

GROUP 54Ac

LIGHTING

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GENERAL INFORMATION

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▪For exterior lights, the headlight assemblies, front fog lights <vehicles without discharge headlight> and daytime running light* have been installed to the front of the vehicle, the side turn-signal lights to the sides of the vehicle (to the fender panel), and the rear combination light assemblies, tail light assemblies, rear side marker lights, license plate lights, and high-mounted stop lights to the rear of the vehicle.

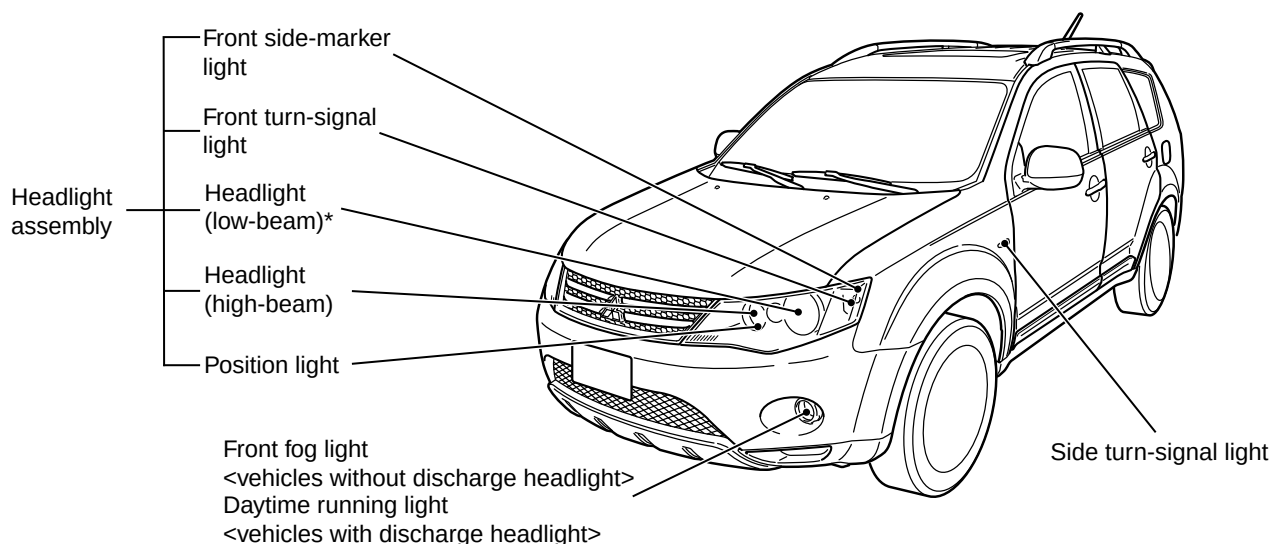
▪The headlight assembly bracket can be replaced separately.

▪For interior lights, the front dome light, rear dome light, luggage compartment light, glove box light, center console down light, foot light, and ignition key cylinder illumination lights have been installed.

NOTE: *: Vehicles for halogen headlight:
Headlight low-beam decrease in lights. Vehicles without discharge headlight: Light only for daytime running light.

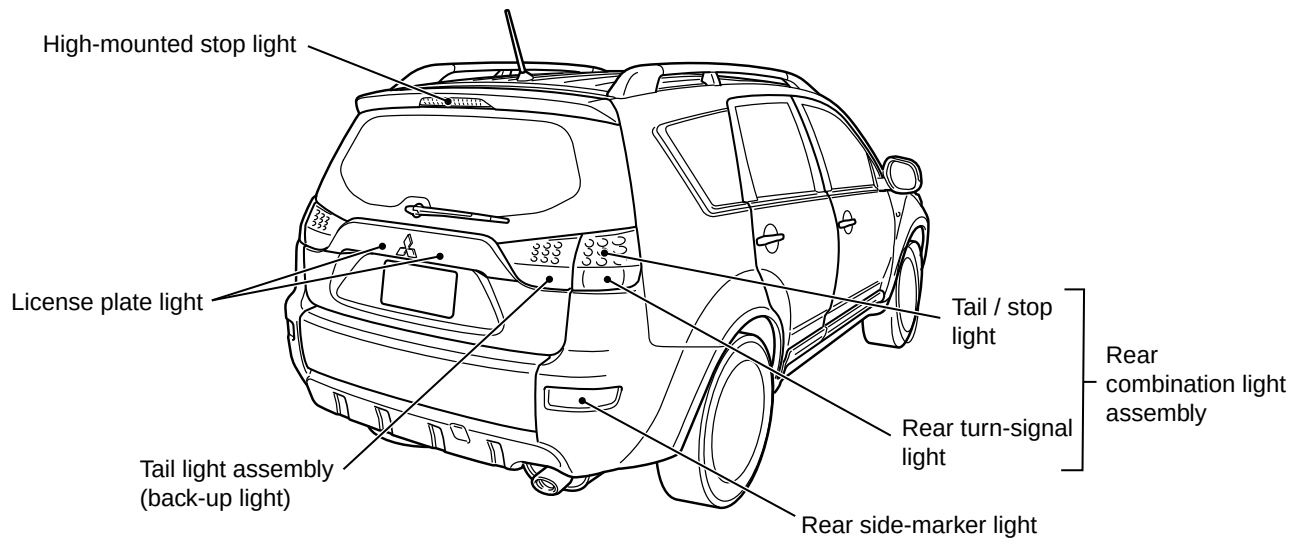
CONSTRUCTION DIAGRAM

Exterior lights



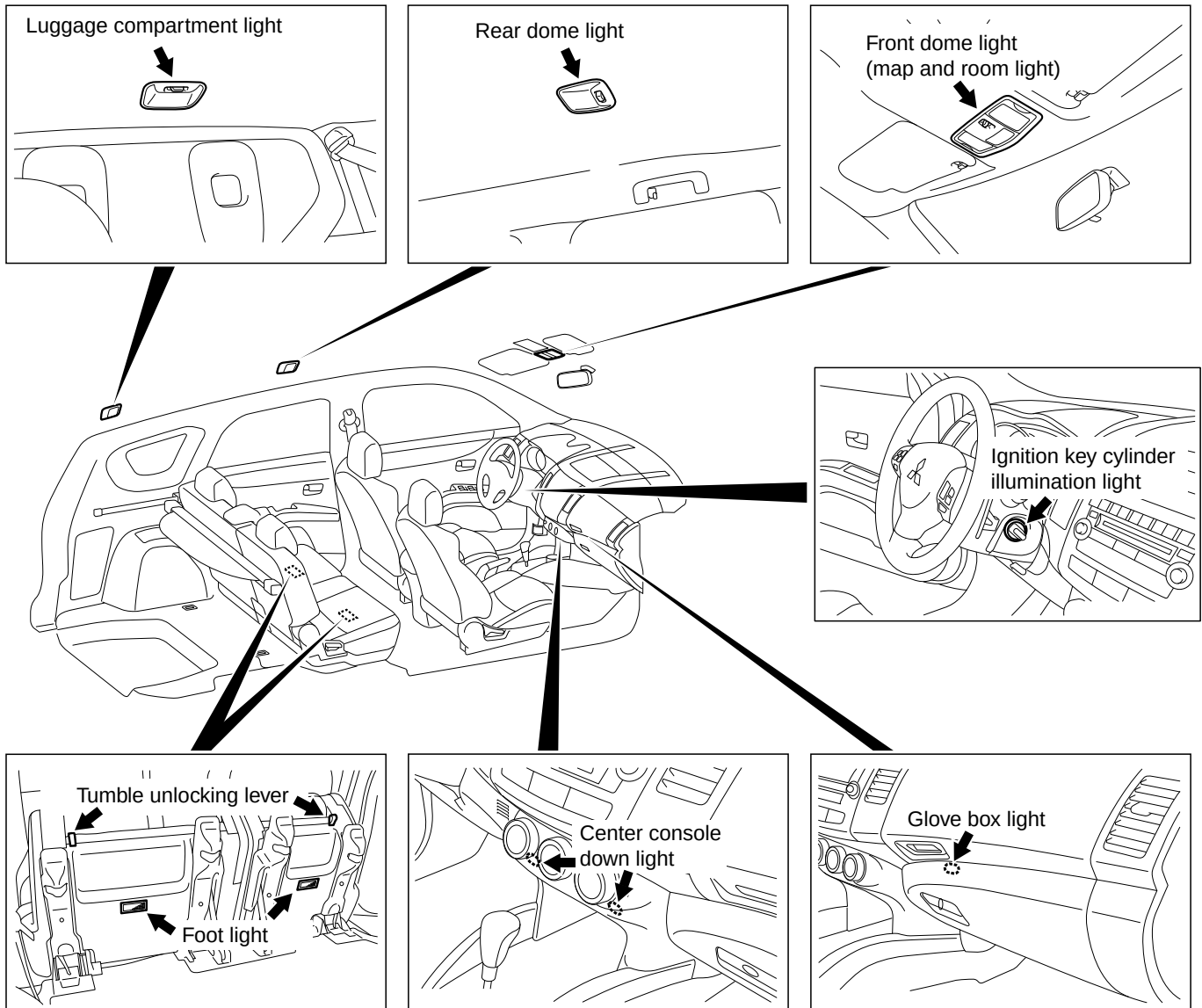
NOTE: *: <Vehicles for halogen headlight>
Headlight (low-beam) + daytime running light
<Vehicles for discharge headlight>
Headlight (low-beam)

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ZC5018070000

Interior lights



ZC5018590001

SERVICE SPECIFICATIONS

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Item			Standard value	Limit
Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam	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)	-

Item	Standard value	Limit
Headlight intensity cd (at high-beam)	-	40,000 or more {when a screen is set 18.3m(60 ft) ahead of the vehicles}
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) $\pm$ 599.7 mm ($\pm$ 23.6 inches) ($\pm$ 4.5 degrees angle).

PRECAUTIONS ON HOW TO USE THE HEADLIGHT ASSEMBLY

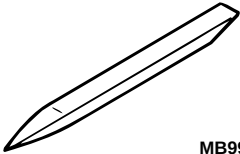
Be careful with the following items as resin lenses are used in the headlight assembly.

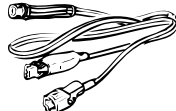
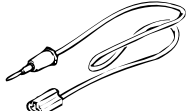
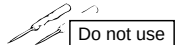
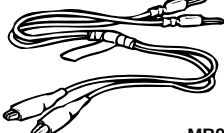
- *Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.
- *Don't tape the outer lens.

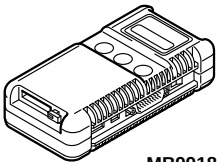
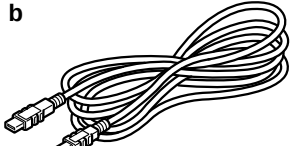
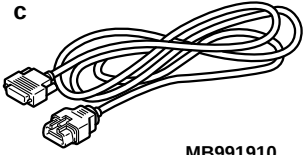
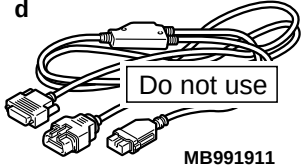
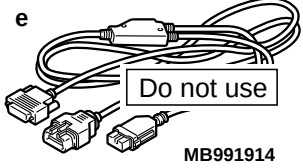
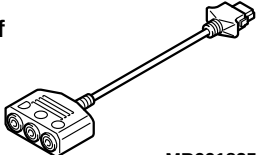
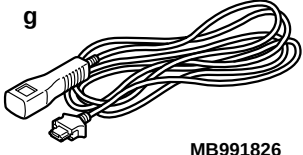
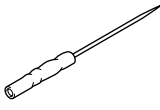
- *Don't scratch the outer lens surface with a sharp edged special tool.
- *Use the specified wax remover and rinse the wax off cleanly.
- *Use the specified genuine bulb.

SPECIAL TOOLS

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Tool	Tool number and name	Supersession	Application
 MB990784	MB990784 Ornament remover	General service tool	Removal of front fog light bezel

Tool	Tool number and name	Supersession	Application
a  b  c  d  YB9912230000	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Test harness b. LED harness c. LED harness adaptor d. Probe	General service tools	Continuity check and voltage measurement at harness wire or connector a. Connector pin contact pressure inspection b. Power circuit inspection c. Power circuit inspection d. Commercial tester connection
 MB991529	MB991529 Diagnostic trouble code check harness	Tool not necessary if the scan tool (M.U.T.-III) is available	Leveling motor drive test
 MB991658	MB991658 Test harness set	Tool not available	Height sensor check

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 YB9919580000	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT <i>NOTE: G: MB991826 M. U. T. -III Trigger Harness is not necessary when pushing V. C. I. ENTER key.</i>	⚠ CAUTION M.U.T.-III main harness B (MB991911) should be used. M.U.T.-III main harness A and C should not be used for this vehicle. Diagnostic code, service data and actuator test check.
 MB992006	MB992006 Extra fine probe	-	Continuity check and voltage measurement at harness wire or connector.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - Contents of troubleshooting P. 00-6.

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DIAGNOSTIC FUNCTION

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

Required Special Tools:

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

CAUTION

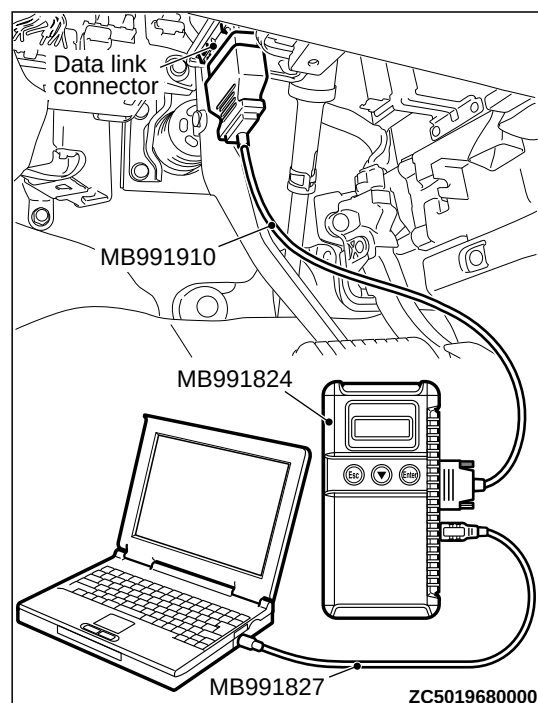
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

HOW TO DIAGNOSE THE CAN BUS LINES**Required Special Tools:**

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
5. Select the "view vehicle information" button.
6. Enter the vehicle information and select the "OK" button.
7. When the vehicle information is displayed, confirm again that it matches the vehicle being diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
8. Select the "OK" button.
9. When the optional equipment screen is displayed, choose the one which the vehicle is fitted with, and then select the "OK" button.

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 five minutes after switching them on). Check that the headlights do not flash or flicker.

Turn on the headlights for thirty minutes. Check that the brightness is the same between right and left lights.

Turn on the headlights for thirty minutes. Check that the headlights do not flash or flicker for thirty 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.54Ac-25.

3. If ETACS-ECU fails, only the low-beam headlights will illuminate as a fail-safe measure.

DIAGNOSTIC TROUBLE CODE CHART**⚠ 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.

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Diagnostic trouble code No.	Diagnostic item	Reference page
B16A2	Blown turn-signal light (LH) bulb	P.54Ac-15
B16A3	Turn-signal light (LH) short circuit	P.54Ac-17
B16A4	Blown turn-signal light (RH) bulb	P.54Ac-20
B16A5	Turn-signal light (RH) short circuit	P.54Ac-22

DIAGNOSTIC TROUBLE CODE PROCEDURES

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

M15410900086USA0000010000

TROUBLE JUDGMENT

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

the illumination of hazard or turn-signal light (left side) is attempted.

▪After the bulb counter reaches "3," DTC B16A2 is set.

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

TROUBLESHOOTING HINTS

▪Malfunction of turn-signal light bulb (left)
▪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. 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. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

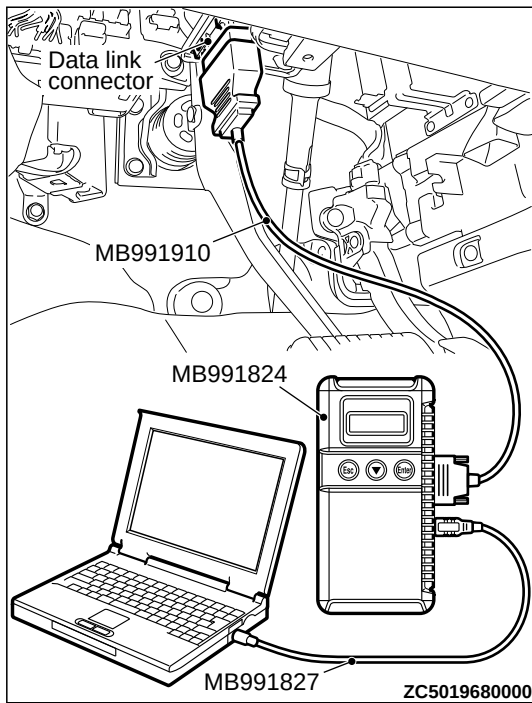
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-11."
- (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.

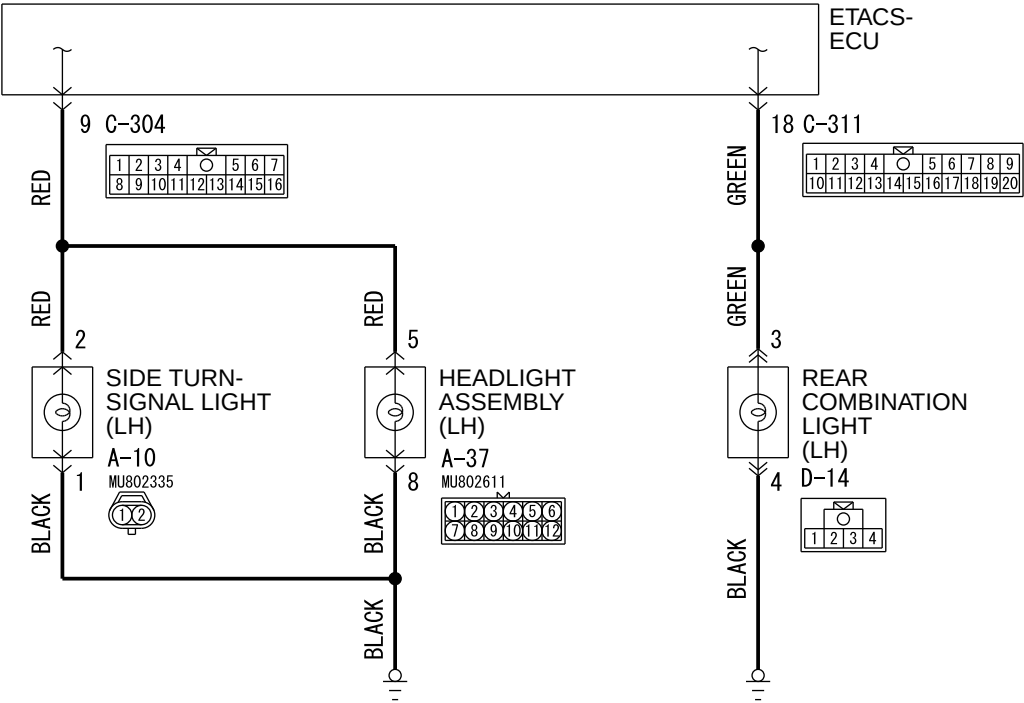
NO: The procedure is complete.



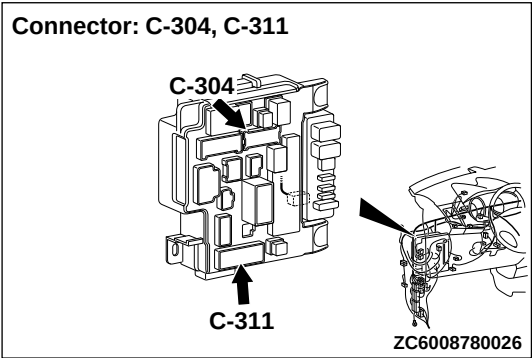
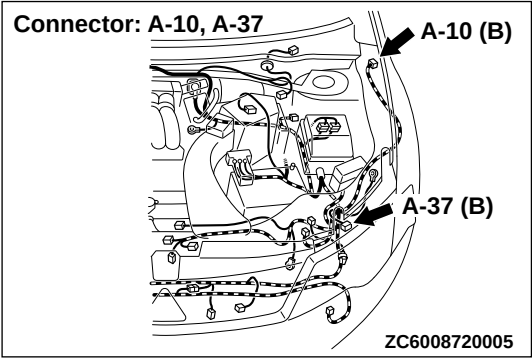
DTC B16A3: Turn-signal light (LH) short circuit

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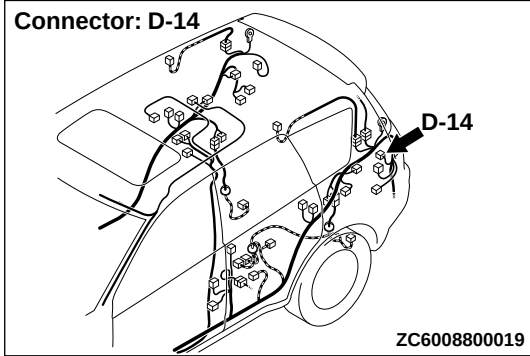
Turn-Signal Lights Circuit (LH)



D7G54M027A00



Connector: D-14

**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-37 <front>, side turn-signal light (LH) connector A-10 <side>, rear combination light (LH) connector D-14 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

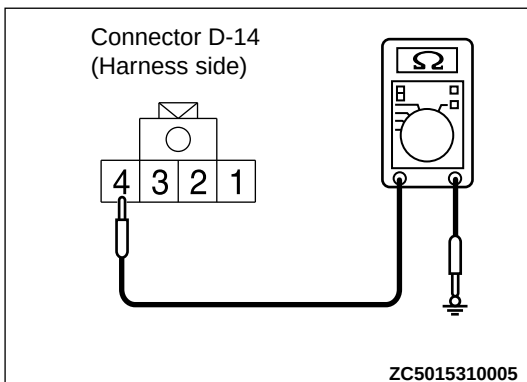
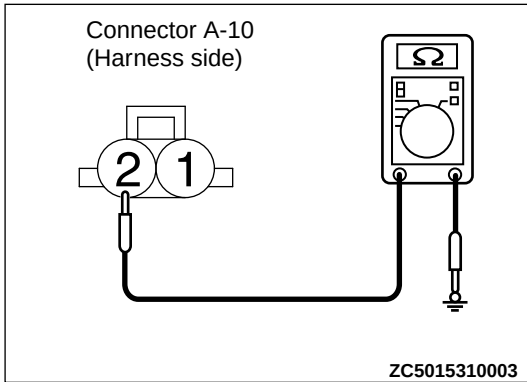
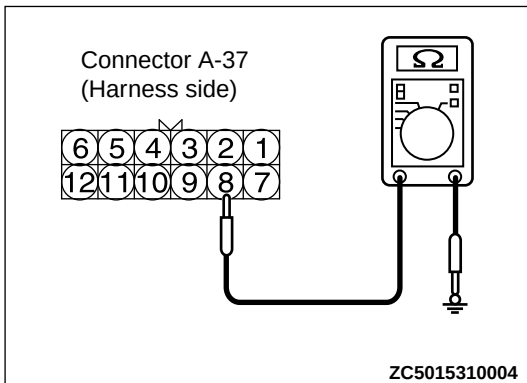
Q: Are headlight assembly (LH) connector A-37 <front>, side turn-signal light (LH) connector A-10 <side>, rear combination light (LH) connector D-14 <rear> in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Resistance measurement at headlight assembly (LH) connector A-37 <front>, side turn-signal light (LH) connector A-10 <side>, and rear combination light (LH) connector D-14 <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-37 (terminal No. 8) and body ground. <Front>
- *Measure the resistance between side turn-signal light (LH) connector A-10 (terminal No. 1) and body ground. <Side>
- *Measure the resistance between rear combination light (LH) connector D-14 (terminal No. 4) and body ground. <Rear>

The measured value should be 2 Ω 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 headlight assembly (LH) connector A-37 (terminal No. 8) <front>, side turn-signal light (LH) connector A-10 (terminal No. 1) <side>, rear combination light (LH) connector D-14 (terminal No. 4) <rear> and ground.

Q:Are the wiring harness between headlight assembly (LH) connector A-37 (terminal No. 8) <front>, side turn-signal light (LH) connector A-10 (terminal No. 1) <side>, rear combination light (LH) connector D-14 (terminal No. 4) <rear> and ground in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 4. Check ETACS-ECU connectors C-304 and C-310 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-310 <rear> in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Check the wiring harness between headlight assembly (LH) connector A-37 (terminal No. 5) <front>, side turn-signal light (LH) connector A-10 (terminal No. 2) <side>, rear combination light (LH) connector D-14 (terminal No. 3) <rear> and ETACS-ECU connector C-304 (terminal No. 9) <front or side> or ETACS-ECU connector C-311 (terminal No. 18) <rear>.

Q: Are the wiring harness between headlight assembly (LH) connector A-37 (terminal No. 5) <front>, side turn-signal light (LH) connector A-10 (terminal No. 2) <side>, rear combination light (LH) connector D-14 (terminal No. 3) <rear> and ETACS-ECU connector C-304 (terminal No. 9) <front or side> or ETACS-ECU connector C-311 (terminal No. 18) <rear> in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

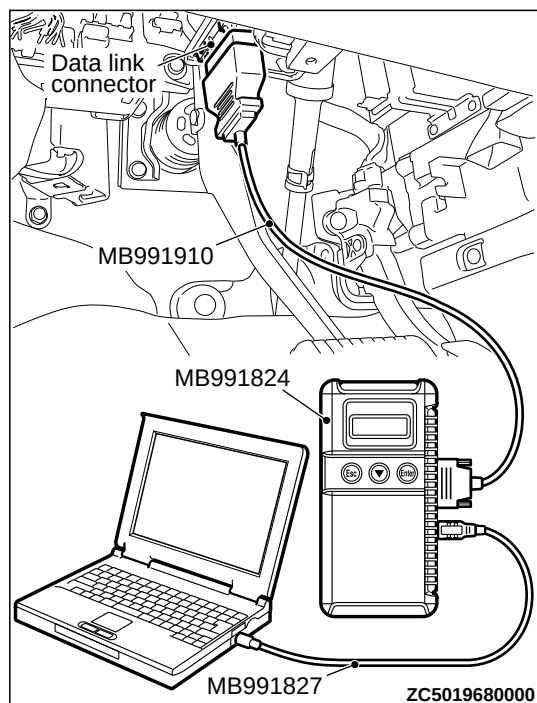
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-11."
- (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

M15410900088USA0000010000

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

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

⚠ CAUTION

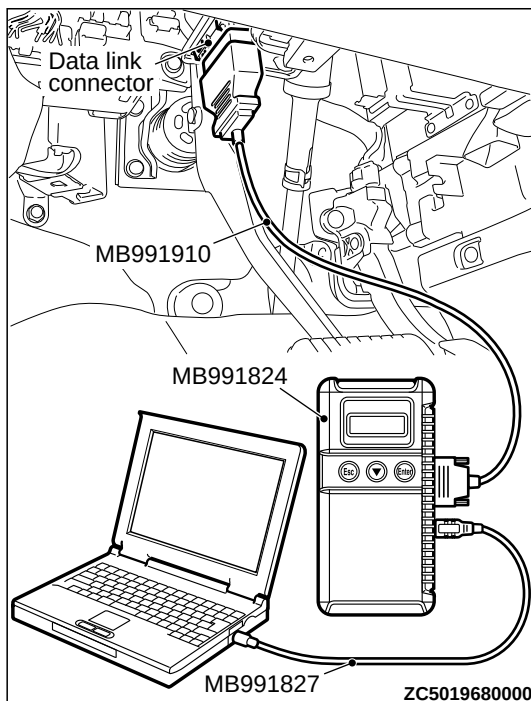
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-11."
- (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.

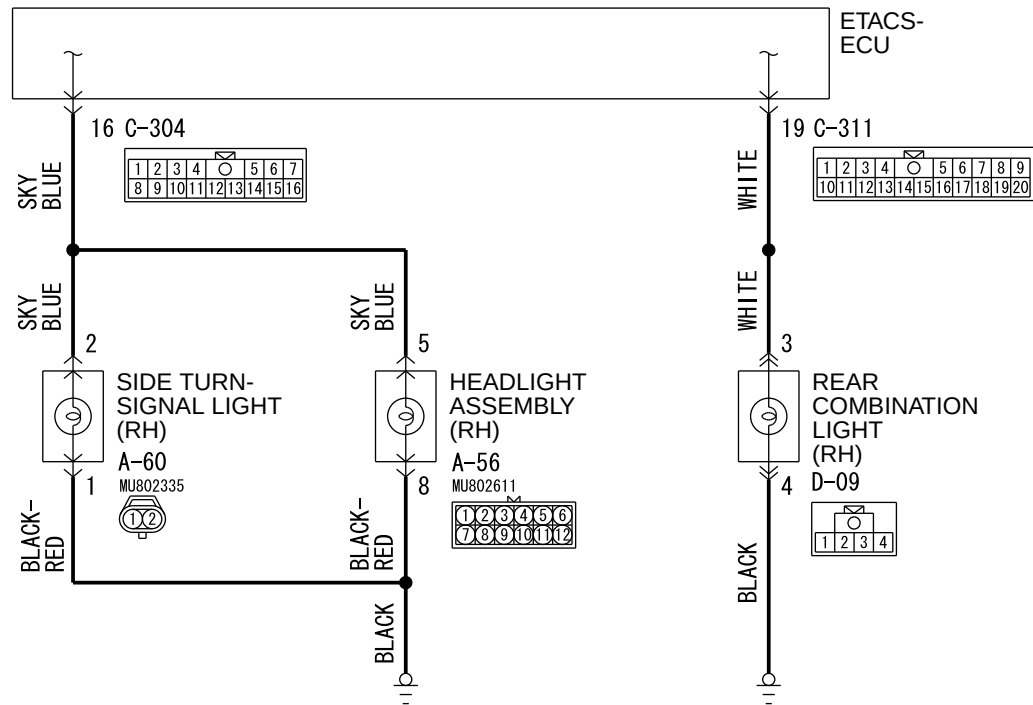
NO: The procedure is complete.



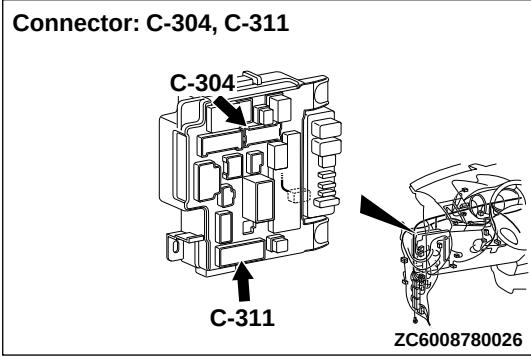
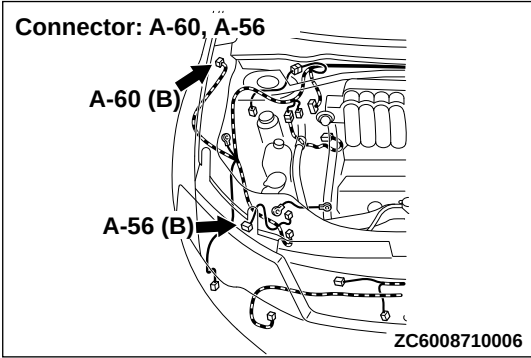
DTC B16A5: Turn-signal light (RH) short circuit

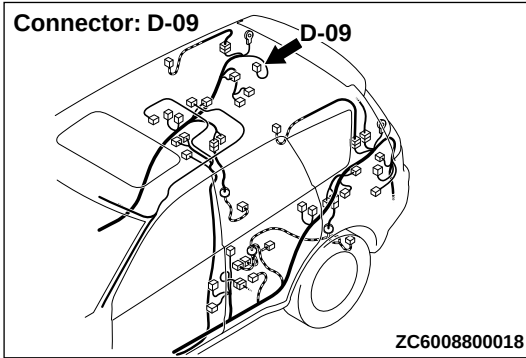
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Turn-Signal Lights Circuit (RH)



D7G54M028A00





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-56 <front>, side turn-signal light (LH) connector A-60 <side>, rear combination light (LH) connector D-09 <rear> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

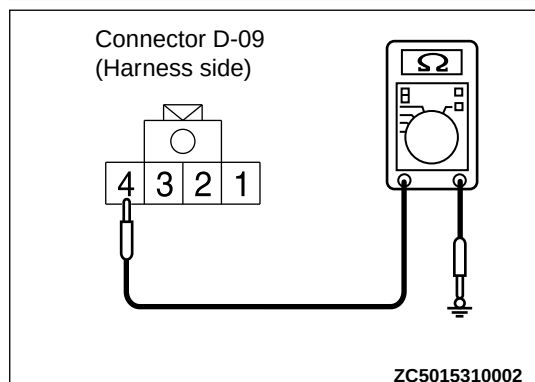
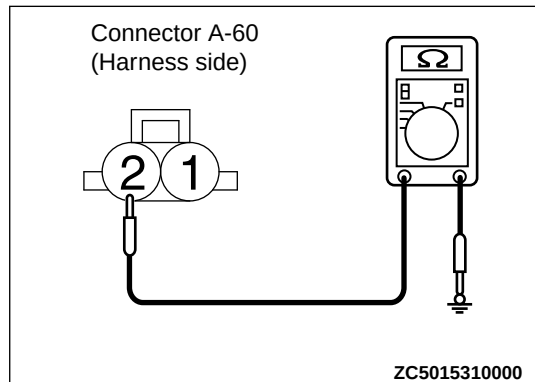
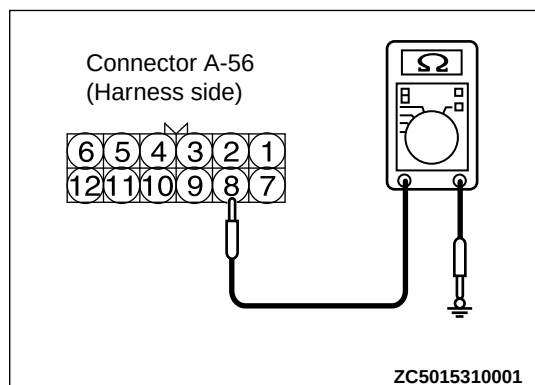
Q:Are headlight assembly (RH) connector A-56 <front>, side turn-signal light (RH) connector A-60 <side>, rear combination light (LH) connector D-09 <rear> in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Resistance measurement at headlight assembly (RH) connector A-56 <front>, side turn-signal light (RH) connector A-60 <side>, and rear combination light (RH) connector D-09 <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-56 (terminal No. 8) and body ground.
<Front>
- Measure the resistance between the side turn-signal light (RH) connector A-60 (terminal No. 1) and body ground.
<side>
- Measure the resistance between the rear combination light (RH) connector D-09 (terminal No. 4) and body ground.
<Rear>

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 4.

NO: Go to Step 3.

STEP 3. Check the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 8) <front>, side turn-signal light (RH) connector A-60 (terminal No. 1) <side>, rear combination light (LH) connector D-09 (terminal No. 4) <rear> and ground.

Q: Are the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 8) <front>, side turn-signal light (RH) connector A-60 (terminal No. 1) <side>, rear combination light (RH) connector D-09 (terminal No. 4) <rear> and ground in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 4. Check ETACS-ECU connectors C-304 and C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-304 and C-310 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Check the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 5) <front>, side turn-signal light (RH) connector A-60 (terminal No. 2) <side>, rear combination light (RH) connector D-09 (terminal No. 3) <rear> and ETACS-ECU connector C-304 (terminal No. 16) <front or side> or ETACS-ECU connector C-311 (terminal No. 19) <rear>.

Q:Are the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 5) <front>, side turn-signal light (RH) connector A-60 (terminal No. 2) <side>, rear combination light (LH) connector D-09 (terminal No. 3) <rear> and ETACS-ECU connector C-304 (terminal No. 16) <front or side> or ETACS-ECU connector C-311 (terminal No. 19) <rear> in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

CAUTION

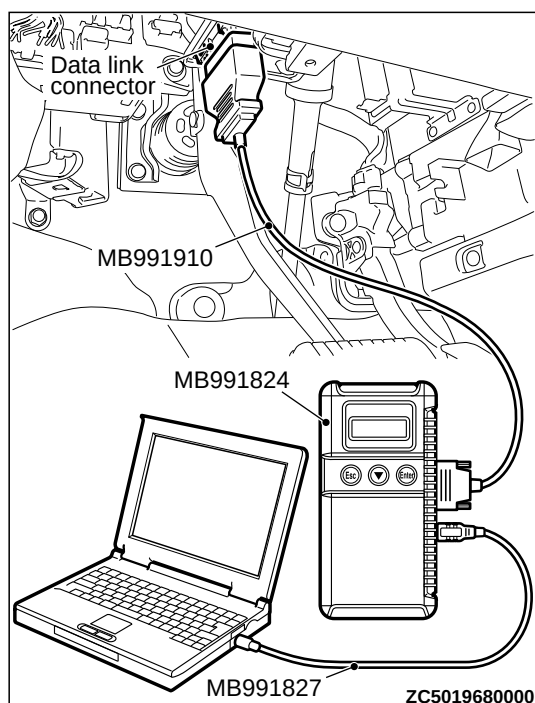
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Af-4."
- (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

M15410900009USA0000010000

Trouble symptom		Inspection Procedure No.	Reference page
Headlight and taillight	Headlights (low-beam) do not illuminate..	1	P.54Ac-26
	Headlights (high-beam) do not illuminate..	2	P.54Ac-30

Trouble symptom		Inspection Procedure No.	Reference page
	The headlights do not illuminate when the lighting switch is at the "PASSING" position, but the low-beam illuminates (high-beam and low-beam cannot be changed) with the switch at the "HEAD" position.	3	P.54Ac-34
	Headlights do not illuminate when the passing switch is operate.	4	P.54Ac-35
	The headlight(s) do not illuminate.	5	P.54Ac-37
	High-beam indicator light does not illuminate normally.	6	P.54Ac-41
	The headlight automatic shutdown function does not work normally.	7	P.54Ac-43
	Daytime running light function does not work normally.	8	P.54Ac-45
	Any of position light, side marker lights or the license plate light do not illuminate.	9	P.54Ac-48
Turn-signal light	The turn-signal lights do not illuminate.	10	P.54Ac-53
	The comfort flashing function does not work normally.	11	P.54Ac-55
	The turn-signal indicator lights do not illuminate.	12	P.54Ac-56

SYMPTOM PROCEDURES

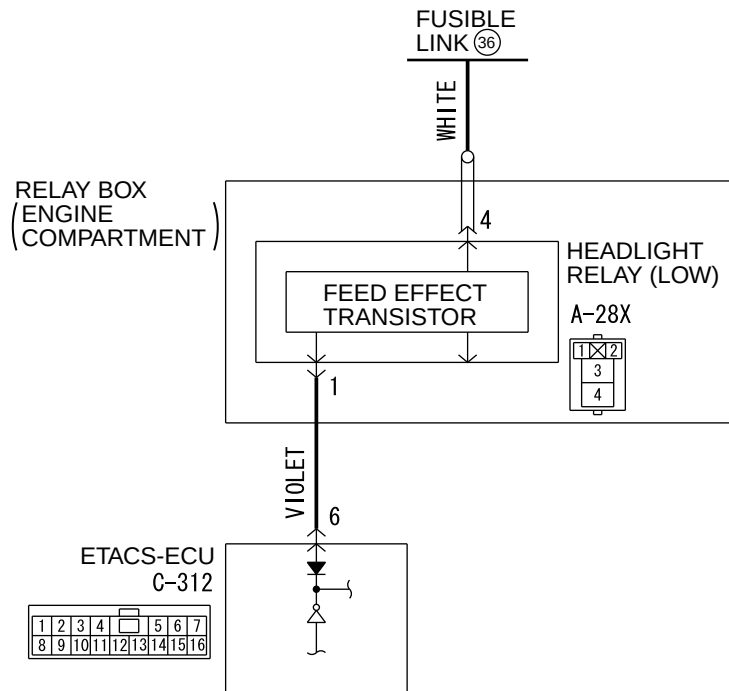
Inspection Procedure 1: Headlights (low-beam) do not illuminate.

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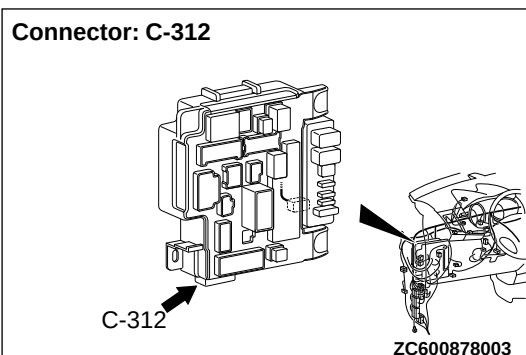
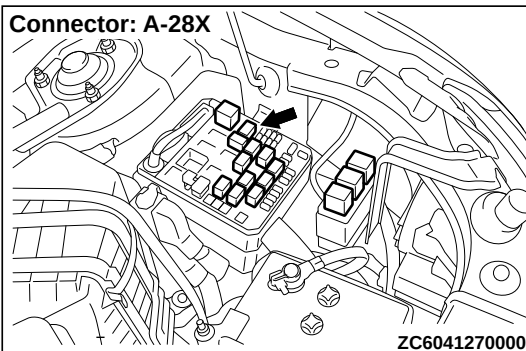
⚠ CAUTION

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



D7G54M029A00



TECHNICAL DESCRIPTION (COMMENT)

If both headlights (low-beam) do not illuminate normally, the headlight switch input circuit, headlight relay (LOW), or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of column switch
- Malfunction of headlight relay (LOW)
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - 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

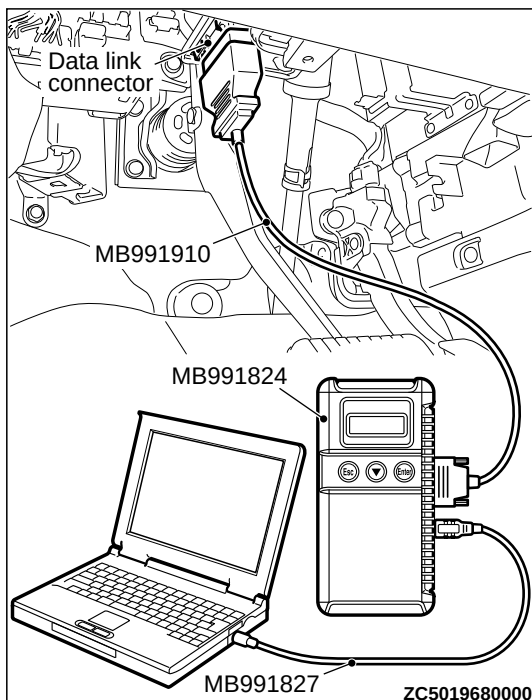
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

NO: Go to Step 2.



STEP 2. Check headlight relay (LOW) connector A-28X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight relay (LOW) connector A-28X in good condition?

YES: Go to Step 3.

NO: Repair the damaged parts.

STEP 3. Check of headlight relay (LOW).

Refer to P.54Ac-173.

Q:Is the headlight relay (LOW) in good condition?

YES: Go to Step 4.

NO: Replace the headlight relay (LOW). Verify that the low-beam headlights illuminate normally.

STEP 4. Check the battery power supply circuit to the headlight relay (LOW). Measure the voltage at headlight relay (LOW) connector A-28X.

⚠ CAUTION

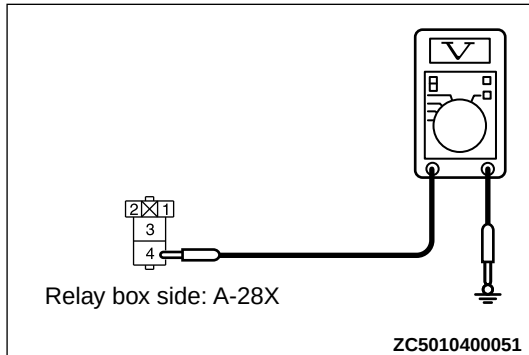
The top and bottom of the headlight relay (LOW) are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

- (1) Disconnect headlight relay (LOW) connector A-28X and measure the voltage available at the relay box side of the connector.
- (2) Measure the voltage 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 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-28X (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-28X (terminal 1) and ETACS-ECU connector C-312 (terminal 6) 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. Verify that the low-beam headlights illuminate normally.

STEP 7. Check the wiring harness between headlight relay (LOW) connector A-28X (terminal 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-28X (terminal 4) and fusible link (36) 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. Verify that the low-beam headlights illuminate normally.

STEP 8. Check the column switch (switch body).

Refer to GROUP 54Ah - Inspection P.54Ah-9.

Q: Is the column switch (switch body) in good condition?

YES: Go to Step 9.

NO: Replace the column switch. Verify that the low-beam headlights illuminate normally.

STEP 9. Retest the system

Q: Does the headlights (low-beam) do not illuminate in good condition?

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

NO: Replace the ETACS-ECU.

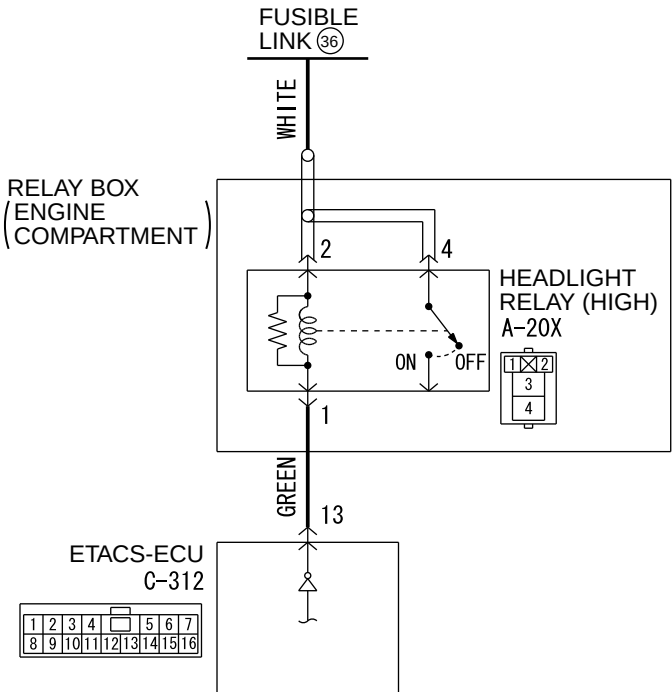
Inspection Procedure 2: Headlights (high-beam) do not illuminate.

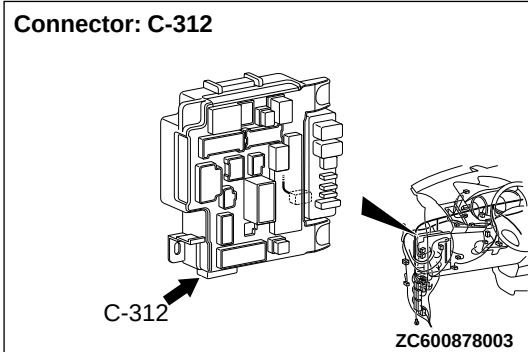
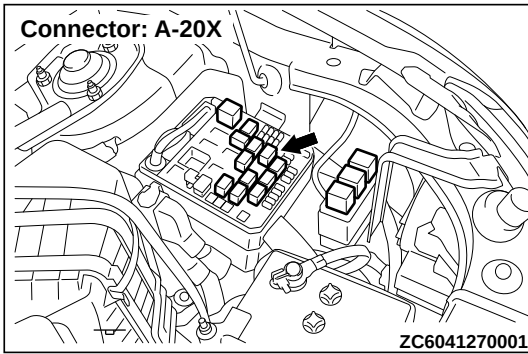
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CAUTION

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





TECHNICAL DESCRIPTION (COMMENT)

If both headlights (high-beam) do not illuminate normally, the headlight switch input circuit, headlight relay (HIGH), or ETACS-ECU may have a problem.

- Malfunction of headlight relay (HIGH)
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

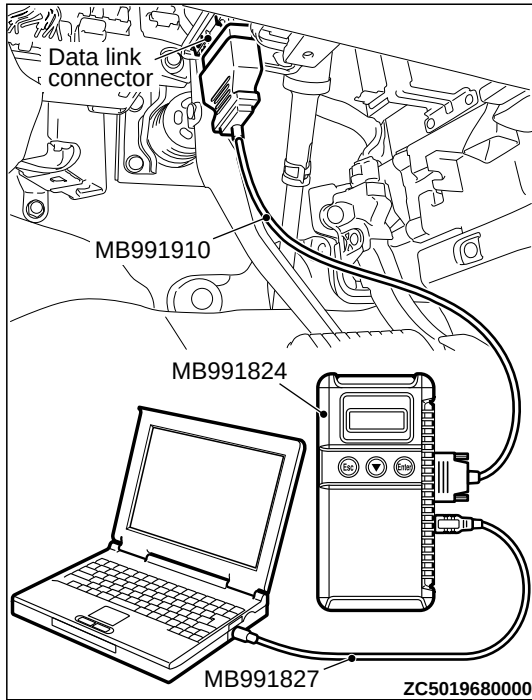
TROUBLESHOOTING HINTS

- Malfunction of column switch

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.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

NO: Go to Step 2.

STEP 2. Check headlight relay (HIGH) connector A-20X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight relay (HIGH) connector A-20X in good condition?

YES: Go to Step 3.

NO: Repair the damaged parts.

STEP 3. Check of headlight relay (HIGH)

Refer to P.54Ac-173.

Q:Is the headlight relay (HIGH) in good condition?

YES: Go to Step 4.

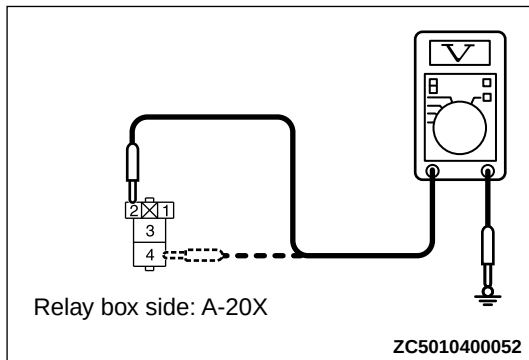
NO: Replace the headlight relay (HIGH). Verify that the high-beam headlights illuminate normally.

STEP 4. Check the battery power supply circuit to the headlight relay (HIGH). Measure the voltage at headlight relay (HIGH) connector A-20X

⚠ 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-20X and measure the voltage available at the relay box side of the connector.



- (2) Measure the voltage between terminal 2 or 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 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 (HIGH) connector A-20X (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-20X (terminal 1) and ETACS-ECU connector C-312 (terminal 13) 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. Verify that the high-beam headlights illuminate normally.

STEP 7. Check the wiring harness between headlight relay (HIGH) connector A-20X (terminal 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-20X (terminal 4) and fusible link (36) 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. Verify that the high-beam headlights illuminate normally.

STEP 8. Check the column switch (switch body).

Refer to GROUP 54Ah - Inspection P.54Ah-9.

Q: Is the column switch (switch body) in good condition?

YES: Go to Step 9.

NO: Replace the column switch. Verify that the high-beam headlights illuminate normally.

STEP 9. Retest the system

Q:Does the headlights (high-beam) do not illuminate in good condition?

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

NO: Replace the ETACS-ECU.

Inspection Procedure 3: The headlights do not illuminate when the lighting switch is at the "PASSING" position, but the low-beam illuminates (high-beam and low-beam cannot be changed) with the switch at the "HEAD" position.

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⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

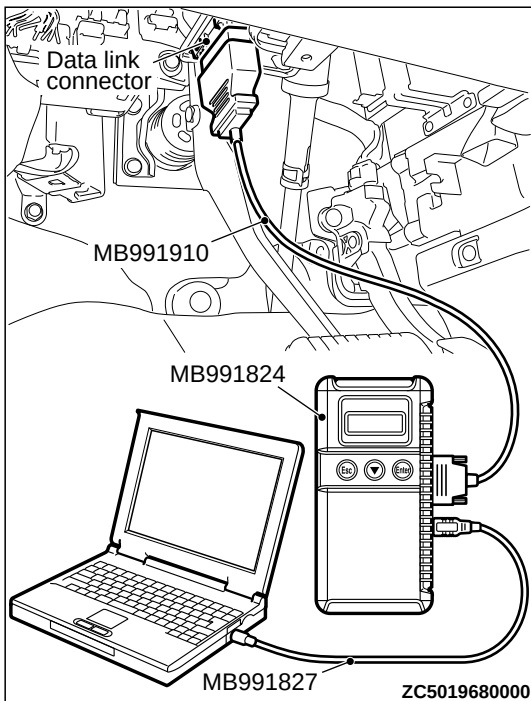
If the headlights illuminate only at low-beam regardless of the lighting switch position, the headlight fail-safe function may be active.

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 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.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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 operate.

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⚠ 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 "Headlights (low-beam) do not illuminate." P.54Ac-26 and Inspection Procedure 2 "Headlights (high-beam) do not illuminate." P.54Ac-30.

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

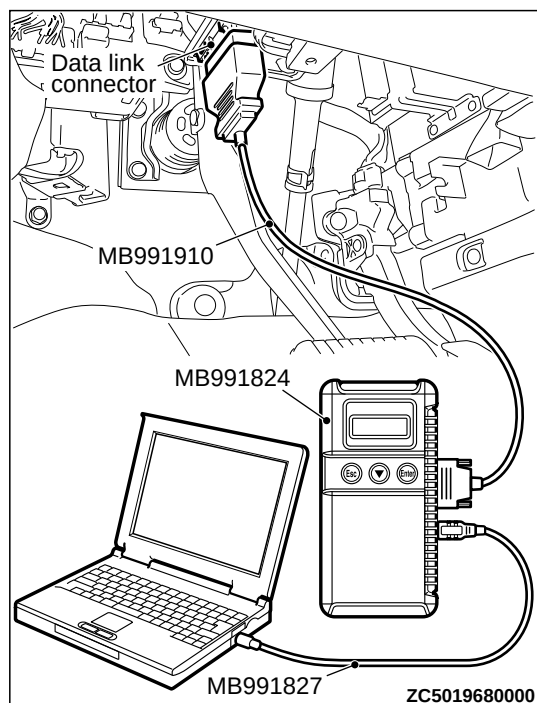
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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: The headlight(s) do not illuminate.

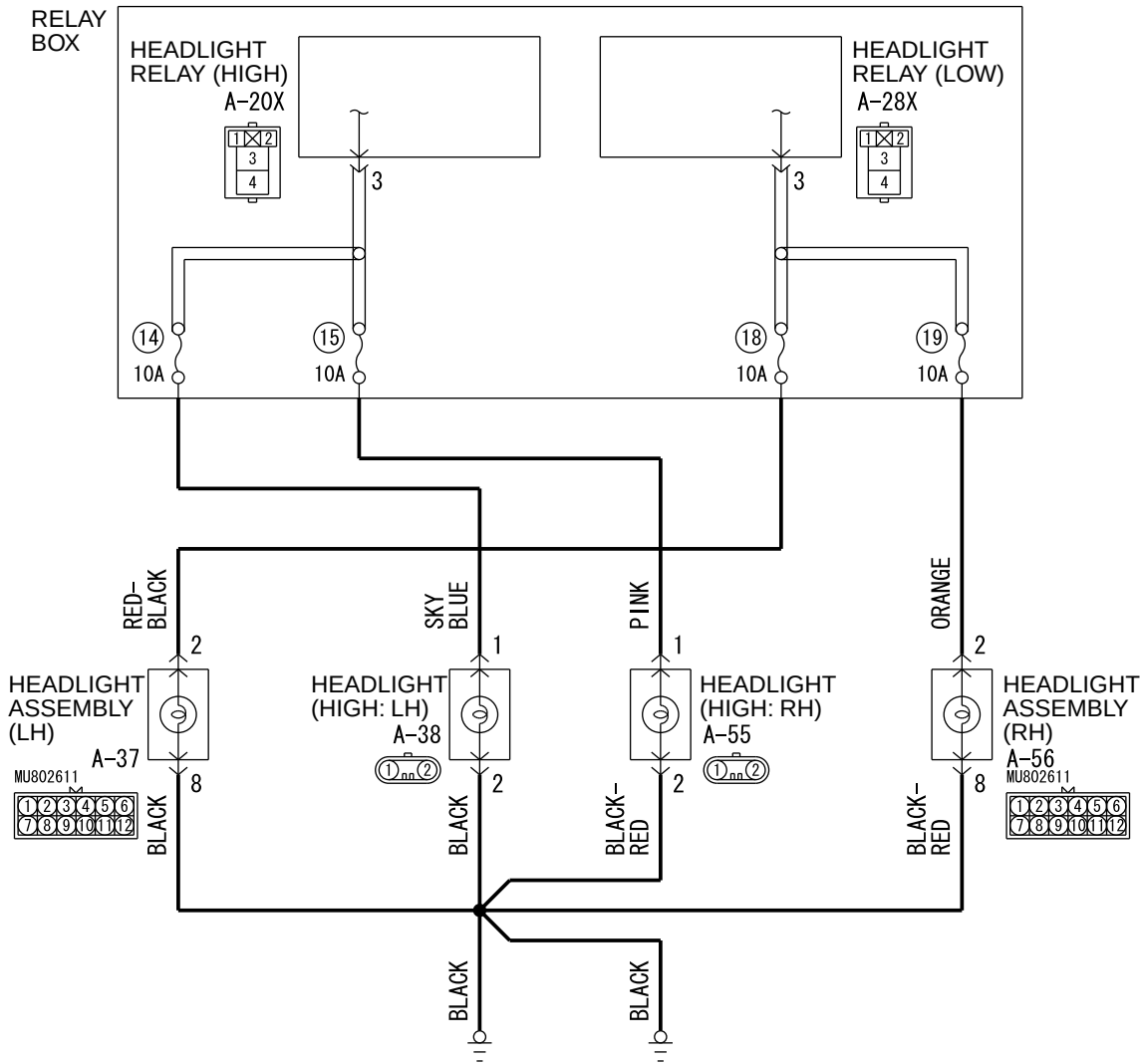
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CAUTION

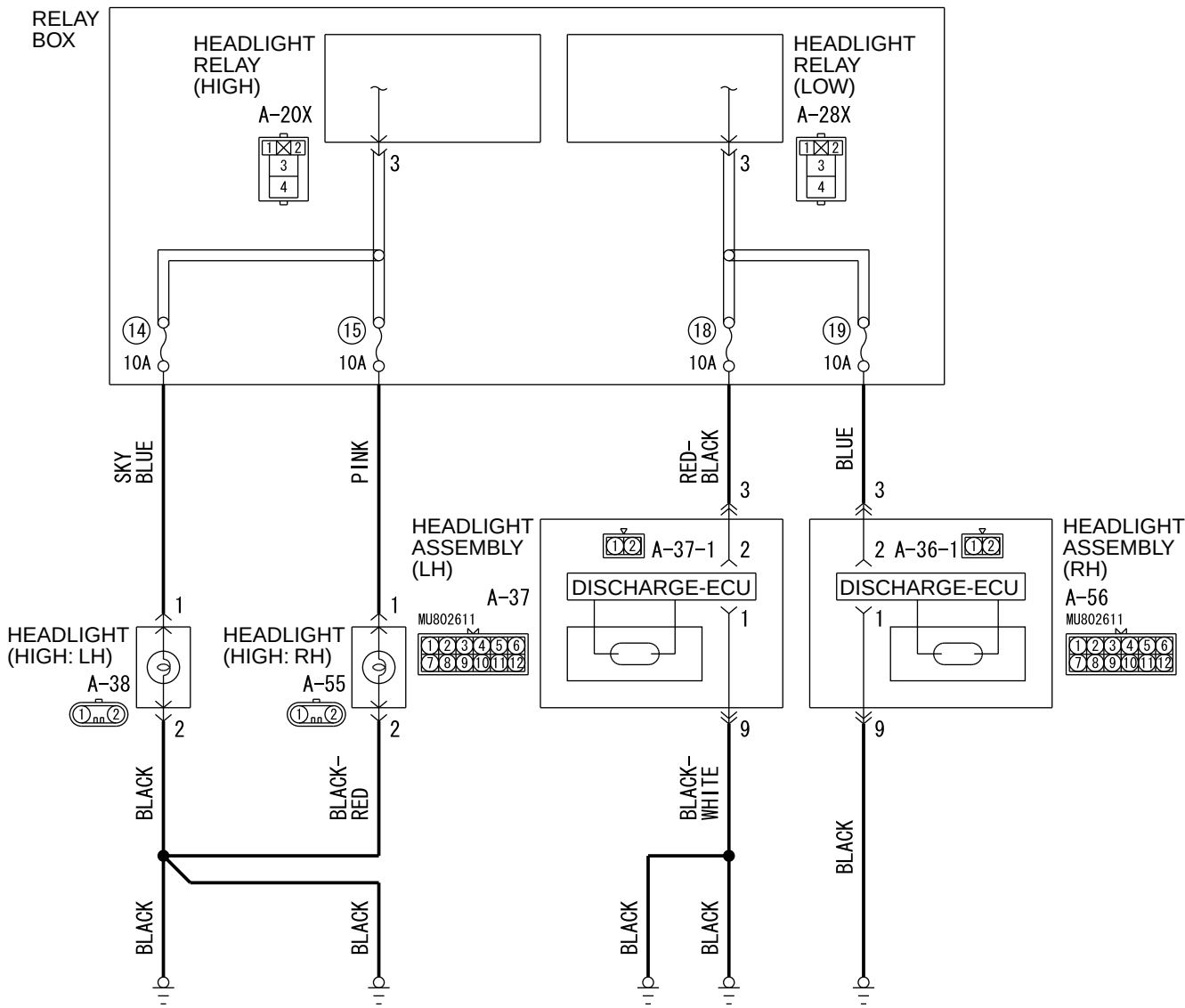
If the discharge type headlights do not illuminate, fully understand the precautions in "Service

precautions for discharge headlight" before proceeding with the troubleshooting. Refer to P. 54Ac-12.

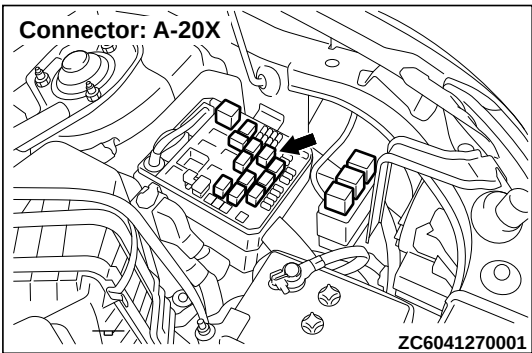
Headlights Circuit

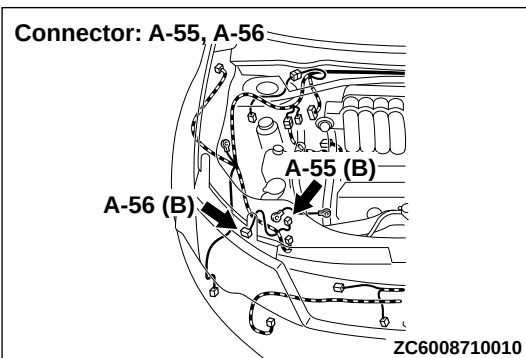
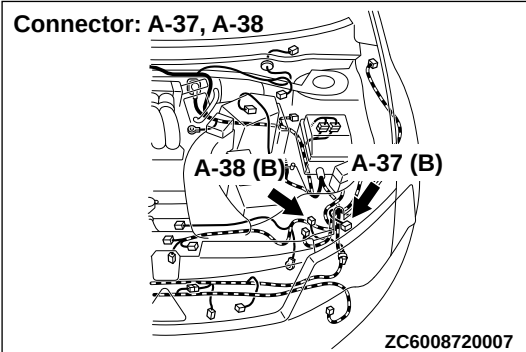
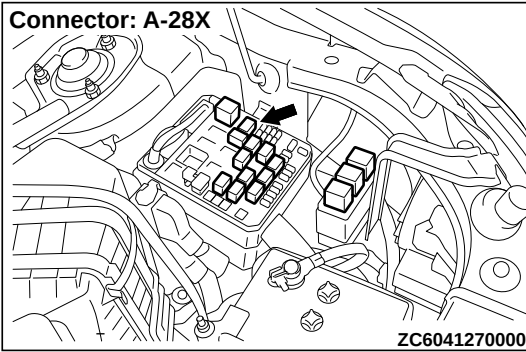


Headlights Circuit



D7G54M081A00





TECHNICAL DESCRIPTION (COMMENT)

If any of the headlights do not illuminate, the wiring harness, connector(s), or the bulb may have a problem, or the fuse may be burned out.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check headlight (LOW) connector A-37 <LH>, A-56 <RH>, headlight (HIGH) connector A-38 <LH>, A-55 <RH> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight (LOW) assembly connector A-37 <LH>, A-56 <RH>, headlight (HIGH) connector A-38 <LH>, A-55 <RH> in good condition?

YES: Go to Step 2.

NO: Repair the defective connector.

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 ground circuit to the headlight assembly (LOW) or headlight assembly (HIGH). Measure the resistance at headlight assembly (LOW) connector A-37 <LH>, A-56 <RH> or headlight assembly (HIGH) connector A-38 <LH>, A-55 <RH>.

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

(2) Resistance between the connector of light which does not illuminate and ground.

•Resistance between the A-37 (LH), A-56 (RH) headlight assembly connector terminal 8 and ground. <Halogen headlight (LOW)>

•Resistance between the A-37 (LH), A-56 (RH) headlight assembly connector terminal 9 and ground. <Discharge headlight (LOW)>

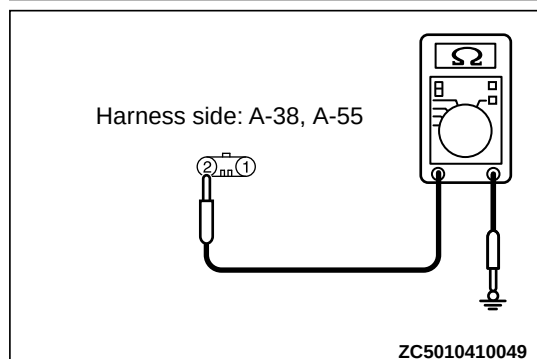
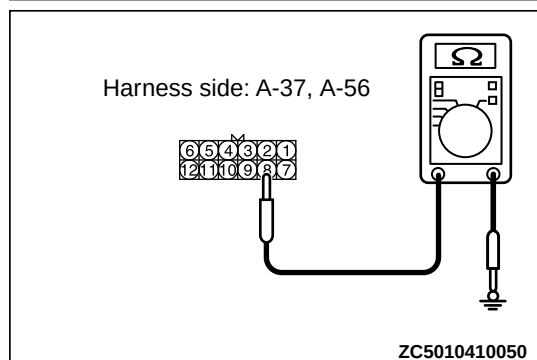
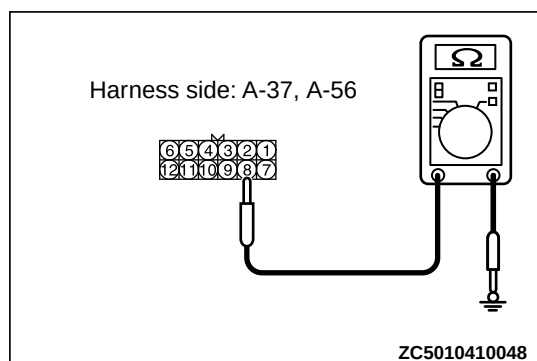
•Resistance between the A-38 (LH), A-55 (RH) headlight assembly connector terminal 2 and ground. <HIGH>

OK: The resistance should be 2 Ω or less.

Q:Is the measured resistance 2 Ω or less?

YES: Go to Step 5.

NO: Go to Step 4.



STEP 4. Check the wiring harness between headlight assembly (LOW) connector A-37 <LH>, A-56 <RH> (terminal

8 <halogen headlight> or 9 <discharge headlight>) or headlight assembly (HIGH) connector A-38 <LH>, A-55 <RH> (terminal 2) and ground.

*Check the ground wires for open circuit.

Q:Is the wiring harness between headlight assembly (LOW) connector A-37 <LH>, A-56 <RH> (terminal 8 <halogen headlight> or 9 <discharge headlight>) or headlight assembly (HIGH) connector A-38 <LH>, A-55 <RH> (terminal 2) 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 headlights illuminate normally.

STEP 5. Check the wiring harness between headlight assembly (LOW) connector A-37 <LH>, A-56 <RH> (terminal 2 <halogen headlight> or 3 <discharge headlight>) or headlight assembly (HIGH) connector A-38 <LH>, A-55 <RH> (terminal 1) and headlight relay (LOW) connector A-28X or headlight relay (HIGH) connector A-20X (terminal 3).

*Check the power supply line for open circuit.

Q:Is the wiring harness between headlight assembly (LOW) connector A-37 <LH>, A-56 <RH> (terminal 2 <halogen headlight> or 3 <discharge headlight>) or headlight assembly (HIGH) connector A-38 <LH>, A-55 <RH> (terminal 2) and headlight relay (LOW) connector A-28X or headlight relay (HIGH) connector A-20X (terminal 3) 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.

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 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 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 "Headlights (high-beam) do not illuminate." P. 54Ac-30.

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

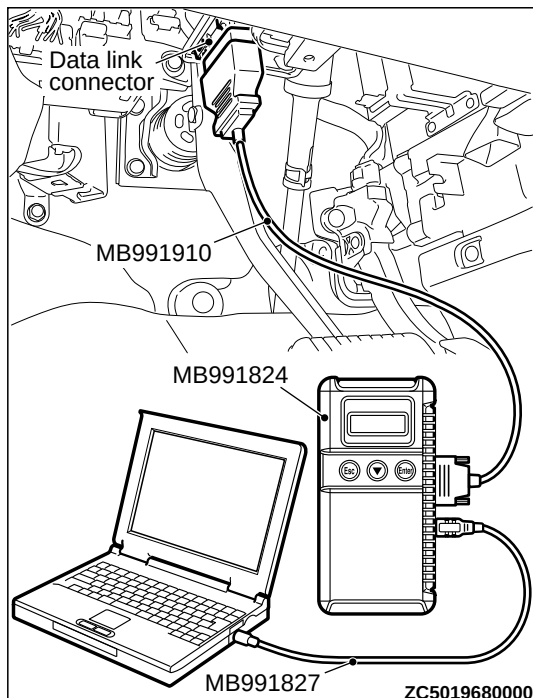
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54Ac-11."
- (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 54D, Diagnosis P.54D-17).



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.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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 GROUP 54Ab - Diagnosis P.54Ab-61).
- (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

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ETACS-ECU may have a problem. Also, it may be possible that the headlight automatic shutdown function is set to "Disable" through configuration function.

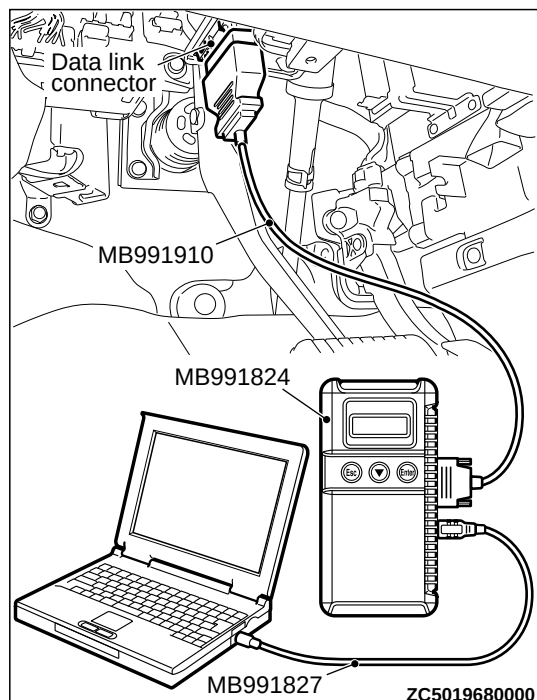
TROUBLESHOOTING HINTS

- 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 "A-spec." or "D-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.54Ac-11."
- (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 "A-spec." or "D-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 "A-spec." or "D-spec." (Refer to P.54Ac-170).

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 GROUP 54Ad, Diagnosis P.54Ad-8.

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 conditions
Item 206	Head light LO ON duty	100%
Item 254	IG voltage	Battery voltage

- * Open the driver's door.

Item No.	Item name	Normal conditions
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 <Normal conditions are displayed for all items.>: Go to Step 4.

NO <Normal condition is not displayed for item No.

206. >: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 2 "ETACS-ECU does not receive any signal from the column switch signal" P. 54Ad-89.

NO <Normal condition is not displayed for item No.

254. >: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 2 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

NO <Normal condition is not displayed for item No.

256. >: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P. 54Ad-73.

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.

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CAUTION

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

ETACS-ECU or the input signal circuit may be defective.

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

TROUBLESHOOTING HINTS

- Trouble in input signal system
- 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 "Headlights (low-beam) do not illuminate normally P. 54Ac-26."

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

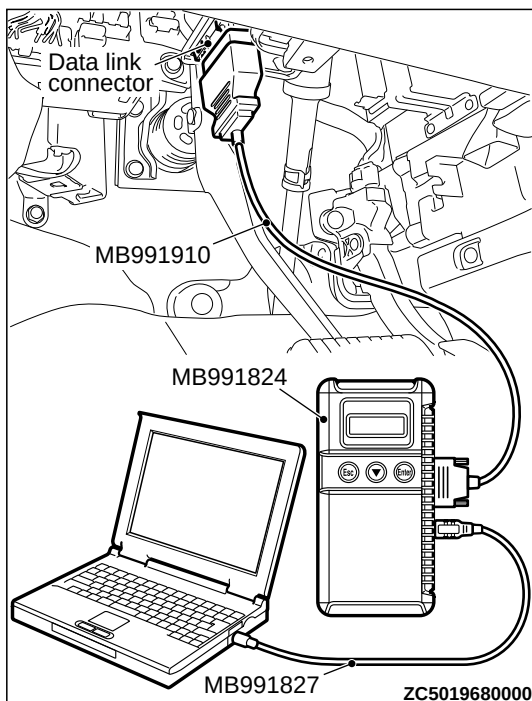
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54Ac-11."
- (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 54D, Diagnosis P.54D-17).

**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 GROUP 54Ad - Diagnosis P.54Ad-8.

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 13Ab - Diagnostic Trouble Code Chart P.13Ab-44.

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?

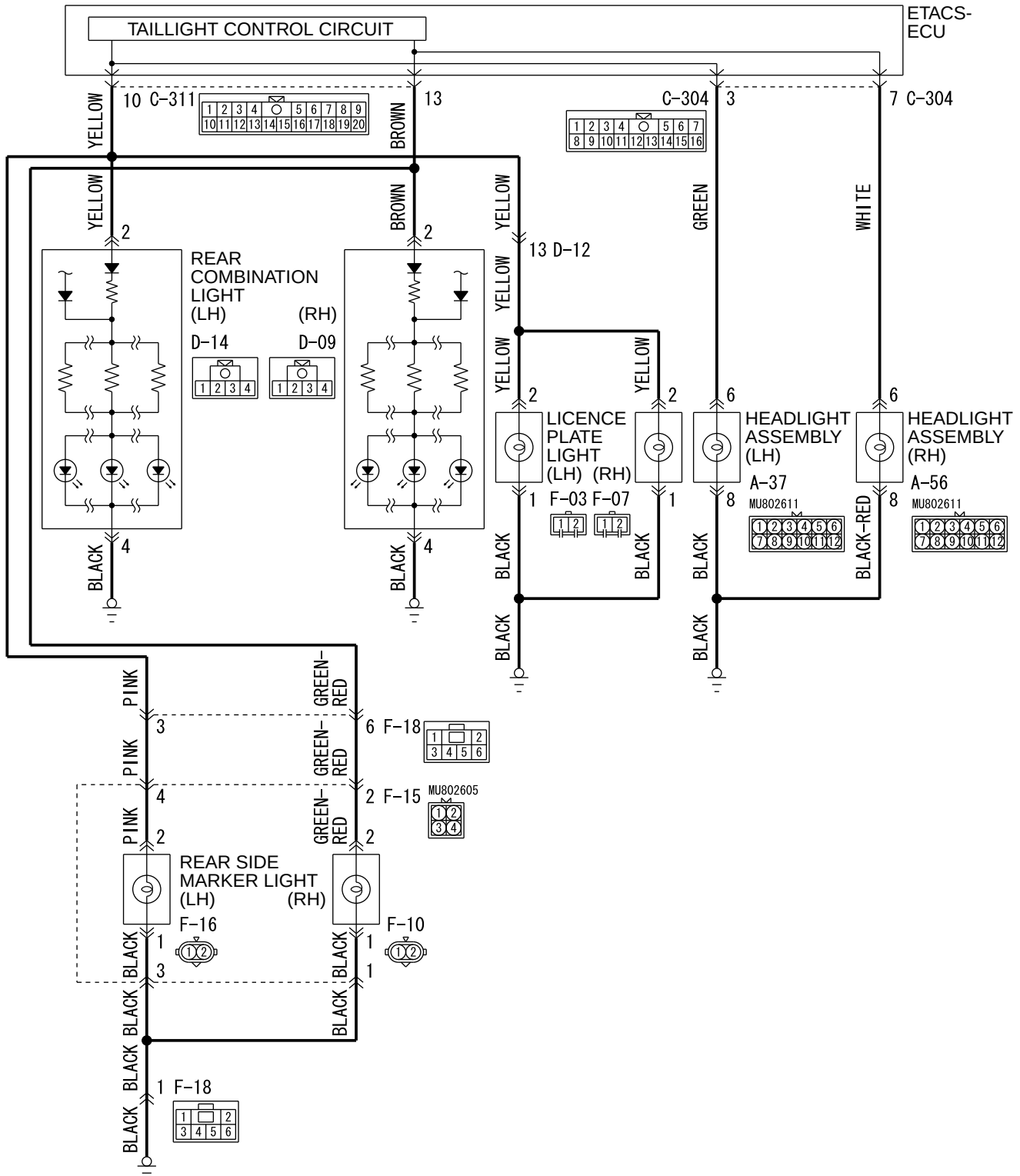
YES: Replace the ETACS-ECU. Verify that the daytime running light function does not work normally.

NO: Refer to GROUP 36 - Inspection Procedure 3: When the Parking Brake Lever is Released, the Brake Warning Light does not Turn Off. P.36-7. Verify that the daytime running light function does not work normally.

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

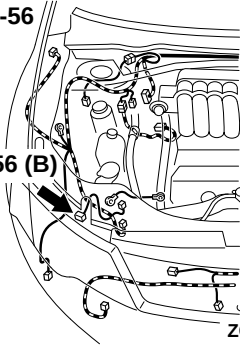
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Position Lights, Licence Plate Lights and Rear Side Marker Lights Circuit



Connector: A-56

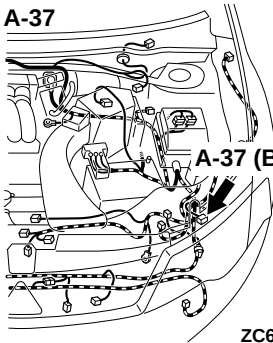
A-56 (B)



ZC6008710011

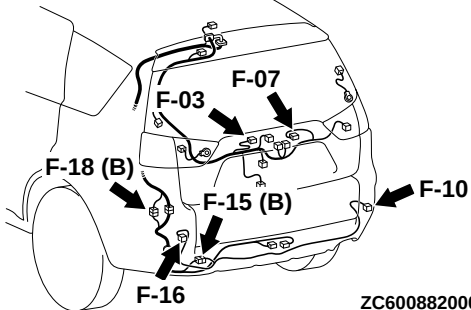
Connector: A-37

A-37 (B)



ZC6008720008

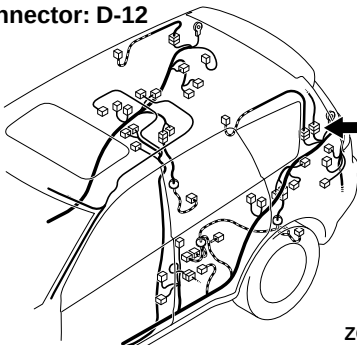
Connector: F-03, F-07, F-10, F-16, F-15, F-18



ZC6008820007

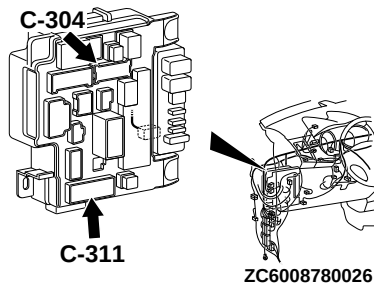
Connector: D-12

D-12



ZC6008800025

Connector: C-304, C-311

**TECHNICAL DESCRIPTION (COMMENT)**

If any position light, side marker light or license plate light do not illuminate normally, the harness, connector(s), or bulb(s) may have a problem, or the fuse may be burned out.

TROUBLESHOOTING HINTS

- Malfunction of bulbs

- Malfunction of rear combination light
- Malfunction of rear combination light harness
- Malfunction of license plate light
- Malfunction of headlight
- Malfunction of rear side maker 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 check.

Q: Does the rear combination light illuminate normally?

YES: Go to Step 2.

NO: Refer to P. 54Ac-108.

STEP 2. Check headlight assembly connector A-56 (position light RH and front side maker RH) or A-37 (position light LH and front side maker LH), license plate light connector F-07 (RH) or F-03 (LH), or rear side marker light connector F-10 (RH) or F-16 (LH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly connector A-56 (position light RH and front side maker RH) or A-37 (position light LH and front side maker LH), license plate light connector F-07 (RH) or F-03 (LH), or rear side marker light connector F-10 (RH) or F-16 (LH) in good condition?

YES: Go to Step 3.

NO: Repair the damaged parts.

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-56 (position light RH and front side maker RH) or A-37 (position light LH and front side maker LH), license plate light connector F-07 (RH) or F-03 (LH), or rear side marker light connector F-10 (RH) or F-16 (LH).

(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-37 (LH), A-56 (RH) (terminal No. 8) and body ground.

- Measure the resistance between license plate light connector F-03 (LH), F-07 (RH) (terminal No. 1) and body ground.

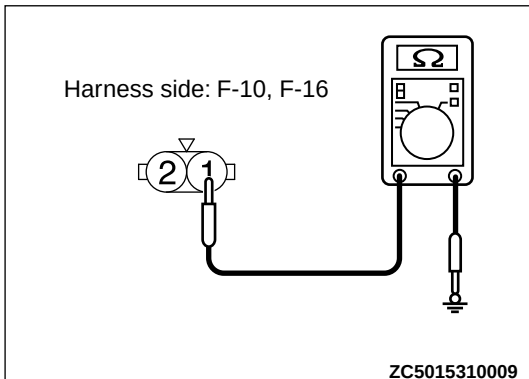
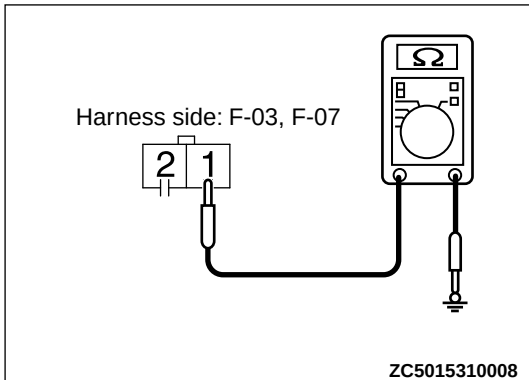
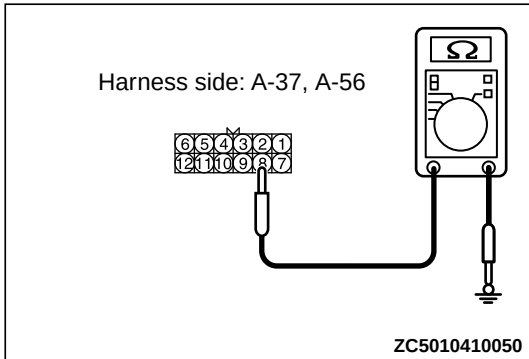
- Measure the resistance between rear side marker light connector F-16 (LH), F-10 (RH) (terminal No. 1) and body ground.

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 wiring harness between headlight assembly connector A-56 (position light RH and front side maker RH) or A-37 (position light LH and front side maker LH) (terminal No. 8), license plate light connector F-07 (RH) or F-03 (LH) (terminal No. 1), or rear side marker light connector F-10 (RH) or F-16 (LH) (terminal No. 1) and the body ground.

NOTE: Before the wiring harness check, check the F-15 rear side light, or and repair that if necessary.

Q:Is the wiring harness between headlight assembly connector A-56 (position light RH and front side marker RH) or A-37 (position light LH and front side marker LH) (terminal No. 8), license plate light connector F-07 (RH) or F-03 (LH) (terminal No. 1), or rear side marker light connector F-10 (RH) or F-16 (LH) (terminal No. 1) 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 <headlight assembly> or C-311 <license plate light and rear side marker light> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is ETACS-ECU connector C-304 <headlight assembly> or C-311 <license plate light and rear side marker light> in good condition?

YES: Go to Step 7.

NO: Repair the damaged parts.

STEP 7. Check Wiring harness between headlight assembly connector A-56 (position light RH and front side marker RH) or A-37 (position light and front side marker LH) (terminal No. 6), license plate light connector F-07 (RH) or F-03 (LH) (terminal No. 2), or rear side marker light connector F-10 (RH) or F-16 (LH) (terminal No. 2) and ETACS-ECU connector C-304 <headlight assembly>, C-311 <license plate light and rear side marker light>.

NOTE: Before the wiring harness check, check the D-12 <license plate light>, or F-15, F-18 <rear side marker light> and repair that if necessary.

Q:Is the wiring harness between headlight assembly connector A-56 (position light RH and front side marker RH) or A-37 (position light and front side marker LH) (terminal No. 6), license plate light connector F-07 (RH) or F-03 (LH) (terminal No. 2), or rear side marker light connector F-10 (RH) or F-16 (LH) (terminal No. 2) and ETACS-ECU connector C-304 <headlight assembly>, C-311 <license plate light and rear side marker light> in good condition?

YES: Go to Step 8.

NO: Repair the wiring harness.

STEP 8. Retest the system.

Check that the position light, front side marker light, rear side marker light, or license plate light illuminate normally.

Q:Do the position light, front side marker 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 front side marker lights do not

illuminate>: Replace the front side marker 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 turn-signal lights do not illuminate.

M15410900119USA0000010000

TECHNICAL DESCRIPTION (COMMENT)

If all the turn-signal lights do not illuminate, the ignition switch (IG1), the turn-signal light switch input circuit or the ETACS-ECU may have a problem.

- Malfunction of the ETACS-ECU

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

TROUBLESHOOTING HINTS

- Malfunction of column switch

DIAGNOSIS

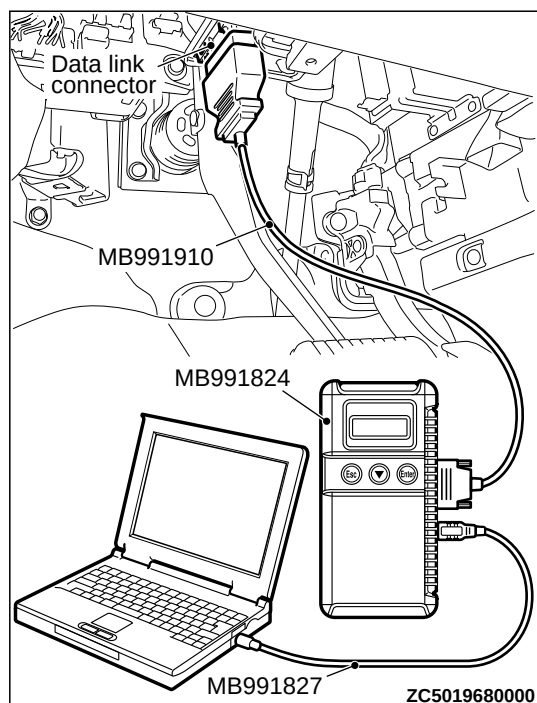
Required Special Tools:

- 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.54Ac-11."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8).

NO: Go to Step 2.

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

Using the ETACS-ECU service data, check the signals related to the illumination of turn-signal light.

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

Item No.	Item name	Normal conditions
Item 254	IG voltage	Battery voltage

Q:Does scan tool MB991958 display the item "IG voltage" as normal condition?

YES<Normal conditions is displayed for item.>: Go to Step 3.

NO: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 2 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

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 11: The comfort flashing function does not work normally.

M15410900123USA0000010000

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.

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

TROUBLESHOOTING HINTS

- Malfunction of column switch

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

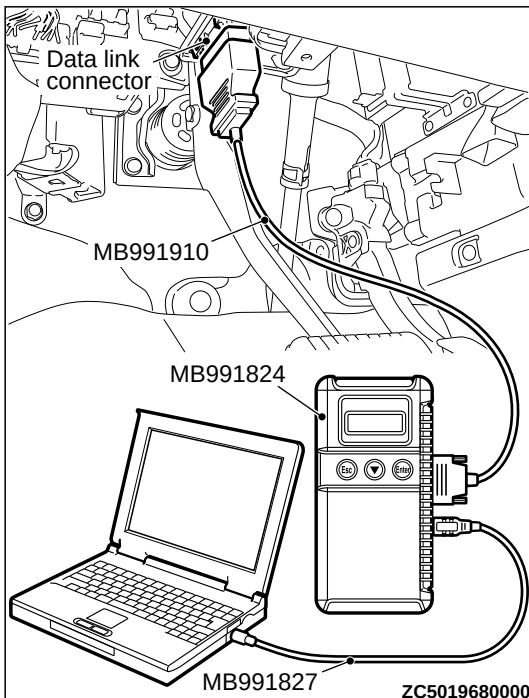
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-11."
- (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.54Ac-170).



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 GROUP 54Ad, Diagnosis P.54Ad-8).

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 10 "The turn-signal lights do not illuminate" P.54Ac-53.

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 12: The turn-signal indicator light do not illuminate.

M15410900120USA0000010000

⚠ 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)

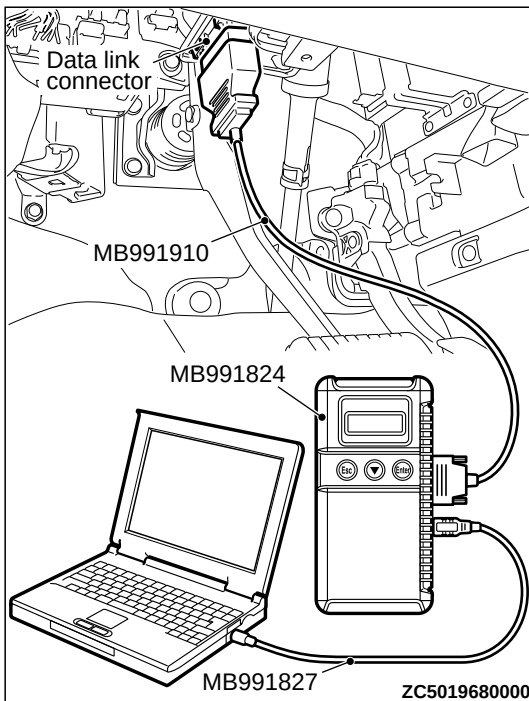
STEP 1. Check turn-signal light.

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 10 "The turn-signal lights do not illuminate" P.54Ac-53.



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.54Ac-11."
- (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 54D - Diagnosis P.54D-17).

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 GROUP 54Ad, Diagnosis P.54Ad-8.

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.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - Contents of troubleshooting P. 00-6.

DIAGNOSTIC FUNCTION

M15410900006USA0000010001

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

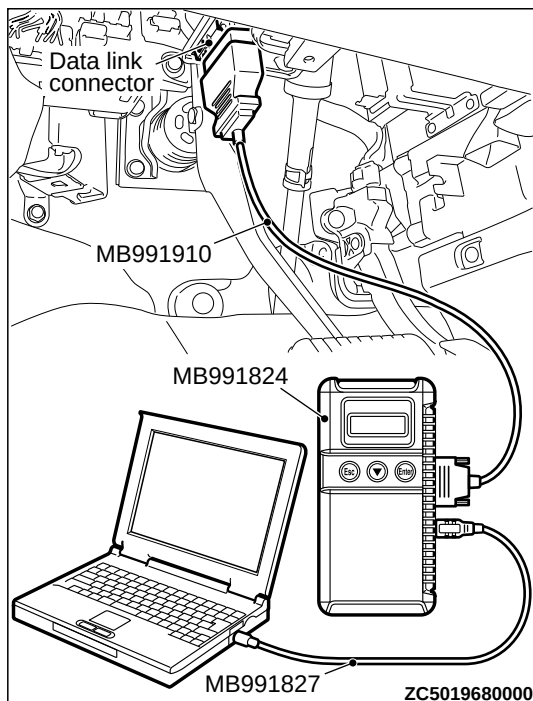
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

6. Select "Special function."
7. Select "Headlight automatic leveling diagnosis."
8. On the multi information display in the combination meter, the headlight automatic leveling warning is displayed. From the flashing of headlight automatic leveling warning display, read the diagnostic trouble code.

Warning display flashing example of when diagnostic trouble code No. 24 is displayed	Warning display flashing when normal
1.5 seconds 0.5 seconds 0.5 seconds Illuminates Extinguishes Pause time 3 seconds Ten's place signal 2 seconds One's place signal Pause time 3 seconds ZC3035540000	0.25 seconds Illuminates Extinguishes ZC303550000

DIAGNOSTIC TROUBLE CODE CHART

M15410900007USA0000010001

⚠ CAUTION

On troubleshooting, if the ignition switch is turned "ON" while disconnecting connector(s), DTC

associated with other system may be set. On completion, confirm all systems for DTC. If DTC are set, erase them all.

Diagnostic trouble code number	Diagnostic item	Reference page
21	Height sensor abnormality (rear)	P.54Ac-59
22	Height sensor abnormality (front)	P.54Ac-63
23	Height sensor power supply short to ground	P.54Ac-66
24	Pitch angle abnormality	P.54Ac-70
31	Leveling unit abnormality	P.54Ac-74

DIAGNOSTIC TROUBLE CODE PROCEDURES

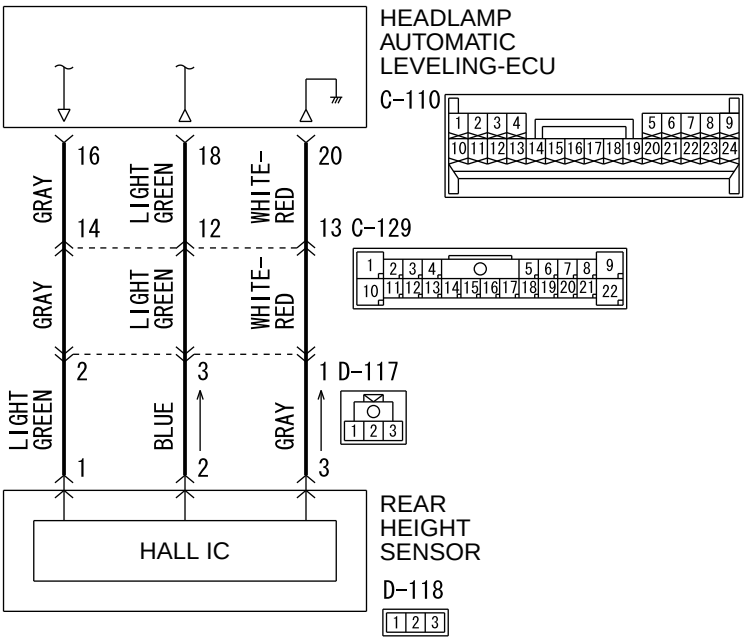
DTC 21: Height sensor abnormality (Rear)

M15410900081USA0000010000

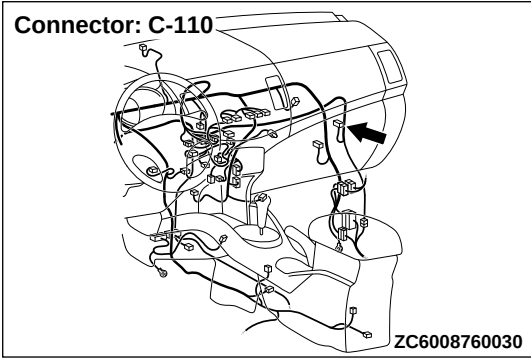
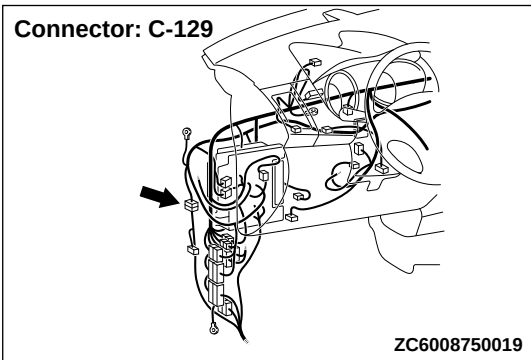
⚠ CAUTION

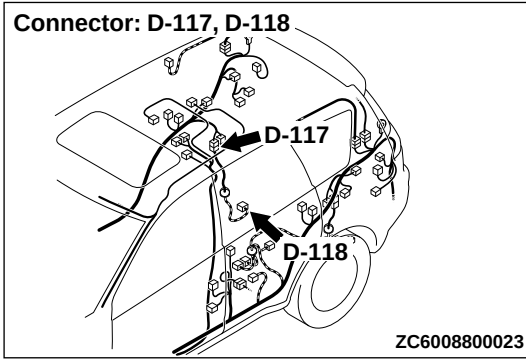
Before replacing the ECU, ensure that the communication circuit is normal.

Height Sensor (Rear) Circuit



D7G54M032A00





TROUBLE JUDGMENT

When the headlight automatic leveling-ECU receives an abnormal voltage signal from the rear height sensor, DTC 21 is set.

TECHNICAL DESCRIPTION (COMMENT)

The rear height sensor, the headlight automatic leveling-ECU, or wiring harness and connectors between the two may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the rear height sensor
- Malfunction of the headlight automatic leveling-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check rear height sensor connector D-118 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear height sensor connector D-118 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

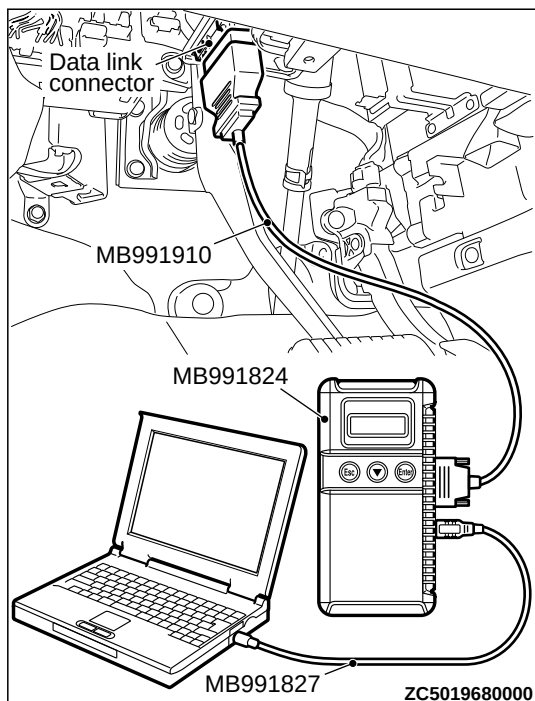
STEP 2. Check the rear height sensor.

Check that the rear height sensor is normal (Refer to P. 54Ac-180).

Q: Does the rear height sensor work normal?

YES: Go to Step 3.

NO: Replace the rear height sensor.



STEP 3. 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.54Ac-58."
- (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 DTC 21 set?

YES: Go to Step 4.

NO: The procedure is complete.

STEP 4. Check headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Check the wiring harness between rear height sensor connector D-118 (terminal No. 1/2/3) and the headlight automatic leveling-ECU connector C-110 (terminal No 16/18/20).

NOTE: Before the wiring harness check, check the intermediate connectors C-129 and D-117, and then repair that if necessary.

Q: Is wiring harness between rear height sensor connector D-118 (terminal No. 1/2/3) and the headlight automatic leveling-ECU connector C-110 (terminal No 16/18/20) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 21 set?

YES: Replace the headlight automatic leveling-ECU.

NO: The trouble, such as a poor connector connection from the rear height sensor to headlight automatic leveling-ECU or an open circuit of wiring harness, 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.)

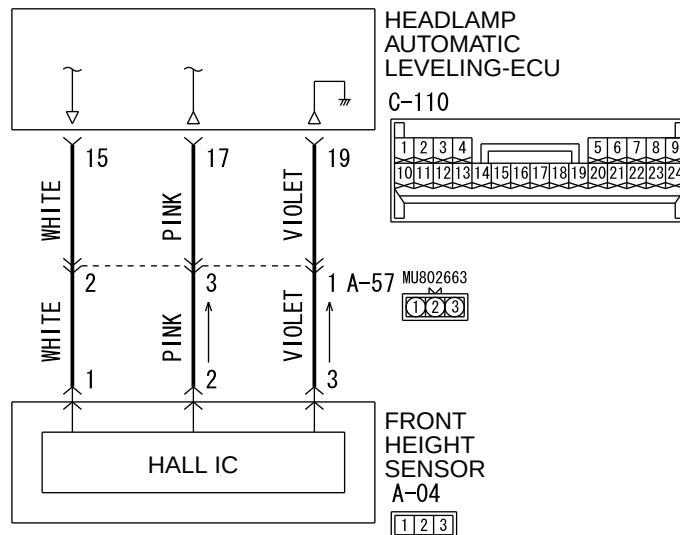
DTC 22: Height sensor abnormality (Front)

M15410900082USA0000010000

CAUTION

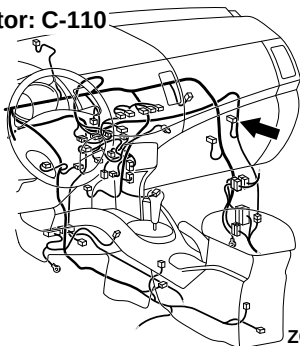
Before replacing the ECU, ensure that the communication circuit is normal.

Height Sensor (Front) Circuit



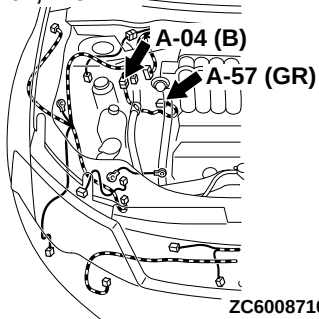
D7G54M034A00

Connector: C-110



ZC6008760030

Connector: A-04, A-57

**TROUBLE JUDGMENT**

When the headlight automatic leveling-ECU receives an abnormal voltage signal from the front height sensor, DTC 22 is set.

TECHNICAL DESCRIPTION (COMMENT)

The front height sensor, the headlight automatic leveling-ECU, or wiring harness and connectors between the two may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the front height sensor
- Malfunction of the headlight automatic leveling-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

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

STEP 1. Check front height sensor connector A-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front height sensor connector A-04 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

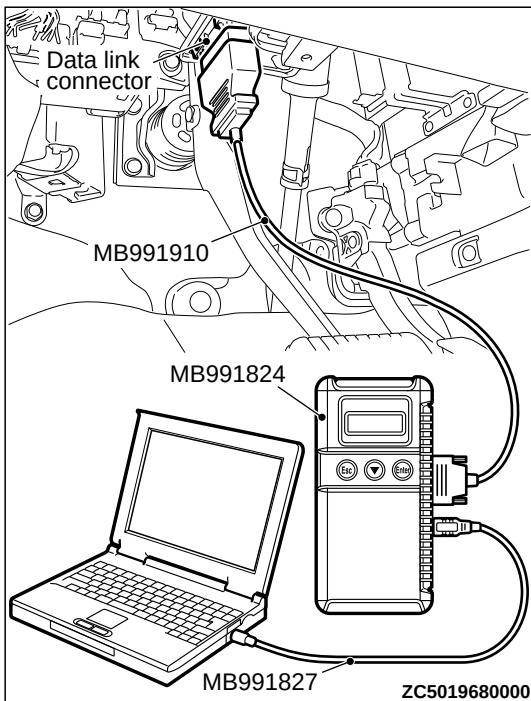
STEP 2. Check the front height sensor.

Check that the front height sensor is normal (Refer to P. 54Ac-180).

Q: Does front height sensor work normal?

YES: Go to Step 3.

NO: Replace the front height sensor.



STEP 3. 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.54Ac-58."
- (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 DTC 22 set?

YES: Go to Step 4.

NO: The procedure is complete.

STEP 4. Check headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Check the wiring harness between front height sensor connector A-04 (terminal No. 1/2/3) and the headlight automatic leveling-ECU connector C-110 (terminal No. 15/17/19).

NOTE: Before the wiring harness check, check the intermediate connector A-57, and repair that if necessary.

Q: Is wiring harness between front height sensor connector A-04 (terminal No. 1/2/3) and the headlight automatic leveling-ECU connector C-110 (terminal No 15/17/19) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q: Is DTC 22 set?

YES: Replace the headlight automatic leveling-ECU.
NO: The trouble, such as a poor connector connection from the front height sensor to headlight automatic leveling-ECU or an open circuit of wiring harness, 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.)

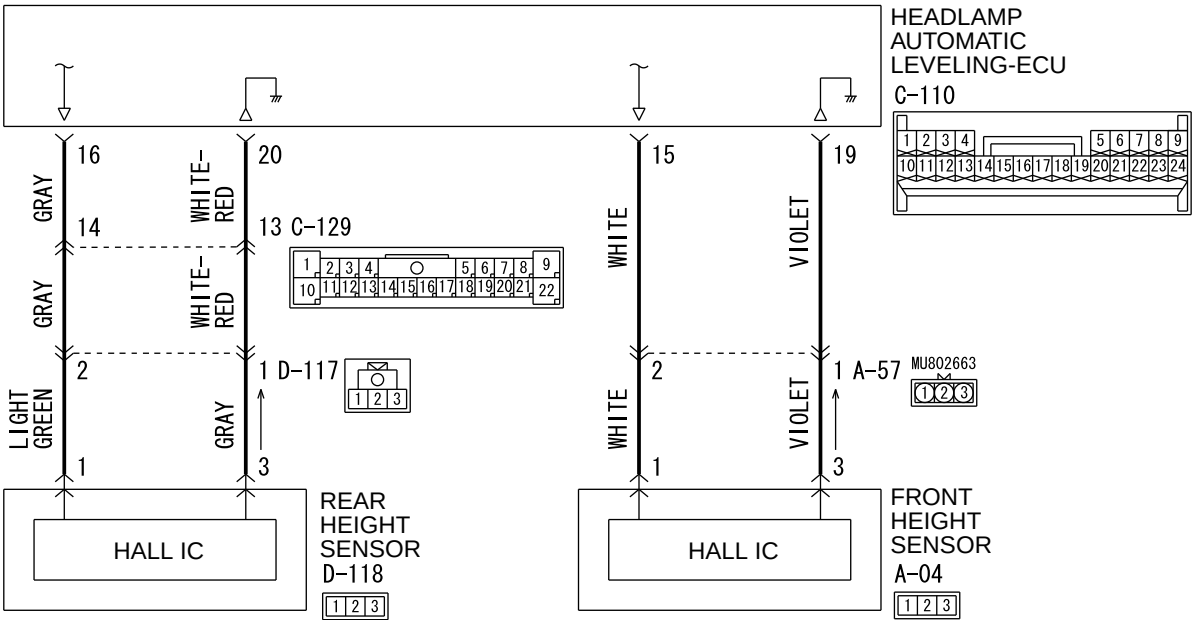
DTC 23: Height sensor power supply short to ground

M15410900083USA0000010000

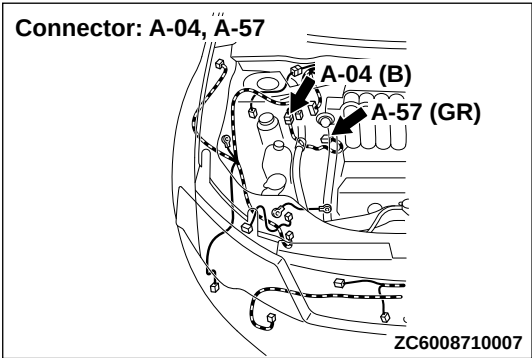
CAUTION

Before replacing the ECU, ensure that the communication circuit is normal.

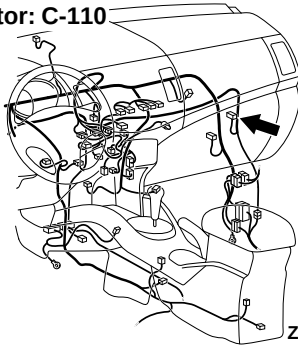
Height Sensor Power Supply Circuit



D7G54M031A00

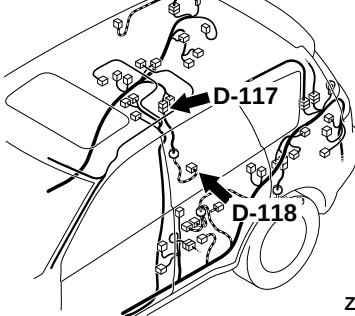


Connector: C-110



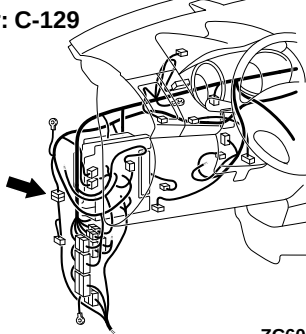
ZC6008760030

Connector: D-117, D-118



ZC6008800023

Connector: C-129



ZC6008750019

TROUBLE JUDGMENT

If the front height sensor, rear height sensor power supply, or ground line is short-circuited, DTC 23 is set.

TECHNICAL DESCRIPTION (COMMENT)

The front height sensor, the rear height sensor, the headlight automatic leveling-ECU, or wiring harness and connectors between the front/rear height sensor and the headlight automatic leveling-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the front height sensor
- Malfunction of the rear height sensor
- Malfunction of the headlight automatic leveling-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

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

STEP 1. Check front height sensor connector A-04 and headlight automatic leveling-ECU connector D-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Are front height sensor connector A-04 and headlight automatic leveling-ECU connector D-110 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Check the wiring harness between front height sensor connector A-04 (terminal No. 1/3) and headlight automatic leveling-ECU connector D-110 (terminal No. 15/19).

NOTE: Before the wiring harness check, check the intermediate connector A-57, and repair that if necessary.

Q:Is wiring harness between front height sensor connector A-04 (terminal No. 1/3) and headlight automatic leveling-ECU connector D-110 (terminal No. 15/19) in good condition?

YES: Go to Step 3.

NO: Repair the wiring harness.

STEP 3. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

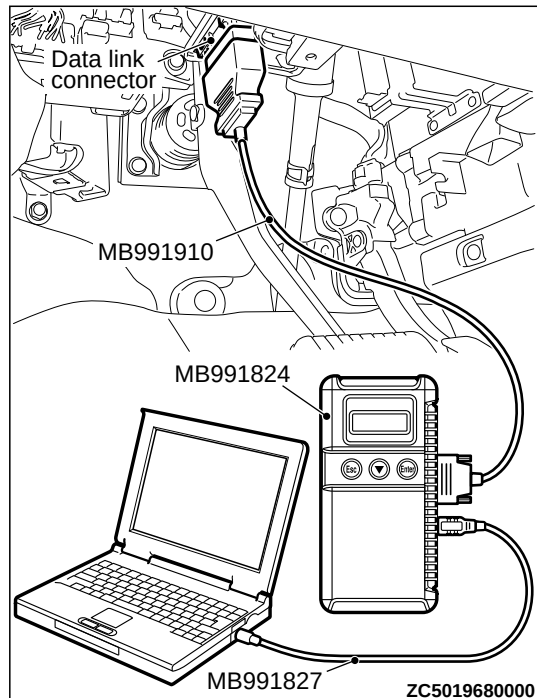
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-58."
- (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 DTC 23 set?

YES: Go to Step 4.

NO: The trouble, such as a poor connector connection from the front height sensor to headlight automatic leveling-ECU or an open circuit of wiring harness, can be an intermittent malfunction. (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to cope with Intermittent Malfunction P.00-15.)



STEP 4. Check rear height sensor connector D-118 and headlight automatic leveling-ECU connector D-110 for

loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Are rear height sensor connector D-118 and headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Check the wiring harness between rear height sensor connector D-118 (terminal No. 1/3) and headlight automatic leveling-ECU connector C-110 (terminal No. 16/20).

NOTE: Before the wiring harness check, check the intermediate connectors C-129 and D-117, and then repair that if necessary.

Q:Is wiring harness between rear height sensor connector D-118 (terminal No. 1/3) and the headlight automatic leveling-ECU connector C-110 (terminal No 15/19) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 23 set?

YES: Go to Step 7.

NO: The trouble, such as a poor connector connection from the rear height sensor to headlight automatic leveling-ECU or an open circuit of wiring harness, 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 7. Check front height sensor.

Check that the front height sensor is normal (Refer to P. 54Ac-180).

Q:Do front height sensor work normal?

YES: Go to Step 8.

NO: Replace the front height sensor.

STEP 8. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 23 set?**YES:** Go to Step 9.**NO:** The procedure is complete.

STEP 9. Check rear height sensor.

Check that the rear height sensor is normal (Refer to P. 54Ac-180).

Q:Does the rear height sensor work normal?**YES:** Go to Step 10.**NO:** Replace the rear height sensor.

STEP 10. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 23 set?**YES:** Replace the headlight automatic leveling-ECU.**NO:** The procedure is complete.

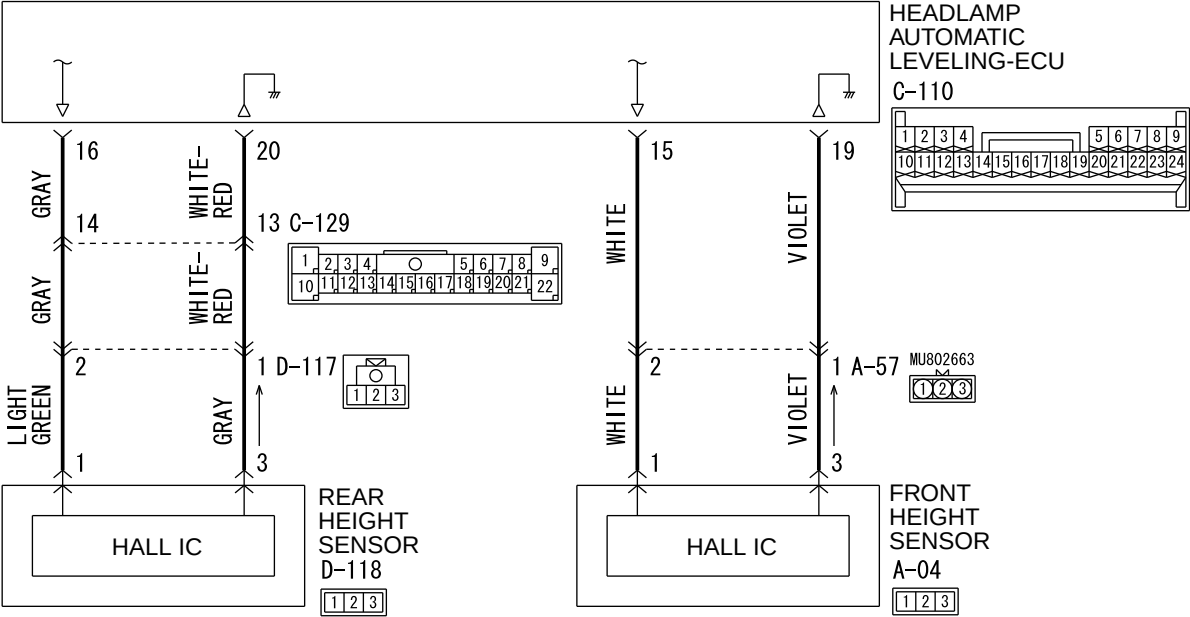
DTC 24: Pitch angle abnormality

M15410900084USA0000010000

** CAUTION**

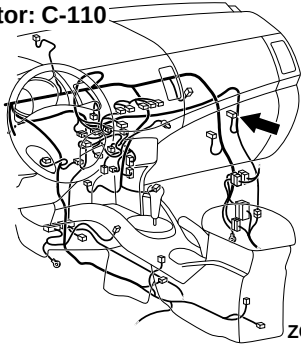
Before replacing the ECU, ensure that the communication circuit is normal.

Height Sensor Power Supply Circuit



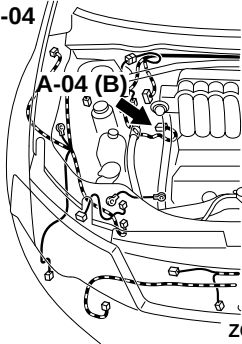
D7G54M031A00

Connector: C-110



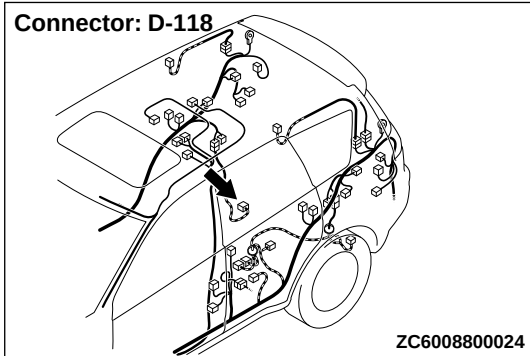
ZC6008760030

Connector: A-04



ZC600871

Connector: D-118

**TROUBLE JUDGMENT**

The headlight automatic leveling-ECU receives a vehicle height signal from the front and rear height sensors and calculates the headlight leveling pitch angle. If an abnormal pitch angle is calculated, DTC 24 is set.

TECHNICAL DESCRIPTION (COMMENT)

The front height sensor, the rear height sensor or the headlight automatic leveling-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the front height sensor
- Malfunction of the rear height sensor
- Malfunction of the headlight automatic leveling-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

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

STEP 1. Check front height sensor connector A-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the damaged parts.

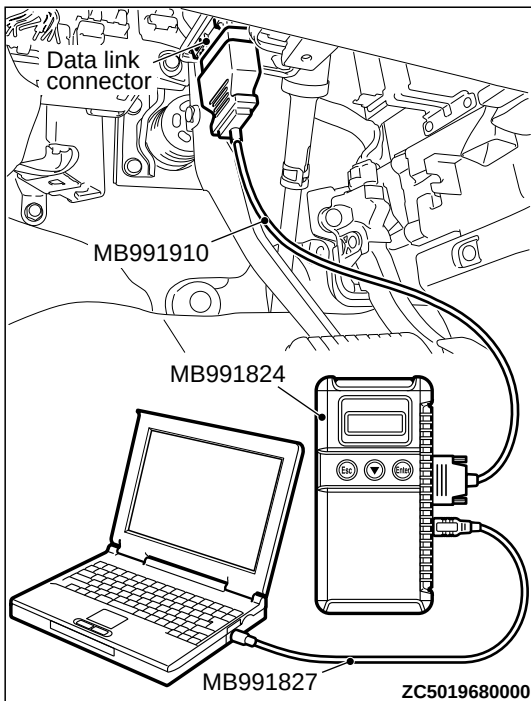
STEP 2. Check front height sensor.

Check that the front height sensor is normal (Refer to P. 54Ac-180).

Q: Do front height sensor work normal?

YES: Go to Step 3.

NO: Replace the front height sensor.



STEP 3. 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.54Ac-58."
- (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 DTC 24 set?

YES: Go to Step 4.

NO: The procedure is complete.

STEP 4. Check rear height sensor connector D-118 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is rear height sensor connector D-118 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. check rear height sensor.

Check that the rear height sensor is normal (Refer to P. 54Ac-180).

Q:Do rear height sensor work normal?

YES: Go to Step 6.

NO: Replace the rear height sensor.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 24 set?

YES: Go to Step 7.

NO: The procedure is complete.

STEP 7. Check headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 8.

NO: Repair the damaged parts.

STEP 8. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

(2) Erase the DTC.

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

(4) Check if DTC is set.

Q: Is DTC 24 set?

YES: Replace the headlight automatic leveling ECU.

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

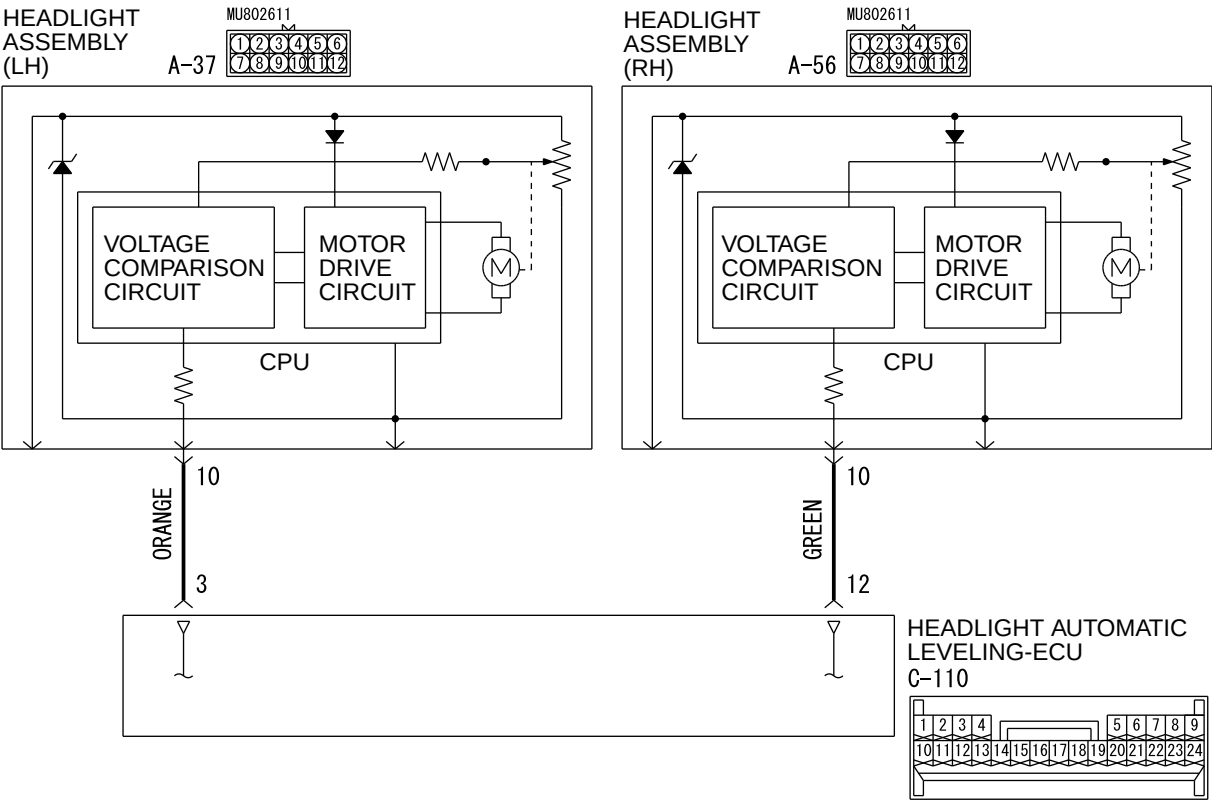
Code No.31 Leveling unit abnormality

M15410900085USA0000010000

CAUTION

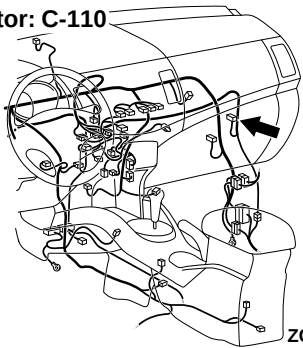
Before replacing the ECU, ensure that the communication circuit is normal.

Headlight Leveling Unit Circuit

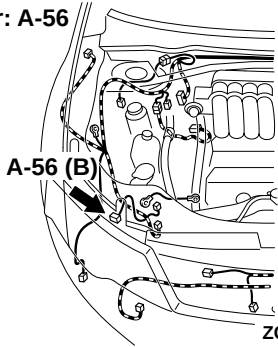


D7G54M033A00

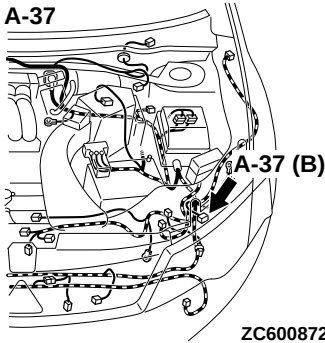
Connector: C-110



Connector: A-56



Connector: A-37

**TROUBLE JUDGMENT**

If the headlight leveling unit signal line is short-circuited, DTC 31 is set.

TECHNICAL DESCRIPTION (COMMENT)

The wiring harness and connector(s) between the headlight leveling unit and the headlight automatic leveling-ECU, headlight assembly (headlight leveling unit), or headlight automatic leveling-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of headlight assembly (headlight leveling unit)
- Malfunction of the headlight automatic leveling-ECU
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

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

STEP 1. Check headlight leveling unit (LH) connector A-37, headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight leveling unit (LH) connector A-37, headlight automatic leveling-ECU connector C-110?

YES: Go to Step 2.

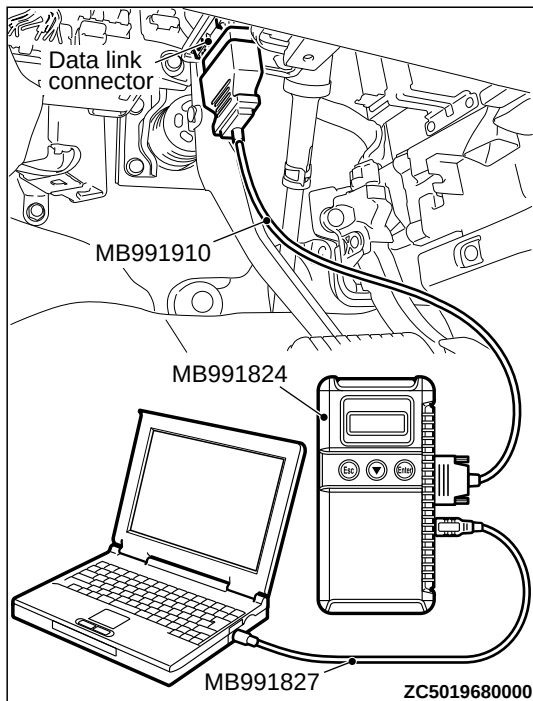
NO: Repair the damaged parts.

STEP 2. Check the wiring harness between headlight leveling unit (LH) connector A-37 (terminal No. 10) and headlight automatic leveling-ECU connector C-110 (terminal No. 3)

Q: Is wiring harness between headlight leveling unit (LH) connector A-37 (terminal No. 10) and headlight automatic leveling-ECU connector C-110 (terminal No. 3) in good condition?

YES: Go to Step 3.

NO: Repair the wiring harness.



STEP 3. 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.54Ac-58."
- (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 DTC 31 set?

YES: Go to Step 4.

NO: The trouble, such as a poor connector connection from the headlight leveling unit (LH) to headlight automatic leveling-ECU or an open circuit of wiring harness, can be an intermittent malfunction. (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to cope with Intermittent Malfunction P.00-15.)

STEP 4. Check headlight leveling unit (RH) connector A-56, headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight leveling unit (RH) connector A-56, headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 5.

NO: Repair the defective connector.

STEP 5. Check the wiring harness between headlight leveling unit (RH) connector A-56 (terminal No. 10) and headlight automatic leveling-ECU connector C-110 (terminal No. 12).

Q:Is wiring harness between headlight leveling unit (RH) connector A-56 (terminal No. 10) and headlight automatic leveling-ECU connector C-110 (terminal No. 12) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

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

Q:Is DTC 31 set?

YES: Go to Step 7.

NO: The trouble, such as a poor connector connection from the headlight leveling unit to headlight automatic leveling-ECU or an open circuit of wiring harness, 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 7. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Replace the headlight assembly (LH), and then check again if DTC 31 is set.

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

Q:Is DTC 31 set?

YES: Go to Step 8.

NO: The procedure is complete.

STEP 8. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

Replace the headlight assembly (RH), and then check again if DTC 31 is set.

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

Q:Is DTC 31 set?

YES: Replace the headlight automatic leveling-ECU.

NO: The procedure is complete.

TROUBLE SYMPTOM CHART

M15410900009USA0000010001

Trouble symptom	Inspection Procedure No.	Reference page
The diagnostic trouble code is not set.	1	P.54Ac-79
Neither right nor left automatic leveling operates.	2	P.54Ac-84
Either automatic leveling does not operate.	3	P.54Ac-88
The headlight automatic leveling warning is not displayed.	4	P.54Ac-92
The headlight automatic leveling warning light does not go off.	5	P.54Ac-96

SYMPTOM PROCEDURES

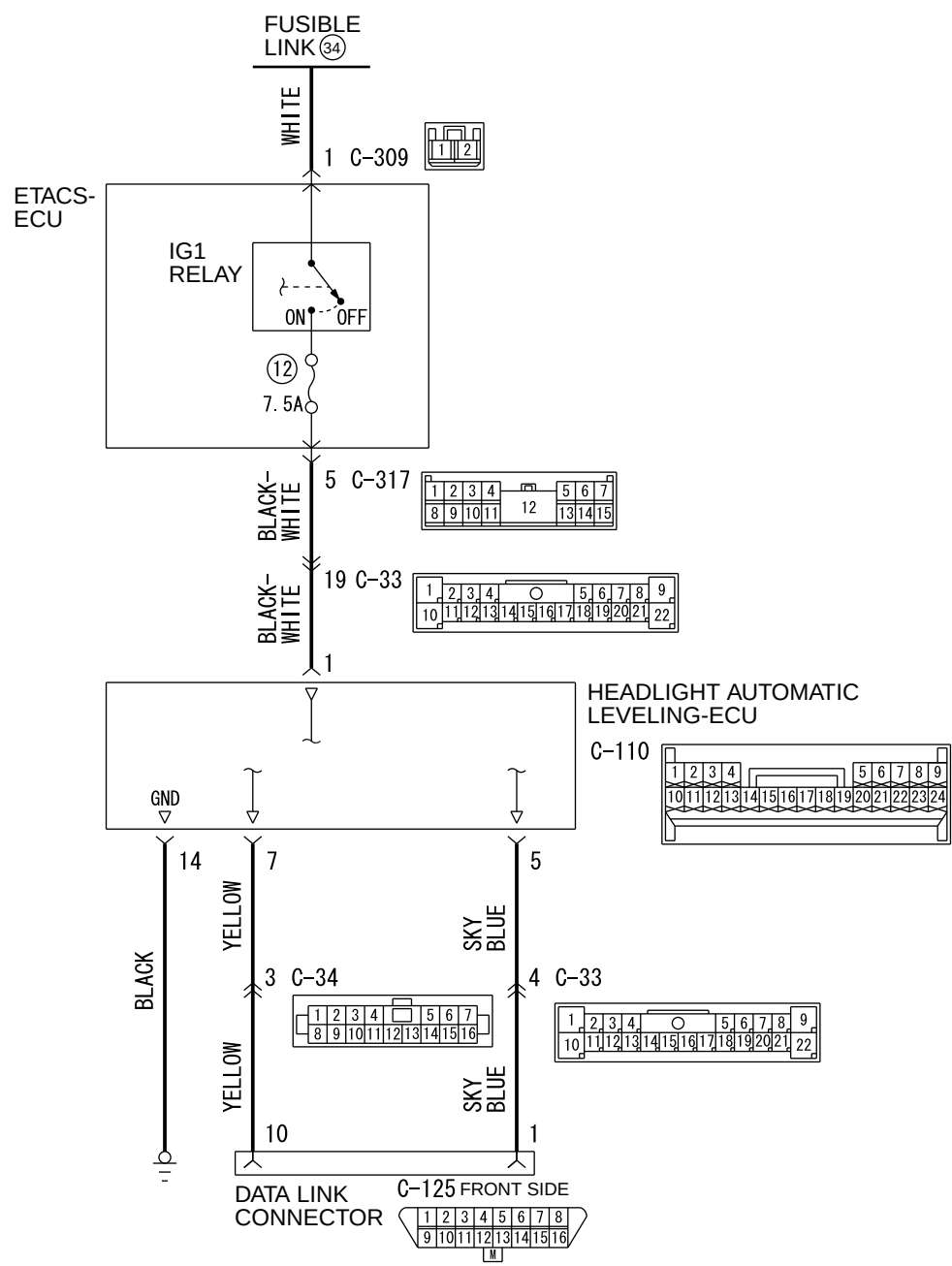
Inspection Procedure 1: The diagnostic trouble code is not set.

M15410900095USA0000010000

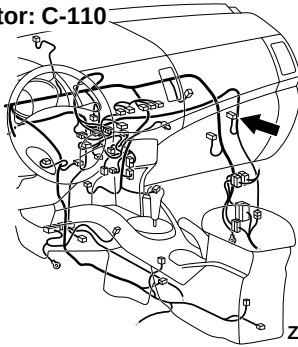
 CAUTION

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

Diagnosis Connector Communication Circuit

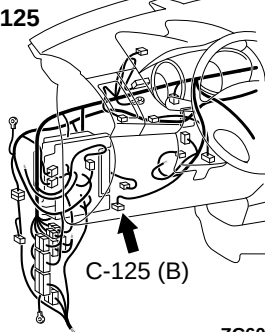


Connector: C-110



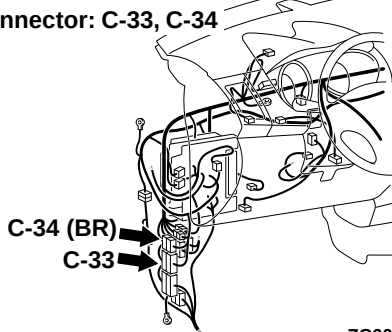
ZC6008760030

Connector: C-125



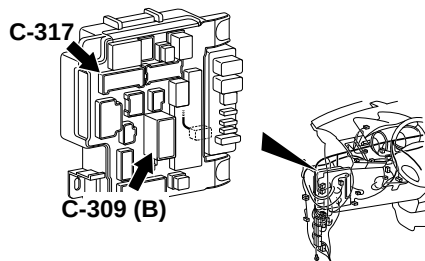
ZC6008750000

Connector: C-33, C-34



ZC6008750032

Connector: C-317, C-309



ZC6008780028

TECHNICAL DESCRIPTION (COMMENT)

If neither normal nor abnormal DTC is set, the headlight automatic leveling-ECU, the headlight automatic leveling-ECU power supply, wiring harness or connectors of ground, or wiring harness and connectors between the headlight automatic leveling-ECU and data link connector may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the headlight automatic leveling-ECU
- 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. Check headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Resistance measurement at headlight automatic leveling-ECU connector C-110.

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

(2) Measure the resistance between headlight automatic leveling-ECU connector C-110 (terminal No. 14) and body ground.

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 4.

NO: Go to Step 3.

STEP 3. Check the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 14) and body ground.

Q: Is the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 14) and body ground. in good condition?

YES:

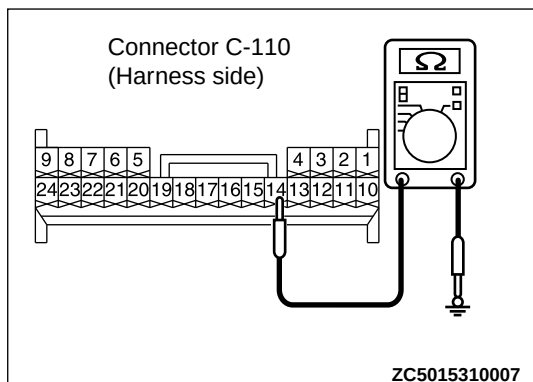
Go to Step 4.

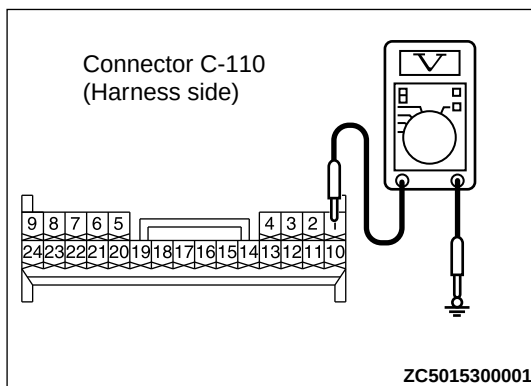
NO: Repair the wiring harness.

STEP 4. Voltage measurement at the C-110 headlight automatic leveling-ECU connector.

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

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





- (3) Voltage between headlight automatic leveling-ECU connector (terminal No. 1) and body ground
The voltage should measure approximately 12 volts (battery positive voltage).

Q: Does the voltage measure battery voltage?

YES: Go to Step 6.

NO: Go to Step 5.

STEP 5. Check the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 1) and fusible link (34).

NOTE: Before the wiring harness check, check the ETACS-ECU connectors C-309 and C-317, and the intermittent connector C-33. Then, repair them if necessary.

Q: Is the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 1) and the fusible link (34) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Check data link connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is data link connector C-125 in good condition?

YES: Go to Step 7.

NO: Repair the damaged parts.

STEP 7. Check the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 5/7) and data link connector C-125 (terminal No. 1/10).

NOTE: Before the wiring harness check, check the intermittent connector C-33 and C-34. Then, repair them if necessary.

Q: Is the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 5/7) and data link connector C-125 (terminal No. 1/10) in good condition?

YES: Go to Step 8.

NO: Repair the wiring harness.

STEP 8. Retest the system.

Check if DTC is set.

Q: Is the DTC set?

YES: Refer to diagnostic trouble code chart P. 54Ac-59.

NO: Replace the headlight automatic leveling-ECU.

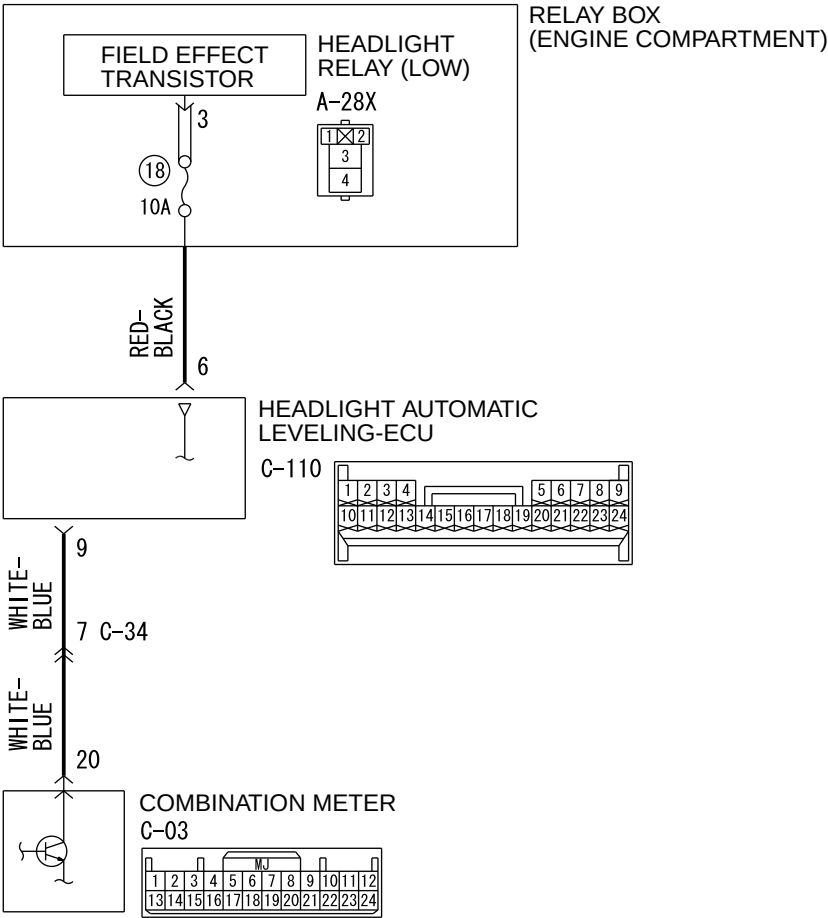
Inspection Procedure 2: Neither right nor left automatic leveling operates.

M15410900108USA0000010002

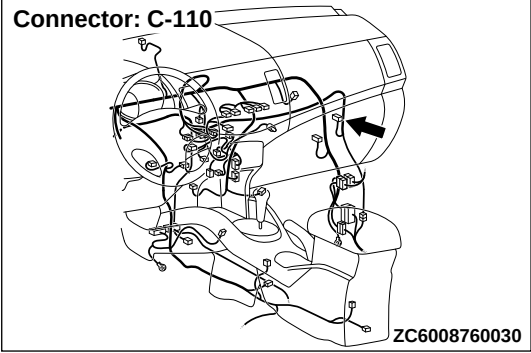
CAUTION

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

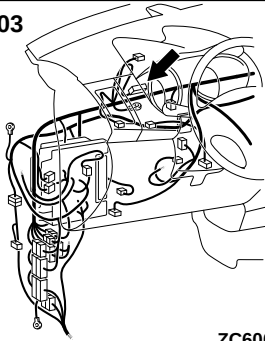
Headlight Relay (LOW) Signal and Combination Meter Signal Circuit



D7G54M078A00

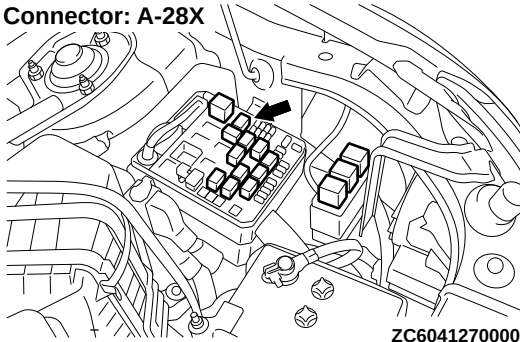


Connector: C-03



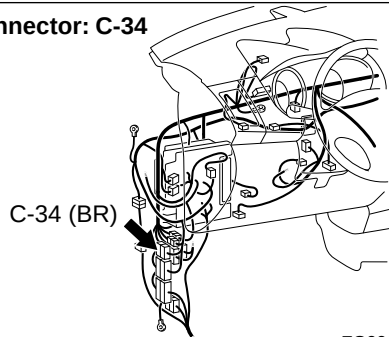
ZC6008750015

Connector: A-28X



ZC6041270000

Connector: C-34



ZC6008750023

OPERATION

When a vehicle is at a standstill or being driven at a constant speed for 12 seconds or more (except on rough road), the headlight automatic leveling ECU inputs a headlight relay (LOW) signal, vehicle speed signal, and height signal for judgment and operates the headlight leveling.

NOTE: The automatic leveling during driving at a constant speed operates only once after starting driving. The automatic leveling does not work if the vehicle pitch angle during driving at a constant speed and the vehicle pitch angle when the vehicle is stopped are the same.

TECHNICAL DESCRIPTION (COMMENT)

Assuming that the automatic leveling DTC is not set, if neither right nor left automatic leveling operates, the headlight automatic leveling-ECU, wiring harness and connector(s) between the headlight automatic leveling-ECU and the headlight relay (LOW), the combination meter (vehicle speed signal abnormality), or wiring harness and connector(s) between the headlight automatic leveling-ECU and the combination meter may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the headlight automatic leveling-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:**

- 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**

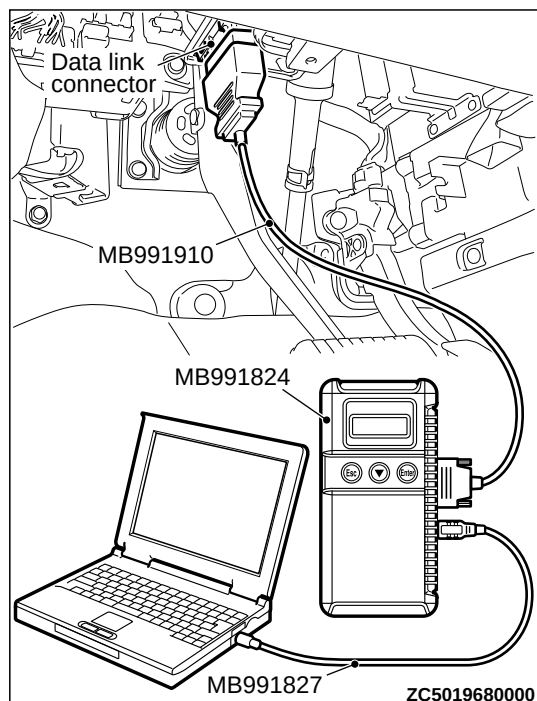
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-58."
- (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 ETACS-ECU code set?

YES: Go to Step 2.

NO: Refer to Inspection Procedure 1 "Diagnostic trouble code is not set" P. 54Ac-79.



STEP 2. Check combination meter.

Q:Does the speedometer operate?

YES: Go to Step 3.

NO: Diagnosis the combination meter (Refer to GROUP 54Ab - Diagnosis P.54Ab-7). On completion, go to Step 3.

STEP 3. Check headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 4.

NO: Repair the damaged parts.

STEP 4. Voltage measurement at headlight automatic leveling-ECU connector C-110.

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

(2) Turn "ON" the headlight switch.

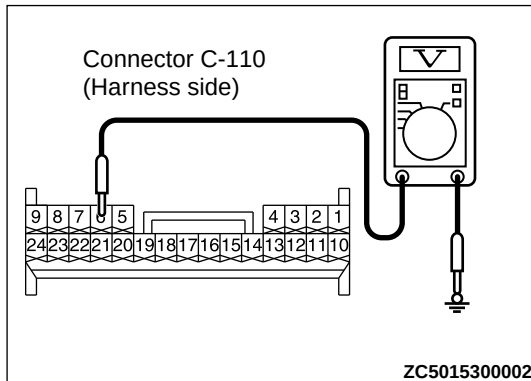
(3) Voltage between headlight automatic leveling-ECU connector C-110 (terminal No. 6) and body ground

The voltage should measure approximately 12 volts (battery positive voltage).

Q:Does the voltage measure battery voltage?

YES: Go to Step 6.

NO: Go to Step 5.



STEP 5. Check wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 6) and headlight relay (LOW) connector A-28X (terminal No. 3).

Q:Are the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 6) and headlight relay (LOW) connector A-28X (terminal No. 3) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Check combination meter connector C-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is combination meter connector C-03 in good condition?

YES: Go to Step 7.

NO: Repair the damaged parts.

STEP 7. Check wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 9) and combination meter connector C-03 (terminal No. 20).

NOTE: Prior to the wiring harness inspection, check intermediate connector C-34, and repair if necessary.

Q:Are the wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 9) and combination meter connector C-03 (terminal No. 20) in good condition?

YES:

Go to Step 8.

NO: Repair the wiring harness.

STEP 8. Retest the system.

Check that the automatic leveling operates 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 headlight automatic leveling-ECU.

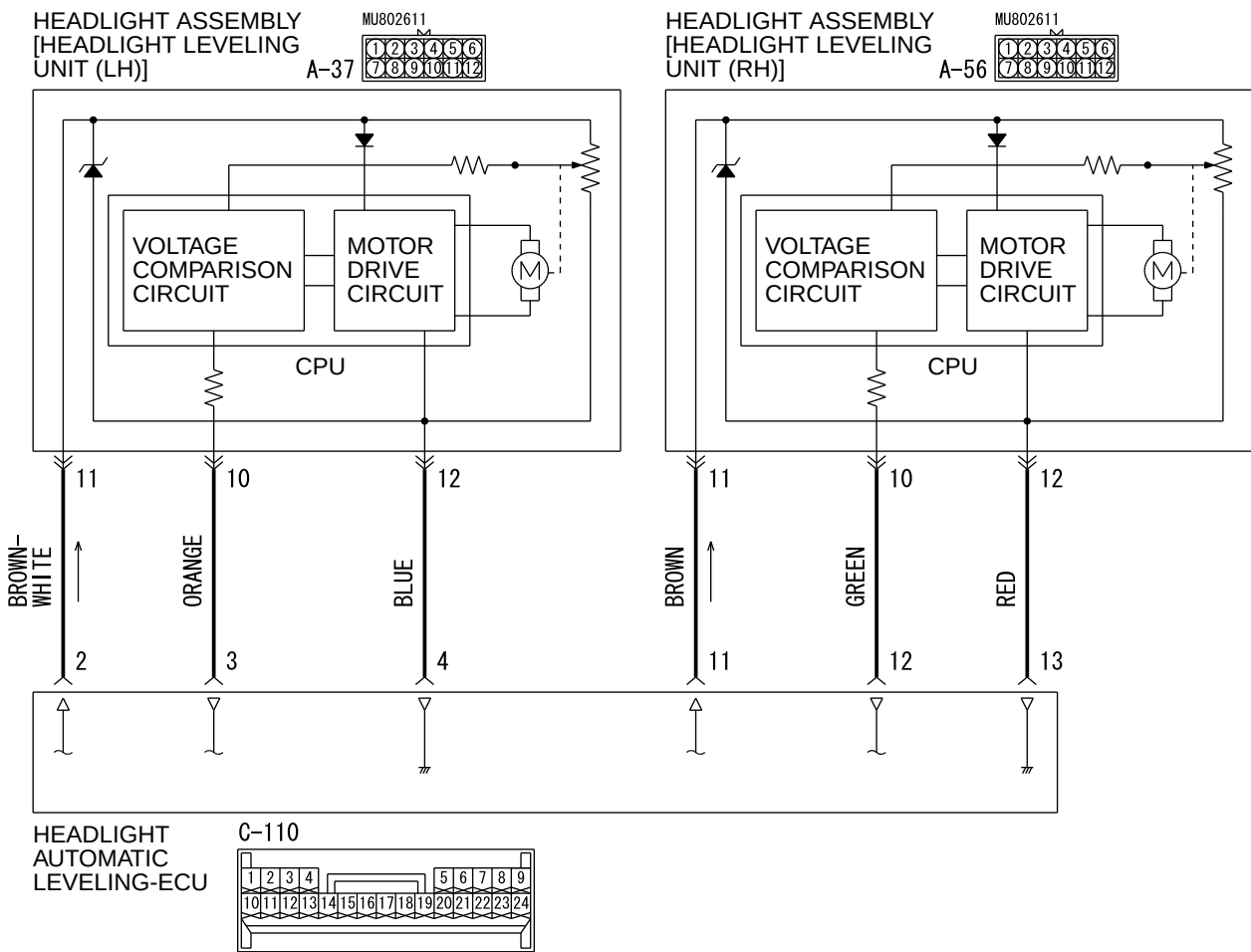
Inspection Procedure 3: Either automatic leveling does not operate.

M15410900109USA0000010000

⚠ CAUTION

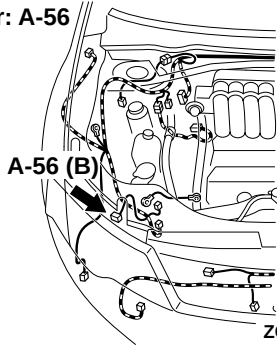
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Headlight Levelling Unit Circuit



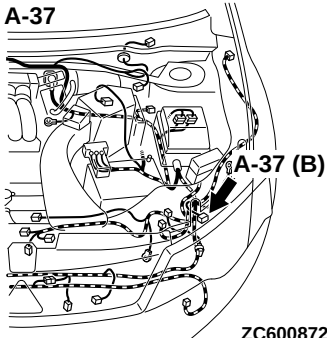
D7G54M079A00

Connector: A-56



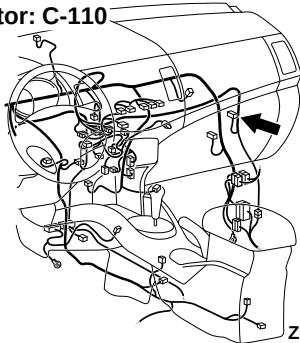
ZC6008710009

Connector: A-37



ZC6008720006

Connector: C-110



ZC6008760030

TECHNICAL DESCRIPTION (COMMENT)

If either automatic leveling does not operate, the wiring harness and connector(s) between the headlight automatic leveling-ECU and the headlight leveling unit, or the headlight assembly (headlight leveling unit) may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of headlight assembly (headlight leveling unit)
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**STEP 1. Check headlight leveling unit.**

Perform a leveling motor drive test of the headlight leveling unit to check that the motor is driven. Refer to P.54Ac-177.

Q:Do Headlight leveling unit 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 (The left leveling motor is not driven.): Go to Step 2.

NO (The right leveling motor is not driven.): Go to Step 5.

STEP 2. Check headlight automatic leveling-ECU connector C-110, Headlight leveling unit (LH) connector A-37 for loose,

corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight automatic leveling-ECU connector C-110, Headlight leveling unit (LH) connector A-37 in good condition?

YES: Go to Step 3.

NO: Repair the damaged parts.

STEP 3. Check wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 2/3/4) and headlight leveling-unit (LH) connector A-37 (terminal No. 11/10/12).

Q:Is headlight automatic leveling-ECU connector C-110 (terminal No. 2/3/4) and headlight leveling-unit (LH) connector A-37 (terminal No. 11/10/12) in good condition?

YES:

Go to Step 4.

NO: Repair the wiring harness.

STEP 4. Retest the system.

Check that the automatic leveling of the left headlight operates 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 headlight assembly (LH).

STEP 5. Check headlight automatic leveling-ECU connector C-110, Headlight leveling unit (RH) connector A-56 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is headlight automatic leveling-ECU connector C-110, Headlight leveling unit (RH) connector A-56 in good condition?

YES: Go to Step 6.

NO: Repair the damaged parts.

STEP 6. Check wiring harness between headlight automatic leveling-ECU connector C-110 (terminal No. 11/12/13) and headlight leveling-unit (LH) connector A-37 (terminal No. 11/10/12).

Q:Is headlight automatic leveling-ECU connector C-110 (terminal No. 11/12/13) and headlight leveling-unit (LH) connector A-37 (terminal No. 11/10/12) in good condition?

YES:

Go to Step 7.

NO: Repair the wiring harness.

STEP 7. Retest the system.

Check that the automatic leveling of the right headlight operates 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 headlight assembly (RH)

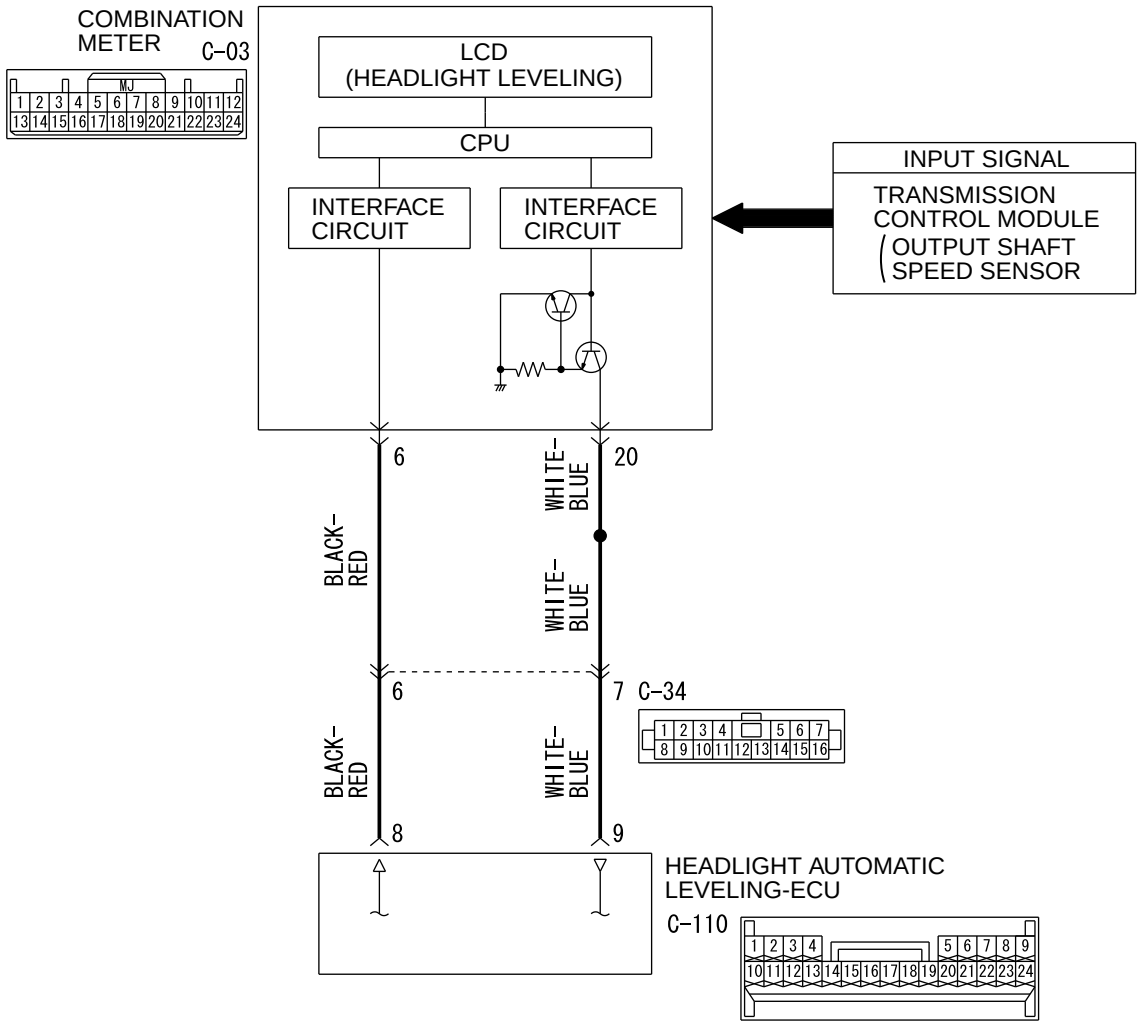
Inspection Procedure 4: The headlight automatic leveling warning is not displayed.

M15410900110USA0000010000

** CAUTION**

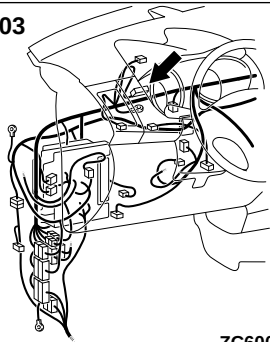
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Headlight Automatic Leveling Warning Display Circuit



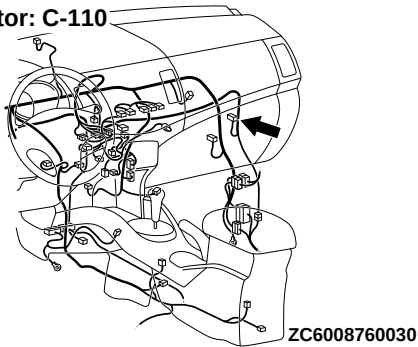
D7G54M080A00

Connector: C-03

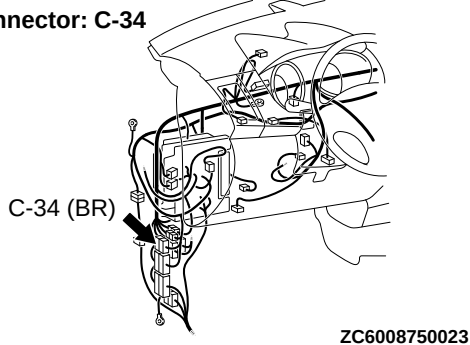


ZC6008750015

Connector: C-110



Connector: C-34

**OPERATION**

When the height sensor or headlight leveling unit is abnormal, the headlight automatic leveling warning is displayed.

COMMENTS ON TROUBLE SYMPTOM

If the headlight automatic leveling warning is not displayed, the combination meter, headlight automatic leveling-ECU, or the harness and connector(s) between the two may have a problem.

TECHNICAL DESCRIPTION (COMMENT)

- Malfunction of the headlight automatic leveling-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 of automatic leveling.

Check that the automatic leveling operates normally.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Refer to Inspection Procedure 2 "Neither right nor left automatic leveling operates." P.54Ac-84.

STEP 2. Using scan tool MB991958, check other system actuator test.

Perform the actuator test for the combination meter, and check that the headlight automatic leveling warning is displayed .

⚠ CAUTION

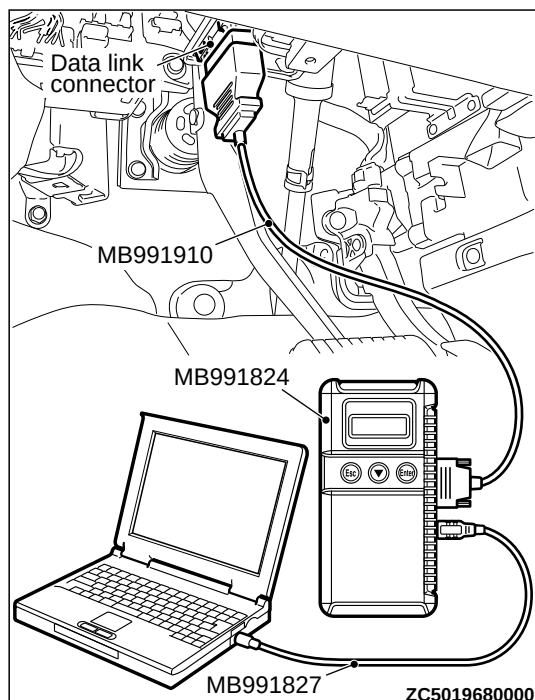
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-58."
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Set scan tool MB991958 to the actuator test mode.
*Item 8: Indicator2
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Replace the combination meter.



STEP 3. Check combination meter connector C-03, headlight automatic leveling-ECU connector C-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-03, headlight automatic leveling-ECU connector C-110 in good condition?

YES: Go to Step 4.

NO: Repair the damaged parts.

STEP 4. Check wiring harness between combination meter connector C-03 (terminal No. 6/20) and the headlight automatic leveling-ECU connector C-110 (terminal No. 8/9).

NOTE: Prior to the wiring harness inspection, check intermediate connector C-34, and repair if necessary.

Q: Are the wiring harness between combination meter connector C-03 (terminal No. 6/20) and the headlight automatic leveling-ECU connector C-110 (terminal No. 8/9) in good condition?

YES: Go to Step 5.

NO: Repair the wiring harness.

STEP 5. Retest the system

Check that the headlight automatic leveling warning display is illuminated under the illumination conditions.

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 headlight automatic leveling-ECU.

Inspection Procedure 5: The headlight automatic leveling warning light does not go off.

M15410900111USA0000010000

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

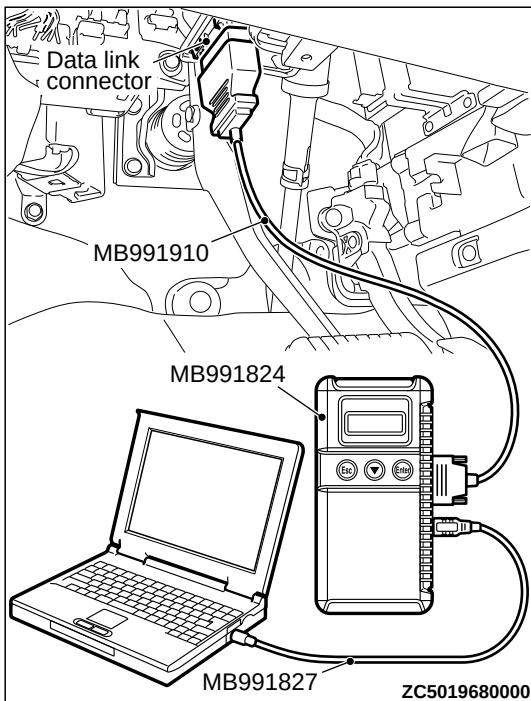
If the headlight automatic leveling warning display does not go off, DTC may be set, or the automatic leveling ECU or the combination meter may have a problem.

TROUBLESHOOTING HINTS

- Diagnostic trouble code setting is under way.
- Malfunction of the headlight automatic leveling-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. 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.54Ac-58."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the headlight automatic leveling-ECU related DTC is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES: Perform the troubleshooting of when the diagnostic trouble code is set (Refer to P.54Ac-59).

NO: Go to Step 2.

STEP 2. Using scan tool MB991958, check other system actuator test.

Perform the actuator test for the combination meter, and check that the headlight automatic leveling warning is displayed.

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the actuator test mode.
*Item 8: Indicator2
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Replace the combination meter.

STEP 3. Retest the system.

Check whether the headlight automatic leveling warning display goes out.

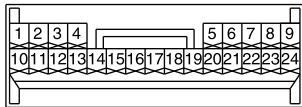
Q: Is the check result normal?

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 headlight automatic leveling-ECU.

HEADLIGHT AUTOMATIC LEVELING ECU TERMINAL VOLTAGE

C-110



ZC603878 0000

Terminal No.	Check item	Check conditions	Normal conditions
1	Power supply from ignition switch (IG1)	Ignition switch: ON	Battery voltage
2	Headlight leveling unit (LH) power supply	Ignition switch: ON	Battery voltage
3	Output to the headlight leveling unit (LH)	Ignition switch: ON	1.2 - 10.8 V
4	Headlight leveling unit (LH) ground	Always	0 V
5	Output of diagnosis signal	At reading of diagnostic trouble code	1.5 V or less
6	Headlight relay ON signal	Headlight: ON	Battery voltage
7	Output of the pulse check signal	Ignition switch: ON	0 - 12 V (pulse signal)
8	Headlight automatic leveling warning display output	Ignition switch: ON Warning display illumination	1.2 V or less
9	Input of vehicle speed signal	Perform a test run of the vehicle.	0 - 12 V (pulse signal)
11	Headlight leveling unit (RH) power supply	Ignition switch: ON	Battery voltage
12	Output to the headlight leveling unit (RH)	Ignition switch: ON	1.2 - 10.8 V
13	Headlight leveling unit (RH) ground	Always	0 V
14	Ground	Always	0 V
15	Front height sensor power supply	Ignition switch: ON	5 V
16	Rear height sensor power supply	Ignition switch: ON	5 V
17	Input from front height sensor	Ignition switch: ON	0.5 - 4.5 V
18	Input from the rear height sensor	Ignition switch: ON	0.5 - 4.5 V
19	Front height sensor ground	Always	0 V
20	Rear height sensor ground	Always	0 V

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - Contents of troubleshooting P.
00-6.

M15410900005USA0000010002

DIAGNOSTIC FUNCTION

M15410900006USA0000010002

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

Required Special Tools:

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

CAUTION

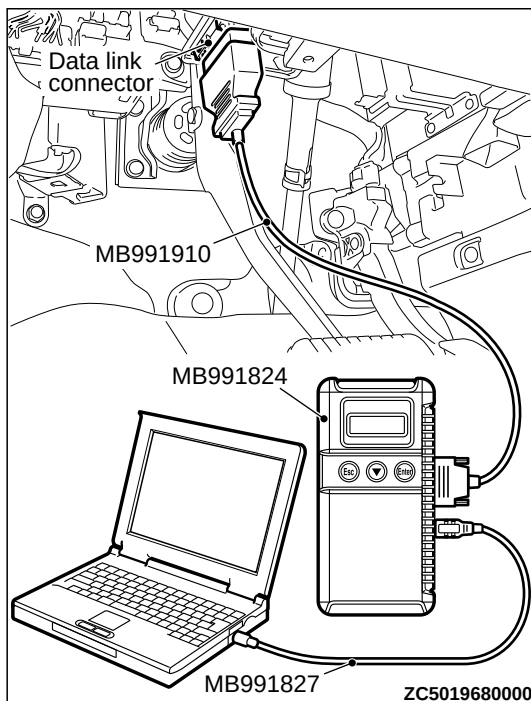
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.

2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

DIAGNOSTIC TROUBLE CODE CHART

M15410900007USA0000010002

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.

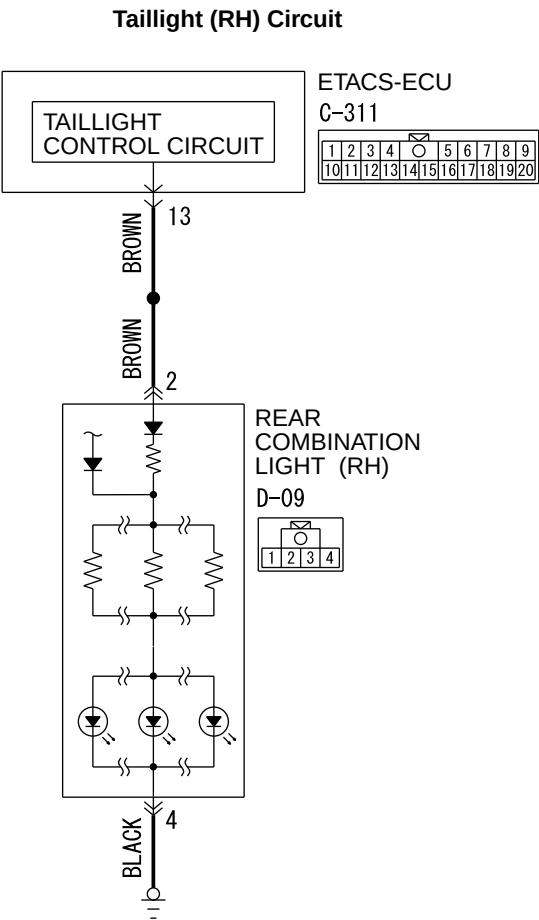
Diagnostic trouble code No.	Diagnostic item	Reference page
B16A0	Taillight (RH) circuit open	P.54Ac-100
B16A7	Taillight (RH) circuit short	P.54Ac-100
B16A1	Taillight (LH) circuit open	P.54Ac-104
B16A8	Taillight (LH) circuit short	P.54Ac-104

DIAGNOSTIC TROUBLE CODE PROCEDURES

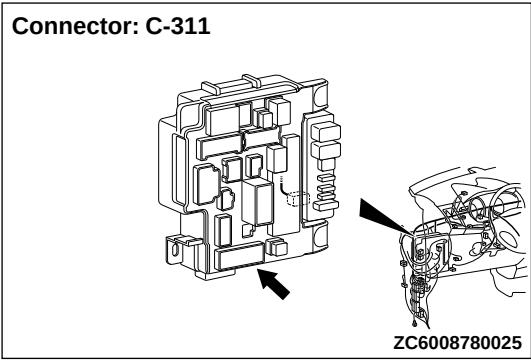
DTC B16A0: Taillight (RH) circuit open

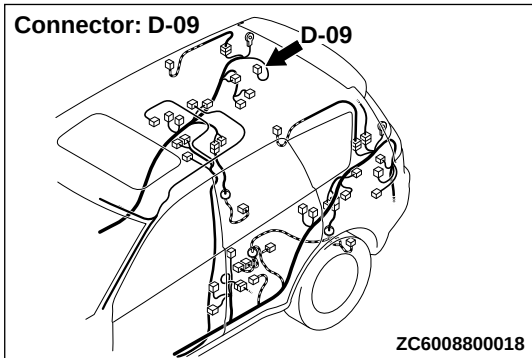
DTC B16A7: Taillight (RH) circuit short

M15410900091USA0000010000



D7G54M036A00



**TROUBLE JUDGMENT**

When an open circuit is detected in the taillight circuit, the ETACS-ECU sets DTC B16A0. If a short circuit is detected, DTC B16A7 is set.

TECHNICAL DESCRIPTION (COMMENT)

The problem detection of taillight is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the taillight. When the ignition switch is "ON", the ETACS-ECU determines the taillight 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 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 rear combination light (RH) connector D-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

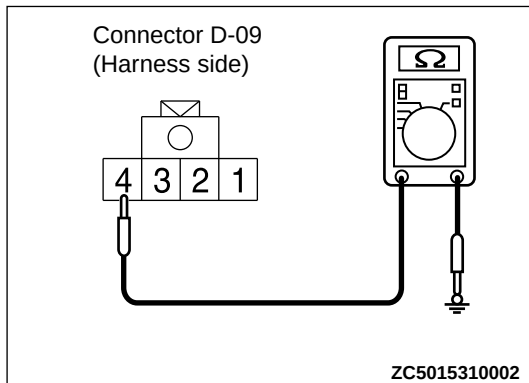
Q: Is combination light (RH) connector D-09 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Resistance measurement at rear combination light (RH) connector D-09.

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



(2) Measure the resistance between rear combination light (RH) connector D-09 (terminal No. 4) and the body ground.

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 4.

NO: Go to Step 3.

STEP 3. Check the wiring harness between rear combination light (RH) connector D-09 (terminal No. 4) and ground.

Q: Is the wiring harness between rear combination light (RH) connector D-09 (terminal No. 4) and ground in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

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 the damaged parts.

STEP 5. Check the wiring harness between rear combination light (RH) D-09 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 13).

Q: Is the wiring harness between rear combination light (RH) D-09 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 13) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

STEP 6. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

⚠ CAUTION

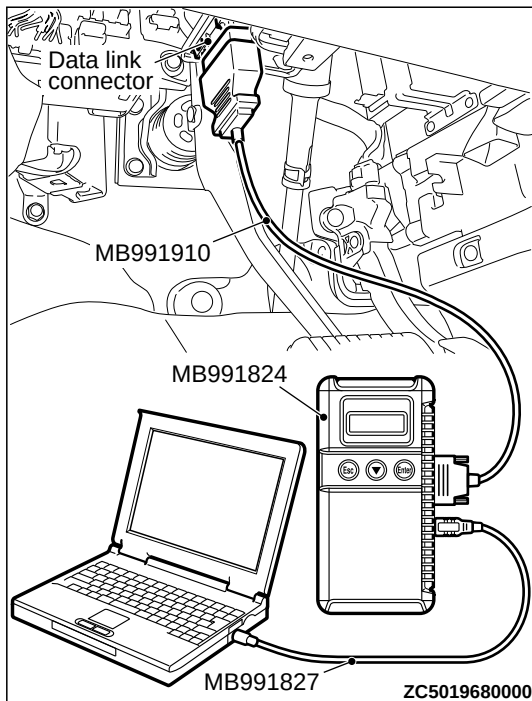
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-99."
- (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.

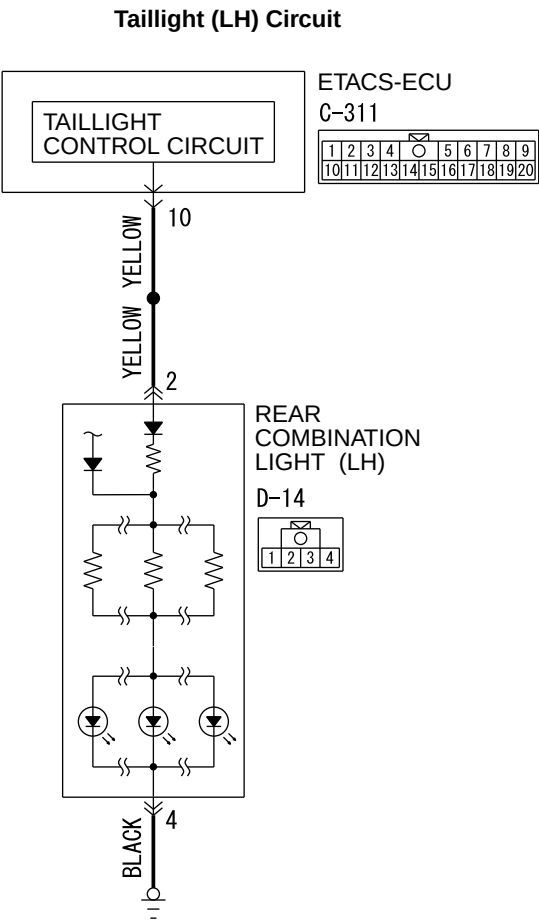
NO: The procedure is complete.



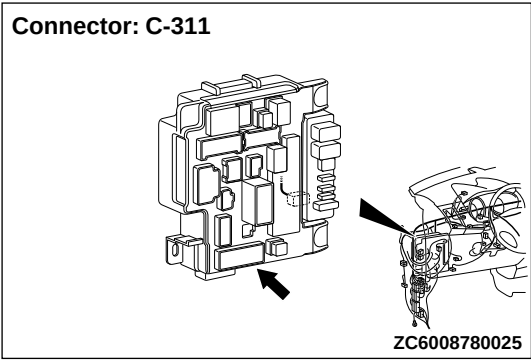
DTC B16A1: Taillight (LH) circuit open

DTC B16A8: Taillight (LH) circuit short

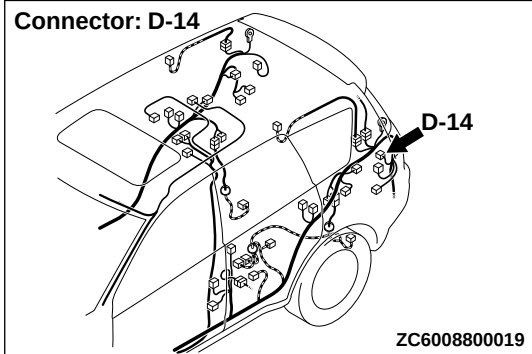
M15410900093USA0000010000



D7G54M037A00



Connector: D-14

**TROUBLE JUDGMENT**

When an open circuit is detected in the taillight circuit, the ETACS-ECU sets DTC B16A1. If a short circuit is detected, DTC B16A8 is set.

TECHNICAL DESCRIPTION (COMMENT)

The problem detection of taillight is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the taillight. When the ignition switch is "ON", the ETACS-ECU determines the taillight 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 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 rear combination light (LH) connector D-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

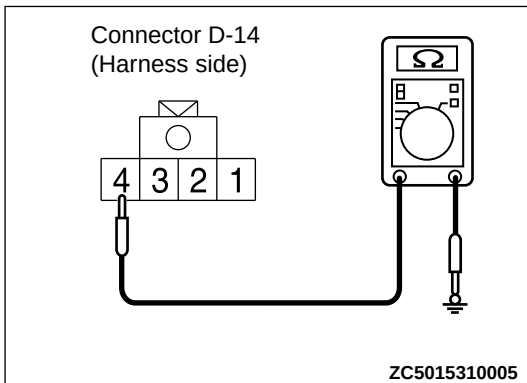
Q:Is combination light (RH) connector D-14 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

STEP 2. Resistance measurement at rear combination light (LH) connector D-14.

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



- (2) Measure the resistance between the rear combination light (LH) connector D-14 (terminal No. 4) and the body ground.
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 4.

NO: Go to Step 3.

STEP 3. Check the wiring harness between rear combination light (LH) connector D-14 (terminal No. 4) and ground.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Repair the wiring harness.

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.

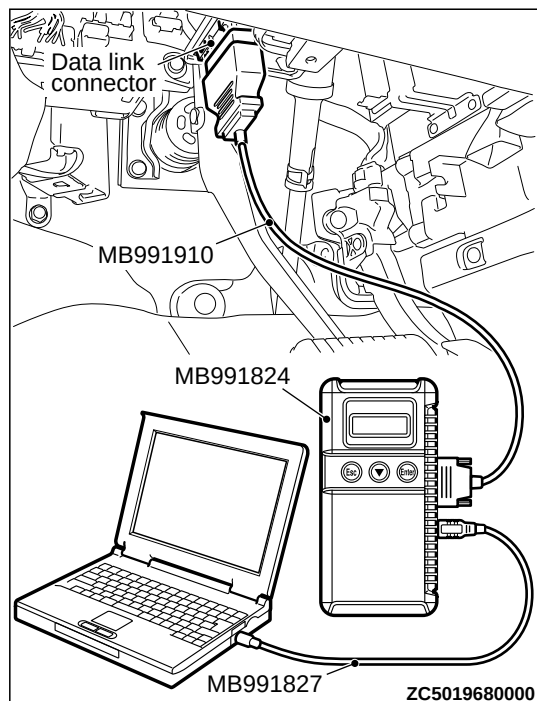
NO: Repair the damaged parts.

STEP 5. Check the wiring harness between rear combination light (LH) D-14 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 10).

Q: Is the wiring harness between rear combination light (LH) D-14 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 10) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.



STEP 6. 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.54Ac-99."
- (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

Trouble symptom	Inspection Procedure No.	Reference page
The taillights do not illuminate.	1	P.54Ac-108
Any of the taillights does not illuminate.	2	P.54Ac-110

M1541090009USA0000010002

SYMPTOM PROCEDURES

Inspection Procedure 1: The taillights do not illuminate.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If all the taillights do not illuminate normally, the taillight switch input circuit or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

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

M15410900112USA0000010000

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

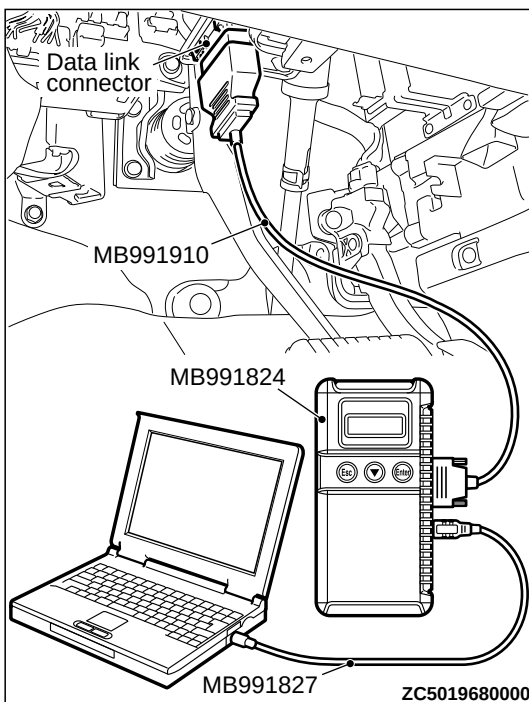
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-99."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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	Tail light	ON

Q:Does scan tool MB991958 display the items "Tail light" as normal condition?

YES<Normal condition is displayed for item.>: Go to Step 4.

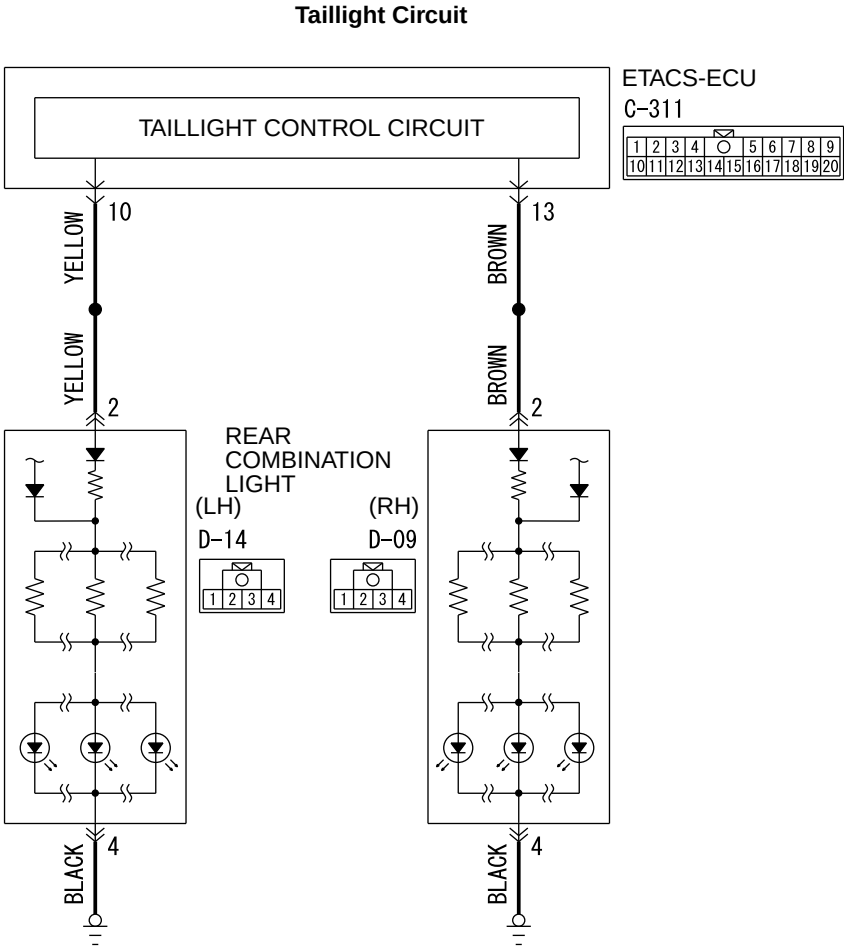
NO<Normal condition is not displayed for item No. 218.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 12 "ETACS-ECU does not receive any signal from the column switch signal" P. 54Ad-73.

STEP 4. Retest the system
Check that the taillight illuminates normally.

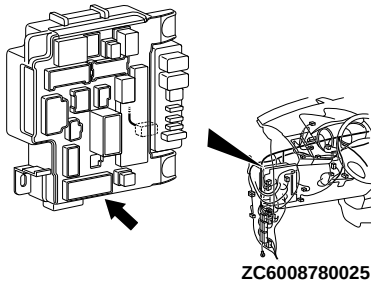
Q:Does the taillight work normally?
YES: The trouble can be an intermittent malfunction (Refer to GROUP 00 - How to use Troubleshooting/ inspection Service Points - How to Cope with Intermittent Malfunction P.00-15).
NO: Replace the ETACS-ECU.

Inspection Procedure 2: Any of the taillights do not illuminate.

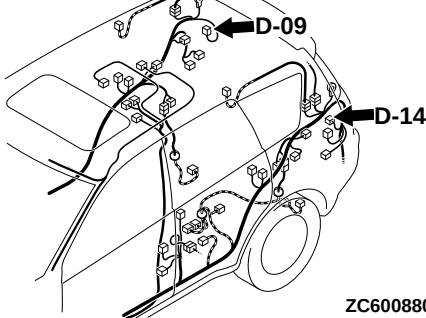
M15410900113USA0000010000



Connector: C-311



Connector: D-09, D-14



TECHNICAL DESCRIPTION (COMMENT)

If any of the taillights do not illuminate, the wiring harness, connector(s), or rear combination light unit may have a problem, or the fuse may be burned out.

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

TROUBLESHOOTING HINTS

- Malfunction of rear combination light unit

DIAGNOSIS

Required Special Tools:

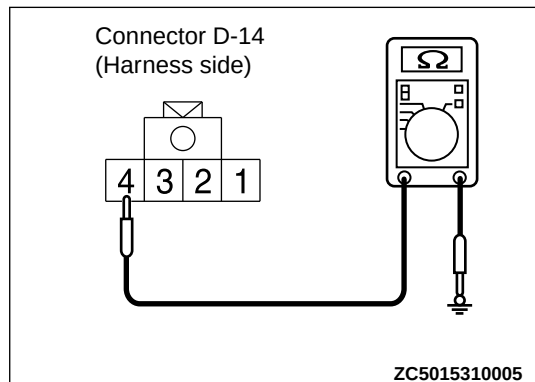
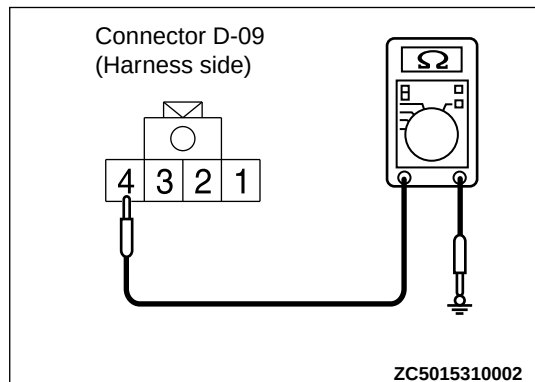
- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check rear combination light connectors D-09 (RH) and D-14 (LH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light connectors D-09 (RH) and D-14 (LH) in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts



STEP 2. Resistance measurement at rear combination light connectors D-09 (RH) and D-14 (LH).

- (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 connector D-09 (RH) (terminal No. 4) and body ground.
 - Measure the resistance between rear combination light connector D-14 (LH) (terminal No. 4) and body ground.

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 4.

NO: Go to Step 3.

STEP 3. Check the wiring harness between rear combination light connectors D-09 (RH) and D-14 (LH) (terminal No. 4) and ground.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair the wiring harness.

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 the damaged parts.

STEP 5. Check the wiring harness between rear combination light connector D-09 (RH), D-14 (LH) and ETACS-ECU connector C-311 (terminal No. 13) (RH), (terminal No. 10) (LH).

Q: Is the wiring harness between rear combination light connector D-09 (RH), D-14 (LH) and ETACS-ECU connector C-311 (terminal No. 13) (RH), (terminal No. 10) (LH) in good condition?

YES: Go to Step 6.

NO: Repair the wiring harness.

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 rear combination light unit.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - Contents of troubleshooting P. 00-6.

M15410900005USA0000010003

DIAGNOSTIC FUNCTION

M15410900006USA0000010004

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

Required Special Tools:

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

CAUTION

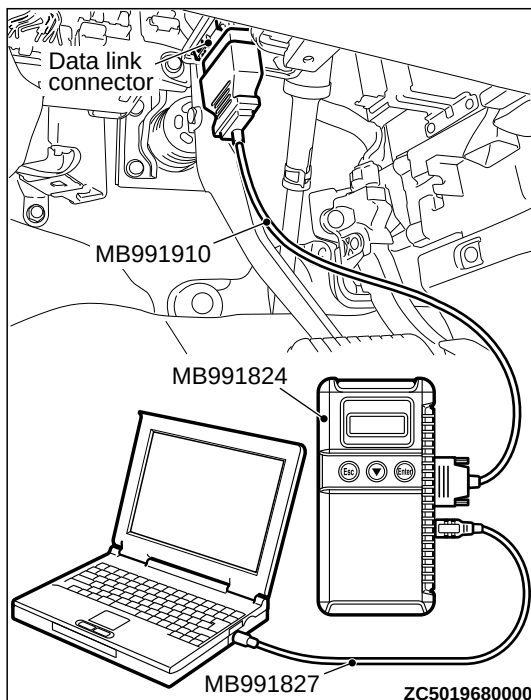
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES**Required Special Tools:**

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

⚠ CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

TROUBLE SYMPTOM CHART

M1541090009USA0000010003

Trouble symptom	Inspection Procedure No.	Reference page
Fog lights do not illuminate normally.	1	P.54Ac-114
The right or left fog light does not illuminate.	2	P.54Ac-120
Fog light indicator does not illuminate/go out normally.	3	P.54Ac-124

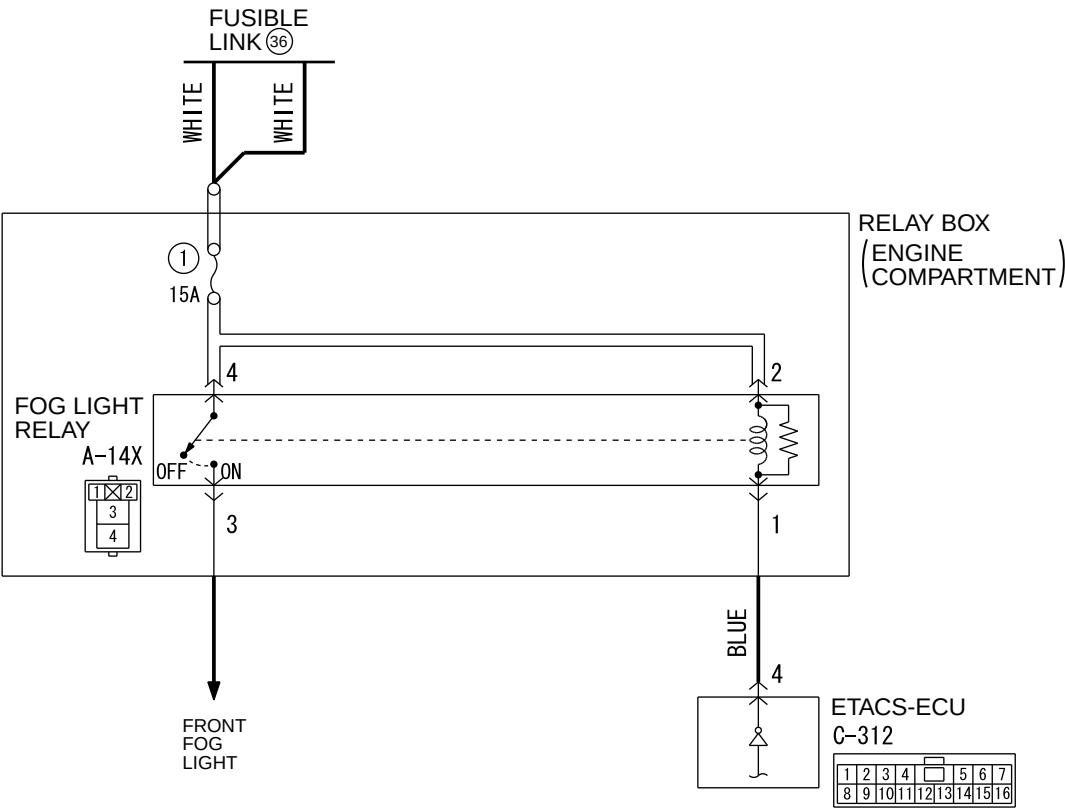
SYMPTOM PROCEDURES**Inspection Procedure 1: Fog lights do not illuminate normally.**

M15410900168USA0000010000

⚠ CAUTION

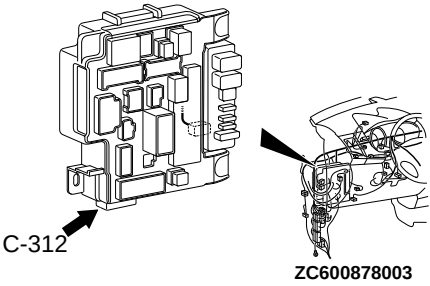
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

Fog Light and ETACS-ECU Communication Circuit

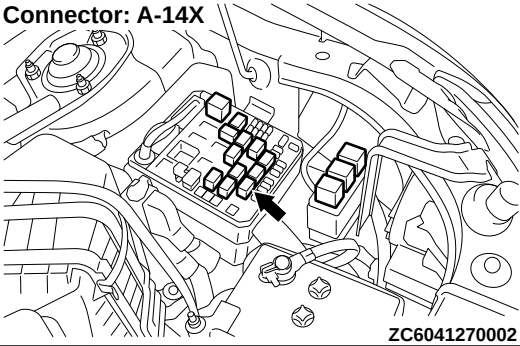


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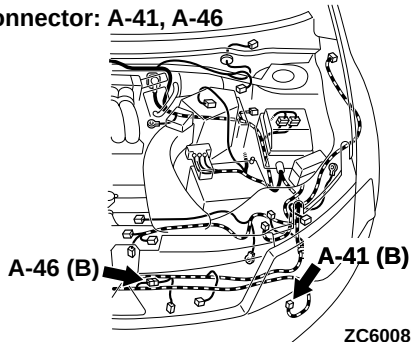
Connector: C-312



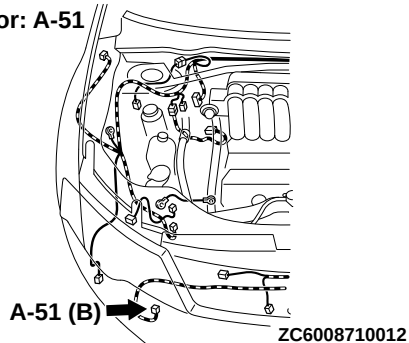
Connector: A-14X



Connector: A-41, A-46



Connector: A-51

**CIRCUIT OPERATION**

If the fog lights do not illuminate normally, the input signal circuit (s) below or the ETACS-ECU may be defective.

- Tail light switch
- Headlight switch
- Fog light switch
- Option coding information

TECHNICAL DESCRIPTION (COMMENT)

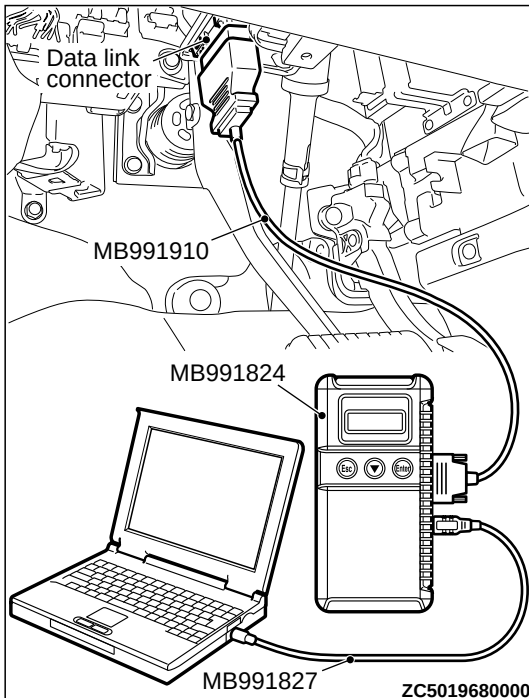
When the fog lights do not illuminate normally, the mentioned input signal circuit(s) or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the column switch
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS**Required Special Tools:**

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



STEP 1. ETACS-ECU coding data check.

⚠ CAUTION

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

- (1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54Af-4."
- (2) Turn the ignition switch to the "ON" position.
- (3) Read out the option coding information in ETACS-ECU. (Refer to GROUP 00, Coding Table.)
- (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.54Ac-114).

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 GROUP 54Ad, Diagnosis P.54Ad-8).

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 GROUP 54Ad, Diagnosis - Inspection Procedure 12 "ETACS-ECU does not receive any signal from the column switch signal." P. 54Ad-89.

STEP 5. Check fog light relay connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-14X 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. Verify that the fog lights illuminate normally.

STEP 6. Check the fog light relay.

Refer to P. 54Ac-187.

Q: Is the fog light relay in good condition?

YES: Go to Step 7.

NO: Replace the fog light relay. Verify that the fog lights illuminate normally.

STEP 7. Check the battery power supply circuit to the fog light relay. Measure the voltage at fog light relay connector A-14X.

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-14X and measure the voltage available at the relay box side of the connector.
- (2) Measure the voltage between terminal 3 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.

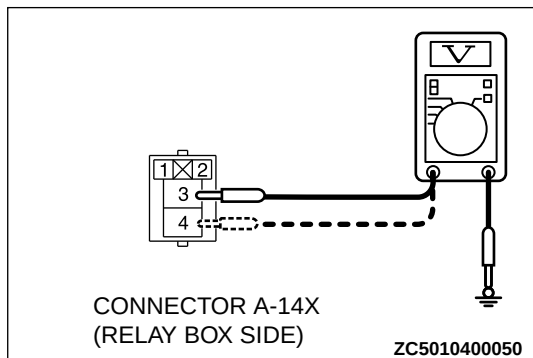
STEP 8. Check the wiring harness between fog light relay connector A-14X (terminal 2 and 4) and fusible link (36).

*Check the power supply line for open circuit.

Q: Is the wiring harness between fog light relay connector A-14X (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. Verify that the front fog lights illuminate normally.

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. Verify that the fog lights illuminate normally.

STEP 10. Check the wiring harness between fog light relay connector A-14X (terminal 1) and ETACS-ECU connector C-312 (terminal 4).

Q: Is the wiring harness between fog light relay connector A-14X (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. Verify that the front fog lights illuminate normally.

STEP 11. Check the wiring harness between fog light relay connector A-14X (terminal 3) and fog light (LH) connector A-41 or fog light (RH) connector A-51 (terminal 2).

NOTE: Also check intermediate connector A-46 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-46 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-14X (terminal 3) and fog light (LH) connector A-41 (terminal 2) or fog light (RH) connector A-51 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. Verify that the front fog lights illuminate normally.

STEP 12. Check the wiring harness between fog light (LH) connector A-41 or fog light (RH) connector A-51 (terminal 1) and ground.

NOTE: Also check intermediate connector A-46 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-46 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-41 or fog light (RH) connector A-51 (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. Verify that the front fog lights illuminate normally.

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.

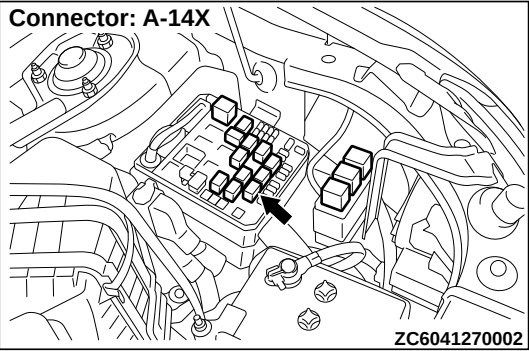
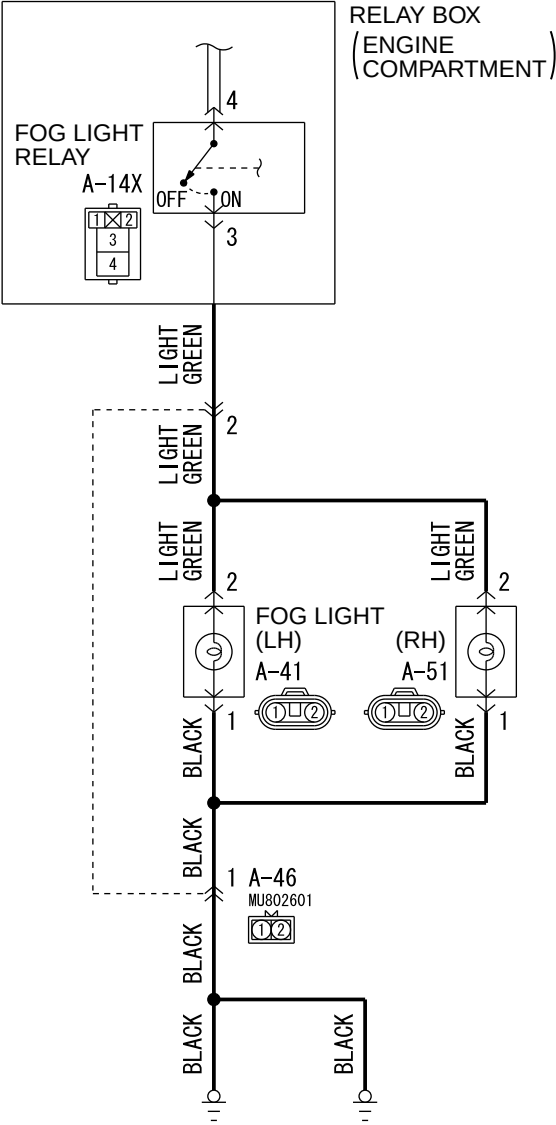
Inspection Procedure 2: The right or left fog light does not illuminate.

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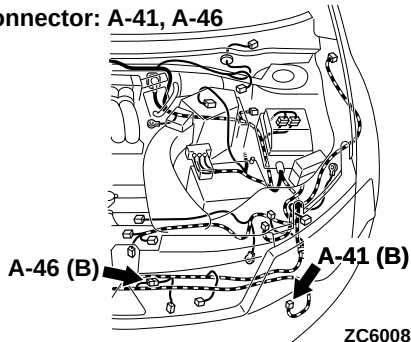
 CAUTION

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

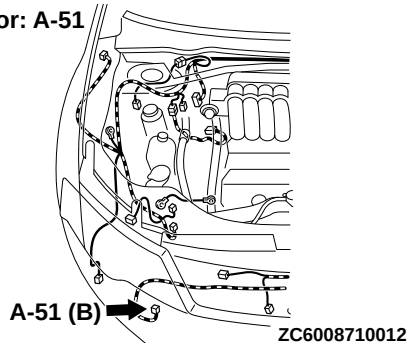
Fog Light Circuit



Connector: A-41, A-46



Connector: A-51

**TECHNICAL DESCRIPTION (COMMENT)**

If any of the fog lights do not illuminate, the wiring harness connector(s), the bulb or the fuse may be defective or burned out.

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-41, fog light (RH) A-51 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-41, fog light (RH) A-51 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

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. Verify that the fog lights illuminate normally.

Step 3. Check the ground circuit to the fog light (LH) or fog light (RH). Measure the resistance at fog light (LH) connector A-41 or fog light (RH) connector A-51.

- (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 fog light (LH) connector terminal No.1 and ground
- Resistance between A-51 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-41 or fog light (RH) connector A-51 (terminal 1) and ground.

NOTE: Also check intermediate connector A-46 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-46 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-41 or fog light (RH) connector A-51 (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: Repair the wiring harness.

STEP 5. Check fog light relay connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-14X in good condition?

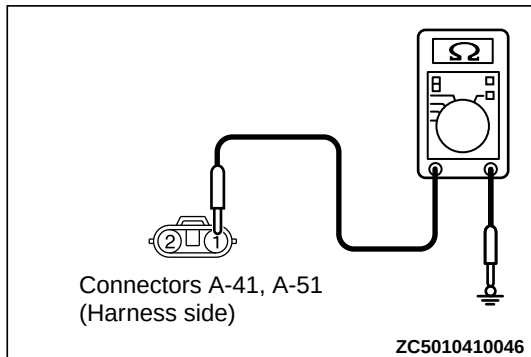
YES: Go to Step 6.

NO: Repair the damaged parts.

STEP 6. Check the wiring harness between fog light (LH) connector A-41 or fog light (RH) connector A-51 (terminal 2) and fog light relay connector A-14X (terminal 3).

NOTE: Also check intermediate connector A-46 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-46 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-41 or fog light (RH) connector A-51 (terminal 2) and fog light relay connector A-14X (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. Verify that the fog lights illuminate normally.

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).

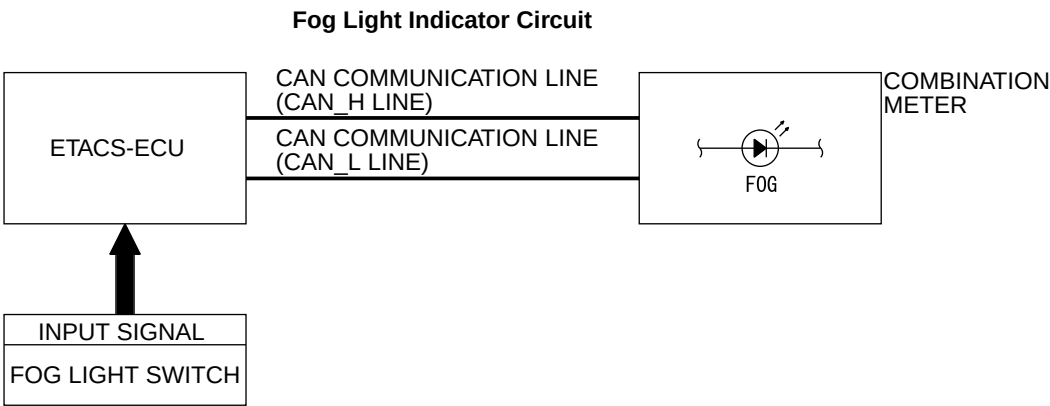
NO: Replace the fog light(s).

Inspection Procedure 3: Fog light indicator does not illuminate/go out normally.

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CAUTION

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



D7G54M074A00

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/go off normally.

Q:Is the fog lights normal?

YES: Go to Step 2.

NO: First, repair the front fog lights. Refer to Inspection Procedure 2 "The right or left fog light does not illuminate P.54Ac-120."

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

⚠ CAUTION

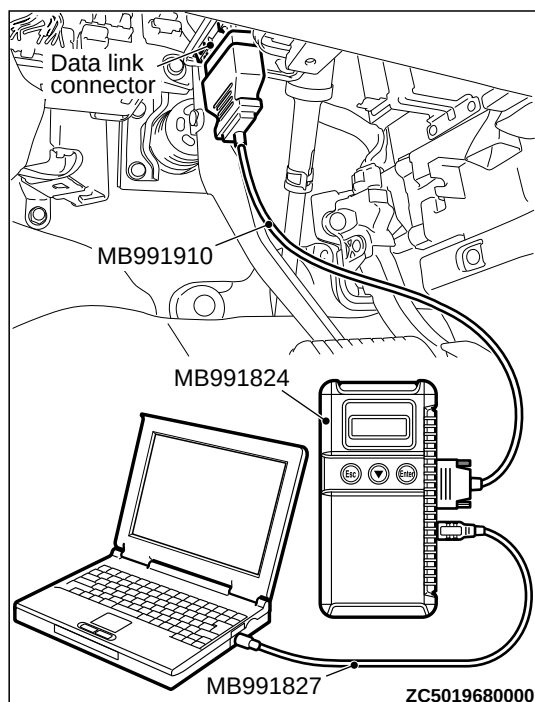
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the scan tool (M.U.T.-III) P.54Ac-113."
- (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 54D - Diagnosis P.54D-10).



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 GROUP 54Ab - Diagnosis P.54Ab-7).

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 GROUP 54Ab - Diagnosis P.54Ab-61).
- (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.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M15410900005USA0000010006

Refer to GROUP 00 - Contents of troubleshooting P. 00-6.

DIAGNOSTIC FUNCTION

M15410900006USA0000010006

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

Required Special Tools:

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

CAUTION

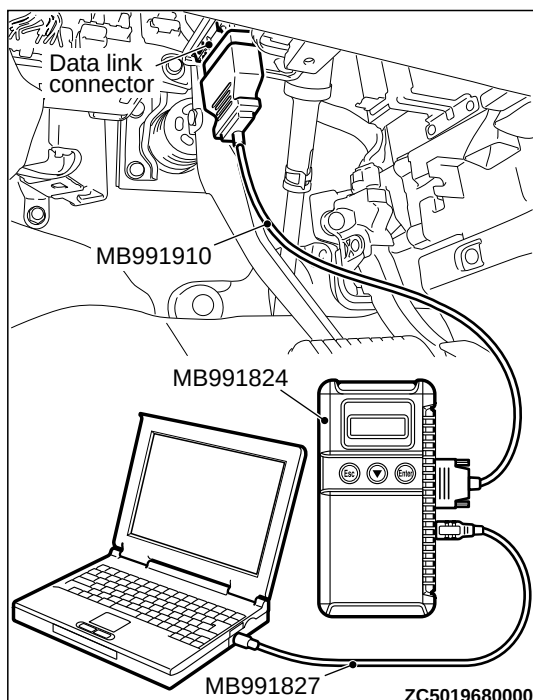
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

TROUBLE SYMPTOM CHART

M15410900009USA0000010006

Trouble symptom	Inspection Procedure No.	Reference page
Daytime running lights do not illuminate normally. <Vehicles with discharge headlight>	1	P.54Ac-127
The right or left daytime running light does not illuminate. <Vehicles with discharge headlight>	2	P.54Ac-134

SYMPTOM PROCEDURES

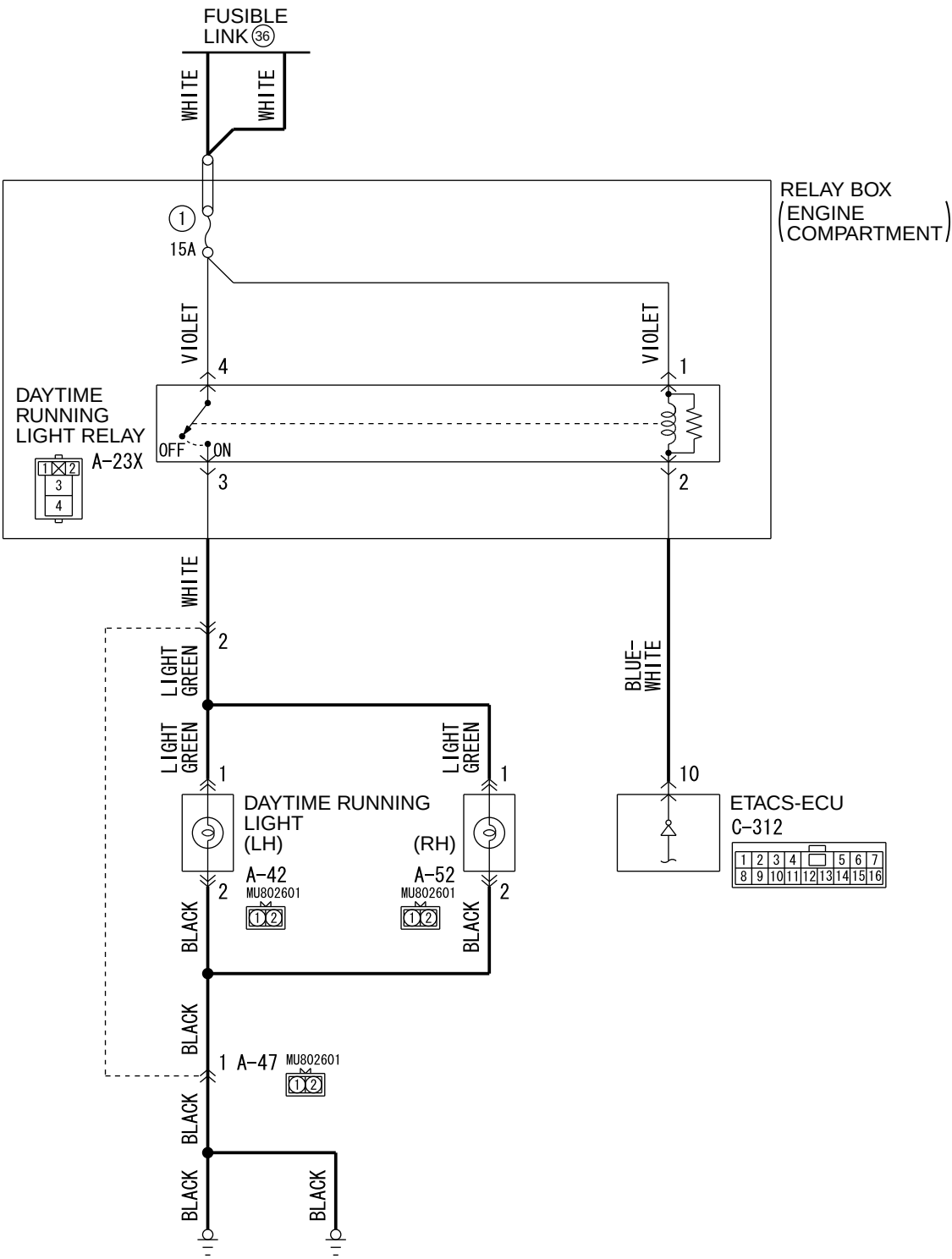
Inspection Procedure 1: Daytime running lights do not illuminate normally.

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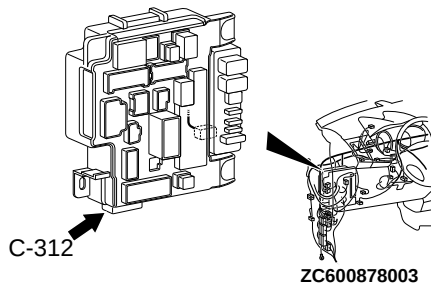
CAUTION

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

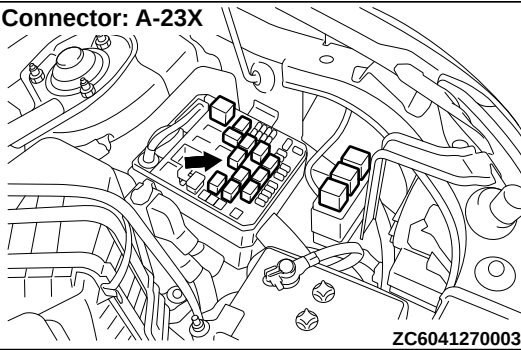
Daytime Running Light Circuit



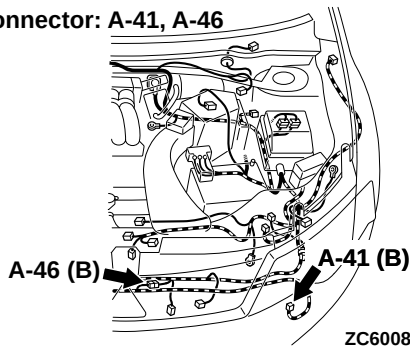
Connector: C-312



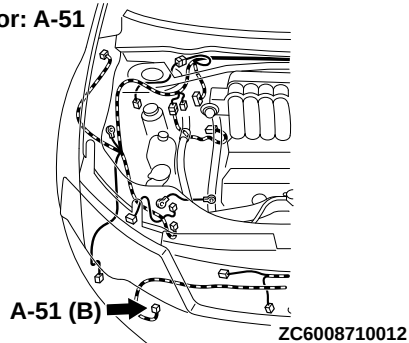
Connector: A-23X



Connector: A-41, A-46



Connector: A-51



CIRCUIT OPERATION

The daytime running light illuminates or goes off by judging the following input signal or information from ETACS-ECU.

- Taillight switch
- Headlight switch
- Parking brake switch
- Engine speed

TECHNICAL DESCRIPTION (COMMENT)

When the daytime running light does not illuminate normally, the above mentioned input signal circuit(s) or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- 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. 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. 54Ac-127).

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

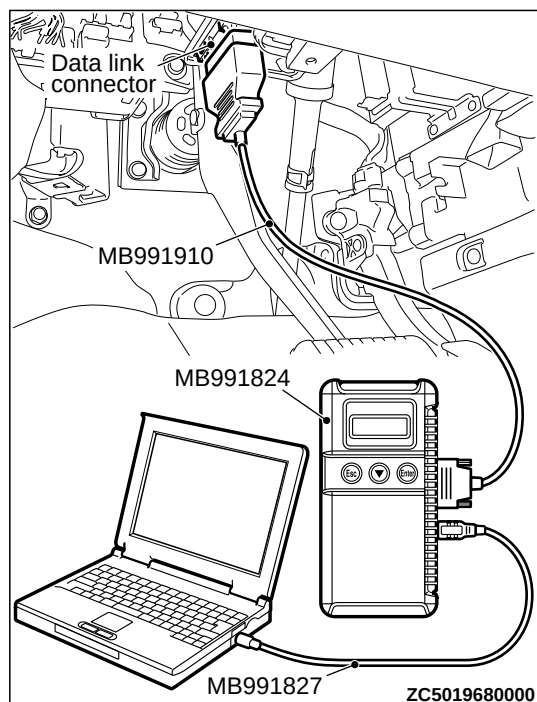
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.54Ac-126."
- (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 54D, Diagnosis P. 54D-17).



STEP 3. 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 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 GROUP 54Ad, Diagnosis P.54Ad-8).

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 13Ab – Diagnostic Trouble Code Chart P.13Ab-44.

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 – Inspection Procedure 3: When the Parking Brake Lever is Released, the Brake Warning Light does not Turn Off. P.36-7.

STEP 6. Check daytime running light relay connector A-23X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Is daytime running light relay connector A-23X 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. Verify that the fog lights illuminate normally.

STEP 7. Check the daytime running light relay.

Refer to P.54Ac-189.

Q:Is the daytime running light relay in good condition?

YES: Go to Step 8.

NO: Replace the daytime running light relay. Verify that the daytime running lights illuminate normally.

STEP 8. Check the battery power supply circuit to the daytime running light relay. Measure the voltage at daytime running light relay connector A-23X.

⚠ CAUTION

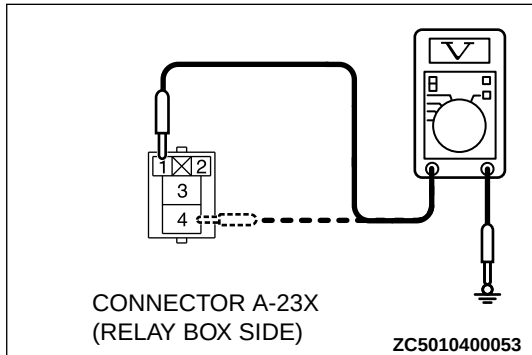
The top and bottom of the daytime running light relay are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

- (1) Disconnect daytime running light relay connector A-23X and measure the voltage available at the relay box side of the connector.
- (2) Measure the voltage between terminal 1 and ground, and also 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 10.

NO: Go to Step 9.



STEP 9. Check the wiring harness between fog light relay connector A-23X (terminal 1 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-23X (terminal 1 and 4) and fusible link (36) in good condition?

YES: Go to Step 14.

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

STEP 10. Check ETACS-ECU connector C-312 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-312 in good condition?

YES: Go to Step 11.

NO: Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the daytime running lights illuminate normally.

STEP 11. Check the wiring harness between fog light relay connector A-23X (terminal 2) and ETACS-ECU connector C-312 (terminal 10).

Q: Is the wiring harness between fog light relay connector A-23X (terminal 2) and ETACS-ECU connector C-312 (terminal 10) 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. Verify that the daytime running lights illuminate normally.

STEP 12. Check the wiring harness between daytime running light relay connector A-23X (terminal 3) and daytime running light (LH) connector A-42 or daytime running (RH) connector A-52 (terminal 1).

NOTE: Also check intermediate connector A-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-47 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P. 00E-2.

• Check the power supply line for open circuit.

Q: Is the wiring harness between daytime running light relay connector A-23X (terminal 3) and daytime running light (LH) connector A-42 or daytime running (RH) connector A-52 (terminal 1) 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. Verify that the daytime running lights illuminate normally.

STEP 13. Check the wiring harness between daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (terminal 2) and ground.

NOTE: Also check intermediate connector A-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-47 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 daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (terminal 2) and ground in good condition?

YES: Go to Step 14.

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

STEP 14. 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.

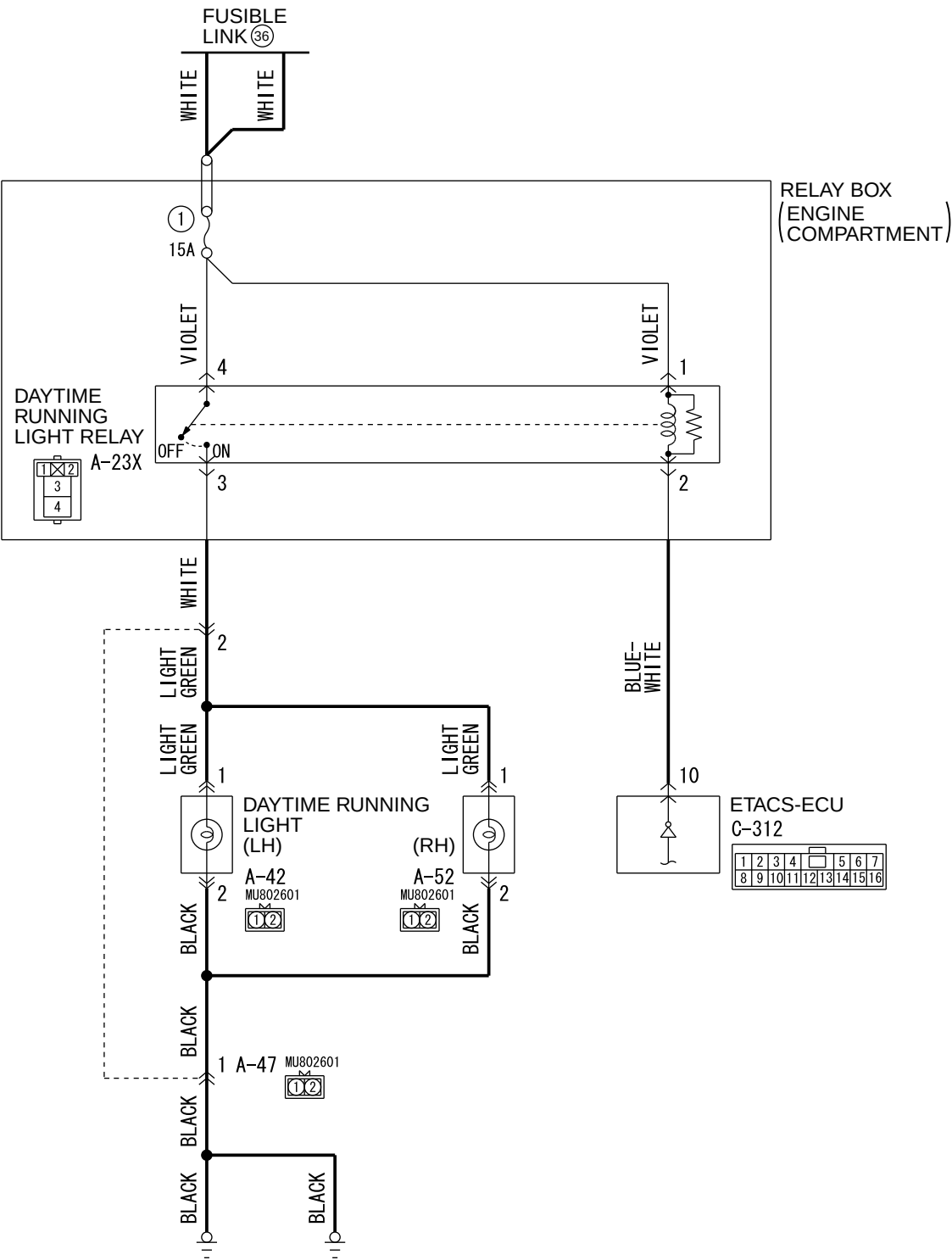
Inspection Procedure 2: The right or left daytime running light does not illuminate.

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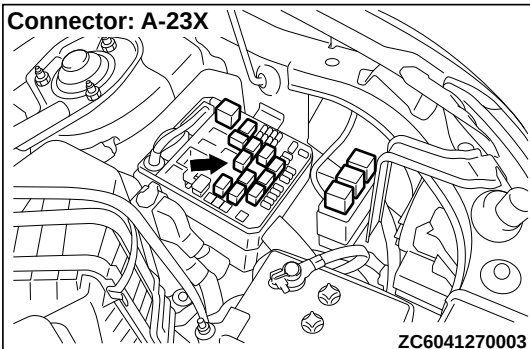
** CAUTION**

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

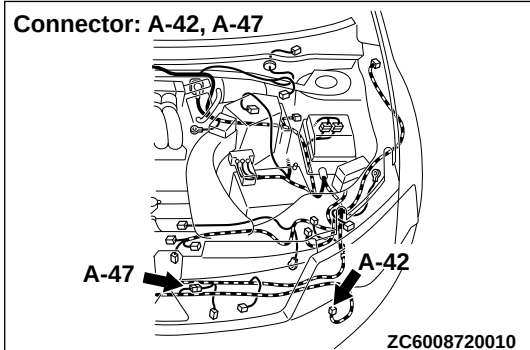
Daytime Running Light Circuit



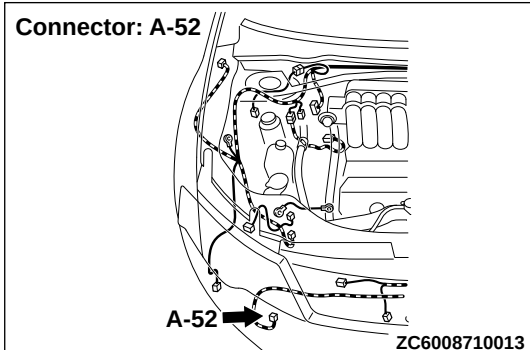
Connector: A-23X



Connector: A-42, A-47



Connector: A-52

**TECHNICAL DESCRIPTION (COMMENT)**

If any of the daytime running lights do not illuminate, the wiring harness connector(s), the bulb or the fuse may be defective or burned out.

TROUBLESHOOTING HINTS

- Burned-out daytime running light bulb
- Damaged harness wires and connectors

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check daytime running light (LH) connector A-42, daytime running light (RH) A-52 for loose, corroded or

damaged terminals, or terminals pushed back in the connector.

Q: Is daytime running light (LH) connector A-42, daytime running light (RH) A-52 in good condition?

YES: Go to Step 2.

NO: Repair the damaged parts.

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 daytime running light bulb. Verify that the daytime running lights illuminate normally.

Step 3. 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-42 or daytime running light (RH) connector A-52.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the resistance between the daytime running light connector and ground.
 - *Resistance between A-42 daytime running light (LH) connector terminal No.2 and ground
 - *Resistance between A-52 daytime running light (RH) connector terminal No.2 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 daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (terminal 1) and ground.

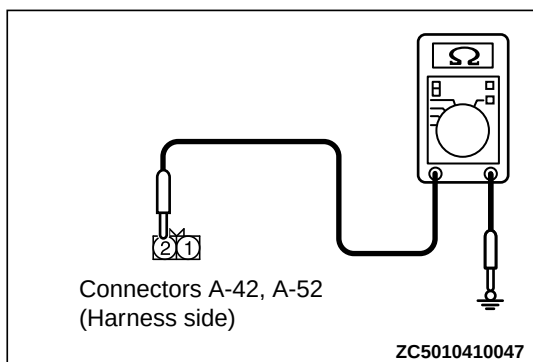
NOTE: Also check intermediate connector A-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-47 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P. 00E-2.

- *Check the ground wires for open circuit.

Q: Is the wiring harness between daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (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: Repair the wiring harness.



STEP 5. Check daytime running light relay connector A-23X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is daytime running light relay connector A-23X in good condition?

YES: Go to Step 6.

NO: Repair the damaged parts.

STEP 6. Check the wiring harness between daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (terminal 1) and daytime running light relay connector A-23X (terminal 3).

NOTE: Also check intermediate connector A-47 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-47 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P. 00E-2.

* Check the power supply line for open circuit.

Q: Is the wiring harness between daytime running light (LH) connector A-42 or daytime running light (RH) connector A-52 (terminal 1) and daytime running light relay connector A-23X (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. Verify that the fog lights illuminate normally.

STEP 7. Retest the system.

Q: Does the right or left daytime running 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 daytime running light(s).

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - Contents of troubleshooting P. 00-6.

DIAGNOSTIC FUNCTION

M15410900006USA0000010005

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

Required Special Tools:

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

CAUTION

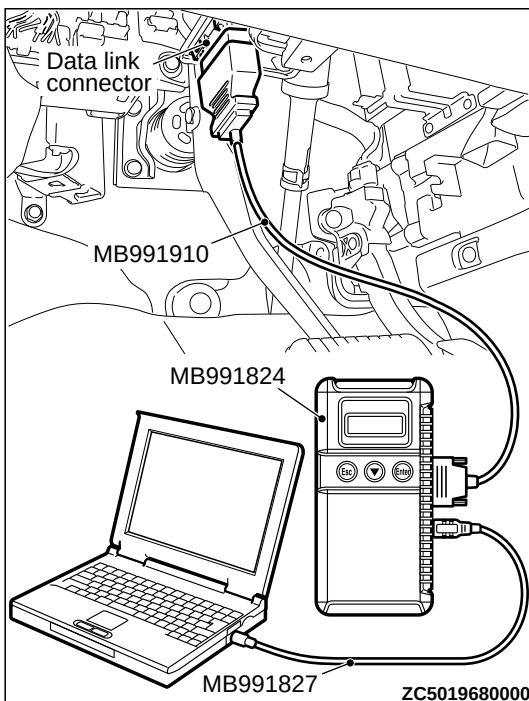
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.

2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

TROUBLE SYMPTOM CHART

M15410900009USA0000010004

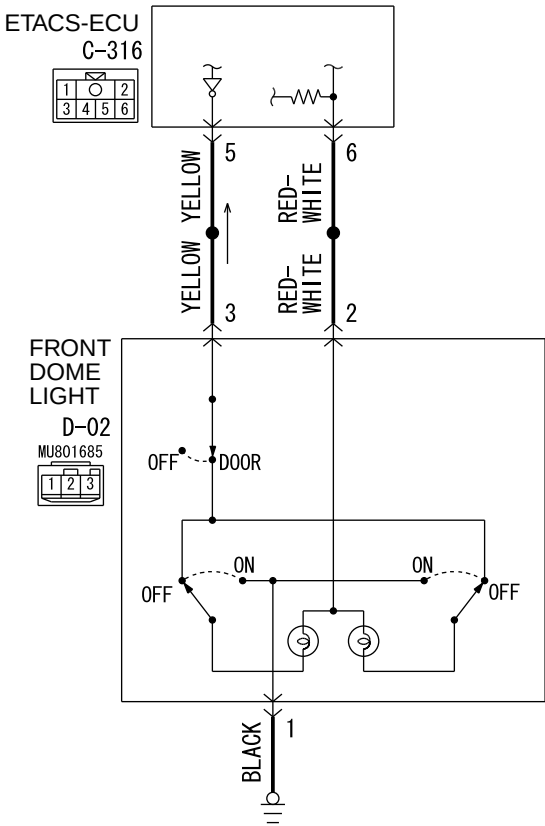
Trouble symptom	Inspection Procedure No.	Reference page
The front dome light does not illuminate normally.	1	P.54Ac-141
The rear dome light does not illuminate normally.	2	P.54Ac-146
The luggage compartment light does not illuminate normally.	3	P.54Ac-150
The foot light does not illuminate normally.	4	P.54Ac-155
The interior light auto-cut function does not operate correctly.	5	P.54Ac-158

SYMPTOM PROCEDURES

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

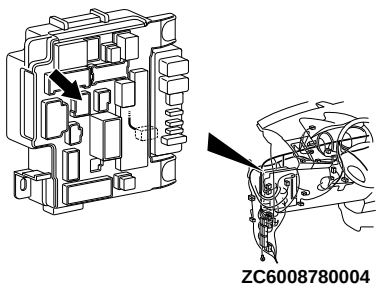
M15410900172USA0000010000

Front Dome Light Circuit

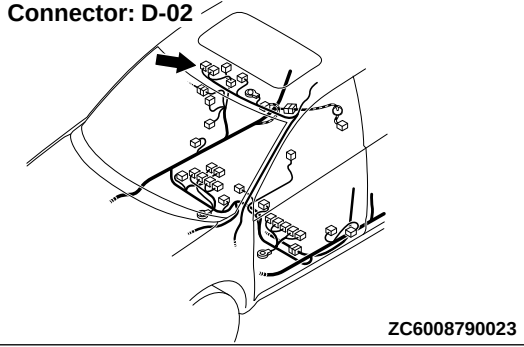


D7G54M039A00

Connector: C-316



Connector: D-02

**TROUBLE JUDGMENT**

The ETACS-ECU illuminates and extinguishes the front room light in accordance with the input signals below.

- Ignition switch (IG1)
- Key reminder switch
- Door switches
- Liftgate latch switch
- 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 liftgate latch switch
- Malfunction of the front door lock actuator
- 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)

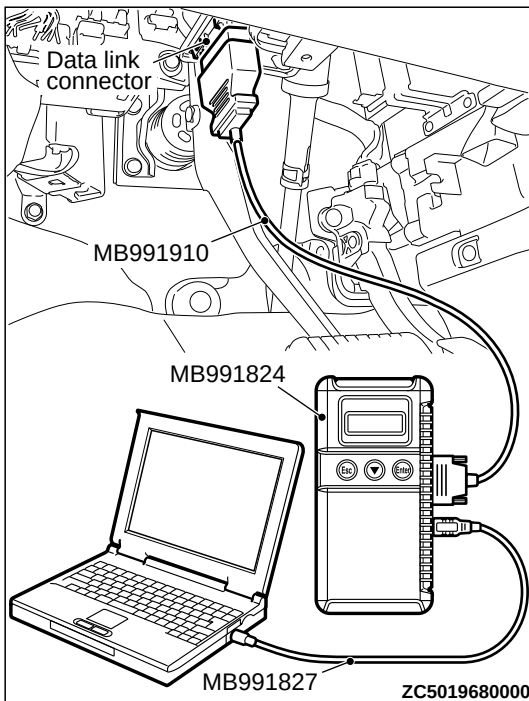
STEP 1. Rear dome light operation check.

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.54Ac-139."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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.
- Open the liftgate.

Item No.	Item name	Normal conditions
Item 228	Dr door unlock	ON
Item 254	IG voltage	Battery voltage
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 260	Trunk/gate trunk ajar switch	Open
Item 264	Handle lock switch	Key in → 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", "Trunk/gate trunk 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 for item No.

228.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the front door lock actuator" P. 54Ad-67.

NO<Normal condition is not displayed for item No.

254.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

NO<Normal condition is not displayed for item No.

256.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P. 54Ad-73.

NO<Normal condition is not displayed for item No.

257.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front door switch (RH)" P. 54Ad-75.

NO<Normal condition is not displayed for item No.

258.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 7 "ETACS-ECU does not receive any signal from the rear door switch (LH)" P. 54Ad-77.

NO<Normal condition is not displayed for item No.

259.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 8 "ETACS-ECU does not receive any signal from the rear door switch (RH)" P. 54Ad-80.

NO<Normal condition is not displayed for item No.

260.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 9 "ETACS-ECU does not receive any signal from the liftgate switch" P. 54Ad-82.

NO<Normal condition is not displayed for item No.

264.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 3 "ETACS-ECU does not receive any signal from the key reminder switch" P. 54Ad-64.

STEP 4. Check front dome light connector D-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front dome light connector D-02 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Front dome light bulb check

Check that the front dome light bulb is normal.

Q: Does front dome light work 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-311 in good condition?

YES: Go to Step 7.

NO: Repair the damaged parts.

STEP 7. Check the wiring harness between front dome light connector D-02 (terminal No. 2/3) and ETACS-ECU connector C-316 (terminal No. 6/5)

Q: Are wiring harness between front dome light connector D-02 (terminal No. 2/3) and ETACS-ECU connector C-316 (terminal No. 6/5) in good condition?

YES: Go to Step 8.

NO: Repair the wiring harness.

STEP 8. Check front dome light connector D-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front dome light connector D-02 in good condition?

YES: Go to Step 9.

NO: Repair the damaged parts.

STEP 9. Check the wiring harness between D-02 front dome light connector (terminal No. 1) and body ground.

Q: Is wiring harness between front dome light connector D-02 (terminal No. 1) and body ground in good condition?

YES: Replace the front dome light, and then go to Step 10.

NO: Repair the wiring harness.

STEP 10. Retest the system

Check that the front dome light illuminates/extinguishes normally.

Q: Do the front dome light work normal?

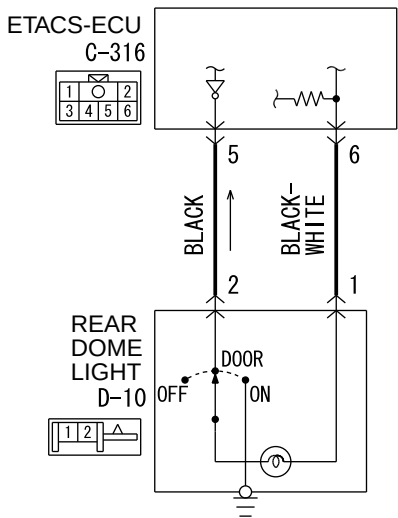
YES: The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction P.00-15).

NO: Replace the ETACS-ECU.

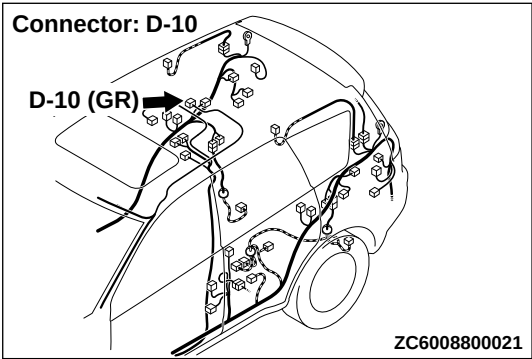
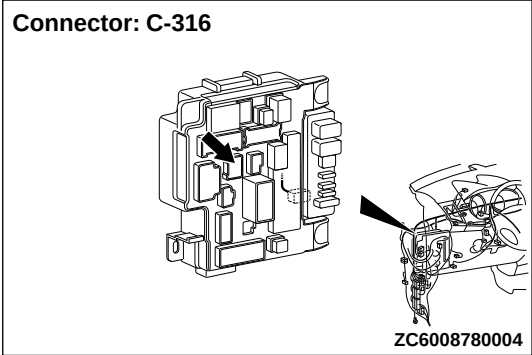
Inspection Procedure 2: The rear dome light does not illuminate normally.

M15410900173USA0000010000

Rear Dome Light Circuit



D7G54M038A00



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
- Liftgate latch switch

- 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 liftgate latch 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

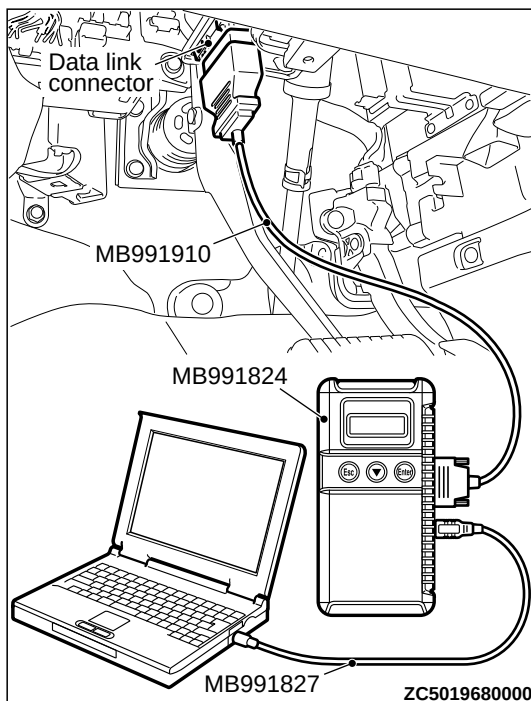
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-139."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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.
- Open the liftgate.

Item No.	Item name	Normal conditions
Item 228	Dr door unlock	ON
Item 254	IG voltage	Battery voltage
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 260	Trunk/gate trunk ajar switch	Open
Item 264	Handle lock switch	Key in → 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", "Trunk/gate trunk 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 for item No.

228.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the front door lock actuator" P. 54Ad-67.

NO<Normal condition is not displayed for item No.

254.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

NO<Normal condition is not displayed for item No.

256.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P. 54Ad-73.

NO<Normal condition is not displayed for item No.

257.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front door switch (RH)" P. 54Ad-75.

NO<Normal condition is not displayed for item No.

258.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad,

Diagnosis – Inspection Procedure 7 “ETACS-ECU does not receive any signal from the rear door switch (LH)” P. 54Ad-77.

NO<Normal condition is not displayed for item No.

259.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis – Inspection Procedure 8 “ETACS-ECU does not receive any signal from the rear door switch (RH)” P. 54Ad-80.

NO<Normal condition is not displayed for item No.

260.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis – Inspection Procedure 9 “ETACS-ECU does not receive any signal from the liftgate switch” P. 54Ad-82.

NO<Normal condition is not displayed for item No.

264.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis – Inspection Procedure 3 “ETACS-ECU does not receive any signal from the key reminder switch” P. 54Ad-64.

STEP 4. Check rear dome light connector D-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear dome light connector D-10 in good condition?

YES: Go to Step 5.

NO: Repair the damaged parts.

STEP 5. Rear dome light bulb check

Check that the rear dome light bulb is normal.

Q: Does rear dome light work 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-311 in good condition?

YES: Go to Step 7.

NO: Repair the damaged parts.

STEP 7. Check the wiring harness between rear dome light D-10 connector terminal (No. 1/2) and ETACS-ECU connector C-316 (terminal No. 6/5)

Q: Is wiring harness between rear dome light connector D-10 (terminal No. 1/2) and ETACS-ECU connector C-316 (terminal No. 6/5) in good condition?

YES: Go to Step 8.

NO: Repair the wiring harness.

STEP 8. Retest the system

Check that the rear dome light illuminates/extinguishes normally.

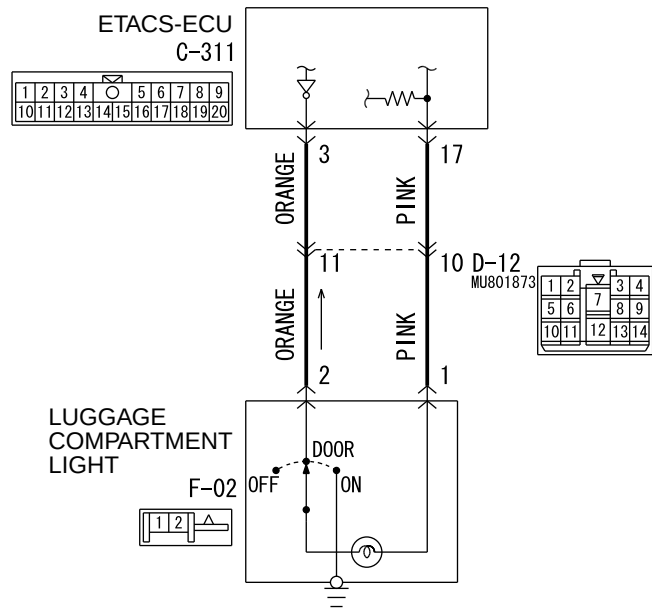
Q: Does rear dome light work normal?

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.

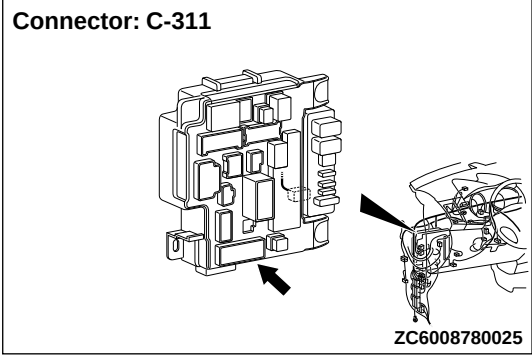
Inspection Procedure 3: The luggage compartment light does not illuminate normally.

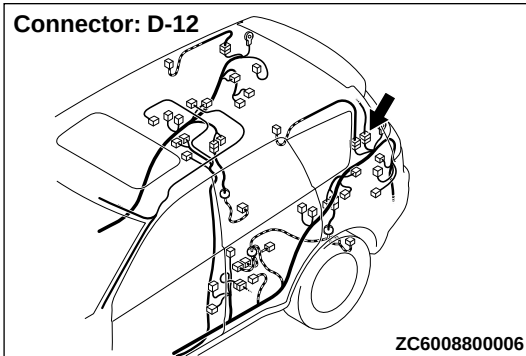
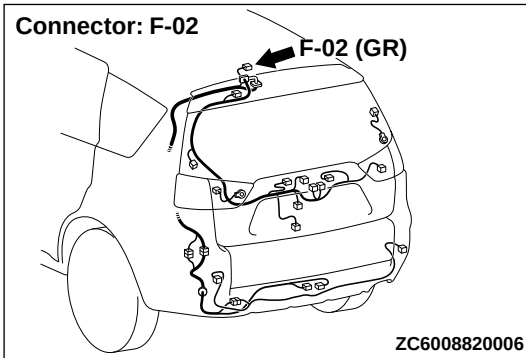
M15410900127USA0000010000

Luggage Compartment Light Circuit



D7G54M023A00





TROUBLE JUDGMENT

The ETACS-ECU illuminates and extinguishes the luggage compartment light in accordance with the input signals below.

- Ignition switch (IG1)
- Key reminder switch
- Door switches
- Liftgate latch switch
- Front door lock actuator

TECHNICAL DESCRIPTION (COMMENT)

If this does not work normally, the above switch input circuit(s), luggage compartment light, or ETACS-ECU may have a problem.

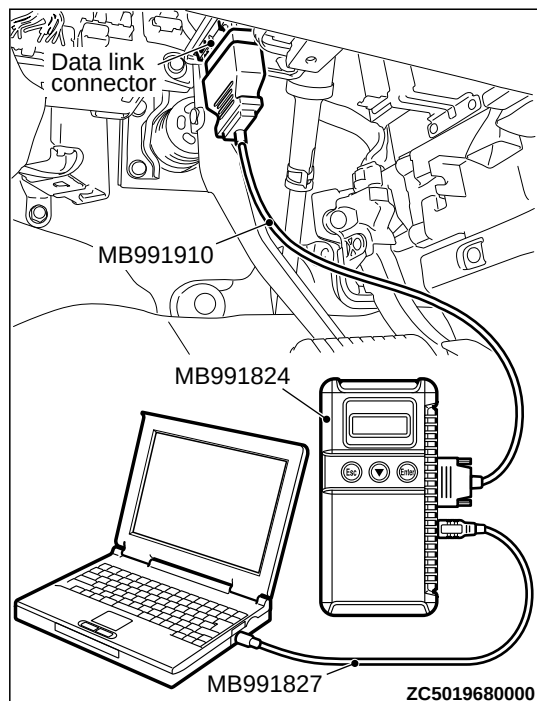
TROUBLESHOOTING HINTS

- Malfunction of the key reminder switch
- Malfunction of door switch
- Malfunction of liftgate latch switch
- Malfunction of the front door lock actuator
- 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.54Ac-139."
- (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 GROUP 54Ad, Diagnosis P.54Ad-8.

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 luggage compartment light.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Remove the ignition key from the ignition key cylinder.
- Open each door.
- Open the liftgate.

Item No.	Item name	Normal conditions
Item 228	Dr door unlock	ON
Item 254	IG voltage	Battery voltage
Item 256	Dr door ajar switch	Open
Item 257	As door ajar switch	Open
Item 258	RR door ajar switch	Open
Item 259	RL door ajar switch	Open
Item 260	Trunk/gate trunk ajar switch	Open
Item 264	Handle lock switch	Key in → 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", "Trunk/gate trunk ajar switch" and "Handle lock switch" as normal condition?

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

NO<Normal condition is not displayed for item No.

228.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the front door lock actuator" P. 54Ad-67.

NO<Normal condition is not displayed for item No.

254.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

NO<Normal condition is not displayed for item No.

256.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P. 54Ad-73.

NO<Normal condition is not displayed for item No.

257.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front door switch (RH)" P. 54Ad-75.

NO<Normal condition is not displayed for item No.

258.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 7 "ETACS-ECU does not receive any signal from the rear door switch (LH)" P. 54Ad-77.

NO<Normal condition is not displayed for item No.

259.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 8 "ETACS-ECU does not receive any signal from the rear door switch (RH)" P. 54Ad-80.

NO<Normal condition is not displayed for item No.

260.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 9 "ETACS-ECU does not receive any signal from the liftgate switch" P. 54Ad-82.

NO<Normal condition is not displayed for item No.

264.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 3 "ETACS-ECU does not receive any signal from the key reminder switch" P. 54Ad-64.

STEP 3. Check luggage compartment light connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is luggage compartment light connector F-02 in good condition?

YES: Go to Step 4.

NO: Repair the damaged parts.

STEP 4. Luggage compartment light bulb check

Check that the luggage compartment light bulb is normal.

Q:Does luggage compartment light work 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 the damaged parts.

STEP 6. Check the wiring harness between luggage compartment light connector F-02 (terminal No. 2/1) and ETACS-ECU connector C-311 (terminal No. 3/17).

NOTE: Prior to the wiring harness inspection, check intermediate connector D-12, and repair if necessary.

Q:Is wiring harness between luggage compartment light connector F-02 (terminal No. 2/1) and ETACS-ECU connector C-311 (terminal No. 3/17) in good condition?

YES: Go to Step 7.

NO: Repair the wiring harness.

STEP 7. Retest the system

Check that the luggage compartment light illuminates/extinguishes normally.

Q:Do the luggage compartment work normal?

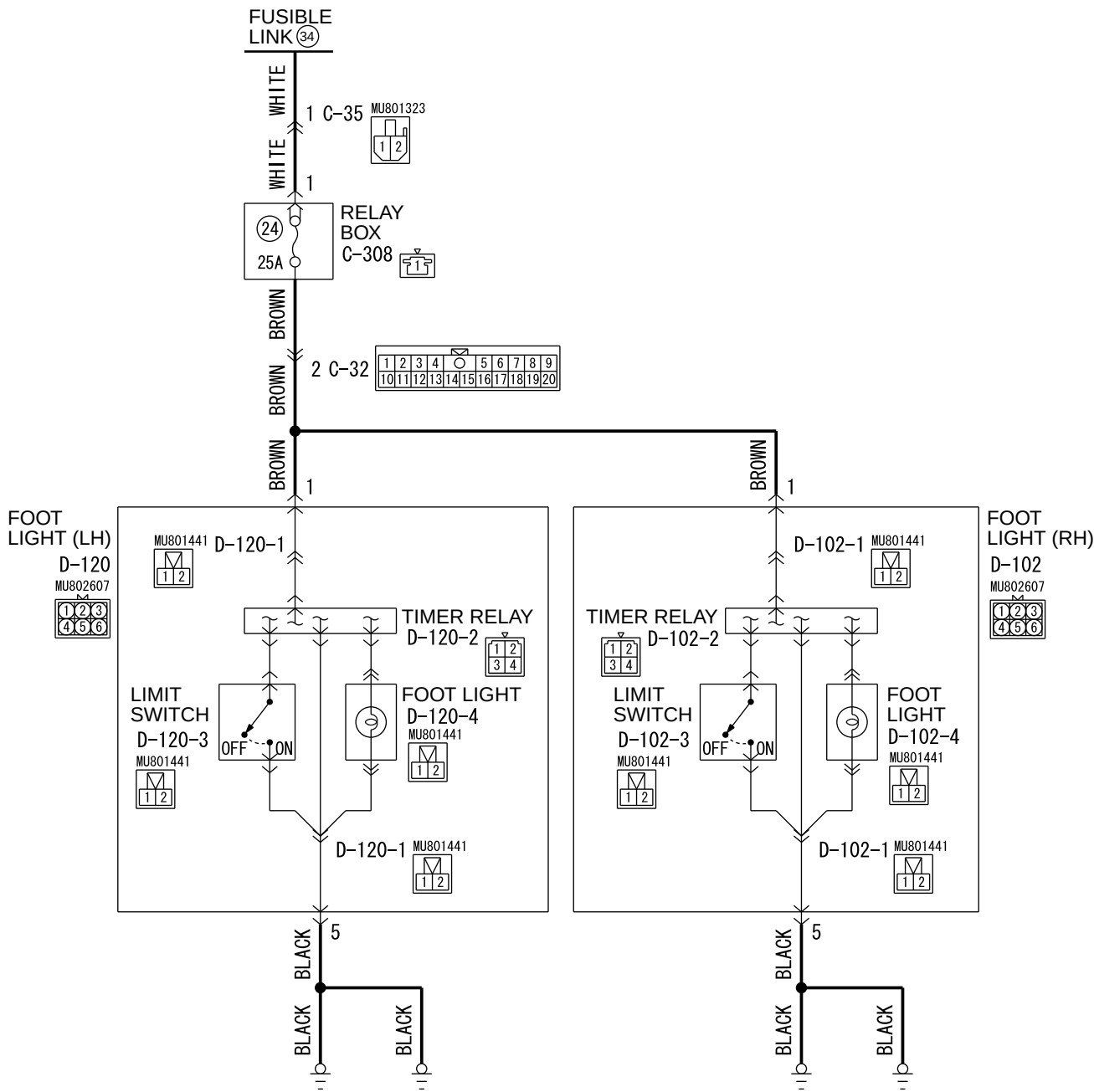
YES: The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction P.00-15).

NO: Replace the ETACS-ECU.

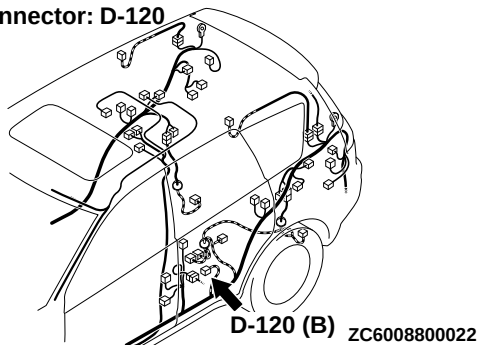
Inspection Procedure 4: The foot light does not illuminate normally.

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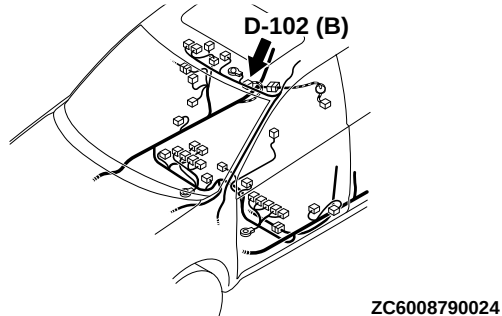
Foot Light Circuit



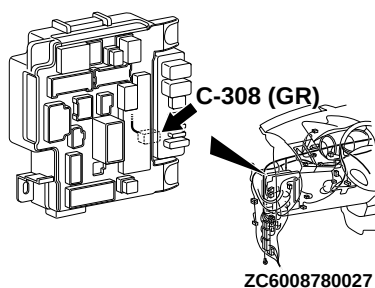
Connector: D-120



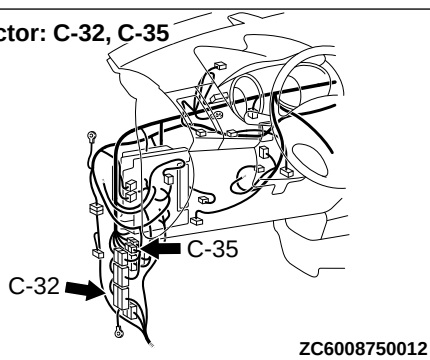
Connector: D-102



Connector: C-308



Connector: C-32, C-35

**TROUBLE JUDGMENT**

If the foot light does not illuminate normally, the power supply circuit(s), ground circuit, or under cover rear may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of under cover rear
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Check electric foot light connector D-102 (RH), D-120 (LH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the defective connector.

STEP 2. Measure the voltage at foot light connector D-102 (RH), D-120 (LH).

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

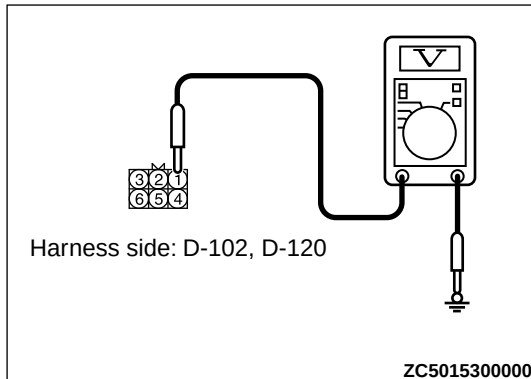
(2) Measure the voltage between the D-102 (RH), D-120 (LH) electric folding second seat connector (terminal No. 1) and the ground.

The voltage should measure approximately 12 volts (battery positive voltage).

Q: Does the voltage measure battery voltage?

YES: Go to Step 4.

NO: Go to Step 3.



STEP 3. Check the wiring harness between foot light connector D-102 (RH), D-120 (LH) (terminal No. 1) and the fusible link (34).

NOTE: Before the wiring harness check, check the relay box connector C-308, and the intermediate connector C-35, C-32 and then repair them if necessary.

Q: Is wiring harness between foot light connector D-102 (RH), D-120 (LH) (terminal No. 1) 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 4. Measure the resistance at foot light connector D-102 (RH), D-120 (LH).

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

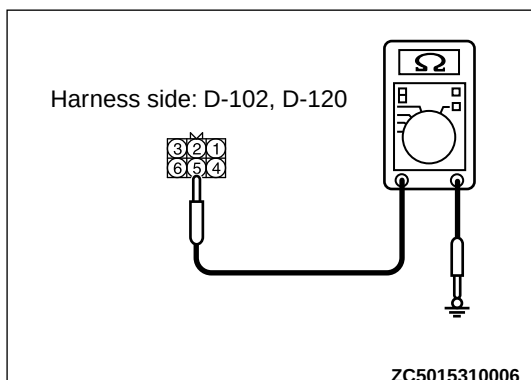
(2) Measure the resistance between the resistance at foot light connector D-102 (RH), D-120 (LH) (terminal No. 5) and ground.

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 foot light connector D-102 (RH), D-120 (LH) (terminal No. 5) and ground.

Q: Is wiring harness between foot light connector D-102 (RH), D-120 (LH) (terminal No. 5) 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 6. Retest the system.

Check that the foot light illuminates 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 under cover rear.

Inspection Procedure 5: The interior light auto-cut function does not operate correctly.

M15410900128USA0000010000

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 "0min" through customization.

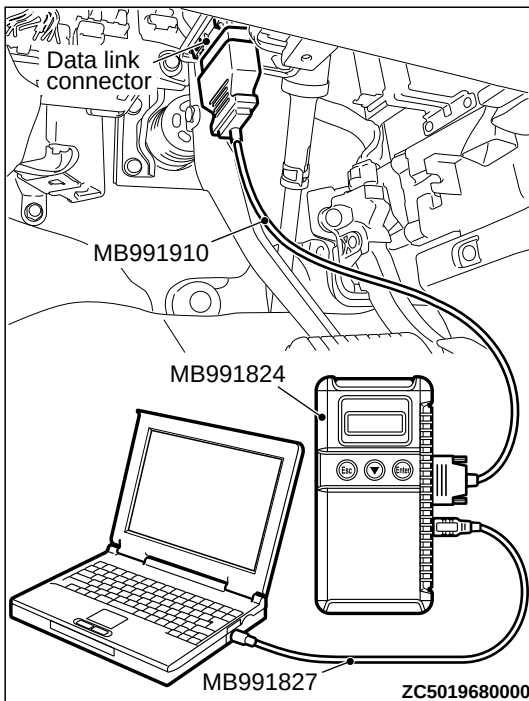
TROUBLESHOOTING HINTS

- 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.54Ac-139."
- (2) Turn the ignition switch to the "ON" position.
- (3) Use the ETACS-ECU customize function to check to see which of the followings other than "0min" the "Interior light auto cut timer" is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Use the ETACS-ECU configuration function to set the "Interior light auto cut timer" to other than "0min" (Refer to P.54Ac-190).

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 GROUP 54Ad - Diagnosis P.54Ad-8).

NO: Go to Step 3.

STEP 3. Using scan tool MB991958, check data list.

Use the ETACS-ECU data list to check the signals related to the interior light auto-cut function.

- Turn the ignition switch to the "ACC" position.
- Turn the ignition switch to the "LOCK" (OFF) position.
- Open each door.

Item No.	Item name	Normal conditions
Item 254	IG voltage	Battery voltage
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", "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 for item No.

254.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 4 "ETACS-ECU does not receive any signal from the ignition switch (IG1)" P. 54Ad-62.

NO <Normal condition is not displayed for item No.

288.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 1 "ETACS-ECU does not receive any signal from the ignition switch (ACC)" P. 54Ad-61.

NO <Normal condition is not displayed for item No.

256.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 5 "ETACS-ECU does not receive any signal from the front door switch (LH)" P. 54Ad-73.

NO <Normal condition is not displayed for item No.

257.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 6 "ETACS-ECU does not receive any signal from the front door switch (RH)" P. 54Ad-75.

NO <Normal condition is not displayed for item No.

258.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 7 "ETACS-ECU does not receive any signal from the rear door switch (LH)" P. 54Ad-77.

NO <Normal condition is not displayed for item No.

259.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 8 "ETACS-ECU does not receive any signal from the rear door switch (RH)" P. 54Ad-80.

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.

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M15410900005USA0000010005

Refer to GROUP 00 - Contents of troubleshooting P.
00-6.

DIAGNOSTIC FUNCTION

M15410900006USA0000010003

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

Required Special Tools:

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

CAUTION

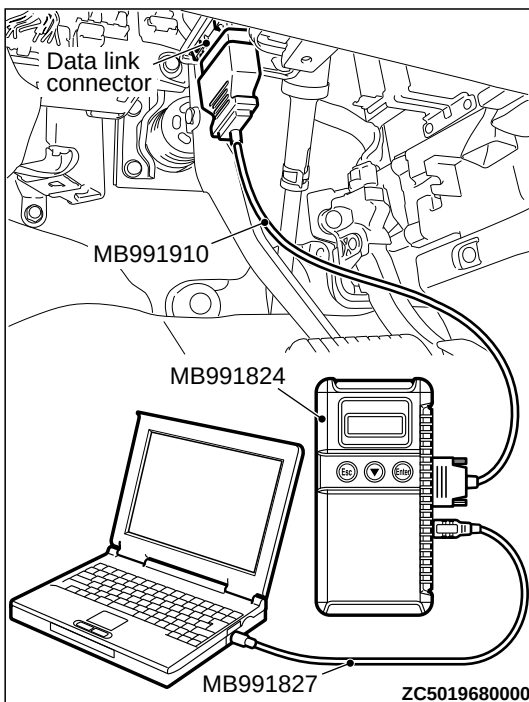
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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



HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ETACS" from "System List", and press the "OK" button.

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

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

DIAGNOSTIC TROUBLE CODE CHART

M15410900007USA0000010003

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may

be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
B16A6	Turn-signal fuse blown	P.54Ac-162

DIAGNOSTIC TROUBLE CODE PROCEDURES**DTC B16A6: Turn-signal fuse blown**

M15410900009USA0000010000

TROUBLE JUDGMENT

When the hazard warning light fuse is blown, the ETACS-ECU sets the DTC B16A6.

TECHNICAL DESCRIPTION (COMMENT)

With the ADC DTC not set, when the blown fuse of hazard warning light is detected three times consecutively, the ETACS-ECU sets the DTC B16A3.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)

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

STEP 1. Fuse check

Check if the turn-signal light fuse is normal.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Replace the turn-signal light fuse.

STEP 2. Using scan tool MB991958, Check whether the diagnostic trouble code is reset.

CAUTION

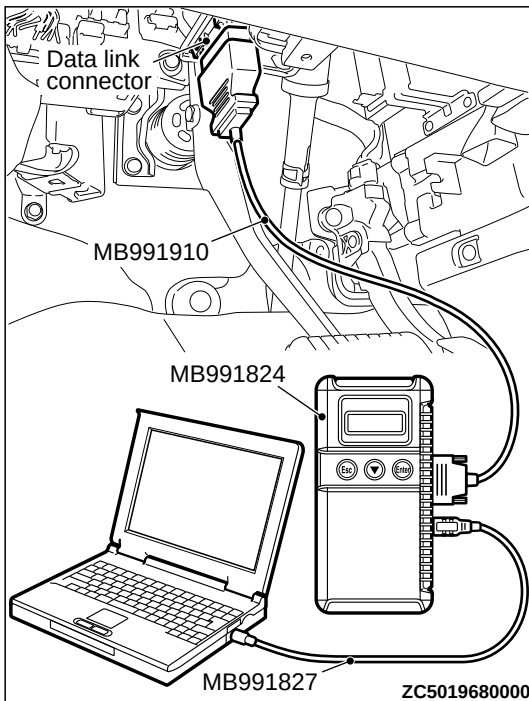
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect scan tool P.54Ac-161."
- (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

Trouble symptom	Inspection Procedure No.	Reference page
The hazard warning lights do not illuminate.	1	P.54Ac-163

M15410900009USA0000010005

SYMPTOM PROCEDURES

Inspection Procedure 1: The hazard warning lights do not illuminate.

M15410900122USA0000010000

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning light does not illuminate, the hazard warning light switch input circuit in center panel unit or the ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of center panel unit
- Malfunction of the ETACS-ECU

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

DIAGNOSIS**Required Special Tools:**

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

STEP 1. Check that the turn-signal light operate.

Check that the turn-signal lights illuminate normally.

Q:Does turn-signal light work normally?

YES: Go to Step 2.

NO: Diagnose the headlights. Refer to Inspection Procedure 11 "The turn-signal lights do not illuminate" P. 54Ac-53.

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

Using the ETACS-ECU service data, check the hazard warning light signal.

⚠ CAUTION

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

- Connect scan tool MB991958. Refer to "How to connect scan tool (M.U.T.-III) P.54Ac-161."
- Turn the ignition switch to the "ACC" position.
- Turn "ON" the hazard light switch.

Item No.	Item name	Normal conditions
Item 265	Hazard switch	ON

Q:Does scan tool MB991958 display the items "Hazard switch" as normal condition?

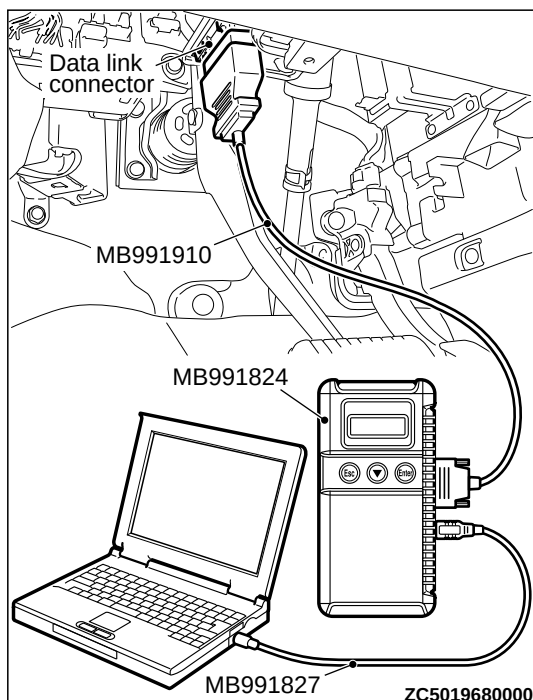
YES<Normal condition is displayed for item.>: Go to Step 3.

NO<Normal condition is not displayed for item No.

265.>: Troubleshoot the ETACS-ECU. Refer to GROUP 54Ad, Diagnosis - Inspection Procedure 11 "ETACS-ECU does not receive any signal from the hazard warning light switch" P. 54Ad-87.

STEP 3. Retest the system

Check that the hazard warning light illuminate normally.

Q:Does the taillight work normally?

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

NO: Replace the ETACS-ECU.

HEADLIGHT

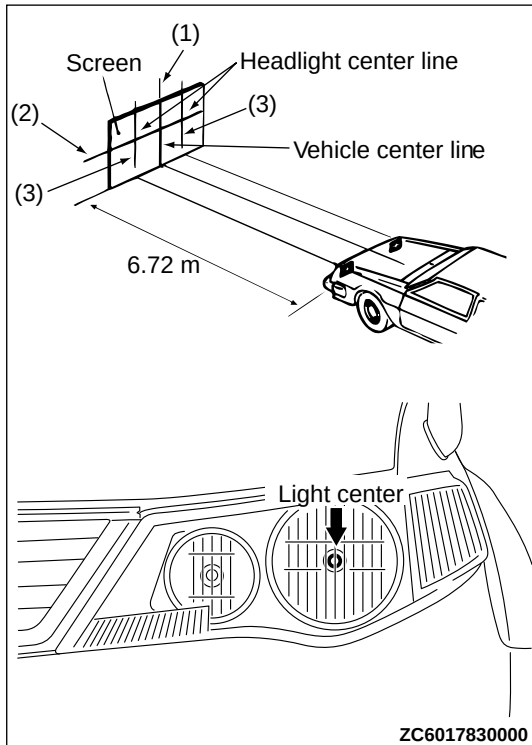
ON-VEHICLE SERVICE

HEADLIGHT AIMING

M15410900017USA0000010000

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. Thoroughly clean headlight lenses.
7. 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.
8. Rock vehicle sideways to allow vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to hood or bumper.



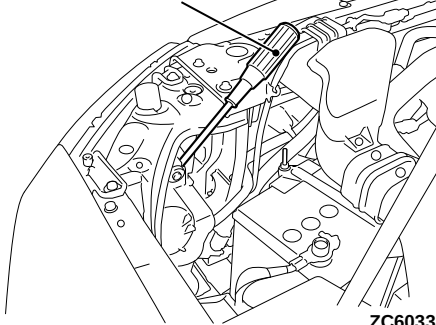
10. Set the distance between the screen and the bulb center marks of the headlight as shown in the illustration.
11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
 - (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
 - (2) Measure the distance from the center-marks on the headlight lens to the floor [reference value: 828 mm (3.26 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)

NOTE: When adjusting headlight, disconnect the other headlight harness.

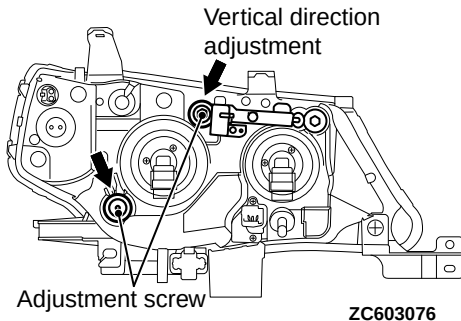
1. The low beam headlight will project on the screen upper edge of the beam (cut-off).

Vertical direction adjustment



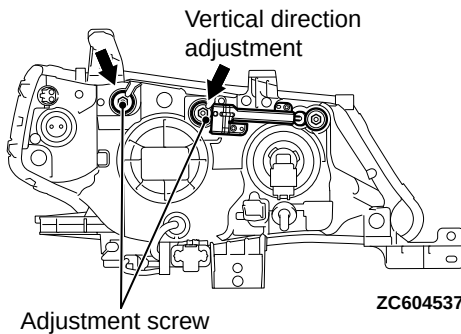
ZC603337

<Halogen headlight>



ZC603076

<Discharge headlight>



ZC604537

ZC6036190000

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

Standard value:

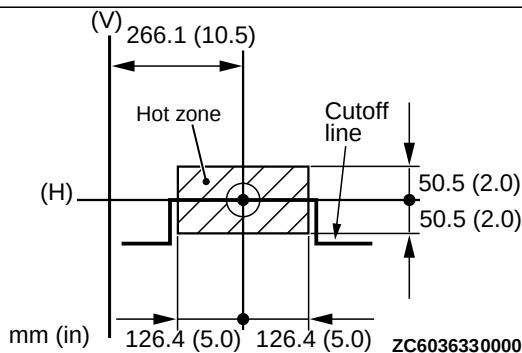
(Vertical direction) Horizontal line (H) ± 50.5 mm (± 2.0 inches) (0.38 degrees angle)

(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)

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.



ZC6036330000

LUMINOUS INTENSITY MEASUREMENT

M15410900018USA0000010000

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.

$I = E \times r^2$ Where:

- *I = intensity (cd)
- *E = illumination (lux)
- *r = distance (m) from headlights to illuminometer

REPLACE THE BULB.

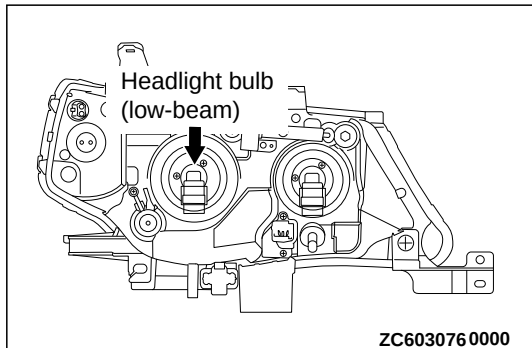
M15410900019USA0000010000

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.

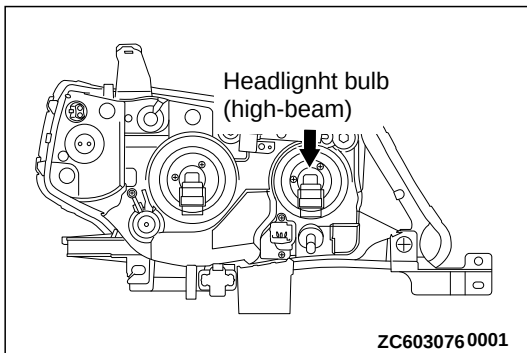
Disconnect the connector, and twist the headlight bulb (low-beam) to remove.



HEADLIGHT BULB (HIGH-BEAM) REPLACEMENT

⚠ 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.



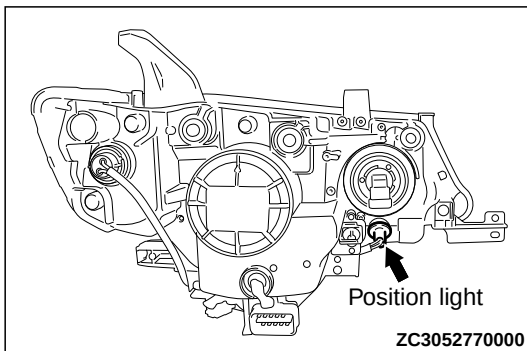
Disconnect the connector, and twist the headlight bulb (high-beam) to remove.

POSITION LIGHT BULB REPLACEMENT

⚠ 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.

Disconnect the connector, and twist the position light socket to remove it.

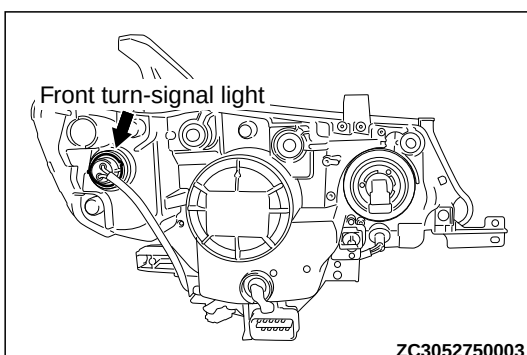


FRONT TURN-SIGNAL LIGHT BULB REPLACEMENT

⚠ 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.

Disconnect the connector, and twist the front turn-signal light socket to remove it.

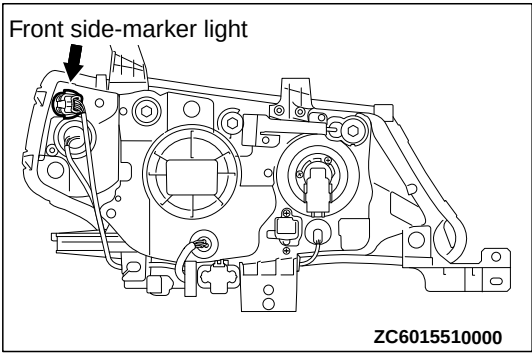


FRONT SIDE-MARKER LIGHT BULB
REPLACEMENT

⚠ 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.

Disconnect the connector, and twist the front side-marker light socket to remove it.



HEADLIGHT AUTOMATIC SHUTDOWN FUNCTION
CHECK

M15410900164USA0000010000

Confirm that the headlights turn OFF in one second if the ignition key is pulled out and the driver's door is opened when the ignition switch is ON and the lighting switch is ON (HEAD position). If there is a malfunction, perform the troubleshooting (Refer to P. 54Ac-25).

CONFIGURATION FUNCTION

M15410900014USA0000010000

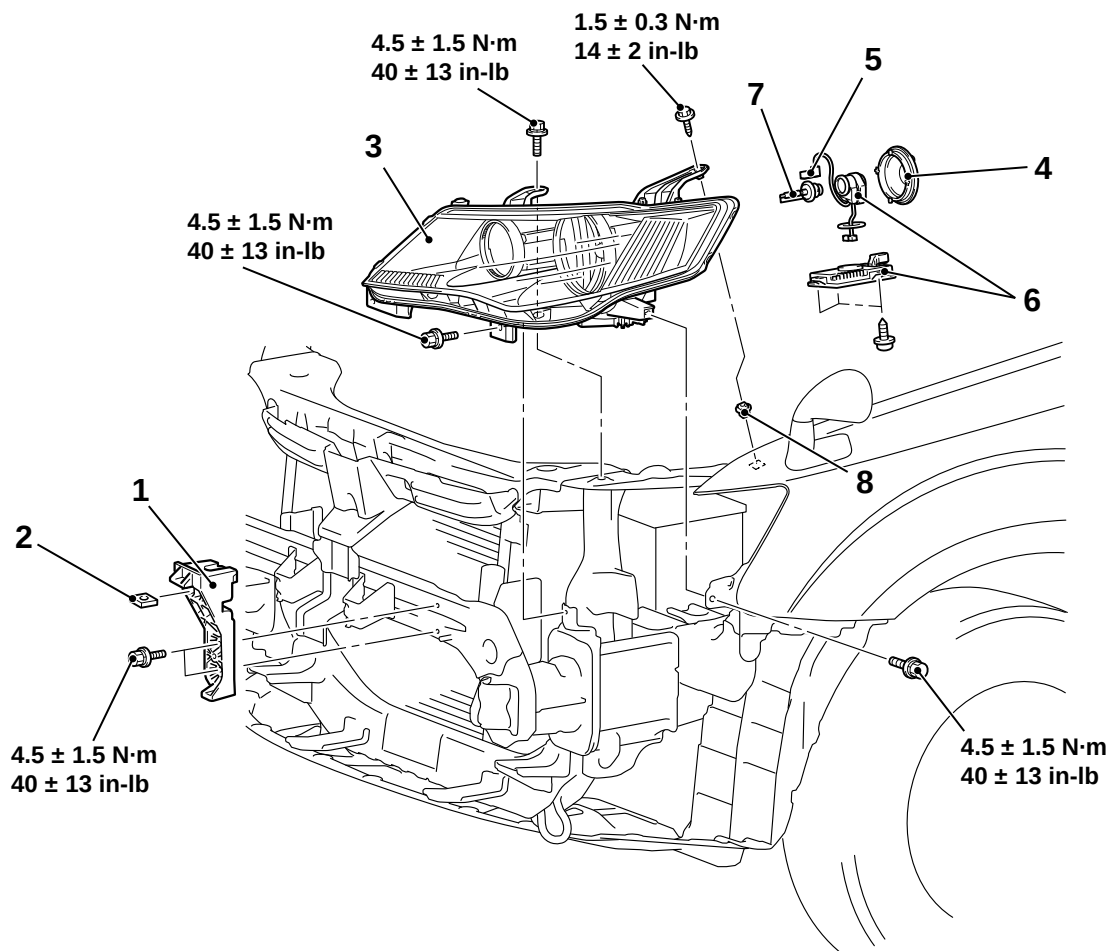
With the scan tool MB991958 operation, the following information is held even when the battery is disconnected. The programmed functions can be programmed.

Adjustment item (scan tool display)	Adjustment item	Adjustment contents (scan tool display)	Adjusting contents
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (default)
Comfort flasher	With/without comfort flasher function	Disable	Without function
		Enable	With function (default)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 seconds (default)
		Long	0.8 seconds

Adjustment item (scan tool display)	Adjustment item	Adjustment contents (scan tool display)	Adjusting contents
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (default)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	Without function
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	Without function
		C-spec.	With function (default)

REMOVAL AND INSTALLATION

M15410900020USA0000010000



ZC601652AA00

Removal Steps

Front bumper assembly (Refer to GROUP 51A - Front Bumper Assembly P.51A-3.)

Removal Steps

1. Front bumper bracket

	Removal Steps		Removal Steps
<<A>>	2. Square nut		6. Headlight control unit <Vehicles with discharge headlight>
	3. Headlight assembly		7. Headlight bulb <Vehicles with discharge headlight>
	4. Headlight bulb socket cover <Vehicles with discharge headlight>	<>	8. Grommet
	5. Connector <Vehicles with discharge headlight>		

REMOVAL SERVICE POINTS

<<A>> HEADLIGHT ASSEMBLY REMOVAL

When removing the headlight assembly of the right side, remove the washer fluid inlet.

<> BULB REMOVAL <VEHICLES WITH DISCHARGE HEADLIGHT>

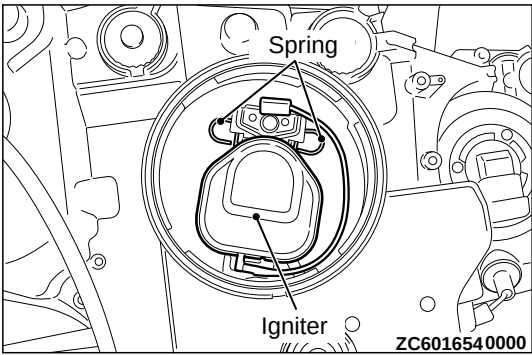
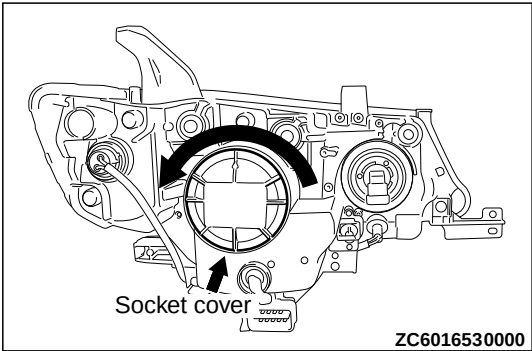
CAUTION

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.



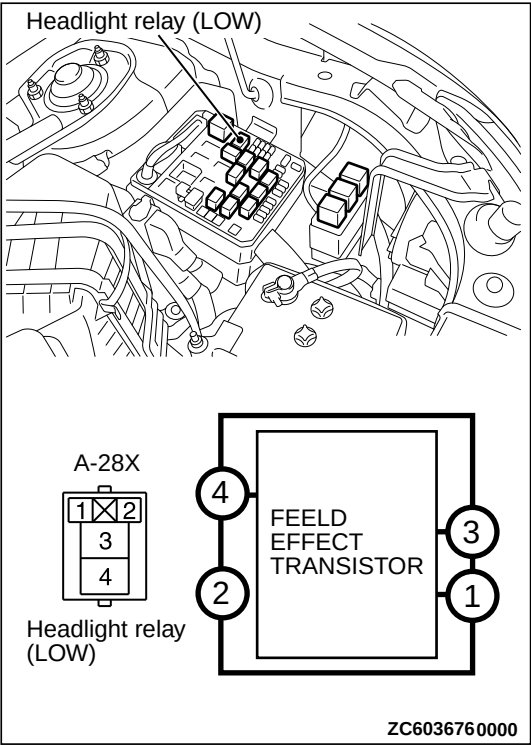
INSPECTION

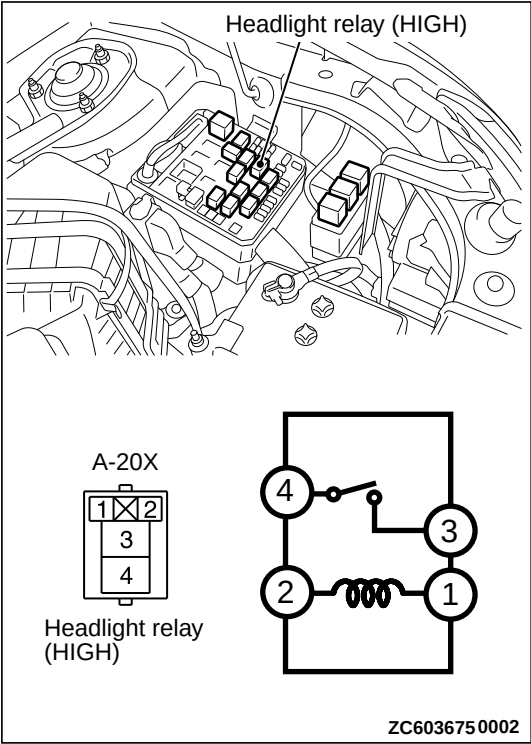
HEADLIGHT RELAY CHECK

M15410900028USA0000010000

HEADLIGHT RELAY (LOW) CHECK

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





HEADLIGHT RELAY (HIGH) CHECK

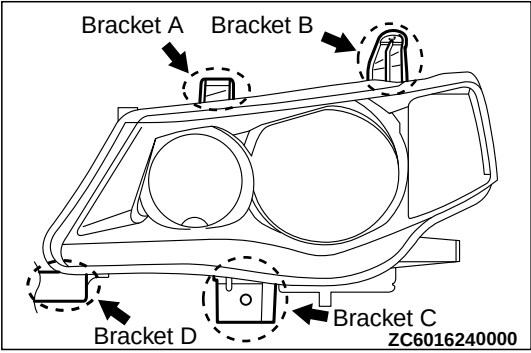
Battery voltage	Terminal number	Normal conditions
Not energized	3 - 4	No continuity
With current supply [terminal 1 (+), terminal 2 (-)]		Continuity exists (2 Ω or less)

BRACKET REPAIR OF HEADLIGHT ASSEMBLY

M15410900167USA0000010000

CAUTION

If damage is present to locations other than the repairable bracket, replace the assembly.



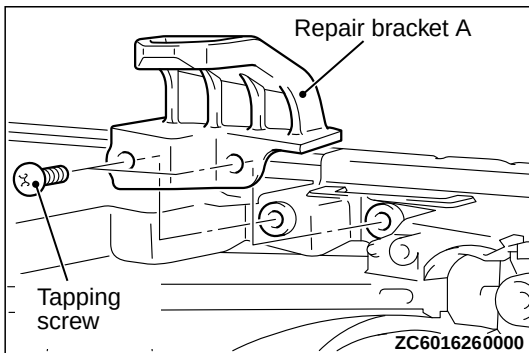
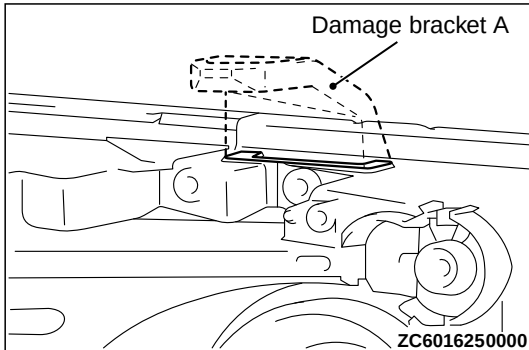
When only brackets A, B, or C shown in the figure are damaged, a low-cost repair can be performed by mounting a repair bracket. If the bracket D is damaged, cut off the damaged bracket D. (Mounting of repair bracket is not needed.)

OPERATIONS BEFORE REPAIRING BRACKET

Remove the headlight assembly. Then, remove the bulb, headlight socket cover vehicles with discharge headlight, and headlight control unit vehicles with discharge headlight (Refer to P.54Ac-171).

REPAIR PROCEDURE OF BRACKET A

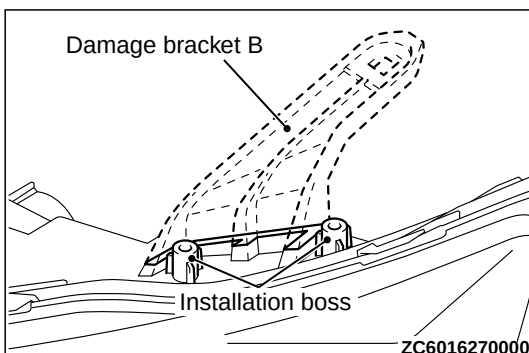
1. Cut off the damaged bracket A.
2. Remove the remaining bracket cut surface using the sandpaper.

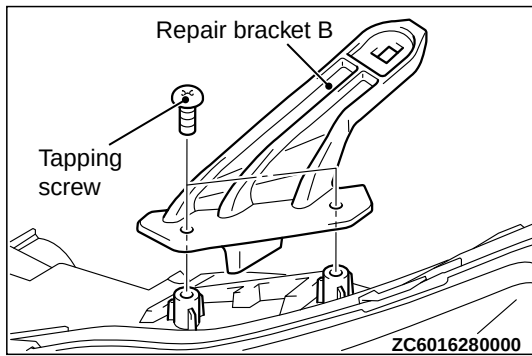


3. Affix the repair bracket to the headlight assembly using the tapping screw.

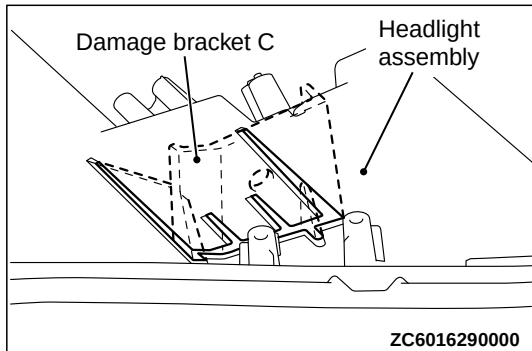
REPAIR PROCEDURE OF BRACKET B

1. Cut the damaged bracket B so that the cut surface becomes 8 mm (0.31 inch) or less from the mounting boss bearing surface for repair bracket.
2. Smoothen the bracket cut surface using sandpaper.



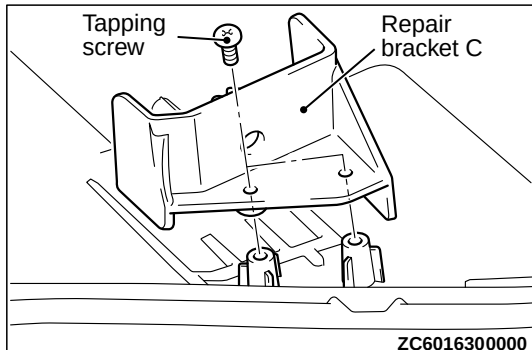


3. Affix the repair bracket to the headlight assembly using the tapping screw.



REPAIR PROCEDURE OF BRACKET C

1. Cut the damaged bracket C so that the cut surface becomes 3 mm (0.12 inch) or less from the headlight assembly body surface.
2. Smoothen the bracket cut surface using sandpaper.



3. Affix the repair bracket to the headlight assembly using the tapping screw.

OPERATIONS AFTER REPAIRING BRACKET

1. Mount the bulb, headlight socket cover vehicles with discharge headlight and headlight control unit vehicles with discharge headlight, and then mount the headlight assembly to the vehicle (Refer to P.54Ac-171).
2. Check that the headlight assembly does not vibrate while driving.
3. Perform the headlight aiming adjustment (refer to P. 54Ac-165) and light intensity measurement (refer to P. 54Ac-167).

REPAIR BRACKET PART NUMBER

Part name	Part number
Headlight (LH) bracket (LH-side 3-piece set)	8301A664
Headlight (RH) bracket (RH-side 3-piece set)	8301A722

HEADLIGHT AUTOMATIC LEVELING SYSTEM

ON-VEHICLE SERVICE

HEADLIGHT AUTOMATIC LEVELING MOTOR DRIVE TEST

M15410900035USA0000010000

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

•The leveling motor drive test of headlight leveling unit must be performed with the vehicle at a standstill (When a vehicle speed signal is input from the headlight automatic leveling ECU, the leveling motor drive test cannot be performed).

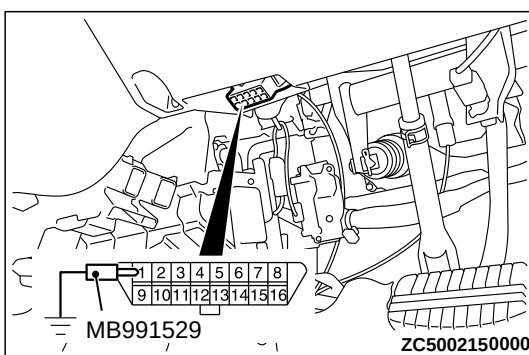
1. Hook up the scan tool or ground terminal 1 of data link connector.
2. Turn the ignition switch to the ON position.
3. Turn ON the headlight switch.
4. Check that the headlight leveling operates downward for 3 seconds.

NOTE:

•When the leveling of the headlight faces downward at the time of drive test start, it stays as is.

•Only one drive test is possible after the ignition switch is turned to the ON position.

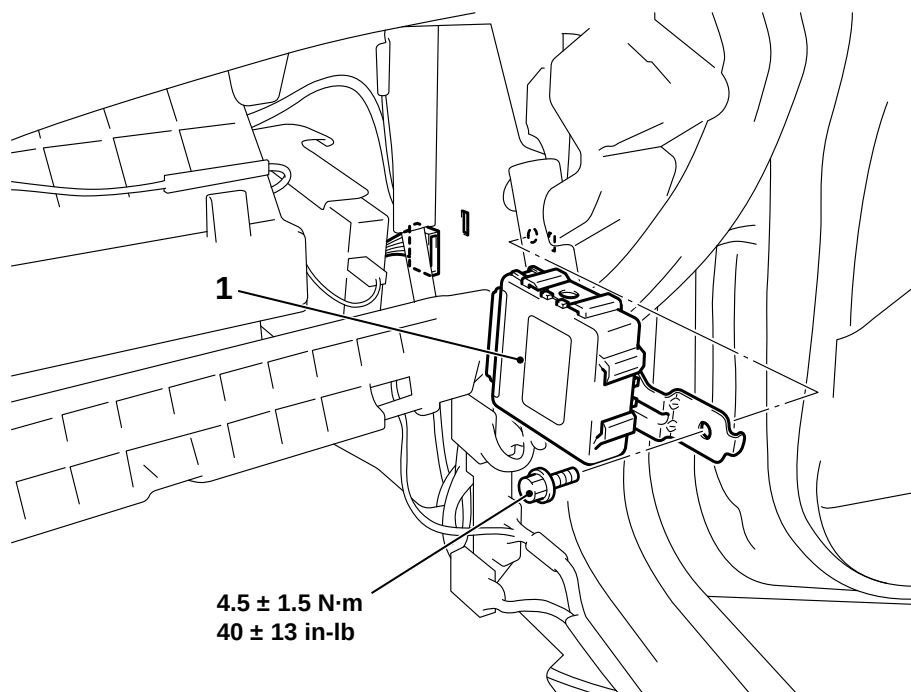
5. Check that the headlight leveling operates upward for 3 seconds.



HEADLIGHT AUTOMATIC LEVELING-ECU

REMOVAL AND INSTALLATION

M15410900039USA0000010000



ZC601249AA000

Removal Steps

Glove box assembly (Refer to GROUP 52A - Instrument Panel Assembly P. 52A-2.)

Removal Steps

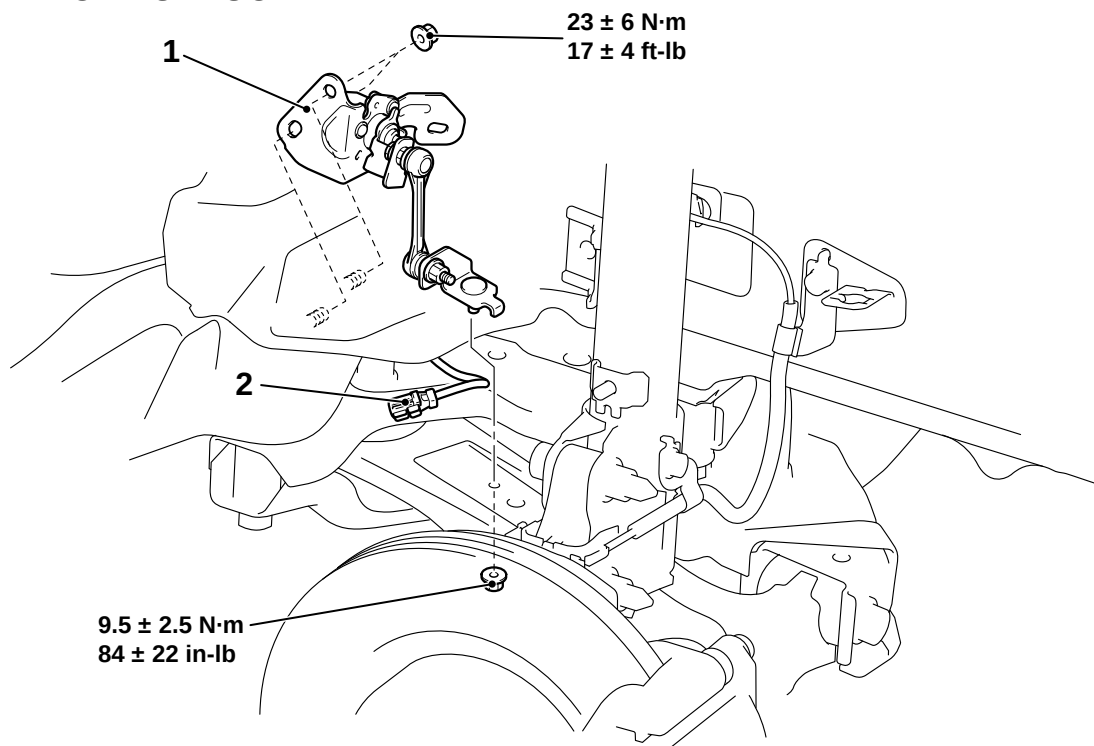
1. Headlight automatic leveling-ECU

HEIGHT SENSOR

REMOVAL AND INSTALLATION

M15410900037USA0000010000

FRONT HEIGHT SENSOR



ZC305462AA00

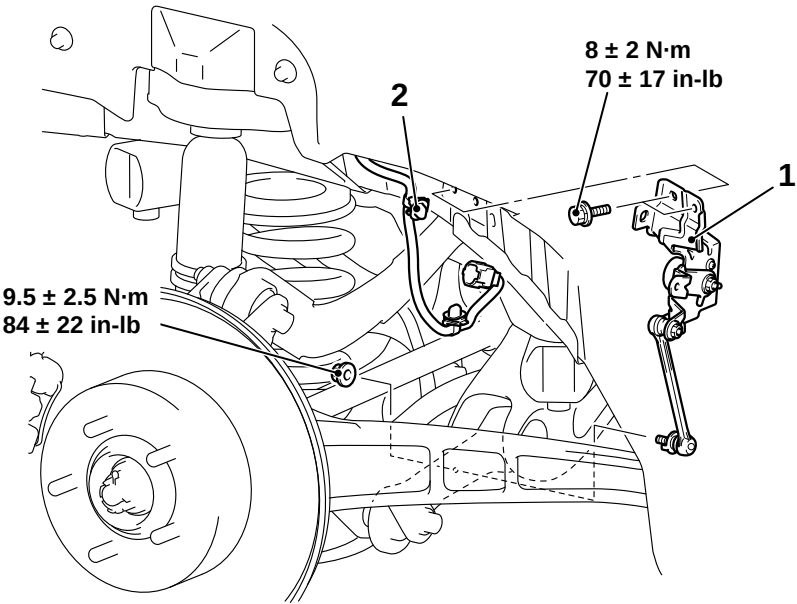
Removal Steps

1. Front height sensor

Removal Steps

2. Front height sensor sub harness

REAR HEIGHT SENSOR



ZC601621AA00

Removal Steps

1. Rear height sensor

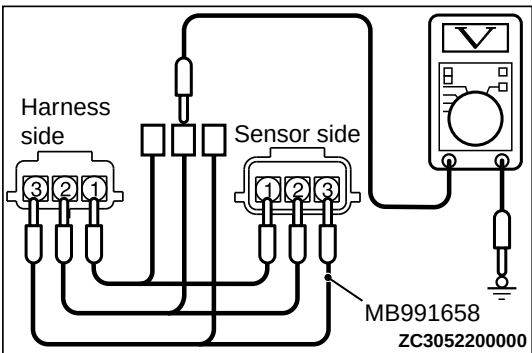
Removal Steps

2. Rear height sensor sub harness

INSPECTION

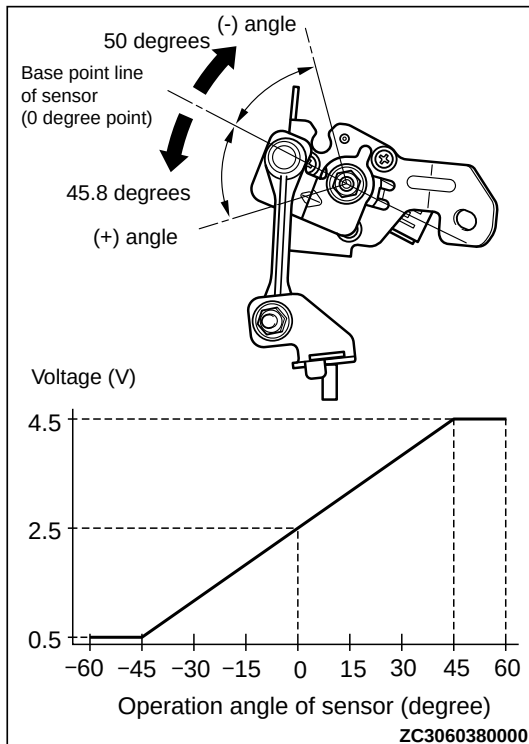
HEIGHT SENSOR CHECK

M15410900040USA0000010000

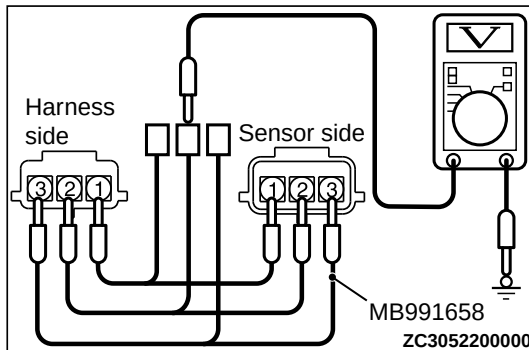


FRONT HEIGHT SENSOR CHECK

1. Disconnect the sensor connector and connect the special tool test harness (MB991658) as shown.
2. Turn the ignition switch to the ON position.
3. Measure the voltage of sensor connector terminal No. 2.



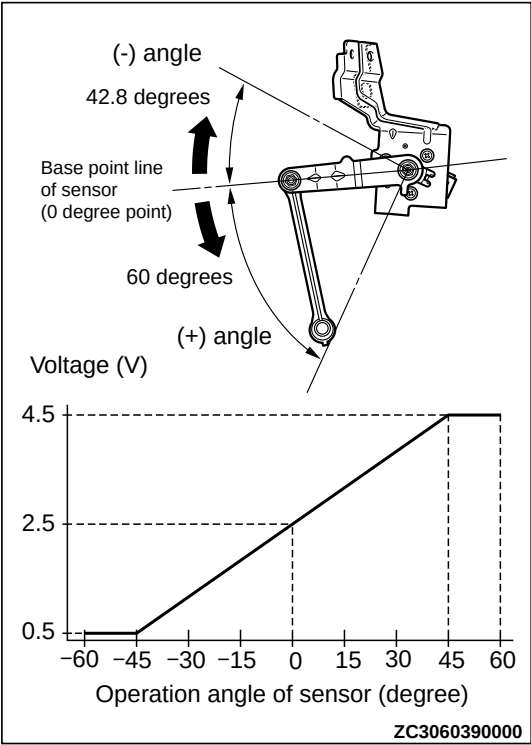
4. Check that voltages show the values described in the graph according to the sensor operation angle.



REAR HEIGHT SENSOR CHECK

1. Disconnect the sensor connector and connect the special tool test harness (MB991658) as shown.
2. Turn the ignition switch to the ON position.
3. Measure the voltage of sensor connector terminal No. 2.

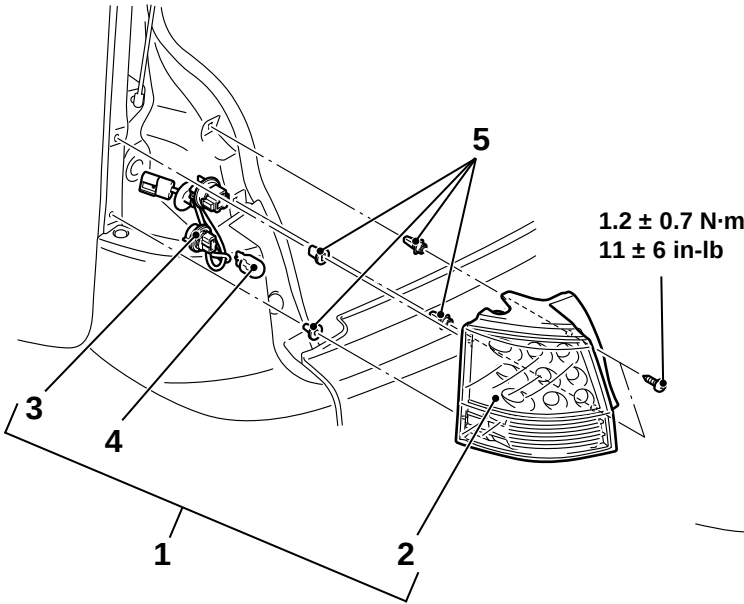
4. Check that voltages show the values described in the graph according to the sensor operation angle.



REAR COMBINATION LIGHT

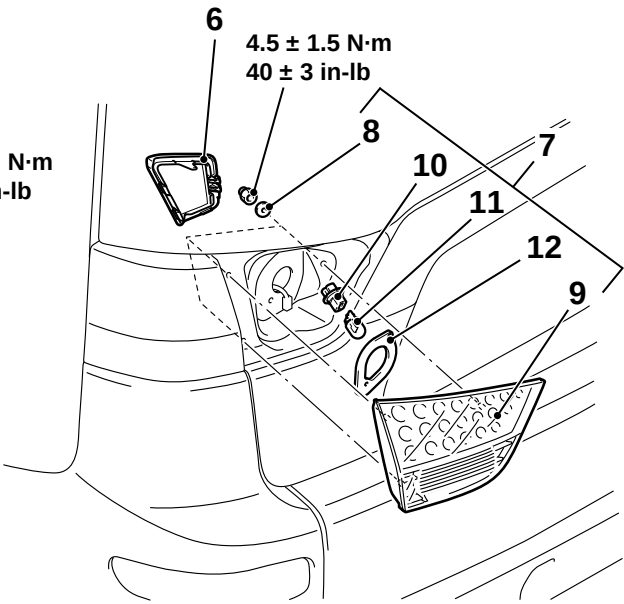
REMOVAL AND INSTALLATION

M15410900056USA0000010000



Removal Steps

1. Rear combination light assembly
2. Rear combination light unit

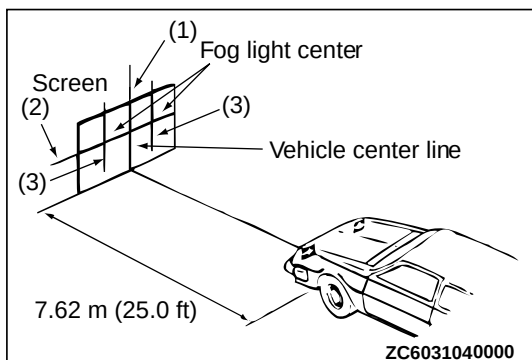
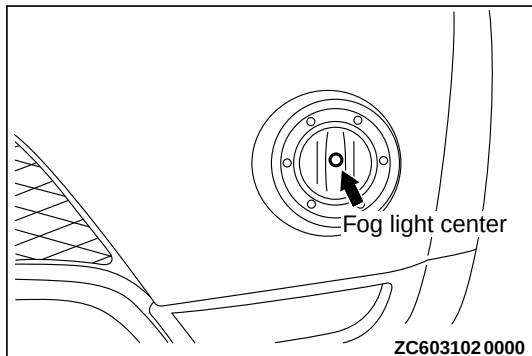


Removal Steps

3. Socket
4. Bulb

ZC600965AA00

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.

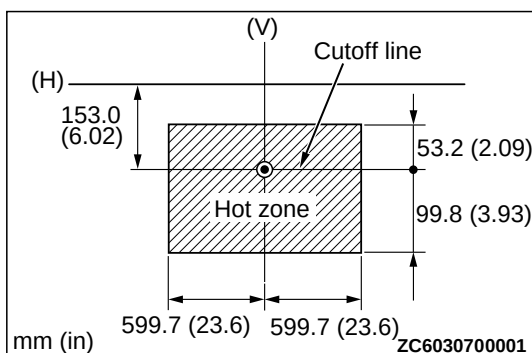
Standard value:

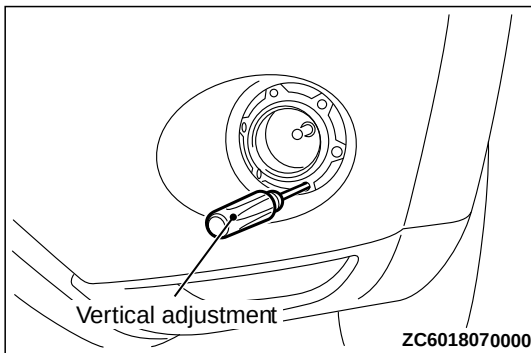
(Cutoff line direction): The horizontal line 153.0 mm (6.02 inches) (1.15 degrees angle) below the horizontal line (H)

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

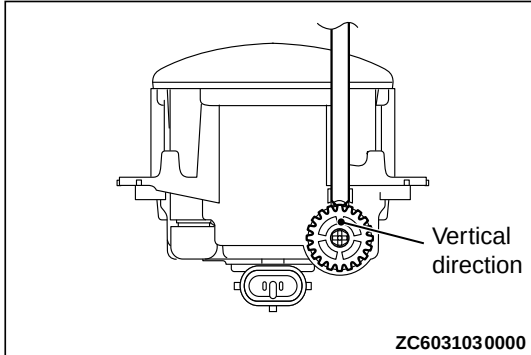
(Horizontal direction): Vertical line (V) $\pm$ 599.7 mm ($\pm$ 23.6 inches) ($\pm$ 4.5 degrees angle)





2. If it is not within the standard value range, adjust by turning the adjusting screw.

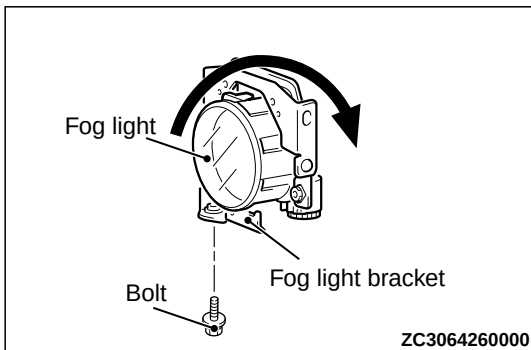
NOTE: The horizontal direction is non-adjustable. If deviation of the light beam axis exceeds the standard value, check that the mounting location or some other points are not faulty.



BULB REPLACEMENT

M15410900019USA0000010001

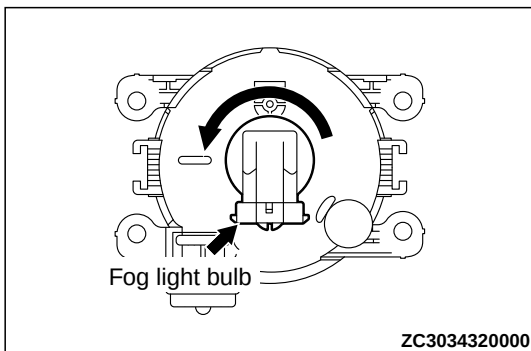
1. Remove the bolt under the fog light bracket and tilt the fog light to ease the bulb pulling-out.



CAUTION

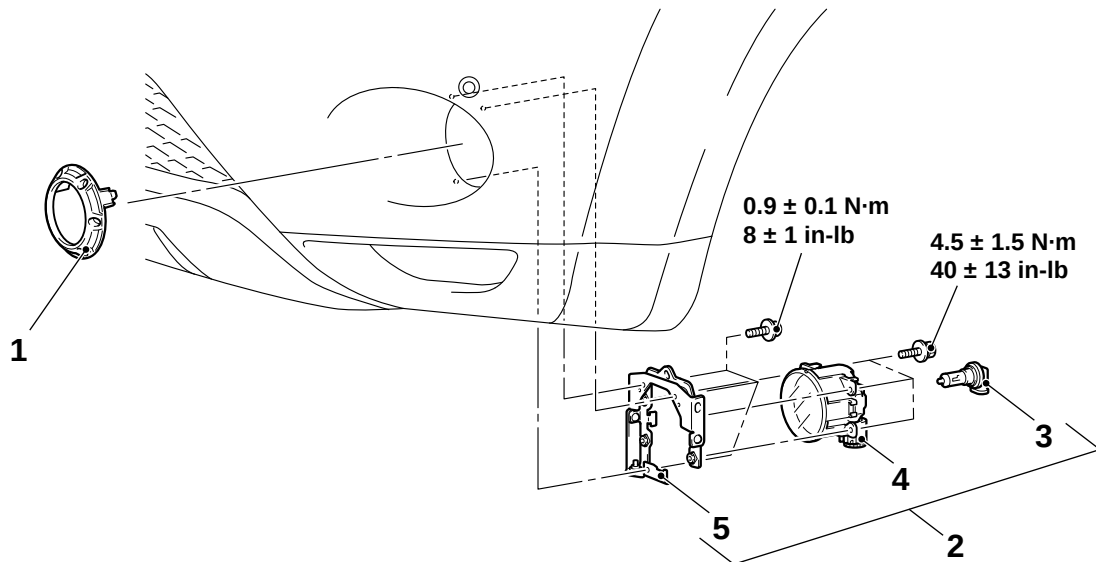
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

2. Disconnect the connector and withdraw the bulb.
3. Replace the bulb, and connect securely the connector.



REMOVAL AND INSTALLATION

M15410900170USA0000010000



ZC601887AA00

Removal steps

- Engine room under cover front (Refer to GROUP 51A - Under Cover P. 51A-18.)
- 1. Fog light bezel
- 2. Fog light assembly

Removal steps

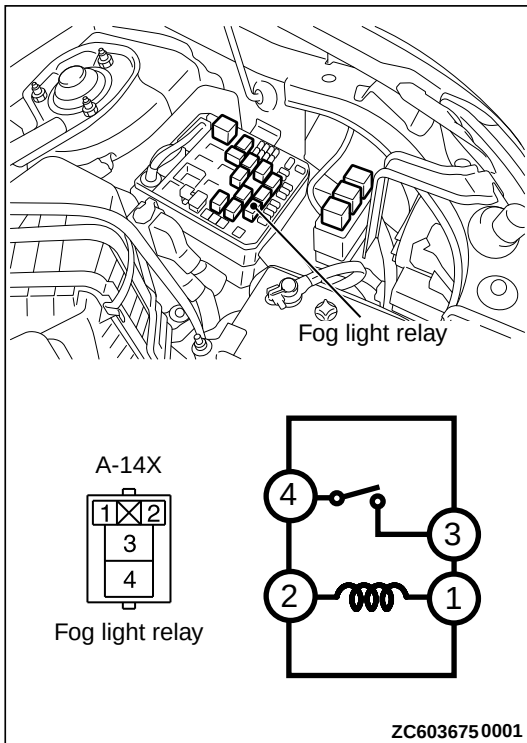
- 3. Bulb
- 4. Fog light unit
- 5. Fog light bracket

INSPECTION

FOG LIGHT RELAY CHECK

M15410900171USA0000010000

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



DAYTIME RUNNING LIGHT

ON-VEHICLE SERVICE

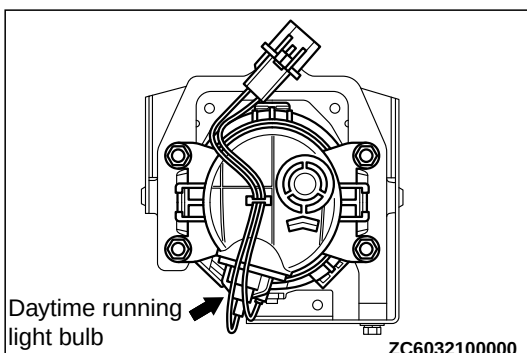
BULB REPLACEMENT

M15410900019USA0000010002

CAUTION

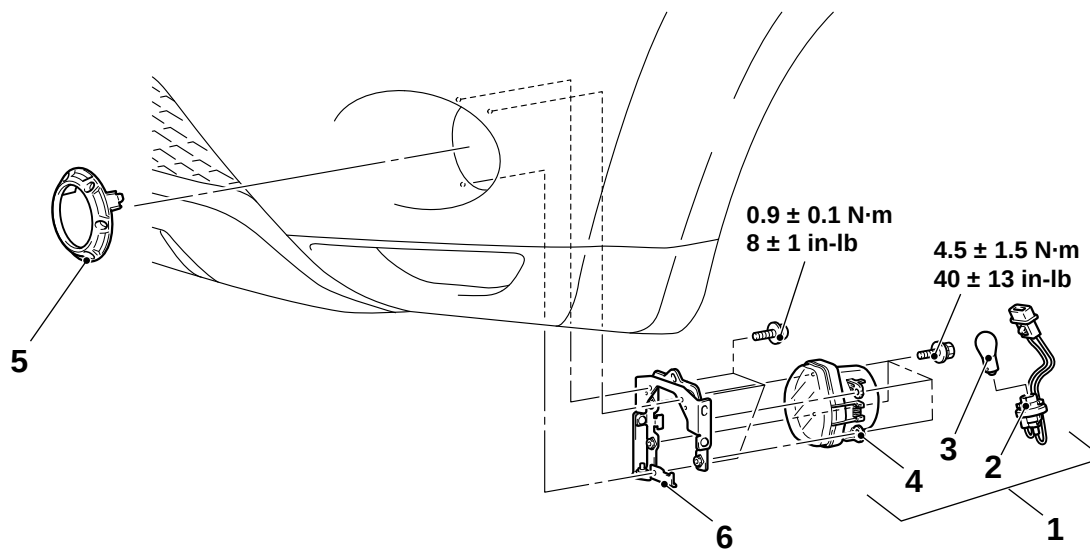
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

1. Disconnect the daytime running light code and withdraw the bulb.
2. Replace the bulb, and connect securely the daytime running light code.



REMOVAL AND INSTALLATION

M15410900178USA0000010000



ZC603182AA00

Removal steps

- Engine room under cover front (Refer to GROUP 51A - Under Cover P. 51A-18.)
- 1. Daytime running light assembly
- 2. Daytime running light cord

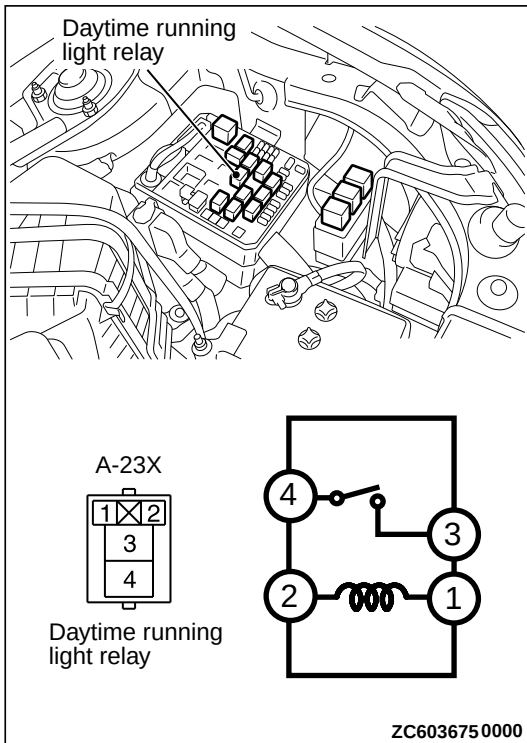
Removal steps

- 3. Bulb
- 4. Daytime running light unit
- 5. Fog light bezel
- 6. Fog light bracket

INSPECTION

DAYTIME RUNNING LIGHT RELAY CHECK

M15410900190USA0000010000



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

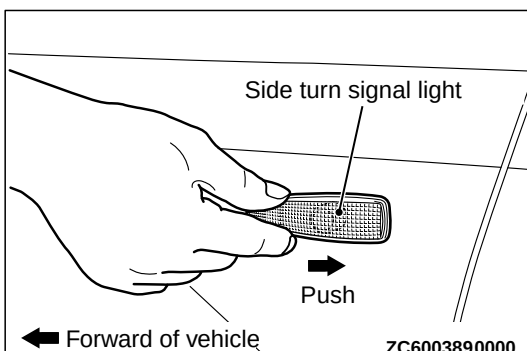
SIDE TURN-SIGNAL LIGHT

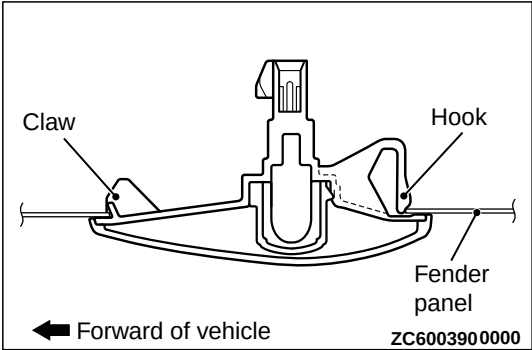
REMOVAL AND INSTALLATION

M15410900054USA0000010000

REMOVAL SERVICE POINT

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

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

DOME LIGHT

ON-VEHICLE SERVICE

CONFIGURATION FUNCTION

M15410900014USA0000010001

With the scan tool MB991958 operation, the following information is held even when the battery is disconnected. The programmed functions can be programmed. The programmed disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjustment contents (scan tool display)	Adjusting contents
Dome light delay timer with door	Adjustment of interior light delay shutdown time	0sec	0 second (no delay shutdown time)
		7.5sec	7.5 seconds
		15sec	15 seconds
		30sec	30 seconds (default)
		60sec	60 seconds
		120sec	120 seconds
		180sec	180 seconds
Interior light auto cut timer	Adjustment of interior light automatic shutdown function operation time	0min	Without function
		3min	3 minutes
		30min	30 minutes (default)
		60min	60 minutes

REMOVAL AND INSTALLATION

M15410900076USA0000010000

Refer to GROUP 52A - Headlining P.52A-15.

HIGH-MOUNTED STOPLIGHT

REMOVAL AND INSTALLATION

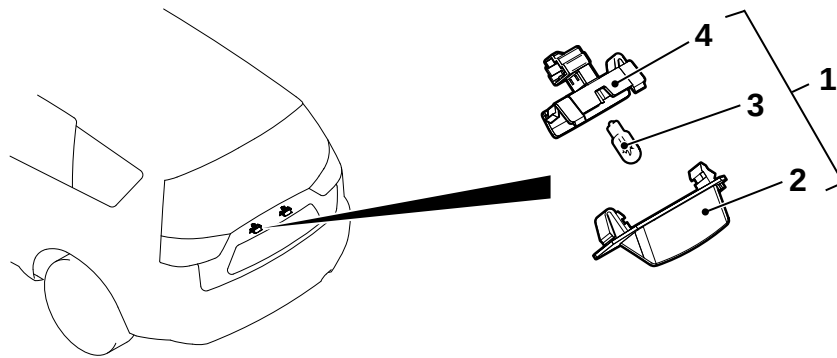
Refer to GROUP 51A - Liftgate spoiler P.51A-20.

M15410900067USA0000010000

LICENSE PLATE LIGHT

REMOVAL AND INSTALLATION

M15410900065USA0000010000



ZC6003910000

<<A>>

Removal Steps

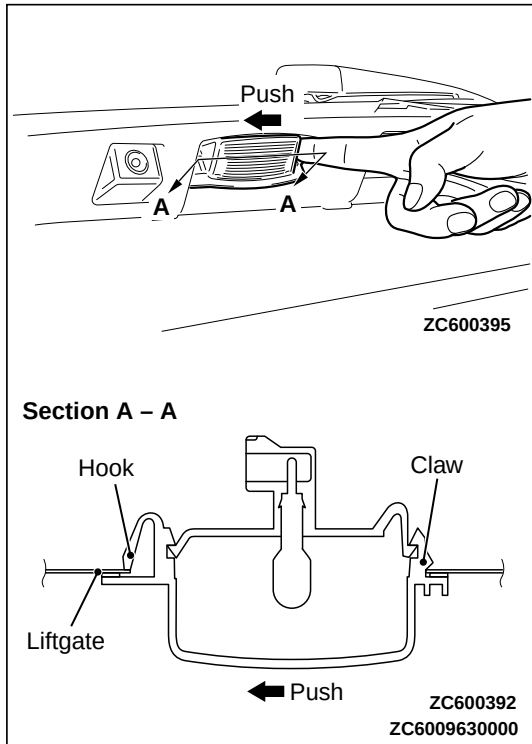
1. License plate light assembly
2. Lens
3. Bulb

Removal Steps

4. Socket

REMOVAL SERVICE POINT**<<A>> LICENSE PLATE LIGHT REMOVAL**

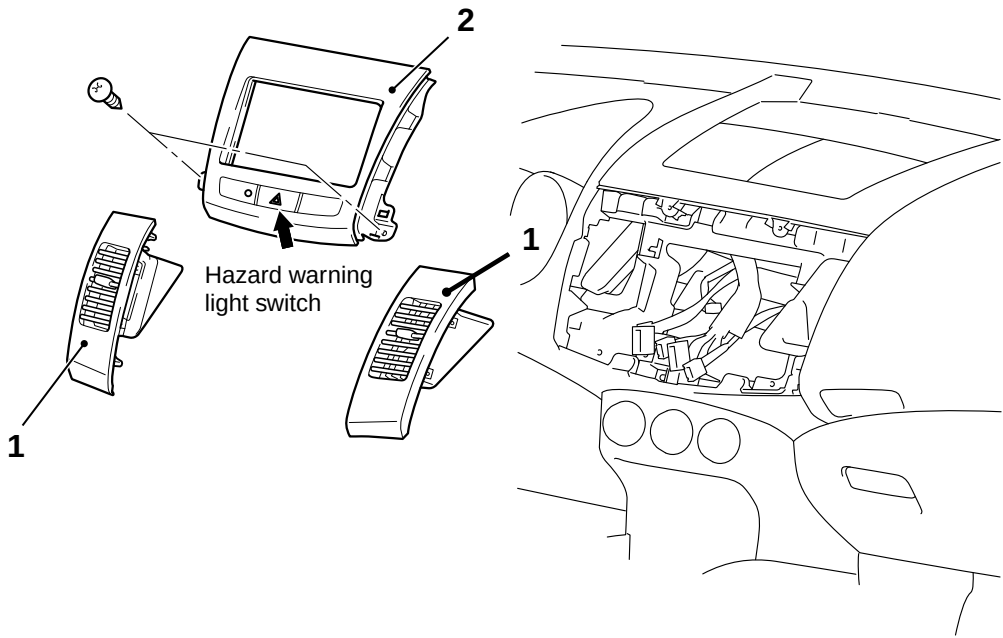
Push the license plate light to the left to bend the hook, and then remove by disengaging the tab from the liftgate.



HAZARD WARNING LIGHT

REMOVAL AND INSTALLATION

M15410900079USA0000010000



ZC6002750000

Removal Steps

1. Center air outlet (Refer to GROUP 52A - Instrument Panel Assembly P. 52A-2.)

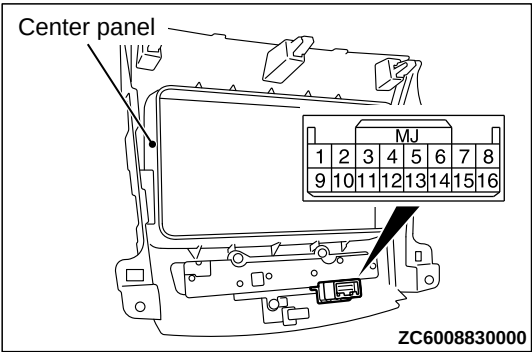
Removal Steps

2. Center panel assembly (Refer to GROUP 52A - Instrument Panel Assembly P.52A-2.)

INSPECTION

CONTINUITY CHECK FOR HAZARD WARNING LIGHT SWITCH

M15410900080USA0000010000



Switch position	Terminal number	Normal conditions
OFF	5 - 9	No continuity
ON		Continuity exists (2 Ω or less)

MEMO