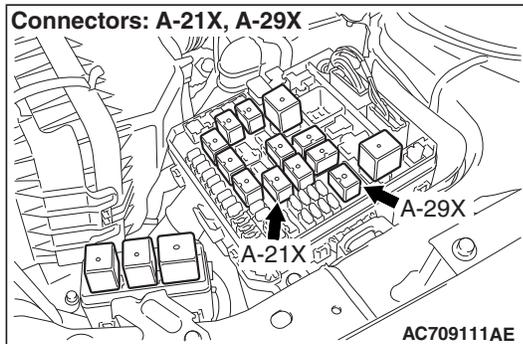


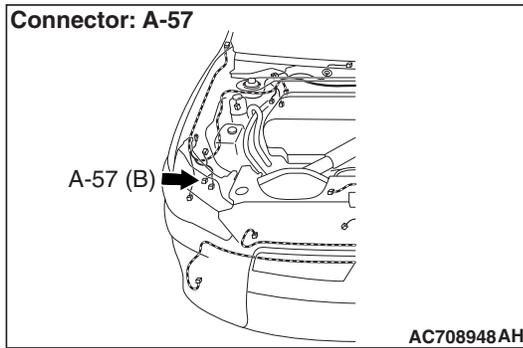
W8G54M155A

Headlights Circuit <Discharge Type>



W9H54M067A





TROUBLESHOOTING HINTS

- Malfunction of the headlight bulbs
- Malfunction of the headlight assembly
- Damaged harness wires and connectors

TECHNICAL DESCRIPTION (COMMENT)

If one 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>

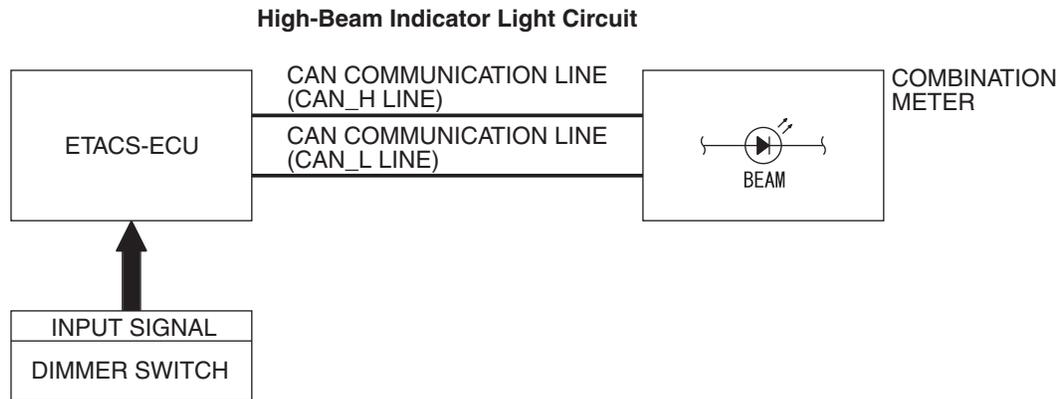
Q: Is the wiring harness between headlight assembly connector and headlight relay connector in good condition?

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.

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.



W4X54E031A

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)

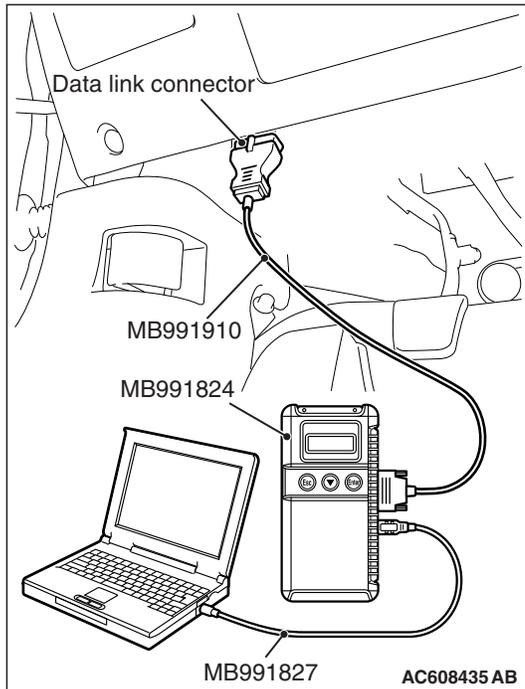
STEP 1. Check of headlight (high-beam).

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 "None of headlights (high-beam) illuminates [P.54A-146](#)."



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-117."
- (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-15).

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-117."
- (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-646.

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-89).
- (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 "Enable (C-spec.)."

⚠ CAUTION

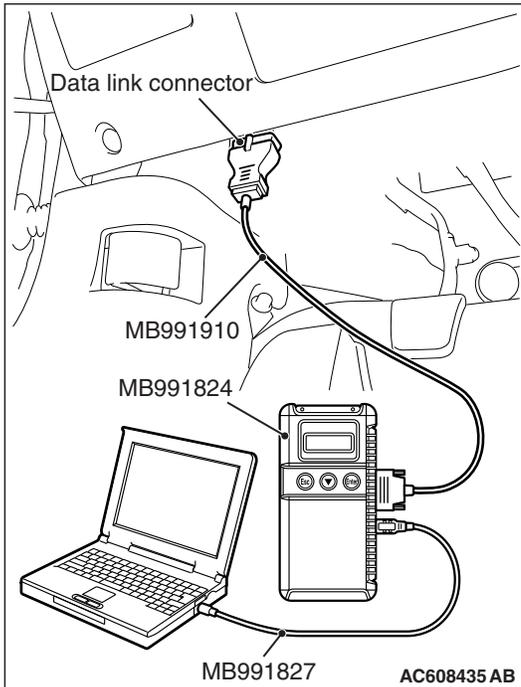
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54A-117."
- (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 "Enable (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 "Enable (C-spec.)." (Refer to P.54A-200).



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-646).

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	1 V or less

- 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-703](#).

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](#)).

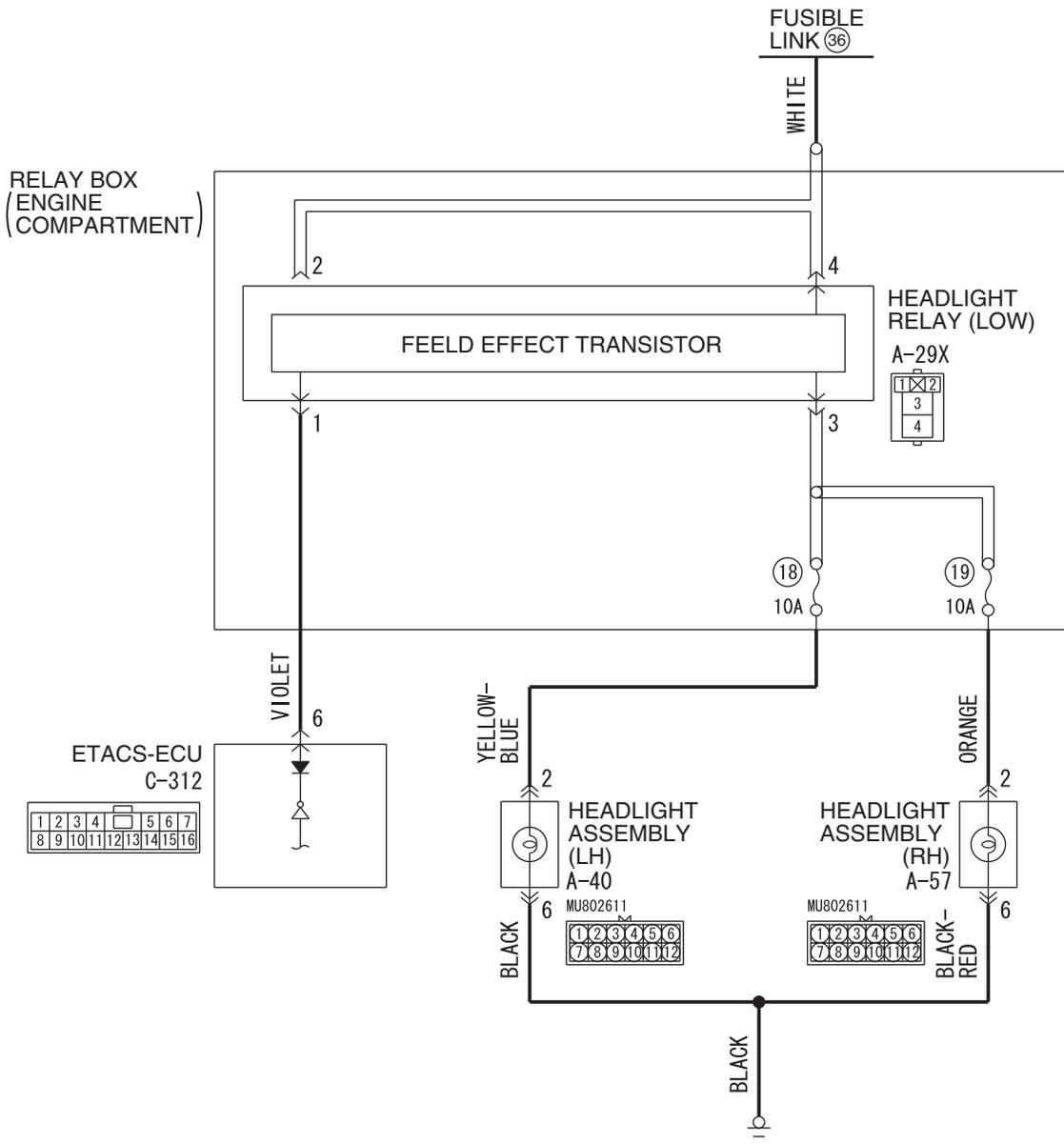
NO : Replace the ETACS-ECU.

Inspection Procedure 8: Daytime running light function does not work normally. <Halogen type headlight>

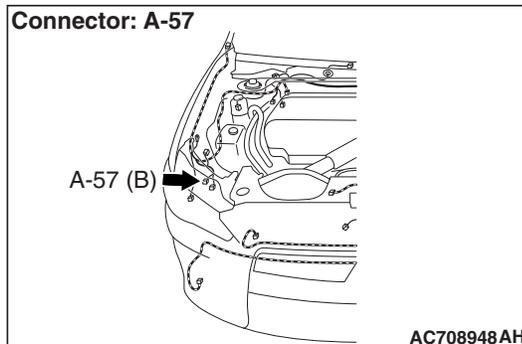
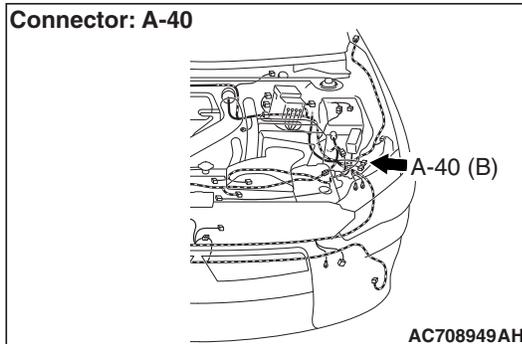
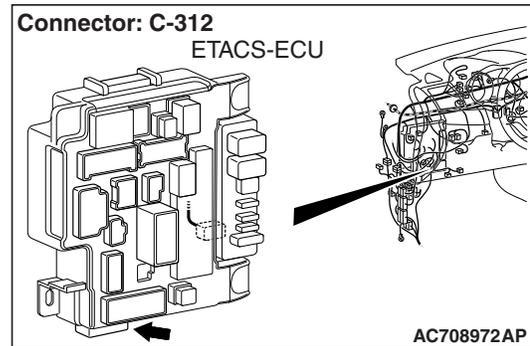
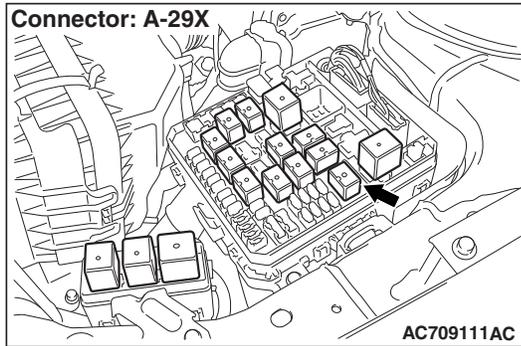
CAUTION

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

Daytime Running Light Circuit



W8G54M157A



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

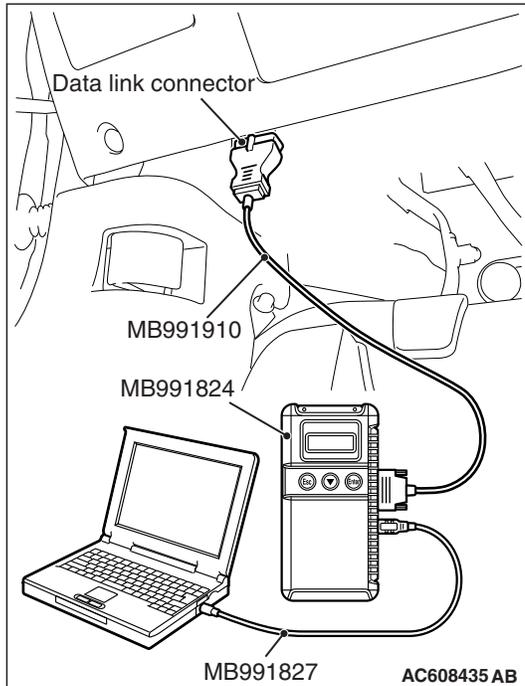
STEP 1. Verify the headlight (low-beam) operation.

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 "None of headlights (low-beam) illuminates [P.54A-141](#)."



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-117."
- (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-15).

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-646.

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-48.

NO : Go to Step 5.

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 2 P.36-4. 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: Do the headlights (low-beam) illuminate in good condition?

YES : Replace the headlight relay (LOW).

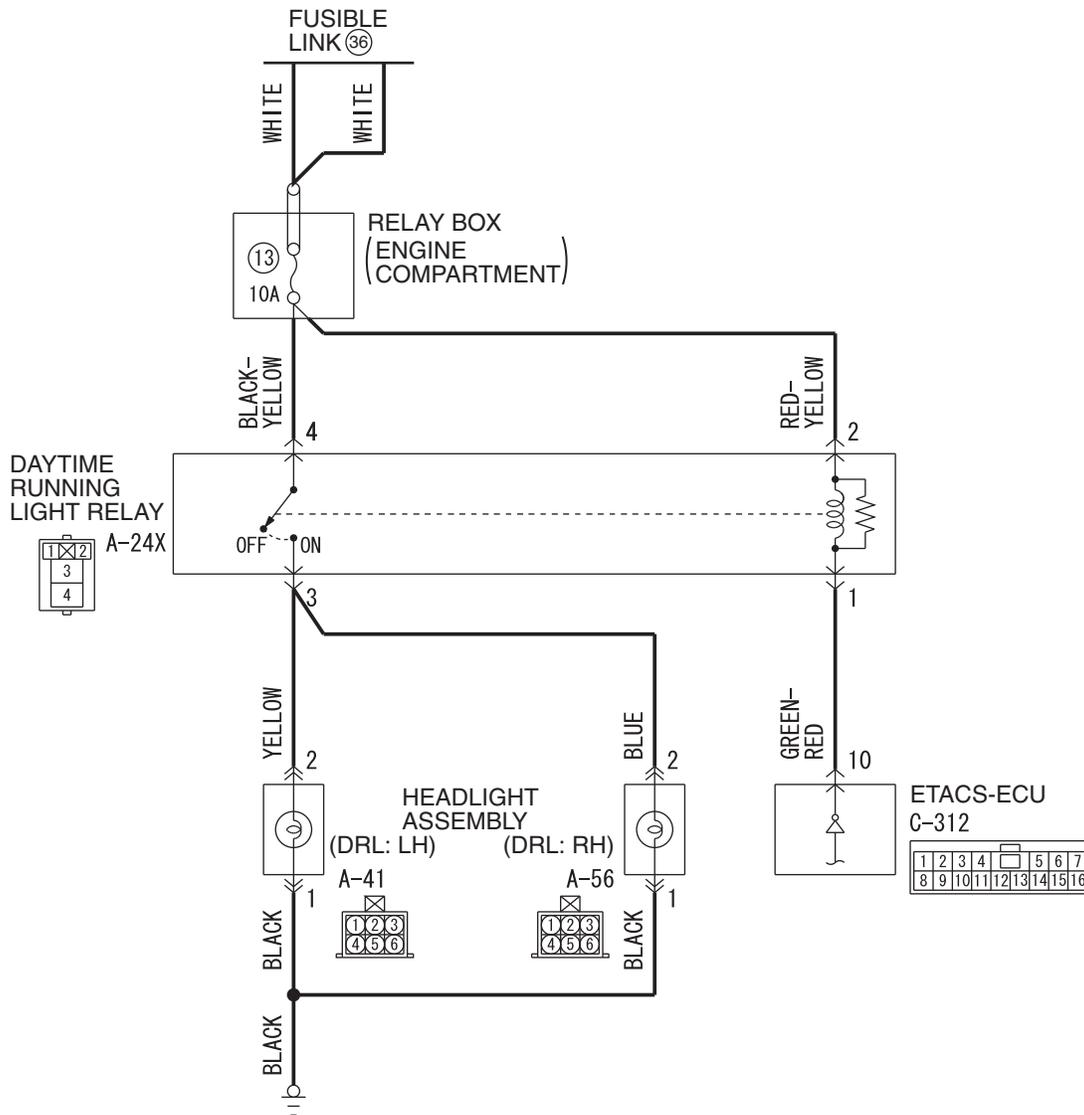
NO : Replace the ETACS-ECU.

Inspection Procedure 8: Daytime running light function does not work normally. <Discharge type headlight>

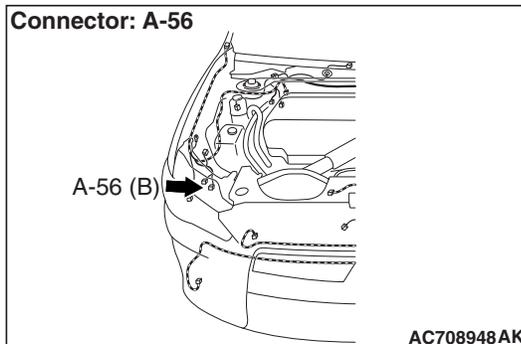
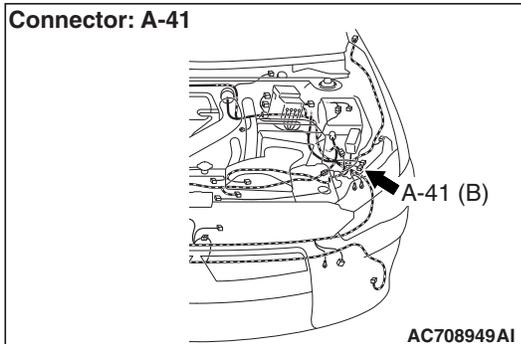
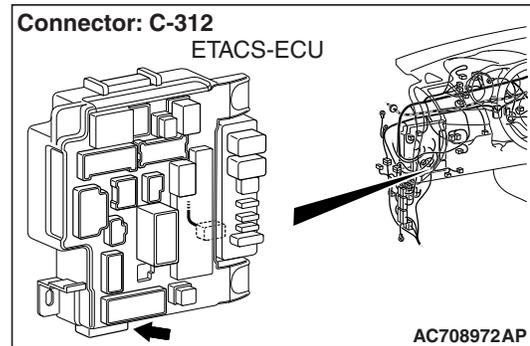
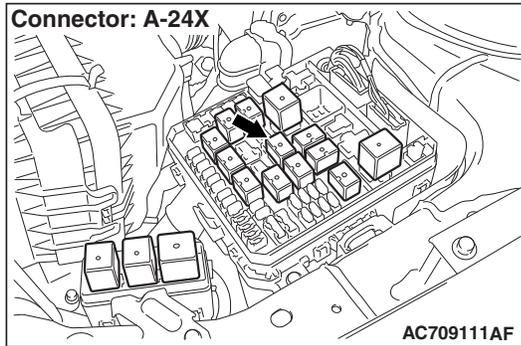
CAUTION

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

Daytime Running Light Circuit



W9H54M068A



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-140](#)).

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

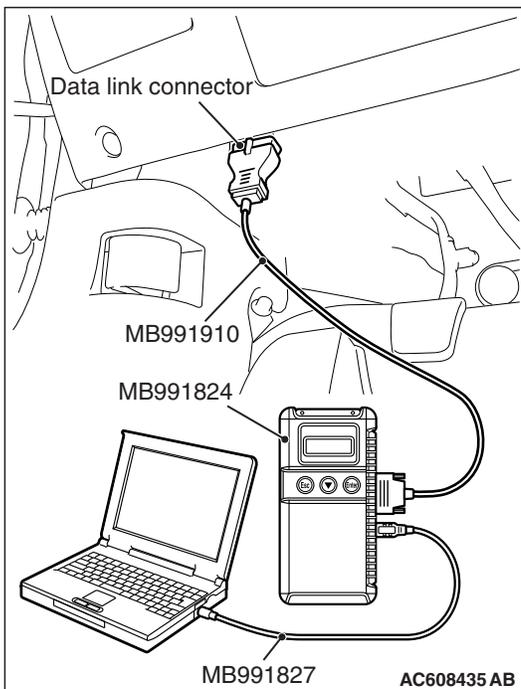
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (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-15).



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-646.

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-48](#).

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 2 [P.36-4](#). 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.

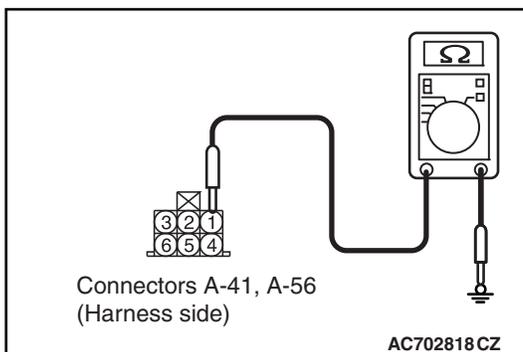
- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the resistance between the fog light connector and ground.
 - Resistance between A-41 daytime running light (LH) connector terminal No.1 and ground
 - Resistance between A-56 daytime running light (RH) connector terminal 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.



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-208](#).

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.

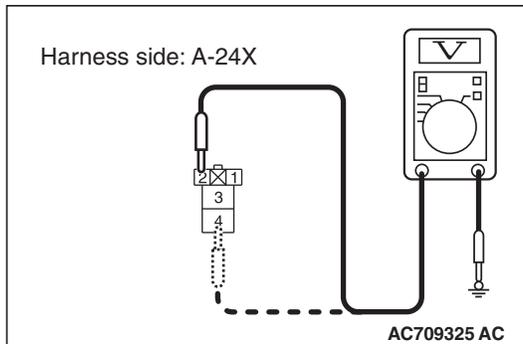
- (1) Disconnect daytime running light relay connector A-24X and measure the voltage available at the relay box side of the connector.
- (2) Measure the voltage between terminal 2 and ground, and also between terminal 4 and ground.

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.

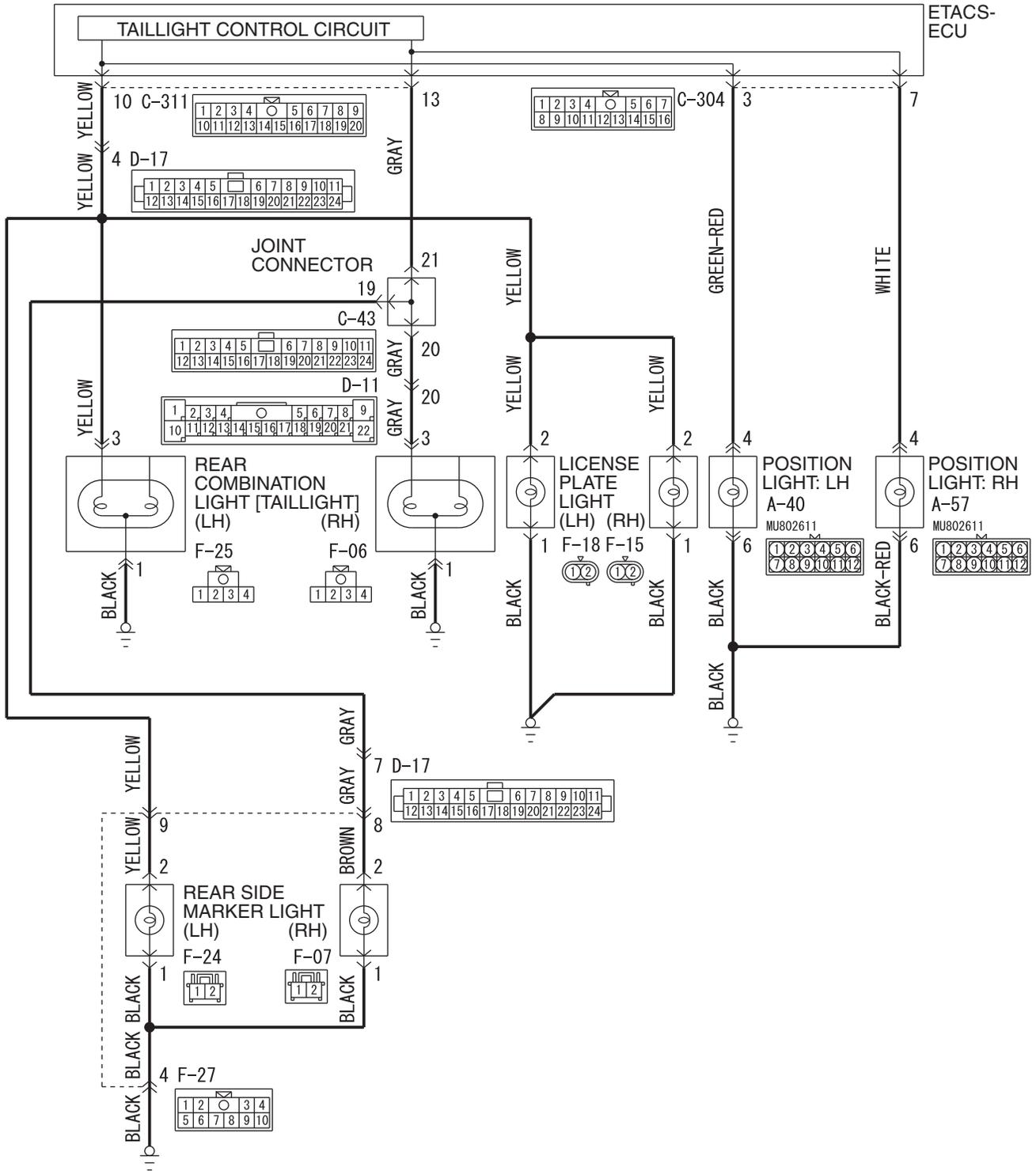
Q: Does the daytime running lights illuminate in good condition?

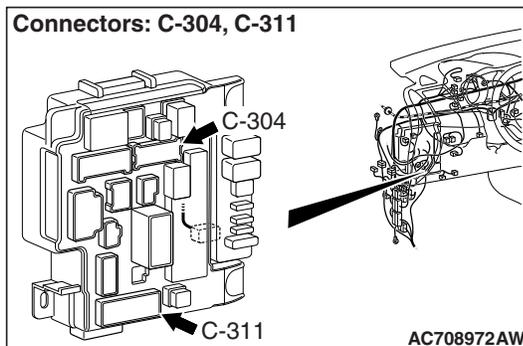
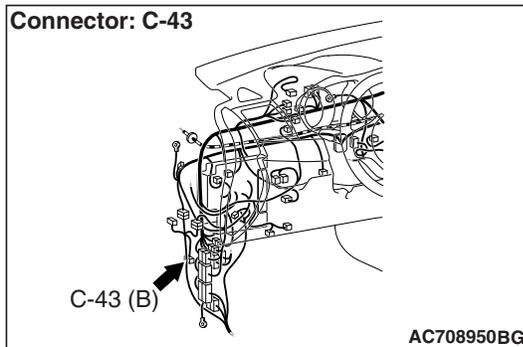
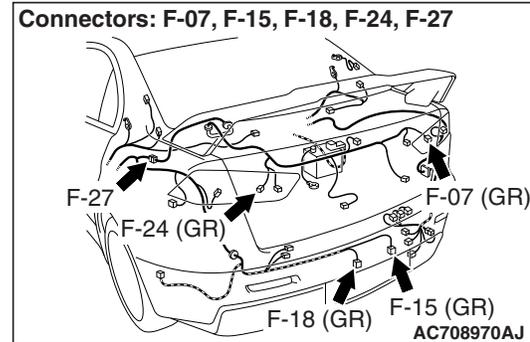
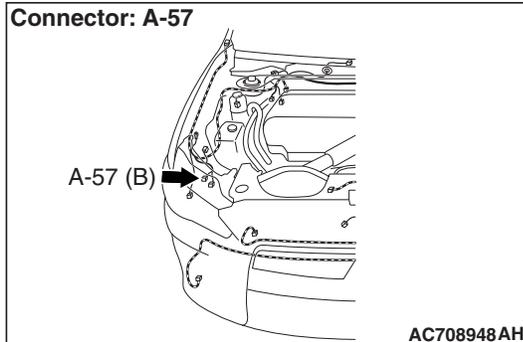
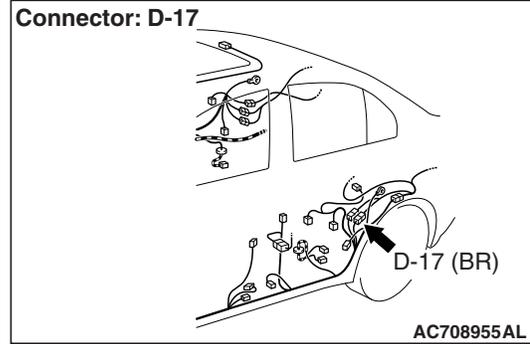
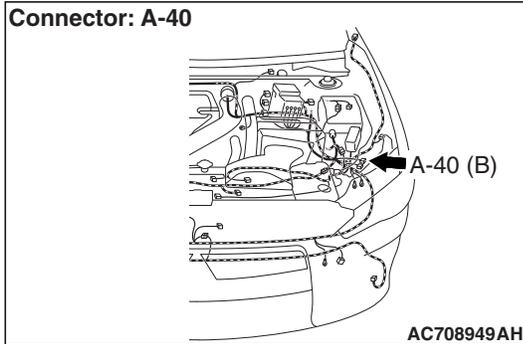
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points –How to Cope with Intermittent Malfunction [P.00-15](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 9: One of the rear side marker lights, position light or the license plate lights does not illuminate.

Position Lights, License Plate Lights, Rear Side Marker Lights and Tail Lights Circuit





TECHNICAL DESCRIPTION (COMMENT)

If one of the rear side marker 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 license plate light
- Malfunction of headlight
- Malfunction of rear side marker 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

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-230](#)).

STEP 2. Check headlight assembly connector A-40 (position light-LH) or A-57 (position light-RH), rear side marker 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), rear side marker 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.

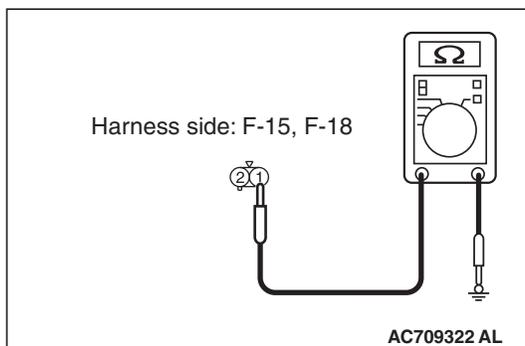
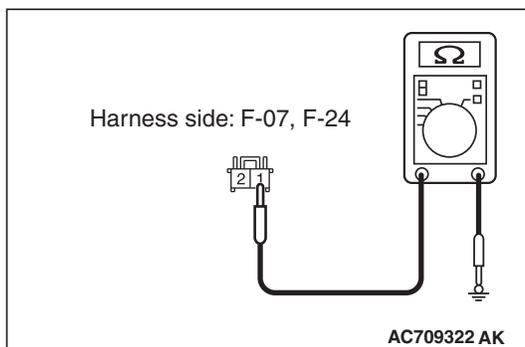
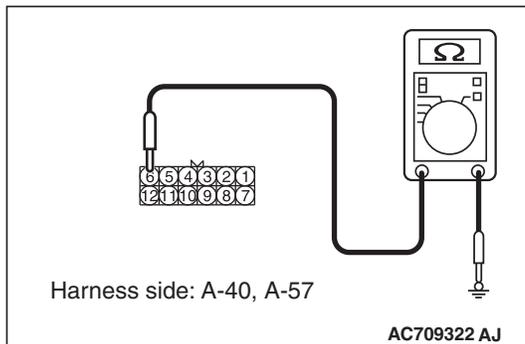
NO : Replace the bulb(s) of the light that does not illuminate.

STEP 4. Resistance measurement at headlight assembly connector A-40 (position light-LH) or A-57 (position light-RH), rear side marker 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 rear side marker 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, rear side marker 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 rear side marker light (LH) connector F-24 (terminal 1) and the body ground. <rear side marker 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 rear side marker light (RH) connector F-07 (terminal 1) and the body ground. <rear side marker 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, rear side marker 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 <rear side marker 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 <rear side marker 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, rear side marker 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 rear side marker light (LH) connector F-24 (terminal 2) and ETACS-ECU connector C-311 (terminal 10). <rear side marker 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 rear side marker light (RH) connector F-07 (terminal 2) and ETACS-ECU connector C-311 (terminal 13). <rear side marker 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, rear side marker 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, rear side marker light, or license plate light illuminate normally.

Q: Do the position light, rear side marker 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 rear side marker 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)

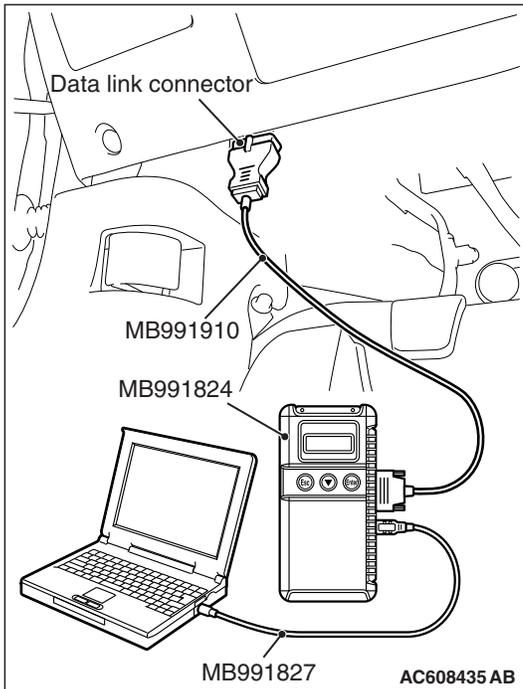
If the auto light function does not work normally, the above input signal circuit(s) or the ETACS-ECU may have a problem.

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-117."
- (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-15).

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-119.

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-646).

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 "None of headlights (low-beam) illuminates." P.54A-141.

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: Does 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-703](#).

STEP 6. Lighting control sensor check

Check the lighting control sensor. Refer to [P.54A-210](#).

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: None of turn-signal lights illuminates.**TECHNICAL DESCRIPTION (COMMENT)**

If none of the turn-signal lights 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

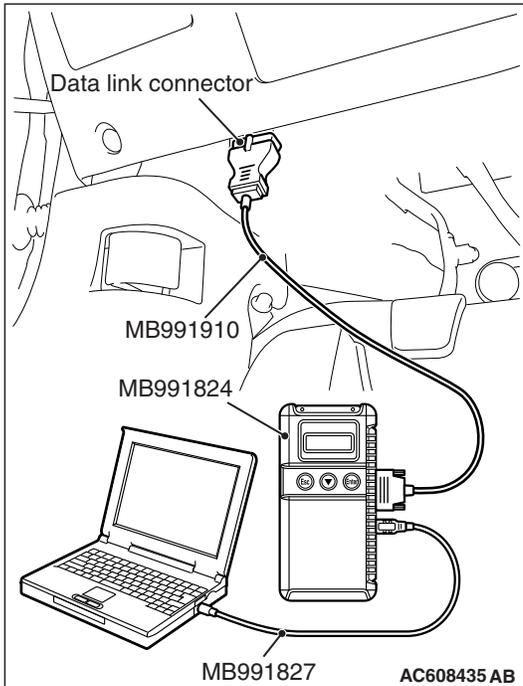
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (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-646).

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 positive 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-703.

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)

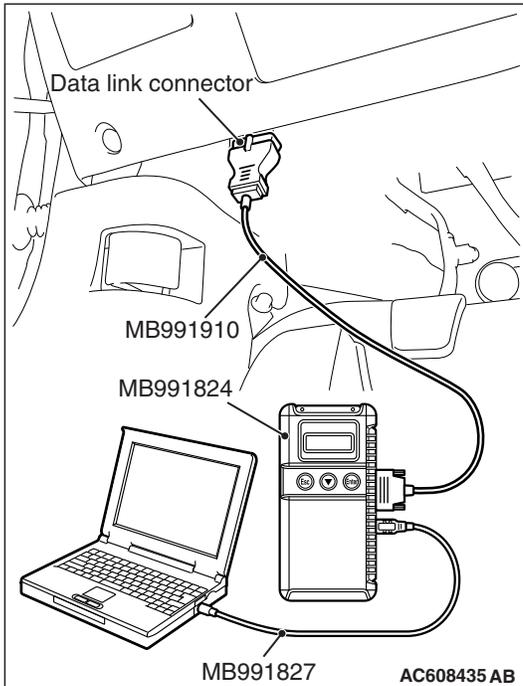
If the comfort flashing function does not work normally, the turn-signal light switch input circuit(s) and ETACS-ECU may have a problem.

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-117."
- (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-200).

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-646).

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 "None of turn-signal lights illuminates" P.54A-182.

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 lights 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)
-

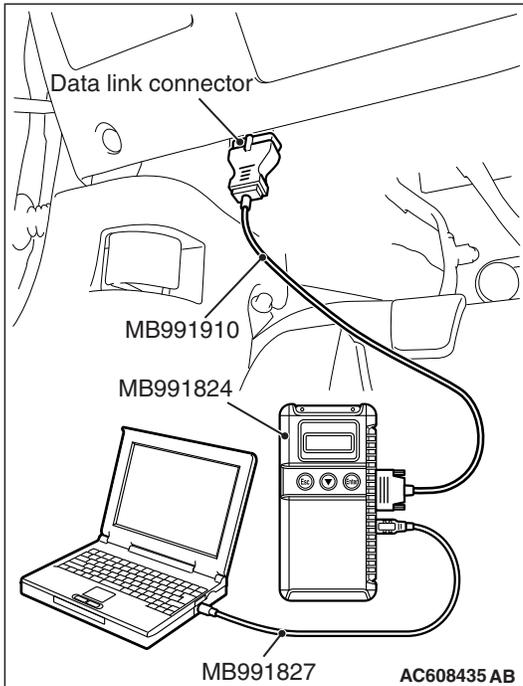
STEP 1. Check turn-signal light.

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 "None of turn-signal lights illuminates" [P.54A-182](#).



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-117."
- (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-15).

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-646.

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.

Inspection Procedure 14: The welcome 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.

TECHNICAL DESCRIPTION (COMMENT)

When the welcome light function does not operate normally, the keyless entry system or the ETACS-ECU may have a problem. Or, the welcome light function may have been set to disabled using the customization function.

TROUBLESHOOTING HINTS

- Malfunction of the keyless entry system
- 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. Using scan tool MB991958, Check the configuration function.**CAUTION**

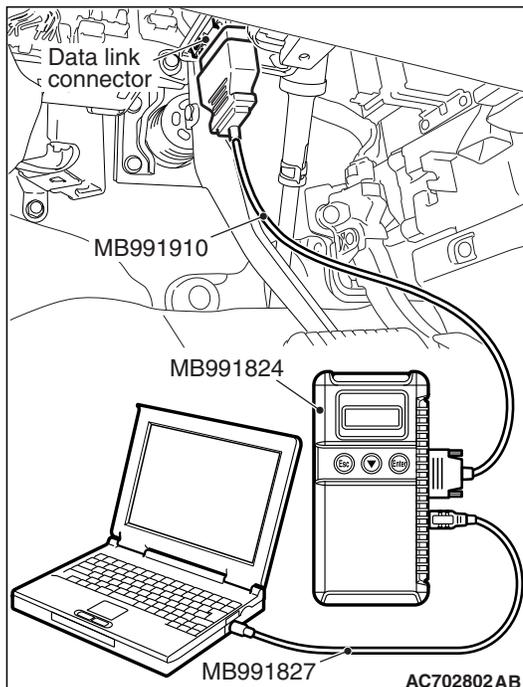
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check that any one of the followings other than "Disabled" is set for "Welcome light" with a customization function.
 - Small light
 - Head light
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is it set to other than "Disabled"?

YES : Go to Step 2.

NO : Set "Welcome light" to any one other than "Disabled" with a customization function (Refer to P.54A-200).



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-646](#))

NO : Go to Step 3.

STEP 3. Check the keyless entry system operation

Check that the keyless entry system operation normally.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Troubleshoot the keyless entry system. Refer to GROUP 42B, Troubleshooting [P.42B-152](#) <KOS> or GROUP 42C, Troubleshooting [P.42C-91](#) <WCM>.

STEP 4. Check the tail lights and headlights.

When the lighting switch is operated, check that the tail lights and headlights illuminate/go off normally.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Troubleshoot the tail lights and headlights. Refer to trouble symptom chart [P.54A-140](#).

STEP 5. Retest the system.

Check that the welcome 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 15: The coming home 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.

TECHNICAL DESCRIPTION (COMMENT)

When the coming home light function does not operate normally, the keyless entry system or the ETACS-ECU may have a problem. Or, the coming home light function may have been set to disabled using the customization function.

TROUBLESHOOTING HINTS

- Malfunction of the keyless entry system
- 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. Using scan tool MB991958, Check the configuration function.**CAUTION**

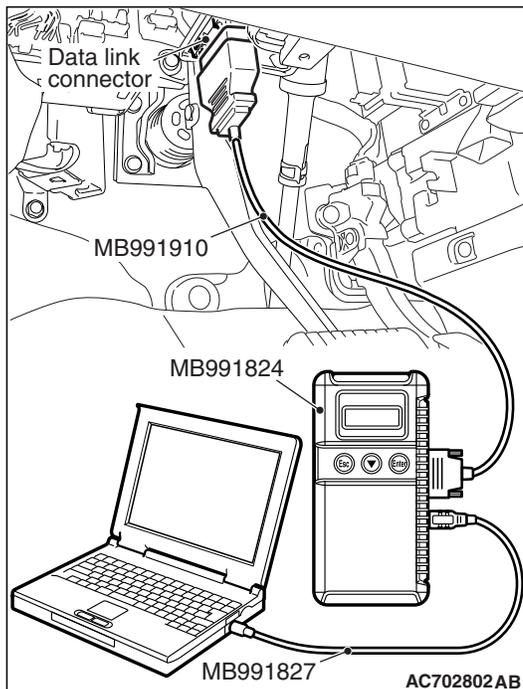
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-117."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check that any one of the followings other than "Disabled" is set for "Coming home light" with a customization function.
 - 15 sec
 - 30 sec
 - 60 sec
 - 180 sec
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is it set to other than "Disabled"?

YES : Go to Step 2.

NO : Set "Coming home light" to any one other than "Disabled" with a customization function (Refer to P.54A-200).



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-646](#))

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.

Item No.	Item name	Normal condition
Item 254	IG voltage	1 V or less

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU. Refer to Inspection Procedure 2 "The ignition switch (IG1) signal is not received" [P.54A-706](#).

STEP 4. Check the headlights.

When the lighting switch is operated, check that the headlights illuminate/go off normally.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Troubleshoot the headlights. Refer to trouble symptom chart [P.54A-140](#).

STEP 5. Retest the system.

Check that the coming home 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.

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 bright
		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	–	–

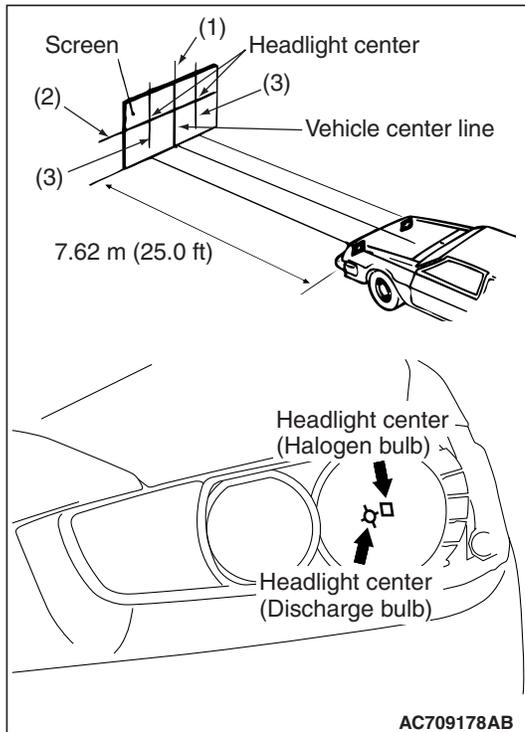
ON-VEHICLE SERVICE

HEADLIGHT AIMING

M1540100500304

PRE-AIMING INSTRUCTIONS (LOW-BEAM)

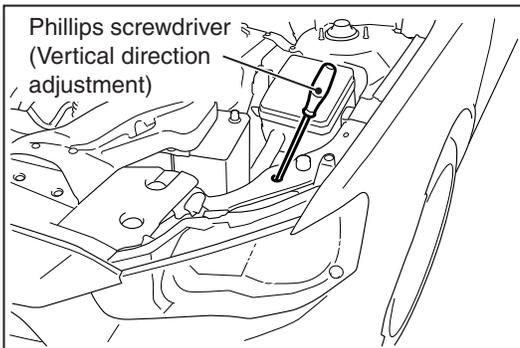
1. Inspect for rusted or faulty headlight assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 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.

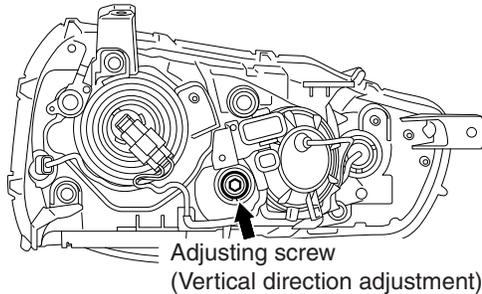
HEADLIGHT ADJUSTMENT (LOW-BEAM)

1. The low-beam headlight will project on the screen upper edge of the beam (cut-off).

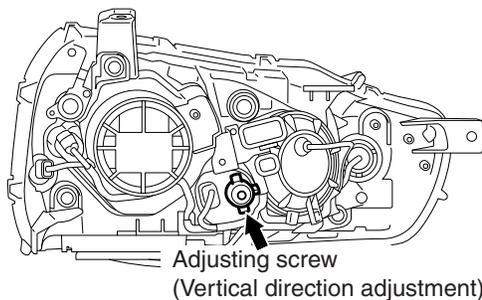


- Turn the adjusting screw to achieve the specified low-beam cut-off location on the aiming screen.

<Vehicles without discharge headlight>

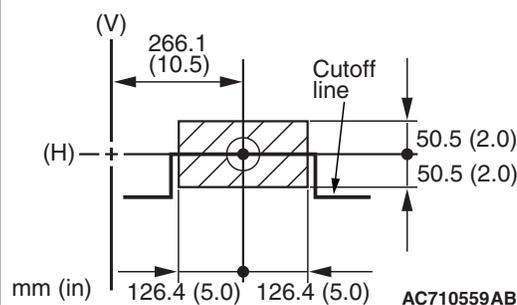


<Vehicles with discharge headlight>



AC709195AB

<Vehicles without discharge headlight>

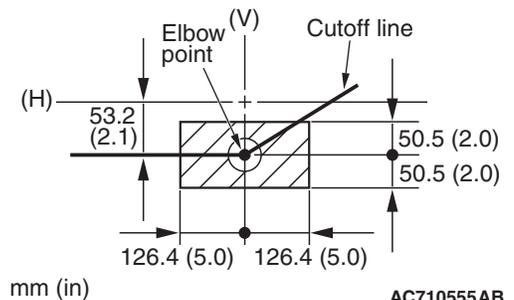


Standard value <Vehicles without discharge headlight>:

(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)

<Vehicles with discharge headlight>



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)

⚠ 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

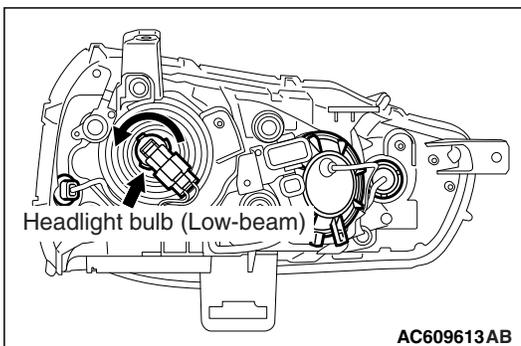
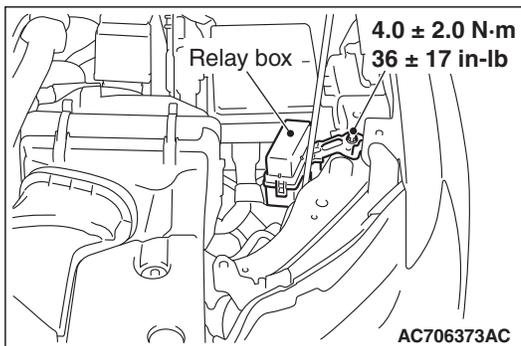
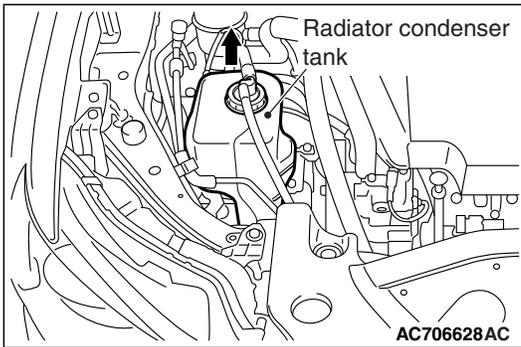
M1540100700290

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.

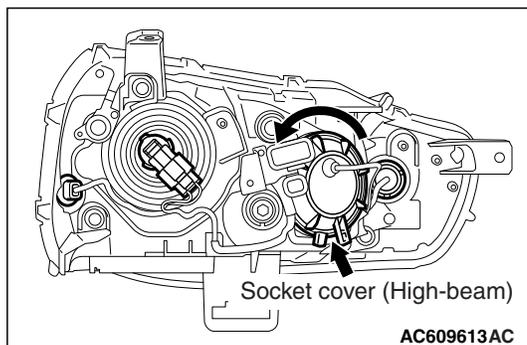


2. Disconnect the connector, and twist the headlight bulb (low-beam) to remove.

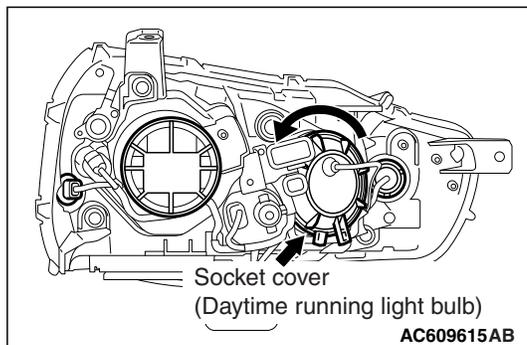
**HEADLIGHT BULB (HIGH-BEAM) REPLACEMENT
<VEHICLES WITHOUT DISCHARGE HEADLIGHT>****⚠ CAUTION**

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.

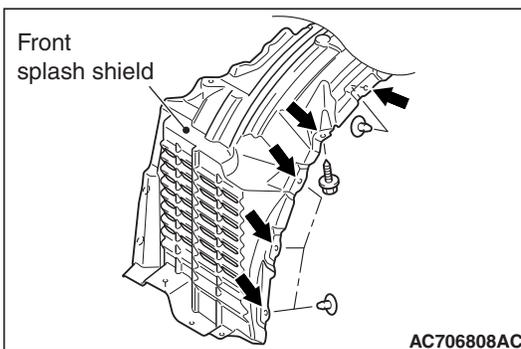
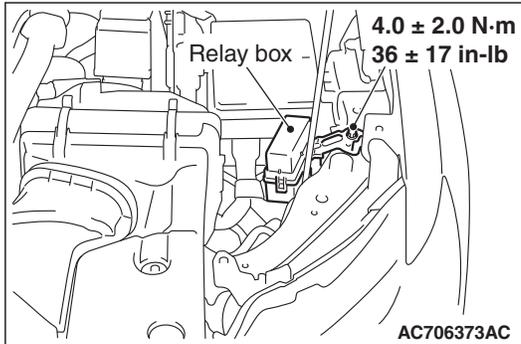
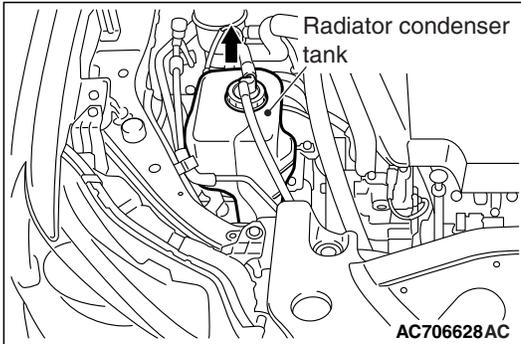
**DAYTIME RUNNING LIGHT BULB REPLACEMENT
<VEHICLES WITH DISCHARGE HEADLIGHT>**

1. Twist the socket cover to remove.
2. Twist the daytime running light socket to remove it.

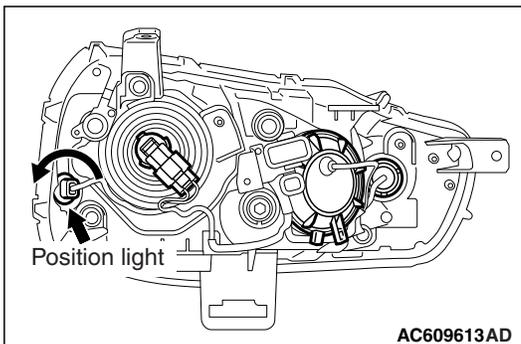


POSITION LIGHT BULB REPLACEMENT

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>



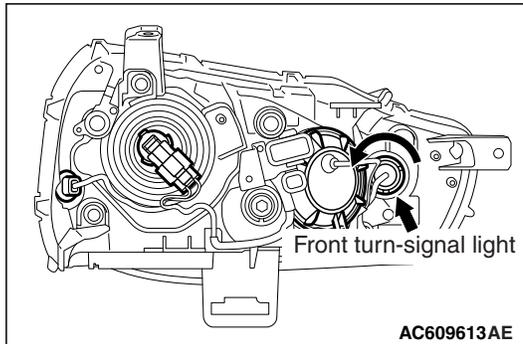
2. Remove the front splash shield assembling clip shown in the figure, and turn up the front splash shield. <Vehicles with discharge headlight>



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-140).

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-140.)

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.)

WELCOME LIGHT FUNCTION CHECK

When the lighting switch is in the OFF or AUTO position, unlock the door by the keyless entry system and check that the taillights or headlights turn on. If there is a malfunction, perform the troubleshooting (Refer to P.54A-140).

NOTE: As for the vehicles with lighting control sensor, carry out the inspection in the dark place.

M1540112700026

COMING-HOME LIGHT FUNCTION CHECK

After turning the ignition switch to the LOCK (OFF) position, check that passing operation lights up the headlights. If there is a malfunction, perform the troubleshooting (Refer to P.54A-140).

M1540112800023

CUSTOMIZATION FUNCTION

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.

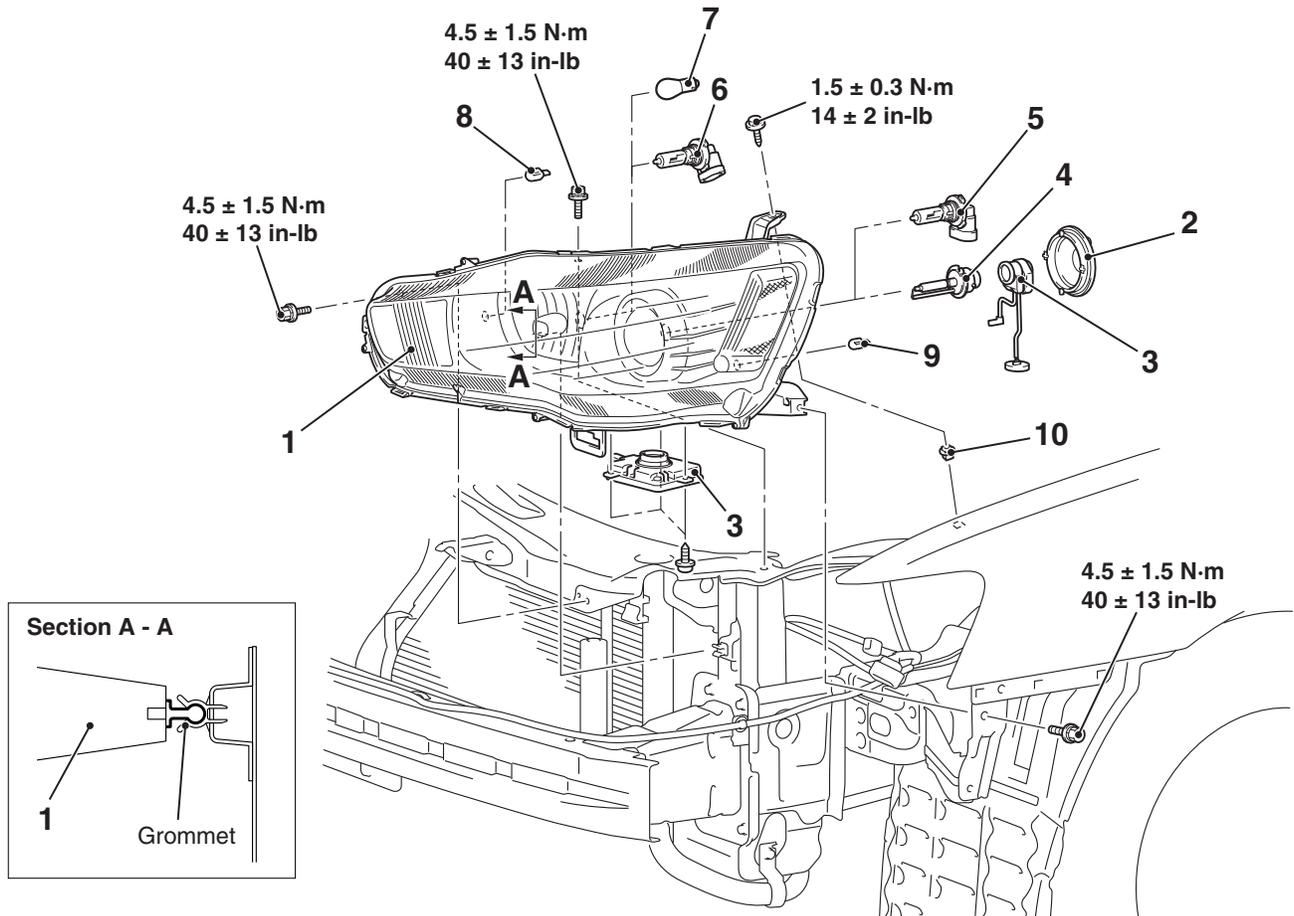
M1540103700813

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
		30 min	30 minutes (initial condition)
		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 (initial condition)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (initial condition)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 second (initial condition)
		Long	0.8 second
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 (initial condition)
		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 bright	High ambient brightness
		Level 3	Standard ambient brightness (initial condition)
		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 (initial condition)
Welcome light	Disabling or enabling welcome light function	Disabled	No function
		Small light	Tail light illuminates. (initial condition)
		Head light	Headlight illuminates.
Coming home light	Disabling or enabling coming home light function	Disabled	No function
		15 sec	Headlight illuminates for 15 seconds.
		30sec	Headlight illuminates for 30 seconds. (initial condition)
		60 sec	Headlight illuminates for 60 seconds.
		180 sec	Headlight illuminates for 180 seconds.

HEADLIGHT REMOVAL AND INSTALLATION

M1540101000595

<p>Pre-removal operation Front bumper and radiator grille assembly removal (Refer to GROUP 51 –Front Bumper Assembly and Radiator Grille P.51-3.)</p>	<p>Post-installation operation</p> <ul style="list-style-type: none"> • 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-193).
--	---



AC711846AC

Removal Steps

1. Headlight assembly
2. Headlight bulb socket cover
<Vehicles with discharge headlight>
- <<A>> >>A<< 3. Headlight control unit <Vehicles with discharge headlight>
- <> 4. Headlight bulb <Vehicles with discharge headlight>
5. Headlight bulb (low-beam)
<Vehicles without discharge headlight>

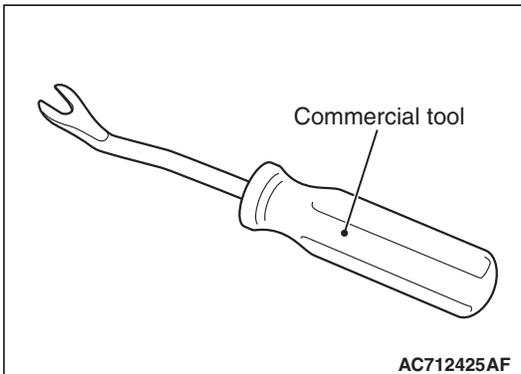
Removal Steps (Continued)

6. Headlight bulb (high-beam)
<Vehicles without discharge headlight>
7. Daytime running light bulb
<Vehicles with discharge headlight>
8. Front turn-signal light bulb
9. Position light bulb
10. Grommet

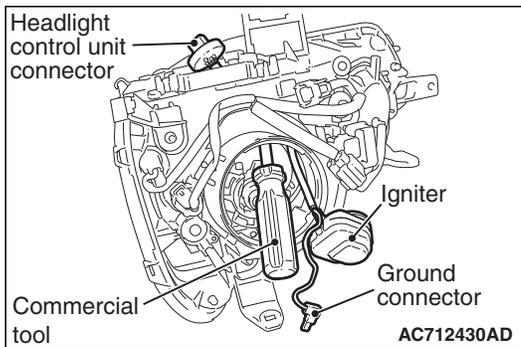
REMOVAL SERVICE POINTS

<<A>> HEADLIGHT CONTROL UNIT (HARNESS)
REMOVAL <VEHICLES WITH DISCHARGE HEAD-
LIGHT>

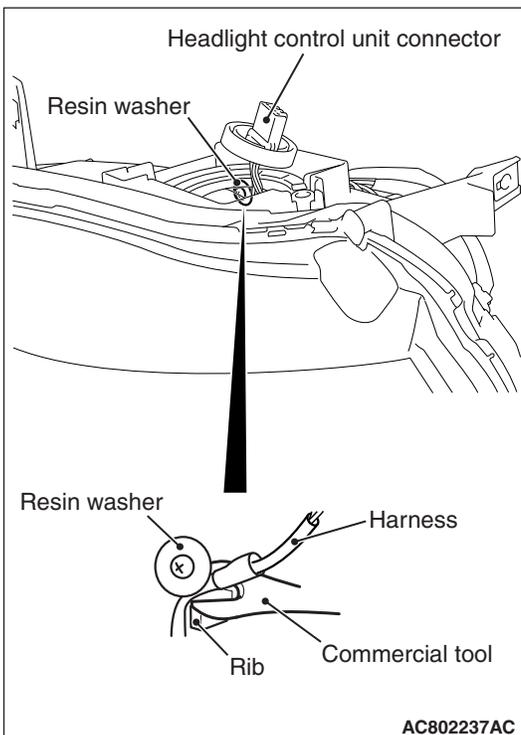
1. As shown in the figure, use the commercial tool to remove it.



2. To insert the tool available in the market into the headlight assembly from the opening at the igniter side, firstly remove the headlight control unit, the socket cover, the igniter and the ground connector.



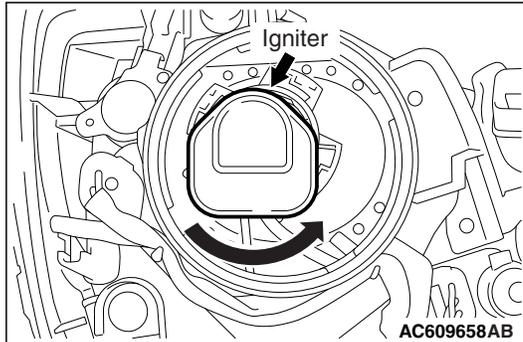
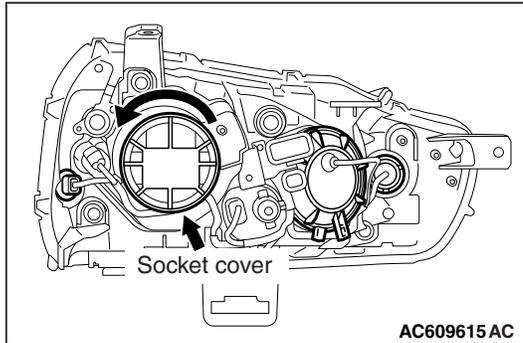
3. Using the commercial tool, make the resin washer sag to push up the harness above the resin washer.
4. Pull out the harness from the headlight assembly.



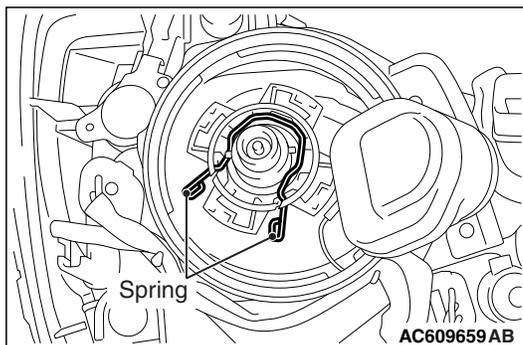
<> HEADLIGHT BULB REMOVAL <VEHICLES
WITH DISCHARGE HEADLIGHT>**⚠ CAUTION**

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.



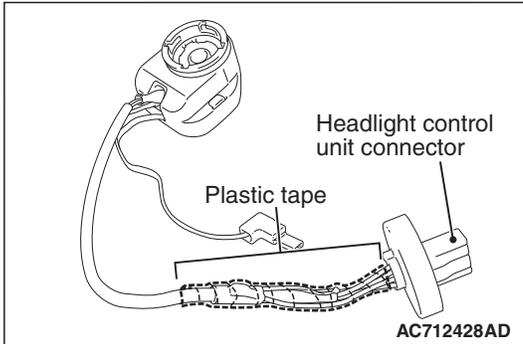
2. Disconnect the igniter.



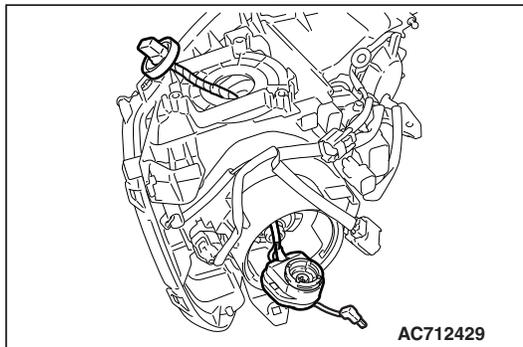
3. Release the bulb securing spring, and remove the bulb.

INSTALLATION SERVICE POINT

>>A<< HEADLIGHT CONTROL UNIT INSTALLATION <VEHICLES WITH DISCHARGE HEADLIGHT>



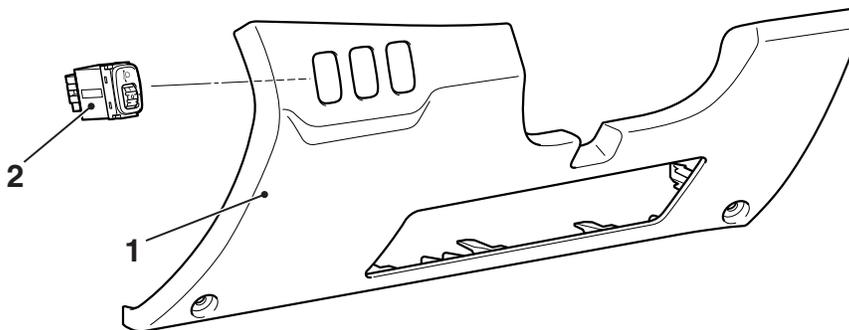
1. As shown in the figure, doubly wrap the portion in the vinyl tape, from the headlight control unit connector root to the point where the harness separation is hidden.



2. Install the harness to the headlight assembly. At that time, fitting the harness into the resin washer is unnecessary.

HEADLIGHT LEVELING SWITCH REMOVAL AND INSTALLATION

M1540105200137



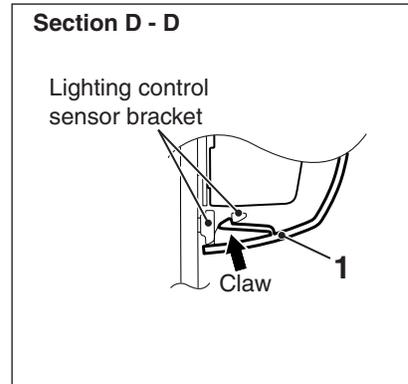
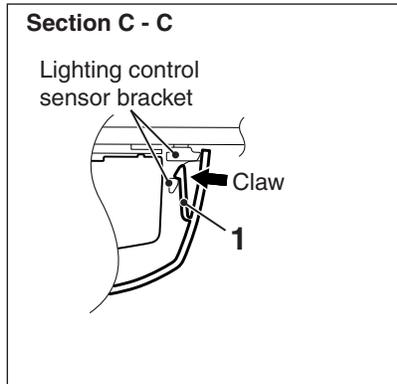
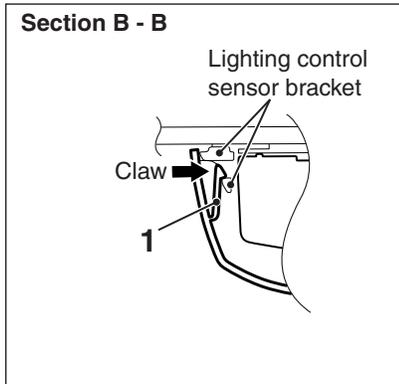
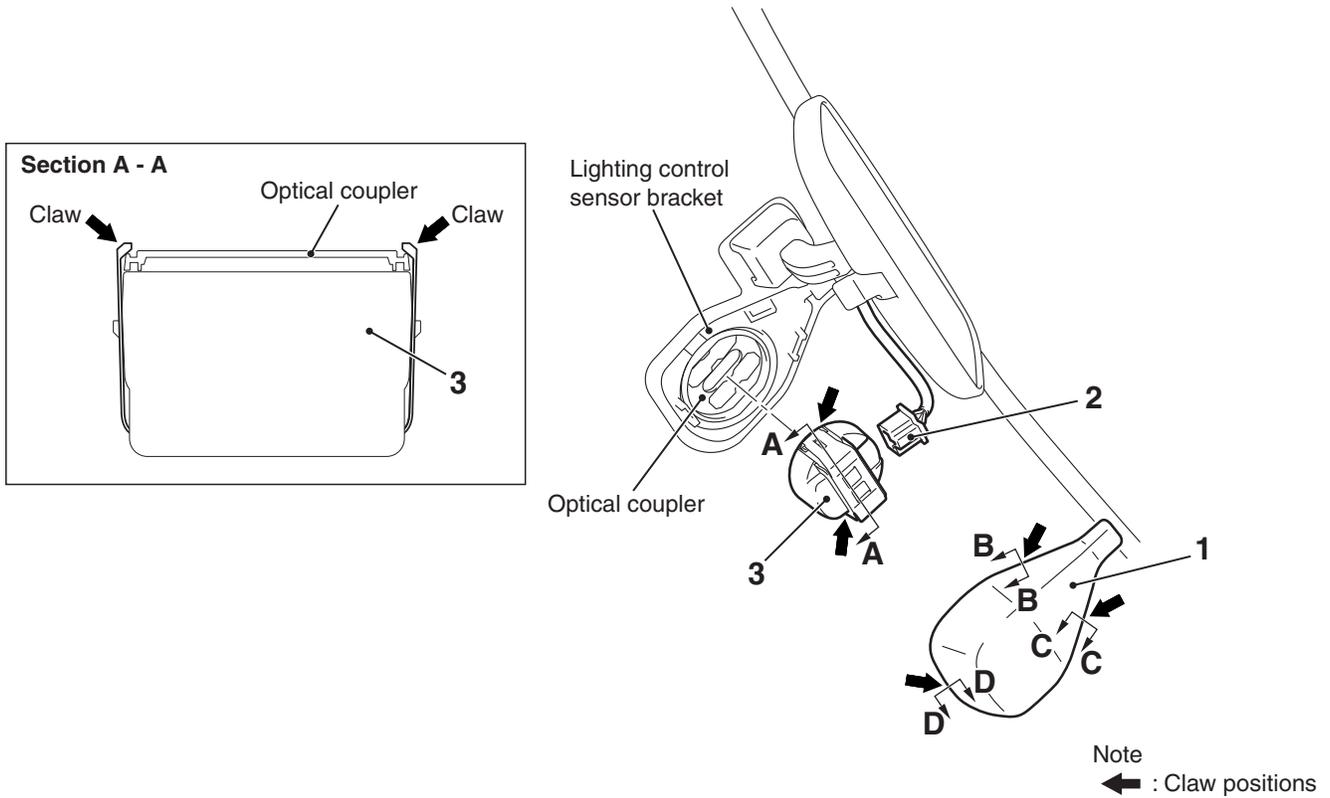
AC709250AB

Removal Steps

1. Instrument panel cover assembly
(Refer to GROUP 52A -Instrument Lower Panel P.52A-9).
2. Headlight leveling switch

LIGHTING CONTROL SENSOR REMOVAL AND INSTALLATION

M1540108500126



AC709252AB

Removal Steps

1. Lighting control sensor cover

<<A>> >>A<<

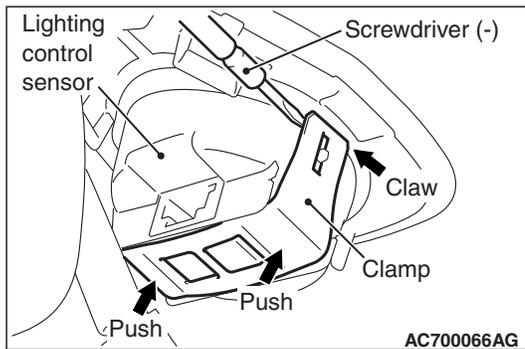
Removal Steps (Continued)

2. Connector
3. Lighting control sensor

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.51-84>.

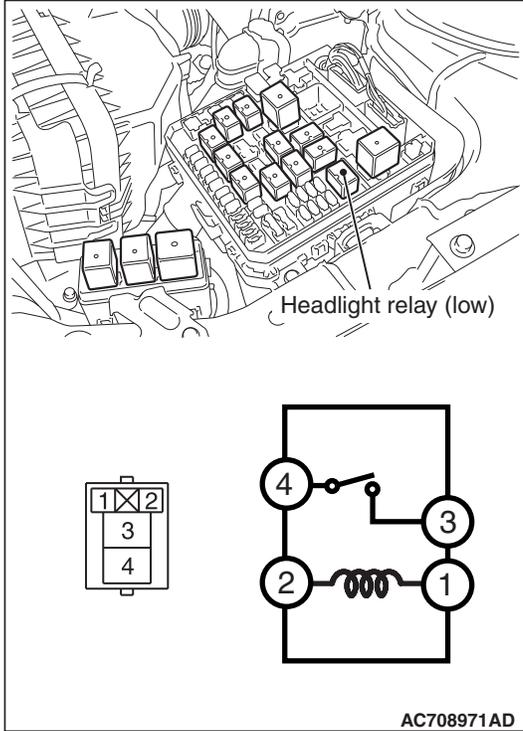
NOTE: Be careful not to touch the lighting control sensor receiver. (The lighting control sensor receiver has limited resistance to oil.)

INSPECTION

HEADLIGHT RELAY CHECK

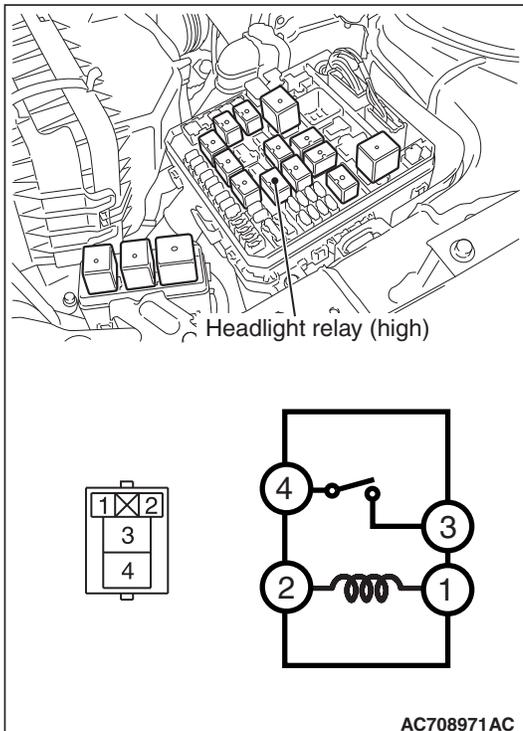
M1540104000248

HEADLIGHT RELAY (LOW) CHECK <VEHICLES WITH DISCHARGE HEADLIGHT>



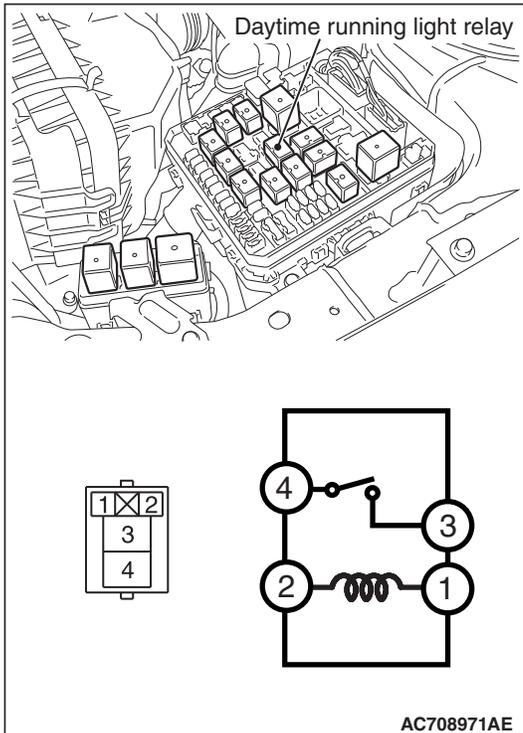
Battery voltage	Terminal number	Normal conditions
Not energized	3 -4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		Continuity exists (2 ohms or less)

HEADLIGHT RELAY (HIGH) CHECK



Battery voltage	Terminal number	Normal conditions
Not energized	3 -4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		Continuity exists (2 ohms or less)

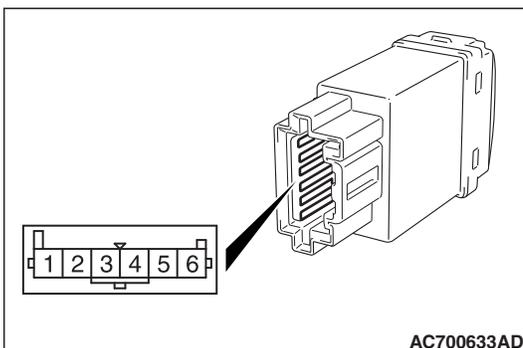
DAYTIME RUNNING LIGHT RELAY CHECK
<VEHICLES WITH DISCHARGE HEADLIGHT>



Battery voltage	Terminal number	Normal conditions
Not energized	3 -4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		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.)

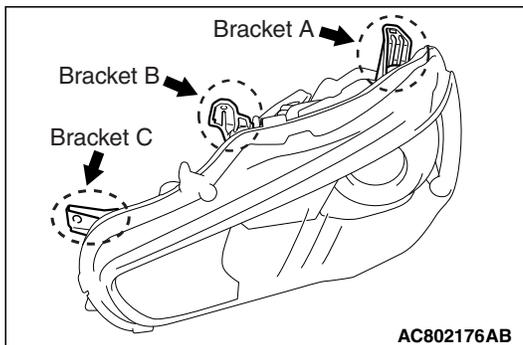
BRACKET REPAIR OF HEADLIGHT ASSEMBLY

M1540104500113

⚠ CAUTION

- If damage is present to locations other than the repairable bracket, replace the assembly.
- Apply a tape to the area around the damaged bracket to prevent damage.
- During repair work, be careful not to damage the repair bracket installation bosses.

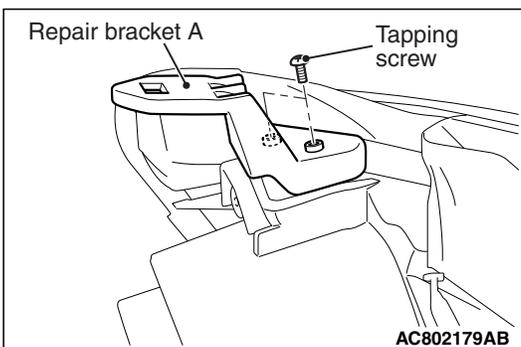
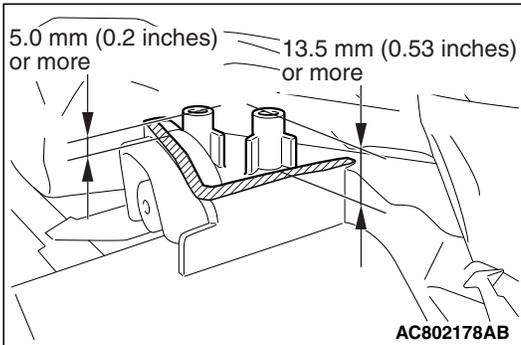
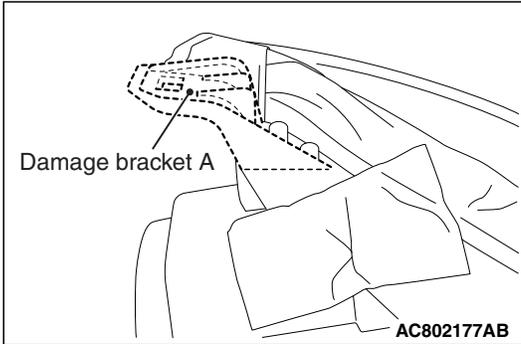
When brackets A, B and C shown in the figure are damaged, a low-cost repair can be performed by mounting a repair bracket.

**OPERATIONS BEFORE REPAIRING BRACKET**

Remove the headlight assembly.

REPAIR PROCEDURE OF BRACKET A

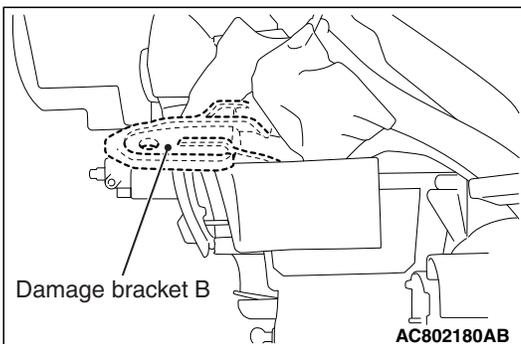
1. Cut the damaged bracket A so that it has the larger dimension than the dimension shown in the figure from the mounting boss seating face.
2. Smoothen the bracket cut surface using the sandpaper.

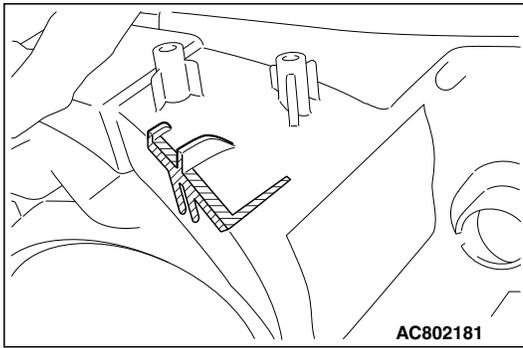


3. Fix the repair bracket A to the headlight assembly using the tapping screw.

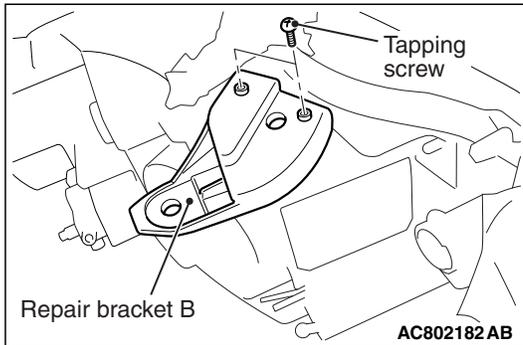
REPAIR PROCEDURE OF BRACKET B

1. Cut off the damaged bracket B.

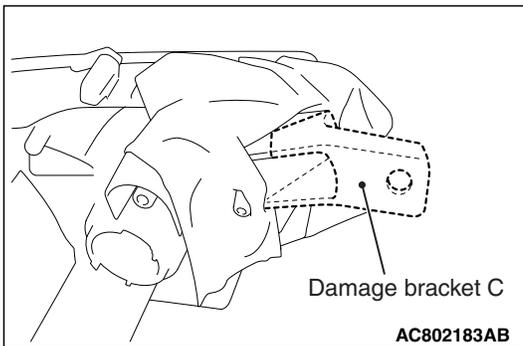




2. Remove the remaining bracket cut surface using the sandpaper.

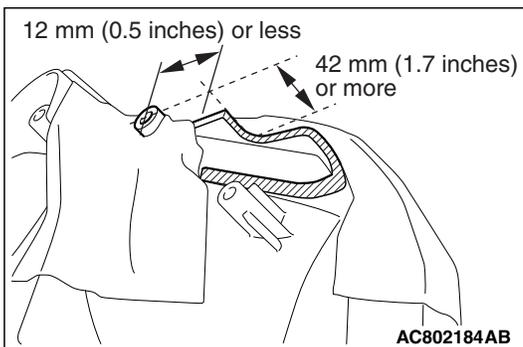


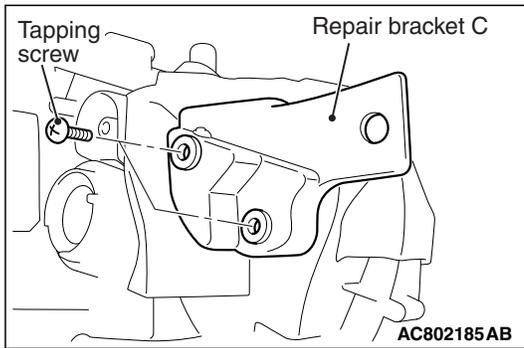
3. Fix the repair bracket B to the headlight assembly using the tapping screw.



REPAIR PROCEDURE OF BRACKET C

1. Cut the damaged bracket C so that it has the dimension shown in the figure.
2. Smoothen the bracket cut surface using the sandpaper.





3. Fix the repair bracket C to the headlight assembly using the tapping screw.

OPERATIONS AFTER REPAIRING BRACKET

1. Mount the headlight assembly to the vehicle.
2. Check that the headlight assembly does not vibrate during driving.
3. Check whether each light built in the headlight assembly and the headlight leveling system are properly operated.
4. Perform the headlight aiming adjustment and light intensity measurement.

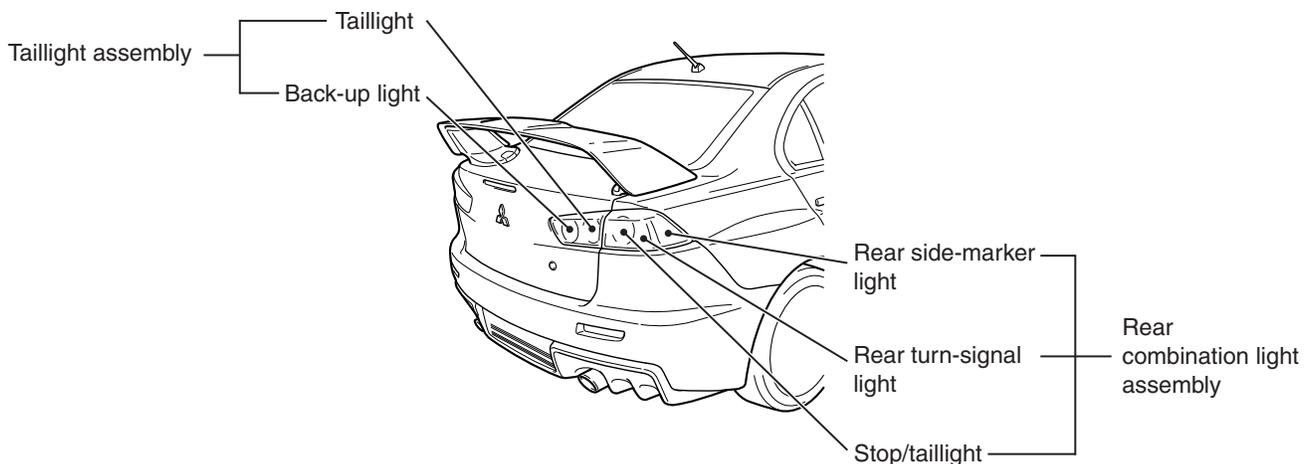
REPAIR BRACKET PART NUMBER

Part name	Part number
Headlight (LH) bracket kit	8301B173
Headlight (RH) bracket kit	8301B174

REAR COMBINATION LIGHT

GENERAL INFORMATION

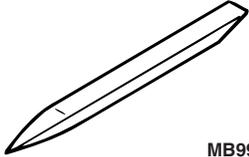
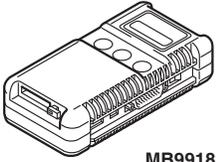
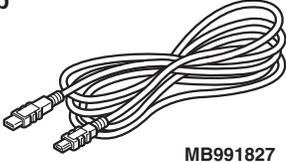
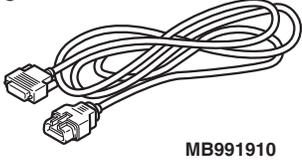
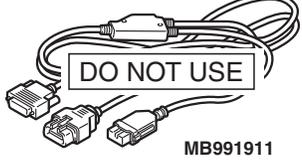
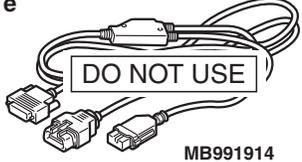
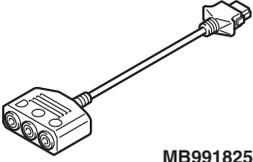
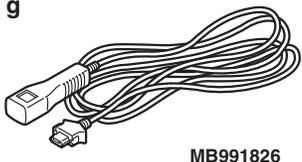
M1542000100424

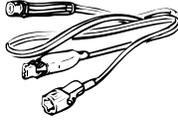
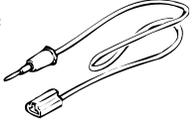


AC709103AC

- 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

Tool	Tool number and name	Supersession	Application
 <p>MB990784</p>	<p>MB990784 Ornament remover</p>	<p>General service tool</p>	<p>Removal of trunk lid trim, rear combination light assembly, taillight assembly</p>
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826</p> <p>M.U.T.-III sub-assembly</p> <p>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 Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>DTC, data list and actuator test check.</p>

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

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

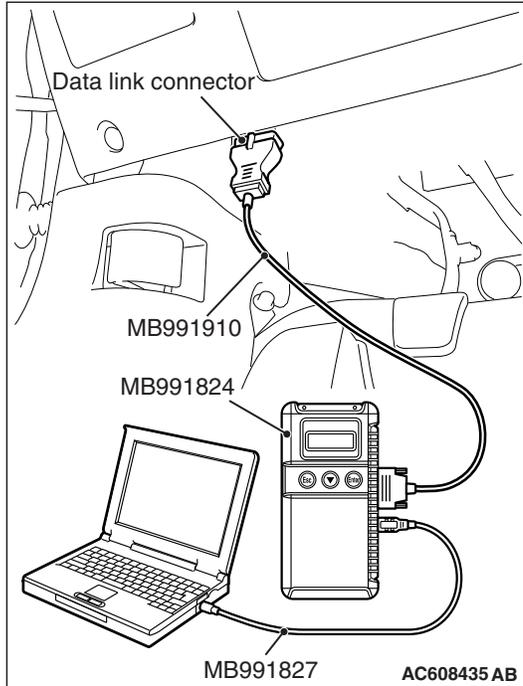
M1541400900038

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." to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

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.

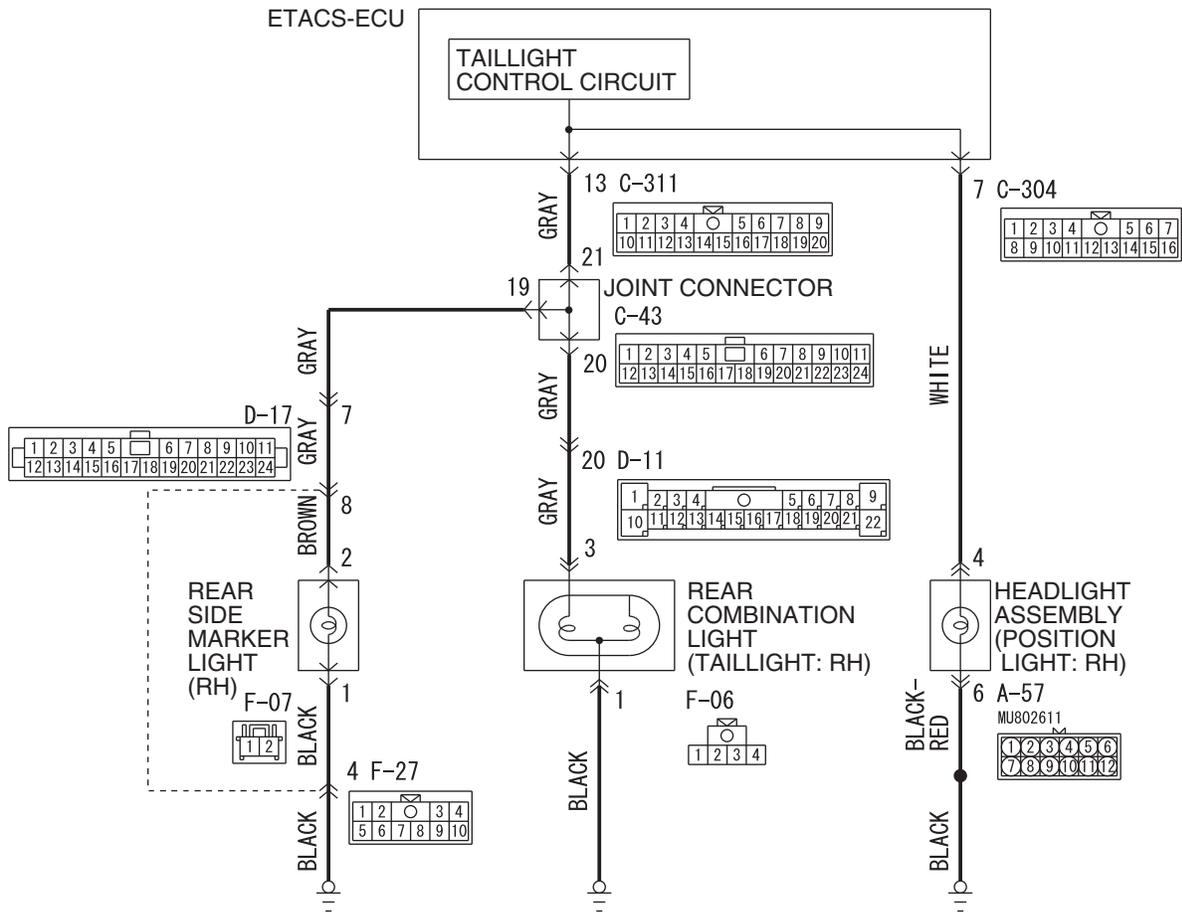
Diagnostic trouble code No.	Diagnostic item	Reference page
B16A0	Taillight (RH) circuit open (Open circuit in taillight (RH) or position light (RH))	P.54A-218
B16A7	Taillight (RH) circuit short (Short circuit in taillight (RH) or position light (RH))	
B16A1	Taillight (LH) circuit open (Open circuit in taillight (LH), position light (LH), or license plate light)	P.54A-224
B16A8	Taillight (LH) circuit short (Short circuit in taillight (LH), position light (LH), or license plate light)	

DIAGNOSTIC TROUBLE CODE PROCEDURES

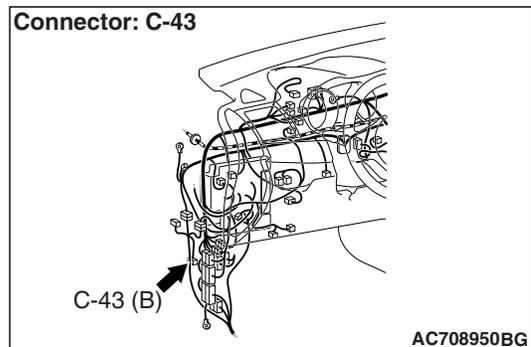
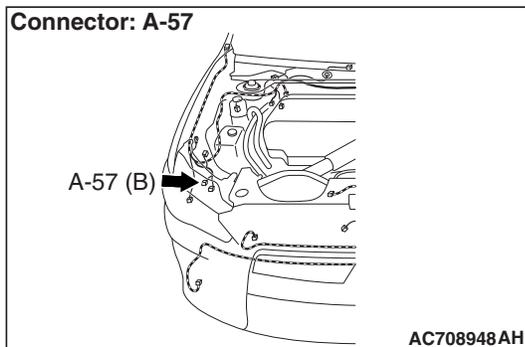
DTC B16A0: Taillight (RH) circuit open (Open circuit in rear side marker light (RH), taillight (RH) or position light (RH))

DTC B16A7: Taillight (RH) circuit short (Short circuit in rear side marker light (RH), taillight (RH) or position light (RH))

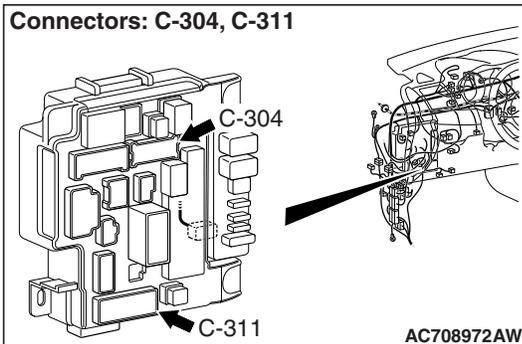
Taillight and Position Light Circuit



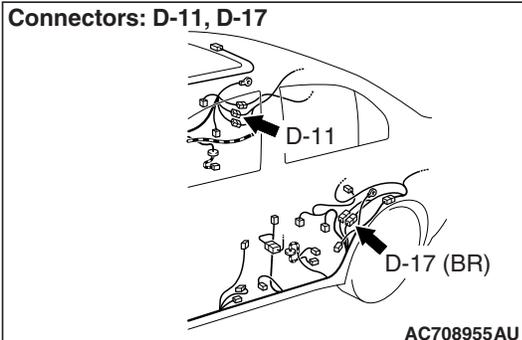
WAH54M026A



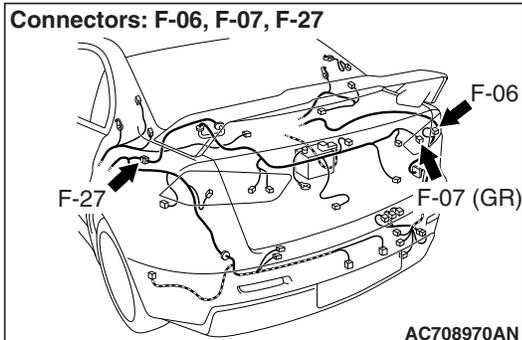
Connectors: C-304, C-311



Connectors: D-11, D-17



Connectors: F-06, F-07, F-27



TROUBLE JUDGMENT

When an open circuit is detected in the rear side marker light, 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 rear side marker light, taillight or position light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the rear side marker light, taillight or position light. When the ignition switch is "ON", the ETACS-ECU determines the rear side marker light, 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 rear side marker light (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 rear side marker light (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

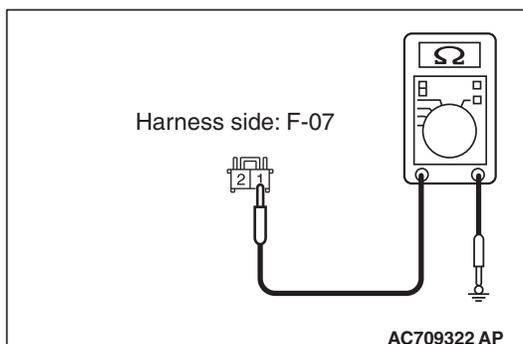
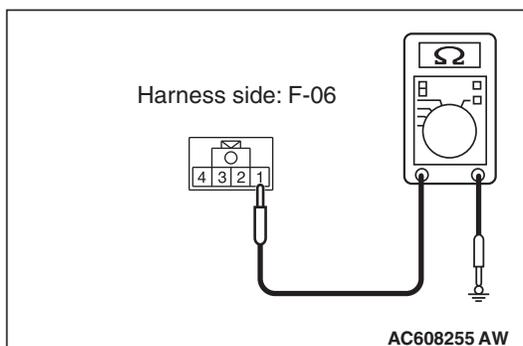
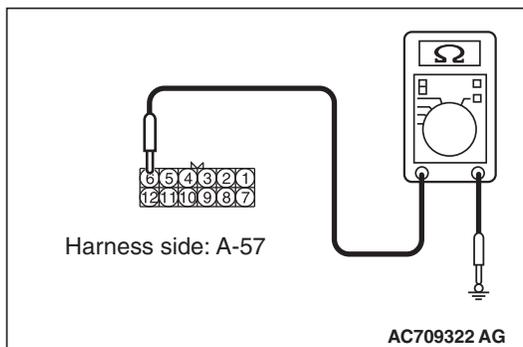
[P.00E-2.](#)

STEP 3. Resistance measurement at headlight assembly (RH) connector A-57, rear combination light (RH) connector F-06 and rear side marker light (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 rear side marker light (RH) connector F-07 (terminal 1) and the body ground.

OK: The measured value should be continuity exists (2Ω 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 rear side marker light (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 <rear side marker light or 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 <rear side marker light or 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 rear side marker light 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 7).
- 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 rear side marker light (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 rear side marker light 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

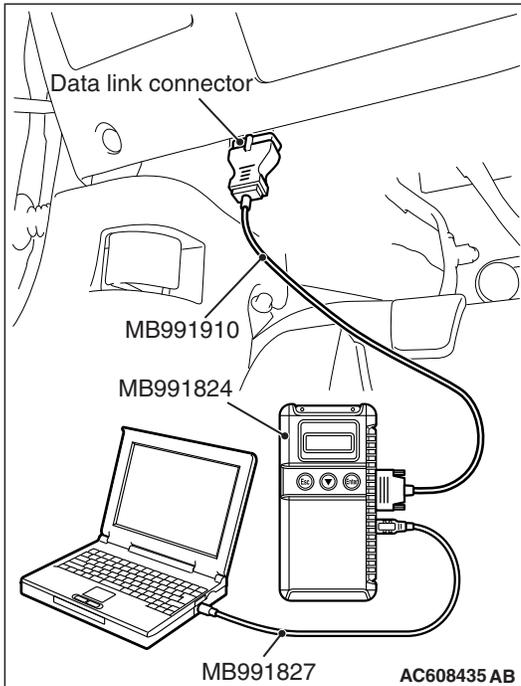
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-215."
- (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?

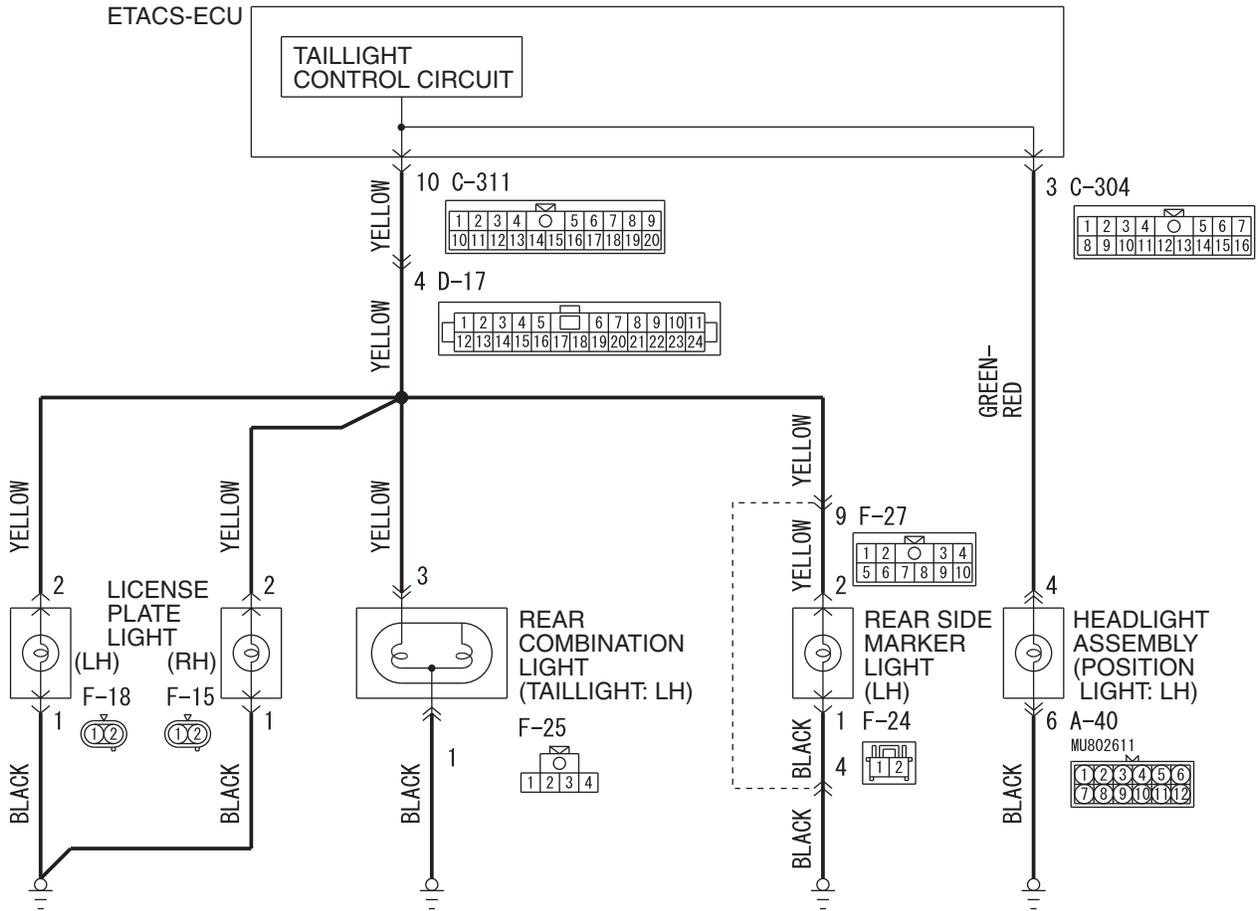
YES : Replace the ETACS-ECU.

NO : The procedure is complete.

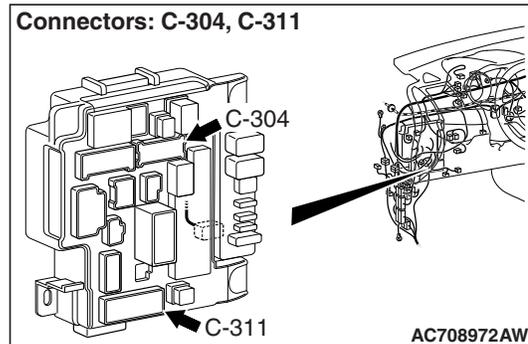
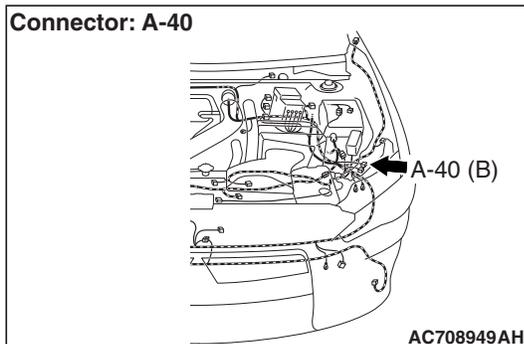


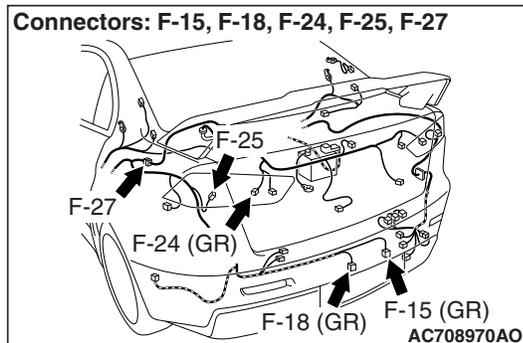
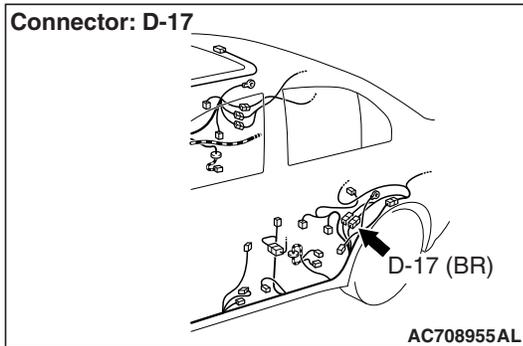
DTC B16A1: Taillight (LH) circuit open (Open circuit in rear side marker light (LH), taillight (LH), position light (LH), or license plate light)
DTC B16A8: Taillight (LH) circuit short (Short circuit in rear side marker light (LH), taillight (LH), position light (LH), or license plate light)

Taillight, Position Light and License Plate Light Circuit



WAH54M027A





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 rear side marker light, taillight, position light or license plate light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the rear side marker light, taillight, position light or license plate light. When the ignition switch is "ON", the ETACS-ECU determines the rear side marker light, 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, rear side marker light (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, rear side marker light (LH) connector F-24, license plate light connector F-18 (LH) and F-15 (RH) in good condition?

YES : Go to Step 3.

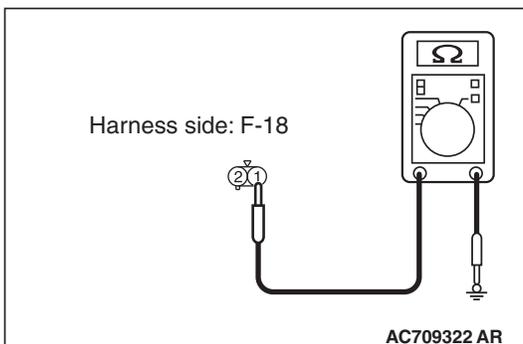
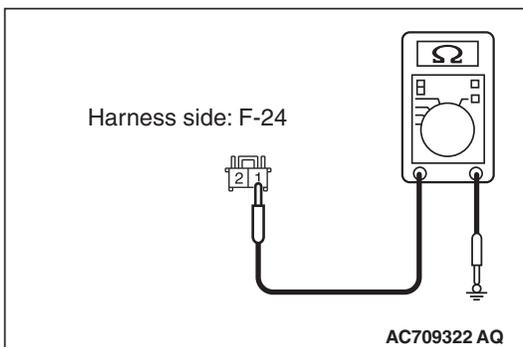
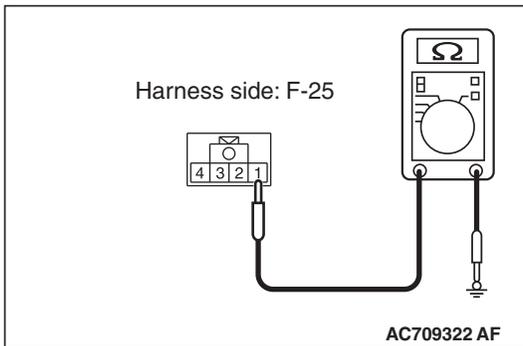
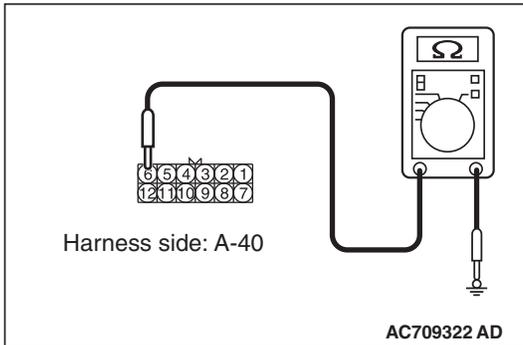
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 3. Resistance measurement at headlight assembly (LH) connector A-40, rear combination light (LH) connector F-25, rear side marker light (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.

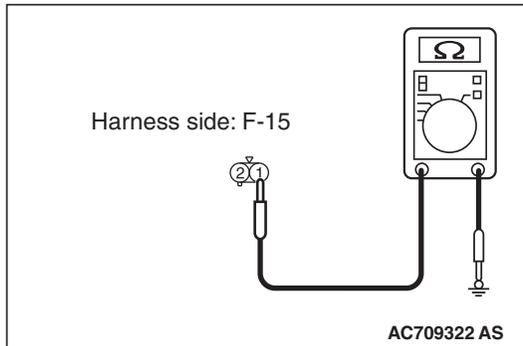
- Measure the resistance between headlight assembly (LH) connector A-40 (terminal 6) and the body ground.



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

- Measure the resistance between rear side marker light (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 rear side marker light (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 <rear side marker light, 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 <rear side marker light, 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, rear side marker light 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 rear side marker light (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, rear side marker light 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

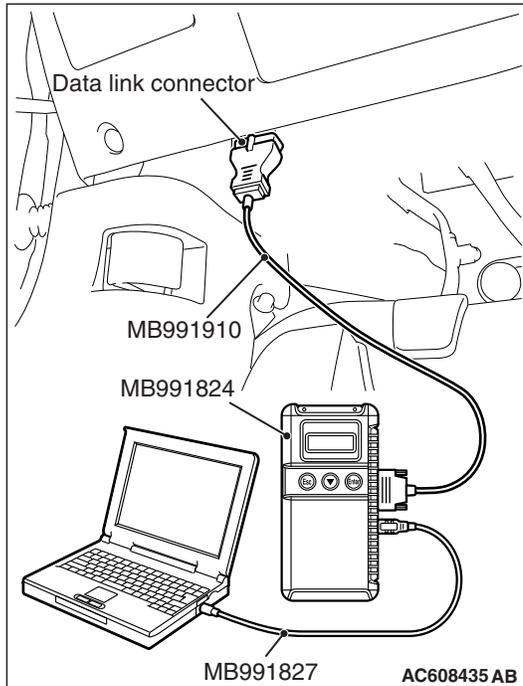
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-215."
- (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	None of taillights illuminates.	P.54A-230
2	One of the taillights does not illuminate.	P.54A-233

SYMPTOM PROCEDURES

Inspection Procedure 1: None of taillights illuminates.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If none of taillights illuminates, 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

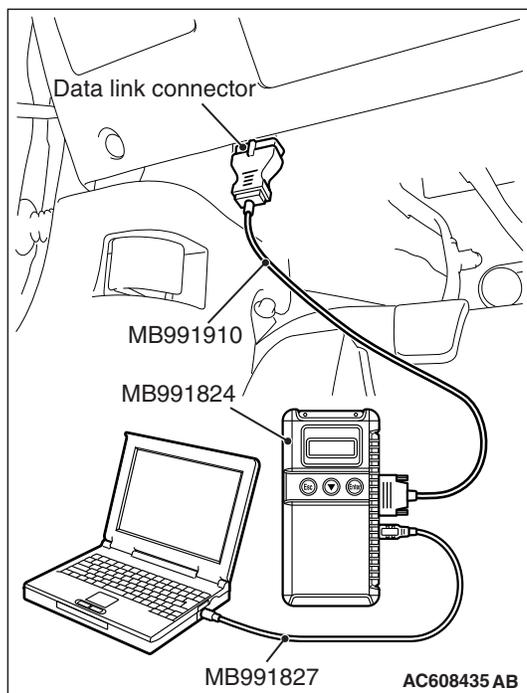
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) [P.54A-215](#)."
- (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-646](#).

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-703](#)).

STEP 4. Retest the system

Check that the taillight illuminates normally.

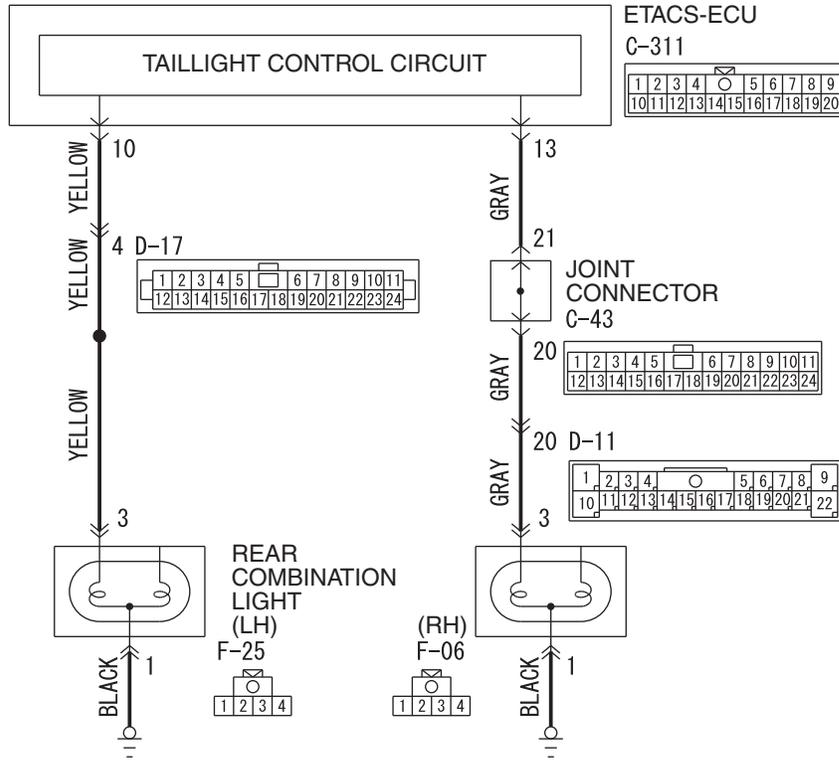
Q: Does the taillight work normally?

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](#)).

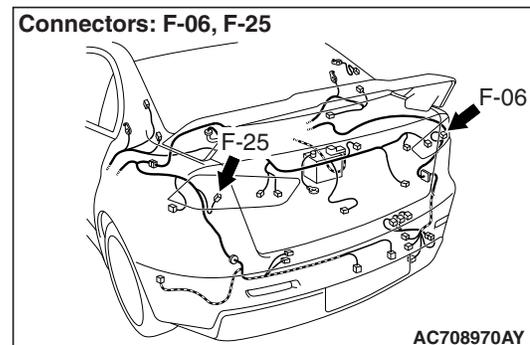
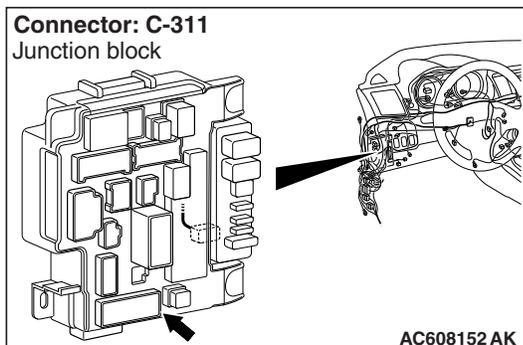
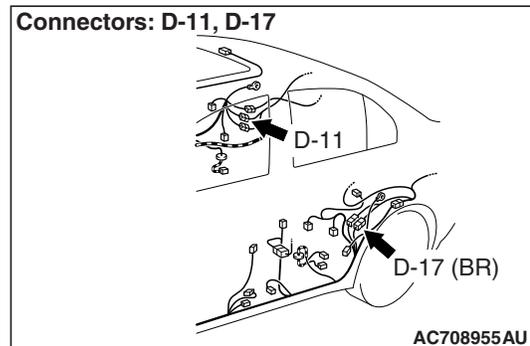
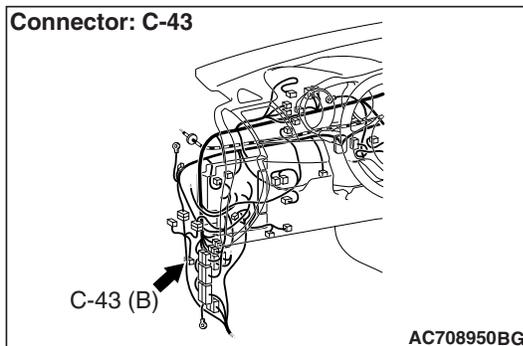
NO : Replace the ETACS-ECU.

Inspection Procedure 2: One of the taillights does not illuminate.

Taillight Circuit



WAH54M050A



TECHNICAL DESCRIPTION (COMMENT)

If one 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:**

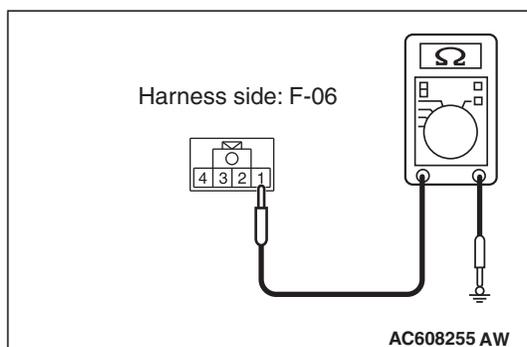
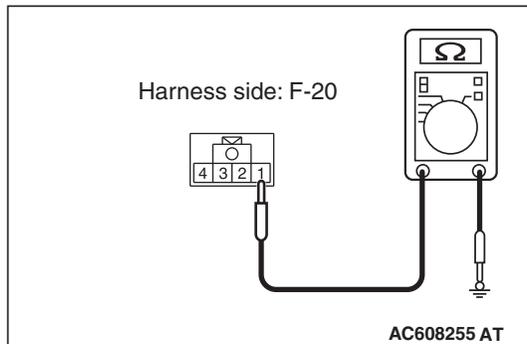
- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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.

Check the ground wires for open circuit.

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.

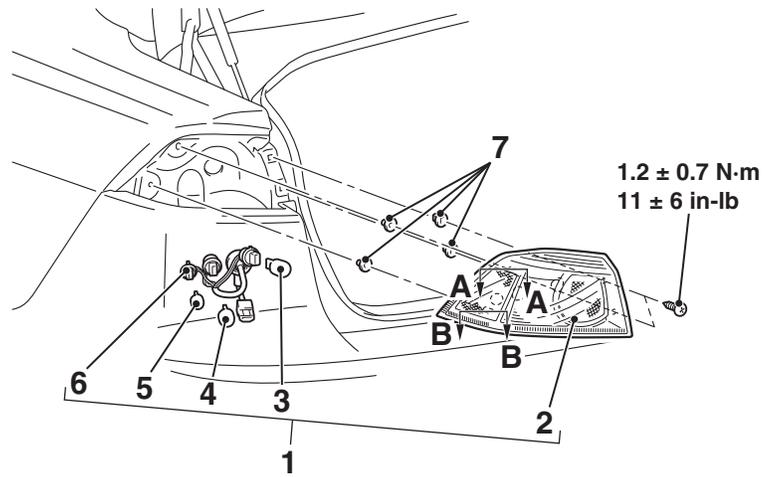
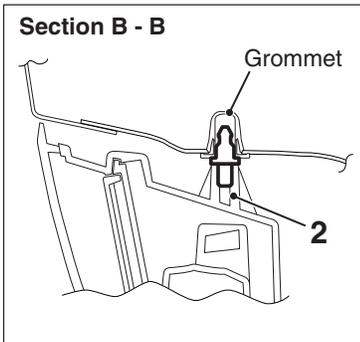
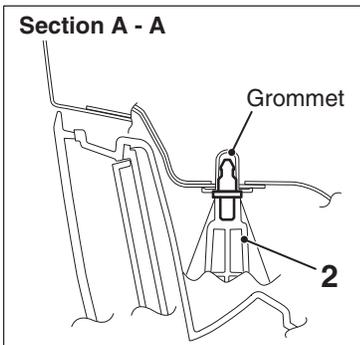
Q: Does the taillight work normally?

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

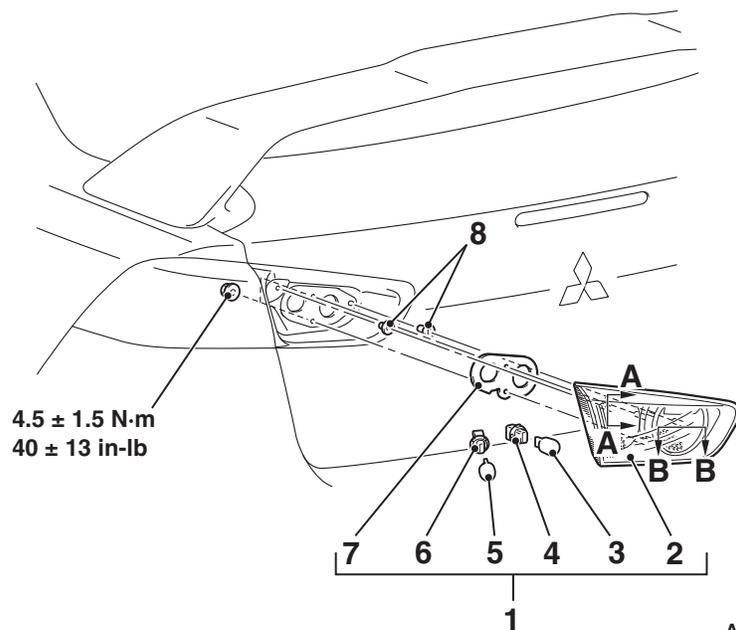
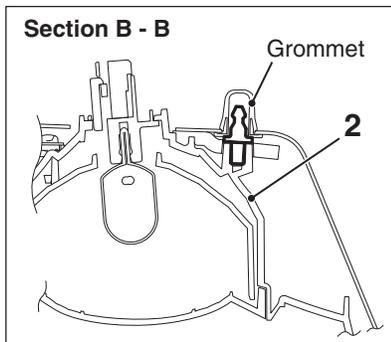
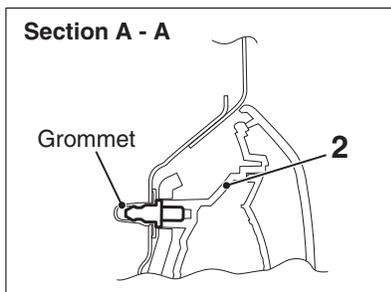
1. Rear combination light assembly
2. Rear combination light unit
3. Stop/taillight bulb
4. Rear turn-signal light bulb

Removal Steps (Continued)

5. Rear side-marker light bulb
6. Socket
7. Grommet

TAILLIGHT REMOVAL AND INSTALLATION

M1541402600107



AC706935AC

Removal Steps

- Trunk lid trim (Refer to GROUP 52A
–Trims P.52A-12).
- 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

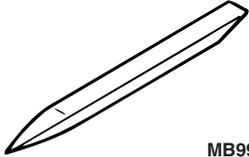
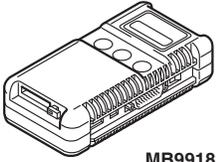
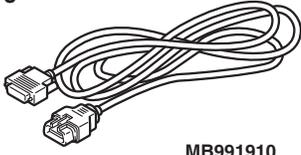
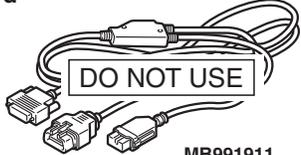
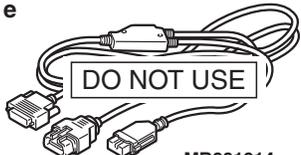
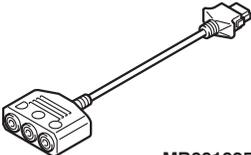
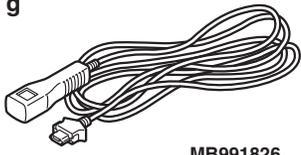
FOG LIGHT**SERVICE SPECIFICATIONS**

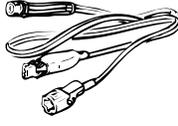
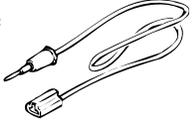
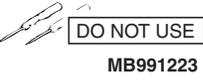
M1540400900091

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).

SPECIAL TOOLS

M1540401800310

Tool	Tool number and name	Supersession	Application
 <p>MB990784</p>	<p>MB990784 Ornament remover</p>	<p>General service tool</p>	<p>Removal of front fog light bezel</p>
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826</p> <p>M.U.T.-III sub-assembly</p> <p>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 Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>DTC, data list and actuator test check.</p>

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

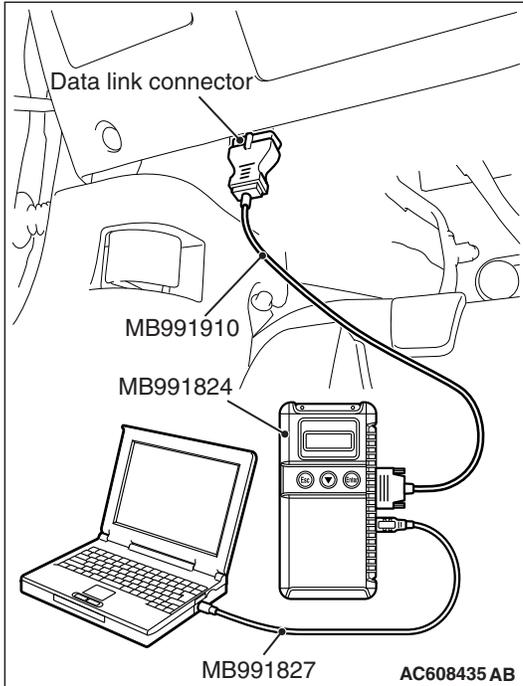
M1540403000020

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.

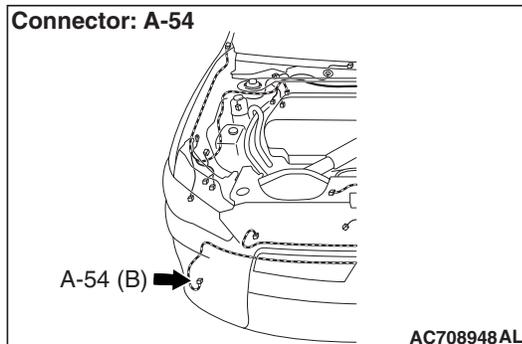
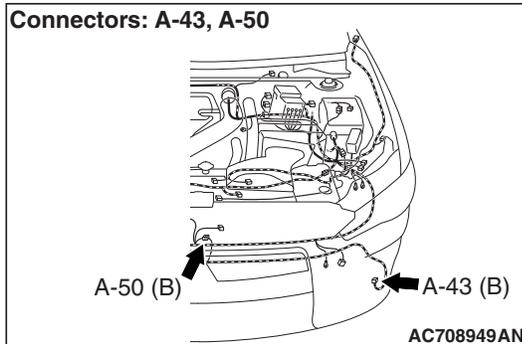
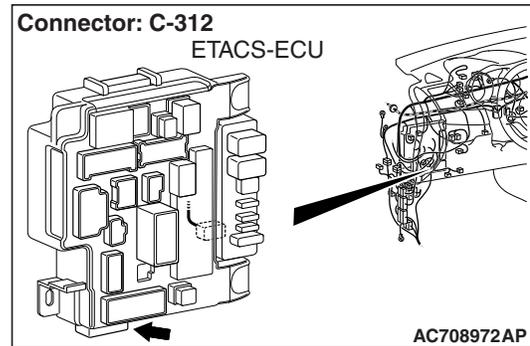
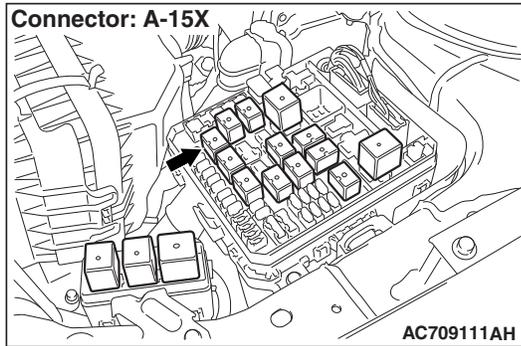
NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.

6. Select "Diagnostic Trouble Code." to read the DTC.
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	None of the front fog lights illuminates.	P.54A-243
2	One of the fog lights does not illuminate.	P.54A-249
3	The front fog light indicator does not illuminate normally.	P.54A-253



CIRCUIT OPERATION

When none of the front fog lights illuminates, 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.

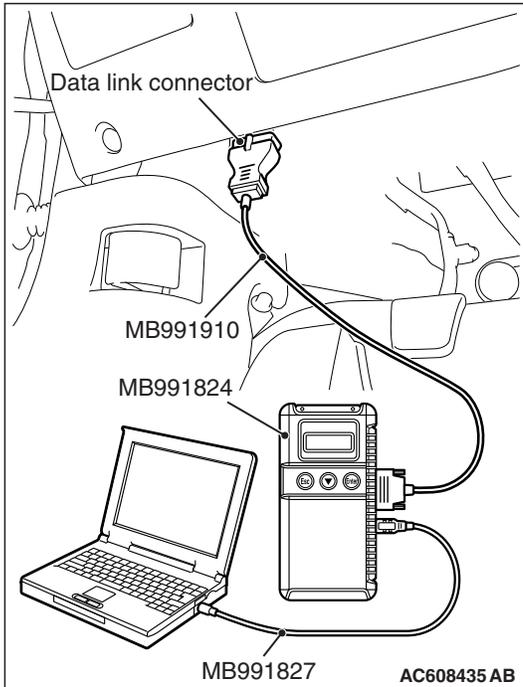
TROUBLESHOOTING HINTS

- 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-240."
- (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.00-26).
- (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-140).

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-646).

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 11 "ETACS-ECU does not receive any signal from the column switch signal." [P.54A-703](#).

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-258](#).

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.

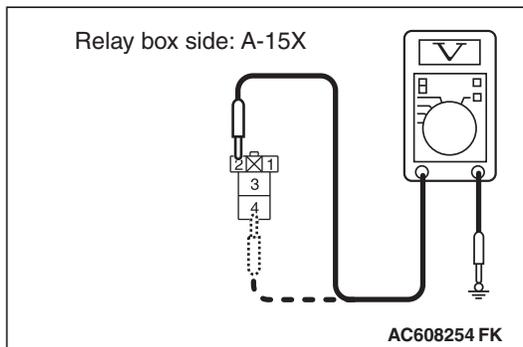
- (1) Disconnect fog light relay connector A-15X and measure the voltage available at the relay box side of the connector.
- (2) Measure the voltage between terminal 2 and ground, and between terminal 4 and ground.

- 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).

- Check the line for open circuit.

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.

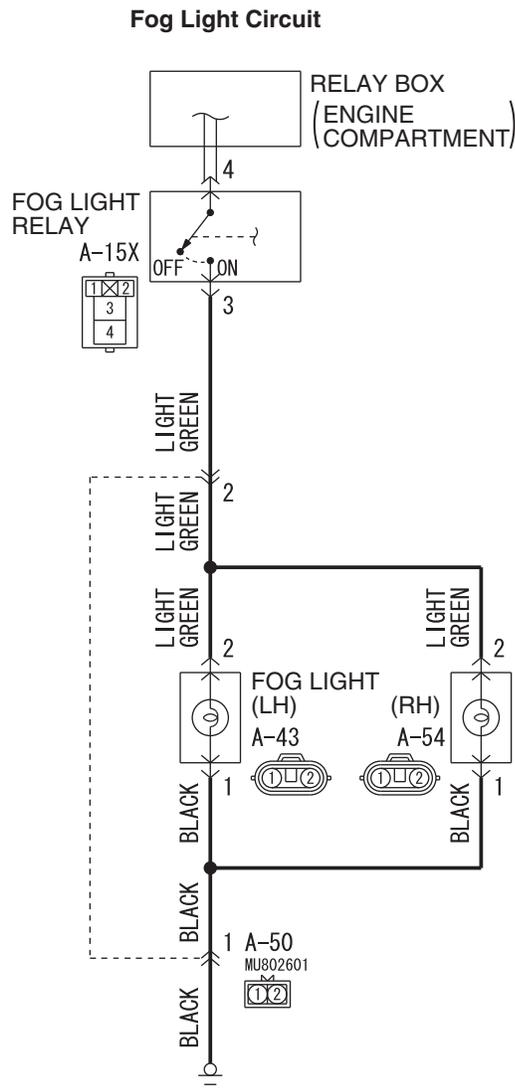
STEP 13. Retest the system.

Q: Does the fog lights illuminate in good condition?

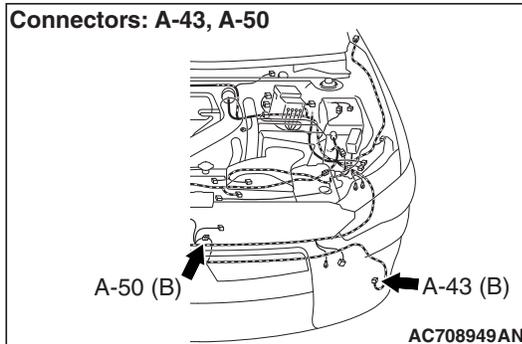
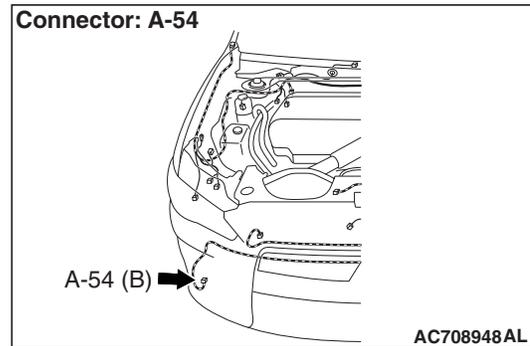
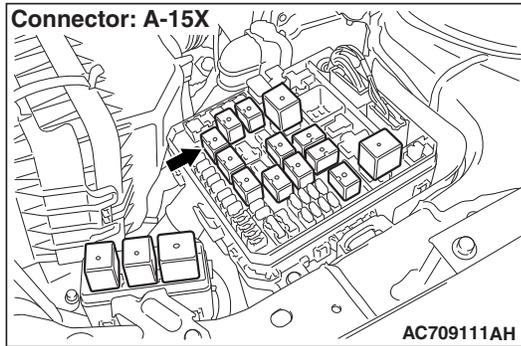
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: One of the fog lights does not illuminate.



W8G54M164A



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.

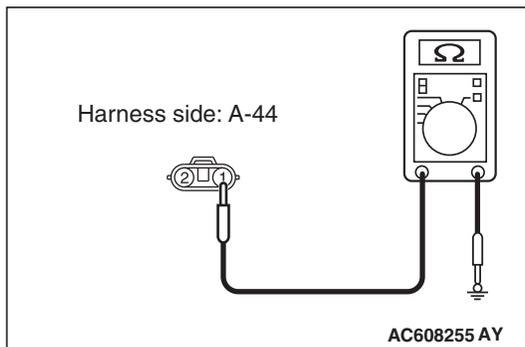
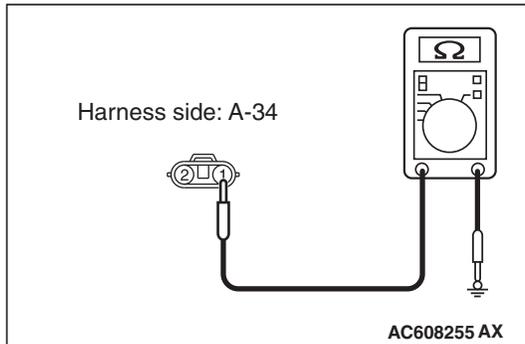
(1) Remove the fog light bulb.

(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.



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?

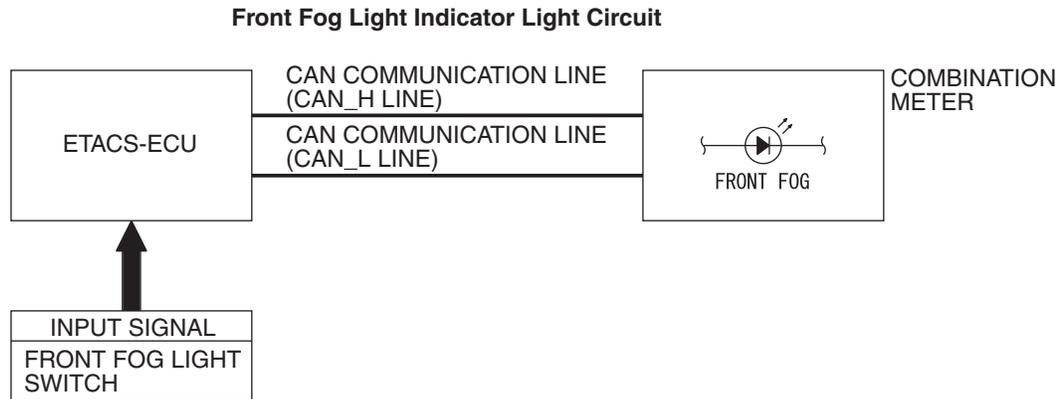
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction [P.00-15](#)).

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.



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

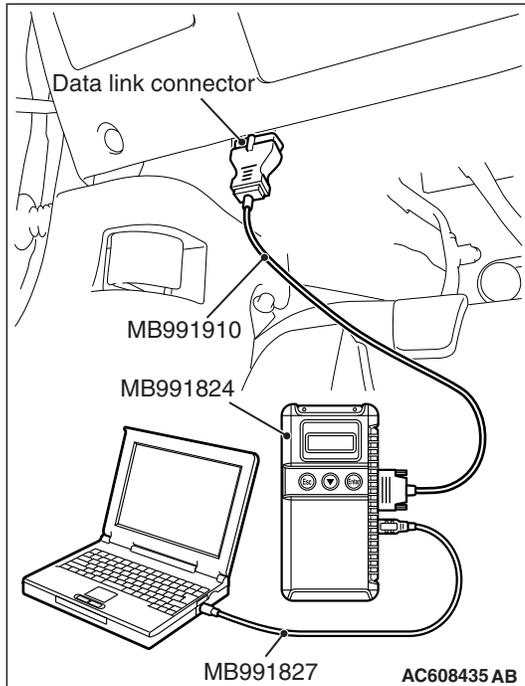
STEP 1. Check the fog lights.

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 "One of the fog lights does not illuminate P.54A-249."



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-240."
- (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-15).

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-32).

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-67).
- (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.

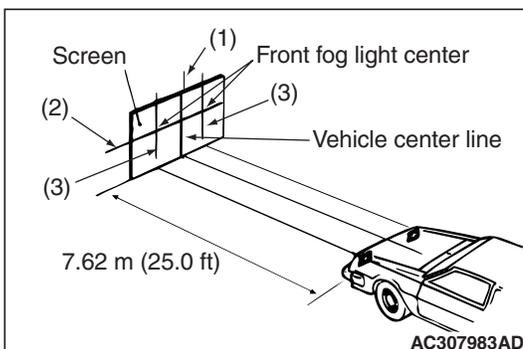
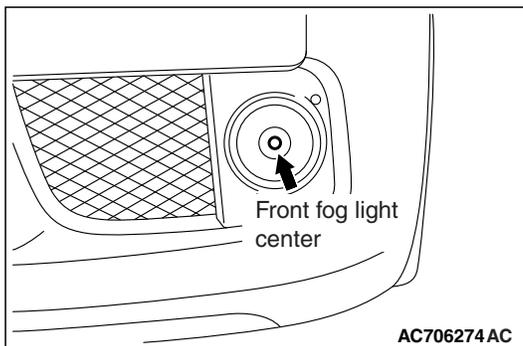
ON-VEHICLE SERVICE

FRONT FOG LIGHT AIMING

M1540400300282

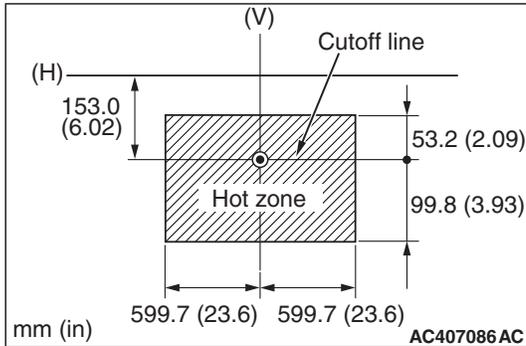
PRE-AIMING INSTRUCTIONS

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)

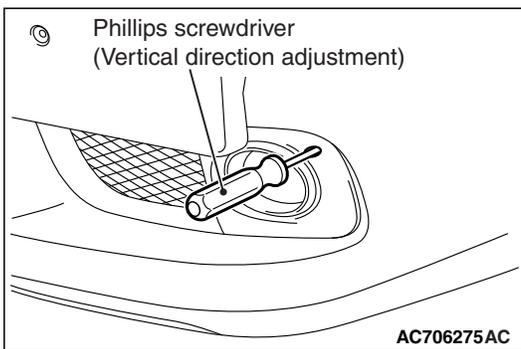
Limit:

(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.



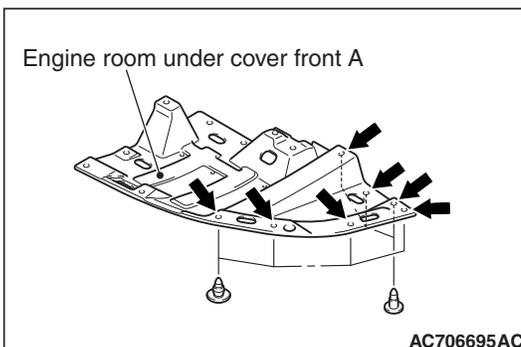
FRONT FOG LIGHT BULB REPLACEMENT

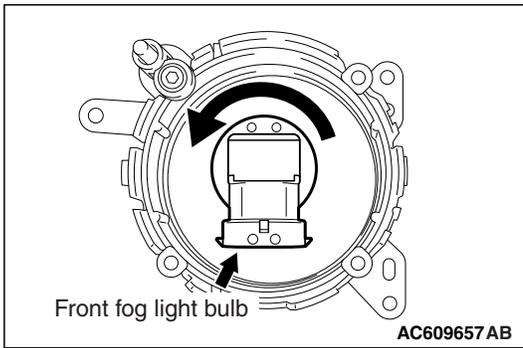
M1540400400289

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.





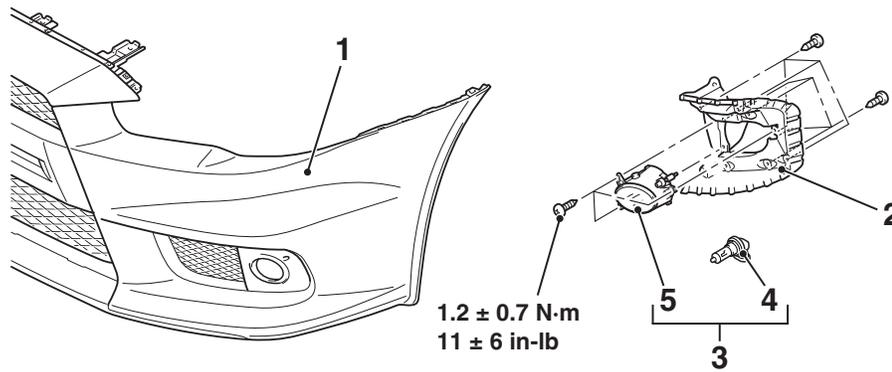
2. Disconnect the connector and withdraw the bulb.

REMOVAL AND INSTALLATION

M1540400500123

Post-installation operation

Check the beam direction of the front fog light (Refer to Front Fog light Aiming [P.54A-255](#)).



AC710516AD

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

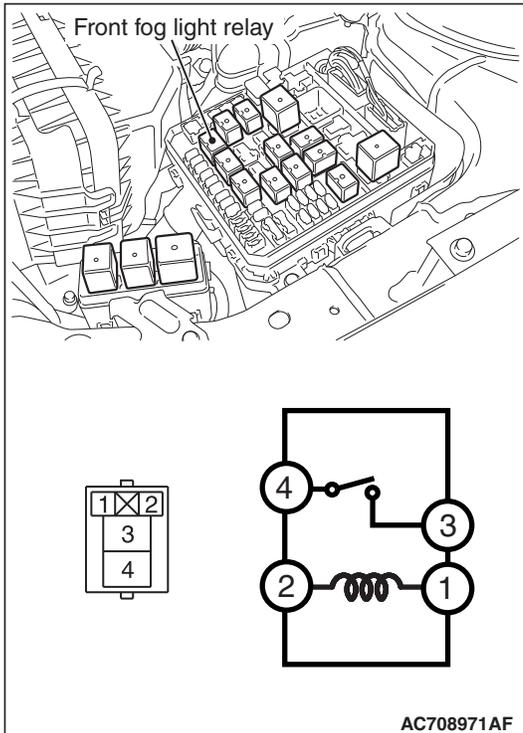
Removal steps (Continued)

3. Fog light assembly
4. Bulb
5. Fog light unit

INSPECTION

FRONT FOG LIGHT RELAY CHECK

M1540400700105

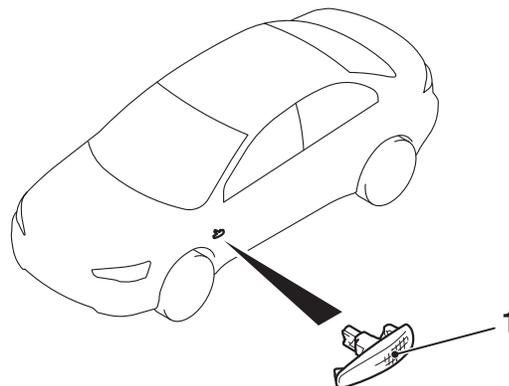


Battery voltage	Terminal number	Normal conditions
Not energized	3 -4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		Continuity exists (2 ohms or less)

SIDE TURN-SIGNAL LIGHT

REMOVAL AND INSTALLATION

M1541800200286



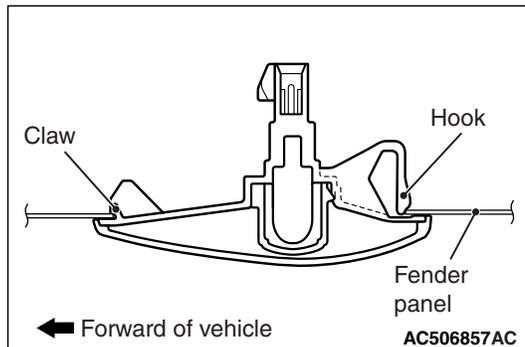
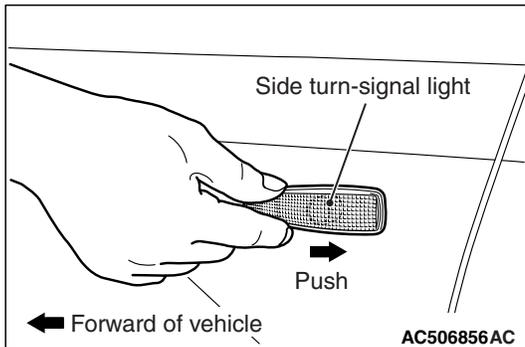
AC609819AB

- <<A>> >>A<< 1. **Removal step**
Side turn-signal light assembly

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

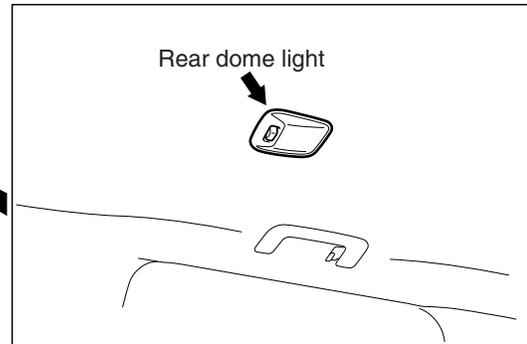
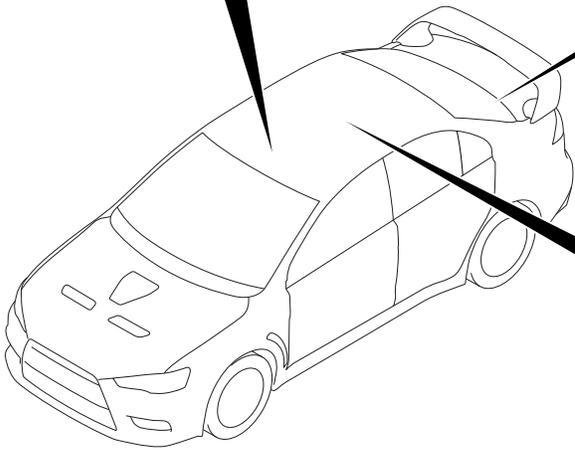
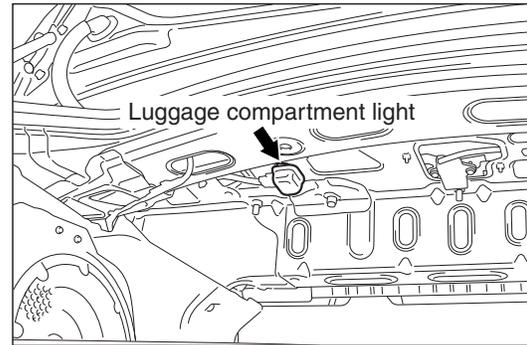
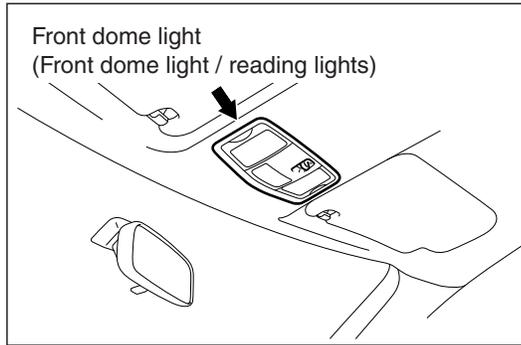
>>A<< SIDE TURN-SIGNAL LIGHT INSTALLATION

Engage the claw to the fender panel to install the side turn signal light.

DOME LIGHT

GENERAL INFORMATION

M1542000100435

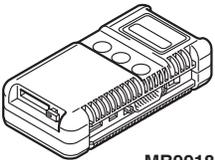
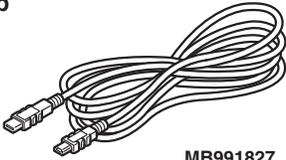
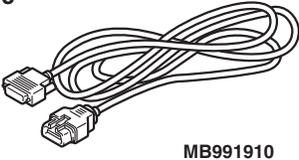
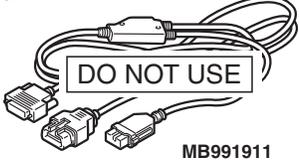
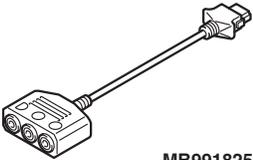
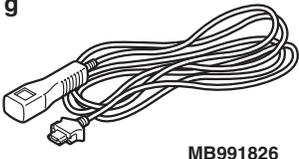


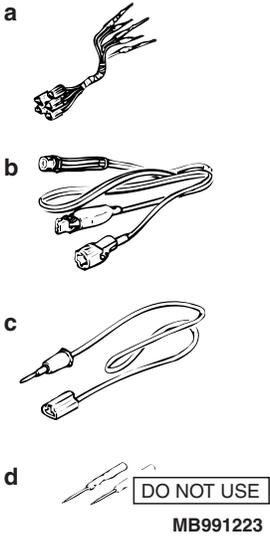
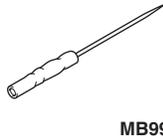
AC709153AB

- 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.

SPECIAL TOOLS

M1541301600293

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

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

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

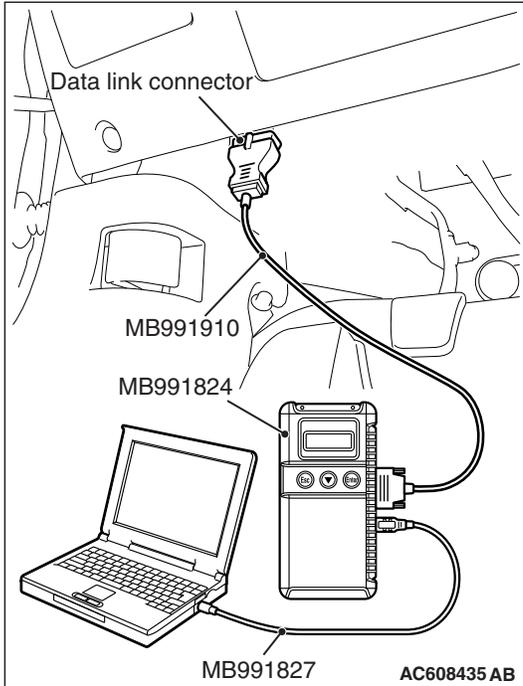
M1541302100020

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." to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

TROUBLE SYMPTOM CHART

M1541300200139

Inspection Procedure No.	Trouble symptom	Reference page
1	The front dome light does not illuminate normally.	P.54A-264
2	The rear dome light does not illuminate normally.	P.54A-269
3	The luggage compartment light does not illuminate normally.	P.54A-273
4	The interior light auto-cut function does not operate correctly.	P.54A-276

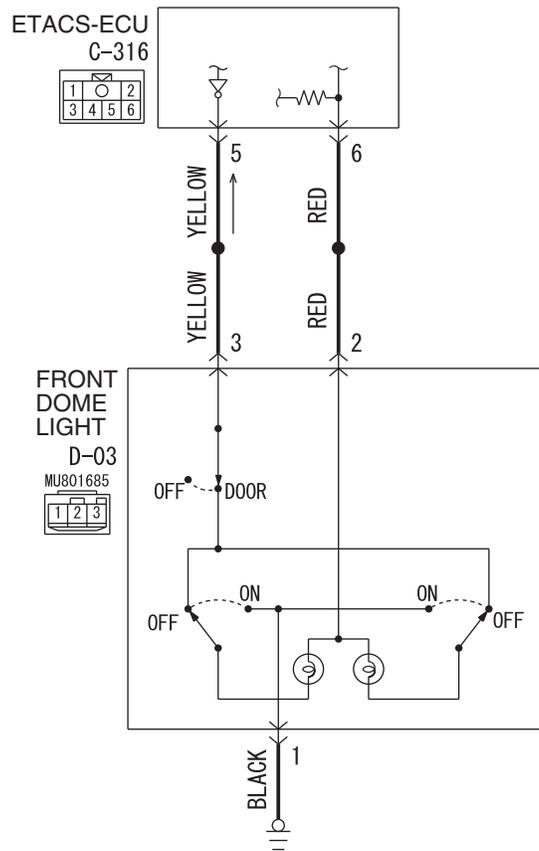
SYMPTOM PROCEDURES

Inspection Procedure 1: The front dome light does not illuminate normally.

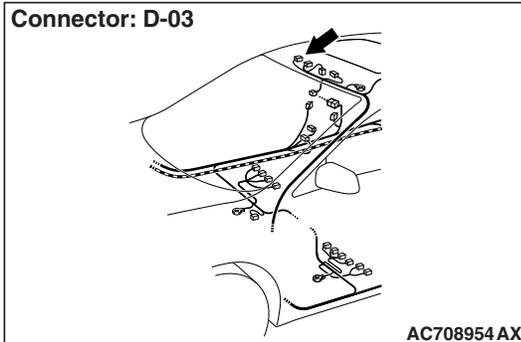
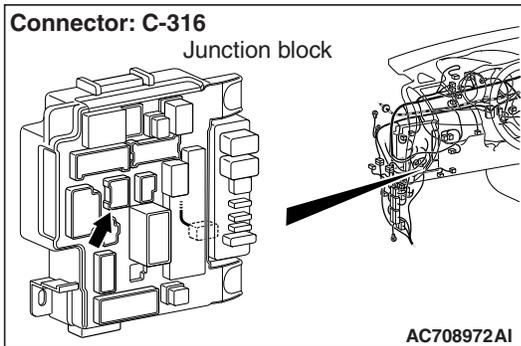
CAUTION

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

Front Dome Light Circuit



W8G54M165A



TROUBLE JUDGMENT

The ETACS-ECU illuminates and extinguishes the front 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), 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

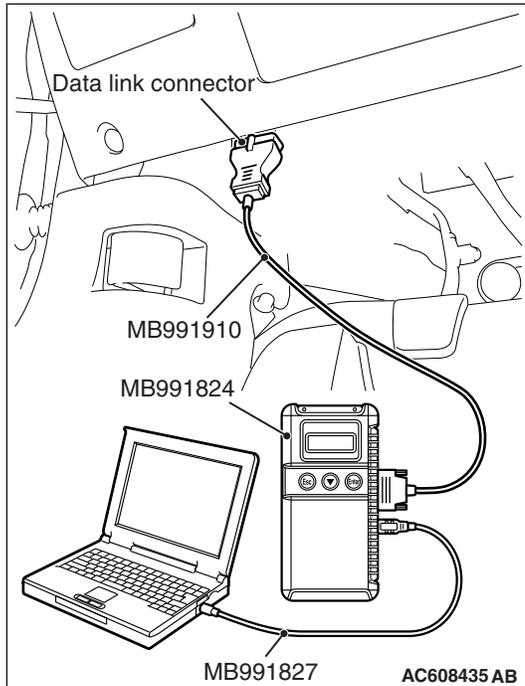
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) [P.54A-262.](#)"
- (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-646.](#)

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	1 V or less
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-703](#).

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](#).

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)

- Check the line for open circuit.

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.

- Check the ground wires for open circuit.

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](#)).

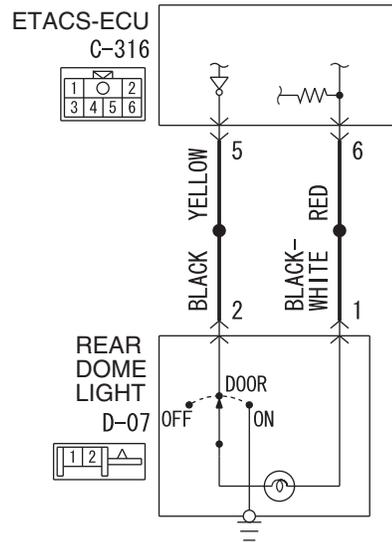
NO : Replace the ETACS-ECU.

Inspection Procedure 2: The rear dome light does not illuminate normally.

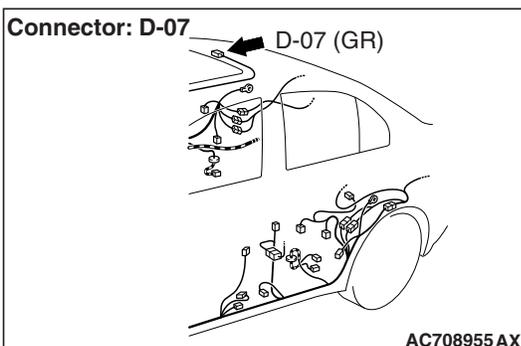
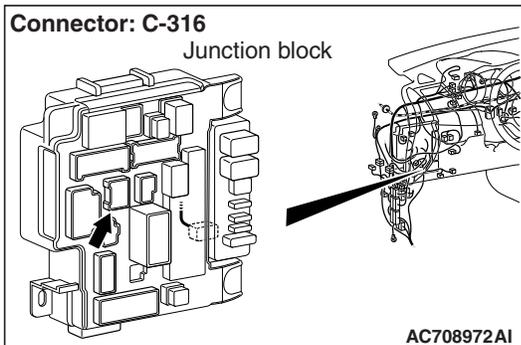
CAUTION

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

Rear Dome Light Circuit



W8G54M166A



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

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**

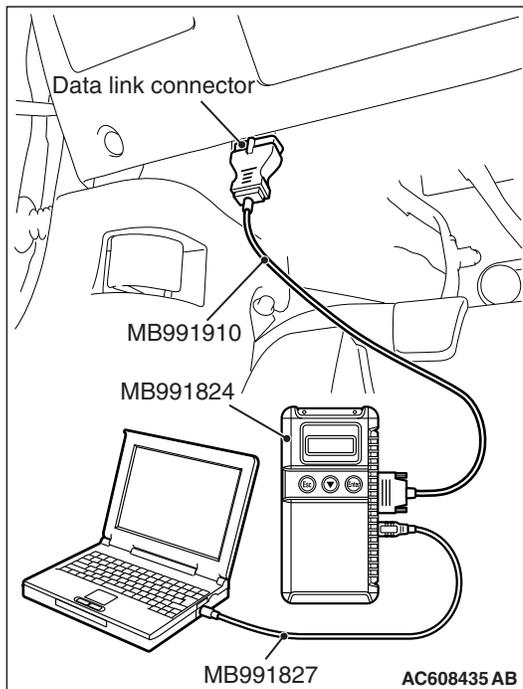
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-262."
- (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-646.

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	1 V or less
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-703](#).

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](#).

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)

- Check the line for open circuit.

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](#)).

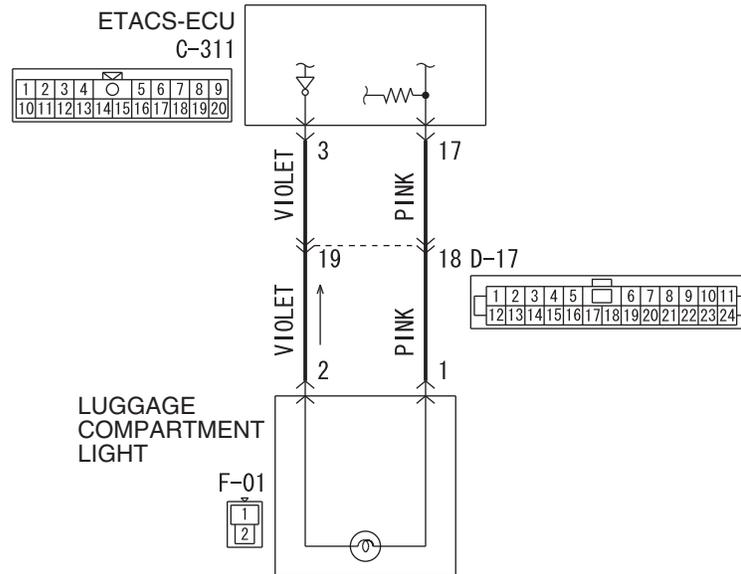
NO : Replace the ETACS-ECU.

Inspection Procedure 3: The luggage compartment light does not illuminate normally.

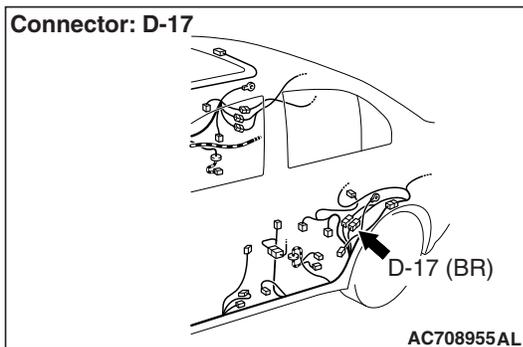
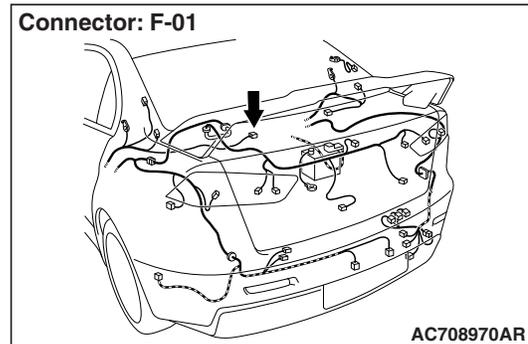
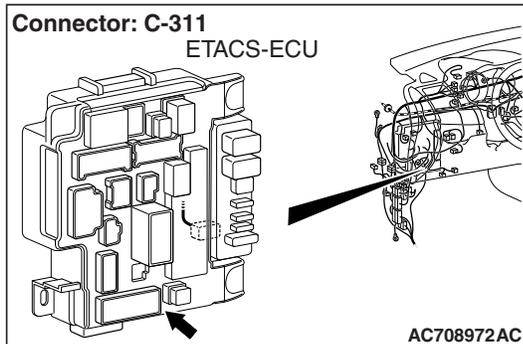
CAUTION

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

Luggage Compartment Light Circuit



W8G54M167A



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.

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

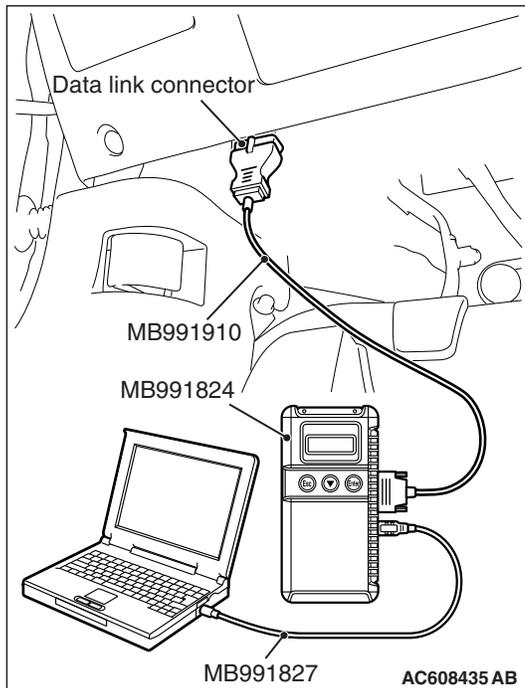
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54A-262."
- (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-646.

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-703](#).

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).

- Check the line for open circuit.

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

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 "Disable" through customization.

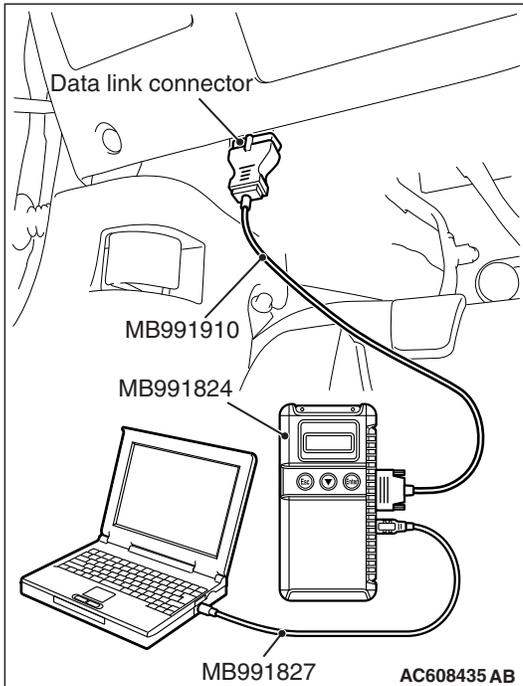
TROUBLESHOOTING HINTS

- Malfunction of door switch
- 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-262."
- (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 "Disable" 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-279).

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-646.

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 "LOCK" (OFF) position.
- Open each door.

Item No.	Item name	Normal condition
Item 254	IG voltage	1 V or less
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

Q: Does scan tool MB991958 display the items "IG voltage", "ACC switch", "Dr door ajar 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-703](#).

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.