

# **SERVICE BULLETIN**

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURP	POSE: Modifications	ISSUE NO.: MSB-16EXML42_52_54-001	DATE: 2016-11-21	
SUBJ	ECT: Modifications of t and additional co	<destination model=""> (As per attached sheet 1)</destination>	<m y=""> ~17</m>	
GROU	UP : Gr:42(Body)/52(Inter	As per attached sheets 2 & 3		

## 1. Description:

Please refer to the attached document for the information about the modifications and additions of mentions in the applicable service manuals.

<For the related workshop manuals>

- Additional procedure regarding other system diagnosis code in the diagnosis code U0141.
- Correction of the diagnosis procedures in the diagnosis codes B16A0 and B16A7
- <For the electric wiring diagrams>
- Additional connection to "TAIL LAMP CONTROL CIRCUIT" in the following points
   Tail Lamp/Position Lamp/License Plate Lamp/Lighting Monitor Buzzer/Glove Box Lamp/Floor
   Console Box Lamp/Heated Seat Tail Lamp(Outlander(CW0W) for MMNA only)

## 2. Affected service manuals:

Please refer to the attached document (Attached sheets 2-3)

For overseas market (Except vehicles for MMNA): Refer to attached sheet 2.

For overseas market (Vehicles for MMNA): Refer to attached sheet 3.

## 3. About the details:

Please refer to the attached document (Attached sheets 5-6)

For overseas market (Except vehicles for MMNA): Refer to attached sheet 5.

For overseas market (Vehicles for MMNA): Refer to attached sheet 6.

## For overseas market (Except vehicles for MMNA)

Vehicle name (Model code)	Applicable manual (Pub No.)	Contents	
LANCER EVOLUTION (CZ#)  LANCER/LANCER EX (CY#),	<pre></pre>	GROUP 13, 17, 23, 27, 35, 37, 42, 52, 54, 55: Code No. U0141 ETACS CAN timeout	Attached sheet 5 (1/22)
LANCER SPORTBACK (CX#)	17MY> Workshop Manual		
OUTLANDER (CW#)	<pre><initial -="" 13my="" launch=""> Workshop Manual</initial></pre>	GROUP 13, 17, 23, 27, 35, 37, 42, 52, 54, 55: Code No. U0141 ETACS CAN timeout	Attachad
	Workshop Manual	GROUP 54A: Code No. B16AO Tail lamp(RH) circuit open, Code No. B16A7 Tail lamp(RH) circuit short	Attached sheet 5 (2/22) ~ (7/22)
	GENERAL EXPORT> 2006 OUTLANDER Workshop Manual	GROUP 90: TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER	Attached sheet 5 (8/22)
	(PWRE0503R:English)	GROUP 90: GLOVE BOX LAMP	Attached sheet 5 (9/22)
ASX/OUTLANDER SPORT (GA#)	<initial -<br="" launch="">17MY&gt; Workshop Manual</initial>	GROUP 13, 17, 23, 27, 35, 37, 42, 52, 54, 55: Code No. U0141 ETACS CAN timeout	Attached sheet 5 (1/22)
		GROUP 54A: Code No. B16AO Tail lamp(RH) circuit open, Code No. B16A7 Tail lamp(RH) circuit short NOTE: Due to a design change, the DTC "B16AO" will not be anymore from 12MY.	Attached sheet 5 (2/22) ~ (7/22)
OUTLANDER (GF#)	<pre><initial -="" 17my="" launch=""> Workshop Manual</initial></pre>	GROUP 13, 17, 23, 27, 35, 36, 37, 42, 52, 54, 55: Code No. U0141 ETACS CAN timeout	Attached sheet 5 (1/22)
		GROUP 54A: Code No. B16A7 Tail lamp(RH) circuit short	Attached sheet 5 (10/22) ~ (14/22)
		GROUP 90: TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER	Attached sheet 5 (15/22)
		GROUP 90: GLOVE BOX LAMP AND FLOOR CONSOLE BOX LAMP	Attached sheet 5 (16/22)
OUTLANDER PHEV (GG#)	<initial -<br="" launch="">17MY&gt; Workshop Manual</initial>	GROUP 13, 17, 23, 27, 35, 36, 37, 42, 52, 54, 55: Code No. U0141 ETACS CAN timeout	Attached sheet 5 (1/X)
		GROUP 54A: Code No. B16A7 Tail lamp(RH) circuit short	Attached sheet 5 (17/22) ~ (22/22)
		GROUP 90: TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER	Attached sheet 5 (15/22)
		GROUP 90: GLOVE BOX LAMP AND FLOOR CONSOLE BOX LAMP	Attached sheet 5 (16/22)

## For overseas market (Vehicles for MMNA)

Vehicle name (Model code)	Applicable manual	Contents	
LANCER EVOLUTION (CZ#)	( <b>Pub No.)</b> <initial -<br="" launch="">15MY&gt;</initial>	GROUP 13, 23, 27, 35, 37, 42, 52, 54, 55: DTC U0141: ETACS CAN timeout	Attached sheet 6
	Service Manual		(1/27)
LANCER (CY#) , LANCER SPORTBACK (CX#)	<initial -<="" launch="" td=""><td></td><td></td></initial>		
OUTLANDED (OW!!)	Service Manual	00010 10 00 07 05 00 07 40 50 54 55	
OUTLANDER (CW#)	<initial -<br="" launch="">13MY&gt;</initial>	GROUP 13, 23, 27, 35, 36, 37, 42, 52, 54, 55: DTC U0141: ETACS CAN timeout	
	Service Manual	GROUP 54A:	Attached
		DTC B16AO: Taillight (RH) circuit open, DTC B16A7: Taillight (RH) circuit short	sheet 6 (2/27) ~
	OOOT OUT ANDED	apour as	(16/27)
	2007 OUTLANDER	GROUP 90:	Attached
	Service Manual (MSCD-007B-2007)	TAILLIGHT, POSITION LIGHT, REAR SIDE MARKER LIGHT, LICENSE PLATE LIGHT AND LIGHTING MONITOR TONE ALARM	sheet 6 (17/27)
		GROUP 90:	Attached
		GLOVE BOX LIGHT	sheet 6
			(18/27)
		GROUP 90:	Attached
		HEATED SEAT	sheet 6 (19/27)
OUTLANDER SPORT/RVR (GA#)	<initial -<="" launch="" td=""><td>GROUP 13, 23, 27, 35, 36, 37, 42, 52, 54, 55 :</td><td>Attached</td></initial>	GROUP 13, 23, 27, 35, 36, 37, 42, 52, 54, 55 :	Attached
	17MY> Service Manual	DTC U0141: ETACS CAN timeout	sheet 6 (1/27)
		GROUP 54A:	Attached
		DTC B16AO: Taillight (RH) circuit open,	sheet 6
		DTC B16A7: Taillight (RH) circuit short	(2/27) ~
		NOTE: Due to a design change, the DTC "B16A0" will not be anymore from 12MY.	(16/27)
OUTLANDER (GF#)	<pre><initial -<="" launch="" pre=""></initial></pre>	GROUP 13, 17, 23, 27, 35, 36, 37, 42, 52, 54,	Attached
COTE/MDER (di #)	17MY>	55:	sheet 6
	Service Manual	DTC U0141: ETACS CAN timeout	(1/27)
		GROUP 54A:	Attached
		DTC B16A7: Taillight (RH) circuit short	sheet 6 (20/27) ~ (25/27)
		GROUP 90:	Attached
		TAILLIGHT, POSITION LIGHT, SIDE MARKER LIGHT, LICENSE PLATE LIGHT AND LIGHT REMINDER TONE ALARM	sheet 6 (26/27)
		GROUP 90: GLOVE BOX LIGHT AND FLOOR CONSOLE BOX LIGHT	Attached sheet 6 (27/27)

Check whether an ETACS "time-out" related diagnosis code is set in other ECUs (Refer to GROUP 54C - CAN-Related Diagnosis Code Table).

### Code No.U0141 ETACS CAN timeout

## **⚠** CAUTION

- If the diagnosis code No. U0141 is set, be sure to diagnose the CAN bus line.
- Before replacing the ECU or combination meter, ensure that the power supply circuit, the earth circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID
   .)

### DIAGNOSTIC FUNCTION

If the signal from ETACS-ECU cannot be received, the combination meter sets the diagnosis code No. U0141.

### JUDGEMENT CRITERIA

With the ignition switch is at ON position, the diagnosis code No. U1190 is not stored and the diagnosis code No. U1195 is not stored, if the communication with ETACS-ECU cannot be established for 2500 ms or more, the combination meter determines that a problem has occurred.

## **PROBABLE CAUSES**

- Malfunction of CAN bus line
- · Malfunction of the combination meter
- Malfunction of the ETACS-ECU

## **DIAGNOSIS PROCEDURE**

## STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

### Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting). Repair the CAN bus line and go to Step 5.

## STEP 2. M.U.T.-III other system diagnosis code

Check if diagnosis code is set to the ETACS-ECU.

## Q: Is the diagnosis code set?

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

## STEP 3. M.U.T.-III other system diagnosis code

Check if a diagnosis code, which relates to CAN communication-linked systems below, is set. KOS-ECU

Code No.U0141: ETACS CAN timeout

## Q: Is the diagnosis code set?

<Incorrect>

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

## STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

- (1) Erase the diagnosis code.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the diagnosis code is not reset.

## Q: Is the diagnosis code set?

**YES**: Replace ETACS-ECU and then go to Step 6.

NO: A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ETACS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points).

## STEP 5. Check whether the diagnosis code is reset.

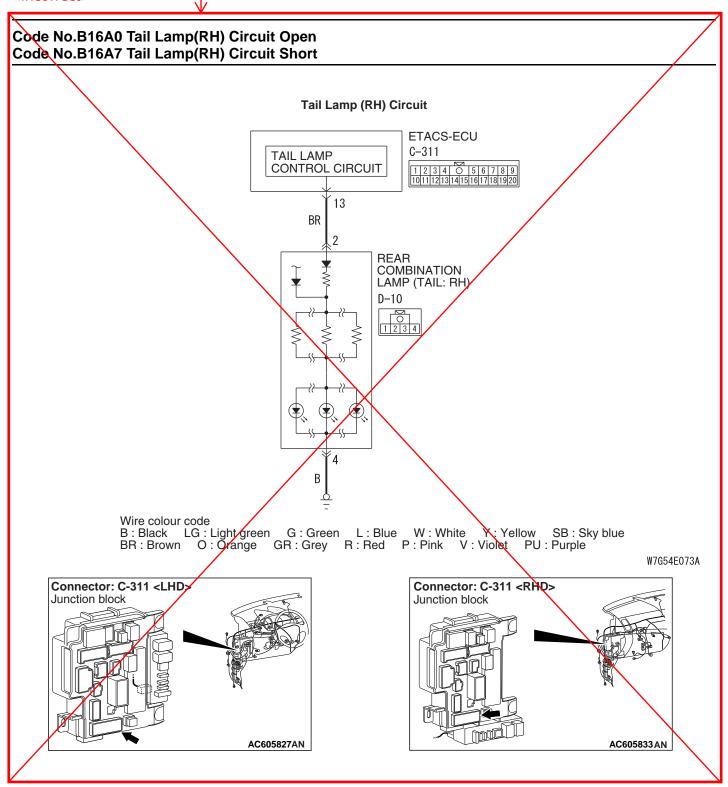
Recheck if the diagnosis code is set.

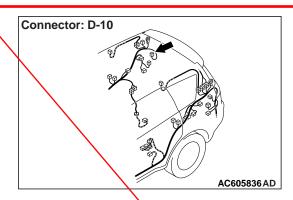
- (1) Erase the diagnosis code.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the diagnosis code is not reset.

## Q: Is the diagnosis code set?

Insert the attached sheet 5 (4/22) $\sim$ (7/22)

<Incorrect>





## DIAGNOSTIC FUNCTION

When the open circuit is detected in the taillamp circuit, the ETACS-ECU sets the diagnosis code No. B16A0. If the short circuit is detected, the diagnosis code No. B16A7 is set.

## JUDGMENT CRITERIA

The problem detection of taillamp is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the taillamp. When the ignition switch is ON, the ETACS-ECU determines the taillamp 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 diagnosis code No. B16A0 if the load is detected on the line, and sets the code B16A7 if no load is detected.

## **PROBABLE CAUSES**

- Damaged harness wires and connectors
- Malfunction of the ETACS/ECU

## DIAGNOSIS PROCEDURE

# STEP 1. Connector check: D-10 rear combination lamp (RH) connector

Q: Is the check result normal?

YES: Go to Step 2.

**NO**: Repair the defective connector.

# STEP 2. Resistance measurement at the D-10 rear combination lamp (RH) connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the D 10 rear combination lamp (RH) connector terminal No. 4 and the body earth.

OK: Continuity exists (2 \( \infty \) or less)

Q: Is the check result normal?

YES: Go to Step 4. NO: Go to Step 3.

# STEP 3. Wiring harness check between the D-10 rear combination lamp (RH) connector terminal No. 4 and the body earth

Check the earth wires for open circuit.

Q: Is the check result normal?

YES: Go to Step 6.

**NO**: Repair the wiring harness.

## STEP 4. Connector check: C-311 ETACS-ECU connector

Q: Is the check result normal?

YES: Go to Step 5.

No: Repair the defective connector.

# STEP 5. Wiring harness check between the D-10 rear combination lamp (RH) connector terminal No. 2 and the C-311 ETACS-ECU connector terminal No. 13

Check the output lines for open circuit.

Q: Is the check result normal?

YES: Go to Step 6.

**NO**: Repair the wiring harness.

## STEP 6. Check whether the diagnosis code is reset.

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

Q: Is the diagnosis code set?

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

Code No.B16A0 Tail lamp (RH) circuit open <Open circuit in the tail lamp control circuit> Code No.B16A7 Tail lamp (RH) circuit short <Short circuit in the tail lamp control circuit>

## **⚠** CAUTION

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

## **DIAGNOSTIC FUNCTION**

When the open circuit is detected in the following lamp circuit, the ETACS-ECU sets the diagnosis code No. B16A0. If the short circuit is detected, the diagnosis code No. B16A7 is set.

- Tail lamp
- Position lamp
- Glove box lamp
- Heated seat (illumination circuit in the heated seat switch) <Up to 2016 model year, and vehicles with heated seat>

## JUDGEMENT CRITERIA

The problem detection of each lamp is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the each lamp. When the ignition switch is ON, the ETACS-ECU determines the each lamp 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 diagnosis code No. B16A0 if the load is detected on the line, and sets the code B16A7 if no load is detected.

### PROBABLE CAUSES

- Malfunction of the rear combination lamp unit (RH)
- Malfunction of the position lamp bulb (RH)
- Malfunction of the headlamp body
- Malfunction of the heated seat (RH, LH) <Up to 2016 model year, and vehicles with heated seat>
- Malfunction of the heated seat switch (RH, LH)
   Up to 2016 model year, and vehicles with heated seat>
- Malfunction of the glove box lamp bulb
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU

### **DIAGNOSIS PROCEDURE**

# STEP 1. Resistance measurement at the rear combination lamp (tail: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination lamp (tail: RH) connector (earth terminal) and body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 3. NO: Go to Step 2.

STEP 2. Check of open circuit in earth lines between the rear combination lamp (tail: RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 3.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 3.

STEP 3. Check of short to power supply and open circuit in power supply lines between the rear combination lamp (tail: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 4.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 4.

## STEP 4. Check whether the diagnosis code is set again.

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

Q: Is the diagnosis code set?

YES: Go to Step 5.

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

# STEP 5. Substitute a known good rear combination lamp unit (RH), and check the diagnosis code.

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

## Q: Is the diagnosis code set?

YES: Go to Step 6.

NO: Replace the rear combination lamp unit

(RH).

## STEP 6. Check the position lamp bulb (RH).

Check the continuity at the position lamp bulb (RH) to confirm whether it is normal.

## Q: Is the check result normal?

YES: Go to Step 7.

**NO**: Replace the position lamp bulb (RH). Then go to Step 7.

# STEP 7. Resistance measurement at the headlamp assembly (position: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlamp assembly (position: RH) connector (earth terminal) and the body earth.

## OK: Continuity exists (2 $\Omega$ or less)

## Q: Is the check result normal?

YES: Go to Step 9. NO: Go to Step 8.

# STEP 8. Check of open circuit in earth lines between the headlamp assembly (position: RH) connector and body earth.

## Q: Is the check result normal?

YES: Go to Step 9.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 9.

# STEP 9. Check of short to power supply and open circuit in power supply lines between the headlamp assembly (position: RH) connector and ETACS-ECU connector.

### Q: Is the check result normal?

YES: Go to Step 10.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 10.

## STEP 10. Check whether the diagnosis code is set again.

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

## Q: Is the diagnosis code set?

YES: Go to Step 11.

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

## STEP 11. Substitute a known good headlamp body (RH), and check the diagnosis code.

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

## Q: Is the diagnosis code set?

YES <Up to 2016 model year, and vehicles with heated seat>: Go to Step 13.

YES <2017 model year, or vehicles without heated

seat>: Go to Step 18.

**NO**: Replace the headlamp body (RH).

# STEP 12. Check the continuity of the heated seat (RH) connector.

Check the continuity at the heated seat (RH).

Terminal number	Standard value
1 – 2	Continuity exists (2 $\Omega$ or less)

### Q: Is the check result normal?

YES: Go to Step 14.
NO: Go to Step 13.

# STEP 13. Check the continuity of the heated seat switch (RH) connector.

Refer to GROUP 52A – Front seat assembly – Inspection, continuity test of heated seat switch.

## Q: Is the check result normal?

**YES**: Replace the heated seat (RH). Then go to Step 14.

**NO**: Replace the heated seat switch (RH). Then go to Step 14.

# STEP 14. Resistance measurement at the heated seat (RH) connector (earth terminals).

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

(2) Measure the resistance between the heated seat (RH) connector (earth terminal) and the body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 16. NO: Go to Step 15.

# STEP 15. Check of open circuit in earth lines between the heated seat (RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 16.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 16.

# STEP 16. Check of short to power supply and open circuit in power supply lines between the heated seat (RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 17.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 17.

## STEP 17. Check whether the diagnosis code is set again.

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

### Q: Is the diagnosis code set?

YES: Go to Step 18.

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).

## STEP 18. Check the continuity of the heated seat (LH) connector.

Check the continuity at the heated seat (LH).

Terminal number	
1 – 2	Continuity exists (2 $\Omega$ or less)

## Q: Is the check result normal?

YES: Go to Step 20. NO: Go to Step 19.

## STEP 19. Check the continuity of the heated seat switch (LH) connector.

Refer to GROUP 52A – Front seat assembly – Inspection, continuity test of heated seat switch.

Q: Is the check result normal?

**YES**: Replace the heated seat (LH). Then go to Step 20.

**NO**: Replace the heated seat switch (LH). Then go to Step 20.

## STEP 20. Resistance measurement at the heated seat (LH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the heated seat (LH) connector (earth terminal) and the body earth.

## OK: Continuity exists (2 $\Omega$ or less)

Q: Is the check result normal?

YES: Go to Step 22. NO: Go to Step 21.

# STEP 21. Check of open circuit in earth lines between the heated seat (LH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 22.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 22.

# STEP 22. Check of short to power supply and open circuit in power supply lines between the heated seat (LH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 23.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 23.

# STEP 23. Check whether the diagnosis code is set again.

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

Q: Is the diagnosis code set?

YES: Go to Step 24.

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).

## STEP 24. Check the glove box lamp bulb.

Check the continuity at the glove box lamp bulb to confirm whether it is normal.

## Q: Is the check result normal?

YES: Go to Step 25.

**NO**: Replace the glove box lamp bulb. Then go to Step 25.

STEP 25. Check of short to power supply and open circuit in power supply lines between the glove box lamp connector and ETACS-ECU connector.

### Q: Is the check result normal?

YES: Go to Step 26.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 26.

# STEP 26. Check of open circuit in earth lines between the glove box lamp connector and body earth.

### Q: Is the check result normal?

YES: Go to Step 27.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 27.

## STEP 27. Check whether the diagnosis code is set again.

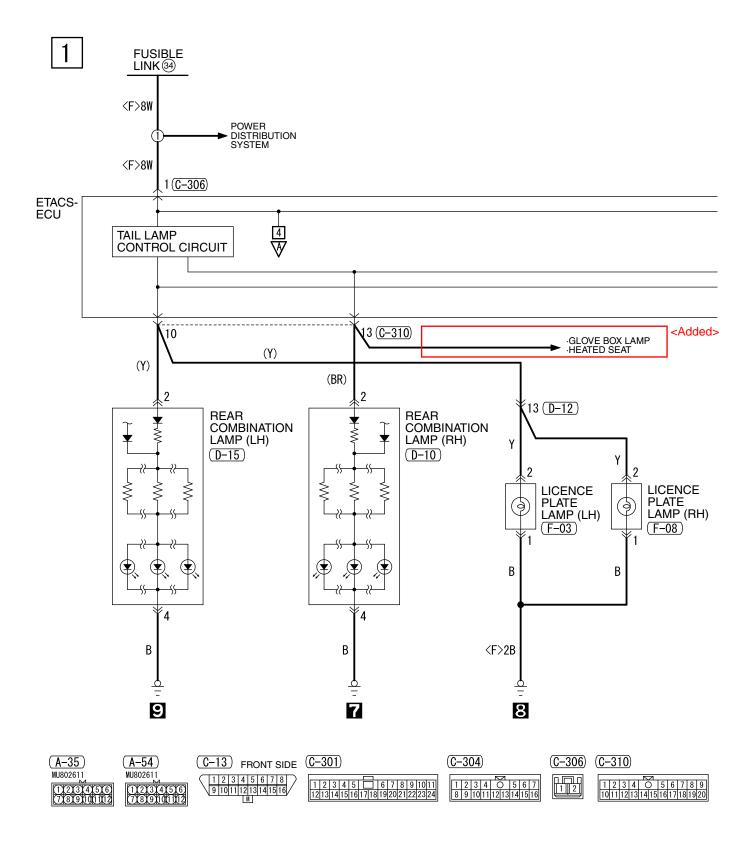
- (1) Erase the diagnosis code.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Replace the ETACS-ECU.

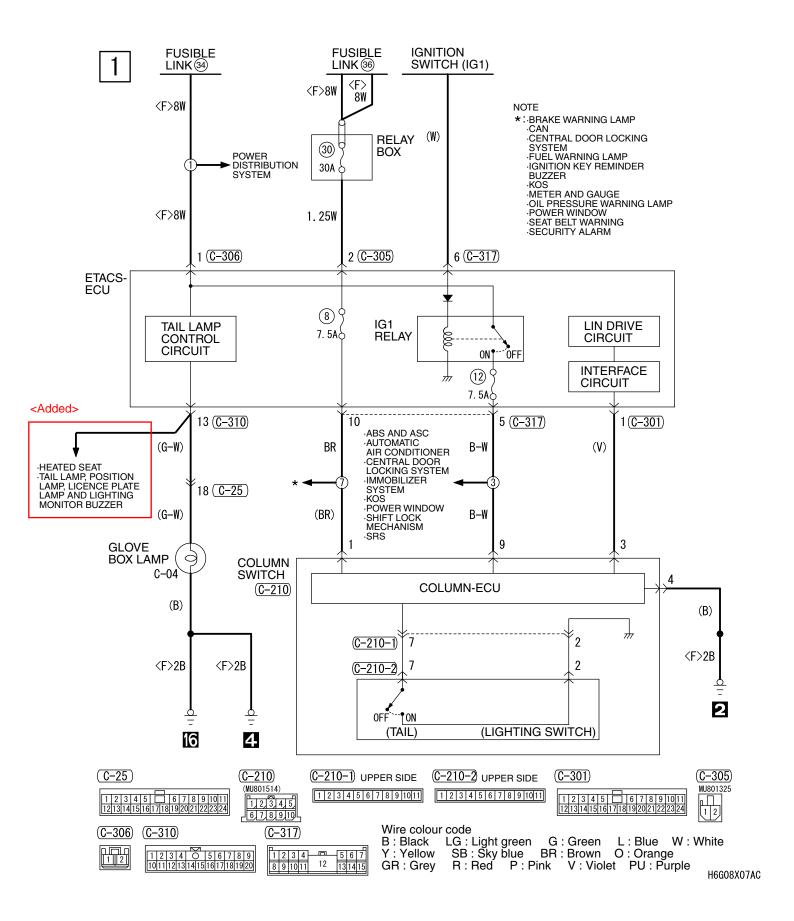
NO: The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction).

## TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER



H6G08X05AC

## **GLOVE BOX LAMP**



<Incorrect>

Code No.B16A7 Tail lamp (RH) circuit short <Short circuit in the position lamp (RH) circuit or the tail lamp (RH) circuit>

## **⚠** CAUTION

- Before replacing the ECU, ensure that the power supply circuit, the earth circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID

### DIAGNOSTIC FUNCTION

When a short circuit is detected in the position lamp circuit or the tail lamp circuit, the ETACS-ECU sets the diagnosis code No. B16A7.

### JUDGEMENT CRITERIA

The problem detection of tail lamp is made based on the digital feed back signal (input signal to ETACS ECU) which operates the tail lamp. When the ignition switch is ON, the ETACS-ECU determines the tail lamp 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 diagnosis code No. B16A7 if no load is detected.

#### PROBABLE CAUSES

- Malfunction of bulbs
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU

## DIAGNOSIS PROCÉDURE

## STEP 1. Bulb check

Check the bulb(s) of the lamp that does not illuminate.

Q: Is the check result normal?

YES: Go to Step 2.

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

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STEP 2. Resistance measurement at the headlamp assembly (position: RH) connector, rear combination lamp (tail: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the connector terminal of lamp which does not illuminate and the body earth.
  - Measure the resistance between the headlamp assembly (position: RH) connector (earth terminal) and body earth.
  - Measure the resistance between the rear combination lamp (tail: RH) connector (earth terminal) and body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES Go to Step 4. NO: Go to Step 3.

STEP 3. Check of open circuit in earth lines between the headlamp assembly (position: RH) connector, rear combination lamp (tail: RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness.

STEP 4. Check of short to power supply, short to earth, and open circuit in (TAR1, TAR2) lines between the headlamp assembly (position: RH) connector, rear combination lamp (tail: RH) connector and ETACS ECU connector.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness.

## STEP 5. Check whether the diagnosis code is reset.

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

Q: Is the diagnosis code set?

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YES: Replace the ETACS-ECU.

**NO**: The diagnosis is complete.

## Code No.B16A7 Tail lamp (RH) circuit short <Short circuit in the tail lamp control circuit>

## **⚠** CAUTION

- Before replacing the ECU, ensure that the power supply circuit, the earth circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID.)

## **DIAGNOSTIC FUNCTION**

When a short circuit is detected in the following lamp circuit, the ETACS-ECU sets diagnosis code No. B16A7.

- Tail lamp
- Position lamp
- Glove box lamp
- Floor console box lamp <2017 model year>

#### JUDGEMENT CRITERIA

The problem detection of each lamp is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the each lamp. When the ignition switch is ON, the ETACS-ECU determines the each lamp 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 diagnosis code No. B16A7 if no load is detected.

## **PROBABLE CAUSES**

- Malfunction of the rear combination lamp bulb (RH) <Bulb type>
- Malfunction of the rear combination lamp unit (RH)
- Malfunction of the position lamp bulb (RH) <Bulb type>
- Malfunction of the headlamp body
- Malfunction of the tail lamp assembly (RH) <From 2016 model year>
- Malfunction of the glove box lamp bulb
- Malfunction of the floor console box lamp <17MY>
- Damaged harness wires and connectors MSB-16EXML42\_52\_54-001(16CD068)

Malfunction of the ETACS-ECU

## **DIAGNOSIS PROCEDURE**

# STEP 1. Check the rear combination lamp bulb (RH). <Bulb type>

Check the continuity at the rear combination lamp bulb (RH) to confirm whether it is normal.

Q: Is the check result normal?

YES: Go to Step 2.

**NO**: Replace the rear combination lamp bulb (RH). Then go to Step 2.

# STEP 2. Resistance measurement at the rear combination lamp (tail: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination lamp (tail: RH) connector (earth terminal) and body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 4. NO: Go to Step 3.

# STEP 3. Check of open circuit in earth lines between the rear combination lamp (tail: RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 4.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 4.

# STEP 4. Check of short to power supply and open circuit in (TAR2) lines between the rear combination lamp (tail: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 5.

## STEP 5. Check whether the diagnosis code is set again.

- (1) Erase the diagnosis code.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.

(3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Go to Step 6.

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

Malfunction).

# STEP 6. Substitute a known good rear combination lamp unit (RH), and check the diagnosis code.

(1) Erase the diagnosis code.

- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Go to Step 7.

**NO**: Replace the rear combination lamp unit (RH).

## STEP 7. Check the position lamp bulb (RH). <Bulb type>

Check the continuity at the position lamp bulb (RH) to confirm whether it is normal.

#### Q: Is the check result normal?

YES: Go to Step 8.

**NO**: Replace the position lamp bulb (RH). Then go to Step 8.

# STEP 8. Resistance measurement at the headlamp assembly (position: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlamp assembly (position: RH) connector (earth terminal) and the body earth.

## OK: Continuity exists (2 $\Omega$ or less)

## Q: Is the check result normal?

YES: Go to Step 10. NO: Go to Step 9.

# STEP 9. Check of open circuit in earth lines between the headlamp assembly (position: RH) connector and body earth.

#### Q: Is the check result normal?

YES: Go to Step 10.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 10.

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STEP 10. Check of short to power supply and open circuit in (TAR1) lines between the headlamp assembly (position: RH) connector and ETACS-ECU connector.

## Q: Is the check result normal?

YES: Go to Step 11.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 11.

## STEP 11. Check whether the diagnosis code is set again.

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

## Q: Is the diagnosis code set?

YES: Go to Step 12.

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).

# STEP 12. Substitute a known good headlamp body (RH), and check the diagnosis code.

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

## Q: Is the diagnosis code set?

YES <From 2016 model year> : Go to Step 13. YES <Up to 2015 model year> : Go to Step 18. NO : Replace the headlamp body (RH).

# STEP 13. Resistance measurement at the tail lamp (RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the tail lamp (RH) connector (earth terminal) and the body earth.

## **OK:** Continuity exists (2 $\Omega$ or less)

### Q: Is the check result normal?

YES: Go to Step 15. NO: Go to Step 14.

# STEP 14. Check of open circuit in earth lines between the tail lamp (RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 15.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 15.

# STEP 15. Check of short to power supply and open circuit in (TAR2) lines between the tail lamp (RH) connector and ETACS-ECU connector.

## Q: Is the check result normal?

YES: Go to Step 16.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 16.

# STEP 16. Check whether the diagnosis code is set again.

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

## Q: Is the diagnosis code set?

YES: Go to Step 17.

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).

## STEP 17. Substitute a known good tail lamp assembly (RH), and check the diagnosis code.

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

## Q: Is the diagnosis code set?

YES: Go to Step 18.

NO: Replace the tail lamp assembly (RH).

## STEP 18. Check the glove box lamp bulb.

Check the continuity at the glove box lamp bulb to confirm whether it is normal.

#### Q: Is the check result normal?

YES: Go to Step 19.

**NO**: Replace the glove box lamp bulb. Then go to Step 19.

# STEP 19. Check of short to power supply and open circuit in (TAR3) lines between the glove box lamp connector and ETACS-ECU connector.

## Q: Is the check result normal?

YES: Go to Step 20.

NO: Repair the connector(s) or wiring harness.
Then go to Step 20

Then go to Step 20.
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# STEP 20. Check of open circuit in earth lines between the glove box lamp connector and body earth.

### Q: Is the check result normal?

YES: Go to Step 21.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 21.

## STEP 21. Check whether the diagnosis code is set again.

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

## Q: Is the diagnosis code set?

YES <2017 model year> : Go to Step 22. YES <Up to 2016 model year> : Go to Step 26.

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).

# STEP 22. Check the continuity of the floor console box lamp.

Refer to floor console box lamp inspection.

## Q: Is the check result normal?

YES: Go to Step 23.

**NO**: Replace the floor console box lamp. Then go to Step 23.

# STEP 23. Resistance measurement at the floor console box lamp connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the floor console box lamp connector (earth terminal) and the body earth.

## OK: Continuity exists (2 $\Omega$ or less)

#### Q: Is the check result normal?

YES: Go to Step 25. NO: Go to Step 24.

# STEP 24. Check of open circuit in earth lines between the floor console box lamp connector and body earth.

### Q: Is the check result normal?

YES: Go to Step 25.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 25.

STEP 25. Check of short to power supply and open circuit in (TAR3) lines between the floor console box lamp connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 26.

**NO**: Repair the connector(s) or wiring harness.

Then go to Step 26.

STEP 26. Check whether the diagnosis code is set again.

(1) Erase the diagnosis code.

- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if diagnosis code is set.

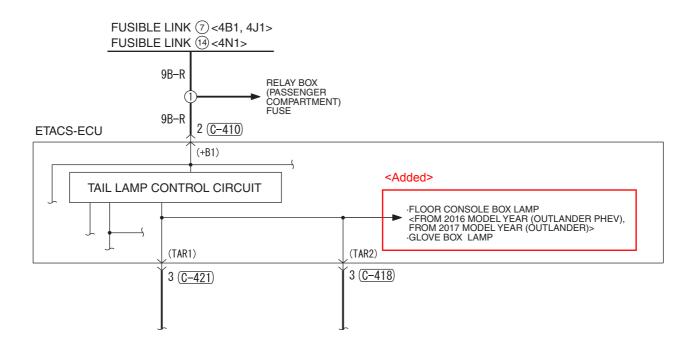
Q: Is the diagnosis code set?

YES: Replace the ETACS-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

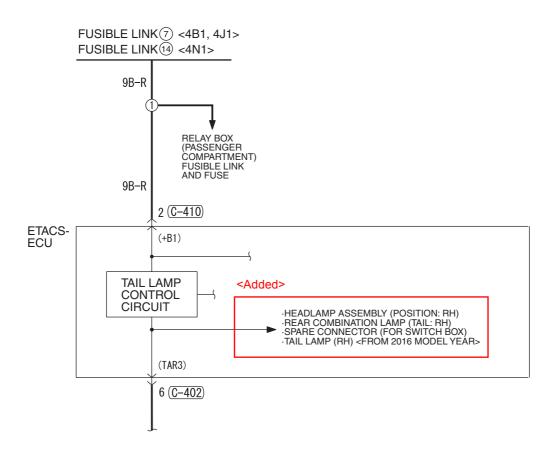
Malfunction).

## TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER



Note: The circuit diagram above shows 2017 model year OUTLANDER as a typical circuit.

## GLOVE BOX LAMP AND FLOOR CONSOLE BOX LAMP



Note: The circuit diagram above shows 2017 model year OUTLANDER as a typical circuit.

Insert the attached sheet 5 (19/22) $\sim$ (22/22)

### <Incorrect>

Code No.B16A7 Tail lamp (RH) circuit short <Short circuit in the position lamp (RH) circuit or the tail lamp (RH) circuit>

## **⚠** CAUTION

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

## DIAGNOSTIC FUNCTION

When a short circuit is detected in the position lamp circuit or the tail lamp circuit, the ETACS-ECU sets diagnosis code No. B1647.

### JUDGEMENT CRITERIA

The problem detection of tail lamp is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the tail lamp. When the ignition switch is ON, the ETACS-ECU determines the tail lamp 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 diagnosis code No. B16A7 if no load is detected.

## **PROBABLE CAUSES**

- Malfunction of headlamp assembly (position: RH)
- Malfunction of rear combination lamp unit (RH)
- Malfunction of tail lamp assembly (R/H)
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU/

## DIAGNOSIS PROCEDURÉ

## STEP 1. Determine a trouble spot.

Q: Which of lamp does not work?
Position lamp: Go to Step 2.
Tail lamp: Go to Step 11.

## STEP 2. Check the rear combination lamp socket.

Check the continuity at the rear combination lamp socket to confirm whether it is normal.

Q: Is the check result normal?

**YES**: Go to Step 3.

**NO**: Replace the rear combination lamp socket

(RH).

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# STEP 3. Resistance measurement at the headlamp assembly (position: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlamp assembly (position: RH) connector (earth terminal) and the body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result pormal?

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

# STEP 4. Check of open circuit in earth lines between the headlamp assembly (position: RH) connector and body earth.

Q: Is the check result normal?

**XES**: Go to Step 9.

**NO**: Repair the connector(s) or wiring harness.

STEP 5.Check of short to power supply, short to earth, and open circuit in (TAR1) lines between the headlamp assembly (position: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 6.

**NO**: Repair the connector(s) or wiring harness.

# STEP 6. Resistance measurement at the rear combination lamp (tail: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination lamp (tail: RH) connector (earth terminal) and body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 8. NO: Go to Step 7.

# STEP 7. Check of open circuit in earth lines between the rear combination lamp (tail: RH) connector and body earth.

• Check the earth wires for open circuit.

Q: Is the check result normal?

YES: Go to Step 9.

NO: Repair the connector(s) or wiring harness.

STEP 8. Check of short to power supply, short to earth, and open circuit in (TAR2) lines between the rear combination lamp (tail: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 9.

**NO**: Repair the connector(s) or wiring harness.

## STEP 9. Check whether the diagnosis code is set again.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Go to Step 10.

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).

# STEP 10. Substitute a known good rear combination lamp unit (RH), and check the diagnosis code.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Replace the ETACS-ECU.

NO: Replace the rear combination lamp unit (RH).

## STEP 11. Resistance measurement at the tail lamp (RH) connector (earth terminals).

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

(2) Measure the resistance between the tail lamp (RH) connector (earth terminal) and the body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 13. NO: Go to Step 12.

STEP 12. Check of open circuit in earth lines between the tail lamp (RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 14/

**NO**: Repair the connector(s) or wiring harness.

STEP 13.Check of short to power supply, short to earth, and open circuit in (TAR2) lines between the tail lamp (RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 14.

**NO**: Repair the connector(s) or wiring harness.

## STEP 14. Check whether the diagnosis code is set again.

- (1) Exase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check it diagnosis code is set.

Q: Is the diagnosis code set?

YES: Go to Step 15.

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).

# STEP 15. Substitute a known good tail lamp assembly (RH), and check the diagnosis code.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Replace the ETACS-ECU.

NO: Replace the tail lamp assembly (RH).

## Code No.B16A7 Tail lamp (RH) circuit short <Short circuit in the tail lamp control circuit>

## **⚠** CAUTION

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

### DIAGNOSTIC FUNCTION

When a short circuit is detected in the following lamp circuit, the ETACS-ECU sets diagnosis code No. B16A7.

- Tail lamp
- Position lamp
- Glove box lamp
- Floor console box lamp <From 2016 model year>

#### JUDGEMENT CRITERIA

The problem detection of each lamp is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the each lamp. When the electric motor switch is ON, the ETACS-ECU determines the each lamp 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 diagnosis code No. B16A7 if no load is detected.

### PROBABLE CAUSES

- Malfunction of the rear combination lamp bulb (RH) <Bulb type>
- Malfunction of the rear combination lamp unit (RH)
- Malfunction of the position lamp bulb (RH) <Bulb type>
- Malfunction of the headlamp body
- Malfunction of the tail lamp assembly (RH) <From 2016 model year>
- · Malfunction of the glove box lamp bulb
- Malfunction of the floor console box lamp <From 2016 model year>
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU

## **DIAGNOSIS PROCEDURE**

# STEP 1. Check the rear combination lamp bulb (RH). <Bulb type>

Check the continuity at the rear combination lamp bulb (RH) to confirm whether it is normal.

## Q: Is the check result normal?

YES: Go to Step 2.

**NO**: Replace the rear combination lamp bulb (RH). Then go to Step 2.

# STEP 2. Resistance measurement at the rear combination lamp (tail: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination lamp (tail: RH) connector (earth terminal) and body earth.

OK: Continuity exists (2  $\Omega$  or less)

## Q: Is the check result normal?

YES: Go to Step 4. NO: Go to Step 3.

# STEP 3. Check of open circuit in earth lines between the rear combination lamp (tail: RH) connector and body earth.

## Q: Is the check result normal?

YES: Go to Step 4.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 4.

# STEP 4. Check of short to power supply and open circuit in (TAR2) lines between the rear combination lamp (tail: RH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 5.

## STEP 5. Check whether the diagnosis code is set again.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Go to Step 6.

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

# STEP 6. Substitute a known good rear combination lamp unit (RH), and check the diagnosis code.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Go to Step 7.

**NO**: Replace the rear combination lamp unit (RH).

## STEP 7. Check the position lamp bulb (RH). <Bulb type>

Check the continuity at the position lamp bulb (RH) to confirm whether it is normal.

## Q: Is the check result normal?

YES: Go to Step 8.

**NO**: Replace the position lamp bulb (RH). Then go to Step 8.

# STEP 8. Resistance measurement at the headlamp assembly (position: RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlamp assembly (position: RH) connector (earth terminal) and the body earth.

## **OK:** Continuity exists (2 $\Omega$ or less)

## Q: Is the check result normal?

YES: Go to Step 10. NO: Go to Step 9.

# STEP 9. Check of open circuit in earth lines between the headlamp assembly (position: RH) connector and body earth.

### Q: Is the check result normal?

YES: Go to Step 10.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 10.

# STEP 10. Check of short to power supply and open circuit in (TAR1) lines between the headlamp assembly (position: RH) connector and ETACS-ECU connector.

## Q: Is the check result normal?

YES: Go to Step 11.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 11.

## STEP 11. Check whether the diagnosis code is set again.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES: Go to Step 12.

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).

# STEP 12. Substitute a known good headlamp body (RH), and check the diagnosis code.

- (1) Erase the diagnosis code.
- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

## Q: Is the diagnosis code set?

YES <From 2016 model year> : Go to Step 13. YES <Up to 2015 model year> : Go to Step 18. NO : Replace the headlamp body (RH).

# STEP 13. Resistance measurement at the tail lamp (RH) connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the tail lamp (RH) connector (earth terminal) and the body earth.

## **OK:** Continuity exists (2 $\Omega$ or less)

### Q: Is the check result normal?

YES: Go to Step 15. NO: Go to Step 14.

# STEP 14. Check of open circuit in earth lines between the tail lamp (RH) connector and body earth.

Q: Is the check result normal?

YES: Go to Step 15.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 15.

# STEP 15. Check of short to power supply and open circuit in (TAR2) lines between the tail lamp (RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 16.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 16.

## STEP 16. Check whether the diagnosis code is set again.

(1) Erase the diagnosis code.

- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Go to Step 17.

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).

## STEP 17. Substitute a known good tail lamp assembly (RH), and check the diagnosis code.

(1) Erase the diagnosis code.

- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Go to Step 18.

NO: Replace the tail lamp assembly (RH).

## STEP 18. Check the glove box lamp bulb.

Check the continuity at the glove box lamp bulb to confirm whether it is normal.

Q: Is the check result normal?

YES: Go to Step 19.

**NO**: Replace the glove box lamp bulb. Then go to Step 19.

# STEP 19. Check of short to power supply and open circuit in (TAR3) lines between the glove box lamp connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 20.

**NO**: Repair the connector(s) or wiring harness.

Then go to Step 20. MSB-16EXML42\_52\_54-001(16CD068)

# STEP 20. Check of open circuit in earth lines between the glove box lamp connector and body earth.

Q: Is the check result normal?

YES: Go to Step 21.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 21.

## STEP 21. Check whether the diagnosis code is set again.

(1) Erase the diagnosis code.

- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES <From 2016 model year> : Go to Step 22. YES <Up to 2015 model year> : Go to Step 26.

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).

# STEP 22. Check the continuity of the floor console box lamp.

Refer to floor console box lamp inspection.

Q: Is the check result normal?

YES: Go to Step 23.

**NO**: Replace the floor console box lamp. Then go to Step 23.

# STEP 23. Resistance measurement at the floor console box lamp connector (earth terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the floor console box lamp connector (earth terminal) and the body earth.

OK: Continuity exists (2  $\Omega$  or less)

Q: Is the check result normal?

YES: Go to Step 25. NO: Go to Step 24.

# STEP 24. Check of open circuit in earth lines between the floor console box lamp connector and body earth.

Q: Is the check result normal?

YES: Go to Step 25.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 25.

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STEP 25. Check of short to power supply and open circuit in (TAR3) lines between the floor console box lamp connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 26.

**NO**: Repair the connector(s) or wiring harness.

Then go to Step 26.

STEP 26. Check whether the diagnosis code is set again.

(1) Erase the diagnosis code.

- (2) Press the electric motor switch to turn on the power supply mode.
- (3) Check if diagnosis code is set.

Q: Is the diagnosis code set?

YES: Replace the ETACS-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).

### **DTC U0141: ETACS CAN timeout**

## **⚠** CAUTION

- If the DTC No. U0141 stored, be sure to diagnose the CAN bus line.
- Before replacing the ECU or combination meter, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID
   .)

### DIAGNOSTIC FUNCTION

If the signal from ETACS-ECU cannot be received, the combination meter sets DTC No. U0141.

### JUDGMENT CRITERIA

With the ignition switch is at ON position, DTC No. U1190 is not stored and DTC No. U1195 is not stored, if the communication with ETACS-ECU cannot be established for 2500 ms or more, the combination meter determines that a problem has occurred.

## TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The combination meter may be defective.
- The ETACS-ECU may be defective. < Correct</li>

## **DIAGNOSIS**

STEP 1. Using scan tool (M.U.T.-III), diagnose the CAN bus line

## **⚠** CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to "How to connect the Scan Tool (M.U.T.-III)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- Q: Is the CAN bus line found to be normal?

YES: Go to Step 2.

**NO**: Repair the CAN bus line (Refer to GROUP 54C, Diagnosis).

## STEP 2. Using scan tool (M.U.T.-III), read the ETACS diagnostic trouble code

Check if DTC is stored in the ETACS-ECU.

### Q: Is the DTC stored?

YES: Diagnose the ETACS-ECU (Refer to ).

NO: Go to Step 3

## STEP 3. Using scan tool (M.U.T.-III), read the KOS diagnostic trouble code.

Correct> Check if the DTC No. U0141 stored in KOS-ECU.

Q: Is the DTC stored? YES: Go to Step 4. NO: Go to Step 5.

### <Incorrect>

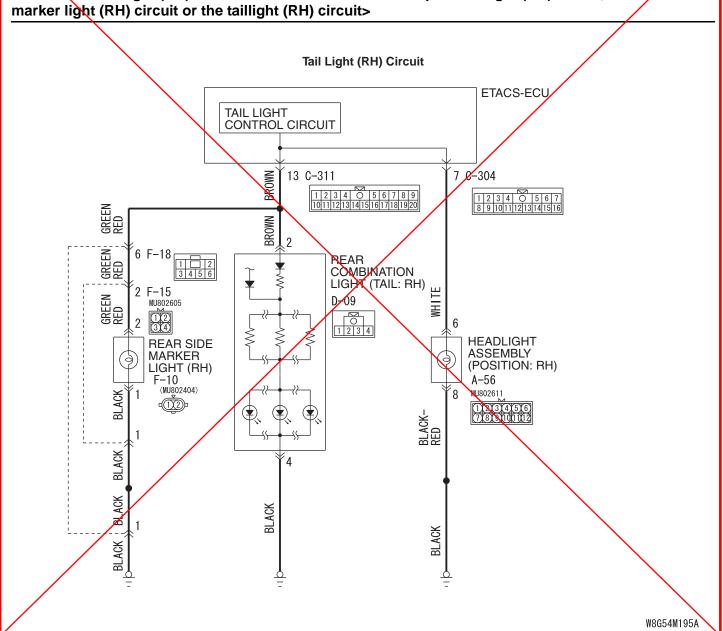
Check whether an ETACS "time-out" related DTC is set in other ECUs (Refer to GROUP 54C - CAN-Related DTC Table).

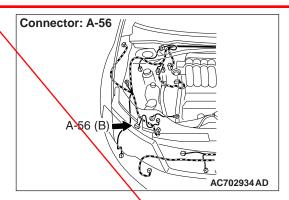
Insert the attached sheet 6 (9/27)  $\sim$  (16/27)

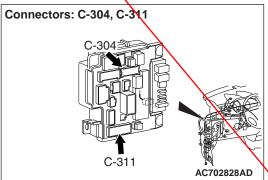
## <Incorrect>

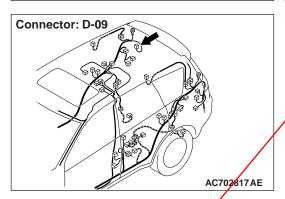
DTC B16A0: Taillight (RH) circuit open <Open circuit in the position light (RH) circuit, rear side marker light (RH) circuit and the taillight (RH) circuit>

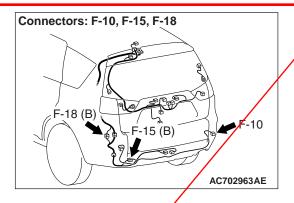
DTC B16A7: Taillight (RH) circuit short <Short circuit in the position light (RH) circuit, rear side marker light (RH) circuit or the taillight (RH) circuit>











## **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

- Malfunction of bulbs
- Malfunction of rear combination light unit (RH)
- 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. Bulb check.

Check the bulb of the light that does not illuminate.

Q: Is the check result normal?

YES: Go to Step 2.

**NO**: Replace the bulb of the light that does not fluminate.

STEP 2. Check headlight assembly (RH) connector A-56 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight assembly (RH) connector A-56 in good condition?

YES: Go to Step 3.

**NO**: Repair the damaged parts.

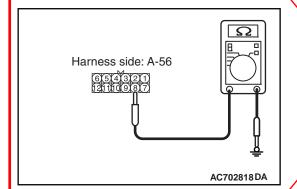
## STEP 3. Resistance measurement at headlight assembly (RH) connector A-56.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the registance between headlight assembly (RH) connector A-56 (terminal No. 8) and the body ground.

The measured value should be continuity exists (2  $\Omega$  or less).

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

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



STEP 4. Check the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 8) and ground.

Check the ground line for open circuit.

Q: Is the wiring harness between headlight assembly (RH) connector A-56 (terminal No. 8) and ground in good condition?

YES: Go to Step 17.

**NO**: Repair the wiring harness.

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

Q: Is ETACS-ECU connectors C-304 in good condition?

YES: Go to Step 6.

**NO**: Repair the damaged parts.

STEP 6. Check the wiring harness between headlight assembly (RH) A-56 connector (terminal No. 6) and ETACS-ECU connector C-304 (terminal No. 7).

Check the communication line for open or short circuit,

Q: Is the wiring harness between headlight assembly (RH)
A-56 connector (terminal No. 6) and ETACS ECU
connector C-304 (terminal No. 7) in good condition?

YES: Go to Step 7.

**NO**: Repair the wiring harness.

STEP 7. Check rear side marker light (RH) connector F-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear side marker light (RH) connector F-10 in good condition?

YES: Go to Step 8.

**NO**: Repair the damaged parts.

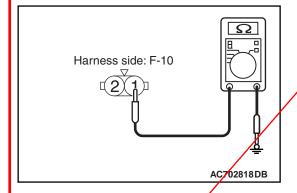
STEP 8. Resistance measurement at rear side marker light (RH) connector F-10.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between rear side marker light (RH) cornector F-10 (terminal No. 1) and the body ground.

The measured value should be continuity exists (2  $\Omega$  or less).

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

YES: Go to Step 10. NO: Go to Step 9.



STEP 9. Check the wiring harness between rear side marker light (RH) connector F-10 (terminal No. 1) and ground.

Check the ground line for open circuit.

NOTE: Before the wiring harness check, check the F-15, F-18 and repair that if necessary.

Q: Is the wiring harness between rear side marker light (RH) connector F-10 (terminal No. 1) and ground in good condition?

YES: Go to Step 17.

**NO**: Repair the wiring harness.

STEP 10. 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 11.

**NO**: Repair the damaged parts.

STEP 11. Check the wiring harness between rear side marker light (RH) F-10 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 13).

Check the communication line for open or short circuit.

NOTE: Before the wiring harness check, check the F-15, F-18 and repair that if necessary.

Q: Is the wiring harness between rear side marker light (RH) F-10 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 13) in good condition?

YES: Go to Step 12.

NO: Repair the wiring harness.

STER 12. 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 13.

NO: Repair the damaged parts.

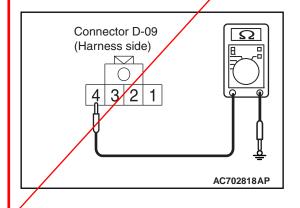
# STEP 13. Resistance measurement at rear combination light (RH) connector D-09.

- (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  $\Omega$  or less).

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

YES: Go to Step 15.
NO: Go to Step 14.



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

Check the ground line for open circuit.

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 17.

NO: Repair the wiring harness.

STEP 15. 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 16.

NO: Repair the damaged parts.

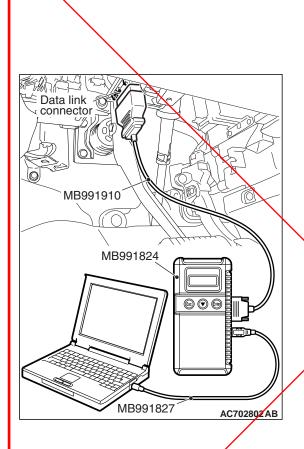
STEP 16. Check the wiring harness between rear combination light (RH) D-09 connector (terminal No. 2) and ETACS-ECU connector C-311 (terminal No. 13).

Check the communication line for open or short circuit.

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 17.

**NO**: Repair the wiring harness.



STEP 17. 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 ."
- (2) Turn the ignition switch to the "ON" position.
- (3) Erase the DTC.
- (4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (5) Check if DTC is set.

### Q: Is the DTC set?

YES: Go to Step 18.

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).

STEP 18. Substitute a known good rear combination light unit (RH), and 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 the DTC set?

YES: Replace the ETACS-ECU.

**NO**: Replace the rear combination light unit (RH).

DTC B16A0: Taillight (RH) circuit open <Open circuit in the taillight control circuit> DTC B16A7: Taillight (RH) circuit short <Short circuit in the taillight control circuit>

## **⚠** CAUTION

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

## TROUBLE JUDGMENT

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

- Taillight
- · Side marker light
- Position light
- Glove box light
- Heated seat (illumination circuit in the heated seat switch) <Up to 2016 model year, and vehicles with heated seat>

## **TECHNICAL DESCRIPTION (COMMENT)**

The problem detection of the each light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the each light. When the ignition switch is "ON", the ETACS-ECU determines the each light circuit state from the load placed on the line. After 100 ms has elapsed since the start of the check, the ETACS-ECU performs a sampling with each 10 ms. If an abnormality is detected, it

increases the counter by 2, and when no abnormality is detected, it decreases the counter by 1. Once the counter reaches "10", the ETACS-ECU sets the DTC B16A0 if the load is detected on the line, and sets the DTC B16A7 if no load is detected.

### TROUBLESHOOTING HINTS

- The rear combination light unit (RH) may be defective
- The rear side marker light bulb (RH) may be defective <OUTLANDER>
- The rear side marker light unit (RH) may be defective <OUTLANDER>
- The position light bulb (RH) may be defective
- The headlight body may be defective
- The glove box light bulb may be defective
- The heated seat (RH, LH) may be defective <Up to 2016 model year, and vehicles with heated seat>
- The heated seat switch (RH, LH) may be defective <Up to 2016 model year, and vehicles with heated seat>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

### **DIAGNOSIS**

## **Required Special Tools:**

MB992006: Extra fine probeMB991223: Harness set

# STEP 1. Resistance measurement at the rear combination light (RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination light (RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

## Q: Is the check result normal?

YES: Go to Step 3. NO: Go to Step 2.

## STEP 2. Check of open circuit in ground lines between the rear combination light (RH) connector and ground.

### Q: Is the check result normal?

YES: Go to Step 3.

**NO**: Repair the connector(s) or wiring harness. Then go to <sub>34</sub>Step 3.

# STEP 3. Check of short to power supply and open circuit in power supply lines between the rear combination light (RH) connector and ETACS-ECU connector.

## Q: Is the check result normal?

YES: Go to Step 4.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 4.

## STEP 4. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is stored again.

## **⚠** CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

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

### Q: Is the DTC stored?

YES: Go to Step 5.

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

## STEP 5. Substitute a known good rear combination light unit (RH), and check whether the DTC is stored again.

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

## Q: Is the DTC stored?

YES <OUTLANDER>: Go to Step 6.

YES <ASX/OUTLANDER SPORT> : Go to Step 12.

**NO**: Replace the rear combination light unit (RH).

## STEP 6. Check the rear side marker light bulb (RH).

Check the continuity at the rear side marker light bulb (RH) to confirm whether it is normal.

## Q: Is the check result normal?

**YES**: Go to Step 7.

**NO**: Replace the rear side marker light bulb (RH). Then go to Step 7.

## STEP 7. Resistance measurement at the rear side marker light (RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear side marker light (RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

### Q: Is the check result normal?

YES: Go to Step 9. NO: Go to Step 8.

STEP 8. Check of open circuit in ground lines between the rear side marker light (RH) connector and ground.

### Q: Is the check result normal?

YES: Go to Step 9.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 9.

STEP 9. Check of short to power supply and open circuit in power supply lines between the rear side marker light (RH) connector and ETACS-ECU connector.

### Q: Is the check result normal?

**YES**: Go to Step 10.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 10.

STEP 10. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is stored again.

## **⚠** CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

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

## Q: Is the DTC stored?

YES: Go to Step 11.

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

### STEP 11. Substitute a known good rear side marker light unit (RH), and check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 12.

**NO**: Replace the rear side marker light unit (RH).

#### STEP 12. Check the position light bulb (RH).

Check the continuity at the position light bulb (RH) to confirm whether it is normal.

#### Q: Is the check result normal?

YES: Go to Step 13.

**NO :** Replace the position light bulb (RH). Then go to Step 13.

### STEP 13. Resistance measurement at the headlight assembly (position: RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlight assembly (position: RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

#### Q: Is the check result normal?

YES: Go to Step 15.
NO: Go to Step 14.

#### STEP 14. Check of open circuit in ground lines between the headlight assembly (position: RH) connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 15.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 15.

## STEP 15. Check of short to power supply and open circuit in power supply lines between the headlight assembly (position: RH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 16.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 16.

### STEP 16. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES <Up to 2016 model year, and vehicles with heated

seat>: Go to Step 17.

YES <2017 model year, or vehicles without heated

seat>: Go to Step 29.

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).

### STEP 17. Check the continuity of the heated seat (RH) connector.

Check the continuity at the heated seat (RH).

Terminal number	Standard value
1 – 2	Continuity exists (2 ohms or less)

#### Q: Is the check result normal?

YES: Go to Step 19. NO: Go to Step 18.

### STEP 18. Check the continuity of the heated seat switch (RH) connector.

Refer to GROUP 52A – Front seat assembly – Inspection, continuity test of heated seat switch.

#### Q: Is the check result normal?

**YES**: Replace the heated seat (RH). Then go to Step 19. **NO**: Replace the heated seat switch (RH). Then go to Step 19.

### STEP 19. Resistance measurement at the heated seat (RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the heated seat (RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

#### Q: Is the check result normal?

YES: Go to Step 21.
NO: Go to Step 20.

### STEP 20. Check of open circuit in ground lines between the heated seat (RH) connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 21.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 21.

## STEP 21. Check of short to power supply and open circuit in power supply lines between the heated seat (RH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 22.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 22.

### STEP 22. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 23.

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).

### STEP 23. Check the continuity of the heated seat (LH) connector.

Check the continuity at the heated seat (LH).

Terminal number	Standard value
1 – 2	Continuity exists (2 ohms or less)

#### Q: Is the check result normal?

YES: Go to Step 25.
NO: Go to Step 24.

### STEP 24. Check the continuity of the heated seat switch (LH) connector.

Refer to GROUP 52A – Front seat assembly – Inspection, continuity test of heated seat switch.

#### Q: Is the check result normal?

YES: Replace the heated seat (LH). Then go to Step 25.

NO: Replace the heated seat switch (LH). Then go to Step 25.

### STEP 25. Resistance measurement at the heated seat (LH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the heated seat (LH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

#### Q: Is the check result normal?

YES: Go to Step 27. NO: Go to Step 26.

### STEP 26. Check of open circuit in ground lines between the heated seat (LH) connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 27.

**NO :** Repair the connector(s) or wiring harness. Then go to Step 27.

## STEP 27. Check of short to power supply and open circuit in power supply lines between the heated seat (LH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 28.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 28.

### STEP 28. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 29.

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).

#### STEP 29. Check the glove box light bulb.

Check the continuity at the glove box light bulb to confirm whether it is normal.

#### Q: Is the check result normal?

**YES:** Go to Step 30.

**NO**: Replace the glove box light bulb. Then go to Step 30.

STEP 30. Check of short to power supply and open circuit in power supply lines between the glove box light connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 31.

**NO :** Repair the connector(s) or wiring harness. Then go to Step 31.

### STEP 31. Check of open circuit in ground lines between the glove box light connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 32.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 32.

### STEP 32. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

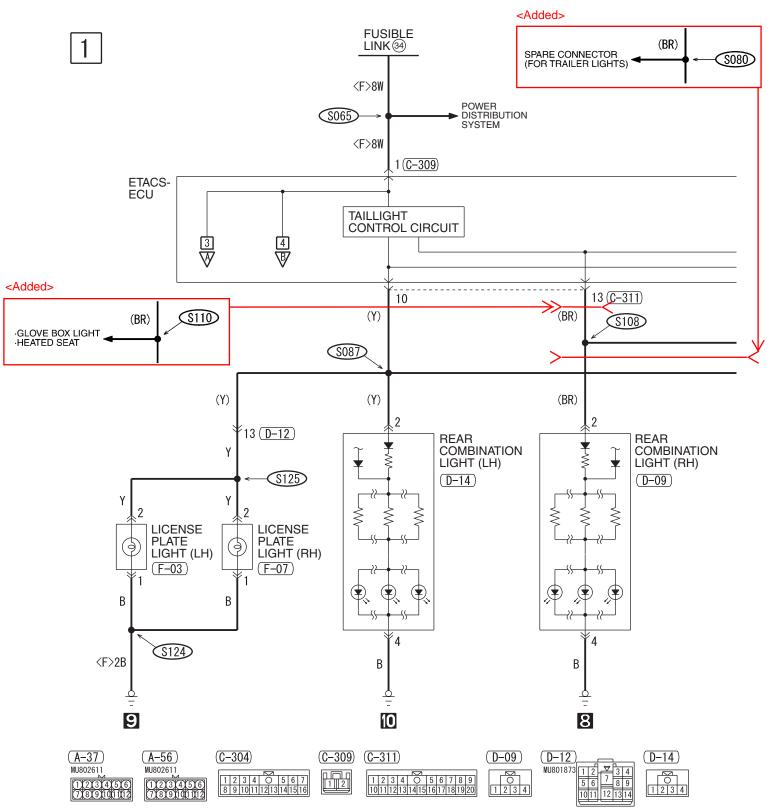
- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if DTC is stored.

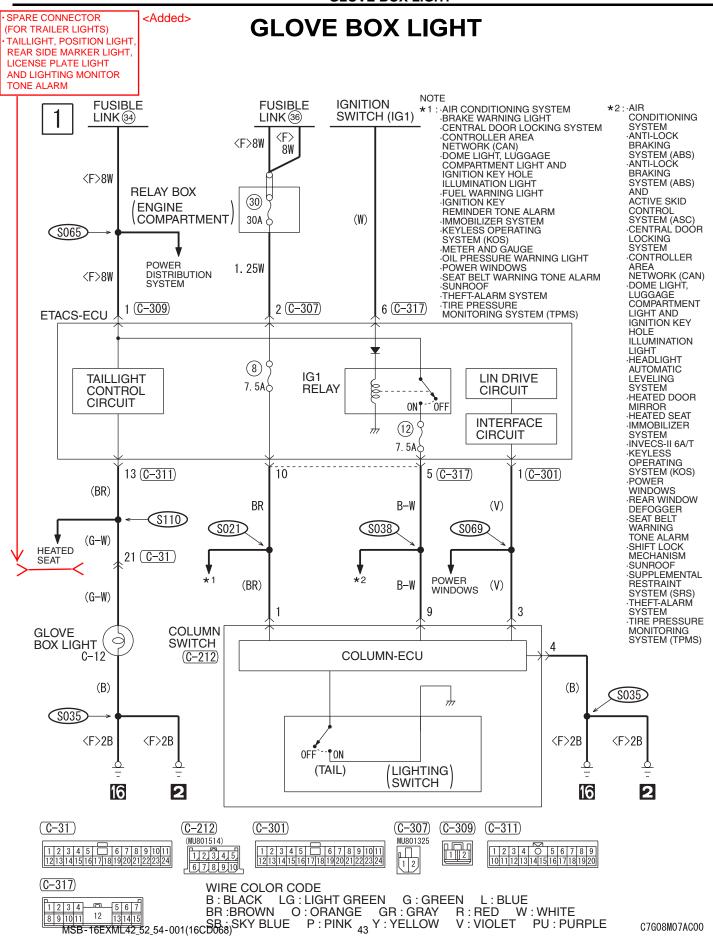
#### Q: Is the DTC stored?

**YES**: Replace the ETACS-ECU.

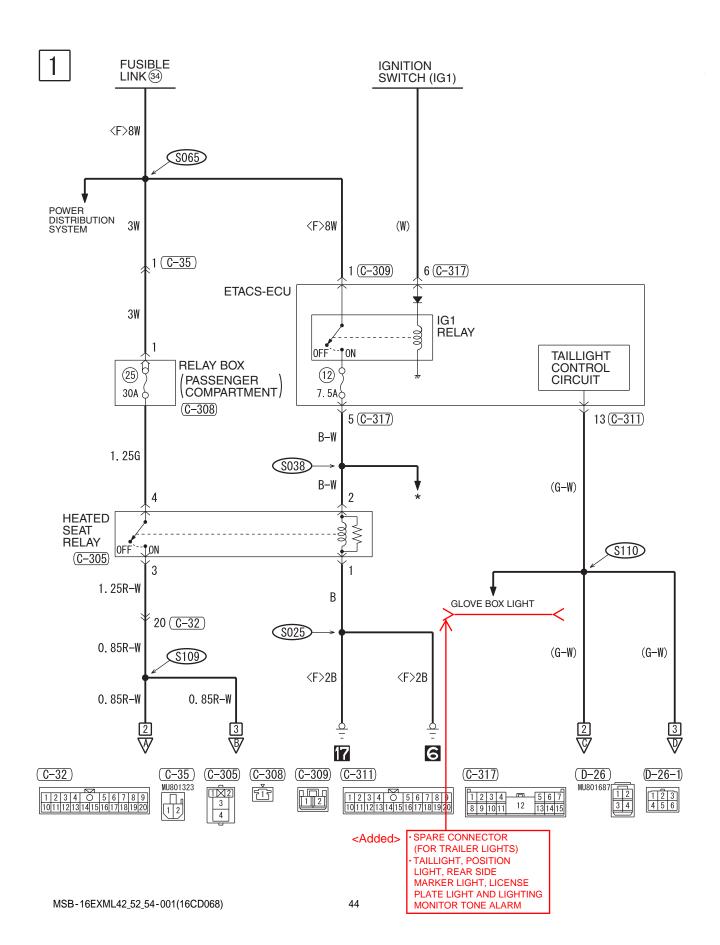
NO: The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction).

## TAILLIGHT, POSITION LIGHT, REAR SIDE MARKER LIGHT, LICENSE PLATE LIGHT AND LIGHTING MONITOR TONE ALARM





#### **HEATED SEAT**



Insert the attached sheet 6  $(22/27) \sim (25/27)$ 

<Incorrect>

DTC B16A7: Taillight(RH) circuit short <Short circuit in the position light (RH) circuit or the taillight (RH) circuit>

#### **⚠** CAUTION

- Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID

#### **DIAGNOSTIC FUNCTION**

When a short circuit is detected in the position light circuit or the taillight circuit, the ETACS-ECU stores the DTC No. B16A7.

#### **TROUBLE JUDGMENT**

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 stores the DTC No. B16A7 if no load is detected.

#### TROUBLESHOOTING HINTS

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

#### DIAGNOSIS

#### Required Special Tools:

✓ MB992006: Extra fine probe

MB991223: Harness set

#### STEP 1. Bulb check

Check the bulb(s) of the light that does not illuminate.

Q: Is the check result normal?

YES: Go to Step 2.

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

STEP 2. Resistance measurement at the headlight assembly (position/side maker: RH) connector, rear combination light (tail/side maker: RH) connector (ground terminals).

- (1) Discoppiect 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 (position/side maker: RH) connector (ground terminal) and ground.
  - Measure the resistance between the rear combination light (tail/side maker: RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES: Go to Step 4.
NO: Go to Step 3.

STEP 3. Check of open circuit in ground lines between the headlight assembly (position/side maker: RH) connector, rear combination light (tail/side maker: RH) connector and ground.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness.

#### <Deleted>

STER 4. Check of short to power supply, short to ground, and open circuit in (TAR1, TAR2) lines between the headlight assembly (position/side maker: RH) connector, rear combination light (tail/side maker: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness.

STEP 5. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is stored again.

#### **⚠** CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to "How to sonnect Scan Tool (M.U.T.-III)."
- (2) Erase the DTC.
- (3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (4) Check if DTC is stored.

Q: Is the DTC stored?

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

#### DTC B16A7: Taillight(RH) circuit short <Short circuit in the taillight control circuit>

#### **⚠** CAUTION

- Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. (If the encrypted code is not registered, the engine cannot be started. Register the encrypted code as described in Immobilizer System – How to Register Key ID.)

#### **DIAGNOSTIC FUNCTION**

When a short circuit is detected in the following circuit, the ETACS-ECU stores the DTC No. B16A7.

- Taillight
- · Side marker light
- Position light
- Glove box light
- Floor console box light <2017 model year>

#### TROUBLE JUDGMENT

The problem detection of each light is made based on the digital feed back signal (input signal to ETACS-ECU) which operates the each light. When the ignition switch is ON, the ETACS-ECU determines the each light circuit state from the load placed on the line. After 100 ms has elapsed since the start of the check, the ETACS-ECU performs a sampling with each 10 ms. If an abnormality is detected, it increases the counter by 2, and when no abnormality is detected, it decreases the counter by 1. Once the counter reaches "10," the ETACS-ECU stores the DTC No. B16A7 if no load is detected.

#### TROUBLESHOOTING HINTS

- The rear combination light bulb (RH) may be defective <Bulb type>
- The rear combination light unit (RH) may be defective
- The position light bulb (RH) may be defective <Bulb type>
- The side marker light bulb (front RH) may be defective
- The headlight body may be defective

- The taillight assembly (RH) may be defective
   From 2016 model year>
- The glove box light bulb may be defective
- The floor console box light may be defective
   2017 model year>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

#### **DIAGNOSIS**

#### **Required Special Tools:**

MB992006: Extra fine probeMB991223: Harness set

### STEP 1. Check the rear combination light bulb (RH). <Bulb type>

Check the continuity at the rear combination light bulb (RH) to confirm whether it is normal.

Q: Is the check result normal?

YES: Go to Step 2.

**NO**: Replace the rear combination light bulb (RH). Then go to Step 2.

## STEP 2. Resistance measurement at the rear combination light (tail/side maker: RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear combination light (tail/side maker: RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES: Go to Step 4. NO: Go to Step 3.

STEP 3. Check of open circuit in ground lines between the rear combination light (tail/side maker: RH) connector and ground.

Q: Is the check result normal?

YES: Go to Step 4.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 4.

# STEP 4. Check of short to power supply and open circuit in (TAR2) lines between the rear combination light (tail/side maker: RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES: Go to Step 5.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 5.

STEP 5. Using scan tool (M.U.T.

## STEP 5. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is stored again.

#### **⚠** CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

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

#### Q: Is the DTC stored?

YES: Go to Step 6.

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

## STEP 6. Substitute a known good rear combination light unit (RH), and check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 7.

**NO**: Replace the rear combination light unit (RH).

### STEP 7. Check the position/side marker light bulb (RH).

Check the continuity at the position light bulb (RH) <Bulb type> or side marker light bulb (RH) to confirm whether it is normal.

#### Q: Is the check result normal?

YES: Go to Step 8.

NO: Replace the position light bulb (RH) <Bulb type> or side marker light bulb (RH). Then go to Step 8.

## STEP 8. Resistance measurement at the headlight assembly (position/side maker: RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the headlight assembly (position/side maker: RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES: Go to Step 10. NO: Go to Step 9.

## STEP 9. Check of open circuit in ground lines between the headlight assembly (position/side maker: RH) connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 10.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 10.

STEP 10. Check of short to power supply and open circuit in (TAR1) lines between the headlight assembly (position/side maker: RH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 11.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 11.

### STEP 11. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 12.

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).

## STEP 12. Substitute a known good headlight body (RH), and check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES <From 2016 model year> : Go to Step 13. YES <Up to 2015 model year> : Go to Step 18. NO : Replace the headlight body (RH).

### STEP 13. Resistance measurement at the taillight (RH) connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the taillight (RH) connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

#### Q: Is the check result normal?

YES: Go to Step 15. NO: Go to Step 14.

### STEP 14. Check of open circuit in ground lines between the taillight (RH) connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 15.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 15.

## STEP 15. Check of short to power supply and open circuit in (TAR2) lines between the taillight (RH) connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 16.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 16.

### STEP 16. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 17.

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).

## STEP 17. Substitute a known good taillight assembly (RH), and check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES: Go to Step 18.

NO: Replace the taillight assembly (RH).

#### STEP 18. Check the glove box light bulb.

Check the continuity at the glove box light bulb to confirm whether it is normal.

#### Q: Is the check result normal?

YES: Go to Step 19.

**NO**: Replace the glove box light bulb. Then go to Step 19.

## STEP 19. Check of short to power supply and open circuit in (TAR3) lines between the glove box light connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 20.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 20.

## STEP 20. Check of open circuit in ground lines between the glove box light connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 21.

NO: Repair the connector(s) or wiring harness.

Then go to Step 21.

### STEP 21. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

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

#### Q: Is the DTC stored?

YES <2017 model year>: Go to Step 22.

YES <Up to 2016 model year> : Go to Step 26.

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).

### STEP 22. Check the continuity of the floor console box light.

Refer to floor console box light inspection.

#### Q: Is the check result normal?

YES: Go to Step 23.

**NO**: Replace the floor console box light. Then go to Step 23.

### STEP 23. Resistance measurement at the floor console box light connector (ground terminals).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the floor console box light connector (ground terminal) and ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES: Go to Step 25. NO: Go to Step 24.

## STEP 24. Check of open circuit in ground lines between the floor console box light connector and ground.

#### Q: Is the check result normal?

YES: Go to Step 25.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 25.

# STEP 25. Check of short to power supply and open circuit in (TAR3) lines between the floor console box light connector and ETACS-ECU connector.

#### Q: Is the check result normal?

YES: Go to Step 26.

**NO**: Repair the connector(s) or wiring harness. Then go to Step 26.

### STEP 26. Using scan tool (M.U.T.-III), Check whether the DTC is stored again.

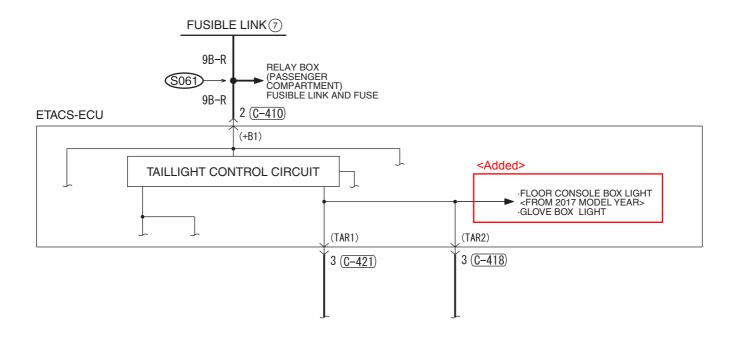
- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if DTC is stored.

#### Q: Is the DTC stored?

YES: Replace the ETACS-ECU.

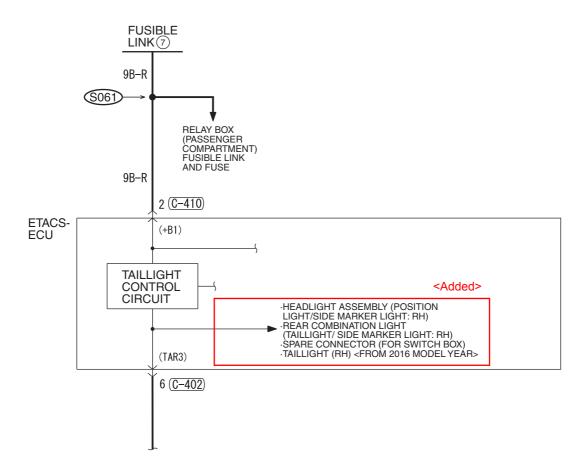
NO: The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction).

### TAILLIGHT, POSITION LIGHT, SIDE MARKER LIGHT, LICENSE PLATE LIGHT AND LIGHT REMINDER TONE ALARM



Note: The circuit diagram above shows 2017 model year as a typical circuit.

#### **GLOVE BOX LIGHT AND FLOOR CONSOLE BOX LIGHT**



Note: The circuit diagram above shows 2017 model year as a typical circuit.