

GROUP 54A

CHASSIS

ELECTRICAL

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WARNING

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

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

WARNING

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

NOTE

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

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BATTERY

GENERAL INFORMATION

M1541000100807

Item	Specification
	55D23L
Voltage V	12
Capacity (5-hour rate) Ah	48
Electrolytic fluid specific gravity [fully charged state at 20 °C (68 °F)]	1.220 – 1.290

ON-VEHICLE SERVICE

FLUID LEVEL AND SPECIFIC GRAVITY CHECK

M1541000900502

 CAUTION

- If the battery is used with the electrolyte level below the LOWER LEVEL indicator, there is the danger that explosions may occur, so add water to the battery until the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.
- If too much water is added to make the level rise above the UPPER LEVEL indication, the electrolyte may leak out, so adjust so that the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.

1. Check that the battery electrolyte level is between the UPPER LEVEL and LOWER LEVEL indications.
2. Use a specific gravity meter and a thermometer to measure the specific gravity.

Standard value: 1.220 – 1.290 <electrolyte temperature 20°C (68°F)>

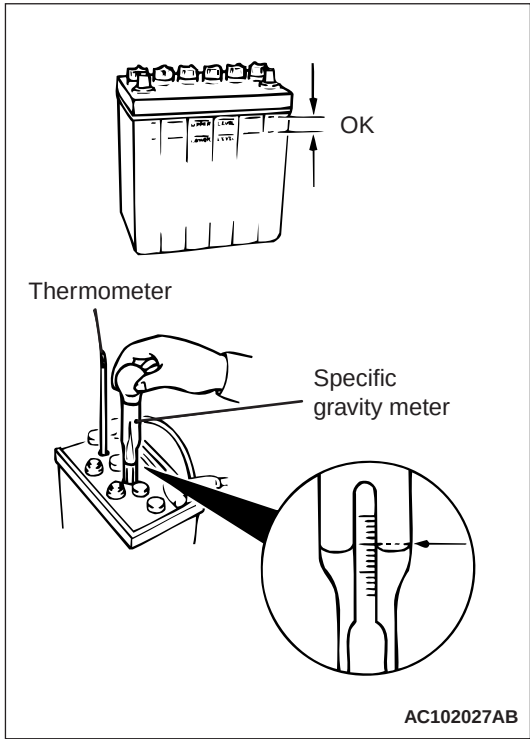
The specific gravity of the battery electrolyte changes according to the temperature, so the specific gravity when the electrolyte is at a temperature of 20°C can be calculated using the following formula. Use the converted value to judge whether the electrolyte is okay or not.

$$D_{20} = (t - 20) \times 0.0007 + Dt$$

D₂₀: Specific gravity converted to a value for electrolyte temperature of 20°C

t: Electrolyte temperature at the time of measurement

Dt: Actual specific gravity



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BATTERY CHARGING

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⚠ WARNING

When batteries are being charged, an explosive gas forms beneath the cover of each cell. Do not smoke near batteries on charge or which have recently been charged. Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken. Keep all open flames away from the battery.

Battery electrolyte temperature may temporarily be allowed to rise to 55 °C (131 °F). Increase of electrolyte temperature above 55 °C (131 °F) is harmful to the battery, causing deformation of battery cell, decrease in life of battery, etc.

CHARGE RATE

Recommended rate and time for charging completely flat battery fully is shown in the charge rate chart. When the specific gravity of electrolyte keeps 1.22 to 1.29 for more than one hour, charging should be stopped.

Charge Rate Chart

Battery	Charging time
	55D23L
Slow charging	5 amps 10 hours
	10 amps 5 hours
Fast charging	20 amps 3 hours
	30 amps 2 hours

BATTERY TEST

M1541001202405

BATTERY TESTING PROCEDURE**STEP 1. Check the battery cables.**

- (1) Remove the negative cable, then the positive cable.
- (2) Check for dirty or corroded connections.

Q: Are the battery cables dirty or have corroded connections?

YES : Clean the battery cables. Then go to Step 2.
NO : Go to Step 2.

STEP 2. Check the battery posts.

Check for loose battery post.

Q: Are the battery posts loose?

Yes : Replace the battery.
NO : Go to Step 3.

STEP 3. Check the battery case and cover.

- (1) Remove the hold-downs and shields.
- (2) Check for broken/cracked case or cover.

Q: Is the battery case or cover faulty?

YES : Replace the battery.
NO : Go to Step 4.

STEP 4. Check the open circuit voltage.

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

Q: Is open circuit voltage 12.4 volts or more?

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

STEP 5. Battery charging

Charge the battery. (See CHARGE RATE CHART P.54A-5)

Q: Is open circuit voltage 12.4 volts or more?

YES : Go to Step 6.

NO : Replace the battery.

STEP 6. Check the load test.

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

Q: Is the voltage higher than minimum voltage?

YES : The battery is normal.

NO : Replace the battery.

LOAD TEST RATE CHART

Battery	Load test	Cranking ratio [-18°C (0°F)]	Reserve capacity
55D23L	170 amps	356 amps	99 minutes

LOAD TEST CHART

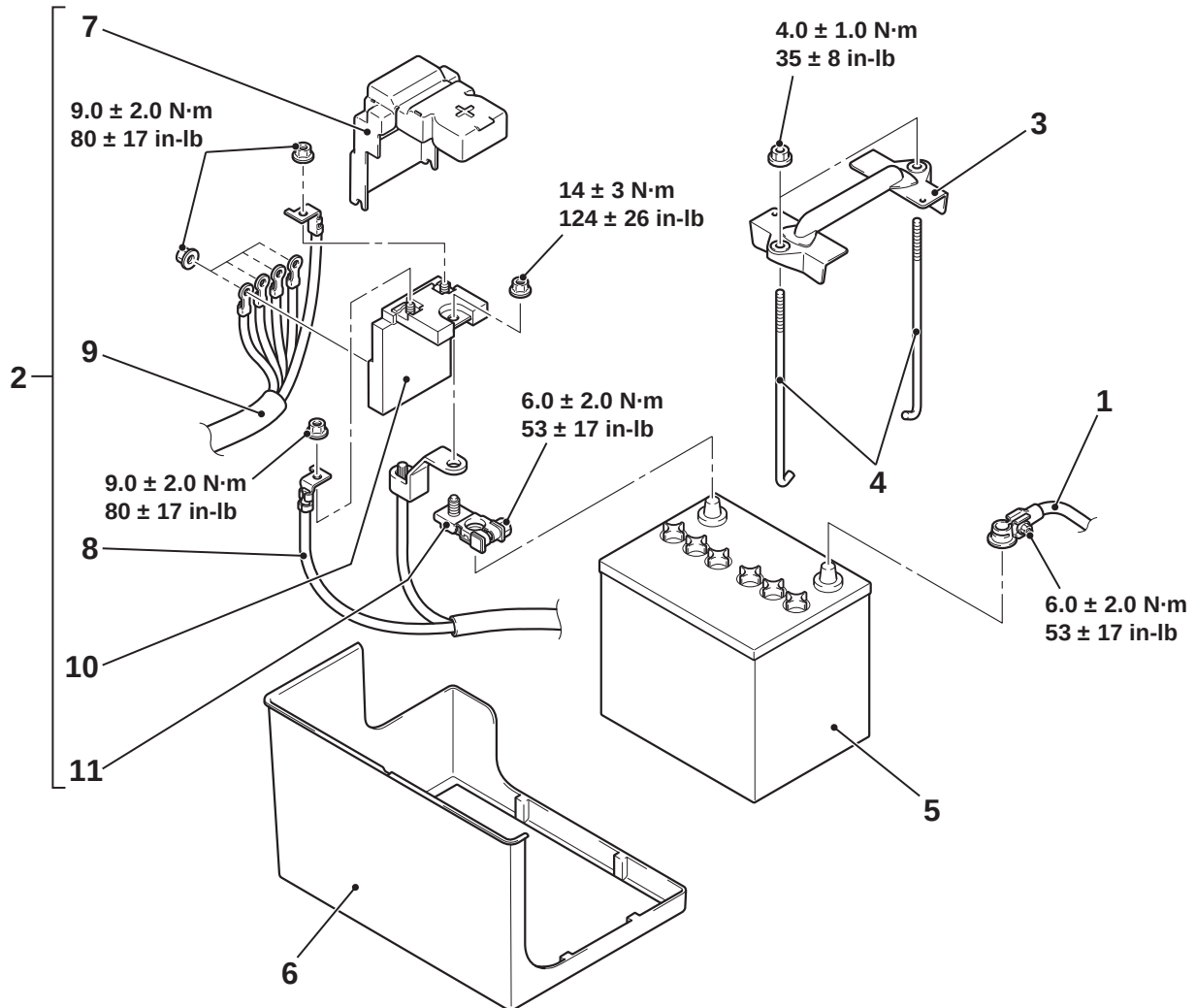
Temperature °C (°F)	21 (70) AND ABOVE	16 (61) to 20 (68)	10 (50) to 15 (59)	4 (40) to 9 (48)	-1 (31) to 3 (37)	-7 (20) to -2 (28)	-12 (11) to -8 (17)	-18 (0) to -13 (8)
Minimum voltage	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

REMOVAL AND INSTALLATION

M1541001301540

Post-installation Operation

- Learning Procedures Of Power Window Fully Closed Position <Vehicles with safety system (driver's side door)> (Refer to GROUP 42A, Door [P.42A-57](#)).



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Removal steps

1. Connection of the battery wiring harness (negative battery terminal)
2. Fusible link box cover, connection of the control wiring harness (positive battery terminal), connection of the front wiring harness (positive battery terminal), fusible link box and battery terminal
3. Battery holder
4. Battery bolt

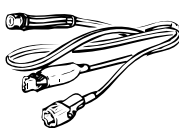
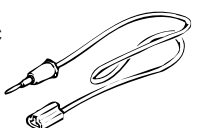
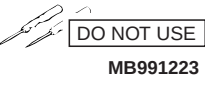
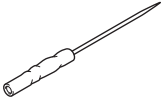
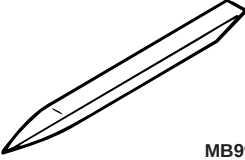
Removal steps (Continued)

5. Battery
6. Battery seat
7. Fusible link box cover
8. Connection of the control wiring harness (positive battery terminal)
9. Connection of the front wiring harness (positive battery terminal)
10. Fusible link box
11. Battery terminal

IGNITION SWITCH

SPECIAL TOOL

M1541200600301

Tool	Tool number and name	Supersession	Application
   	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector
 MB990784	MB990784	Ornament remover	Lower panel and steering column cover removal

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLE SHOOTING

M1541201400214

Refer to Group 00 – Contents of troubleshooting [P.00-6](#).

TROUBLE SYMPTOM CHART

M1541201100514

CAUTION

During troubleshooting, a DTC associated with another system may be stored when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are stored, erase them all.

Trouble symptom	Reference page
Malfunction of the ignition switch power supply system.	P.54A-9

SYMPTOM PROCEDURES

Malfunction of the ignition switch power supply system

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The ignition switch may be defective
- The fuse 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. Check the battery power supply circuit to the ignition switch. Measure the voltage at ignition switch connector.

- (1) Disconnect the ignition switch connector and measure the voltage at ignition switch connector wiring harness side.
- (2) Check the voltage between the ignition switch connector (power supply terminal) and ground.

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

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

- YES :** Go to Step 4.
NO : Go to Step 2.

STEP 2. Check the fuse.

Q: Is the check result normal?

- YES :** Go to Step 3.
NO : Replace the fuse. (Check that there is not a short to ground in the circuit of lower reaches before replacing. If there are any problems, replace the fuse after the circuit of lower reaches is repaired.)

STEP 3. Check of open circuit in power supply line between ignition switch connector and junction block connector

Q: Is the check result normal?

- YES :** Go to Step 5.
NO : Repair the connector(s) or wiring harness.

STEP 4. Check the ignition switch.

Refer to [P.54A-12](#).

Q: Is the ignition switch in good condition?

- YES :** Go to Step 5.
NO : Replace the ignition switch.

STEP 5. Retest the system.

Q: When the ignition switch is operated, do the equipment and system work normally?

- YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).
NO : Replace the ETACS-ECU.

ON-VEHICLE SERVICE

IGNITION KEY REMINDER TONE ALARM INSPECTION

M1541200900120

1. With the driver's door kept closed, release the steering lock, and then turn the ignition key to the "LOCK" (OFF) position (key inserted).

2. Open the driver's door.
3. Check that the tone alarm sounds normally.
4. If not, carry out the troubleshooting.(Refer to [P.54A-35.](#))

REMOVAL AND INSTALLATION

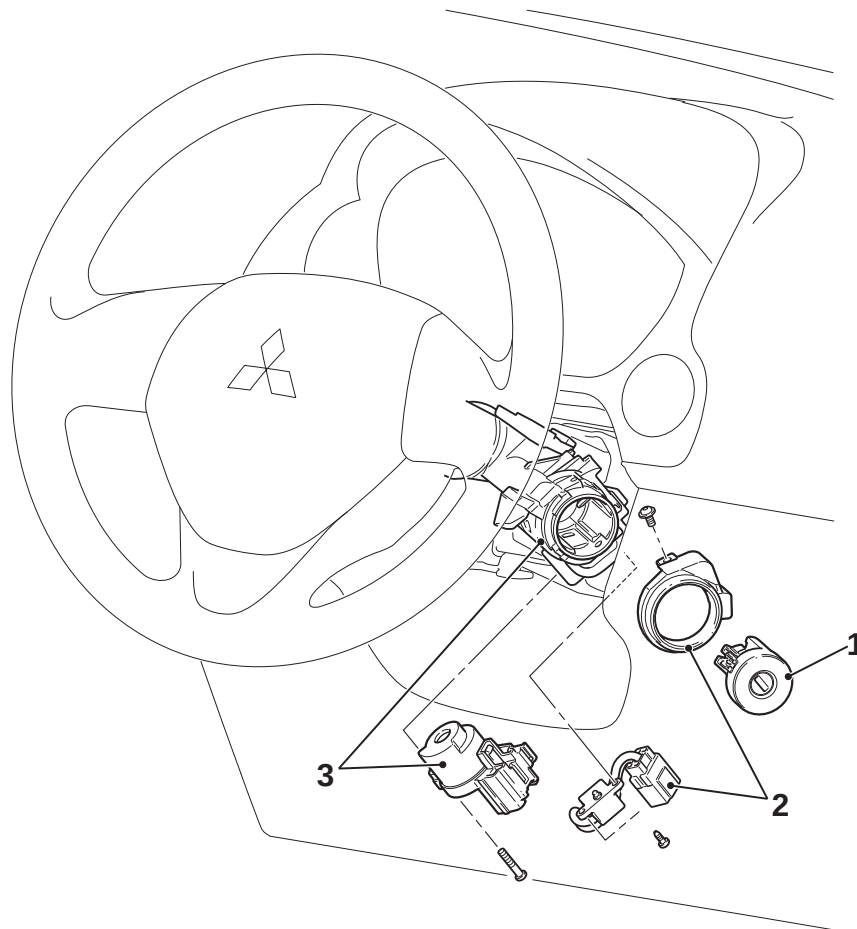
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Pre-removal operation

- Removal of Steering wheel assembly (Refer to GROUP 37 – Steering wheel [P.37-62.](#))
- Removal of Steering column lower cover and steering column upper cover (Refer to GROUP 37 – Steering Shaft [P.37-64.](#))
- Removal of Column switch body (Refer to GROUP 54A – Column Switch [P.54A-152.](#))
- Removal of Instrument panel cover lower (Refer to GROUP 52A – Instrument lower panel [P.52A-6.](#))

Post-installation operation

- Installation of Instrument panel cover lower (Refer to GROUP 52A – Instrument Lower Panel [P.52A-6.](#))
- Removal of Column switch body (Refer to GROUP 54A – Column Switch [P.54A-152.](#))
- Installation of Steering column lower cover and steering column upper cover (Refer to GROUP 37 – Steering Shaft [P.37-64.](#))
- Removal of Steering wheel assembly (Refer to GROUP 37 – Steering wheel [P.37-62.](#))



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<<A>>

Removal Steps

1. Steering lock hole
2. Key reminder switch and key ring antenna assembly <Vehicles with immobilizer system>

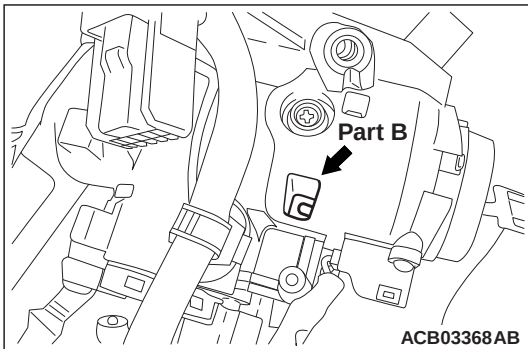
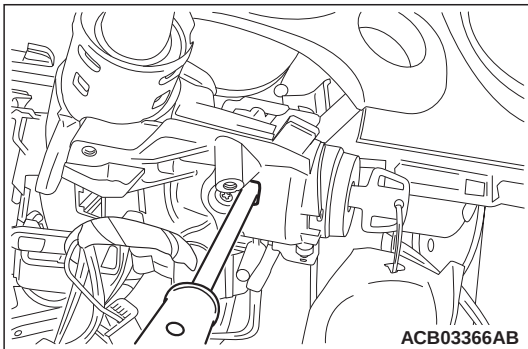
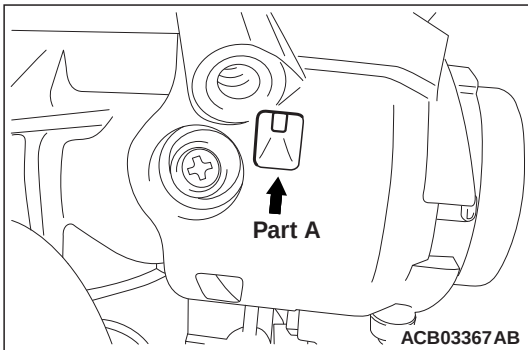
Removal Steps (Continued)

2. Key reminder switch, key ring <Vehicles without immobilizer system>
3. Engine starting switch assembly (Refer to GROUP 37 – Steering shaft disassembly and reassembly [P.37-64.](#))

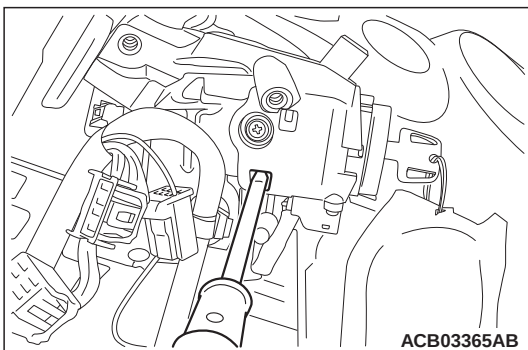
REMOVAL SERVICE POINT

<<A>> STEERING LOCK HOLE REMOVAL

1. Insert the key into the steering lock hole, and turn the ignition key to the ACC position.
2. Using a flat-tipped precision screwdriver or similar tool, press the lock button located at the part "A" shown in the figure.



3. Subsequently, using a flat-tipped precision screwdriver or similar tool, press the step generated at the part "B" toward the direction of front passenger's seat. Then, pull out the ignition key, and then remove the steering lock hole.

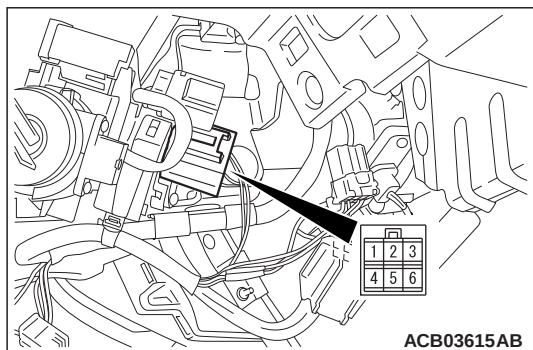


INSPECTION

IGNITION SWITCH CHECK

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

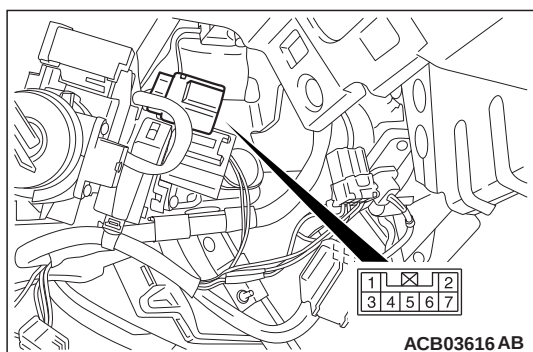


Ignition key position	Terminal number	Normal condition
LOCK	1 – 2, 1 – 4, 1 – 5, 1 – 6	No continuity
ACC	1 – 6	Continuity exists (2 ohms or less)
ON	1 – 2 – 4 – 6	Continuity exists (2 ohms or less)
START	1 – 2 – 5	Continuity exists (2 ohms or less)

KEY REMINDER SWITCH INSPECTION

M1541200500304

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



Key status	Terminal number	Normal condition
Key removed	4 – 6	Continuity exists (2 ohms or less)
Key inserted	4 – 6	No continuity

COMBINATION METER

SERVICE SPECIFICATIONS

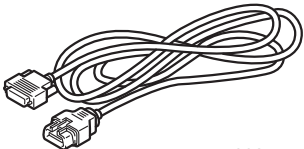
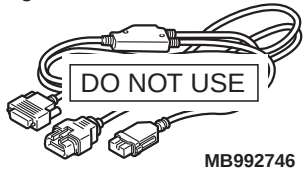
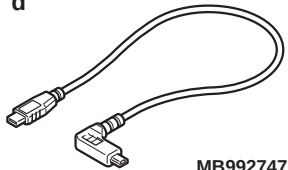
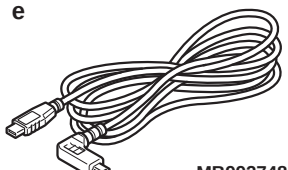
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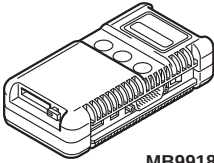
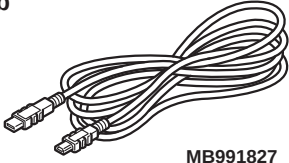
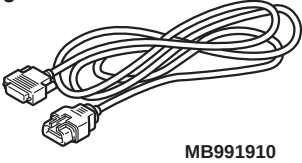
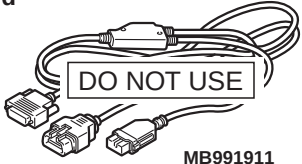
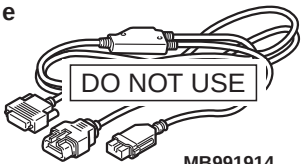
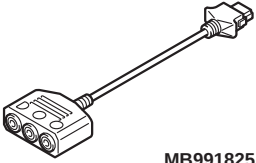
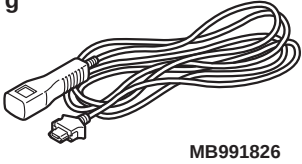
Item		Standard Value
Speedometer indication tolerance {mph (km/h)} <Vehicles for USA>	25 (40)	23.5 – 26.5 (40.5 – 44.5)
	50 (80)	48.5 – 51.5 (81.5 – 86.5)
	75 (120)	73.5 – 76.5 (122.5 – 128.5)
	100 (160)	98.5 – 102.5 (162.5 – 169.5)
Speedometer indication tolerance {km/h (mph)} <Vehicles for CANADA>	40 (25)	40.5 – 44.5 (25.5 – 28.5)
	80 (50)	81.5 – 86.5 (50.5 – 53.5)
	120 (75)	122.5 – 128.5 (76.0 – 78.0)
	160 (100)	162.5 – 169.5 (101.5 – 106.5)

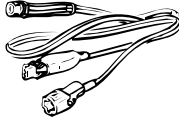
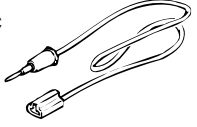
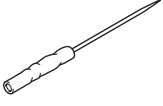
Item		Standard Value
Tachometer indication tolerance (r/min)	700	600 – 800
	3,000	2,850 – 3,150
	5,000	4,750 – 5,250
	6,000	5,700 – 6,300
Fuel level sensor resistance (ohms)	Stopper position "F"	13.0 ± 1.0
	Stopper position "E"	120.0 ± 1.0
Fuel level sensor float height {mm (in)}	Stopper position "F"	135.4 ± 5.0 (5.3 ± 0.2)
	Stopper position "E"	14.9 ± 5.0 (0.6 ± 0.2)

SPECIAL TOOLS

M1540200300426

Tool	Tool number and name	Supersession	Application
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748 a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	—	DTC, data list and actuator test check.

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540203800118

Refer to GROUP 00, Contents of troubleshooting [P.00-6](#).

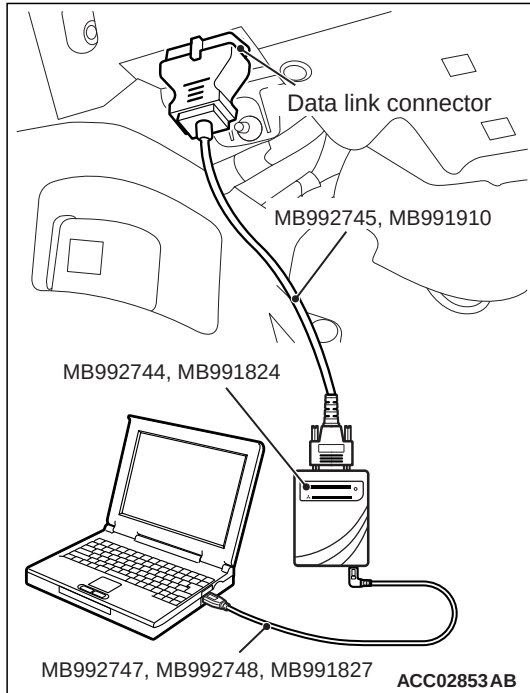
DIAGNOSIS FUNCTION

M1540200500271

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

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

To prevent damage to scan tool (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. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool (M.U.T.-III) does not display.

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

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

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

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

CHECK OF FREEZE FRAME DATA

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

DISPLAY ITEM LIST

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

NOTE: *: If a failure occurs to both the ASC-ECU and ETACS-ECU, 0000 mile or FFFF mile is displayed on the scan tool (M.U.T.-III).

DIAGNOSTIC TROUBLE CODE CHART

M1540200600728

⚠ CAUTION

- During troubleshooting, a DTC associated with other system may be stored when the ignition switch is turned on with connector(s) disconnected. On completion, check all systems for DTCs. If DTCs are stored, erase them all.
- When the combination meter is required to be replaced as a result of the troubleshooting, the current driving distance and number of elapsed days to be used for service reminder function must be entered into the meter after the replacement. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool (M.U.T.-III), and note them. For the operation method of scan tool (M.U.T.-III), refer to [P.54A-55](#). If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool (M.U.T.-III), follow the method described below.
 - a. For the driving distance for check warning, use the driving distance displayed on the multi information display.
 - b. For the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service remainder function start date) and current date.

DTC No.	Diagnostic item	Reference page
B1200	Odometer failure	P.54A-19
B1201	Fuel information problem	P.54A-19
B1209	Test mode	P.54A-21
B2463	Rheostat switch sticking	P.54A-21
U0100	Engine CAN timeout	P.54A-21
U0101	T/M CAN timeout	P.54A-22
U0121	ABS/ASC CAN timeout	P.54A-24
U0131	EPS CAN timeout	P.54A-25
U0141	ETACS CAN timeout	P.54A-26

DTC No.	Diagnostic item	Reference page
U0151	SRS-ABG CAN timeout	P.54A-27
U0154	OCM CAN timeout	P.54A-28
U0168	WCM/F.A.S.T. CAN timeout	P.54A-30
U1000	OSS CAN timeout	P.54A-31
U1110	A/C CAN timeout/Not equipped	P.54A-32
U1190	No receive fault detect signal	P.54A-33
U1195	Coding not completed	P.54A-34

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1200: Odometer failure

TROUBLE JUDGMENT

If the odometer information, which is stored in the combination meter, is abnormal with the ignition switch at the ON position and DTC No. U1190 is not stored, DTC No. B1200 is stored.

TROUBLESHOOTING HINTS

The combination meter may be defective.

DTC B1201: Fuel information problem

CAUTION

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

TROUBLE JUDGMENT

With the ignition switch at the ON position and DTC No. U1190 is not stored, if the combination meter detects the abnormal resistance of fuel level sensor circuit for 64 seconds continuously, DTC No. B1201 is stored.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check of fuel pump and gauge assembly circuit

- (1) Disconnect the fuel pump and gauge assembly connector.
- (2) Use the special tool Check harness (MB991219) to connect a test light (12 V - 3.4 W) between the wiring harness connector terminals.
- (3) Turn the ignition switch to the ON position.
- (4) Check if the test light illuminates.

OK: Illuminates

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 2.

STEP 2. Check the fuel level sensor.

Check to see if the fuel level sensor is normal (Refer to [P.54A-54](#)).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the fuel level sensor.

STEP 3. Resistance measurement at the fuel pump and gauge assembly connector

- (1) Disconnect the fuel pump and gauge assembly connector, the measure at the harness side.
- (2) Measure the resistance between the fuel pump and gauge assembly connector (ground terminal) and ground.

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

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

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of open circuit in ground line between fuel pump and gauge assembly connector and ground.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector(s) or wiring harness, and then go to Step 7.

STEP 5. Check of open circuit in F/G line between combination meter connector and fuel pump and gauge assembly connector.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the connector(s) or wiring harness, and then go to Step 7.

STEP 6. Using scan tool (M.U.T.-III), perform actuator test.

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

OK: The fuel gauge operates.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the combination meter.

STEP 7. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

(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 combination meter.

NO : The diagnosis is complete.

DTC B1209: B1209 Test mode

TROUBLE JUDGMENT

When the mode is changed to the meter test mode (supplier mode) with the ignition switch at the ON position and DTC No. U1190 is not stored, the combination meter stores DTC No. B1209.

TROUBLESHOOTING HINTS

The combination meter may be defective

DTC B2463: Rheostat switch sticking

TROUBLE JUDGMENT

If the combination meter detects the multi-information display switch pressed state for 60 seconds or more continuously with the ignition switch at the ON position and DTC No. U1190 is not stored, DTC No. B2463 is stored.

TROUBLESHOOTING HINTS

- The combination meter may be defective.

DTC U0100: Engine CAN timeout

⚠ CAUTION

- If DTC No. U0100 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No. U0100 when it cannot receive signals from the engine control module.

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 engine control module 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 engine control module may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

STEP 2. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code
Check if DTC is stored in the engine control module.**Q: Is the DTC stored?**

YES : Troubleshoot the MFI (Refer to GROUP 13A – DTC Chart [P.13A-47](#).)

NO : Go to Step 3.

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

Check if DTC No. U0100 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

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

Q: Is the DTC stored?

YES : Replace the engine control module and then go to Step 6.

NO : A poor connection, open circuit, or other intermittent malfunction in the CAN bus line between the combination meter and the engine control module. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#).)

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

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

Q: Is the DTC stored?

YES : Replace the combination meter and then go to Step 6.

NO : A poor connection, open circuit, or other intermittent malfunction in the CAN bus line between the combination meter and the engine control module. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#).)

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U0101: T/M CAN timeout**⚠ CAUTION**

- If DTC U0101 is stored in the combination meter, always diagnose the CAN bus lines.

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

DIAGNOSTIC FUNCTION

The combination meter stores DTC No.U0101 when it cannot receive signals from the TCM.

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 TCM 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 TCM may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is stored in the TCM.

Q: Is the DTC stored?

YES : Diagnose the CVT system (GROUP 23A – Troubleshooting [P.23A-16](#)).

NO : Go to Step 3.

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

Check if DTC No. U0101 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace TCM 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 TCM and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace combination meter 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 TCM and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Check whether the DTC is reset.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U0121: ABS/ASC CAN timeout**⚠ CAUTION**

- If DTC No. U0121 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No. U0121 when it cannot receive signals from the ASC-ECU.

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 ASC-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 ASC-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is stored in the ASC-ECU.

Q: Is the DTC stored?

YES : Diagnose the ASC-ECU (Refer to GROUP 35C – Troubleshooting [P.35C-16](#)).

NO : Go to Step 3.

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

Check if DTC No. U0121 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the ASC-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 ASC-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the combination meter. 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 ASC-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U0131: EPS CAN timeout**⚠ CAUTION**

- If DTC No. U0131 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No.U0131 when it cannot receive signals from the EPS-ECU.

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 EPS-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 EPS-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is stored in the EPS-ECU.

Q: Is the DTC stored?

YES : Diagnose the EPS-ECU (Refer to GROUP 37 – Troubleshooting [P.37-8](#)).

NO : Go to Step 3.

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

Check if DTC No. U0131 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace the EPS-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 EPS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace the combination meter 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 EPS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U0141: ETACS CAN timeout**⚠ CAUTION**

- If DTC No. U0141 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No. U0141 when it cannot receive signals from the ETACS-ECU.

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.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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 [P.54A-218](#)).

NO : Go to Step 3.

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

Check if DTC No. U0141 is stored in engine control module.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

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 [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace combination meter 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 [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U0151: SRS-ABG CAN timeout**CAUTION**

- If DTC No. U0151 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No. U0151 when it cannot receive signals from the SRS-ECU.

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 SRS-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 SRS-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is stored in the SRS-ECU.

Q: Is the DTC stored?

YES : Diagnose the SRS-ECU (Refer to GROUP 52B – Troubleshooting [P.52B-14](#)).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the SRS-ECU and then go to Step 4.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the SRS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the combination meter. and then go to Step 5.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the SRS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U0154: OCM CAN timeout**⚠ CAUTION**

- If DTC No. U0154 is set, be sure to diagnose the CAN bus line.

- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter sets DTC No.U0154 when it cannot receive signals from the occupant classification-ECU.

JUDGMENT CRITERIA

With the ignition switch is at "ON" position, DTC No. U1190 is not set and DTC No. U1195 is not set, if the communication with occupant classification-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 occupant classification-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is set in the occupant classification-ECU.

Q: Is the DTC set?

YES : Troubleshoot the occupant classification-ECU (Refer to GROUP 52B – DTC Chart [P.52B-197](#).)

NO : Go to Step 3.

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

Check if DTC No. U0154 is set in the SRS-ECU.

Q: Is the DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

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

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

Q: Is the DTC set?

YES : Replace the occupant classification-ECU and then go to Step 6.

NO : A poor connection, open circuit, or other intermittent malfunction in the CAN bus line between the combination meter and the occupant classification-ECU. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#).)

STEP 5. Recheck for diagnostic trouble code.

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

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

Q: Is the DTC set?

YES : Replace the combination meter and then go to Step 6.

NO : A poor connection, open circuit, or other intermittent malfunction in the CAN bus line between the combination meter and the occupant classification-ECU. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#).)

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U0168: WCM/F.A.S.T. CAN timeout

⚠ CAUTION

- If DTC No. U0168 is set, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter sets DTC No. U0100 when it cannot receive signals from the KOS&OSS-ECU.

JUDGMENT CRITERIA

With the ignition switch is at "ON" position, DTC No. U1190 is not set and DTC No. U1195 is not set, if the communication with KOS&OSS-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 KOS&OSS-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is set in the KOS&OSS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the KOS. Refer to GROUP 42B – DTC Chart [P.42B-13](#).

NO : Go to Step 3.

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

Check if DTC No. U0168 is set in the ETACS-ECU.

Q: Is the DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

- YES :** Replace KOS&OSS-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 KOS&OSS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

- YES :** Replace combination meter 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 KOS&OSS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

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

DTC U1000: OSS CAN timeout**⚠ CAUTION**

- If DTC No. U1000 is set, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter sets DTC No. U1000 when it cannot receive signals from the KOS&OSS-ECU.

JUDGMENT CRITERIA

With the ignition switch is at "ON" position, DTC No. U1190 is not set and DTC No. U1195 is not set, if the communication with KOS&OSS-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 KOS&OSS-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

- YES :** Go to Step 2.
- NO :** Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC is set in the KOS&OSS-ECU.

Q: Is the DTC set?

YES : Troubleshoot the KOS&OSS-ECU (Refer to GROUP 42B – Troubleshooting [P.42B-13](#)).

NO : Go to Step 3.

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

Check if DTC No. U1000 is set in the ETACS-ECU.

Q: Is the DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Replace KOS&OSS-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 KOS&OSS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Replace combination meter 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 KOS&OSS-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

- (1) Erase the DTC.
- (2) Turn the ignition switch to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U1110: A/C CAN timeout/Not equipped**⚠ CAUTION**

- If DTC No. U1110 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

The combination meter stores DTC No. U0100 when it cannot receive signals from the A/C-ECU.

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 engine control module 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 A/C-ECU may be defective.

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

STEP 2. Using scan tool (M.U.T.-III), read the A/C diagnostic trouble code

Check if DTC is stored in the A/C-ECU.

Q: Is the DTC stored?

YES : Troubleshoot the A/C-ECU (Refer to GROUP 55B – Troubleshooting [P.55B-8](#)).

NO : Go to Step 3.

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

Check if DTC No. U1110 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace A/C-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 A/C-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace combination meter 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 A/C-ECU and the combination meter (Refer to GROUP 00 – How to use troubleshooting/Inspection Service Points [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Go to Step 1.

NO : The procedure is complete.

DTC U1190: No receive fault detect signal**⚠ CAUTION**

- If DTC No. U1190 is stored, be sure to diagnose the CAN bus line.
- When replacing the ECU, always check that the communication circuit is normal.

JUDGMENT CRITERIA

ETACS-ECU sends the DTC (U code) detection permission or prohibition signal to each ECU connected to the CAN bus line. If the combination meter cannot receive the DTC (U code) detection permission or prohibition signal for 5 seconds after turning the electric motor switch to ON position, DTC U1190 will be set.

TROUBLESHOOTING HINTS

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

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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition motor switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. Then go to Step 3.

NO : The procedure is complete.

STEP 3. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the combination meter.

- (1) Erase the DTC.
- (2) Turn the ignition motor switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1195: Coding not completed**⚠ CAUTION**

- If DTC No. U1195 is stored, diagnose the CAN bus lines.
- When replacing the ECU, always check that the communication circuit is normal.

DIAGNOSTIC FUNCTION

If the vehicle information data is not registered to the combination meter, the combination meter stores DTC No. U1195.

JUDGMENT CRITERIA

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if DTC No. U1000 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Troubleshoot the ETACS-ECU. Refer to [P.54A-218](#).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the combination meter.

- (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 combination meter.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

TROUBLE SYMPTOM CHART

M1540200800863

⚠ CAUTION

- During troubleshooting, a DTC associated with another system may be stored when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTCs. If DTCs are stored, erase them all.
- When the combination meter is required to be replaced as a result of the troubleshooting, the current driving distance and number of elapsed days to be used for service reminder function must be entered into the meter after the replacement. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool (M.U.T.-III), and note them. For the operation method of scan tool (M.U.T.-III), refer to [P.54A-55](#). If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool (M.U.T.-III), follow the method described below.
 - a. For the driving distance for check warning, use the driving distance displayed on the multi information display.
 - b. For the elapsed days for check warning, calculate the number of elapsed days from the delivery date to the customer (service remainder function start date) and current date.

Trouble symptom	Inspection Procedure No.	Reference page
Power supply circuit check	1	P.54A-36
The odometer and the trip meter are not displayed.	2	
No needle meters work.	3	
If the ignition switch is turned to the ON position, the indicator and warning lights do not illuminate normally.	4	
The speedometer does not work (the other meters work).	5	P.54A-38
The tachometer does not work (the other meters work).	6	P.54A-40
Tone alarm does not sound normally.	7	P.54A-41
Fuel gauge does not work (the other meters work)	8	P.54A-42
The combination meter light does not illuminate normally or the multi-information display is not displayed normally.	9	P.54A-44
The multi-information display screen cannot be changed with the operation of the multi-information display switch.	10	P.54A-45

Trouble symptom	Inspection Procedure No.	Reference page
Parking brake reminder tone alarm does not sound.	11	P.54A-46
Brake warning light does not illuminate.	12	
Ambient temperature sensor does not work.	13	P.54A-47
Seat belt reminder function does not work normally.	14	P.54A-48

SYMPTOM PROCEDURES

Inspection Procedure 1: Power supply circuit check

Inspection Procedure 2: The odometer and the trip meter are not displayed.

Inspection Procedure 3: No needle meters work.

Inspection Procedure 4: If the ignition switch is turned to the ON position, the indicator and warning lights do not illuminate normally.

TECHNICAL DESCRIPTION (COMMENT)

If the odometer and trip meter is not displayed or no needle meters work, power supply to the combination meter, or the combination meter itself may have a problem.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool (M.U.T.-III), read the combination meter diagnostic trouble code

Check if DTC is stored in the combination meter.

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) [P.54A-15](#)."
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Troubleshoot the combination meter (Refer to [P.54A-18](#)).

NO : Go to Step 2.

STEP 2. Voltage measurement at the combination meter connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the LOCK (OFF) position.
- (3) Measure the voltage between the combination meter connector (B+B terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check of open circuit in B+B line between the fusible link and combination meter connector.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Voltage measurement at the combination meter connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between the combination meter connector (IG1 terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 5.

STEP 5. Using scan tool (M.U.T.-III), check data list

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

- Turn the ignition switch to the ON position.

Item No.	Item name	Normal condition
30	IG SW (IG1)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Troubleshoot the ETACS-ECU. Refer to Inspection Procedure 2 "The ignition switch (IG1) signal is not received." [P.37-62](#).

STEP 6. Check of open circuit in IG1 line between the ignition switch (IG1) and combination meter connector.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 7. Resistance measurement at the combination meter connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the combination meter connector (GND 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 GND line between combination meter connector and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 9. Retest the system

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the combination meter.

Inspection Procedure 5: The speedometer does not work (The other meters work).

TECHNICAL DESCRIPTION (COMMENT)

If only the speedometer does not operate, the combination meter, the wiring harness or its connector may be defective.

TROUBLESHOOTING HINTS

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

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 electric motor 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)" [P.54A-15](#)."
- (2) Turn the electric motor switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the electric motor switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?**YES :** Go to Step 2.**NO :** Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)). On completion, go to Step 6.

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

Check whether the MFI system-related DTC is stored.

Q: Is the DTC stored?**YES :** Diagnose MFI system. (Refer to GROUP 13A, Troubleshooting [P.13A-47](#).) After diagnosing the MFI system, go to Step 6.**NO :** Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), check data list

Check the vehicle speed signal data list of MFI system.

Item No.4: Vehicle speed signal (Refer to GROUP 13A, Data list reference table [P.13A-599](#).)

Q: Is the check result normal?**YES :** Go to Step 4.**NO :** Diagnose MFI system. (Refer to GROUP 13A, Troubleshooting [P.13A-599](#).) After diagnosing the MFI system.

STEP 4. Using scan tool (M.U.T.-III), check actuator test.

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

(2) Conduct the actuator test of the combination meter.

- Item 1: Speedometer

- The speedometer operates up to the set position.

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

Q: Is the check result normally?**YES :** Go to Step 5.**NO :** Replace combination meter, then go to Step 6.

STEP 5. Check by scan tool (M.U.T.-III) "Special Function"

- Item 4: Pointer (Refer to [P.54A-51](#)).

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the combination meter, and then go to Step 6.

STEP 6. Retest the system.

Check that the speedometer works normally.

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 6: The tachometer does not work (the other meters work).

TECHNICAL DESCRIPTION (COMMENT)

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

DIAGNOSIS

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

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) [P.54A-15](#)."
- (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 – Troubleshooting [P.54C-12](#)).
Complete the CAN troubleshooting, and then go to Step 6.

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

Check if DTC is stored in the combination meter.

Q: Is the DTC stored?

YES : Troubleshoot the combination meter. Refer to [P.54A-18](#). Complete the combination meter troubleshooting, then go to Step 6.

NO : Go to Step 3.

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

Check if DTC is stored in the engine control module.

Q: Is the DTC stored?

- YES :** Troubleshoot the MFI (Refer to GROUP 13A – Troubleshooting [P.13A-47](#)).
Complete the engine troubleshooting, and then go to Step 6.
- NO :** Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), check actuator test

- Item 2: Tachometer (Refer to [P.54A-51](#)).

Q: Is the check result normal?

- YES :** Go to Step 5.
- NO :** Replace the combination meter, and then go to Step 6.

STEP 5. Check by scan tool (M.U.T.-III) "Special Function"

- Item 4: Pointer (Refer to [P.54A-51](#)).

Q: Is the check result normal?

- YES :** Go to Step 6.
- NO :** Replace the combination meter, and then go to Step 6.

STEP 6. Retest the system

Check that the tachometer works normally.

Q: Is the check result normal?

- YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).
- NO :** Go to Step 1.

Inspection Procedure 7: Tone alarm does not sound normally.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

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

OSS-related malfunction warning tone alarm (vehicles with KOS)

- Engine switch signal
- When the following conditions are met, and 1 second or more has elapsed.
 - +B1 is detected to be ON and +B2 is detected to be OFF.
 - When +B1 is OFF and +B2 is ON, KOS&OSS-ECU detects that the IOD fuse is mounted.

Engine switch reminder tone alarm (vehicles with KOS)

- Engine switch ON signal
- Driver's door switch ON signal

Ignition key reminder tone alarm function (vehicles without KOS)

- Ignition switch OFF signal
- Key reminder switch OFF signal

- Driver's door switch ON signal

Light reminder tone alarm

- Ignition switch OFF signal
- Lighting switch ON signal
- Driver's door switch ON signal

Door-ajar warning tone alarm

- Ignition switch ON signal
- Any door switch or liftgate switch ON signal
- Vehicles speed signal

Freeze warning tone alarm

- Ignition switch ON signal
- Ambient temperature signal

Parking brake reminder tone alarm

- Ignition switch ON signal
- Parking brake switch
- Vehicles speed signal
- Engine speed

Multi-information display switch operation tone alarm

- ON signal for multi-information display switch

Turn-signal light tone alarm

- Turn-signal light switch ON signal

ETACS-ECU function customize tone alarm

- Sounding request signal from the ETACS-ECU

A/C operation tone alarm

- Sounding request signal from the A/C-ECU

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

TROUBLESHOOTING HINTS

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

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) [P.54A-15](#)."
- (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 – Troubleshooting [P.54C-12](#)).

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

Check if DTC is set in the combination meter.

Q: Is the DTC set?

YES : Refer to [P.54A-18](#).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), read for any diagnostic trouble code

Check if DTC is set in the engine control module, TCM, ASC-ECU, KOS&OSS-ECU, ETACS-ECU or A/C-ECU or heater control unit.

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

Set to the engine control module. : Troubleshoot the MFI (Refer to GROUP 13A – Troubleshooting [P.13A-47](#)).

Set to the TCM. : Troubleshoot the CVT. Refer to GROUP 23A – DTC Chart [P.23A-16](#).

Set to the ASC-ECU. : Troubleshoot the ASC. Refer to GROUP 35C – Troubleshooting [P.35C-16](#).

Set to the KOS&OSS-ECU. : Troubleshoot the KOS. Refer to GROUP 42B – Troubleshooting [P.42B-13](#).

Set to the ETACS-ECU. : Troubleshoot the ETACS. Refer to [P.54A-218](#).

Set to the A/C-ECU. : Troubleshoot the A/C. Refer to GROUP 55B – Troubleshooting [P.55B-8](#).

The DTC is not set. : Go to Step 4.

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the tone alarm.

- Item 3: Buzzer(AUTO)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the combination meter, and then go to Step 5.

STEP 5. Retest the system

Check that the tone alarms sound normally.

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 8: Fuel gauge does not work (the other meters work).

TECHNICAL DESCRIPTION (COMMENT)

If only the fuel gauge does not operate, the pump module [fuel level sensor] or the combination meter may be defective.

TROUBLESHOOTING HINTS

- The fuel pump module [fuel level sensor] may be defective.
- The combination meter may be defective.

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the combination meter diagnostic trouble code.

⚠ 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) [P.54A-15](#)."
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if DTC No. B1201 is stored.

Q: Is DTC No. B1201 set?

YES : Perform the troubleshooting of when the DTC is stored (Refer to [P.54A-18](#)).

NO : Go to Step 2.

STEP 2. Check the fuel level sensor

Check to see if the fuel level sensor is normal (Refer to [P.54A-54](#)).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the fuel level sensor.

STEP 3. Using scan tool (M.U.T.-III), check data list

- Item 89: Fuel gauge (Refer to [P.54A-50](#)).
- Item 8A: Fuel gauge(Target) (Refer to [P.54A-50](#)).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the combination meter, and then go to Step 5.

STEP 4. Using scan tool (M.U.T.-III), check actuator test

- Item 3: Fuel gauge (Refer to [P.54A-51](#)).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the combination meter, and then go to Step 5

STEP 5. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 9: The combination meter light does not illuminate normally or the multi-information display is not displayed normally.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

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

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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)" [P.54A-15](#)."
- (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 – Troubleshooting [P.54C-12](#)).

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

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

Q: Is the DTC set?

YES : Troubleshoot the combination meter (Refer to [P.54A-18](#)).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), read for any diagnostic trouble code.

Check again if the DTC is set in the engine control module, TCM, ASC-ECU, EPS-ECU, KOS&OSS-ECU, SRS-ECU, ETACS-ECU and A/C-ECU.

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

Set to the engine control module. : Troubleshoot the MFI system. GROUP 13A – DTC Chart [P.13A-47](#).

Set to the TCM. : Troubleshoot the CVT. Refer to GROUP 23A – DTC Chart [P.23A-16](#).

Set to the ASC-ECU. : Troubleshoot the ASC. Refer to GROUP 35C – Troubleshooting [P.35C-16](#).

Set to the EPS-ECU. : Troubleshoot the EPS. Refer to GROUP 37 – Troubleshooting [P.37-8](#).

Set to the KOS&OSS-ECU. : Troubleshoot the KOS. Refer to GROUP 42B – Troubleshooting [P.42B-13](#).

Set to the SRS-ECU. : Troubleshoot the SRS. Refer to GROUP 52B – Troubleshooting [P.52B-14](#).

Set to the ETACS-ECU. : Troubleshoot the ETACS-ECU. Refer to [P.54A-218](#).

Set to the A/C-ECU. : Troubleshoot the A/C. Refer to GROUP 55B – Troubleshooting [P.55B-8](#).

The DTC is not set. : Go to Step 4.

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the liquid crystal display.

- Item 2: LCD(AUTO)
- Item 5: Illumination (AUTO)
- Item 6: Indicator (AUTO)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the combination meter, and then go to Step 5.

STEP 5. Retest the system

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

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 10: The multi-information display screen cannot be changed with the operation of the multi-information display switch.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The multi-information display switch may be defective
- The combination meter may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the combination meter diagnostic trouble code.

Check if DTC is stored in the combination meter.

 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) [P.54A-15](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (4) Check if DTC is stored.

Q: Is the DTC stored?

YES : Troubleshoot the combination meter (Refer to [P.54A-18](#)).

NO : Go to Step 2.

STEP 2. Check by scan tool (M.U.T.-III) "Special Function"

- Item 2: LCD (AUTO) (Refer to [P.54A-51](#)).

Q: Is the check result normal?**YES** : Go to Step 3.**NO** : Replace the combination meter, and then go to Step 3.**STEP 3. Retest the system.**

Check that the multi-information display screen works normally.

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 11: Parking brake reminder tone alarm does not sound.

Inspection Procedure 12: Brake warning light does not illuminate.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the parking reminder tone alarm does not sound or the brake warning light does not come on at a speed above 8 km/h with the parking brake switch ON, the parking brake switch input circuit, the vehicle speed signal circuit, the combination meter, the wiring harness or its connector may be defective.

TROUBLESHOOTING HINTS

- The vehicle speed signal circuit may be defective.
- The parking brake switch may be defective.
- The combination meter may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**STEP 1. Check the speedometer.**

Check that the speedometer in the combination meter operates normally.

Q: Is the check result normal?**YES** : Go to Step 2.**NO** : Troubleshoot the combination meter. Refer to [P.54A-38](#).**STEP 2. Check the parking brake switch.**

Refer to GROUP 36 – On-vehicle Service, Parking Brake Switch Check [P.36-6](#).

Q: Is the check result normal?**YES** : Go to Step 3.**NO** : Replace the parking brake switch.**STEP 3. Check of short to power supply, and open circuit in BRK line between combination meter connector and parking brake switch connector.****Q: Is the check result normal?****YES** : Go to Step 4.**NO** : Repair the connector(s) or wiring harness.

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the tone alarm and the liquid crystal display.

- Item 3: Buzzer (AUTO)
- Item 6: Indicator (AUTO)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the combination meter, and then go to Step 5.

STEP 5. Retest the system.

The parking brake reminder tone alarm function should work normally.

Q: Is the check result normal?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00 / How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Go to Step 1.

Inspection Procedure 13: Ambient temperature sensor does not work.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

When the ambient temperature sensor does not work, the ambient temperature sensor circuit, the ambient temperature sensor may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the ambient temperature sensor.

Refer to GROUP 55B – Inspection, Ambient Temperature Sensor Check [P.55B-46](#).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the ambient temperature sensor.

STEP 2. Resistance measurement at the ambient temperature sensor connector

- (1) Disconnect the ambient temperature sensor connector, the measure at the harness side.
- (2) Measure the resistance between the Disconnect the ambient temperature sensor connector, the measure at the harness side. connector (SENG 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 SENG line between ambient temperature sensor connector and combination meter connector.

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. Check of open circuit in AMB line between combination meter connector and ambient temperature sensor connector.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Retest the system.

Check that the ambient temperature sensor circuit works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the combination meter.

Inspection Procedure 14: Seat belt reminder function does not work normally.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the seat belt reminder function does not work normally, the seat belt switch input circuit, the combination meter or passenger's air bag OFF indicator light assembly may be defective.

TROUBLESHOOTING HINTS

- The seat belt switch (driver's side) may be defective.
- The seat belt switch (passenger's side) may be defective.
- The combination meter may be defective.
- The passenger's air bag OFF indicator light assembly may be defective.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. 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) [P.54A-15](#)."
- (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 – Troubleshooting [P.54C-12](#)).

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

Check if DTC is stored in the SRS-ECU.

Q: Is the DTC stored?

YES : Diagnose the SRS-ECU (Refer to GROUP 52B – Troubleshooting [P.52B-14](#)).

NO : Go to Step 3.

STEP 3. Check the seat belt switch.

Refer to GROUP 52A – Front Seat Belt [P.52A-28](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the seat belt switch.

STEP 4. Resistance measurement at the seat belt switch (driver's side) connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the seat belt switch (driver's side) connector and ground.

OK: The resistance should be 2 ohms or less.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check of open circuit in ground line between seat belt switch (driver's side) and ground.**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Repair the wiring harness.

STEP 6. Check of short to power supply circuit in S/B– line between combination meter connector and seat belt switch (driver's side) connector.

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 7. Check of short to power supply, and open circuit in BWLP line between combination meter connector and passenger's air bag OFF indicator light assembly connector.

Q: Is the check result normal?

YES : Go to Step 8.

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

STEP 8. Retest the system.

The seat belt reminder function should work normally.

Q: Is the check result normal?

YES <The seat belt reminder function works normally.> :

The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use

Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO <Tone alarm sounds do not sound.> : Replace the combination meter.

NO <The indicator (driver's side) does not illuminate.> :

Replace the combination meter.

NO <The indicator (passenger's side) does not illuminate.> : Replace the passenger's air bag OFF indicator light assembly.

SERVICE DATA

The following items of the ECU input data can be read using scan tool (M.U.T.-III).

M1540201001119

Item No.	Check item	scan tool display	Check condition	Normal condition
89	Fuel gauge	Fuel gauge	Fuel gauge unit resistance value and scan tool displayed value agree with each other. (Tolerance is ± 2 ohms)	
8A	Fuel gauge(Target)	Fuel gauge(Target)	Fuel gauge and scan tool displayed values agree with each other.	
90	Odometer	Odometer	Odometer displayed value and scan tool displayed value agree with each other.	
94	Power source voltage	Power source voltage	Always	0 to 20 V

ACTUATOR TEST TABLE

M1540201101008

Item No.	Item name	Test item	Driven content
1*	Speedometer	Pointer setting (–)	Value that is set with scan tool is shown on the combination meter.
2	Tachometer	Pointer setting (r/min)	
3	Fuel gauge	Status setting (ohm)	
5	Meter illumination	Status setting (%)	

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

SPECIAL FUNCTION TABLE

M1540213300017

TEST

Item No.	Item name	Test content
2	LCD (AUTO)	The multi information display screen changes by looping in the following order. 1. A black full screen is displayed. 2. The version information is displayed. 3. A white full screen is displayed. 4. A screen with black and white gradation is displayed.
3	Buzzer (AUTO)	The tone alarm sounds.
4	Pointer (AUTO)	Makes the speedometer and tachometer sweep from zero to full scale.
5	Illumination (AUTO)	Makes the meter needles, the instrument face plate, the variable-dimming LED indicator and the LCD screen back light sweep 0% to 100% and vice versa.
6	Indicator (AUTO)	Toggles all of the LED indicators ON and OFF.

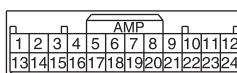
TURN-SIGNAL SOUND CUSTOMIZATION

Item No.	Item name	Test content
1	Signal sound setting	Customizing turn-signal sound

CHECK AT COMBINATION METER TERMINALS

M1540201200712

Connector: C-108



ACB04735AB

Terminal No.	Terminal code	Check item	Check condition	Normal condition
1	B+B	ECU power supply (battery)	Always	Battery positive voltage
2	IG1	ECU power supply (Ignition switch: IG1)	Ignition switch: ON	Battery positive voltage
			Ignition switch: OFF	1 V or less
3	–	–	–	–

Terminal No.	Terminal code	Check item	Check condition	Normal condition
4	BRK	Parking brake switch input	Parking brake switch: ON	1 V or less
			Parking brake switch: OFF	Battery positive voltage
5	S/B–	Seat belt switch (driver's side) input	Seat belt switch (driver's side): ON	1 V or less
			Seat belt switch (driver's side): OFF	Battery positive voltage
6	–	–	–	–
7	AMB	Ambient temp input	Outside temperature: -40°C (-40°F)	Approximately 4.8 V
			Outside temperature: 0°C (32°F)	Approximately 3.4 V
			Outside temperature: 25°C (77°F)	Approximately 1.9 V
			Outside temperature: 50°C (122°F)	Approximately 0.9 V
8	–	–	–	–
9	LVL	Brake fluid level sensor	Parking brake switch: ON	1V or less
			Parking brake switch: OFF	Battery positive voltage
10 to 11	–	–	–	–
12	SENG	Ambient temp ground	Always	1 V or less
13	GND	Ground (sensor)	Always	1 V or less
14	CANH	CAN H	–	–
15	CANL	CAN L	–	–
16, 17	–	–	–	–
18	F/G	Input of fuel gauge	Fuel: FULL	Approximately 1 V
			Fuel: EMPTY	Approximately 8 V
19	BWLP	Passenger's seat belt warning light (passenger's air bag OFF indicator light assembly) output	–	–
20	SPEED	Vehicle speed signal output	Vehicle speed: Approximately 40 km/h (25 mph)	Approximately 28Hz
21	GND1	Ground (ECU)	Always	1 V or less
22	PWM	Illumination (–) output	Always	1 V or less
23	ILL+	Illumination (+) output	With lighting control	Battery positive voltage
24	–	–	–	–

ON-VEHICLE SERVICE

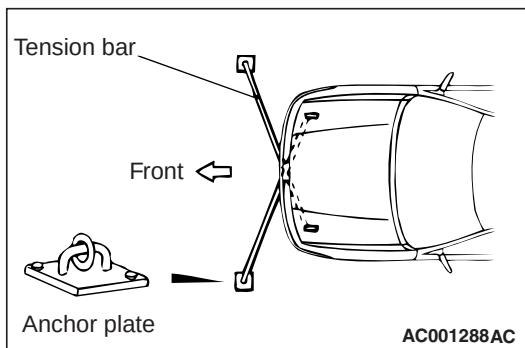
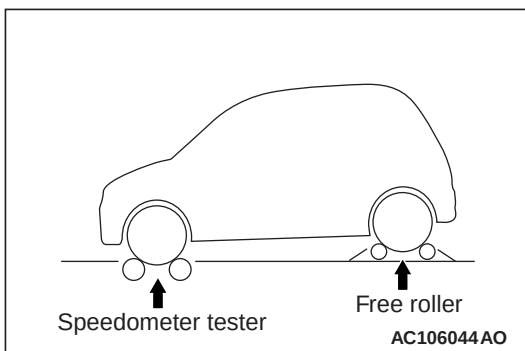
SPEEDOMETER CHECK

M1540201400910

⚠ CAUTION

- Since the DTC may be stored in the ASC-ECU when checking the speedometer with speedometer tester, erase the DTC.
- Do not accelerate or decelerate suddenly during servicing work.

1. Adjust the pressure of tires to the specified level (Refer to GROUP 31, On-vehicle Service P.31-41).
2. Press the ASC OFF switch for 3 seconds or more to stop the ASC operation.
3. Set the vehicle onto a speedometer tester and use wheel chocks to hold the rear wheels.



4. To prevent front wheel lateral runout or vehicle sudden start, attach a chain or wire to the front and rear towing hooks and fix the other end of the chain or wire to the anchor plate.
5. Check that the speedometer indicating range is within the standard value and the needle fluctuation is within the limit value.

Standard value <Vehicles for USA>:

Standard indication {mph (km/h)}	Indication tolerance {mph (km/h)}
25 (40)	23.5 – 26.5 (40.5 – 44.5)
50 (80)	48.5 – 51.5 (81.5 – 86.5)
75 (120)	73.5 – 76.5 (122.5 – 128.5)
100 (160)	98.5 – 102.5 (162.5 – 169.5)

Standard value <Vehicles for CANADA>:

standard indication {km/h (mph)}	Indication tolerance {km/h (mph)}
40 (25)	40.5 – 44.5 (25.5 – 28.5)
80 (50)	81.5 – 86.5 (50.5 – 53.5)
120 (75)	122.5 – 128.5 (76.0 – 78.0)
160 (100)	162.5 – 169.5 (101.5 – 106.5)

6. If not within the standard value, check the tire size. If an incorrect size of tire is used, replace it and check again. If the tire size is correct, a defect may be present in components and circuit between the ASC and the combination meter. Check the following items.
- ASC (Refer to GROUP 35C, Diagnosis [P.35C-16](#)).
 - Combination meter (refer to [P.54A-18](#)).

TACHOMETER CHECK

M1540201500531

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

Standard value:

Engine speed (r/min)	Tachometer indicating tolerance (r/min)
700	600 – 800
3,000	2,850 – 3,150
5,000	4,750 – 5,250
6,000	5,700 – 6,300

FUEL LEVEL SENSOR CHECK

M1540201600936

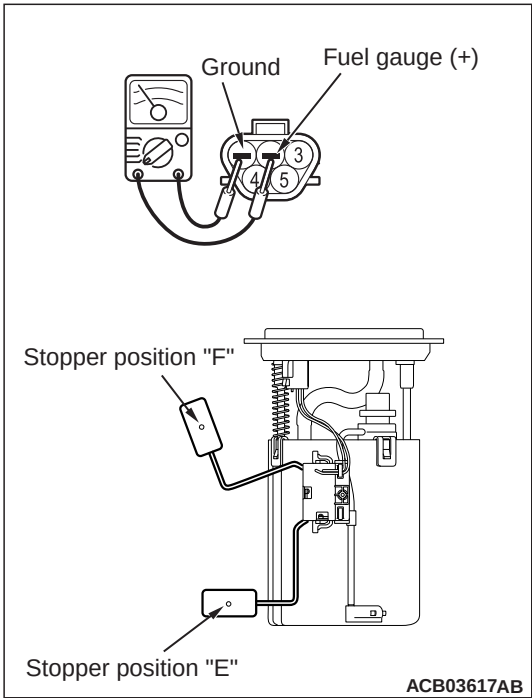
NOMINAL RESISTANCE OF THE FUEL LEVEL SENSOR

1. Remove the fuel pump module (Refer to GROUP 13B – On-Vehicle Service [P.13B-7](#)).
2. When float of the fuel level sensor is in stopper positions F and E, ensure that resistance between the fuel level sensor terminal and ground terminal is within the standard value.

Standard value:

Float position	Gauge resistance value (ohms)
Stopper position "F"	13.0 ± 1.0
Stopper position "E"	120.0 ± 1.0

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

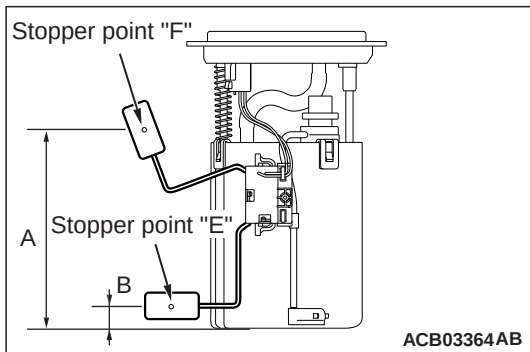


FUEL LEVEL SENSOR FLOAT HEIGHT

1. Remove the fuel pump module (Refer to GROUP 13B – On-Vehicle Service P.13B-7).
2. When float is moved to contact the float arm on the stopper, ensure that stopper positions "F" (height A) and "E" (height B) are within the standard value.

Standard value:

Float position	Float height {mm (in)}
Stopper position "F" (height A)	135.4 ± 5.0 (5.3 $\pm$ 0.2)
Stopper position "E" (height B)	14.9 ± 5.0 (0.6 $\pm$ 0.2)



SERVICE REMINDER FUNCTION SET

HOW TO SET BY OPERATING THE SCAN TOOL (M.U.T.-III)

CAUTION

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

Using the scan tool (M.U.T.-III), the following service reminder functions can be set. Before setting, check

the current status (schedule, driving distance and elapsed days).

1. Extra reminder setting
2. Extra reminder cancel
3. Periodic reminder schedule set
4. Integrated value adjustment
5. Optional INT schedule setting

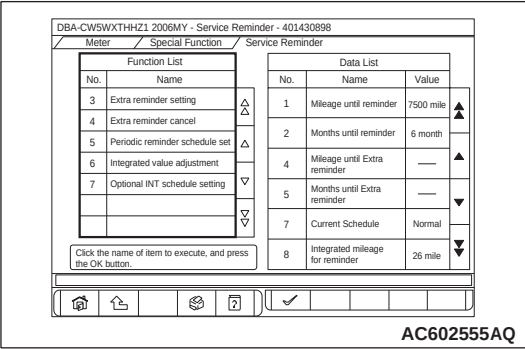
M1540208200735

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

⚠ CAUTION

If the combination meter has not started to calculate the elapsed time yet, follow steps "a" to "d" to activate the calculation beforehand.

- a. Turn the ignition switch to the OFF position.
 - b. Press the multi-information display switch to display the service reminder on the multi-information display.
 - c. Press and hold the multi-information display switch for at least one second until the service reminder indicator flashes.
 - d. While the indicator is flashing, press the switch briefly (within one second).
1. Connect the scan tool (M.U.T.-III) to the data link connector.
 2. Start the scan tool system on the PC and turn the ignition switch to the "ON" position.
 3. Select "Meter" on the "System Select" screen, and press the "OK" button.
 4. Select "Special Function" on the next screen.
 5. Select "Service Reminder" on the "Special function" screen.
 6. Select the function to be executed from "Function List."
 - 3 Extra reminder setting (Refer to P.54A-56).
 - 4 Extra reminder cancel (Refer to P.54A-57).
 - 5 Periodic reminder schedule set (Refer to P.54A-57).
 - 6 Integrated value adjustment (Refer to P.54A-58).
 - 7 Optional INT schedule setting (Refer to P.54A-59).



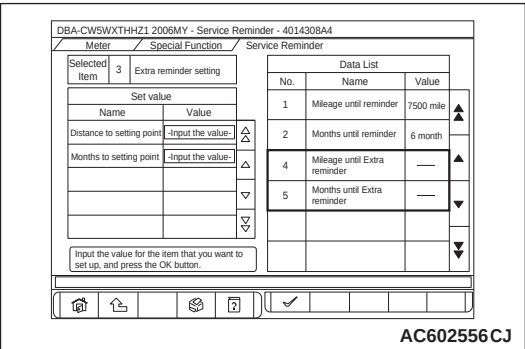
1. EXTRA REMINDER SETTING

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

NOTE: Prior to this Extra reminder setting, execute the Extra reminder cancel and the Periodic reminder schedule set (including the case that it is not necessary to change the schedule).

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

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



DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A5

Meter	Special Function	Service Reminder
Selected Item	3	Extra reminder setting

Set value

Name	Value
Distance to setting point	Input the value:
Months to setting point	2

Input the value for the item that you want to set up, and press the OK button.

Range: 0-254 Unit: month

AC602557AR

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

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

- Press the "OK" button.

DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A6

Meter	Special Function	Service Reminder
Selected Item	3	Extra reminder setting

Check the result.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	---
5	Months until Extra reminder	2 month

AC602558DE

- The temporary warning period is set.

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

2. EXTRA REMINDER CANCEL

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

DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A6

Meter	Special Function	Service Reminder
Selected Item	4	Extra reminder cancel

Press the OK button to execute.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	3000 mile
5	Months until Extra reminder	2 month

AC602558DF

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

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

- Press the "OK" button.

DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A6

Meter	Special Function	Service Reminder
Selected Item	4	Extra reminder cancel

Check the result.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	---
5	Months until Extra reminder	---

AC602558DG

- The temporary warning period is cancelled.

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

3. PERIODIC REMINDER SCHEDULE SET

The service reminder schedule can be changed.

NOTE: In addition to the operation of the scan tool (M.U.T.-III), the schedule can be changed by operating the meter information switch on the combination meter. Refer to [P.54A-60](#).

DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	5	Periodic reminder schedule set

Set value

Name	Value
Schedule Spec.	Select the value:

Select the value and press the OK button.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	---
5	Months until Extra reminder	---
7	Current Schedule	Normal

AC602556CK

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

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

DBA-CW5WXTTHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	5	Periodic reminder schedule set

Set value

Name	Value
Schedule Spec.	NAS 10

Select the value and press the OK button.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	—
5	Months until Extra reminder	—
7	Current Schedule	Normal

AC602556CL

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

DBA-CW5WXTTHZ1 2006MY - Service Reminder - 4014308A6

Meter	Special Function	Service Reminder
Selected Item	5	Periodic reminder schedule set

Set value

Name	Value
Schedule Spec.	NAS 10

Check the result.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	—
5	Months until Extra reminder	—
7	Current Schedule	NAS 10

AC602558DH

- The schedule is changed.

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

4. INTEGRATED VALUE ADJUSTMENT

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

DBA-CW5WXTTHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	6	Integrated value adjustment

Set value

Name	Value
Running Distance	Input the value.
Elapsed Days	Input the value.

Input the value to both items, and press the OK button.

No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
4	Mileage until Extra reminder	—
5	Months until Extra reminder	—
8	Integrated mileage for reminder	26 mile
9	Integrated days for reminder	0 day

AC602556CM

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

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

DBA-CW5WXTTHZ1 2006MY - Service Reminder - 4014308A5

Meter	Special Function	Service Reminder
Selected Item	6	Integrated value adjustment

Set value

Name	Value
Running Distance	100
Elapsed Days	30

Input the value to both items, and press the OK button.

Range: 0-32767, Unit: day.

No.	Name	Value
7	8	9
4	5	6
1	2	3
0	—	Clear

AC602557AF

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

NOTE: Always input both the mileage and elapsed days.

- Press the "OK" button.

DBA-CW5WXTTHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	6	Integrated value adjustment

Set value

Name	Value
Running Distance	100
Elapsed Days	30

Check the result.

No.	Name	Value
1	Mileage until reminder	7400 mile
2	Months until reminder	5 month
4	Mileage until Extra reminder	—
5	Months until Extra reminder	—
8	Integrated mileage for reminder	100 mile
9	Integrated days for reminder	30 day

AC602558DI

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

NOTE:

- The screen indicates that the current mileage and elapsed days (Nos. 8 and 9 in the data list) have been changed to "100 mile" and "30 day."

- Set the elapsed days for check warning to "0 day" by the above resetting method, thereby the timer is reset indirectly.

5. OPTIONAL INT SCHEDULE SETTING

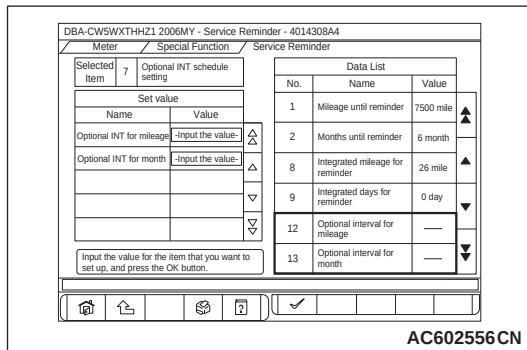
CAUTION

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

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

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

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



DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	7	Optional INT schedule setting
Set value		
Name	Value	
Optional INT for mileage	Input the value-	
Optional INT for month	Input the value-	
Input the value for the item that you want to set up, and press the OK button.		

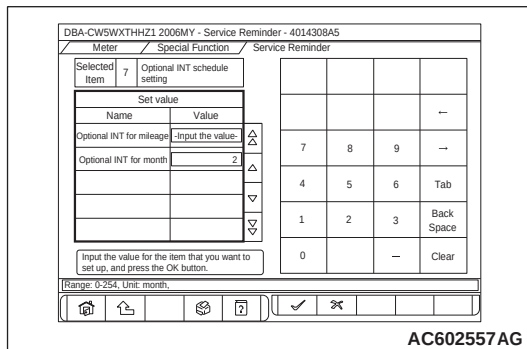
No.	Name	Value
1	Mileage until reminder	7500 mile
2	Months until reminder	6 month
8	Integrated mileage for reminder	26 mile
9	Integrated days for reminder	0 day
12	Optional interval for mileage	—
13	Optional interval for month	—

AC602556CN

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

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

3. Press the "OK" button.



DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A5

Meter	Special Function	Service Reminder
Selected Item	7	Optional INT schedule setting
Set value		
Name	Value	
Optional INT for mileage	Input the value-	
Optional INT for month	2	
Input the value for the item that you want to set up, and press the OK button.		

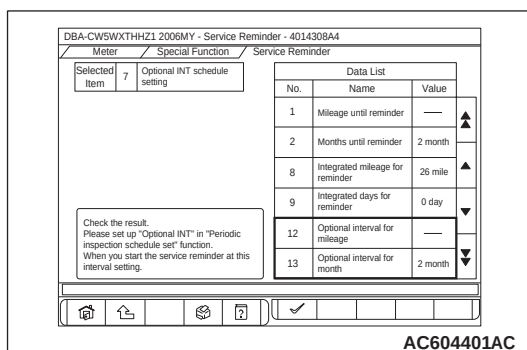
No.	Name	Value
7	8	9
4	5	6
1	2	3
0	—	Clear

Range: 0-254, Unit: month.

AC602557AG

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

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



DBA-CW5WXTHHZ1 2006MY - Service Reminder - 4014308A4

Meter	Special Function	Service Reminder
Selected Item	7	Optional INT schedule setting
Set value		
Name	Value	
Optional INT for mileage	Input the value-	
Optional INT for month	2	
Input the value for the item that you want to set up, and press the OK button.		

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

Check the result.
Please set up "Optional INT" in "Periodic inspection schedule set" function.
When you start the service reminder at this interval setting.

AC604401AC

HOW TO SET BY SPECIAL OPERATION OF SWITCH

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

**HOW TO CANCEL THE SERVICE
REMINDER WARNING****⚠ CAUTION**

- Be careful not to execute the service reminder warning cancellation by operating the switch again after erasing the service reminder warning indicator which is currently output, because the next warning period will be cancelled.
 - If the next warning period is cancelled by mistake, the cancelled warning period can be restored by setting a schedule different from the current one once, and then returning it to the previous schedule.
1. Turn the ignition switch to the "OFF" position.
 2. By operating the multi-information display switch, the warning period is displayed on the odometer.
 3. Press the multi-information display switch once for 1.0 seconds or longer.
 4. The service reminder indicator flashes.
 5. While the service reminder indicator flashes, press the multi-information display switch once for less than 1.0 seconds.
 6. The service reminder indicator is turned ON, and "CLEAR" is displayed on the odometer display for 3 seconds.
 7. After "CLEAR" is displayed for 3 seconds, the warning period to the next time is displayed.

HOW TO SET THE SCHEDULE

1. Turn the ignition switch to the "OFF" position.
2. By operating the multi-information display switch, the warning period is displayed on the odometer.
3. Press the multi-information display switch once for 1.0 seconds or longer.
4. The service reminder indicator flashes.
5. While the service reminder indicator flashes, press the multi-information display switch for 1.0 seconds or longer and 3 times consecutively.
6. The service reminder indicator is turned ON, and the current schedule is displayed on the odometer display.
7. While the current schedule is displayed, press the multi-information display switch for less than 1.0 seconds and 3 times consecutively.
8. The odometer display is shifted to the schedule selection mode.
9. When the multi-information display switch is pressed for less than 1.0 seconds, the schedule is shifted, and when the switch is pressed for 1.0 seconds or longer, the displayed schedule is set.
NOTE: For schedule, "JPN", "EU", "NAS", "GCC/EXP", "MMAL" and "SEVERE" can also be selected. However, the using shall be for "Normal" only.
10. The schedule set in Step 9 is displayed for 3 seconds, and the warning period to the next time is displayed.

SCHEDULE TABLE

Schedule	Contents of schedule	
Normal	Elapsed time (month)	Every 6 elapsed months
	Driving distance (miles)	Every 7,500 miles of driving distance
	Driving distance (km)	Every 12,000 km of driving distance

**HOW TO INACTIVATE THE SERVICE
REMINDER FUNCTION**

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

When "OFF Display" is selected

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

When "Function OFF" is selected

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

COMBINATION METER

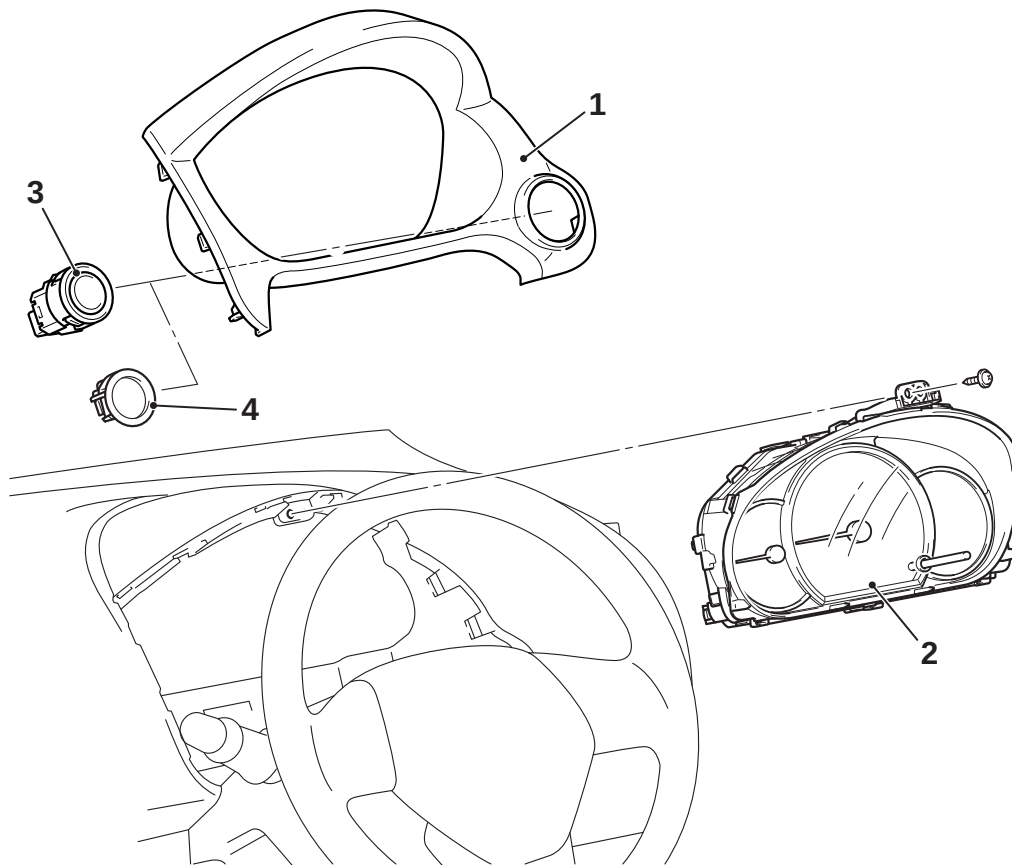
REMOVAL AND INSTALLATION

M1540201700524

⚠ CAUTION

When the combination meter is required to be replaced, the current driving distance and number of elapsed days must be entered into the meter after the replacement in order to be used for service reminder function. Therefore, read "Integrated mileage for reminder," "Integrated days for reminder," "Mileage until Extra reminder," "Months until Extra reminder," and "Current Schedule" from the meter before the replacement using the special function of scan tool (M.U.T.-III), and note them. For the operation method of scan tool (M.U.T.-III), refer to [P.54A-55](#). If "Integrated mileage for reminder" or "Integrated days for reminder" cannot be read by the scan tool (M.U.T.-III), follow the method described below.

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



ACC03246AB

Removal Steps

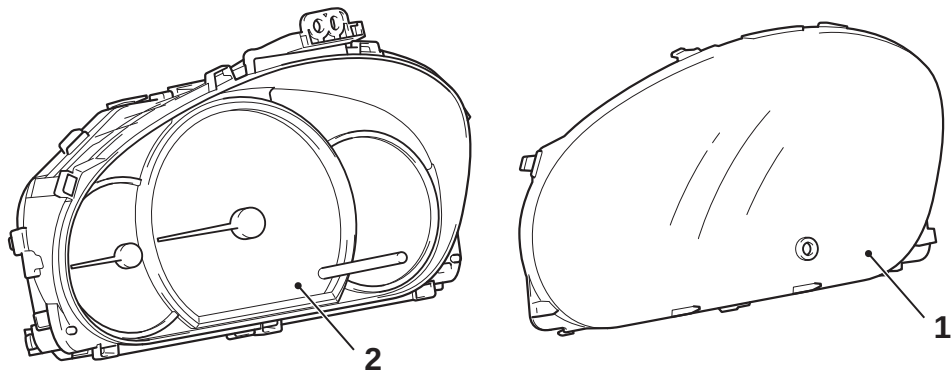
1. Combination meter bezel
2. Combination meter assembly

Removal Steps (Continued)

3. Engine switch <Vehicles with KOS>
4. Plug <Vehicles without KOS>

DISASSEMBLY AND ASSEMBLY

M1540201800286



ACB03309AB

Disassembly steps

- 1. Combination meter glass
- 2. Combination meter

HEADLIGHT

SERVICE SPECIFICATIONS

M1540100200466

Item			Standard value	Limit
Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam	Vertical direction	Horizontal line (H) ± 50.5 mm (± 2.0 inches) (± 0.38 degrees angle)	–
		Horizontal direction	± 126.4 mm (± 5.0 inches) (± 0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)	–
Headlight intensity cd (at high-beam)			–	40,000 or more {when a screen is set 18.3m(60 ft) ahead of the vehicle}

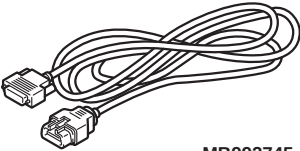
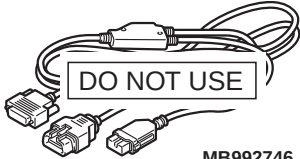
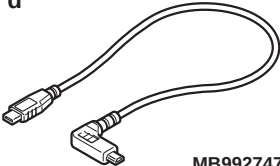
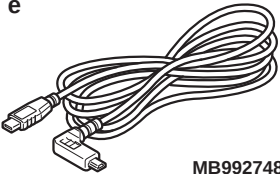
PRECAUTIONS ON HOW TO USE THE HEADLIGHT ASSEMBLY

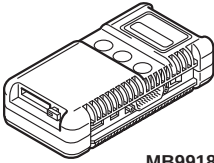
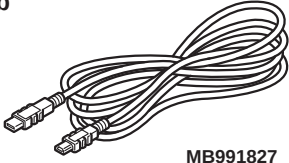
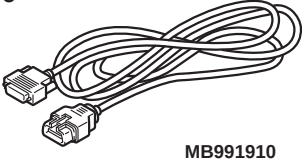
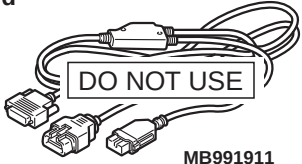
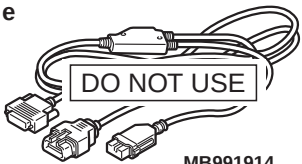
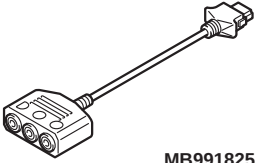
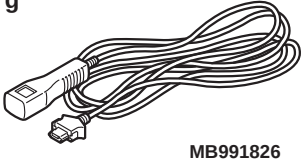
Be careful with the following items as resin lenses are used in the headlight assembly.

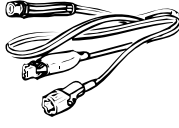
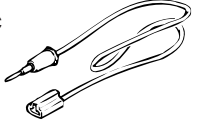
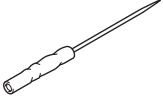
- Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.
- Don't tape the outer lens.
 - Don't scratch the outer lens surface with a sharp edged special tool.
 - Use the specified genuine bulb.

SPECIAL TOOLS

M1540104400354

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC, service data and actuator test check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540104200338

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

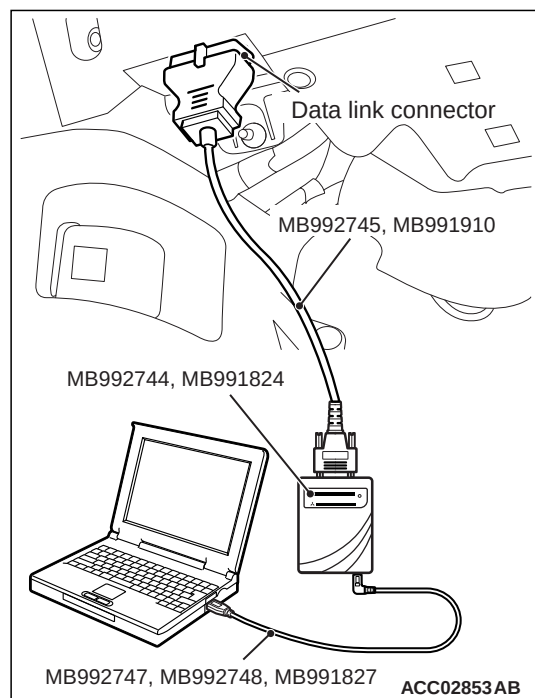
DIAGNOSTIC FUNCTION

M1540104300391

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

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

To prevent damage to scan tool (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. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

NOTE: If the battery voltage is low, diagnostic trouble codes will not be stored. Check the battery if scan tool (M.U.T.-III) does not display.

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

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

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

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

DIAGNOSTIC TROUBLE CODE CHART

M1540101400797

CAUTION

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

DTC No.	Diagnostic item		Reference page
B1706	Flasher fuse blown	Detection of turn-signal light (blown fuse)	P.54A-68
B1707	Flasher open	Detection of turn-signal light (open circuit)	P.54A-69

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1706: Flasher fuse blown

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the flasher fuse is broken, the ETACS-ECU stores DTC B1706.

TROUBLESHOOTING HINTS

- The fuse 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. Check the flasher fuse.**Q: Is the fuse in good condition?**

YES : Go to Step 2 [P.54A-68](#).

NO : Check the flasher fuse. (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – Inspection service point for blown fuse [P.00-15](#).) Then go to Step 3.

STEP 2. Check of open circuit in HAZ1 line between the ETACS-ECU connector and the fusible link.**Q: Is the check result normal?**

YES : Go to Step 3.

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

STEP 3. 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Erase the DTC.
- (4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (5) Check whether the ETACS-ECU DTC is 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 [P.00-13](#)).

DTC B1707: Flasher open

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

When the turn-signal light bulb is blown, or connector(s) or wiring harness between the ETACS-ECU, the turn-signal light which does not illuminate and ground is defective, the ETACS-ECU sets DTC B1707.

TROUBLESHOOTING HINTS

- The turn-signal light bulb may be defective
- The headlight assembly may be defective
- The rear combination light assembly 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. Confirm which turn-signal light is defective.

Q: Which turn-signal light fails to illuminate correctly?

Front turn-signal light : Go to Step 2.

Side turn-signal light : Go to Step 7.

Rear turn-signal light : Go to Step 12.

STEP 2. Check the bulb(s) of the front turn-signal lights.

Check the bulb(s) of the defective light.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the bulb(s) of the defective light. Go to Step 17.

STEP 3. Resistance measurement at the front turn-signal light (LH) connector or front turn-signal light (RH) connector.

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

(2) Resistance measurement between the defective light connector terminal and ground.

- Measure the resistance between the front turn-signal light (LH) connector (ground terminal) and the ground.
- Measure the resistance between the front turn-signal light (RH) connector (ground terminal) and the ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of open circuit in ground line between front turn-signal light (LH) connector or front turn-signal light (RH) connector and ground.**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)). Go to Step 17.

NO : Repair the connector(s) or wiring harness. Go to Step 17.

STEP 5. Check of open circuit in TURN LH or TURN RH line between front turn-signal light (LH) connector or front turn-signal light (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. Go to Step 17.

STEP 6. Retest the system.

Check that the front turn-signal lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)). Go to Step 17.

NO : Replace the front turn-signal light. Go to Step 17.

STEP 7. Check the bulb(s) of side turn-signal lights.

Check the bulb(s) of the defective light.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Replace the bulb(s) of the defective light. Go to Step 17.

STEP 8. Resistance measurement at the side turn-signal light (LH) connector, side turn-signal light (RH) connector <Fender panel type>, door mirror assembly (LH) connector or door mirror assembly (RH) connector <Door mirror type>.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Resistance measurement between the defective light connector terminal and ground.
 - Measure the resistance between the side turn-signal light (LH) connector (ground terminal) and the ground <Fender panel type>.
 - Measure the resistance between the side turn-signal light (RH) connector (ground terminal) and the ground <Fender panel type>.
 - Measure the resistance between the door mirror assembly (LH) connector (ground terminal) and the ground <Door mirror type>.
 - Measure the resistance between the door mirror assembly (RH) connector (ground terminal) and the ground <Door mirror type>.

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 line between side turn-signal light (LH) connector, side turn-signal light (RH) connector <Fender panel type>, door mirror assembly (LH) connector or door mirror assembly (RH) connector <Door mirror type> and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Repair the connector(s) or wiring harness. Go to Step 17.

STEP 10. Check of open circuit in TURN LH or TURN RH line between side turn-signal light (LH) connector, side turn-signal light (RH) connector <Fender panel type>, door mirror assembly (LH) connector or door mirror assembly (RH) connector <Door mirror type> and ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 11.

NO : Repair the connector(s) or wiring harness. Go to Step 17.

STEP 11. Retest the system.

Check that the side turn-signal lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)). Go to Step 17.

NO : Replace the side turn-signal light <Fender panel type>, side turn-signal light assembly (Refer to GROUP 51 – Door Mirror [P.51-68](#)) <Door mirror type>. Go to Step 17.

STEP 12. Check the bulb(s) of rear turn-signal lights.

Check the bulb(s) of the defective light.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Replace the bulb(s) of the defective light. Go to Step 17.

STEP 13. Resistance measurement at the rear combination light (turn: LH) or rear combination light (turn: RH) connector.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Resistance measurement between the defective light connector terminal and ground.
 - Measure the resistance between the side rear combination light (turn: LH) connector (ground terminal) and the ground.
 - Measure the resistance between the side rear combination light (turn: RH) connector (ground terminal) and the 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 line between rear combination light (turn: LH) connector or rear combination light (turn: RH) connector and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)). Go to Step 17.

NO : Repair the connector(s) or wiring harness. Go to Step 17.

STEP 15. Check of open circuit in TURN LH or TURN RH line between rear combination light (turn: LH) connector or rear combination light (turn: 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. Go to Step 17.

STEP 16. Retest the system.

Check that the rear turn-signal lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)). Go to Step 17.

NO : Replace the rear combination light. Go to Step 17.

STEP 17. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is set 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Erase the DTC.
- (4) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (5) Check whether the ETACS-ECU DTC is set.

Q: Is the DTC set?

YES : Replace the ETACS-ECU.

NO : The procedure is complete.

TROUBLE SYMPTOM CHART

M1540102101350

Trouble symptom		Inspection Procedure No.	Reference page
Headlight and position light	None of the low-beam headlights illuminate.	A-1	P.54A-75
	None of the high-beam headlights illuminate.	A-2	P.54A-76
	The high-beam and low-beam headlights do not illuminate when the passing switch is operated.	A-3	P.54A-78
	One of the headlights does not illuminate.	A-4	P.54A-79
	The high-beam indicator light does not illuminate.	A-5	P.54A-80
	The headlight automatic-shutdown function does not work normally.	A-6	P.54A-81
	The position light does not illuminate.	A-7	P.54A-82
	Either of the position lights does not illuminate.	A-8	P.54A-83
	When the ignition switch is turned to the ON position with the lighting switch at the OFF or TAIL position, the headlights will illuminate briefly.	A-9	P.54A-85
	Daytime running light function does not work normally.	A-10	P.54A-87
Turn-signal light	None of the turn-signal lights illuminate.	B-1	P.54A-88
	The comfort flasher does not work normally.	B-2	P.54A-89
	The turn-signal indicator lights do not illuminate.	B-3	P.54A-90
	One of the turn-signal lights does not illuminate.	B-4	P.54A-91

SYMPTOM PROCEDURES

Inspection Procedure A-1: None of the low-beam headlights illuminate.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If none of headlights (low-beam) illuminates, the headlight switch input circuit, headlight relay (LO), or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- The headlight relay (LO) may be defective
- The column switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.**⚠ 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)" [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

Check the input signal from the headlight (low-beam) switch.

- Column switch (lighting switch): HEAD

Item No.	Item name	Normal condition
60	Headlight output	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 3. Check the headlight relay (LO).

Refer to [P.54A-99](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the headlight relay (LO).

STEP 4. Voltage measurement at headlight relay (LO) connector.

(1) Remove the headlight relay (LO), and measure at the relay box side.

(2) Measure the voltage between the headlight relay (LO) connectors (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check of short to power supply, and open circuit in power supply lines between headlight relay (LO) connector and fusible link.**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 6. Check of open circuit in H/LP LO line between headlight relay (LO) connector and ETACS-ECU connector.**Q: Is the check result normal?**

YES : Go to Step 7.

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

STEP 7. Retest the system.

Check that the low-beam headlights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure A-2: None of the high-beam headlights illuminate.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If none of headlights (high-beam) illuminates, the headlight switch input circuit, headlight relay (HIGH), or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- The headlight relay (HI) may be defective
- The column switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

Check the input signal from the dimmer switch.

- Column switch (dimmer/passing): ON

Item No.	Item name	Normal condition
61	Headlight HI output	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 3. Check the headlight relay (HI).

Refer to [P.54A-99](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the headlight relay (HI).

STEP 4. Voltage measurement at headlight relay (HI) connector.

- (1) Remove the headlight relay (HI), and measure at the relay box side.
- (2) Measure the voltage between the headlight relay (HI) connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check of short to power supply, and open circuit in power supply lines between headlight relay (HI) connector and fusible link.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 6. Check of open circuit in H/LP HI line between headlight relay (HI) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 7. Retest the system.

Check that the high-beam headlights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure A-3: The high-beam and low-beam headlights do not illuminate when the passing switch is operated.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If none of headlights (low-beam and high-beam) illuminates, the passing switch input circuit or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the ETACS-ECU diagnostic trouble code.**⚠ 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

- YES :** Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).
NO : Go to Step 2.

STEP 2. Check that the headlights operate.

Check that the low-beam and high-beam headlights illuminate normally.

Q: Is the check result normal?

- YES :** Go to Step 3.
NO : Refer to Inspection Procedure 1 "None of headlights (low-beam) illuminates."
[P.54A-75](#) and Inspection Procedure 2 "None of headlights (high-beam) illuminates." [P.54A-76](#).

STEP 3. Retest the system.

When the passing switch is turned on, check if the headlights illuminate normally.

Q: Is the check result normal?

- YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).
NO : Replace the ETACS-ECU.

Inspection Procedure A-4: One of the headlights does not illuminate.

TECHNICAL DESCRIPTION (COMMENT)

When one of the headlights does not illuminate, the wiring harness, connector(s), or the bulb may have a problem, or the fuse may be burned out.

TROUBLESHOOTING HINTS

- The headlight bulbs 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 headlight 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 (LH) connector, headlight (RH) connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the connector of light which does not illuminate and the ground.
 - Measure the resistance between the headlight (LH) connector (ground terminal) and the ground.
 - Measure the resistance between the headlight (RH) connector (ground terminal) and the 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 line between headlight (LH) connector or headlight (RH) connector and ground.**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, and open circuit in power supply line between headlight (LH) connector or headlight (RH) connector and headlight relay (LO) connector.**Q: Is the check result normal?**

YES : Go to Step 5.

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

STEP 5. Retest the system

Check that the headlights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the headlight socket.

Inspection Procedure A-5: The high-beam indicator light does not illuminate.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the high-beam indicator does not illuminate normally, the harness in the CAN bus lines, connector(s), ETACS-ECU, or combination meter may have a problem.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**STEP 1. Check the headlight.**

Check that the headlights illuminate and go out normally when the lighting switch is operated.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the headlights. Refer to [P.54A-74](#).

STEP 2. 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)" [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 4.

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the indicator.

- Item 6: Indicator (AUTO)

Q: Is the check result normal?

YES : Replace the ETACS-ECU.

NO : Replace the combination meter.

Inspection Procedure A-6: The headlight automatic-shutdown function does not work normally.**⚠ CAUTION**

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

OPERATION

The ETACS-ECU operates this function in accordance with the input signals from column switch (lighting switch), ignition switch (IG1), and front door switch (LH).

TECHNICAL DESCRIPTION (COMMENT)

If the headlight automatic shutdown function does not work normally, the above described input circuits or ETACS-ECU may have a problem. Also, it may be possible that the headlight automatic shutdown function is set to "Disable" through configuration function.

TROUBLESHOOTING HINTS

- The front door switch (LH) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS**STEP 1. Using scan tool (M.U.T.-III), Check the configuration function**

Use the ETACS-ECU configuration function to check that the "Headlight auto cut customize" is set to "Enable (C-spec.)"

⚠ 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Use the ETACS-ECU configuration function to check that the "Headlight auto cut customize" is set to "Enable (C-spec.)"
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Use the ETACS-ECU configuration function to set the "Headlight auto cut customize" to "Enable (C-spec.)" (Refer to [P.54A-97](#)).

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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU (Refer to ETACS, Diagnosis [P.54A-218](#)).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), check data list

Use the ETACS-ECU service data to check the signals related to the operation of headlight automatic shutdown function.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Open the driver's door.
- Column switch (lighting switch): HEAD

Item No.	Item name	Normal condition
19	Driver's door switch	ON
30	Ignition switch(IG1)	OFF
60	Headlight output	ON

OK: Normal conditions are displayed for all the items

Q: Are the check result normal?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 4. Retest the system.

Check that the headlight automatic-shutdown function works normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure A-7: The position light does not illuminate.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The column switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.**⚠ 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)" [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

Check the input signal from the taillight switch.

- Column switch (lighting switch): TAIL

Item No.	Item name	Normal condition
59	Taillight output	ON

OK: Normal conditions is displayed

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 3. Retest the system.

Check that all the position lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure A-8: Either of the position lights does not illuminate.

⚠ CAUTION

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

COMMENTS ON TROUBLE SYMPTOM

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

TROUBLESHOOTING HINTS

- The position light bulb may be defective

- The headlight assembly 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 position 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 position light (LH) connector, position light (RH) connector

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

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

- Measure the resistance between the position light (LH) connector (ground terminal) and the ground.
- Measure the resistance between the position light (RH) connector (ground terminal) and the ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 4.

YES : Go to Step 3.

STEP 3. Check of open circuit in ground line between position light (LH) connector or position light (RH) connector and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, and open circuit in power supply line between position light (LH) connector or position light (RH) connector and junction block connector.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Retest the system.

Check that the position lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the position light which does not illuminate.

Inspection Procedure A-9: When the ignition switch is turned to the ON position with the lighting switch at the OFF or TAIL position, the headlights will illuminate briefly.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate briefly when the ignition switch is turned to the ON position with the lighting switch at the OFF or TAIL position, dome light fuse in the junction block is blown (pulled off).

TROUBLESHOOTING HINTS

- The dome light fuse in the junction block may be defective
- The column switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check dome light fuse.

Check dome light fuse in the junction block is blown or pulled off.

Q: Is the check result normal?

YES : Go to Step 2.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – Inspection service points for a blown fuse [P.00-15](#)).

STEP 2. Check that the headlights operate.

Check that the low-beam and high-beam headlights work normally.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Follow Inspection Procedure A-1: None of the low-beam headlights illuminate (Refer to [P.54A-75](#)) and Inspection Procedure A-2: None of the high-beam headlights illuminate (Refer to [P.54A-76](#)). Then go to Step 4.

STEP 3. Using scan tool (M.U.T.-III), read the ETACS diagnostic trouble code**⚠ 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) [P.54A-65](#)."
- (2) Check if the ETACS-ECU stores a DTC.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU.(Refer to [P.54A-218](#)) After the repair, go to Step 4.

NO : Go to Step 4.

STEP 4. Voltage measurement at column switch connector.

- (1) Disconnect the connector, and measure at the wiring harness-side connector.
- (2) Measure the voltage between the column switch connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check of short to power supply, and open circuit in power supply line between column switch connector and junction block connector.**Q: Is the check result normal?**

YES : Go to Step 6.

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

STEP 6. Retest the system.

Check whether the headlights illuminate briefly when the ignition switch is turned to the ON position with the lighting switch in the OFF or TAIL position.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the column switch (lighting switch).

Inspection Procedure A-10: Daytime running light function does not work normally.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the daytime running light function does not work, connector(s), wiring harness in the CAN bus lines, the engine control module, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS

- The input signal may be defective
- The headlight relay (LO) 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

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

Check to see that the headlight (low-beam) lights up properly when operating the dimmer switch while the headlight switch is ON.

Q: Do the headlights (low-beam) illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-1 "None of the low-beam headlights illuminate [P.54A-75](#)."

STEP 2. 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 Scan Tool (M.U.T.-III) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check whether ETACS-ECU DTCs are stored.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for ETACS-ECU DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), read the MFI system diagnostic trouble code.

Check whether engine control module DTCs are stored or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for engine control module DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the MFI system. Refer to GROUP 13A, Diagnosis [P.13A-47](#).

NO : Go to Step 5.

STEP 5. Check the parking brake switch.

Check the input signals from the parking brake switch.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check that the brake warning light on the combination meter goes off when the parking brake lever is released.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the brake warning light go off?

YES : Go to Step 6.

NO : Diagnose the Parking Brakes. Refer to GROUP 36, Trouble Symptom Chart [P.36-2](#). Verify that the daytime running light function does not work normally.

STEP 6. Temporarily replace the headlight relay (LO), and retest the system.

After temporarily replacing the headlight relay (LOW), with the ignition switch being in the ON position (engine is running), release the parking brake (parking brake switch: OFF) and turn the lighting switch to the OFF or TAIL position, and then check if the headlights (low-beam) illuminate with a reduced beam state.

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

YES : Replace the headlight relay (LO).

NO : Replace the ETACS-ECU.

Inspection Procedure B-1: None of the turn-signal lights illuminate.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If none of the turn-signal lights does not illuminate, the ignition switch (IG1), the turn-signal light switch input circuit or the ETACS-ECU may be defective. Using a customization function, the turn-signal lights can be operated even when the ignition switch is in the ACC position.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code****⚠ 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

- YES :** Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).
- NO :** Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

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

- Turn the ignition switch to the ON position.

Item No.	Item name	Normal condition
30	Ignition switch(IG1)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

- YES :** Go to Step 3.
- NO :** Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 3. Retest the system

Check that the turn-signal lights illuminate.

Q: Is the check result normal?

- YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).
- NO :** Replace the ETACS-ECU.

Inspection Procedure B-2: The comfort flasher does not work normally.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The column switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS**STEP 1. Using scan tool (M.U.T.-III), Check the configuration function.****⚠ 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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Use the ETACS-ECU configuration function to check that the "Comfort flasher" is set to "Enable".
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

- YES :** Go to Step 2.
- NO :** Use the ETACS-ECU customize function to set the "Comfort flasher" to "Enable" (Refer to [P.54A-97](#)).

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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

- YES :** Diagnose the ETACS-ECU (Refer to ETACS, Diagnosis [P.54A-218](#)).
- NO :** Go to Step 3.

STEP 3. Check that the turn-signal light operate.

Check that the turn-signal light work normally when the ignition switch is in the "ON" position.

Q: Is the check result normal?

- YES :** Go to Step 4.
- NO :** Refer to inspection procedure B-1 "None of the turn-signal lights illuminate [P.54A-88](#)."

STEP 4. Replace the ECU.

- (1) Replace the ETACS-ECU.
- (2) Check that the comfort flasher works normally.

Q: Is the check result normal?

- YES :** The procedure is complete.
- NO :** Replace the column switch.

Inspection Procedure B-3: The turn-signal indicator lights do not illuminate.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal light indicator does not illuminate normally, the harness in the CAN bus lines, connector(s), ETACS-ECU, or combination meter may have a problem.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Malfunction of combination meter

DIAGNOSIS**STEP 1. Check turn-signal light**

Check that the turn-signal light flashes normally when the turn-signal switch is operated.

Q: Is the check result normal?

- YES :** Go to Step 2.
- NO :** Refer to Inspection Procedure B-1 "None of the turn-signal lights illuminate" [P.54A-88](#).

STEP 2. 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 Scan Tool (M.U.T.-III) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

- YES :** Go to Step 3.
- NO :** Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

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

Check if diagnostic trouble code is stored in the ETACS-ECU.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

- YES :** Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).
- NO :** Go to Step 4.

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the indicator.

- Item 6: Indicator (AUTO)

Q: Is the check result normal?

YES : Replace the ETACS-ECU.

NO : Replace the combination meter.

Inspection Procedure B-4: One of the turn-signal lights does not illuminate.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If one of the turn-signal lights does not illuminate, the wiring harness connector(s) or the bulb may be defective.

TROUBLESHOOTING HINTS

- The turn-signal light bulb may be defective
- The side turn-signal light assembly may be defective <Fender panel type>
- The side turn-signal light assembly may be defective <Door mirror type>
- 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. Confirm which turn-signal light is defective.

Q: Which turn-signal light fails to illuminate correctly?

YES (All of the turn-signal lights illuminate normally) :

The procedure is complete.

NO (Only the front or rear turn-signal lights does not illuminate normally) : Refer to ETACS diagnostic trouble code chart.

NO (Only the side turn-signal lights does not illuminate normally) : Go to Step 2.

STEP 2. Resistance measurement at the side turn-signal light connector.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the defective light connector terminal and the ground.
 - Measure the resistance between the side turn-signal light (LH) connector (ground terminal) and the ground <Fender panel type>.
 - Measure the resistance between the side turn-signal light (RH) connector (ground terminal) and the ground <Fender panel type>.
 - Measure the resistance between the door mirror assembly (LH) connector (ground terminal) and the ground <Door mirror type>.
 - Measure the resistance between the door mirror assembly (RH) connector (ground terminal) and the ground <Door mirror type>.

OK: Continuity exists (2 Ω 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 line between side turn-signal light connector <Fender mirror type>, door mirror assembly <Door mirror type> and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of open circuit in TURN LH or TURN RH line between side turn-signal light connector <Fender mirror type>, door mirror assembly connector <Door mirror type> 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. Retest the system.

Check that the side turn-signal light flashes normally when the turn-signal switch is operated.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the side turn-signal light assembly <Fender panel type>, side turn-signal light assembly (Refer to GROUP 51 – Door Mirror [P.51-68](#)) <Door mirror type>.

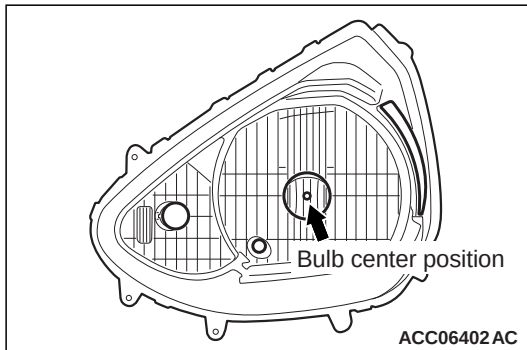
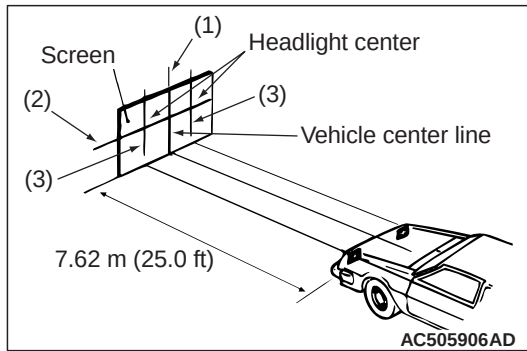
ON-VEHICLE SERVICE

HEADLIGHT AIMING

M1540100500702

PRE-AIMING INSTRUCTIONS (LOW-BEAM)

1. Inspect for rusted or faulty headlight assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the luggage compartment of the vehicle to simulate weight of a full tank [3 kg (6.6 pounds) per gallon].
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
6. Thoroughly clean headlight lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 m (25.0 ft) away from the bulb center-marks on the headlight lens.
8. Rock vehicle sideways to allow vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to hood or bumper.



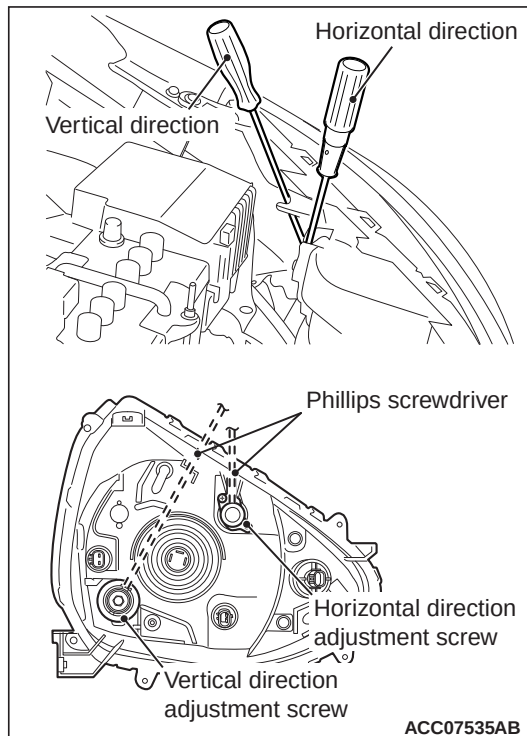
10. Set the distance between the screen and the bulb center marks of the headlight as shown in the illustration.

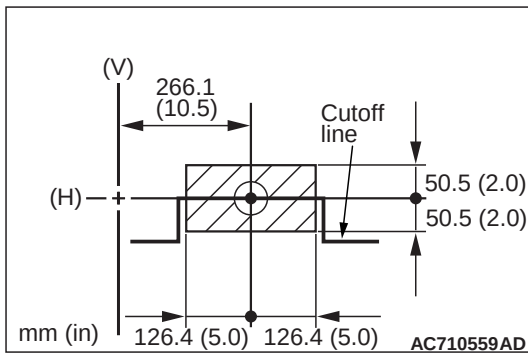
11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:

- (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
- (2) Measure the distance from the center-marks on the headlight lens to the floor [reference value: 832.8 mm (32.79 inches)]. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
- (3) Measure the distance from the center line of the vehicle to the center of each headlight. Transfer the measurement to the screen. Vertical tape or mark on the screen with reference to the center line of each headlight bulb.

HEADLIGHT ADJUSTMENT (LOW-BEAM)

1. The low-beam headlight will project on the screen upper edge of the beam (cut-off).
2. Turn the adjusting screw to achieve the specified low-beam cut-off location on the aiming screen.



**Standard value:**

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

(Horizontal direction): ± 126.4 mm (± 5.0 inches) (± 0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)

⚠ CAUTION

Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.

NOTE: High-beam pattern should be correct when the low-beams are adjusted properly.

LUMINOUS INTENSITY MEASUREMENT

M1540100600323

1. Set the headlights to high-beam.
2. Using a photometer, and following its manufacturer's instruction manual, measure the headlight center intensity and check to be sure that the limit value is satisfied.

Limit: 40,000 cd or more {When a screen is set 18.3m (60 feet) ahead of the vehicle}

NOTE: When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery fully charged.

There may be special local regulations pertaining to headlight intensity. Be sure to make any adjustments necessary to satisfy such regulations.

If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

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

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

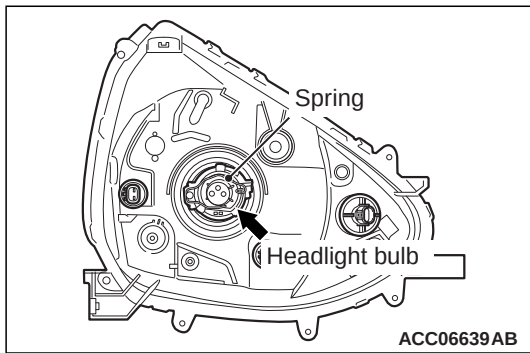
BULB REPLACEMENT

M1542001301800

HEADLIGHT BULB REPLACEMENT**⚠ CAUTION**

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

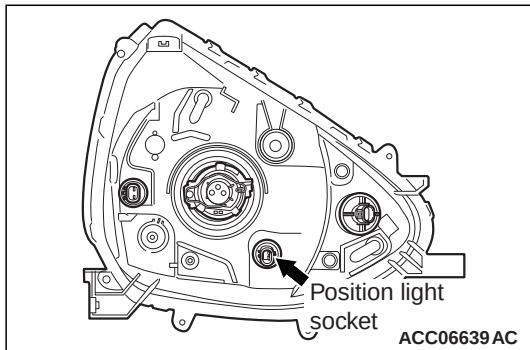
1. Disconnect the battery.
2. Disconnect the connector.



3. Remove bulb mounting spring to pull out bulb.
4. After bulb is replaced, properly reconnect connector.

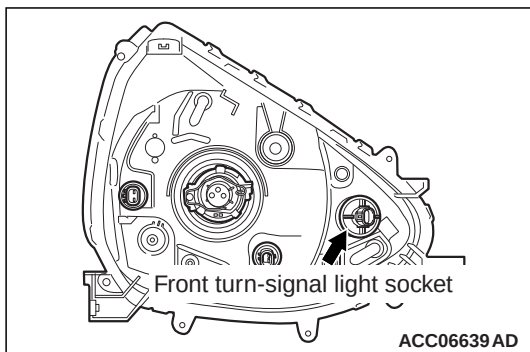
POSITION LIGHT BULB REPLACEMENT

1. Turn the position light socket and remove the position light bulb.



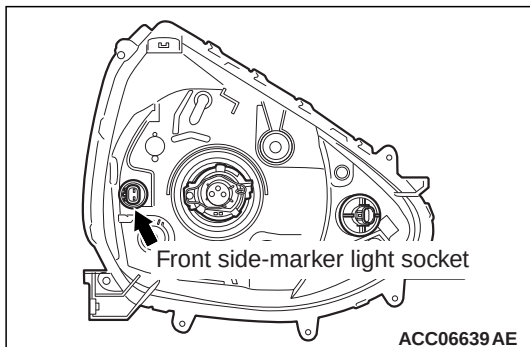
FRONT TURN-SIGNAL LIGHT BULB REPLACEMENT

1. Turn the front turn-signal light socket and remove the front turn-signal light bulb.



FRONT SIDE-MARKER LIGHT BULB REPLACEMENT

1. Turn the front side-marker light socket and remove the front side-marker light bulb.



**HEADLIGHT AUTOMATIC-SHUTDOWN
FUNCTION CHECK**

M1540100800275

Confirm that the headlights turn OFF in one second if the driver's door is opened when the ignition switch is OFF and the lighting switch is ON (TAIL or HEAD position). If there is a malfunction, perform the troubleshooting (Refer to [P.54A-74](#)).

CUSTOMIZATION FUNCTION

M1540103701281

Using the ETACS system of scan tool (M.U.T.-III), the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (initial condition)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (Initial condition)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	400ms	0.4 second (Initial condition)
		800ms	0.8 second
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (Initial condition)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (Initial condition)

HEADLIGHT

HEADLIGHT REMOVAL AND INSTALLATION

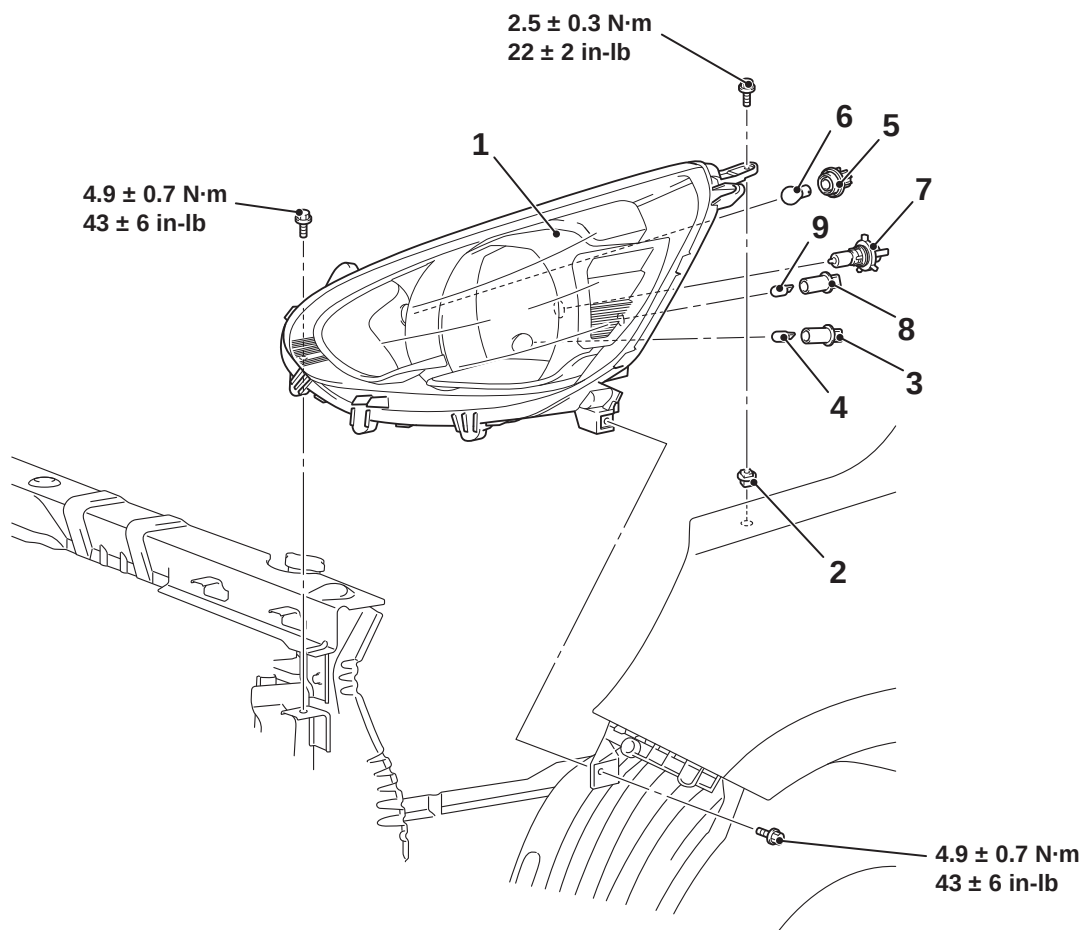
M1540101000874

Pre-removal Operation

Front bumper assembly removal (Refer to GROUP 51 – Front Bumper Assembly [P.51-3.](#))

Post-installation Operation

- Front bumper assembly installation (Refer to GROUP 51 – Front Bumper Assembly [P.51-3.](#))
- Check the beam direction of the headlight (Refer to Headlight Aiming [P.54A-93.](#))



ACC06849AB

Removal Steps

1. Headlight assembly
2. Grommet
3. Socket
4. Position light bulb
5. Socket

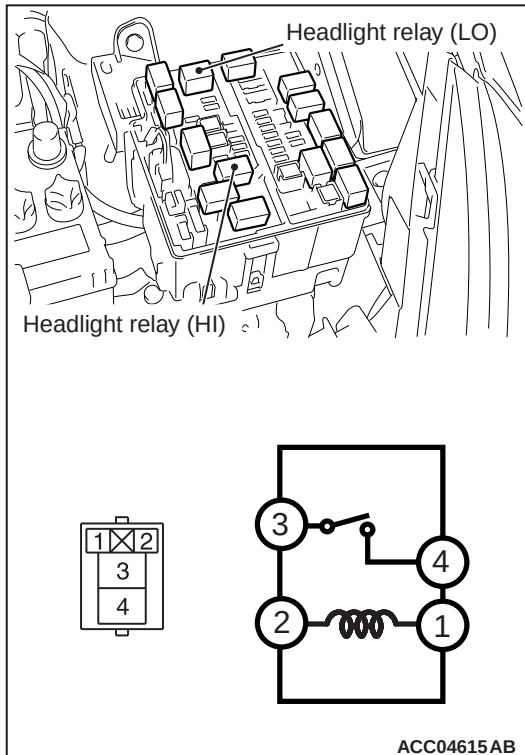
Removal Steps (Continued)

6. Front turn-signal light bulb
7. Headlight bulb
8. Socket
9. Front side-marker light bulb

INSPECTION

HEADLIGHT RELAY CHECK

M1540104000389

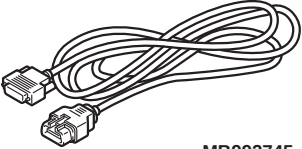
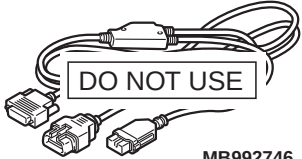
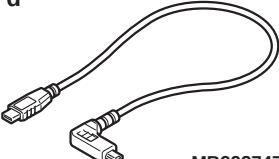
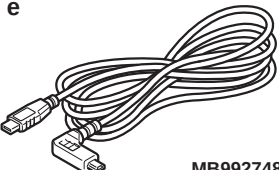


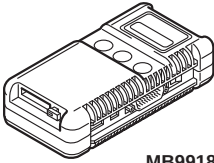
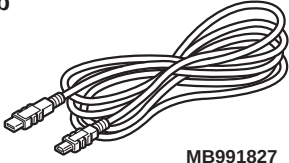
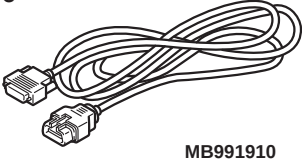
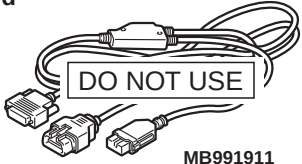
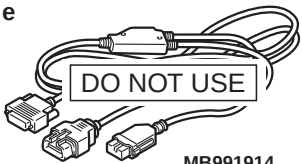
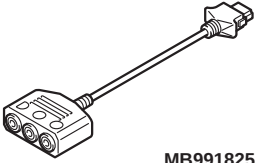
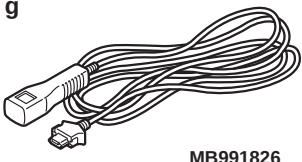
Battery voltage	Terminal number	Normal condition
At no energization	3 – 4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		Continuity exists (2 ohms or less)

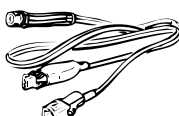
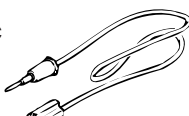
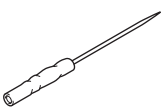
REAR COMBINATION LIGHT

SPECIAL TOOLS

M1541400100333

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC, service data and actuator test check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541402500166

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1541401000511

Trouble symptom	Inspection Procedure No.	Reference page
None of the taillights illuminate.	1	P.54A-102
One of taillights does not illuminate.	2	P.54A-103
The back-up light do not illuminate normally.	3	P.54A-104
The stoplight do not illuminate or go out normally.	4	P.54A-107

SYMPTOM PROCEDURES

Inspection Procedure 1: None of the taillights illuminate.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If none of taillights illuminates, the taillight switch input circuit or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

- The column switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code

⚠ 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) P.54A-65."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-218.

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

Check the input signal from the taillight switch.

- Column switch (lighting switch): TAIL

Item No.	Item name	Normal condition
59	Taillight output	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis P.54A-239.

STEP 3. Retest the system

Check that the taillight illuminates normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction P.00-13).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: One of taillights does not illuminate.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The rear combination light unit 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. Check the bulbs of the taillights.

Check the bulb of the light which does not illuminate.

Q: Is the check result normal?

YES : Go to Step 2.

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

STEP 2. Resistance measurement at the rear combination light (taillight: LH) connector or rear combination light (taillight: RH) connector.

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

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. Check of open circuit in TAIL LP lines between the rear combination light (taillight: LH) connector or rear combination light (taillight: 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. Retest the system.

Check that the taillights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the taillight socket.

Inspection Procedure 3: The back-up light do not illuminate normally.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If both of the back-up light do not illuminate normally, the input signal circuit(s) or the transmission range switch <CVT>, back-up light switch <M/T>, may be defective.

TROUBLESHOOTING HINTS

- The transmission range switch <CVT> or buck-up light switch <M/T> may be defective
- The bulbs may be defective
- The rear combination light assembly 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. Check the operation of the position lights and the headlights.

Check that the position lights and the headlights illuminate normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Check the position lights and the headlights (Refer to trouble symptom chart [P.54A-74](#)).

STEP 2. Check the transmission range switch <CVT> or back-up light switch <M/T>.

Check the continuity of the transmission range switch <CVT> or the back-up light switch <M/T>.(GROUP 23A – On-vehicle Service, Transmission Range Switch Continuity Check [P.23A-123](#) <CVT>, GROUP 22B – Transmission, Transmission Inspection [P.22B-18](#))

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the transmission range switch <CVT> or back-up light switch <M/T>.

STEP 3. Voltage measurement at the transmission range switch connector <CVT> or back-up light switch connector <M/T>.

- (1) Remove the transmission range switch connector <CVT> or back-up light switch connector <M/T>, and measure at the junction block side.
- (2) Move the ignition switch to the ON position.
- (3) Measure the voltage between the transmission range switch connector <CVT> or back-up light switch connector <M/T> (power supply terminals) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of open circuit in power supply line between the transmission range switch connector <CVT> or back-up light switch connector <M/T> and the ignition switch (IG1).

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Check the bulb of the back-up light

Check the bulb of the defective light.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the bulb of the defective light.

STEP 6. Resistance measurement at the rear combination light (back-up light) connector

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

(2) Check the resistance between the light connector and ground.

- Measure the resistance between the rear combination light (back-up light) connector (ground terminal) and the ground.

OK: The resistance should be 2 ohms 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 ground line between rear combination light (back-up light) connector and ground.

Q: Is the check result normal?

YES : Go to Step 8.

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

STEP 8. Check of open circuit in output line between the rear combination light (back-up light) connector and back-up light switch connector.

Q: Is the check result normal?

YES : Go to Step 9.

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

STEP 9. Retest the system

Check that the back-up light illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the rear combination light assembly.

Inspection Procedure 4: The stoplight do not illuminate or go out normally.**TECHNICAL DESCRIPTION (COMMENT)**

If the stoplights do not illuminate or go out normally, the stoplight switch input circuit, ground circuit system, stoplight switch may be defective.

TROUBLESHOOTING HINTS

- The stoplight switch may be defective
- The stoplight switch input circuit may be defective
- The stoplights 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. Using scan tool (M.U.T.-III), check data list**⚠ 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) [P.54A-65](#)."
- (2) Check the input signals from the stoplight switch.
 - Brake pedal: depressed

Item No.	Item name	Normal condition
108	Stoplight switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 2. Voltage measurement at the joint connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Stoplight switch: ON
- (3) Measure the voltage between the joint connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check of short to power supply, and open circuit in power supply line between the joint connector and the fusible link.**Q: Is the check result normal?**

YES : Go to Step 5.

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

STEP 4. Resistance measurement at the liftgate spoiler connector <high-mounted stoplight>, rear combination light (stop: LH) connector, rear combination light (stop: RH) connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the connector of light which does not illuminate and the ground.
 - Measure the resistance between the integrated in liftgate spoiler connector (ground terminal) and the ground. <high-mounted stoplight>
 - Measure the resistance between the rear combination light (stop: LH) connector (ground terminal) and the ground.
 - Measure the resistance between the rear combination light (stop: RH) connector (ground terminal) and the ground.

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the following wiring harness

Check the wiring harness for ground circuit between the following connectors:

- Check of open circuit in ground line between integrated in liftgate spoiler connector and ground. <high-mounted stoplight>
- Check of open circuit in ground line between rear combination light (stop: LH) connector and ground.
- Check of open circuit in ground line between rear combination light (stop: RH) connector and ground.

Q: Is the check result normal?

YES : Go to Step 6.

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

STEP 6. Check the following wiring harness

Check the wiring harness for open circuit between the following connectors:

- Check of open circuit in output line between integrated in liftgate spoiler connector and joint connector. <high-mounted stoplight>
- Check of open circuit in output line between rear combination light (stop: LH) connector and joint connector.
- Check of open circuit in output line between rear combination light (stop: RH) connector and joint connector.

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 7. Retest the system

Check that the stoplights illuminates normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

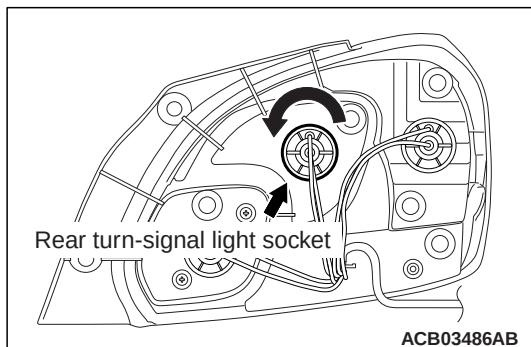
NO : Replace the stoplights.

ON-VEHICLE SERVICE**REPLACE THE BULB**

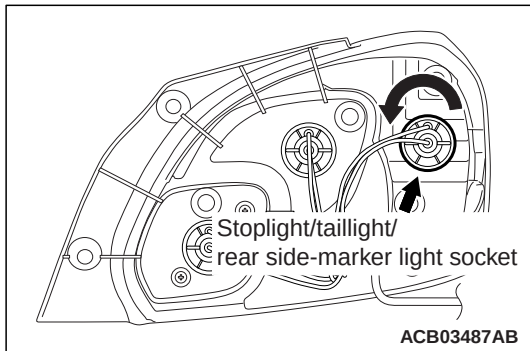
M1541402100113

REAR TURN-SIGNAL LIGHT BULB REPLACEMENT

1. Remove the rear combination light assembly.
2. Turn the rear turn-signal light socket to remove.
3. Remove the bulb from the socket.

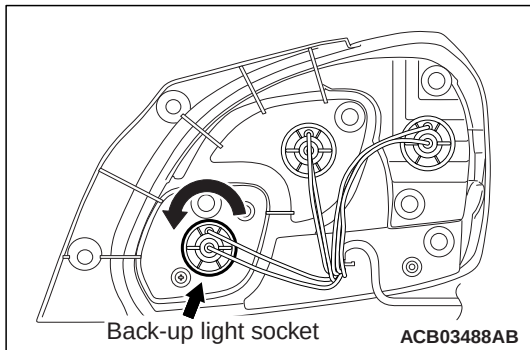
**STOPLIGHT/TAILLIGHT/REAR SIDE-MARKER LIGHT BULB REPLACEMENT**

1. Remove the rear combination light assembly.



2. Turn the stoplight/taillight/rear side-marker light socket to remove.
3. Remove the bulb from the socket.

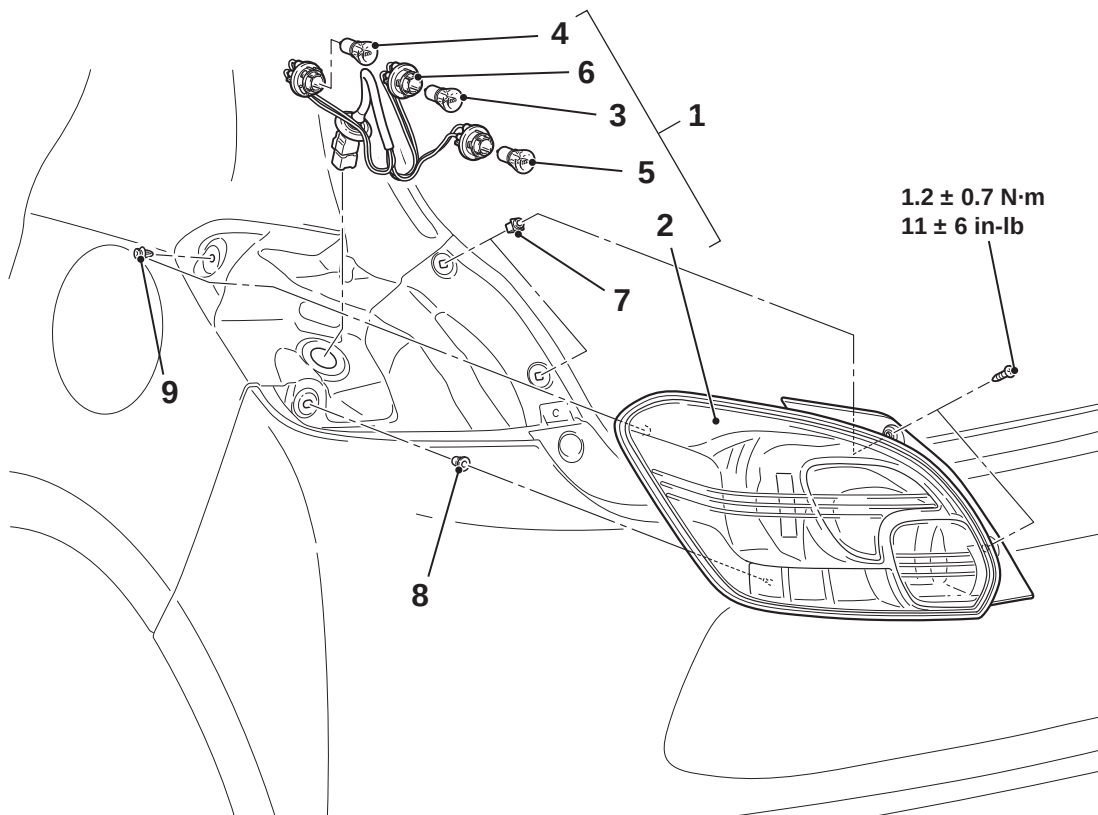
BACK-UP LIGHT BULB REPLACEMENT



1. Remove the rear combination light assembly.
2. Turn the back-up light socket to remove.
3. Remove the bulb from the socket.

REAR COMBINATION LIGHT REMOVAL AND INSTALLATION

M1541402200541



Removal steps

1. Rear combination light assembly
2. Rear combination light unit
3. Rear turn-signal light bulb
4. Stoplight/taillight/rear side-marker light bulb

Removal steps

5. Back-up light bulb
6. Socket
7. Grommet
8. Clip
9. Clip

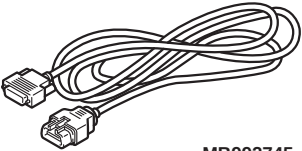
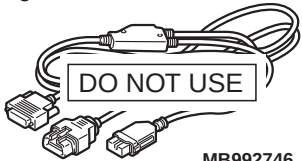
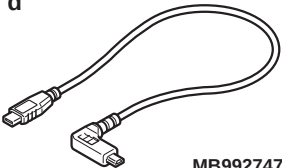
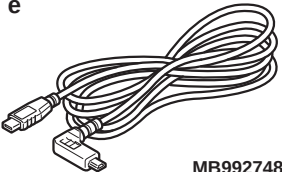
FRONT FOG LIGHT**SERVICE SPECIFICATIONS**

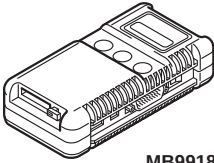
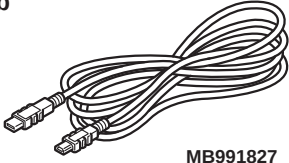
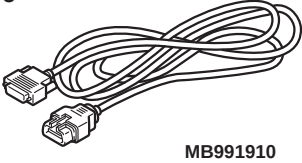
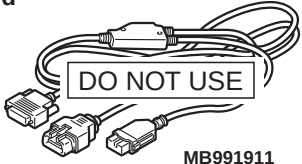
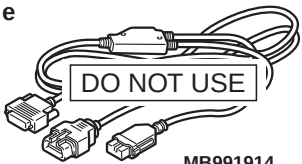
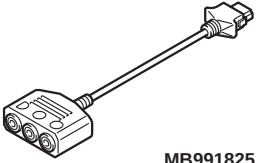
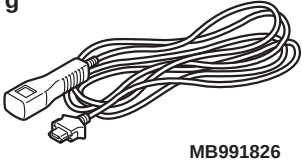
M1540400900392

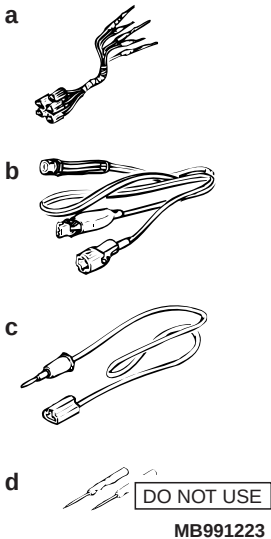
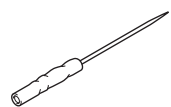
Item	Standard value	Limit
Front fog light aiming (cutoff line direction) [at 7.62 m (25.0 ft)]	The horizontal line 153.0 mm (6.02 inches) (1.15 degrees angle) below the horizontal line (H)	—
Front fog light aiming (vertical direction) [at 7.62 m (25.0 ft)]	—	Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line
Front fog light aiming (horizontal direction) [at 7.62 m (25.0 ft)]	—	Vertical line (V) ± 599.7 mm (± 23.6 inches) (± 4.5 degrees angle).

SPECIAL TOOLS

M1540401800354

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC, data list and actuator test check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

Tool	Tool number and name	Supersession	Application
 a b c d DO NOT USE MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540401700120

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1540401000411

Trouble symptom	Inspection Procedure No.	Reference page
The front fog lights do not illuminate normally.	1	P.54A-113
One of the front fog lights does not illuminate normally.	2	P.54A-115
The front fog light indicator does not illuminate normally.	3	P.54A-116

SYMPTOM PROCEDURES

Inspection Procedure 1: The front fog lights do not illuminate normally.

CAUTION

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

CIRCUIT OPERATION

When none of the front fog lights illuminates, the mentioned input signal circuit(s) or ETACS-ECU may be defective.

- Headlight switch

- Fog light switch
- Option coding information

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. ETACS-ECU coding data check

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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Read out the option coding information in the ETACS-ECU (Refer to GROUP 00, Precautions before service, Coding Table [P.00-33](#)).
- (4) Check that the "Front fog light" is set to "YES."
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ETACS-ECU coding data normal?

YES : Go to Step 2.

NO : Operate scan tool (M.U.T.-III) to set the option coding "Front fog light" to "Yes," and check the trouble symptom.

STEP 2. Check the operation of the headlights.

Check that the headlights illuminate normally.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Check the headlights (Refer to trouble symptom chart [P.54A-74](#)).

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

Check if DTC is stored in the ETACS-ECU.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Troubleshoot the ETACS-ECU (Refer to ETACS, Diagnosis [P.54A-218](#)).

NO : Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), check data list.

Use the ETACS-ECU data list to check the signals related to the fog light function.

- Column switch (lighting switch): HEAD
- Turn the fog light switch to ON.

Item No.	Item name	Normal condition
70	Front fog light	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 5. Check the front fog light relay

Refer to [P.54A-120](#).

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the front fog light relay.

STEP 6. Voltage measurement at the front fog light relay connector

- (1) Remove the front fog light relay, and measure at the relay box side.
- (2) Measure the voltage between the front fog light relay connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check of short to power supply, and open circuit in power supply lines between front fog light relay connector and the fusible link.

Q: Is the check result normal?

YES : Go to Step 11.

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

STEP 8. Check of short to power supply, and open circuit in FOGY line between front fog light relay connector and the 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 of short to power supply, and open circuit in output lines between front fog light relay connector and the front fog light (LH) or front fog light (RH) connector.

Q: Is the check result normal?

YES : Go to Step 10.

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

STEP 10. Check of open circuit in ground lines between the front fog light (LH) or front fog light (RH) connector and ground.

Q: Is the check result normal?

YES : Go to Step 11.

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

STEP 11. Retest the system

Check that the front fog lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The bulbs 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 front fog light (LH) connector or front fog light (RH) connector

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the connector of light which does not illuminate and the ground.
 - Measure the resistance between the front fog light (LH) connector (ground terminal) and the ground.
 - Measure the resistance between the front fog light (RH) connector (ground terminal) and the 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 front fog light (LH) connector or front fog light (RH) connector and ground.

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, and open circuit in output lines between front fog light relay connector and the front fog light (LH) or front fog light (RH) connector.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Retest the system

Check that the front fog lights illuminate normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

NO : Go to Step 1.

Inspection Procedure 3: The front fog light indicator does not illuminate normally.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the front fog light indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

STEP 1. Check the front fog lights

When the front fog light switch is operated, check that the front fog lights illuminate/go off normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : First, repair the front fog lights (Refer to trouble symptom chart [P.54A-113](#)).

STEP 4. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the indicator.

- Item 6: Indicator (AUTO)

Q: Is the check result normal?

STEP 2. 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 Scan Tool (M.U.T.-III) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting [P.54C-12](#)).

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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 4.

YES : Replace the ETACS-ECU.

NO : Replace the combination meter.

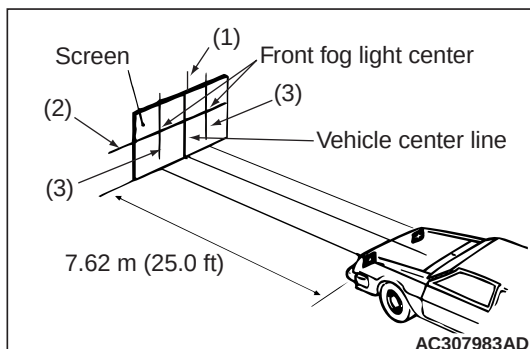
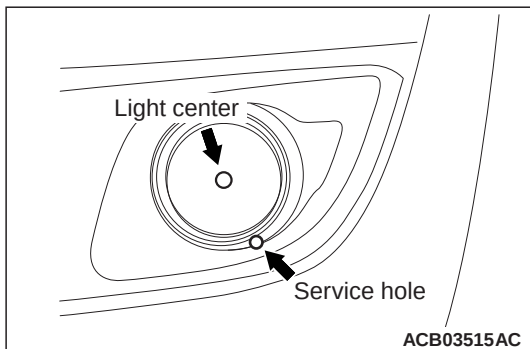
ON-VEHICLE SERVICE

FRONT FOG LIGHT AIMING

M1540400300851

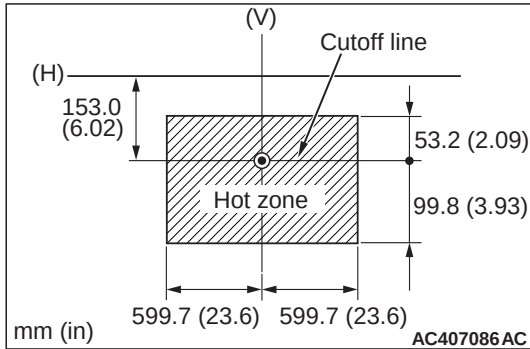
PRE-AIMING INSTRUCTIONS

1. Inspect for rusted or faulty front fog light assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 kg (6.5 pounds) per gallon].
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
6. Thoroughly clean the front fog light lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 meters (25.0 ft) away from the bulb center-marks on the front fog light lens.
8. Rock the vehicle sideways to allow the vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to the hood or bumper.
10. Measure the center of the front fog lights as shown in the illustration.



11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
 - (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
 - (2) Measure the distance from the center of the front fog light lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
 - (3) Measure the distance from the center line of the vehicle to the center of each front fog light. Transfer the measurement to the screen. Vertical tape or mark on the screen is for reference to the center line of each front fog light.

FRONT FOG LIGHT ADJUSTMENT



1. Check if the beam shining onto the screen is at the standard value.

Standard value:

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

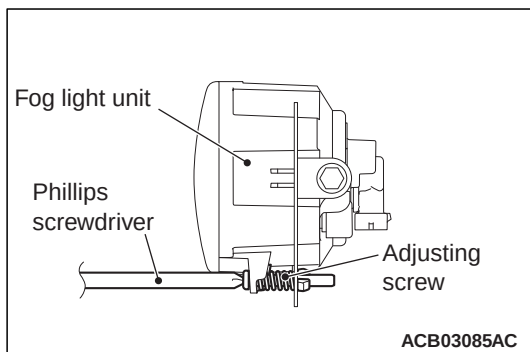
Limit:

(Vertical direction): Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line

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

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

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



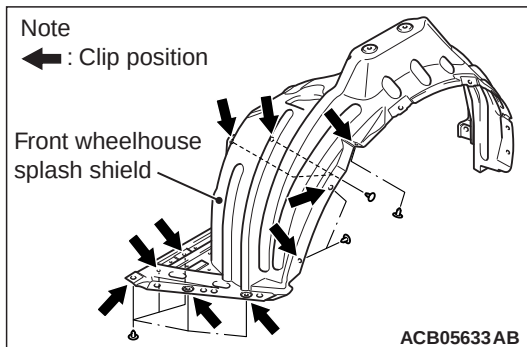
REPLACE THE BULB

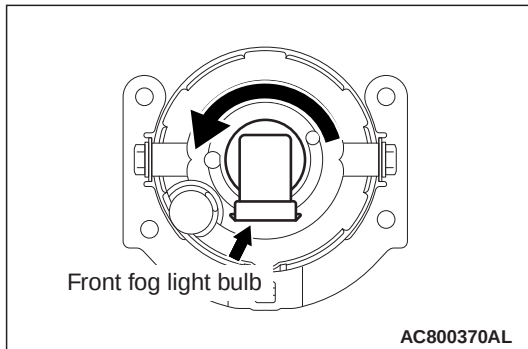
M1540400400825

CAUTION

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

1. Remove the clips of the front wheelhouse splash shield shown in the figure, and turn up the front wheelhouse splash shield.





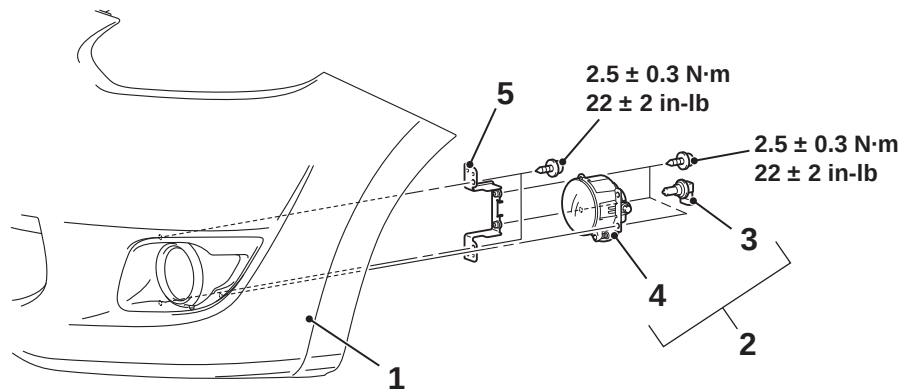
2. Disconnect the connector and withdraw the bulb.
3. Replace the bulb, and connect securely the connector.

REMOVAL AND INSTALLATION

M1540402600609

Post-installation operation

Check the beam direction of the front fog light (Refer to Front Fog Light Aiming [P.54A-117](#)).



ACB03095AC

Removal steps

1. Front bumper assembly (Refer to GROUP 51 – Front Bumper Assembly [P.51-3](#).)
2. Front fog light assembly

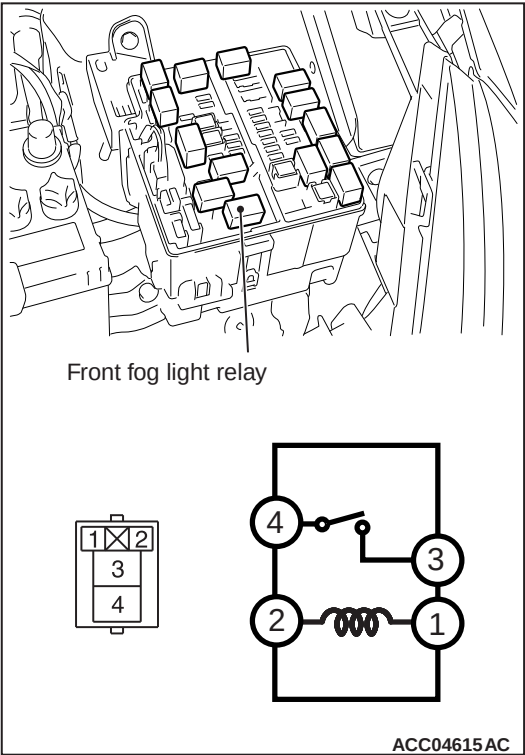
Removal steps (Continued)

3. Bulb
4. Front fog light unit
5. Front fog light bracket

INSPECTION

FRONT FOG LIGHT RELAY CHECK

M1540402800238



Battery voltage	Terminal number	Normal condition
At no energization	3 – 4	No continuity
With current supply [terminal 2 (+), terminal 1 (-)]		Continuity exists (2 ohms or less)

SIDE TURN-SIGNAL LIGHT

REMOVAL AND INSTALLATION

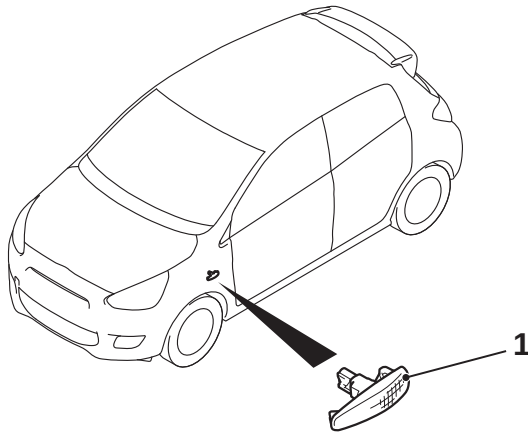
M1541800200703

<DOOR MIRROR TYPE>

For the side turn-signal light removal and installation procedures, refer to GROUP 51 – Door Mirror

[P.51-68](#).

<FENDER PANEL TYPE>



ACB03530AB

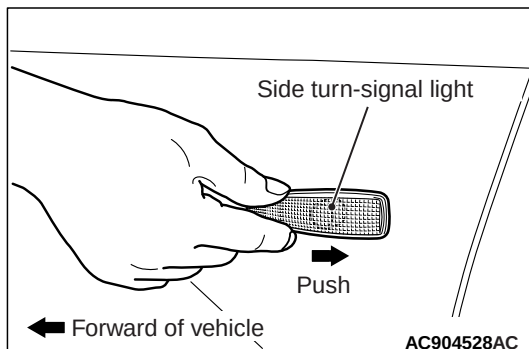
Removal Step

- <<A>> >>A<< 1. Side turn-signal light assembly

REMOVAL SERVICE POINT

<<A>> SIDE TURN-SIGNAL LIGHT ASSEMBLY REMOVAL

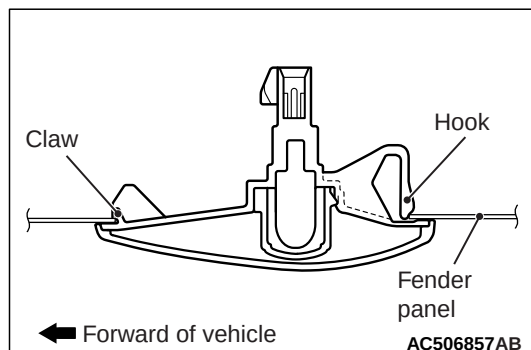
Push the side turn-signal light toward the vehicle rear to bend the hook, and then remove by disengaging the tab from the fender panel.



INSTALLATION SERVICE POINT

>>A<< SIDE TURN-SIGNAL LIGHT ASSEMBLY
INSTALLATION

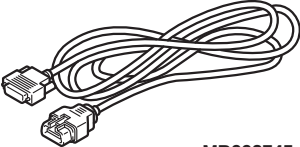
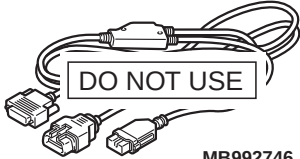
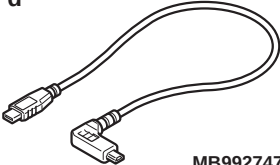
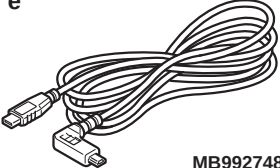
Engage the hook to the fender panel to install the side turn-signal light.

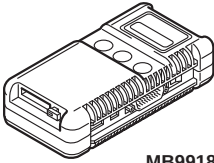
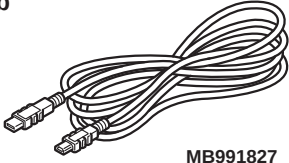
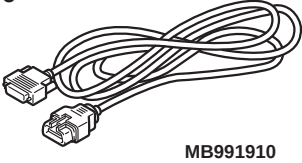
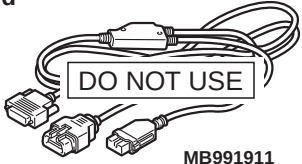
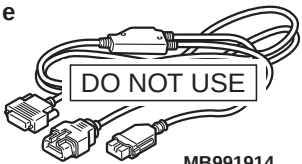
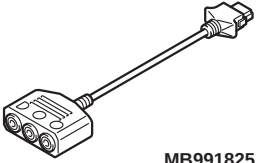
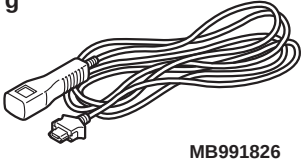


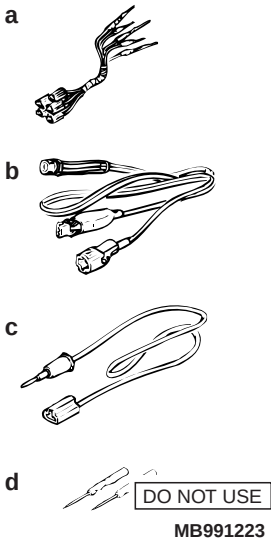
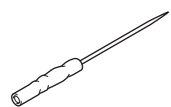
DOME LIGHT

SPECIAL TOOLS

M1541301600334

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC, data list and actuator test check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541301500166

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1541300200537

Trouble symptom	Inspection Procedure No.	Reference page
The dome light does not illuminate normally.	1	P.54A-125
The luggage compartment light does not illuminate normally.	2	P.54A-127
The interior light automatic shutoff function does not work normally.	3	P.54A-128

SYMPTOM PROCEDURES

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

CAUTION

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

OPERATION

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

- Ignition switch (IG1)

- Key reminder switch
- Door switches
- Liftgate latch switch
- Front door lock actuator (driver's side)

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The door switch may be defective
- The front door lock actuator (driver's side) may be defective
- The dome light 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. Retest the system.

Q: At which switch positions (DOOR or ON), the dome light does not illuminate?

The light does not illuminate at both the DOOR and ON positions. : Go to Step 2.

The light does not illuminate at the ON position. : Go to Step 4.

The light does not illuminate at the DOOR position. : Go to Step 6.

STEP 2. Dome light bulb check

Check that the dome light bulb is normal.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the dome light bulb.

STEP 3. Check of open circuit in power supply lines between the dome light connector and the fusible link.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 4. Check of open circuit in ground line between the dome light connector and the ground.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Retest the system

Check that the dome light illuminates/extinguishes normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the dome light assembly.

STEP 6. Using scan tool (M.U.T.-III), check data list.

⚠ 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) [P.54A-65](#)."
- (2) Use the ETACS-ECU service data to check the signals related to the operation of dome light.
 - Turn the ignition switch to the LOCK (OFF) position.
 - Remove the ignition key from the ignition key hole.
 - Open each door.

Item No.	Item name	Normal condition
19	Driver's door switch	ON
20	Driver's door unlock switch	ON
28	Steering lock switch	OFF → ON
30	IG SW (IG1)	OFF
48	Passenger's door switch	ON
49	Rear door switch	ON

OK: Normal conditions are displayed for all the items.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input Signal Chart [P.54A-239](#).

STEP 7. Check of open circuit in ROOM LP lines between the dome light connector and the ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 8.

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

STEP 8. Retest the system

Check that the dome light illuminates/extinguishes normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The luggage compartment light does not illuminate normally.

⚠ CAUTION

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

OPERATION

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

- Ignition switch (IG1)

- Key reminder switch
- Door switches
- Liftgate latch switch
- Front door lock actuator (driver's side)

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The door switch may be defective
- The front door lock actuator (driver's side) may be defective
- The luggage compartment light assembly 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. Dome light operation check

Check that the Dome light illuminates and extinguishes normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure "The dome light does not illuminate normally
[P.54A-125.](#)"

STEP 2. Luggage compartment light bulb check

Check that the luggage compartment light bulb is normal.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the luggage compartment light bulb.

STEP 3. Check of open circuit in power supply lines between the luggage compartment light connector and the fusible link.**Q: Is the check result normal?**

YES : Go to Step 4.

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

STEP 4. Check of open circuit in ROOM lines between the luggage compartment light connector and the ETACS-ECU connector.**Q: Is the check result normal?**

YES : Go to Step 5.

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

STEP 5. Retest the system

Check that the luggage compartment light illuminates/extinguishes normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 3: The interior light automatic shutoff function does not work normally.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU operates the interior light automatic shutoff function in accordance with the input signals below.

- Ignition switch (ACC)
- Ignition switch (IG1)

- Door switches

If this function does not work normally, these input signal circuit(s) or the ETACS-ECU may have a problem. Also, "Interior light auto cut timer" may be set to "Disable" through customization.

TROUBLESHOOTING HINTS

- The door switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), Check the configuration function

Use the ETACS-ECU customization function to check whether "Interior light auto cut timer" is set to "30min".

CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the electric motor 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) P.54A-65."
- (2) Turn the electric motor switch to the "ON" position.
- (3) Use the ETACS-ECU configuration function to check that the "Interior light auto cut timer" is set to "30min."
- (4) Turn the electric motor switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Use the ETACS-ECU configuration function to set the "Interior light auto cut timer" to "30min."(Refer to P.54A-129.)

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

- (1) Turn the electric motor switch to the "ON" position.
- (2) Check whether the ETACS-ECU related DTC is stored.
- (3) Turn the electric motor switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose ETACS-ECU (Refer to ETACS-ECU, Troubleshooting P.54A-218).

NO : Go to Step 3.

ON-VEHICLE SERVICE

CUSTOMIZATION FUNCTION

Using the ETACS system of scan tool (M.U.T.-III), the following functions can be programmed. The programmed information is held even when the battery is disconnected.

STEP 3. Using scan tool (M.U.T.-III), check data list

Use the ETACS-ECU service data to check the signals related to the interior light automatic shutoff function.

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

Item No.	Item name	Normal condition
19	Driver's door switch	ON
29	Ignition switch (ACC)	OFF
30	Ignition switch(IG1)	OFF
48	Passenger's door switch	ON
49	Rear door switch	ON

OK: Normal conditions are displayed for all the items.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis, Input signal chart P.54A-239.

STEP 4. Retest the system

Check that the interior light automatic shutoff function works normally.

Q: Is the check result normal?

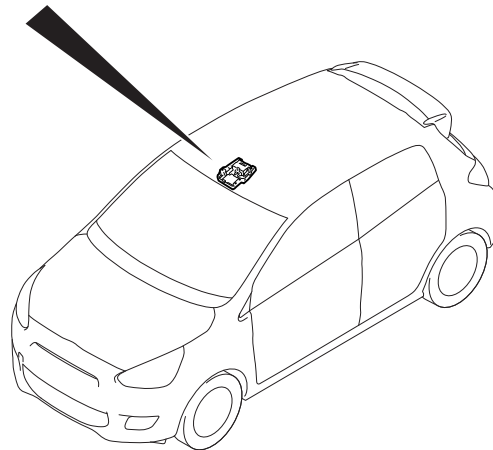
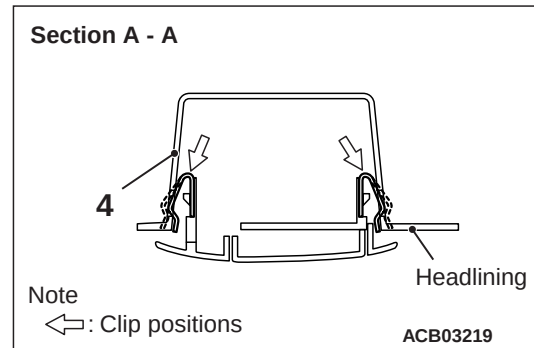
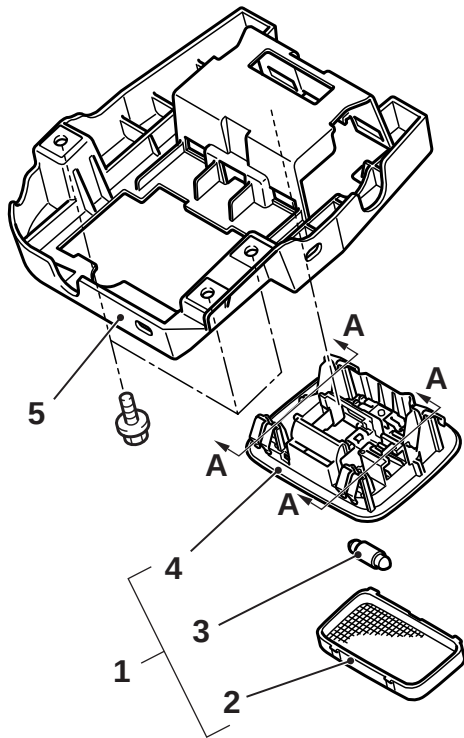
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction P.00-13).

NO : Replace the ETACS-ECU.

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Interior light delay time	Adjustment of interior light delay shutdown time	0 sec.	0 second (no delay shutdown time)
		7.5 sec.	7.5 seconds <Initial condition (vehicles without central door locking system)>
		15 sec.	15 seconds
		30 sec.	30 seconds <Initial condition (vehicles with central door locking system)>
		60 sec.	60 seconds
		120 sec.	120 seconds
		180 sec.	180 seconds
Interior light auto cut timer	Adjustment of interior light automatic shutoff function (only dome light switch is door position)	Disable	No function
		30min	With function (Initial condition)

DOME LIGHT REMOVAL AND INSTALLATION

M1541302700215



ACC03217AB

Removal Steps

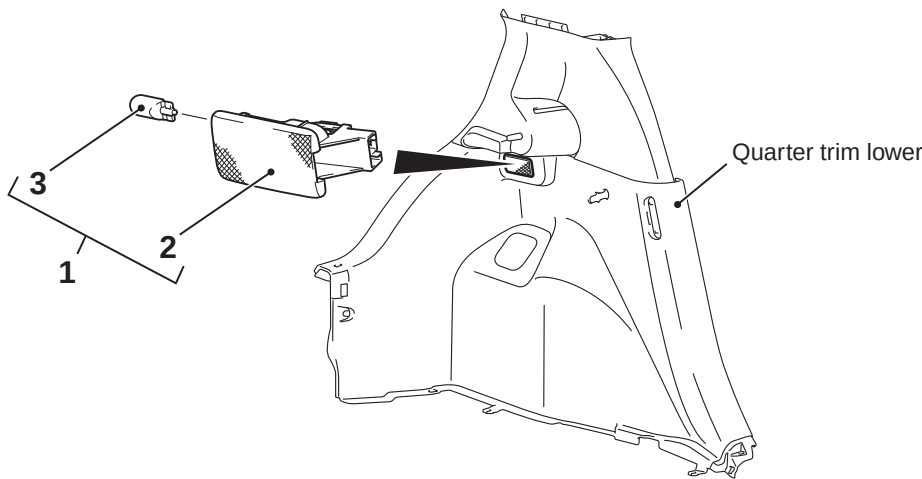
1. Dome light assembly
2. Dome light lens
3. Dome light bulb
4. Dome light

Removal Steps (Continued)

- Headlining (Refer to GROUP 52A - Headlining [P.52A-15](#))
- 5. Dome light bracket

LUGGAGE COMPARTMENT LIGHT REMOVAL AND INSTALLATION

M1541302600207



ACC03233AB

<<A>>

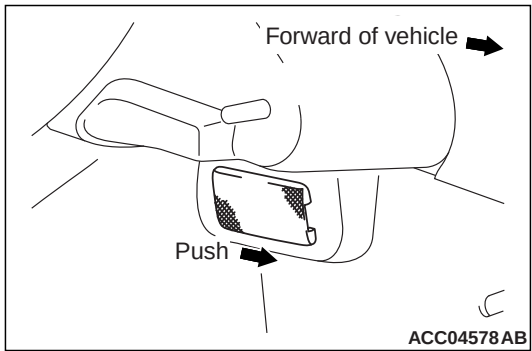
- Removal Step**
1. Luggage compartment light assembly

- Removal Step (Continued)**
2. Luggage compartment light
 3. Bulb

REMOVAL SERVICE POINT

<<A>> LUGGAGE COMPARTMENT LIGHT
ASSEMBLY REMOVAL

Remove the luggage compartment light assembly by pressing the assembly toward the vehicle front.



HIGH-MOUNTED STOPLIGHT

REMOVAL AND INSTALLATION

Refer to GROUP 51 – Liftgate Spoiler [P.51-16](#).

M1541700200546

LICENSE PLATE LIGHT

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541900700073

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1541900400072

Trouble symptoms	Inspection Procedure No.	Reference page
The license plate lights do not illuminate.	1	P.54A-133
One of the license plate lights does not illuminate.	2	P.54A-134

SYMPTOM PROCEDURES

Inspection Procedure 1: The license plate lights do not illuminate.

TECHNICAL DESCRIPTION (COMMENT)

If the license plate lights do not illuminate normally, the harness or connector(s) may have a problem, or the fuse may be blown.

TROUBLESHOOTING HINTS

- 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. Operation check of rear combination light (taillight, LH)

Check that the rear combination light (taillight, LH) illuminates normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Diagnose the rear combination light. Inspection Procedure 1:None of the taillights illuminate. (Refer to [P.00-14.](#))

STEP 2. Resistance measurement at license plate light connector

- (1) Disconnect the connector and measure at wiring harness side.
- (2) Measure the resistance between the license plate light connector (ground terminal) and the 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 line between license plate light connector and ground.**Q: Is the check result normal?**

YES : Go to Step 4.

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

STEP 4. Check of open circuit in power supply lines between the license plate light connector and joint connector.**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-6](#)).

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

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

TECHNICAL DESCRIPTION (COMMENT)

When one of the license lights does not illuminate, wiring harness, connector(s) or the bulb may be defective.

TROUBLESHOOTING HINTS

- The license plate light bulbs may be defective
- The license plate light assembly 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 license plate light that does not illuminate.

Q: Is the check result normal?

YES : Go to Step 2.

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

STEP 2. Retest the system.

Check that the license plate light illuminates normally.

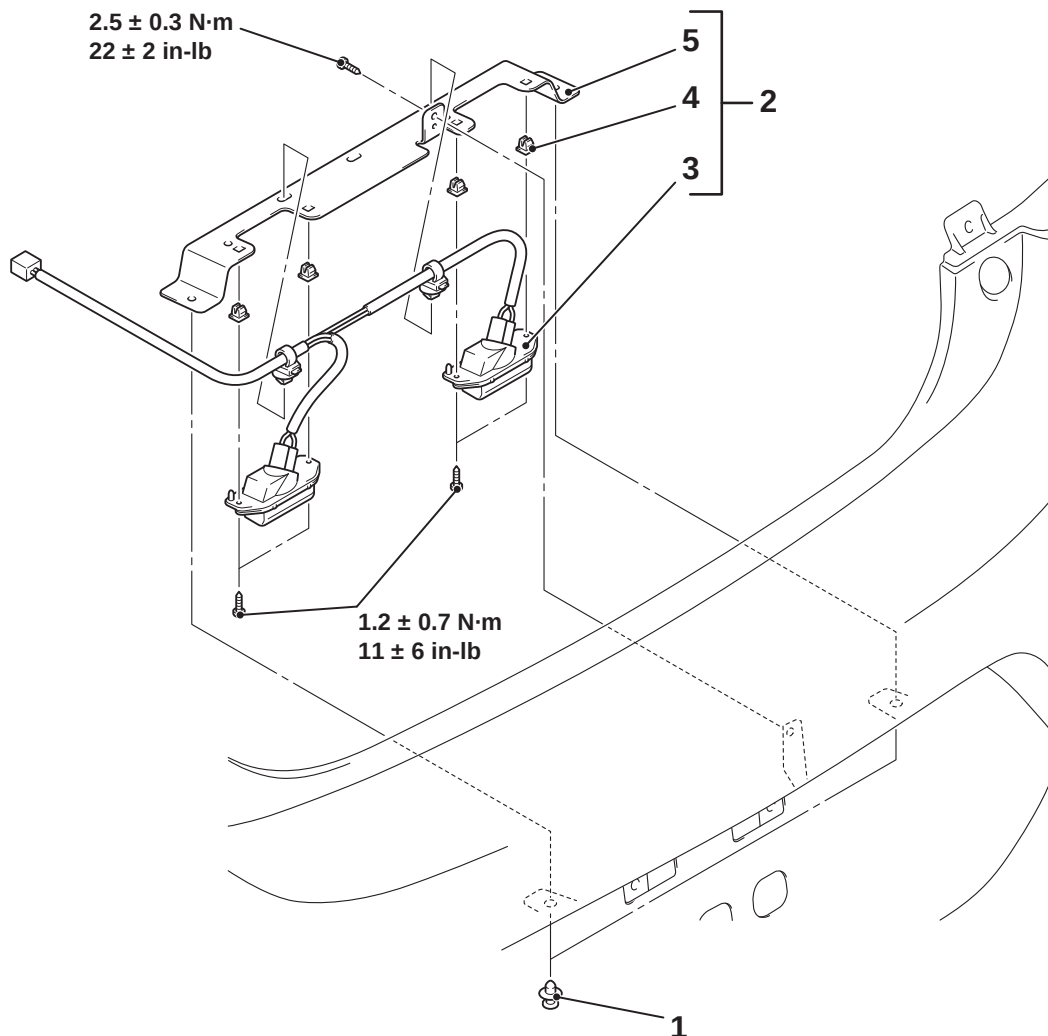
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the license plate light assembly.

REMOVAL AND INSTALLATION

M1541900200498



ACC06720AB

Removal Steps

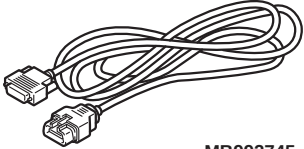
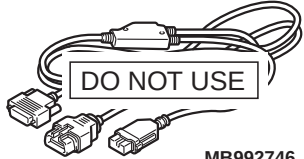
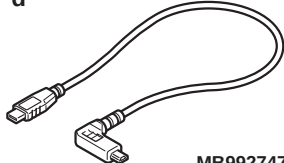
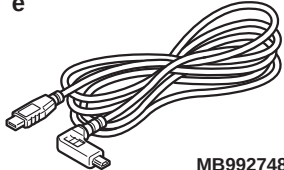
- Rear bumper face (Refer to GROUP 51 – Rear Bumper Assembly [P.51-6](#).)
1. Clip

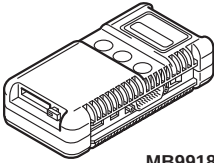
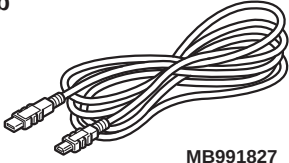
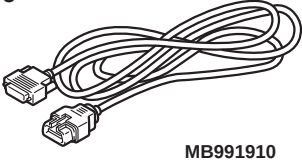
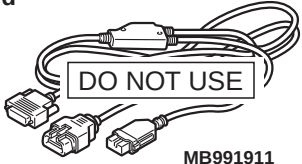
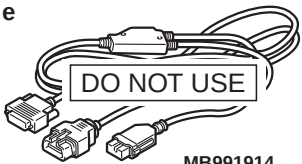
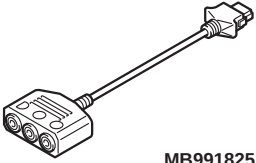
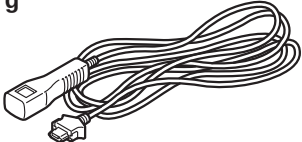
Removal Steps (Continued)

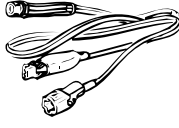
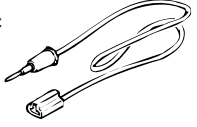
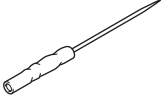
2. License plate light assembly/License plate light bracket
3. License plate light assembly
4. Grommet
5. License plate light bracket

HAZARD WARNING LIGHT SWITCH**SPECIAL TOOLS**

M1541500100329

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC, data list and actuator test check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541501400141

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1541500700365

Trouble symptom	Inspection Procedure No.	Reference page
The hazard warning lights do not illuminate.	1	P.54A-138

SYMPTOM PROCEDURES

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

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The hazard warning light switch may be defective
- The ETACS-ECU may be defective

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

DIAGNOSIS

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

Check that the turn-signal lights illuminate normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to inspection procedure B-1 "None of the turn-signal lights illuminate [P.54A-88](#)."

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

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) [P.54A-65](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-218](#).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), check data list

Check the input signal from the hazard warning light switch.

- Operate the hazard warning light switch.

Item No.	Item name	Normal condition
26	Hazard warning light switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 4. Retest the system.

Check that the hazard warning lights illuminate.

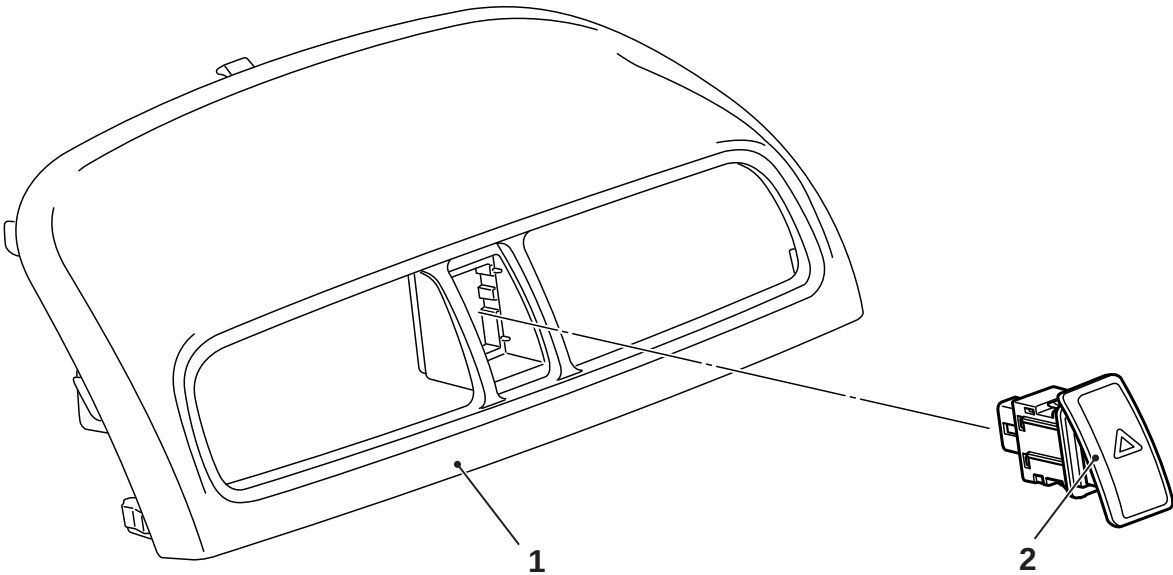
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

REMOVAL AND INSTALLATION

M1541501000347



ACB03206AB

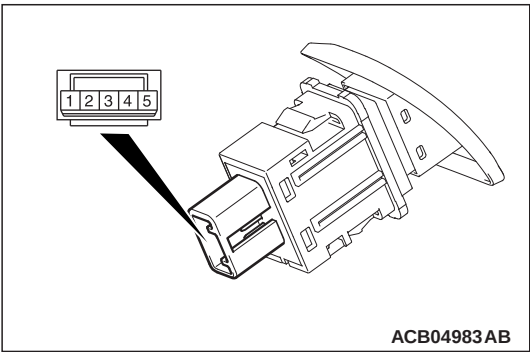
Removal Steps

- 1. Instrument center panel (Refer to GROUP 52A – Instrument Panel [P.52A-2.](#))
- 2. Hazard warning light switch

INSPECTION

CONTINUITY CHECK FOR HAZARD WARNING
LIGHT SWITCH

M1541501100377



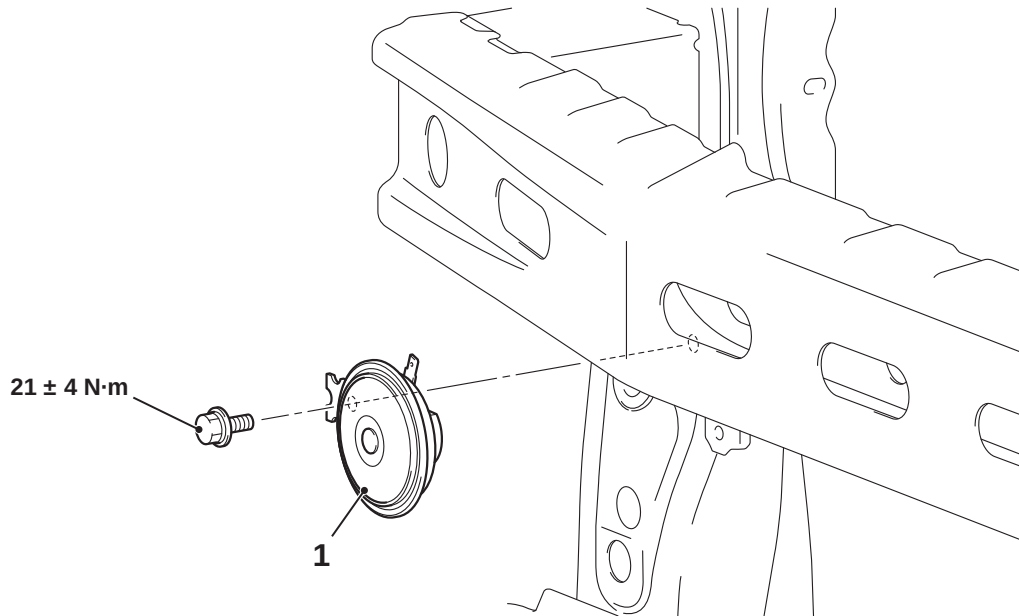
ACB04983AB

Switch position	Measured terminals	Normal condition
OFF	2 – 5	No continuity
ON		Continuity exists (2 ohms or less)

HORN

REMOVAL AND INSTALLATION

M1542100201131



ACB03498AB

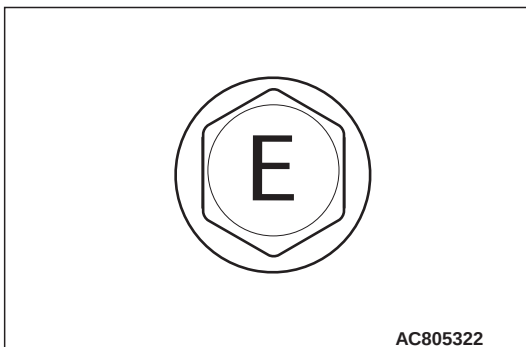
Removal

- Front bumper and radiator grille assembly (Refer to GROUP 51 – Front Bumper Assembly and Radiator Grille [P.51-3](#)).
- >>A<< 1. Horn (LOW)

INSTALLATION SERVICE POINT

>>A<< HORN (LOW) INSTALLATION

Use the ground bolts as the mounting bolts for horn (LOW).
The ground bolts have "E" mark on the bolt heads.

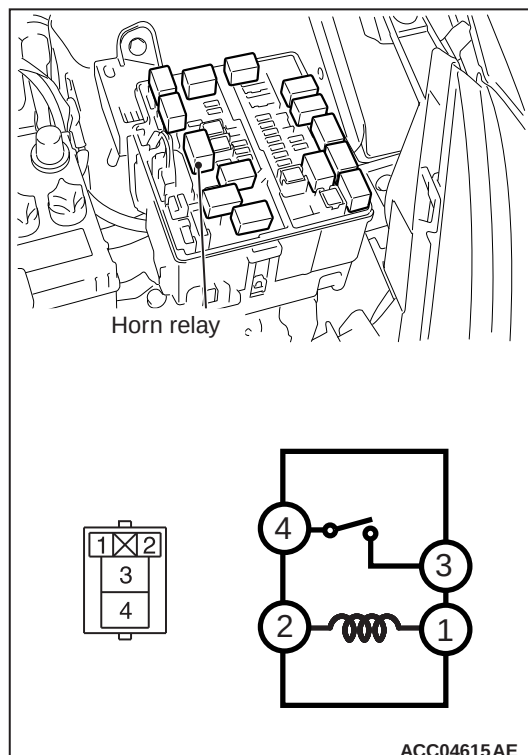


AC805322

INSPECTION

HORN RELAY CHECK

M1542100400734



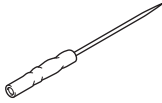
Battery voltage	Terminal number	Normal condition
At no energization	3 – 4	No continuity
With current supply [terminal 1 (+), terminal 2 (-)]		Continuity exists (2 ohms or less)

REAR VIEW CAMERA

SPECIAL TOOLS

M1540902100234

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

Tool	Tool number and name	Supersession	Application
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540902300261

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1540900300511

Trouble symptom	Reference page
Rear view camera image is not correctly displayed.	P.54A-143

SYMPTOM PROCEDURES

Rear view camera image is not correctly displayed.

CAUTION

Before replacing the multivision display, ensure that the power supply circuit, the ground circuit, and the communication circuit are normal. (Check that the voltage is 10 V or more.)

TECHNICAL DESCRIPTION (COMMENT)

When the screen of rear view camera is not shown even if the shift lever <M/T> or selector lever <CVT> is "R" (Reverse) position, the rear view camera, the wiring harness, connectors, transmission range switch or multivision display may be defective. "Camera Interrupt" item on the MMES may be off.

TROUBLESHOOTING HINTS

- The back-up light switch may be defective <M/T>
- The transmission range switch may be defective <CVT>
- The rear view camera may be defective
- The multivision display 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. Self-connection check by MMES

- (1) Display the "Check Connectivity" screen (Refer to [P.54A-179](#)).
- (2) Check that "Rear Camera" is "OK."
- (3) Move the shift lever <M/T> or selector lever <CVT> to the "R" (reverse) position.
- (4) Check that "Back Sensor" is "OK."

Q: Is the check result normal?

YES : Go to Step 7.

NO <"---" is displayed on "Rear Camera"> : Go to Step 2.

NO <"---" is displayed on "Back Sensor"> : Go to Step 5.

STEP 2. Resistance measurement at rear view camera connector (ground terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the rear view camera 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 line between rear view camera connector and the ground

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, short to ground, and open circuit in CACC, CMP–, CMP+ line between multivision display connector and rear view camera connector

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 5. Check the back-up light switch <M/T> or transmission range switch <CVT>.

Check the continuity of the back-up light switch <M/T> or transmission range switch <CVT>. (Refer to GROUP 22B – Transmission [P.22B-18](#), GROUP 23A – On-vehicle Service, Transmission Range Switch Continuity Check [P.23A-123](#))

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the back-up light switch <M/T> or transmission range switch <CVT>.

STEP 6. Check of short to power supply, short to ground, and open circuit in REV line between multivision display connector and back-up light switch <M/T> or transmission range switch <CVT> connector

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 7. Trouble symptom recheck

Check that the display of rear view camera is shown normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the rear view camera temporarily and go to Step 8.

STEP 8. Trouble symptom recheck

Check that the display of rear view camera is shown normally.

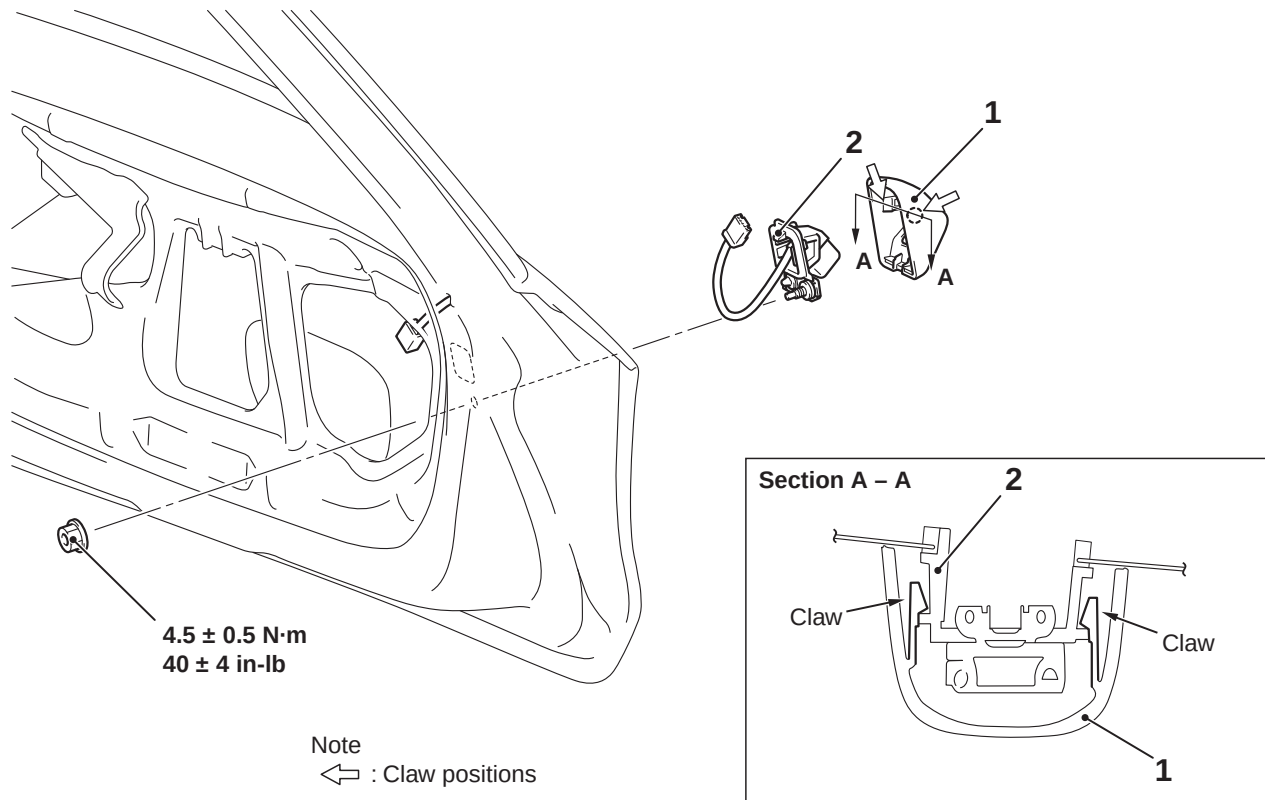
Q: Is the check result normal?

YES : Replace the rear view camera.

NO : Replace the multivision display.

REMOVAL AND INSTALLATION

M1540905500297



ACB04379AB

Removal Steps

1. Rear view camera cover

Removal Steps (Continued)

- Liftgate trim (Refer to GROUP 52A – Liftgate Trim [P.52A-14](#))
2. Rear view camera

ACCESSORY SOCKET

REMOVAL AND INSTALLATION

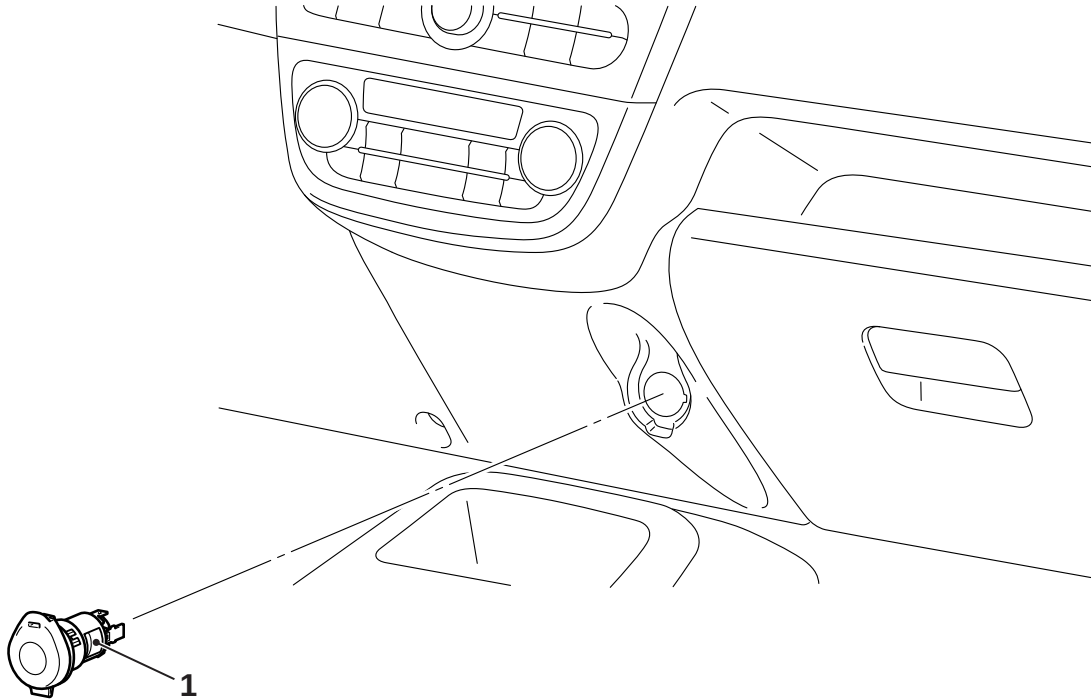
M1542300200604

Pre-removal operation

- Removal of Glove box (Refer to GROUP 52A – Glove Box [P.52A-4](#))

Post-installation operation

- Removal of Glove box (Refer to GROUP 52A – Glove Box [P.52A-4](#))



ACC03218AB

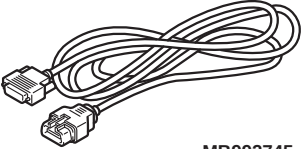
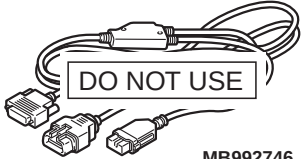
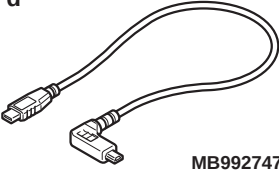
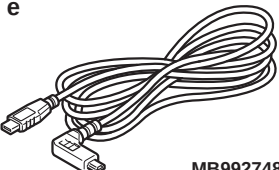
Removal

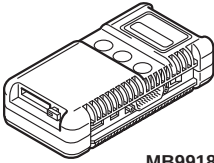
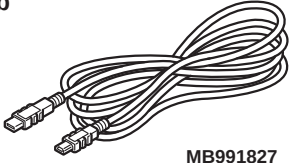
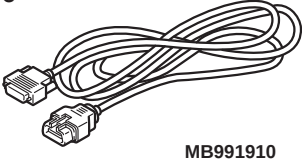
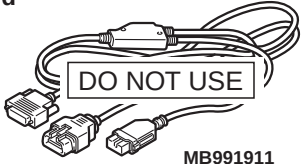
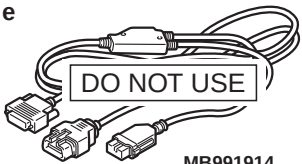
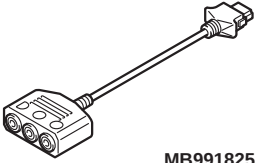
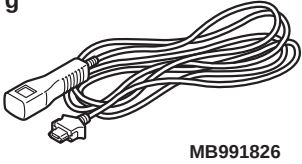
1. Accessory socket

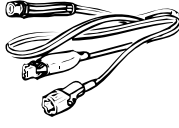
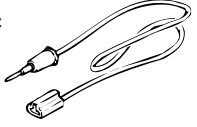
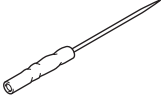
COLUMN SWITCH

SPECIAL TOOLS

M1543100200335

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1543101200134

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

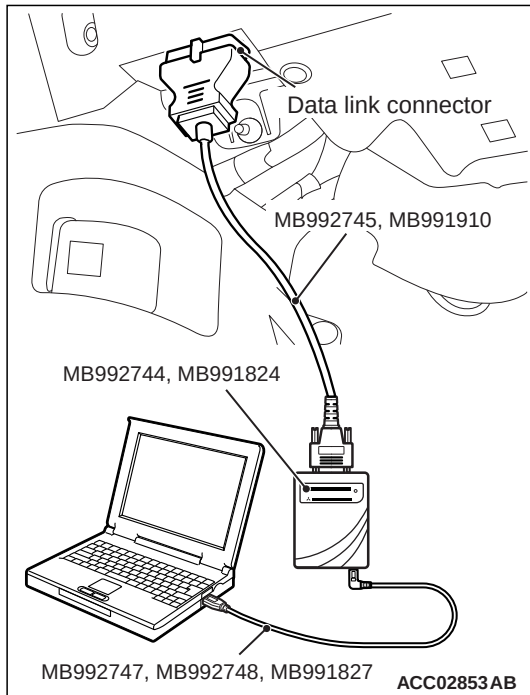
DIAGNOSIS FUNCTION

M1543101300119

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

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

To prevent damage to scan tool (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. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool (M.U.T.-III) does not display.

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

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

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

DIAGNOSTIC TROUBLE CODE TABLE

M1543100300581

NOTE: The ETACS-ECU sets a DTC.

DTC No.	Diagnostic item	Reference page
B1763	Lighting switch	P.54A-151
B1764	Wiper switch	

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1763: Lighting switch

DTC B1764: Wiper switch

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

- If the ETACS-ECU receives the lighting switch fail signal, the ETACS-ECU sets DTC B1763.
- If the ETACS-ECU receives the wiper/washer switch fail signal, the ETACS-ECU sets DTC B1764.

TROUBLESHOOTING HINTS

- The column switch (with built-in column-ECU) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is set 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) [P.54A-149](#)."
- (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 B1763 or B1764 is set.

Q: Is the DTC set?

YES : Go to Step 2.

NO : The trouble can be an intermittent malfunction (GROUP 00 – How to Cope with Intermittent Malfunction [P.00-13](#)).

STEP 2. Using scan tool (M.U.T.-III), Check whether the diagnostic trouble code is set again.

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

- (1) Replace the windshield wiper and washer switch.
- (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 again?

YES : Replace the ETACS-ECU.

NO : The diagnosis is complete.

REMOVAL AND INSTALLATION

M1543100700857

⚠ CAUTION

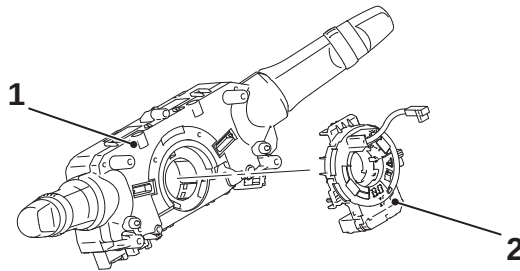
- To remove the driver air bag module, refer to GROUP 52B – Service Precautions [P.52B-5](#) and Driver Air Bag Module and Clock Spring [P.52B-232](#).

Pre-removal operation

- Steering wheel at straight-ahead position check
- Removal of steering column lower cover, steering column upper cover (Refer to GROUP 37 – Steering Column Shaft Assembly [P.37-64](#))
- Removal of steering wheel assembly (Refer to GROUP 52B – Driver's Air Bag Module and Clock Spring [P.52B-232](#))

Post-installation operation

- Installation of steering wheel assembly (Refer to GROUP 52B – Driver's Air Bag Module and Clock Spring [P.52B-232](#))
- Installation of steering column lower cover, steering column upper cover (Refer to GROUP 37 – Steering Column Shaft Assembly [P.37-64](#))
- Steering wheel at straight-ahead position check



ACD01307AB

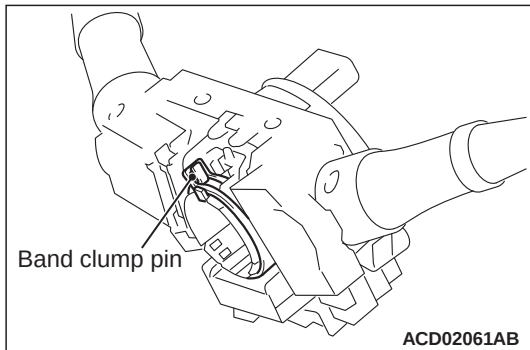
Removal Steps

- <<A>> >>A<<
1. Column switch assembly
 2. Clock spring (Refer to GROUP 52B – Driver's Air Bag Module and Clock Spring [P.52B-232](#).)

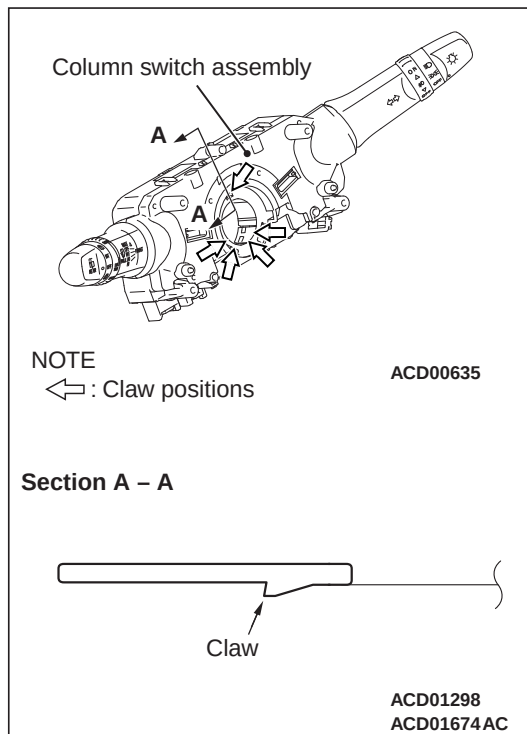
REMOVAL SERVICE POINTS

<<A>> COLUMN SWITCH ASSEMBLY REMOVAL

1. Using a wrench or similar tool, pinch and lift the band clump pin shown in the figure.



2. Unclip the column switch assembly (five clips).
3. Remove the column switch assembly by pulling it.

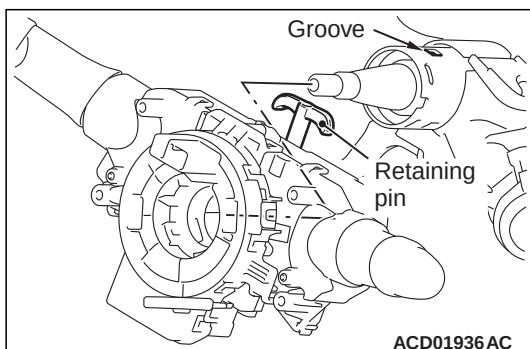


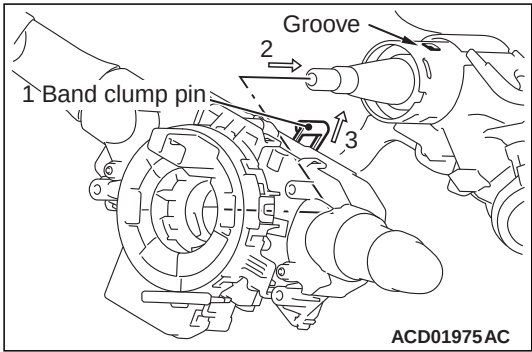
INSTALLATION SERVICE POINT

>>A<< COLUMN SWITCH ASSEMBLY INSTALLATION

When installing a new column switch

- With the retaining pin of the band clump pin installed, install the column switch by securely fitting the claw on the column switch into the groove on the column shaft. Then, remove the retaining pin and release the band clump pin.





When installing the removed column switch

1. Using a wrench or similar tool, pinch and lift the band clump pin shown in the figure.
2. Install the column switch by securely fitting the claw on the column switch into the groove on the column shaft.
3. Release the band clump pin.

INSPECTION

COLUMN SWITCH INSPECTION

The switches on the column switch can be evaluated by reading out a DTC, which is set in the ETACS-ECU.

M1543101900036

RADIO AND CD PLAYER

SPECIAL TOOLS

M1542000602599

Tool	Tool number and name	Supersession	Application
 a b c d DO NOT USE MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1544004800681

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

AUDIO ERROR CODES

M1544018900368

If the radio and CD player detects any malfunction in itself or the inserted CD, the error codes below will be shown on the display.

RADIO AND CD PLAYER-RELATED ERROR CODE

Error code	Cause	Cause of trouble and its solution
CHECK DISC	Focus error	These error codes will be shown if there is any problem with the CD or there is excessive vibration on the vehicle. If the error codes are not displayed when the vehicle is stopped and another CD is inserted, there is a problem with the CD. Check if there is any of the following problems with the CD. • Contamination, scratch, or deformation • Formation of moisture or grease Repair the CD and insert it again. Then, check that no error appears.
DISC ERROR	Abnormal disc	
INTERNAL E	Mechanical error	This error codes will be shown if there is any internal mechanical or electrical problem in the radio and CD player. Replace the radio and CD player check that no error codes are shown.
HEAT ERROR	Protection against high temperature	If the internal temperature is extremely high, this error code will be shown. Turn off the radio and CD player and wait until they cool down. Wait for a while, and then turn on the unit again. Check that the same error does not appear.
ERROR DC	Detection abnormal output to the speaker	This error code will be shown if the radio and CD player has an internal error or is contaminated with the foreign material, and there is a problem with output to the speaker. If it is contaminated with the foreign material, turn OFF the power. Dry the foreign material if it is liquid, and remove it if it is solid. Then, check if the error code is displayed. If the error code is displayed, replace the radio and CD player.

iPod-RELATED ERROR CODE

Error code	Cause	Cause of trouble and its solution
NO SONG	No playable music file is found.	No playable music file is stored in the iPod. Store music files to the iPod.
VER ERROR	iPod cannot be recognized	iPod itself or software is not supported. Use the supported iPod.

USB MEMORY DEVICE-RELATED ERROR CODE

Error code	Cause	Cause of trouble and its solution
NO SONG	No playable music file is found.	No playable music file is stored in the USB memory. Store music files to the USB memory.

Error code	Cause	Cause of trouble and its solution
FILE ERROR	Playback of unplayable file (copyright protected file, etc.) is attempted.	Displayed when the playback of unplayable file such as a copyright protected file is attempted. The error code is displayed approximately for 3 seconds, and then a next playable file is played automatically.
UNSUPPORTED DEVICE	Unsupported device	The USB memory is not supported. Use the supported USB memory.
UNSUPPORTED FORMAT	Unsupported format	
USB BUS PWR	Overcurrent abnormality	There is a communication error. Proceed to "An audio file, which is stored in the USB memory/iPod, cannot be played." (Refer to P.54A-162 <Vehicles with radio and CD player> or P.54A-176 <Vehicles with MMES>.)
LSI ERROR	Internal error	This error code will be displayed when there is a problem in the LSI. If it is displayed even after the radio and CD player is powered on, replace the radio and CD player.

TROUBLE SYMPTOM CHART

M1544004902930

Trouble symptom	Inspection Procedure No.	Reference page
Power is not turned ON when the power switch is turned ON.	1	P.54A-156
No sound is heard.	2	P.54A-158
The radio broadcasting can not be received.	3	P.54A-160
Audio illuminations does not work normally.	4	P.54A-161
An audio file, which is stored in the USB memory/iPod, cannot be played.	5	P.54A-162
An audio file, which is connected through the external input (AUX) terminal, cannot be played.	6	P.54A-162

SYMPTOM PROCEDURES

Inspection Procedure 1: Power is not turned ON when the power switch is turned ON.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the power for radio and CD player cannot be turned ON, the radio and CD player, or power supply circuit for radio and CD player may have a problem.

TROUBLESHOOTING HINTS

- The power supply circuit may be defective
- The radio and CD player may be defective

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Voltage measurement at radio and CD player connector (ACC terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ACC" position.
- (3) Check the voltage between the radio and CD player connector (ACC terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO <vehicles without KOS> : Go to Step 2.

NO <vehicles with KOS> : Go to Step 3.

STEP 2. Check of short to power supply, short to ground, and open circuit in ACC line between ignition switch (ACC) and radio and CD player connector

Q: Is the check result normal?

YES : Refer to Inspection Procedure "Malfunction of the ignition switch power supply system."

[P.54A-9](#)

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

STEP 3. Using scan tool (M.U.T.-III), read the KOS diagnostic trouble code**⚠ 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)" [P.54A-15](#).
- (2) Turn the ignition switch to the "ON" position.
- (3) Check that the KOS&OSS-ECU sets a DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Troubleshoot the KOS&OSS-ECU (Refer to GROUP 42B – Troubleshooting [P.42B-13](#)).

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in ACC line between ACC relay and radio and CD player connector

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 5. Voltage measurement at radio and CD player connector (+B terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the voltage between the radio and CD player connector (+B terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check of short to power supply, short to ground, and open circuit in +B line between fusible link and radio and CD player connector

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 7. Check of short to open circuit in GND line between radio and CD player connector and ground

Q: Is the check result normal?

YES : Go to Step 8.

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

STEP 8. Retest the system

Check if the radio and CD player power is turned ON.

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the radio and CD player.

Inspection Procedure 2: No sound is heard.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the audio sound is not output, the radio and CD player may have a problem. In addition, if any of the speakers is short-circuited, the protection circuit inside the radio and CD player disables all the speakers to sound. Therefore, if all the speakers do not output sound, the speaker circuit may be shorted or the speaker may be defective.

TROUBLESHOOTING HINTS

- The radio and CD player may be defective
- The speaker 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. Checking with audio speaker test

Perform the audio speaker test, and check which speaker does not output the sound. Refer to [P.54A-209](#).

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO (No speakers sound.) : Go to Step 2.

NO (No sound is heard from one of the speakers.) : Go to Step 4.

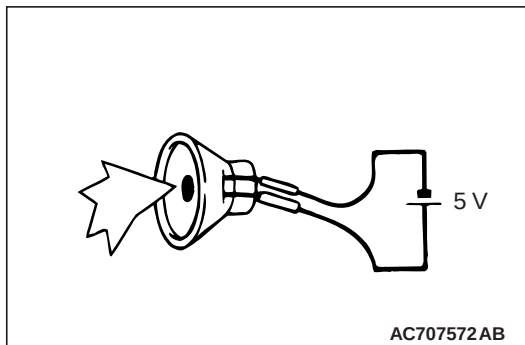
STEP 2. Check the speaker.

- (1) Remove the speaker. Refer to [P.54A-211](#).
- (2) Check that the speaker outputs the noise when the voltage of 5 V is applied to the speaker connector terminal.

Q: Do the speaker output the noise?

YES : Go to Step 3.

NO : Replace the speaker.



STEP 3. Check the wiring harness between the speaker connector terminal and the radio and CD player connector terminal.

- Check of short circuit in DFR+, DFR- line front door speaker (RH) connector and radio and CD player connector. <Front door speaker (RH)>
- Check of short circuit in DFL+, DFL- line front door speaker (LH) connector and radio and CD player connector. <Front door speaker (LH)>
- Check of short circuit in RR+, RR- line rear door speaker (RH) connector and radio and CD player connector. <Rear door speaker (RH)>
- Check of short circuit in RL+, RL- line rear door speaker (LH) connector and radio and CD player connector. <Rear door speaker (LH)>

Q: Is the check result normal?

YES : Go to Step 6.

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

STEP 4. Check the speaker.

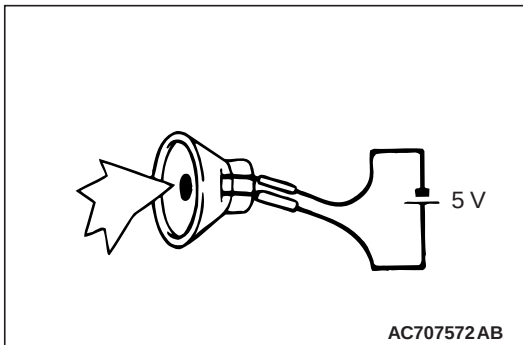
Follow the speaker test to check which speaker does not sound.

- (1) Remove the speaker. Refer to [P.54A-211](#).
- (2) Check that the speaker outputs the noise when the voltage of 5 V is applied to the speaker connector terminal.

Q: Do the speaker output the noise?

YES : Go to Step 5.

NO : Replace the speaker.



STEP 5. Check the wiring harness between the speaker connector terminal and the radio and CD player connector terminal.

Follow the speaker test to check which speaker circuit is defective.

- Check of open circuit in DFR+, DFR- line front door speaker (RH) connector and radio and CD player connector. <Front door speaker (RH)>
- Check of open circuit in DFL+, DFL- line front door speaker (LH) connector and radio and CD player connector. <Front door speaker (LH)>
- Check of open circuit in RR+, RR- line rear door speaker (RH) connector and radio and CD player connector. <Rear door speaker (RH)>
- Check of open circuit in RL+, RL- line rear door speaker (LH) connector and radio and CD player connector. <Rear door speaker (LH)>

Q: Is the check result normal?

YES : Go to Step 6.

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

STEP 6. Retest the system

Check if the sound is output from all the speakers.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the radio and CD player.

Inspection Procedure 3: The radio broadcasting can not be received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

In case of FM/AM radio broadcasting cannot be received., antenna rod, antenna base, antenna feeder or radio and CD player may have a problem.

NOTE: The radio wave may not be received if the vehicle is placed in the area which is exposed to a special electric field. Thus, check that the radio broadcasting can be received using the radio of another vehicle before carrying out diagnosis.

TROUBLESHOOTING HINTS

- The antenna rod may be defective
- The antenna base may be defective
- The antenna feeder may be defective
- The radio and CD player may be defective

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check the state of the antenna rod and antenna base.**Q: Is the antenna assembled?**

YES : Go to Step 2.

NO : Assemble antenna rod and antenna base.

STEP 2. Check to see if inspections are taking place in an area exposed to special electric fields.

Q: Is the reception area exposed to special electric fields?

YES : Go to Step 3.

NO : Go to Step 4.

STEP 3. Move the vehicle and check the radio.

Move the vehicle to a good reception area that is not exposed to special electric fields.

Q: Is the check result normal?

YES : Diagnosis complete.

NO : Go to Step 4.

STEP 4. Check if there is any damage to the antenna rod, antenna base and antenna feeder.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the antenna rod, antenna base and antenna feeder.

STEP 5. Check the connection of the antenna feeder's plug and radio and CD player.

Q: Is the antenna feeder's plug thoroughly connected to the radio and CD player?

YES : Go to Step 6.

NO : Thoroughly connect the antenna feeder's plug and the radio and CD player.

STEP 6. Substitute a known good radio and CD player, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the radio and CD player.

NO : Either repair or replace the antenna rod and antenna base.

Inspection Procedure 4: Audio illuminations does not work normally.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the taillights illuminate, illumination signal is sent from the ETACS-ECU to the radio and CD player. This switches the illumination of the radio and CD player from day mode to night mode. If the mode is switched, the illumination signal line, the ETACS-ECU or the radio/CD player may be defective.

TROUBLESHOOTING HINTS

- The radio and CD player 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. Check that the taillights illuminate.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Diagnose the taillights. (Refer to [P.54A-102.](#))

STEP 2. Check of short to power supply, short to ground, and open circuit in ILL+ line between radio and CD player connector and ETACS-ECU (taillight relay)

Q: Is the check result normal?

YES : Go to Step 3.

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

STEP 3. Combination meter check

When the taillights are activated, check that the combination meter switches from day mode to night mode.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the ETACS-ECU.

STEP 4. Substitute the ETACS-ECU with good one, and check the trouble symptom.

Substitute the ETACS-ECU with good one. When the taillights illuminate, check that the illumination of the radio and CD player is switched from day mode to night mode.

Q: Is the check result normal?

YES : Replace the ETACS-ECU.

NO : Replace the radio and CD player.

Inspection Procedure 5: An audio file, which is stored in the USB memory/iPod, cannot be played.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the sound replay is impossible with the USB/i Pod mode, the USB cable or radio and CD player may be defective.

NOTE: Before troubleshooting, check that the music file (the customer tried to replay) can be replayed.

TROUBLESHOOTING HINTS

- The radio and CD player may be defective
- The USB cable may be defective

DIAGNOSIS

STEP 1. Check if the error message is displayed on the monitor.

(Refer to [P.54A-167](#).)

Q: Is the error message displayed on the monitor?

YES : Refer to error message (refer to [P.54A-167](#)), take necessary steps. If the USB memory/iPod is still not be played, go to Step 2.

NO : Go to Step 2.

STEP 2. Check the USB cable.

Check that the USB cable is connected to the radio and CD player normally. Or check the USB cable for damage such as bend.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace or repair the USB cable.

STEP 3. Retest the system

Check whether an audio file, which is stored in the USB memory/iPod, can be played.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the radio and CD player.

Inspection Procedure 6: An audio file, which is connected through the external input (AUX) terminal, cannot be played.

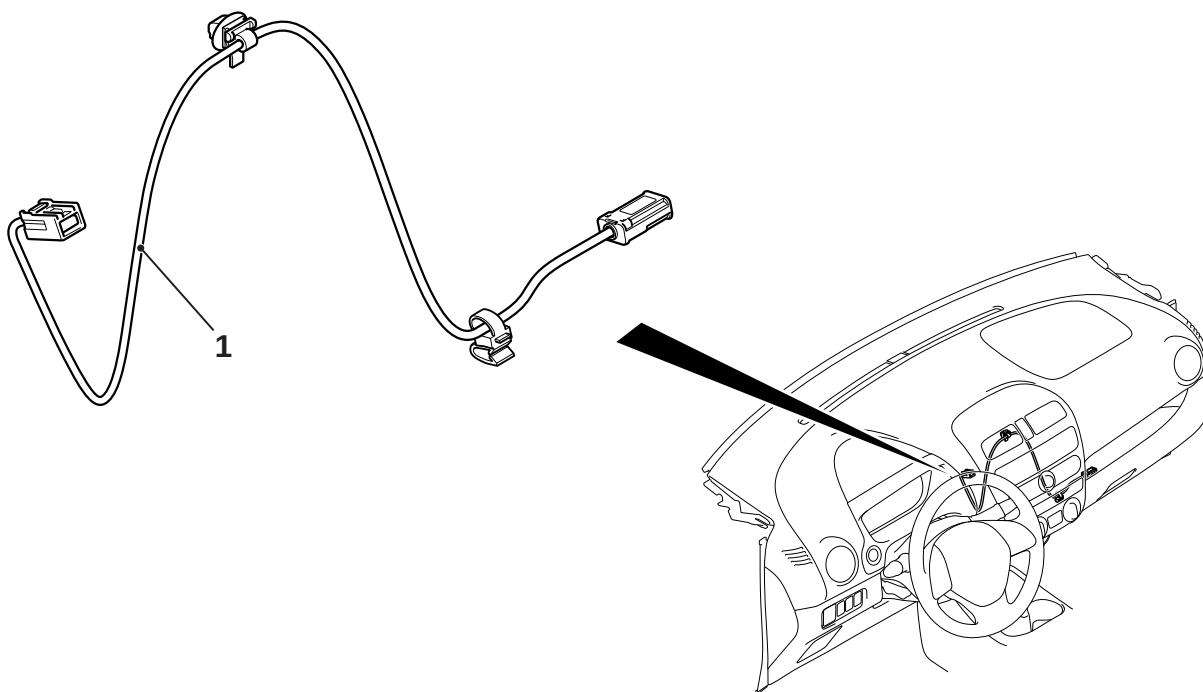
** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If an audio file is not played through the external input (AUX) terminal, the radio and CD player may be defective.

<Vehicles without hands free-ECU>



ACC06752AB

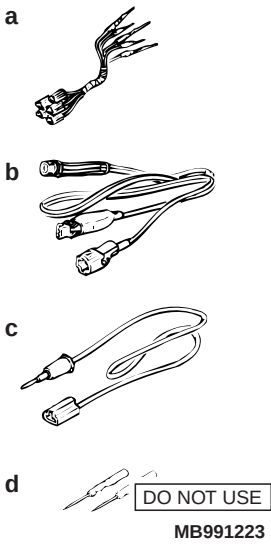
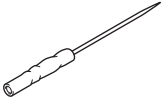
Removal steps

- Radio and CD player or multivision display (Refer to [P.54A-163](#) <Vehicles with radio and CD player> or [P.54A-186](#) <Vehicles with multivision display>)
1. USB cable

MMES

SPECIAL TOOLS

M1544000600674

Tool	Tool number and name	Supersession	Application
 a b c d DO NOT USE MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1546001500052

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

PRECAUTIONS ON SERVICING MMES

M1546303000139

PRIOR TO DISCONNECTING THE
VEHICLE BATTERY

A lot of information, which is set by customer, is stored in the MMES. If the battery terminals are disconnected, this information may disappear. Prior to the terminal disconnection, the agreement of the customer should be obtained.

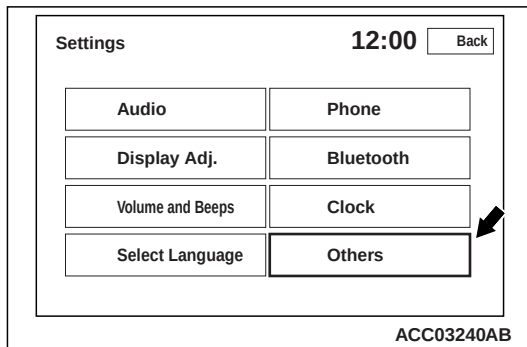
**DIAGNOSIS TIPS CONCERNING THE
NAVIGATION FUNCTION**

1. To pinpoint current location precisely on the navigation screen, at least four GPS signals are needed. If the GPS signals are not received due to poor satellite communication or driving conditions, wrong current location will be displayed although the MMES is OK. Therefore, prior to troubleshooting, ask your customer in which conditions the system is used.

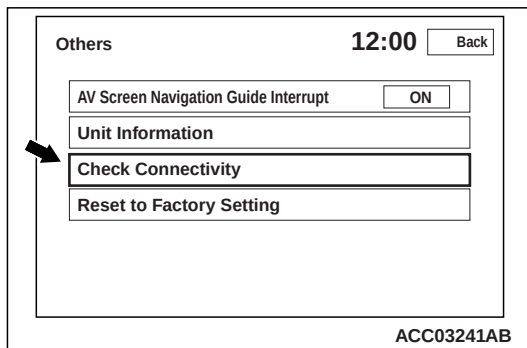
GPS signal status can be checked on the MMES GPS Position screen.

How to check

- (1) Select "Others" from the Settings screen.

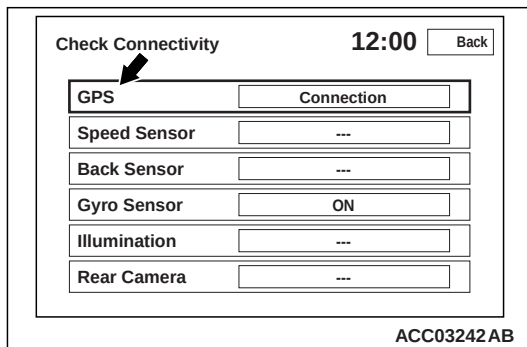


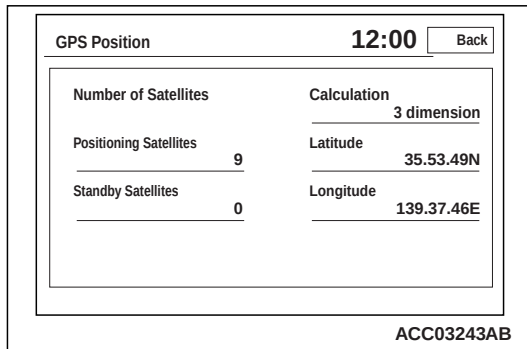
- (2) Select "Check Connectivity" from the Others screen.



- (3) Confirm that "GPS" is "Connection" on the Check Connectivity screen, and then select the "GPS".

NOTE: If "GPS" is "No connection", check whether the MMES is connected to the GPS antenna properly.





(4) The GPS Position screen is displayed. Check whether at least four GPS signals are received.

2. If the system is not OK, diagnose the system according to the trouble symptom chart.

ERROR DISPLAY

If the multivision display detects an error under the conditions below, the error will be displayed.

- When the multivision display is activated
- When the OPEN/TILT key is operated on the multivision display
- When a CD/DVD is loaded/ejected
- When a CD/DVD is played
- When an audio file, which is stored in an SD memory card or an USB device, is played
- When you use a hands-free system

M1546313000077

Error display	Cause	Action
Check Map SD Memory Card	When an error is detected in the map SD memory card (loaded in the right SD card slot)	Load the map SD memory card again.
Please open panel.	An error is detected when the panel is opened.	Press "Panel Open/Close" to open the panel once.
Please eject disc.	A mechanical error occurred in the DVD loading mechanism.	Eject the disk.
Disc read error.	• The disc is scratched • When a disk of unsupported format is attempted to play. • The disk does not contain any supported file.	Replace the disk.
This disc can not be played.	Improper region code	—
Please change the parental level to play this disc.	Playback of the disk is limited under parental level.	Change the parental level setting on the multivision display.
Unplayable file.	When an unsupported file is attempted to play. (collapsed file, difference between file extension and file format, unsupported bit rate, etc.)	—
SD memory card read error.	• When the SD memory card cannot be recognized • When the file system is FAT.	Load the SD memory card again.

Error display	Cause	Action
Stopped.	The control panel is opened while the SD memory card is played.	Close the panel. (The device cannot access the SD memory card while the panel is opened)
Check USB memory or iPod.	- When the USB memory or the iPod cannot be recognized - When the file system is FAT. - When a device other than an USB memory stick or an iPod is connected - When a device is connected via an USB hub.	Insert the USB memory stick or iPod again.
The call failed.	- When phone call fails. - When you cannot talk via the phone.	Check the mobile phone settings.
Unable to switch to Handset mode.	When you fail to switch between the hands-free call and mobile phone call.	
Could not switch to Handsfree mode. Please check your phone.	When you fail to switch from the mobile phone call to the hands-free call.	

CHECK CHART FOR TROUBLE SYMPTOMS

M1546001802134

Symptom	Inspection procedure number	Reference page
Power is not turned ON when the power switch is turned ON.	1	P.54A-168
Current location is not displayed correctly.	2	P.54A-170
No sound is heard.	3	P.54A-171
The radio broadcasting can not be received.	4	P.54A-174
CD/DVD cannot be played.	5	P.54A-175
An audio file, which is stored in the USB memory/iPod, cannot be played.	6	P.54A-176
An audio file, which is stored in the SD memory card, cannot be played.	7	P.54A-176
The hands-free cellular phone system does not operate normally.	8	P.54A-178
The screen brightness is not changed in conjunction with the taillights.	9	P.54A-178

SYMPTOM PROCEDURES

Inspection Procedure 1: Power is not turned ON when the power switch is turned ON.

CAUTION

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground

circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

When the ignition switch is turned to the ACC or ON position, if the screen is not displayed at all, the power supply circuit or multivision display may have a problem.

TROUBLESHOOTING HINTS

- The power supply circuit may be defective
- The multivision display may be defective

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Voltage measurement at multivision display connector (ACC terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ACC" position.
- (3) Check the voltage between the multivision display connector (ACC terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO <Vehicles without KOS> : Go to Step 2.

NO <Vehicles with KOS> : Go to Step 3.

STEP 2. Check of short to power supply, short to ground, and open circuit in ACC line between ignition switch (ACC) and multivision display connector

Q: Is the check result normal?

YES : Refer to Inspection Procedure "Malfunction of the ignition switch power supply system." [P.54A-9](#)

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

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

Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?

YES : Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in ACC line between ACC relay and multivision display connector

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 5. Voltage measurement at multivision display connector (+B terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the voltage between the multivision display connector (+B terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check of short to power supply, short to ground, and open circuit in +B line between fusible link and multivision display connector

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 7. Resistance measurement at multivision display connector (GND terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the multivision display connector (GND 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 GND line between multivision display connector and ground**Q: Is the check result normal?**

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 9. Retest the system

Check if the multivision display power is turned ON.

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the multivision display.

Inspection Procedure 2: Current location is not displayed correctly.**⚠ CAUTION**

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If a current location (and vehicle direction) is not displayed correctly, one of the following malfunctions may be present.

- Orientation signal, which is received through the GPS antenna, is abnormal.
- Abnormal vehicle speed signal sent by the combination meter
- Defective gyro sensor (integrated in the multivision display)

TROUBLESHOOTING HINTS

- The GPS antenna may be defective
- The multivision display may be defective

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Self-connection check by MMES

(1) Display the "Check Connectivity" screen (Refer to [P.54A-179](#)).

(2) Check that "GPS" is "Connection."

(3) Drive the vehicle to check whether "OK" is displayed on "Speed Sensor" item.

(4) Check that "Gyro Sensor" is "OK."

Q: Is the check result normal?

YES : Go to Step 4.

NO <"No connection" is displayed on "GPS"> : Go to Step 2.

NO <"---" is displayed on "Speed Sensor"> : Go to Step 3.

NO <"---" is displayed on "Gyro Sensor"> : Replace the multivision display.

STEP 2. Check the GPS antenna.

Check the GPS antenna for damage.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the GPS antenna.

STEP 3. Check of short to power supply, short to ground, and open circuit in SPD line between multivision display connector and combination meter connector

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. Check the signal reception state of the GPS antenna.

Check whether at least four GPS signals are received on the MMES GSP position screen.

How to check

1. Display the "Check Connectivity" screen (Refer to [P.54A-179](#)).
2. Press "GPS" button to display how the GPS signal are received on the GPS position screen.
3. Check whether at least four GPS signals are received.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Move the vehicle in an open outside area where GPS data can be received from satellites. Then check whether current location is pinpointed. If not, proceed to Step 5.

STEP 5. Reset the MMES and check the trouble symptom.

⚠ CAUTION

If the MMES is reset, all the data stored by customer will disappear. Therefore, prior to the reset, the agreement of the customer should be obtained.

1. Reset the MMES. (Refer to [P.54A-183](#).)
2. Check whether current location is pinpointed.

Q: Is the check result normal?

YES : The diagnosis is complete.

NO : Replace the multivision display.

Inspection Procedure 3: No sound is heard.

⚠ CAUTION

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If the sound is not output, the multivision display may have a problem. In addition, if any of the speakers is short-circuited, the protection circuit inside the multivision display disables all the speakers to sound. Therefore, if all the speakers do not output sound, the speaker circuit may be shorted or the speaker may be defective. In some cases, the sound is output depending on sources, thus use the radio, CD/DVD, and others to check if the sound is output.

TROUBLESHOOTING HINTS

- The multivision display may be defective
- The speaker 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. Check a trouble spot.

Check which speaker does not sound.

Q: Which speaker does not sound?

NO (No speakers sound.) : Go to Step 2.

NO (No sound is heard from one of the speakers.) : Go to Step 5.

STEP 2. Check the multivision display operation.**Q: Check the sources from which the sound is not output.**

No sound only from radio : Perform Inspection Procedure 4 "The radio broadcasting can not be received."
(Refer to [P.54A-174.](#))

No sound only when the CD/DVD is played : Perform Inspection Procedure 5 "CD/DVD cannot be played."
(Refer to [P.54A-175.](#))

No sound only when the USB memory/iPod is played :
Perform Inspection Procedure 6 "An audio file, which is stored in the SD memory card/USB memory/iPod, cannot be played." (Refer to [P.54A-176.](#))

No sound only when the SD memory card is played :
Perform Inspection Procedure 7 "An audio file, which is stored in the SD memory card, cannot be played." (Refer to [P.54A-177.](#))

No sound from any of the sources : Go to Step 3.

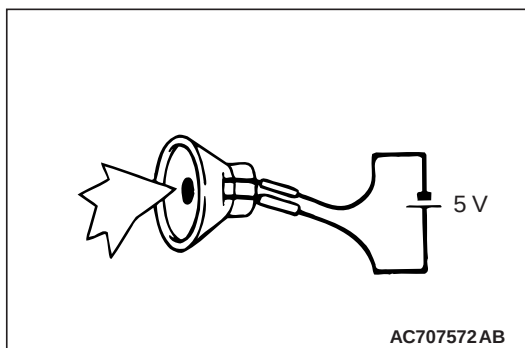
STEP 3. Check the speaker.

- (1) Remove the speaker. Refer to [P.54A-211.](#)
- (2) Check that the speaker outputs the noise when the voltage of 5 V is applied to the speaker connector terminal.

Q: Do the speaker output the noise?

YES : Go to Step 4.

NO : Replace the speaker.



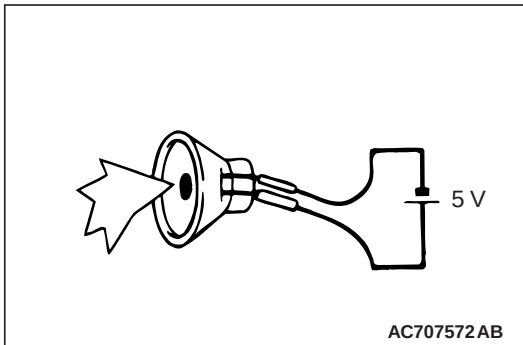
STEP 4. Check the wiring harness between the speaker connector terminal and the multivision display connector terminal.

- Check of short circuit in DFR+, DFR– line front door speaker (RH) connector and multivision display connector. <Front door speaker (RH)>
- Check of short circuit in DFL+, DFL– line front door speaker (LH) connector and multivision display connector. <Front door speaker (LH)>
- Check of short circuit in RR+, RR– line rear door speaker (RH) connector and multivision display connector. <Rear door speaker (RH)>
- Check of short circuit in RL+, RL– line rear door speaker (LH) connector and multivision display connector. <Rear door speaker (LH)>

Q: Is the check result normal?**YES :** Go to Step 7.**NO :** Repair the connector(s) or wiring harness.**STEP 5. Check the speaker.**

Check which speaker does not sound.

- (1) Remove the speaker. Refer to [P.54A-211](#).
- (2) Check that the speaker outputs the noise when the voltage of 5 V is applied to the speaker connector terminal.

Q: Is the check result normal?**YES :** Go to Step 6.**NO :** Replace the speaker.

STEP 6. Check the wiring harness between the speaker connector terminal and the multivision display connector terminal.

Check which speaker circuit is defective.

- Check of open circuit in DFR+, DFR– line front door speaker (RH) connector and multivision display connector. <Front door speaker (RH)>
- Check of open circuit in DFL+, DFL– line front door speaker (LH) connector and multivision display connector. <Front door speaker (LH)>
- Check of open circuit in RR+, RR– line rear door speaker (RH) connector and multivision display connector. <Rear door speaker (RH)>
- Check of open circuit in RL+, RL– line rear door speaker (LH) connector and multivision display connector. <Rear door speaker (LH)>

Q: Is the check result normal?

YES : Go to Step 7.

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

STEP 7. Retest the system

Check if the sound is output from all the speakers.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the multivision display.

Inspection Procedure 4: The radio broadcasting can not be received.**⚠ CAUTION**

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

In case of FM/AM radio broadcasting cannot be received., antenna rod, antenna base, antenna feeder or multivision display may have a problem.

NOTE: The radio wave may not be received if the vehicle is placed in the area which is exposed to a special electric field. Thus, check that the radio broadcasting can be received using the radio of another vehicle before carrying out diagnosis.

TROUBLESHOOTING HINTS

- The antenna rod may be defective
- The antenna base may be defective
- The antenna feeder may be defective

- The multivision display may be defective

DIAGNOSIS**STEP 1. Check the state of the antenna rod and antenna base.****Q: Is the antenna assembled?**

YES : Go to Step 2.

NO : Assemble antenna rod and antenna base.

STEP 2. Check to see if inspections are taking place in an area exposed to special electric fields.**Q: Is the reception area exposed to special electric fields?**

YES : Go to Step 3.

NO : Go to Step 4.

STEP 3. Move the vehicle and check the radio.

Move the vehicle to a good reception area that is not exposed to special electric fields.

Q: Is the check result normal?

YES : Diagnosis complete.

NO : Go to Step 4.

STEP 4. Check if there is any damage to the antenna rod, antenna base and antenna feeder.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the antenna rod, antenna base and antenna feeder.

STEP 5. Check the connection of the antenna feeder's plug and multivision display.

Q: Is the antenna feeder's plug thoroughly connected to the multivision display?

YES : Go to Step 6.

NO : Thoroughly connect the antenna feeder's plug and the multivision display.

STEP 6. Substitute a known good multivision display, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the multivision display.

NO : Either repair or replace the antenna rod and antenna base.

Inspection Procedure 5: CD/DVD cannot be played.**⚠ CAUTION**

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

The CD/DVD or the multivision display may be defective.

TROUBLESHOOTING HINTS

- The CD/DVD may be defective
- The multivision display may be defective

DIAGNOSIS**STEP 1. Check if the error message is displayed on the monitor.**

(Refer to [P.54A-167](#).)

Q: Is the error message displayed on the monitor?

YES : Refer to error message (refer to [P.54A-167](#)), take necessary steps. If the CD or DVD is still not be played, go to Step 2.

NO : Go to Step 2.

STEP 2. Check the CD/DVD insertion surface.

Check that the CD/DVD is inserted with the correct surface facing up.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Check the disc insertion surface, and reinsert the disc. (In case of a single-sided disc, insert it with its label facing upward.)

STEP 3. Check the CD/DVD.

- Check that the DVD has the correct region code.
- Check if the CD corresponds with the multivision display.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Use a DVD with a correct region code. Or, use a CD corresponds with the multivision display.

STEP 4. Check the CD/DVD.

Check that the CD/DVD is free of dirt or scratch.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Clean the disc, use a disc without scratches and burrs, or remove the burrs from the disc, and then reinsert the disc.

STEP 5. Temporarily replace the CD /DVD with another CD or DVD, and check the trouble symptom.

Check that the new CD/DVD is played normally when it is inserted.

Q: Is the check result normal?

YES : Replace the used CD/DVD.

NO : Go to Step 6.

STEP 6. Temporarily replace the multivision display, and check the trouble symptom.

After temporary replacement of the multivision display, check that the new CD/DVD is played normally when it is inserted.

Q: Is the check result normal?

YES : Replace the multivision display.

NO : Replace the CD/DVD.

Inspection Procedure 6: An audio file, which is stored in the USB memory/iPod, cannot be played.

⚠ CAUTION

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If the sound replay is impossible with the USB/iPod mode, the USB cable or multivision display may be defective.

NOTE: Before troubleshooting, check that the music file (the customer tried to replay) can be replayed.

TROUBLESHOOTING HINTS

- The multivision display may be defective
- The USB cable may be defective
- The iPod is not supported

DIAGNOSIS

STEP 1. Check whether the iPod is supported.

Check whether the iPod is supported.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Use the supported iPod.

STEP 2. Check if the error message is displayed on the monitor.

(Refer to [P.54A-167.](#))

Q: Is the error message displayed on the monitor?

YES : Refer to error message (refer to [P.54A-167](#)), take necessary steps. If the USB memory/iPod is still not be played, go to Step 3.

NO : Go to Step 3.

STEP 3. Check the USB cable.

Check that the USB cable is connected to the multivision display normally. Or check the USB cable for damage such as bend.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace or repair the USB cable.

STEP 4. Retest the system

Check whether an audio file, which is stored in the USB memory/iPod, can be played.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the multivision display.

Inspection Procedure 7: An audio file, which is stored in the SD memory card, cannot be played.

** CAUTION**

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If the sound replay is impossible with the SD memory card mode, the SD card or multivision display may be defective.

NOTE: Before troubleshooting, check that the music file (the customer tried to replay) can be replayed.

TROUBLESHOOTING HINTS

- The multivision display may be defective
- The SD card may be defective

DIAGNOSIS

STEP 1. Check if the error message is displayed on the monitor.

(Refer to [P.54A-167](#).)

Q: Is the error message displayed on the monitor?

YES : Refer to error message (refer to [P.54A-167](#)), take necessary steps. If the SD memory card is still not be played, go to Step 2.

NO : Go to Step 2.

STEP 2. Retest the system

Check whether an audio file, which is stored in the SD memory card, can be played.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the multivision display.

Inspection Procedure 8: The hands-free cellular phone system does not operate normally.

⚠ CAUTION

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If a hands-free cellular phone system does not function correctly, a Bluetooth® device is not paired or the multivision display may be defective.

TROUBLESHOOTING HINTS

- Pairing with the Bluetooth® device has not been completed.
- The multivision display may be defective
- The Bluetooth® device may be defective

DIAGNOSIS

STEP 1. Check whether the Bluetooth® device is supported.

Check whether the Bluetooth® device is supported.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Use the supported Bluetooth® device.

STEP 2. Reset the MMES and check the trouble symptom.**⚠ CAUTION**

If the MMES is reset, all the data stored by customer will disappear. Therefore, prior to the reset, the agreement of the customer should be obtained.

1.Reset the MMES. (Refer to [P.54A-183.](#))

2.Carry out the necessary pairing for the Bluetooth® device. (Refer to [P.54A-181.](#))

3.Check whether the hands-free cellular phone system works normally.

Q: Is the check result normal?

YES : The diagnosis is complete.

NO : Replace the multivision display.

Inspection Procedure 9: The screen brightness is not changed in conjunction with the taillights.

⚠ CAUTION

Whenever the multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal

TECHNICAL DESCRIPTION (COMMENT)

If the screen brightness is not changed in conjunction with the taillights, the wiring harness wires, the connector(s), the multivision display or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The multivision display 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. Self-connection check by MMES

- (1) Display the "Check Connectivity" screen (Refer to [P.54A-179](#)).
- (2) If the taillights illuminate, "Illumination" should be "OK".

Q: Is the check result normal?

- YES** : Replace the multivision display.
NO : Go to Step 2.

STEP 2. Check of short to power supply, short to ground, and open circuit in ILL+ line between multivision display connector and ETACS-ECU (taillight relay)**Q: Is the check result normal?**

- YES** : Go to Step 3.
NO : Repair the connector(s) or wiring harness.

STEP 3. Retest the system

Check whether the screen brightness is changed in conjunction with the taillights.

Q: Is the check result normal?

- YES** : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).
- NO** : Replace the ETACS-ECU.

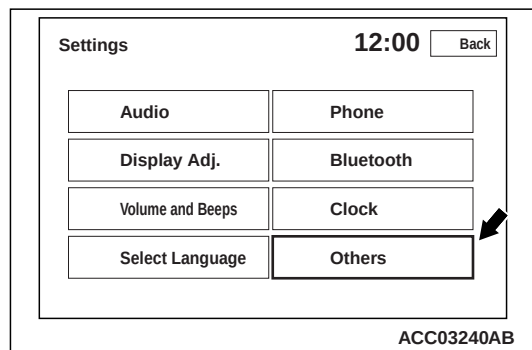
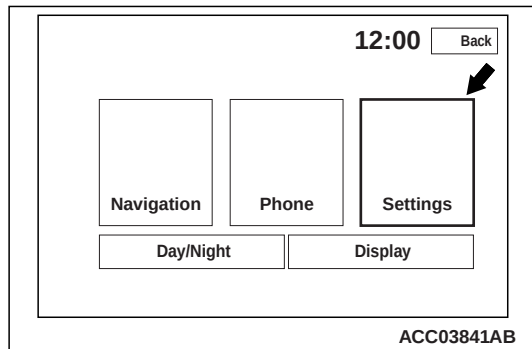
ON-VEHICLE SERVICE**CONNECTION CHECK FUNCTION**

M1546314300015

This function allows you to check which device and sensors are connected to the multivision display. Furthermore, this function indicates how the GPS signals are received.

How to check connections

1. Press "MENU" button to display the menu screen.
2. Press "Settings" button to display the "Settings" screen.
3. Press "Others" button to display the "Others" screen.



Others 12:00 Back

AV Screen Navigation Guide Interrupt ON

Unit Information

Check Connectivity

Reset to Factory Setting

ACC03241AB

Check Connectivity 12:00 Back

GPS	No connection
Speed Sensor	---
Back Sensor	---
Gyro Sensor	ON
Illumination	---
Rear Camera	---

ACC03242AC

GPS Position 12:00 Back

Number of Satellites	Calculation
	3 dimension
Positioning Satellites 9	Latitude 35.53.49N
Standby Satellites 0	Longitude 139.37.46E

ACC03243AB

4. Press "Check Connectivity" button to display the "Check Connectivity" screen. Activate the connection checks on "GPS", "Speed Sensor", "Back Sensor", "Gyro Sensor", "Illumination" and "Rear Camera" items.

GPS

- Check whether the GPS antenna is connected. If a GPS antenna connection is recognized, "Connection" will be displayed. If it cannot be recognized, "No connection" will be displayed.

- Press "GPS" button to display how the GPS signal are received on the GPS position screen.

Speed Sensor

- Displays whether the vehicle speed signal is received. If the vehicle speed signal is received from the combination meter during driving, "OK" will be displayed. If it cannot be received, "---" will be displayed.

Back Sensor

- Check whether the transmission range switch <CVT> or the back-up light switch <M/T> is connected. If the R position signal is received when the selector lever <CVT> or the shift lever <MT> is moved to the "R" position, "OK" will be displayed. If it cannot be received, "---" will be displayed.

Gyro Sensor

- Displays how the gyro sensor incorporated in the multi-view display is. If the gyro sensor is normal, "OK" will be displayed. If the gyro sensor is not abnormal, "---" will be displayed.

Illumination

- Displays whether the illumination signal is received. If the TAIL ON signal is received when the lighting switch is turned to the "TAIL" position, "OK" will be displayed. If it cannot be received, "---" will be displayed.

Rear Camera

- Displays whether the rear view camera is connected. If the rear view camera connection is recognized, "Connection" will be displayed. If it cannot be recognized, "No connection" will be displayed.

PAIRING THE BLUETOOTH® DEVICE

M1544405500573

How to activate or deactivate the pairing with a Bluetooth® device through the multivision display

By operating the multivision display by means of the touch-screen, you can activate or deactivate the pairing with a Bluetooth® device.

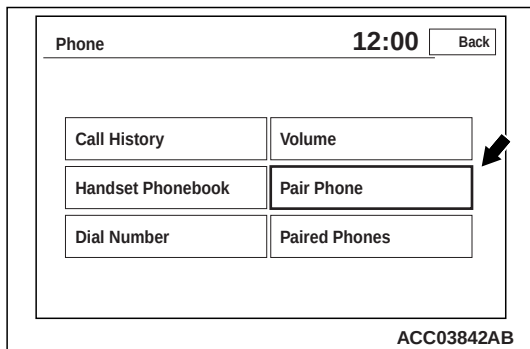
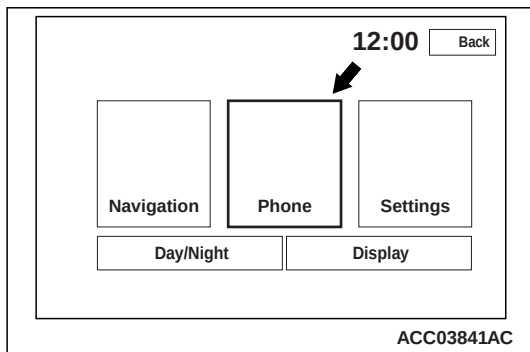
NOTE:

- A maximum of five Bluetooth® devices can be paired.
- Some Bluetooth® device are not supported.
- When a Bluetooth® device is not powered on, the pairing cannot activated.

How to pair

How to pair a device on "Phone" screen

1. Press "MENU" button to display the menu screen.
2. Press "Phone" button to display the "Phone" screen.



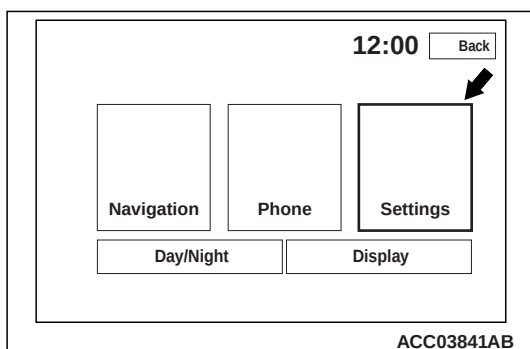
3. Press "Pair Phone" button.
4. Search a valid Bluetooth® device by operating it. Select "Car-Navi" on the search result, and then press "OK" button.

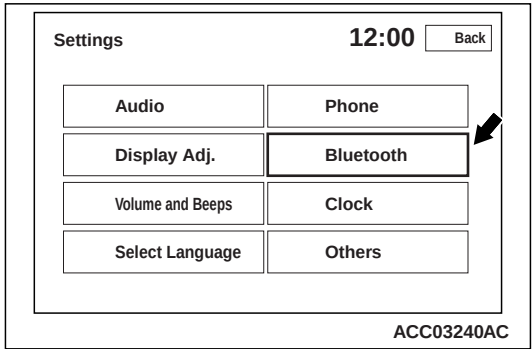
NOTE: For how to operate a Bluetooth® device, follow manufacturer's instructions.

5. Follow instructions on the multivision display to press "YES" button.
6. On completion, "XXXX (Bluetooth® device description) paired as 1 (Pairing number)" will be displayed.

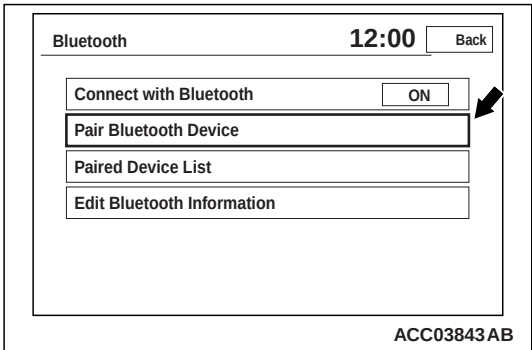
How to pair a device on "Settings" screen

1. Press "MENU" button to display the menu screen.
2. Press "Settings" button to display the "Settings" screen.





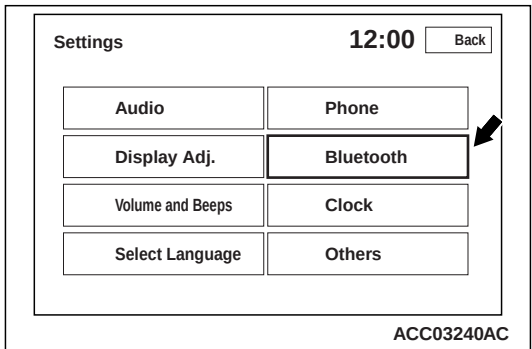
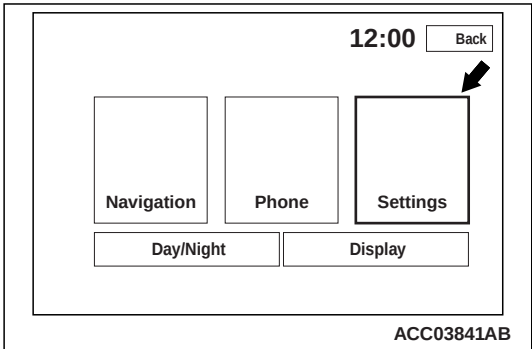
3. Press "Bluetooth" button to display the "Bluetooth" screen.



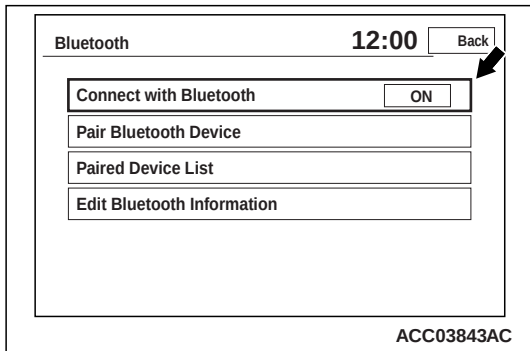
- 4. Press "Pair Bluetooth Device" button.
- 5. Search a valid Bluetooth® device by operating it. Select "Car-Navi" on the search result, and then press "OK" button.
NOTE: For how to operate a Bluetooth® device, follow manufacturer's instructions.
- 6. Follow instructions on the multivision display to press "YES" button.
- 7. On completion, "XXXX (Bluetooth® device description) paired as 1 (Paring number)" will be displayed.

How to deactivate or activate the paring

- 1. Press "MENU" button to display the menu screen.
- 2. Press "Settings" button to display the "Settings" screen.



3. Press "Bluetooth" button to display the "Bluetooth" screen.



4. Select "ON" or "OFF" on "Connect with Bluetooth" item to deactivate/activate the pairing.

HOW TO RESET MMES

M1546314200029

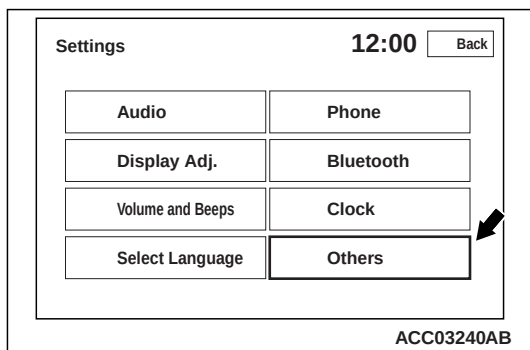
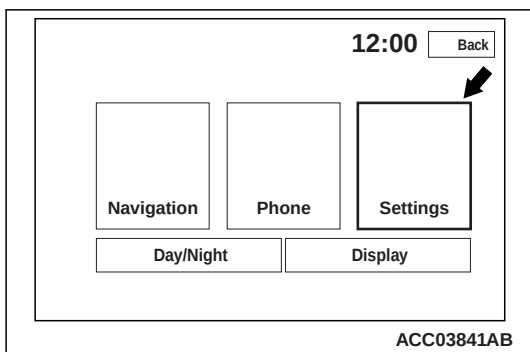
CAUTION

If the MMES is reset, all the data stored by customer will disappear. Therefore, prior to the reset, the agreement of the customer should be obtained.

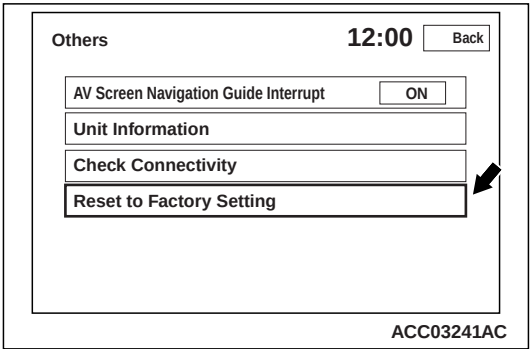
The MMES can be reset by the operations below.

How to reset

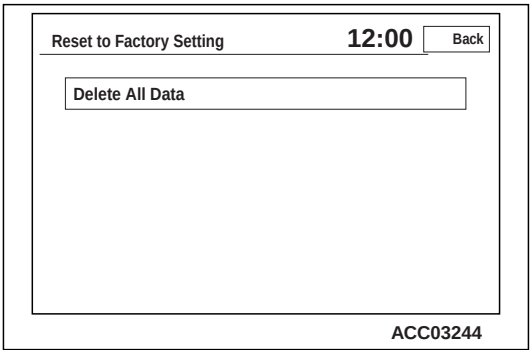
1. Press "MENU" button to display the menu screen.
2. Press "Settings" button to display the "Settings" screen.



3. Press "Others" button to display the appropriate screen.



4. Press "Reset to Factory Setting" button to initialize the MMES.

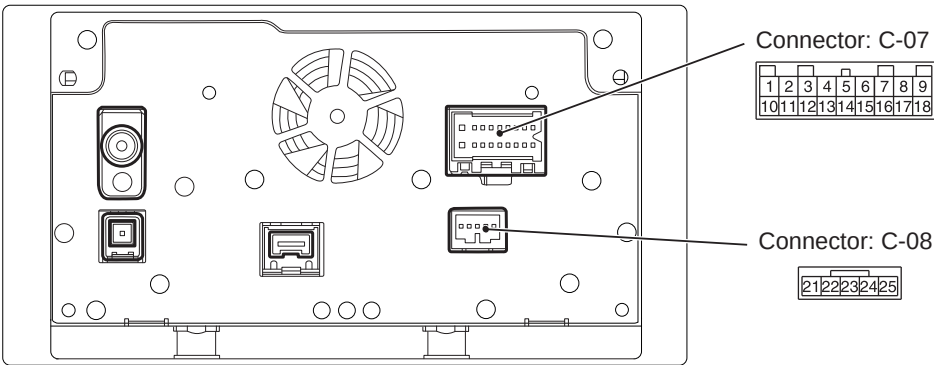


5. On completion, power on the system. Then follow the screen instructions to configure language and other initial settings.

NOTE: When the MMES is reset, the displayed language will be reset to English (default setting).

MAIN UNIT TERMINAL VOLTAGE

M1546303300152



ACC06770AB

CONNECTOR: C-07

Terminal No.	Terminal code	Signal symbol	Check condition	Terminal voltage
1	RL-	SPEAKER RL (-)	When the sound is output	2.0 - 12.3 Vrms
2	RL+	SPEAKER RL (+)	When the sound is output	2.0 - 12.3 Vrms
3	FL-	SPEAKER FL (-)	When the sound is output	2.0 - 12.3 Vrms
4	FL+	SPEAKER FL (+)	When the sound is output	2.0 - 12.3 Vrms

Terminal No.	Terminal code	Signal symbol	Check condition	Terminal voltage
5	FR+	SPEAKER FR (+)	When the sound is output	2.0 - 12.3 Vrms
6	FR-	SPEAKER FR (-)	When the sound is output	2.0 - 12.3 Vrms
7	RR+	SPEAKER RR (+)	When the sound is output	2.0 - 12.3 Vrms
8	RR-	SPEAKER RR (-)	When the sound is output	2.0 - 12.3 Vrms
9	+B	BACK UP	Always	10.8 - 15.6 V
10	REV	PS-R	- Ignition switch: ACC position - Shift lever <M/T> or Selector lever <CVT>: R position	7 V or more
11	-	-	-	-
12	SPD	VEHICLE SPEED	When the vehicle is being driven	0 - 15.6 V (Pulse signal)
13	ACC	ACC	Ignition switch: ACC position	9 V or more
14	SW1	Steering wheel remote control switch	-	-
15	ILL-	ILLUMI-	Lighting switch: TAIL	7 V or more
16	ILL+	ILLUMI	Lighting switch: TAIL	7 V or more
17	AUTO ANT	Power supply (Radio antenna)	When the radio station is received	10.8 - 15.6 V
18	GND	GND	Always	1V or less

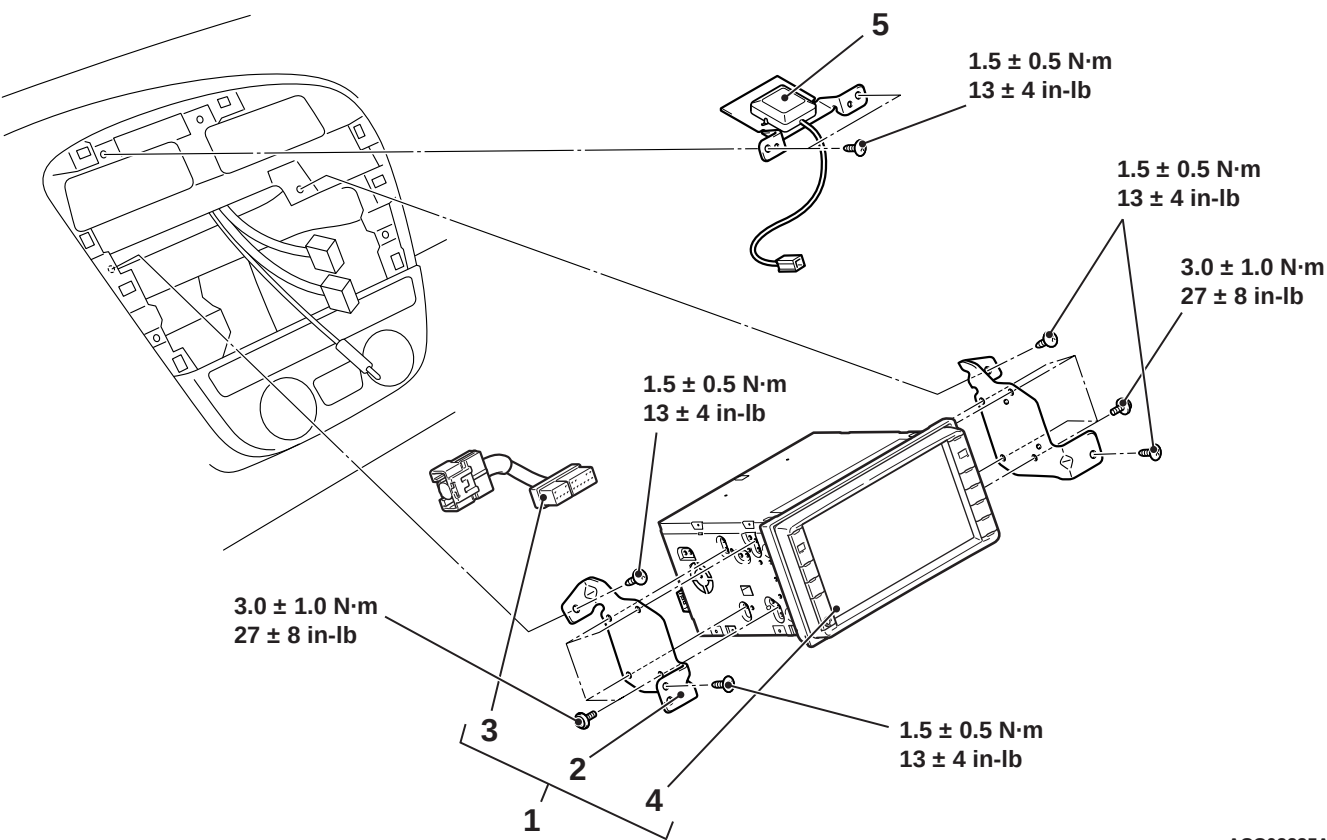
CONNECTOR: C-08

Terminal No.	Terminal code	Signal symbol	Check condition	Terminal voltage
21	CAMERA-DET	CCD CAMERA DETECT	When the rear camera is detected	1 V or less
22	CCD 6V	REAR CAMERA (POWER)	Ignition switch: ACC position	5.5 - 6.5 V
23	CCD-IN	CCD CAMERA INPUT	Always	1 Vp-p
24	CCD-GND	CCD CAMERA GROUND	Always	1 V or less
25	CCD GND	REAR CAMERA GROUND	Always	1 V or less

MULTIVISION DISPLAY REMOVAL AND INSTALLATION

M1546301000166

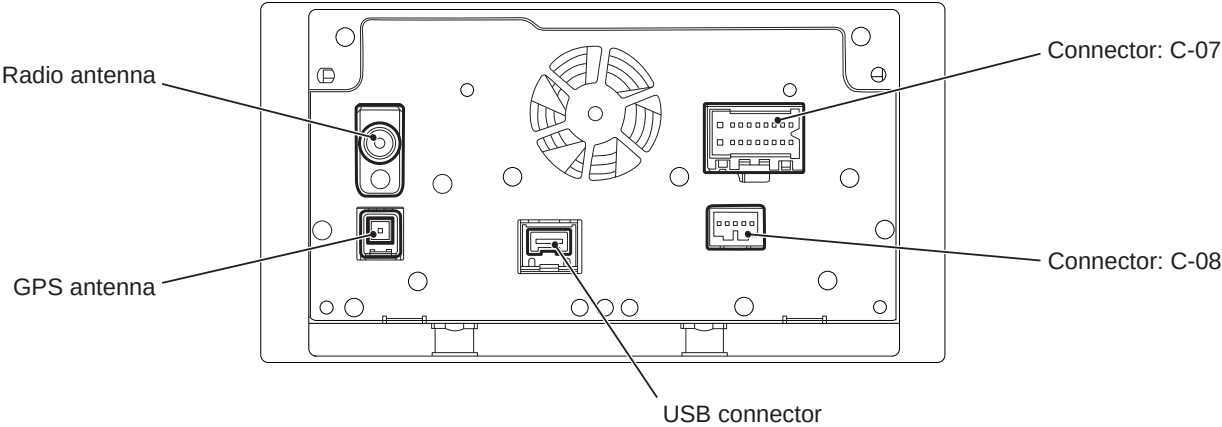
Pre-removal operation Removal of Instrument center panel (Refer to GROUP 52A – Instrument Center Panel assembly P.52A-5)	Post-installation operation Installation of Instrument center panel (Refer to GROUP 52A – Instrument Center Panel assembly P.52A-5)
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ACC03235AB

- Removal Steps**
1. Multivision display/Bracket/Navigation harness
 2. Bracket (LH/RH)
 3. Navigation harness
 4. Multivision display
 5. GPS antenna
- >>A<<

INSTALLATION SERVICE POINT
>>A<< MULTIVISION DISPLAY



ACC06770AC

The connectors, antenna and cables connected to the multivision display are shown in the figure.

USB CABLE REMOVAL AND INSTALLATION

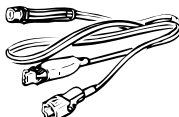
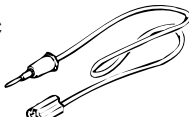
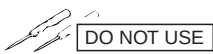
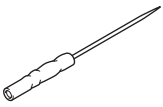
M1549101300452

Refer to Radio and CD Player [P.54A-163](#).

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH

SPECIAL TOOLS

M1544000600759

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1544004800926

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1544004902985

Trouble symptom	Inspection Procedure No.	Reference page
Steering wheel remote control switch (audio remote control switch) does not function.	1	P.54A-188
Steering wheel remote control switch illumination does not come on.	2	P.54A-189

SYMPTOM PROCEDURES

Inspection Procedure 1: Steering wheel remote control switch (audio remote control switch) does not function.

⚠ CAUTION

Whenever the radio and CD player or multivision display is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel remote control switch (audio remote control switch), the steering wheel remote control switch, the radio and CD player, the multivision display, or the clock spring may be defective.

TROUBLESHOOTING HINTS

- The steering wheel remote control switch may be defective
- The radio and CD player may be defective
- The multivision display may be defective
- The clock spring 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. Check the steering wheel remote control switch.

Check the steering wheel remote control switch (Refer to [P.54A-191](#)).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the steering wheel remote control switch.

STEP 2. Check the clock spring.

Check whether the clock spring is in good condition. Refer to GROUP 52B – Air bag module and clock spring [P.52B-238](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the clock spring.

STEP 3. Check of short to power supply, short to ground, and open circuit in REM+, REM- line between radio and CD player connector or multivision display connector and steering wheel remote control switch connector

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. Retest the system

Check whether you can operate the radio and CD player or multivision display by using the steering wheel remote control switch.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use

Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the radio and CD player or multivision display.

Inspection Procedure 2: Steering wheel remote control switch illumination does not come on.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the steering wheel remote control switch, the steering wheel remote control switch, the combination meter, or the clock spring may be defective.

TROUBLESHOOTING HINTS

- The steering wheel remote control switch may be defective
- The combination meter may be defective
- The clock spring 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. Check the steering wheel remote control switch.

Check the steering wheel remote control switch (Refer to [P.54A-191](#)).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the steering wheel remote control switch.

STEP 2. Resistance measurement at steering wheel remote control switch connector (ground terminal)

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

(2) Measure the resistance between the steering wheel remote control switch 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 line between steering wheel remote control switch connector and the ground**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check the clock spring.

Check whether the clock spring is in good condition. Refer to GROUP 52B – Air bag module and clock spring [P.52B-238](#).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the clock spring.

STEP 5. Check of short to power supply, short to ground, and open circuit in ILL+ line between combination meter connector and steering wheel remote control switch connector**Q: Is the check result normal?**

YES : Go to Step 6.

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

STEP 6. Retest the system

Check whether the illumination of the steering wheel remote control switch comes on normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the combination meter.

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH

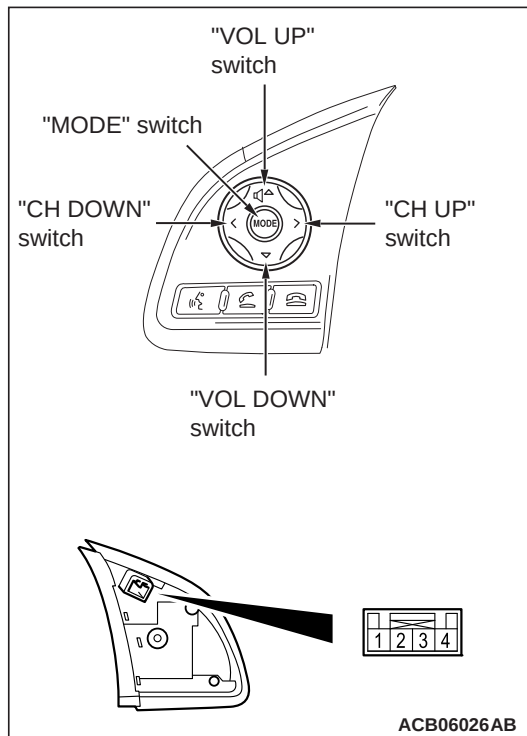
REMOVAL AND INSTALLATION

For the steering wheel remote control switch removal and installation procedures, refer to GROUP 37 – Steering [P.37-62](#).

M1544015600302

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH CHECK

M1544015700406



Switch Position	Tester Connection	Measurement Value
"MODE" switch pushed	1 – 2	Approximately 270 Ω
"CH UP" switch pushed		Approximately 740 Ω
"CH DOWN" switch pushed		Approximately 1.3 k Ω
"VOL UP" switch pushed		Approximately 2.1 k Ω
"VOL DOWN" switch pushed		Approximately 3.1 k Ω

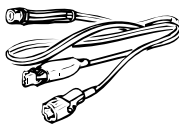
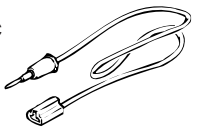
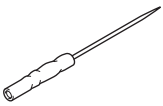
ILLUMINATION CHECK

Apply the battery voltage to the connector terminal No. 3, ground the terminal No. 4, and then check that the illumination lights up.

HANDS-FREE INTERFACE SYSTEM <VEHICLES WITH HANDS FREE-ECU>

SPECIAL TOOLS

M1544403500232

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

MMCS DIAGNOSIS

INTRODUCTION TO DIAGNOSIS

M1544404500387

NOTE: For detail of the hands free-ECU, you can see to access via the MITSUBISHI MOTORS web site. Please read and agree the "Warning about Links to the Web Sites of Other Companies" because it connects other than MITSUBISHI MOTORS web site. <http://www.mitsubishi-motors.com/en/products/index.html>

Prior to the troubleshooting, check if the causes below can be the case. If any, take actions according to the solution method.

Pairing of the Bluetooth®device (mobile phone or music player) and hands free-ECU cannot be made. The hands free-ECU does not recognize the Bluetooth®device (mobile phone or music player)

Cause	Solution
The power of the Bluetooth®device is off.	With the power of the Bluetooth®device turned on, check the trouble symptom again.
In addition to the Bluetooth®device to be recognized, two or more Bluetooth®device exist in the vehicle.	- With the voice operation, select the device to be connected. - Select the device to be connected on the radio and CD player.

Cause	Solution
Power supply abnormality in the hands free-ECU, or communication error between the radio and CD player and hands free-ECU.	Turn the ignition switch to the "ON" position and check if iPod® connected to the USB connector or USB device can be played. If the hands free-ECU is defective, music cannot be played. Perform the Inspection procedure 2: The USB data cannot be replayed. (Refer to P.54A-196 .) If the diagnosis mode of hands free-ECU can be made an entry, the ECU status can be checked by the hands free-ECU self-check, however, if the power supply of hands free-ECU, or the communication with the radio and CD player may have a problem, the ECU status can not be checked. (Refer to P.54A-194 .)

Calling cannot be made using the hands free cellular phone function.

Bluetooth®The music player cannot be replayed.

The music data received from the USB connector cannot be replayed.

Cause	Solution
The Bluetooth® connection is not made between the hands free-ECU and Bluetooth®device.	Connect the Bluetooth®device to the hands free-ECU via Bluetooth®.
The vehicle is not located in the communication area of the cellular phone.	Check the radio wave condition of the mobile phone shown on the display, or check the radio wave condition shown on the mobile phone itself.
Communication error between the hands free-ECU and the radio and CD player.	Check if the data of music file sent to the hands free-ECU can be replayed. If there are no problems, the communication between the hands free-ECU and the radio and CD player may have a problem.

The voice recognition operation cannot be performed.

The communication voice cannot be heard by the other party.

Cause	Solution
During the conversation, the microphone unit is set to mute.	During the conversation, press the speech switch and set to mute off by voice recognition. Perform Inspection Procedure 3: When the speech switch is pressed, the voice guide is output, but the voice recognition is not performed. (Refer to P.54A-196 .)
The hands free-ECU cannot recognize the speech voice because of noise or others.	Minimize the noise by turning off the A/C, closing the window, and stopping the engine, and then clearly speak up near the microphone unit.
The microphone unit , or the connection has a problem.	The microphone unit may have a problem. Perform Inspection Procedure 3: When the speech switch is pressed, the voice guide is output, but the voice recognition is not performed. (Refer to P.54A-196 .) The connection with the microphone unit can be checked by the microphone check result on the diagnosis mode. (Refer to P.54A-194 .)
The speech switch, or the connection has a problem.	If the voice guide is not output when the speech switch is operated, the speech switch has a problem. Perform the Inspection Procedure 4: When the speech switch is pressed, the voice guide is not output. (Refer to P.54A-196 .)

A call cannot be received when the OFF HOOK switch is pressed.

The voice guide cannot be output from the speaker.

Cause	Solution
The Bluetooth® connection is not made between the hands free-ECU and cellular phone.	Connect the cellular phone to the hands free-ECU via Bluetooth®.
The OFF HOOK switch, speech switch, or the connection has a problem.	If the voice guide is not output when the speech switch is operated, the speech switch has a problem. Perform the Inspection Procedure 4: When the speech switch is pressed, the voice guide is not output. (Refer to P.54A-196.)

Voice guide "Unable to obtain vehicle speed. Please try again or contact your dealer for service" is sent from the speaker.

Cause	Solution
The hands free-ECU cannot receive the vehicle speed signal from the radio and CD player.	If the vehicle speed signal the hands free-ECU receives has a problem, the vehicle speed signal of radio and CD player or the hands free-ECU may have a problem. Perform the Inspection Procedure 6: Voice guide "Unable to obtain vehicle speed. Please try again or contact your dealer for service" is sent from the speaker. (Refer to P.54A-196.)

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540203800602

Refer to GROUP 00, How to use Troubleshooting/Inspection Service Points, Troubleshooting Contents [P.00-6.](#)

DIAGNOSIS MODE

M1544404800559

Enter the diagnosis mode according to the following steps:

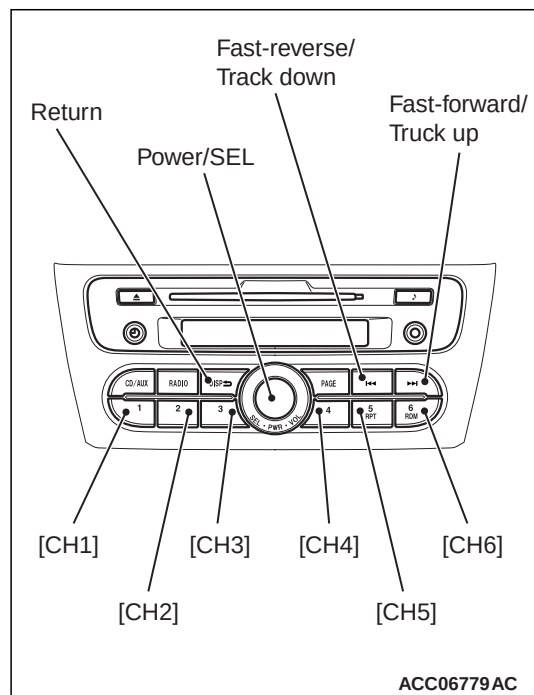
1. Turn the Ignition switch to the "ACC" or "ON" position and switch off the radio and CD player.
2. Press the following buttons in that order within sixty seconds from step (1).

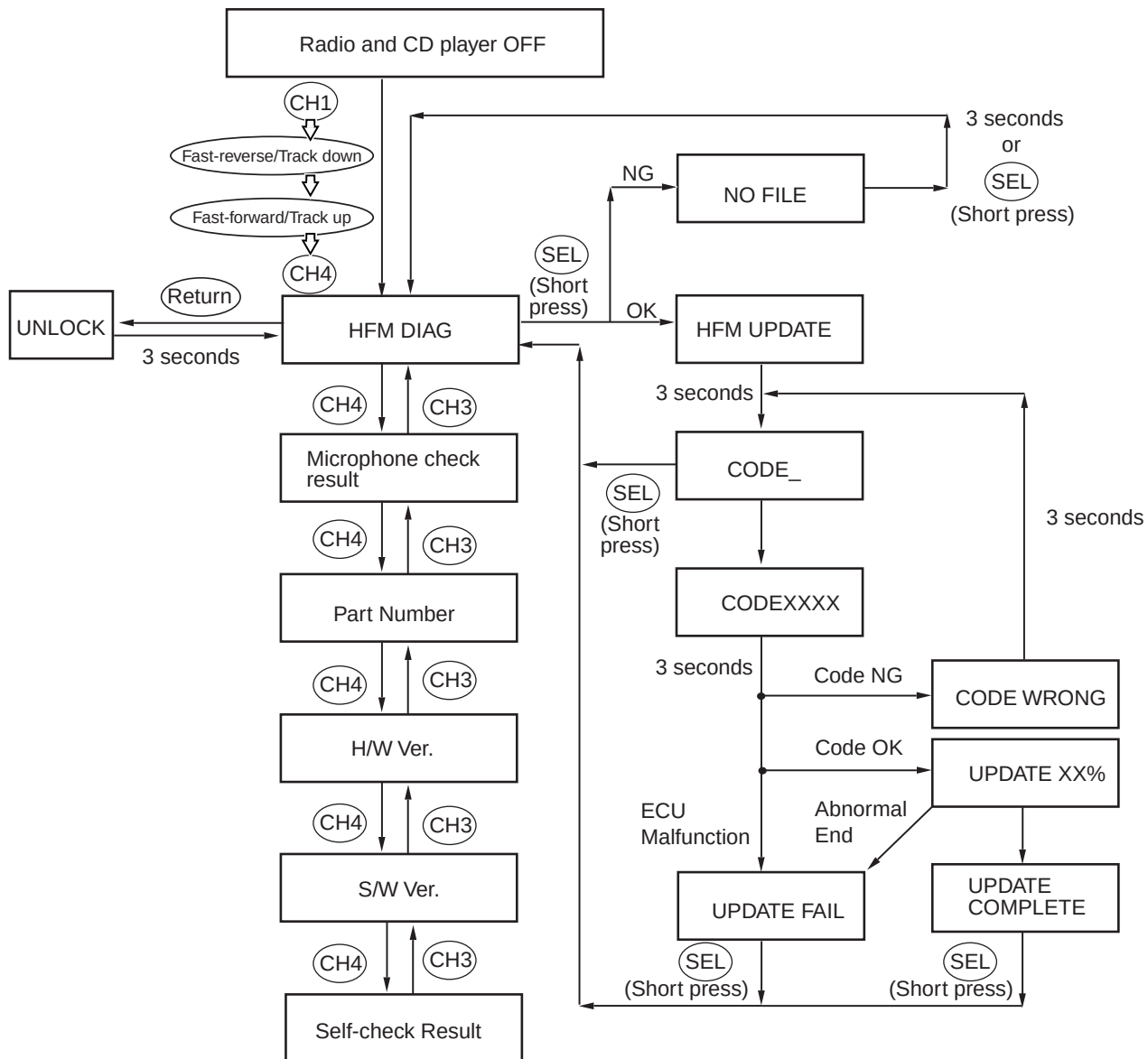
- (1) [CH1] button.
- (2) Fast-reverse/Track down button
- (3) Fast-forward/Track up button
- (4) [CH4] button.

NOTE:

- When the "Power" button of the radio and CD player is pressed during the diagnosis mode, the diagnosis mode will be cancelled, thus switching off the radio and CD player. However, if the "Power" button is pressed while the hands free-ECU is being updated, the update will not be cancelled.
- When an invalid button is pressed during diagnosis mode except the hands free-ECU update, the diagnosis mode will be cancelled, thus switching off the radio and CD player.
- During the diagnosis mode, voice which is input through the microphone unit is played through a relevant loudspeaker.

3. "HFM DIAG" is displayed.





ACC06288 AB

Description in the illustrations	Actual display	Condition
UNLOCK	UNLOCK	Four-digit password, which has been set by the security function, will be erased.
HFM DIAG	HFM DIAG	Displayed when the diagnosis mode is being entered.
Result of microphone check	MIC Short	Displayed when the line between the microphone and the hands free-ECU is short-circuited.
	MIC Open	Displayed when the line between the microphone and the hands free-ECU is open-circuited.
	MIC OK	Normal status (the line between the microphone and the hands free-ECU is not open/short-circuited)
Part number	PN XXXXXXXX	Eight-digit part number is displayed.
H/W Ver.	H/W XX	Two-digit hardware version is displayed.
S/W Ver.	S/W XXXXXXXX	Seven-digit software version is displayed.

Description in the illustrations	Actual display	Condition
Self-check result	HFM OK	Displayed when the hands free-ECU is not defective.
	HFM Error	Displayed when the hands free-ECU is suspected to be defective. <i>NOTE: Turn the ignition switch to the "OFF" position once when "ERROR" is displayed. Enter the diagnosis mode by turning the ignition switch to the "ON" position again. If the self-check result shows "ERROR" again, the hands free-ECU is determined to be defective.</i>
NO FILE	NO file	A USB device stores no data.
HFM UPDATE	HFM Update	Displayed when the hands free-ECU update file is found, at the transition to the hands free-ECU update mode, in the USB memory that is connected to the USB connector.
CODE_	CODE_	Input four-digit code for update. Use the "CH" button when a code is input.
CODE XXXX	Code XXXX	XXXX after Code shows the numbers from 1 to 6, corresponding to the buttons "CH1" to "CH6".
CODE WRONG	Code wrong	The code, which has been input, is wrong.
UPDATING XX%	Updating XX%	Displayed when updating is carried out.
UPDATING COMPLETE	Update complete	The updating mode is complete.
UPDATE FAIL	Update fail	Displayed when the update of the hands free-ECU fails.

TROUBLE SYMPTOM CHART

M1546001802190

NOTE: Some Bluetooth® devices may not be compatible with the hands free-ECU

Trouble symptom	Inspection Procedure No.	Reference page
Check the hands free-ECU power supply circuit.	1	P.54A-197
The USB data cannot be replayed.	2	P.54A-198
When the speech switch is pressed, the voice guide is output, but the voice recognition is not performed.	3	P.54A-200
When the speech switch is pressed, the voice guide is not output.	4	P.54A-201
DIAGNOSIS MODE cannot be made an entry. Mobile Phone item is not displayed on the MENU screen of audio.	5	P.54A-202
Voice guide "Unable to obtain vehicle speed. Please try again or contact your dealer for service" is sent from the speaker.	6	P.54A-204

SYMPTOM PROCEDURES

Inspection Procedure 1: Check the hands free-ECU power supply circuit.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

- The hands free-ECU is energized via the fusible link.
- The ACC signal is received through the radio and CD player.

TROUBLESHOOTING HINTS

- The hands free-ECU may be defective
- The radio and CD player 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. Resistance measurement at hands free-ECU connector (GND terminal).

- (1) Disconnect hands free-ECU connector, and measure at the wiring harness side.
- (2) Check the continuity between GND 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 GND line between hands free-ECU connector and ground.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 3. Voltage measurement at hands free-ECU connector (+B terminal).

- (1) Disconnect hands free-ECU connector, and measure at the wiring harness side.
- (2) Measure the voltage between +B terminal and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in +B line between fusible link and hands free-ECU connector.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 5. Voltage measurement at hands free-ECU connector (ACC terminal).

- (1) Disconnect hands free-ECU connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to "ACC" position.
- (3) Measure the voltage between ACC terminal and ground.

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

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Go to Step 6.

STEP 6. Check of short to power supply, short to ground, and open circuit in ACC line between hands free-ECU connector and radio and CD player connector.

Q: Is the check result normal?

YES : Replace the radio and CD player.

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

Inspection Procedure 2: The USB data cannot be replayed.

** CAUTION**

Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal. Check that the USB memory device or iPod® is also normal.

TECHNICAL DESCRIPTION (COMMENT)

If the sound replay is impossible with the USB mode, the USB cable, hands free-ECU, or radio and CD player may be defective, or a communication error between the radio and CD player and hands free-ECU may have occurred.

NOTE: Before troubleshooting, check that the music file (the customer tried to replay) can be replayed.

TROUBLESHOOTING HINTS

- The radio and CD player may be defective
- The hands free-ECU may be defective
- The USB cable 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. Check the radio and CD player operation.

Check if the radio and CD player normally and the sound is output.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Troubleshoot the radio and CD player.

STEP 2. Check the diagnosis mode

Check if the hands free-ECU can be switched to the diagnosis mode. (Refer to [P.54A-194.](#))

Q: Is the check result normal?

YES : Go to Step 3.

NO : Perform Inspection Procedure 5 "DIAGNOSIS MODE cannot be made an entry." (Refer to [P.54A-202.](#))

STEP 3. Check the USB cable.

Check that the USB cable is connected to the hands free-ECU normally. Or check the USB cable for damage such as bend.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace or repair the USB cable.

STEP 4. Check of short to power supply, short to ground, and open circuit in AAL+, AAR+ line between hands free-ECU connector and radio and CD player connector.

Q: Is the check result normal?

YES : Go to Step 5.

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

STEP 5. Replace the hands free-ECU temporarily, and check the trouble symptom.

Replace the hands free-ECU temporarily, and check that the sound is output from the speaker.

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Replace the radio and CD player.

Inspection Procedure 3: When the speech switch is pressed, the voice guide is output, but the voice recognition is not performed.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

When the speech switch is pushed, if the voice guide is sent but voice recognition is not executed, the microphone unit, hands free-ECU or the communication between the microphone unit and hands free-ECU may have a problem. It may also be possible that the voice recognition is interfered by external noise.

TROUBLESHOOTING HINTS

- The hands free-ECU may be defective.
- The microphone unit 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. Retest the system

Close all the windows to suppress external noise as much as possible. Then check whether the voice recognition operates normally when you utter a word as close to the microphone unit as possible

Q: Is the check result normal?

YES : Diagnosis complete.

NO : Go to Step 2.

STEP 2. Check the diagnosis mode

Check if the microphone check result "HFM MIC Check" is displayed on the diagnosis mode of hands free-ECU. (Refer to [P.54A-194](#).)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check of short to power supply, short to ground, and open circuit in MIC+, MIC- line between hands free-ECU connector and microphone unit connector.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Replace the microphone unit temporarily, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the microphone unit.

NO : Go to Step 5.

STEP 5. Replace the hands free-ECU temporarily, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Go to Step 1.

Inspection Procedure 4: When the speech switch is pressed, the voice guide is not output.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the voice guide is not sent when the steering wheel remote control switch (speech switch) is pushed, the communication between the radio and CD player and the hands free-ECU, or the communication between the radio and CD player and the steering wheel remote control switch, the hands free-ECU or the steering wheel remote control switch may have a problem.

TROUBLESHOOTING HINTS

- The radio and CD player may be defective
- The hands free-ECU may be defective
- The steering wheel remote control switch may be defective

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

DIAGNOSIS

STEP 1. Check the diagnosis mode

Check if the hands free-ECU can be switched to the diagnosis mode. (Refer to [P.54A-194.](#))

Q: Is the check result normal?

YES : Go to Step 2.

NO : Perform Inspection Procedure 5 "DIAGNOSIS MODE cannot be made an entry." (Refer to [P.54A-202.](#))

STEP 2. Operation check of the steering wheel remote control switch (audio remote control switch)

Check that the radio and CD player can be operated by the steering wheel remote control switch.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the steering wheel remote control switch.

STEP 3. Check the steering wheel remote control switch (speech switch).

Check the continuity of the steering wheel remote control switch. (Refer to [P.54A-209.](#))

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the steering wheel remote control switch.

STEP 4. Temporarily replace the hands free-ECU, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Replace the radio and CD player.

Inspection Procedure 5: DIAGNOSIS MODE cannot be made an entry. Mobile Phone item is not displayed on the MENU screen of audio.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the diagnosis mode cannot be made an entry, the hands free-ECU, the communication between the hands free-ECU and the radio and CD player, or the power supply system of hands free-ECU may have a problem.

TROUBLESHOOTING HINTS

- The hands free-ECU may be defective
- The radio and CD player 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. Check the radio and CD player operation.

Check if the radio and CD player work normally and the sound is output.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Troubleshoot the radio and CD player.

STEP 2. Check of short to power supply, short to ground, and open circuit in IE+, IE- line between hands free-ECU connector and radio and CD player connector.

Q: Is the check result normal?

YES : Go to Step 3.

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

STEP 3. Check if the power supply circuit of hands free-ECU have a problem.

Perform the Inspection procedure 1 "Check the hands free-ECU power supply circuit." of the troubleshooting. (Refer to [P.54A-197](#).)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair according to the troubleshooting for reference.

STEP 4. Replace the hands free-ECU temporarily, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Replace the radio and CD player.

Inspection Procedure 6: Voice guide "Unable to obtain vehicle speed. Please try again or contact your dealer for service" is sent from the speaker

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the voice guide "Unable to obtain vehicle speed. Please try again or contact your dealer for service" is sent from the speaker, the vehicle speed signal of hands free-ECU has a problem. At this time, the hands free-ECU, and the vehicle speed signal of radio and CD player may have a problem.

TROUBLESHOOTING HINTS

- The hands free-ECU may be defective
- The radio and CD player may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

STEP 1. Check the radio and CD player operation.

Check if the speed compensated volume function of radio and CD player works normally during driving.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Troubleshoot the radio and CD player.

STEP 2. Check the diagnosis mode

Check if the hands free-ECU can be switched to the diagnosis mode.(Refer to [P.54A-194.](#))

Q: Is the check result normal?

YES : Go to Step 3.

NO : Perform Inspection Procedure 5: "DIAGNOSIS MODE cannot be made an entry." (Refer to [P.54A-202.](#))

STEP 3. Replace the hands free-ECU temporarily, and check the trouble symptom.

Q: Is the check result normal?

YES : Replace the hands free-ECU.

NO : Replace the radio and CD player.

ON-VEHICLE SERVICE

METHODS FOR PAIRING AND PAIRING DELETION WITH BLUETOOTH® DEVICE

M1544405500658

NOTE:

- For detail of the hands free-ECU, you can see to access via the MITSUBISHI MOTORS web site. Please read and agree the "Warning about Links to the Web Sites of Other Companies" because it connects other than MITSUBISHI MOTORS web site.
<http://www.mitsubishi-motors.com/en/products/index.html>

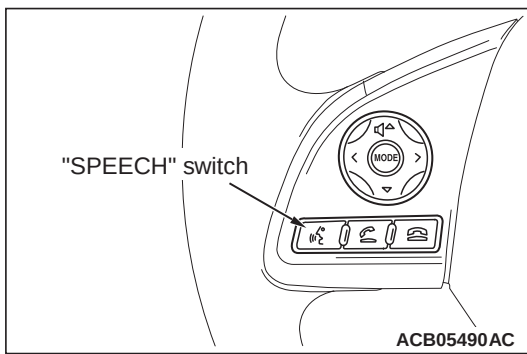
- Some Bluetooth® devices (mobile phone or music player) may not be compatible with the hands free-ECU.
- A maximum of seven Bluetooth® devices can be registered.
- This system cannot be used when a battery of Bluetooth® devices was exhausted.

PAIRING METHOD

1. Turn the ignition switch to "ACC" or "ON" position.
 2. Press the "SPEECH" switch.
 3. Say "Setup."
 4. Say "Pairing options."
 5. The voice guide will say "Select one of the following: pair, edit, delete, or list?"
 6. Say "Pair."
 7. The voice guide will say "Please say a 4-digit pairing code."
 8. Say a 4 digit number. The 4 digit number will be registered as a pairing code for the device.
- When the confirmation function is on, the system will confirm whether the number said is acceptable. Answer "Yes" to go Step 8. Say "No" to return to pairing code selection.

NOTE:

- The pairing code entered here is only used for the Bluetooth® connection certification. It is any 4-digit number the user would like to select. A predetermined 4-digit number may be assigned to some Bluetooth® devices.
 - Remember the pairing code as it needs to be keyed into the device later in the pairing process.
 - Depending on the connection settings of the Bluetooth® device, this code may have to be entered each time you connect the Bluetooth® device to the hands free-ECU. For the default connection settings, refer to the instructions for device.
9. The voice guide will say "Start pairing procedure on device. See device manual for instructions." Refer to the owner's manual for your device and enter into the device the pairing code that was registered in Step 7.
 10. When this system finds a Bluetooth® device, the voice guide will say "Please say the name of the device after the beep."
 11. After you hear the beep, name the device by saying a name of your preference.



NOTE: When the confirmation function is on, after repeating the device tag you have said, the voice guide will ask "Is this correct?" Answer "Yes".

To change the device tag, answer "No" and then say the device tag again.

12. The voice guide will say "Pairing complete," after which a beep will be played and the pairing process will end.

PAIRING DELETION METHOD

1. Turn the ignition switch to "ACC" or "ON" position.
2. Press the Speech switch.
3. Say "Setup."
4. Say "Pairing options"
5. The voice guide will say "Select one of the following: pair, edit, delete, or list"
6. Say "Delete."
7. After the voice guide says "Please say," the numbers of the devices and device tags of corresponding devices will be read out in order, starting with the device that has been most recently connected. After it completes reading all pairs, the voice guide will say "or all."
Say the number of the device that you want to delete from the system.
If you want to delete all paired devices from the system, say "All."
8. For confirmation purposes, the voice guide will say "Deleting (device tag) (number). Is this correct?" or "Deleting all devices, Is this correct?"
9. Answer "Yes" to delete the devices.
Answer "No" the system will return to Step 5.
10. The voice guide will say "Deleted", and then the system will end the device deletion process.
 - If the device deletion process fails for some reason, the voice guide will say "Delete failed." and then the system will cancel deleting the device.

HANDS FREE ECU

REMOVAL AND INSTALLATION

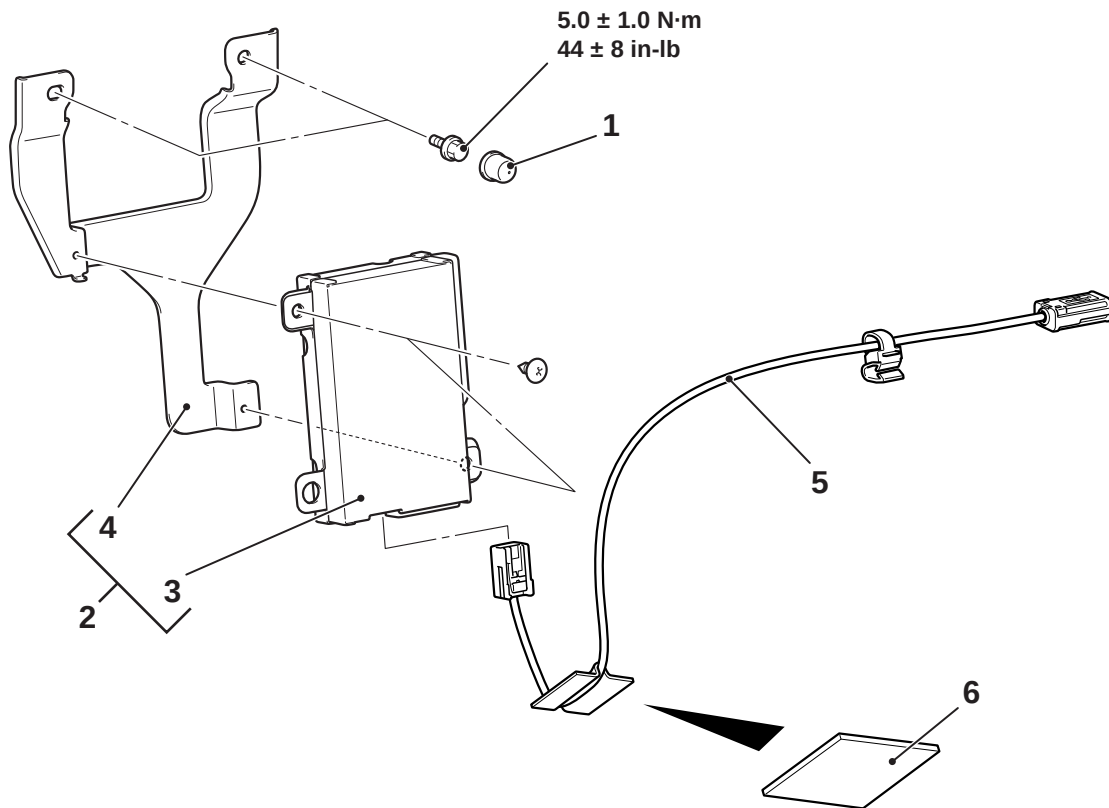
M1544405400383

Pre-removal operation

- Removal of Radio and CD player (Refer to [P.54A-163.](#))

Post-installation operation

- Installation of Radio and CD player (Refer to [P.54A-163.](#))



ACE00994AB

Removal Steps

- Cap
- Hands free-ECU/Hands free-ECU Bracket
- Hands free-ECU

Removal Steps

- Hands free-ECU Bracket
- USB cable
- Wiring tape

MICROPHONE UNIT

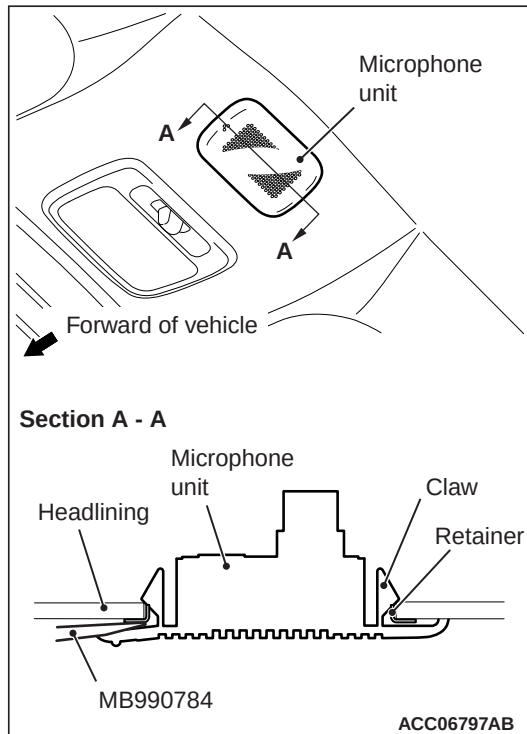
REMOVAL AND INSTALLATION

M1546023300335

REMOVAL SERVICE POINT

MICROPHONE UNIT REMOVAL

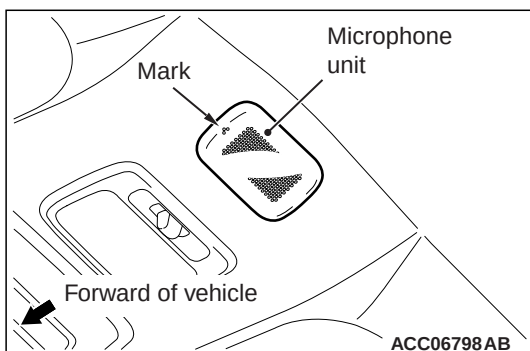
Insert the special tool MB990784 from the shown direction to remove the microphone unit.



INSTALLATION SERVICE POINT

MICROPHONE UNIT INSTALLATION

The mark on the microphone unit should face towards the driver's side.



STEERING WHEEL VOICE CONTROL SWITCH

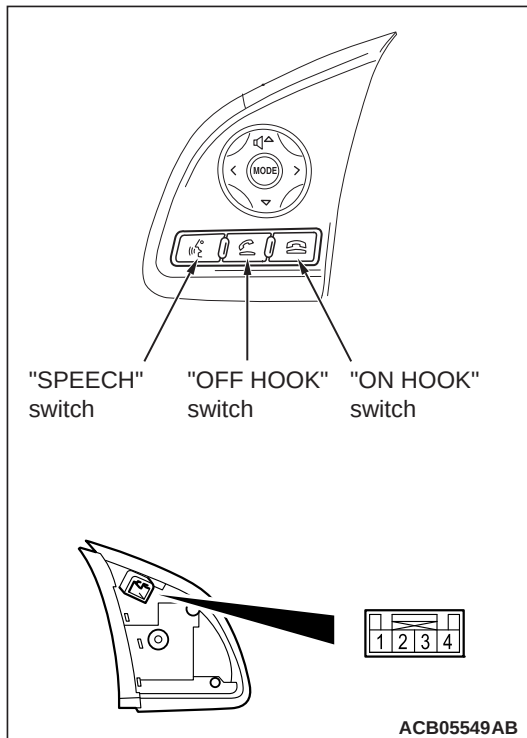
REMOVAL AND INSTALLATION

M1546024200331

For the steering wheel remote control switch removal and installation procedures, refer to GROUP 37 – Steering [P.37-62](#).

**STEERING WHEEL VOICE CONTROL SWITCH
CHECK**

M1544401100476



Switch position	Tester connection	Measurement Value
"SPEECH" switch pushed	1 – 2	Approximately 4.6 kΩ
"OFF HOOK" switch pushed		Approximately 6.3 kΩ
"ON HOOK" switch pushed		Approximately 8.6 kΩ

ILLUMINATION CHECK

Apply the battery voltage to the connector terminal No. 3, ground the terminal No. 4, and then check that the illumination lights up.

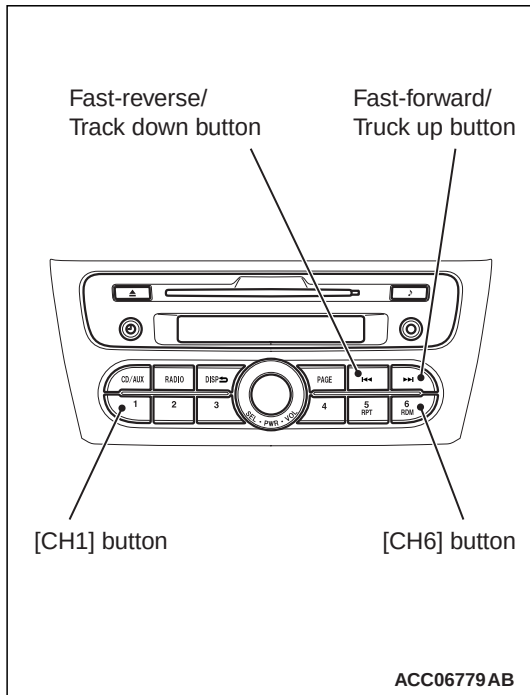
SPEAKER**ON-VEHICLE SERVICE****SPEAKER TEST <VEHICLES WITH RADIO AND
CD PLAYER>**

M1544005400943

SPEAKER CONNECTION CHECK MODE

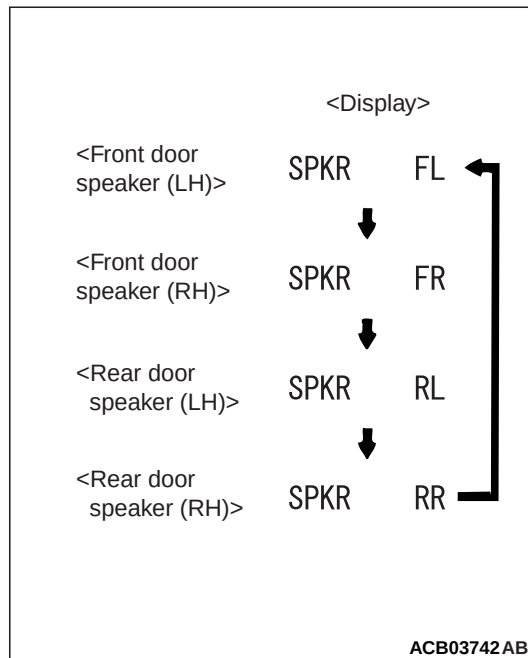
Enter the speaker connection check mode according to the following steps:

1. Turn the Ignition switch to the "ACC" or "ON" position and switch off the radio and CD player.



2. Press the following buttons in that order within sixty seconds from step (1).

- (1) [CH1] button
- (2) Fast-reverse/Track down button
- (3) Fast-forward/Track up button
- (4) [CH6] button



3. Check that the speaker, which is displayed on the center panel display, sounds (If the [CH6] button is pressed, the speaker will be changed).

NOTE:

- The display of "FL", "FR", "RL", "RR" blinks.
- If no speakers sound, any of the speaker circuits is short-circuited. Follow the troubleshooting "No sound is heard". (Refer to Radio and CD Player - Troubleshooting P.54A-158.)

4. If a button other than the [CH6] button is pressed, or the ignition switch is turned to "LOCK" (OFF) position, you will exit from the speaker connection check mode.

BUZZ NOISE CHECK MODE

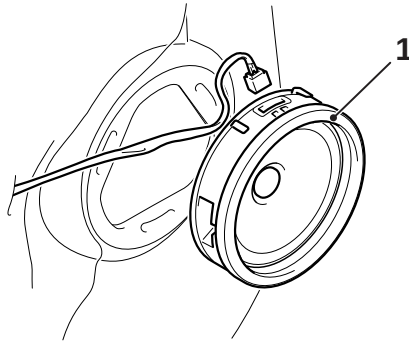
Inserting a CD (MR397836) during the speaker connection check mode shifts the mode to the buzz noise check mode, and the buzz noise sound of each speaker can be checked. As with the speaker connection check mode, press the [CH6] button to switch the output speaker of the buzz noise check sound.

Check that the buzz noise sound is output from the output speaker of buzz noise check sound.

NOTE: "SPKR" is displayed as "BUZZ" during buzz noise check mode.

REMOVAL AND INSTALLATION

M1544100300476



ACB03717 AB

Removal Step

- Front door trim (Refer to GROUP 52A – Door Trim [P.52A-11](#)).
<Front door speaker>
- Rear door trim (Refer to GROUP 52A – Door Trim [P.52A-11](#)).
<Rear door speaker>

<<A>>

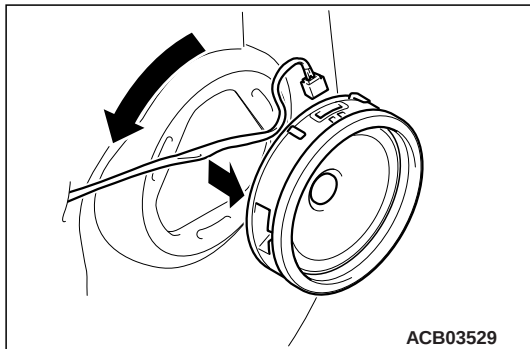
Removal Step (Continued)

- Speaker connector connection
1. Door speaker

REMOVAL SERVICE POINT

<<A>> REMOVAL OF DOOR SPEAKER

Disconnect the connector, and remove by twisting as shown in the figure.

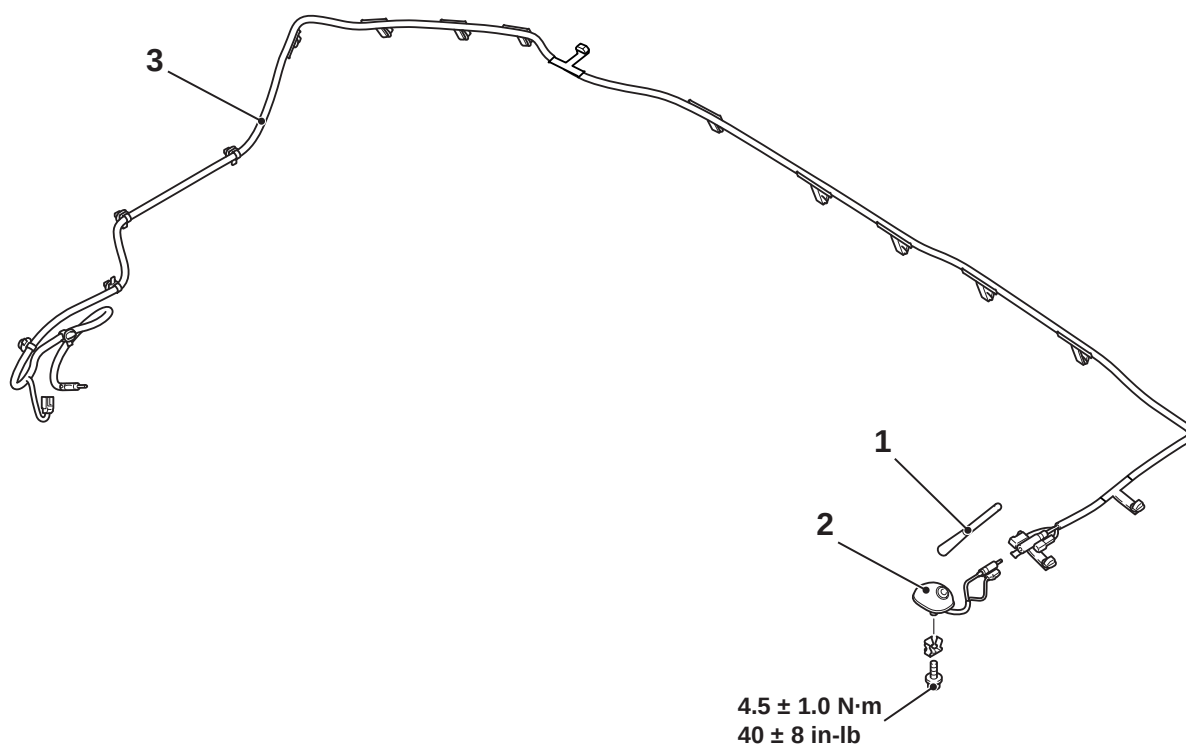


ACB03529

ANTENNA

REMOVAL AND INSTALLATION

M1544200201286



ACD03899 AB

Removal steps

1. Antenna rod
 - Headlining (Refer to GROUP 52A - Headlining [P.52A-15](#))
2. Antenna base
 - Instrument panel cover lower (Refer to GROUP 52A – Instrument Lower Panel [P.52A-6](#))

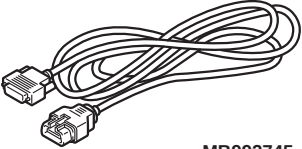
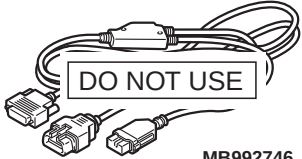
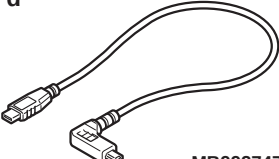
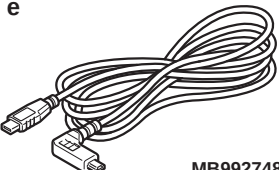
Removal steps

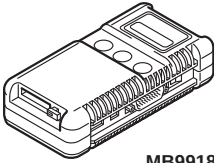
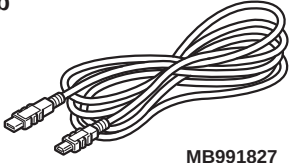
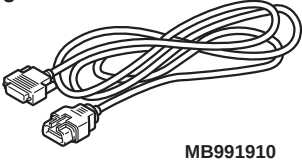
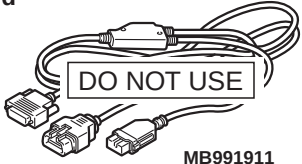
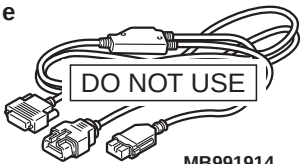
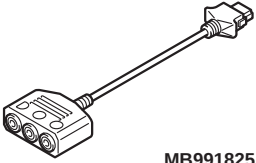
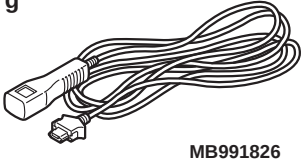
- Radio and CD player or multivision display (Refer to [P.54A-163](#) <Vehicles with radio and CD player> or [P.54A-186](#) <Vehicles with multivision display>)
3. Antenna feeder cable

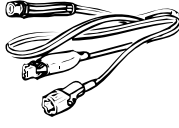
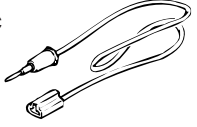
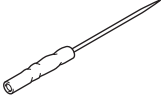
ETACS

SPECIAL TOOLS

M1549000301842

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC and service data check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1545000900139

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

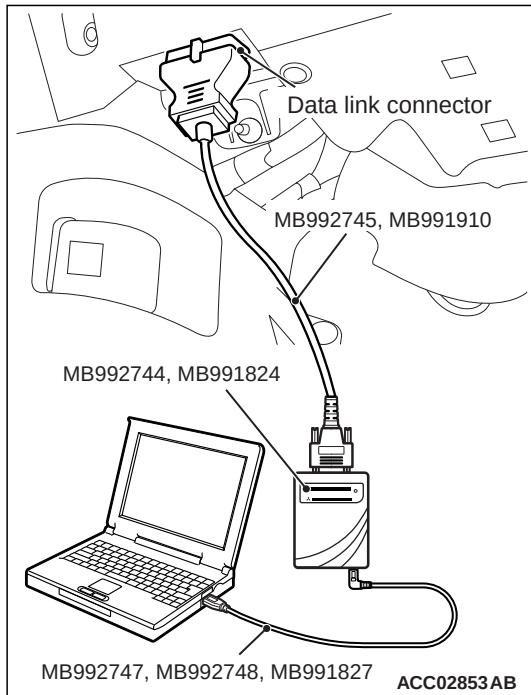
DIAGNOSIS FUNCTION

M1545001000311

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

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

To prevent damage to scan tool (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. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool (M.U.T.-III) does not display.

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

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

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

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

CHECK OF FREEZE FRAME DATA

To detect fault and store the DTC, the ETACS-ECU obtains data before the confirmation of the DTC and data when the DTC is confirmed, and then stores the current condition of the ETACS-ECU. By analyzing each data from scan tool (M.U.T.-III), the troubleshooting can be performed more efficiently. Display items of the freeze frame data are as follows.

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the DTC is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition.	Number of counts is displayed.
3	Elapsed time	Total elapsed time after a DTC is generated	min [*]
4	Accumulated minute	Cumulative time for current malfunction of DTC	min

NOTE: *: Total elapsed time can be stored up to 65534 minutes. The display of scan tool (M.U.T.-III) is fixed to 65534 minutes after 65534 minutes have elapsed. Or, if the battery is disconnected, the total elapsed time cannot be measured properly. Thus, 65535 minutes (null value) is displayed. Since the value is calculated according to the information from the ETACS-ECU, a proper value may not be displayed when the ETACS-ECU time-out has occurred.

DIAGNOSTIC TROUBLE CODE CHART

M1545001101474

⚠ CAUTION

During troubleshooting, a DTC associated with other systems may be stored when the ignition switch is turned ON with connector(s) disconnected. On the completion of troubleshooting, confirm all systems for DTC(s). If DTC(s) are stored, erase them all.

DTC No.	Diagnostic item	Reference page
B1702	Transponder read error	Refer to P.54A-277 .
B1703	Transponder ID unmatched	
B1722	Immobilizer-antenna fail	
B1731	PCM authentication timeout	
B1766	Already learned by other vehicle	
B1A28	PCM authentication error	
B1706 ^{*2}	Flasher fuse blown	Refer to P.54A-67 .
B1707 ^{*2}	Flasher open	
B1709	ETACS ECU (EEPROM)	P.54A-219
B1760 ^{*1, 2}	Coding not completed	P.54A-219
B1761 ^{*1}	VIN not programmed	P.54A-220
B1762 ^{*2}	IOD fuse not seated fully	P.54A-221
B1765 ^{*2}	ECU fuse	
B1763	Lighting switch	Refer to P.54A-151 .
B1764	Wiper switch	
B2206	VIN error/Mismatch	P.54A-222

DTC No.	Diagnostic item		Reference page
U1000	CAN communication	OSS CAN timeout	P.54A-223
U1100		Engine CAN timeout	P.54A-224
U1101		T/M CAN timeout/Not equipped	P.54A-226
U1102		ASC/TCL/ABS timeout/Not equipped	P.54A-227
U1108		Meter CAN timeout/Not equipped	P.54A-228
U1110		A/C CAN timeout/Not equipped	P.54A-229
U1116		F.A.S.T. CAN timeout/No equipped	P.54A-231
U1150*2	Fail Info. for vehicle speed		P.54A-232
U1500	LIN communication	Column ECU LIN timeout/Not equip	Refer to GROUP 54B – DTC Chart P.54B-6.
U1507		LIN transmission bit error	
U1530		Column ECU LIN checksum error	
U1570		No bus activity error for LIN	

NOTE:

- *1: If DTCs No. B1760 or B1761 is stored, there may be an error with the coding data stored in the ETACS-ECU.
- *2: Does not detect historic trouble.

DIAGNOSTIC TROUBLE CODE PROCEDURES**DTC B1709: ETACS ECU (EEPROM)****TROUBLE JUDGMENT**

If at least one error occurs while the ETACS-ECU sends data to and receives from the EEPROM, the ETACS-ECU stores DTC No. B1709.

TROUBLESHOOTING HINTS

The ETACS-ECU may be defective.

DTC B1760: Coding not completed**TROUBLE JUDGMENT**

The ETACS-ECU stores DTC No. B1760 when the coding is not carried out.

TROUBLESHOOTING HINTS

The ETACS-ECU may be defective.

DTC B1761: VIN not programmed

⚠ CAUTION

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

TROUBLE JUDGMENT

If the VIN data is not written when the ETACS-ECU is replaced, the ETACS-ECU stores DTC No.B1761.

TROUBLESHOOTING HINTS

- VIN not written
- The ETACS-ECU may be defective

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) [P.54A-215](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

STEP 2. Write the VIN.

- (1) Write the VIN data to the ETACS-ECU.
- (2) Erase the DTC.
- (3) Turn the ignition switch from the LOCK (OFF) position to the ON position.
- (4) Check if the DTC is stored.

Q: Is DTC No.B1761 set?

YES : Replace the ETACS-ECU.

NO : The procedure is complete.

DTC B1762: IOD fuse not seated fully
DTC B1765: ECU fuse

CAUTION

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

TROUBLE JUDGMENT

- When voltage at the power supply fuses (fuse Nos. 25 and 26) drops below 5 V with the ignition switch ON and ACC OFF signal is detected for 500 milliseconds, the ETACS-ECU sets DTC No. B1762.

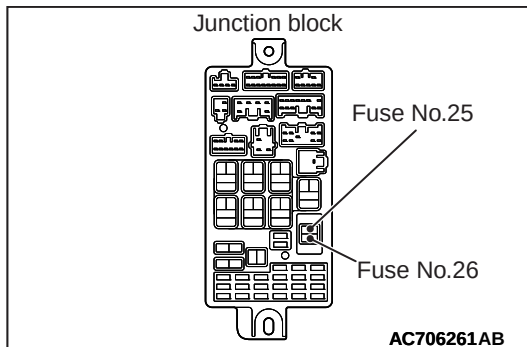
- When voltage at the ECU fuse (fuse No. 26) drops below 5 V with the ignition switch ON and ACC ON signal is detected for 500 milliseconds, the ETACS-ECU sets DTC No. B1765.

TROUBLESHOOTING HINTS

- The fuse may be defective
- The ETACS-ECU may be defective
- The KOS&OSS-ECU may be defective <Vehicles with KOS>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

**STEP 1. Check the power supply fuses (fuse Nos. 25 and 26)**

Check the power supply fuses (fuse Nos. 25 and 26). (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – Inspection Service Points for a Blown Fuse [P.00-15.](#))

Q: Is the fuse in good condition?

YES : Go to Step 2.

NO : Then go to Step 5.

STEP 2. Check of short to power supply, short to ground, and open circuit in ETACS +B line between fusible link and ETACS-ECU connector**Q: Is the check result normal?**

YES <vehicles without KOS> : Go to Step 3.

YES <vehicles with KOS> : Go to Step 4.

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

STEP 3. Using scan tool (M.U.T.-III), read the KOS diagnostic trouble code**⚠ 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) [P.54A-215](#)."
- (2) Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?

YES : Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in ACCI line between ignition switch (ACC) <vehicles without KOS> or ACC relay connector <vehicles with KOS> 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. Recheck for diagnostic trouble code.

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

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

Q: Is the DTC set?

YES : Replace the ETACS-ECU.

NO : If the trouble symptom is resolved, an intermittent malfunction such as poorly engaged connector(s) or wiring harness is suspected. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#).)

DTC B2206: VIN error/Mismatch

⚠ CAUTION

- If DTC No.B2206 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

JUDGMENT CRITERIA

If the VIN registered to ETACS-ECU and the VIN on CAN bus lines do not match, the ETACS-ECU stores DTC No. B2206.

TROUBLESHOOTING HINTS

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

- The ETACS-ECU, which was used on another vehicle, is installed on this vehicle.
- The ETACS-ECU improperly coding or incorrect VIN.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 3.

STEP 2. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code
Check if a VIN-related DTC is stored in the engine control module.

Q: Is the DTC stored?

YES : Troubleshoot the MFI (Refer to GROUP 13A, Troubleshooting [P.13A-47](#)).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Replace the ETACS-ECU with a properly coded one. Then check if a DTC is stored again.

- (1) Replace the ETACS-ECU with a properly coded one.
- (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 : Return to Step 1.

NO : The diagnosis is complete.

DTC U1000: OSS CAN timeout

CAUTION

- If DTC No.U1000 is set in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the KOS&OSS-ECU cannot be received for 500 milliseconds or more, the ETACS-ECU sets DTC No. U1000.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The KOS&OSS-ECU may be defective.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

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

Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?

YES : Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).

NO : Go to Step 3.

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

Check if DTC No. U1000 is set in the combination meter.

Q: Is the DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

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

(1) Erase the DTC.

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

(3) On completion, check whether the DTC is set again.

Q: Is the DTC set?

YES : Replace the KOS&OSS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the KOS&OSS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

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

(1) Erase the DTC.

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

(3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the KOS&OSS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is set in the ETACS-ECU.

(1) Erase the DTC.

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

(3) On completion, check whether the DTC is set again.

Q: Is the DTC set?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1100: Engine CAN timeout**⚠ CAUTION**

- If DTC No.U1100 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the engine control module cannot be received for 500 milliseconds or more, the ETACS-ECU stores DTC No. U1100.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The engine control module may be defective.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

STEP 2. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code

Check that the engine control module set a DTC.

Q: Is the DTC stored?

YES : Diagnose the engine control module. Refer to GROUP 13A, Troubleshooting [P.13A-47](#).

NO : Go to Step 3.

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

Check if DTC No. U0100 is stored in the combination meter.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the engine control module. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

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

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1101: T/M CAN timeout/Not equipped**⚠ CAUTION**

- If DTC No.U1101 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the TCM cannot be received for 500 milliseconds or more, the ETACS-ECU stores DTC No. U1101.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The TCM may be defective.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

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

Check that the TCM set a DTC.

Q: Is the DTC stored?

YES : Diagnose the TCM. Refer to GROUP 23A, Troubleshooting [P.23A-16](#).

NO : Go to Step 3.

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

Check if DTC No. U0101 is stored in the combination meter.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the TCM. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the TCM and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

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

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the TCM and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1102: ASC/TCL/ABS timeout/Not equipped**⚠ CAUTION**

- If DTC No.U1102 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the ASC-ECU cannot be received for 500 milliseconds or more, the ETACS-ECU stores DTC No. U1102.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The ASC-ECU may be defective.

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)" [P.54A-215](#).
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

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

Check that the ASC-ECU set a DTC.

Q: Is the DTC stored?

YES : Diagnose the ASC-ECU. Refer to GROUP 35C, Troubleshooting [P.35C-16](#).

NO : Go to Step 3.

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

Check if DTC No. U1102 is stored in SRS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the ASC-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ASC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

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

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ASC-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1108: Meter CAN timeout/Not equipped**⚠ CAUTION**

- If DTC No.U1108 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the combination meter cannot be received for 500 milliseconds or more, the ETACS-ECU stores DTC No. U1108.

TROUBLESHOOTING HINTS

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

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)" [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

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

Check that the combination meter set a DTC.

Q: Is the DTC stored?

YES : Diagnose the combination meter. Refer to [P.54A-18](#).

NO : Go to Step 3.

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

Check if DTC No. U1108 is stored in SRS-ECU.

Q: Is the DTC stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

(1) Erase the DTC.

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

(3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the combination meter. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

(1) Erase the DTC.

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

(3) On completion, check that the DTC is not reset.

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

(1) Erase the DTC.

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

(3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1110: A/C CAN timeout/Not equipped**⚠ CAUTION**

- If DTC No.U1110 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the A/C-ECU cannot be received for 500 milliseconds or more, the ETACS-ECU stores DTC No. U1110.

TROUBLESHOOTING HINTS

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

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 5.

STEP 2. Using scan tool (M.U.T.-III), read the A/C diagnostic trouble code

Check that the A/C-ECU set a DTC.

Q: Is the DTC stored?

YES : Diagnose the A/C-ECU. Refer to GROUP 55B, Troubleshooting [P.55B-8](#).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the A/C-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 4.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

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

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 5.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1116: F.A.S.T. CAN timeout/No equipped**⚠ CAUTION**

- If DTC No.U1116 is set in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If signal from the KOS&OSS-ECU cannot be received for 500 milliseconds or more, the ETACS-ECU sets DTC No. U1116.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The KOS&OSS-ECU may be defective.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 6.

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

Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?

YES : Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).

NO : Go to Step 3.

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

Check if DTC No. U0168 is set in the combination meter.

Q: Is the DTC set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Recheck for diagnostic trouble code.

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

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check whether the DTC is set again.

Q: Is the DTC set?

YES : Replace the KOS&OSS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the KOS&OSS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Recheck for diagnostic trouble code.

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

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is not set again.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the KOS&OSS-ECU and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 6. Recheck for diagnostic trouble code.

Recheck if the DTC is set in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check whether the DTC is set again.

Q: Is the DTC set?

YES : Return to Step 1.

NO : The procedure is complete.

DTC U1150: Fail Info. for vehicle speed**TROUBLE JUDGMENT**

If the ETACS-ECU receives a vehicle speed sensor failure signal from engine control module, the ECU stores DTC No. U1150.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The vehicle speed sensor may be defective.
- The engine control module may be defective.
- The ETACS-ECU may be defective.

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) [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)). On completion, go to Step 5.

STEP 2. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code
Check that the engine control module set a DTC.

Q: Is the DTC stored?

YES : Diagnose the engine control module. Refer to GROUP 13A – Troubleshooting

[P.13A-47](#).

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Replace the engine control module. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 4.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored in the ETACS-ECU.

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

Q: Is the DTC stored?

YES : Replace the ETACS-ECU. After replacing the ECU, carry out the CAN bus diagnostics. Then go to Step 5.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine control module and the ETACS-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored in the ETACS-ECU.

- (1) Erase the DTC.
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the DTC is reset.

Q: Is the DTC stored?

YES : Return to Step 1.

NO : The procedure is complete.

SERVICE DATA INSPECTION PROCEDURE

M1545001300679

1. Use the scan tool (M.U.T.-III) to check "Data List."
2. The following input signals can be checked by using the scan tool (M.U.T.-III).

SERVICE DATA REFERENCE TABLE

Item No.	Check item	Display on scan tool	Check condition	Normal condition
19	Driver's door switch	Driver's door switch	Driver's door switch ON (The driver's door is open.)	ON
			Driver's door switch OFF (The driver's door is closed.)	OFF
20	Driver's door unlock switch	Driver's door unlock switch	Driver's door: Unlocked	ON
			Driver's door: Locked	OFF
21	Driver's door lock switch	Driver's door lock switch	Driver's door: Locked	ON
			Driver's door: Unlocked	OFF
22*	–	Electric folding door mirror SW	–	OFF
25	Windshield wiper auto stop switch	Front wiper auto stop switch	When windshield wipers are operating	ON
			When windshield wipers are off	OFF
26	Hazard warning light switch	Hazard warning light switch	Hazard warning light switch: ON (when the switch is operated)	ON
			Hazard warning light switch: OFF (when the switch is not operated)	OFF
27	Rear wiper auto-stop switch	Rear wiper auto stop switch	When the rear wiper is operating	ON
			When the rear wiper is not working	OFF

Item No.	Check item	Display on scan tool	Check condition	Normal condition
28	Key reminder switch	Steering lock switch	Key reminder switch: ON (with the ignition key removed from the ignition key hole)	ON
			Key reminder switch: OFF (with the ignition key inserted into the ignition key hole)	OFF
29	Ignition switch (ACC)	Ignition switch(ACC)	Ignition switch: ACC or ON	ON
			Ignition switch: LOCK (OFF) or START	OFF
30	Ignition switch (ON)	Ignition switch(IG1)	Ignition switch: ON or START	ON
			Ignition switch: LOCK (OFF) or ACC	OFF
44	Ignition switch (IG2)	Ignition switch(IG2)	Ignition switch: ON	ON
			Ignition switch: LOCK (OFF), ACC or START	OFF
48	Passenger's door switch	Passenger's door switch	Front passenger's door: open	ON
			Front passenger's door: closed	OFF
49	Rear door switch or liftgate latch switch	Rear door switch	Rear door (right or left) or liftgate: open	ON
			Rear door (right or left) or liftgate: closed	OFF
55	Battery voltage	Battery voltage	–	Voltage (V) is displayed.
56	Headlight automatic shutdown timer period	Remain of headlight timer	Headlight automatic shutdown function is on	Time (second) of the headlight automatic shutdown timer is displayed.
59	Taillight output	Taillight output	Column switch (lighting switch): TAIL	ON
			Column switch (lighting switch): Other than TAIL	OFF
60	Output to low-beam headlights	Headlight output	Column switch (lighting switch): HEAD	ON
			Column switch (lighting switch): Other than HEAD	OFF
61	Output to high-beam headlights	Headlight HI output	Column switch (dimmer/passing): ON	ON
			Column switch (dimmer/passing): OFF	OFF
62	Output to left turn-signal light	Turn-signal light (LH) output	Column switch (left turn-signal light): ON	ON
			Column switch (left turn-signal light): OFF	OFF
63	Output to right turn-signal light	Turn-signal light (RH) output	Column switch (right turn-signal light): ON	ON
			Column switch (right turn-signal light): OFF	OFF
64*	–	Headlight washer output	–	OFF
65	Low speed output to windshield wipers	Front wiper output	Column switch (windshield wipers): LO	ON
			Column switch (windshield wipers): Other than LO	OFF

Item No.	Check item	Display on scan tool	Check condition	Normal condition
66	High speed output to windshield wipers	Front wiper HI output	Column switch (windshield wipers): HI	ON
			Column switch (windshield wipers): Other than HI	OFF
67	Output to windshield washer	Front washer output	Column switch (windshield washers): ON	ON
			Column switch (windshield washers): OFF	OFF
68	Door lock output	Door "LOCK" output	Door lock switch: ON	ON
			Door lock switch: OFF	OFF
69	Door unlock output	Door "UNLOCK" output	Door lock switch: OFF	ON
			Door lock switch: ON	OFF
70	Output to front fog lights	Front fog light	Turn on the fog light switch when the headlights are on.	ON
			When front fog lights are off	OFF
71*	–	Rear fog light	–	OFF
72	Output to dome light	Dome light output	Dome light: ON	ON
			Dome light: OFF	OFF
73	Output to horn	Horn	Panic alarm system: ON	ON
			Panic alarm system: OFF	OFF
76	Power supply to the illumination	Illuminations power supply	Column switch (lighting switch): TAIL	ON
			Column switch (lighting switch): Other than TAIL	OFF
77	Output to the power window relay	Power window relay output	Ignition switch: ON	ON
			Ignition switch: OFF	OFF
80*	–	All of the door switch output	–	OFF
81	Output of selector lever (P) position	Shift position "P" output	Shift lever <M/T> or selector lever <CVT>: P position	ON
			Shift lever <M/T> or selector lever <CVT>: Other than P position	OFF
83	Rear washer output	Rear washer output	Column switch (rear washer): ON	ON
			Column switch (rear washer): OFF	OFF
84	Output to rear wiper	Rear wiper output	Column switch (rear wiper): ON	ON
			Column switch (rear wiper): OFF	OFF

Item No.	Check item	Display on scan tool	Check condition	Normal condition
86	Windshield intermittent wiper interval	Intermittent wiper interval	—	Intermittent wiper interval of the windshield wipers is displayed in seconds. This value depends on position of the variable intermittent wiper control switch and vehicle speed.
88*	—	ELC.folding mirror(OPEN) output	—	OFF
89*	—	ELC.folding mirror(CLOSE)output	—	OFF
91*	—	Hood switch	—	OFF
103	Rear window defogger switch	Rear defogger switch	Rear window defogger switch: ON	ON
			Rear window defogger switch: OFF	OFF
104	—	Auto light sensor voltage	—	—
105*	—	Security indicator output	—	OFF
106	Output to rear window defogger	Rear defogger output	When rear window defogger is operated	ON
			When rear window defogger is not operated	OFF
107*	—	DRL output	—	OFF
108	Stoplight switch	Stoplight switch	Brake pedal: depressed	ON
			Brake pedal: released	OFF
109	Output to shift lock signal	Shift Lock output	When all the following conditions are met. • Ignition switch: ON • Selector lever: P position • Brake pedal: depressed	ON
			Other than above	OFF
110	—	ACC output	—	OFF

NOTE: *: Is displayed as OFF because the item is not used.

CHECK CHART FOR TROUBLE SYMPTOMS

M1549000803144

Symptom		Inspection procedure number	Reference page
Check the battery power supply circuit to the ETACS-ECU.		A-1	P.54A-237
Tone alarm	Light reminder tone alarm does not work normally.	B-1	P.54A-238

SYMPTOM PROCEDURES

Inspection Procedure A-1: Check the battery power supply circuit to the ETACS-ECU.

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the ETACS-ECU functions do not work at all, the ETACS-ECU power supply system, ground system, or ETACS-ECU may have a problem.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Resistance measurement at ETACS-ECU connector (EARTH, SGND terminal)

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

OK: The resistance should be 2 ohms or less

- (3) Measure the resistance between the ETACS-ECU connector (SGND 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 EARTH, SGND line between ETACS-ECU connector and ground**Q: Is the check result normal?**

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-13).

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

STEP 3. Voltage measurement at ETACS-ECU connector (ETACS +B terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the voltage between the ETACS-ECU connector (ETACS +B terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in ETACS +B line between fusible link and ETACS-ECU connector

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 5. Retest the system.

Check that the ETACS-ECU functions work normally.

Q: Is the check result satisfactory?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#))

NO : Replace the ETACS-ECU.

Inspection procedure B-1: Light reminder tone alarm does not work normally.

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU uses the input signals below to send a light reminder tone alarm request signal to the combination meter.

- Ignition switch (IG1)
- Driver's door switch
- Taillight switch

- Headlight switch

If the tone alarm does not sound properly, the input signal(s) are abnormal or the combination meter or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The driver's door switch may be defective
- The column switch may be defective
- The combination meter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ 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) [P.54A-215](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check whether the ETACS-ECU related DTC is stored.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC stored?

YES : Refer to DTC chart [P.54A-218](#).

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list

Check the input signals below, which are related to the light reminder tone alarm function.

- Turn the ignition switch to the "LOCK" (OFF) position.
- Open the driver's door.
- Column switch (lighting switch): TAIL or HEAD

Item No.	Item name	Normal condition
19	Driver's door switch	ON
30	Ignition switch(IG1)	OFF
60	Headlight output	Any of items is ON
59	Taillight output	

OK: Normal conditions are displayed for all the items.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

CHECK TROUBLE BY USING THE INPUT SIGNAL CHECK

M1545004900614

Symptom	Inspection procedure number	Reference page
The ignition switch (ACC) signal is not received.	1	P.54A-240
The ignition switch (IG1) signal is not received.	2	P.54A-241

STEP 3. Check by scan tool (M.U.T.-III) "Special Function"

Using scan tool (M.U.T.-III), select "Test" from the special function of the combination meter. Execute the following item to check the tone alarm.

- Item 3: Buzzer(AUTO)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the combination meter.

STEP 4. Retest the system.

Check that the light reminder tone alarm works normally.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Symptom	Inspection procedure number	Reference page
The key reminder switch signal is not received.	3	P.54A-242
The front door lock actuator (driver's side) signal is not received.	4	P.54A-243
The front door switch (driver's side) signal is not received.	5	P.54A-244
The front door switch (passenger's side) signal is not received.	6	P.54A-245
One of the door switch signals (including the liftgate latch switch) is not received.	7	P.54A-246
The hazard warning light switch signal is not received.	8	P.54A-248
The column switch signal is not received.	9	P.54A-249
The stoplight switch signal is not received.	10	P.54A-250
The rear window defogger switch signal is not received. <vehicles with manual air conditioning>	11	P.54A-251
The rear window defogger switch signal is not received. <vehicles with automatic air conditioning>	12	P.54A-252

INPUT SIGNAL PROCEDURES

Inspection Procedure 1: The ignition switch (ACC) signal is not received.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If the input signal from the ignition switch (ACC) is defective, the signal is not sent to the communication lines.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- The KOS&OSS-ECU may be defective <Vehicles with KOS>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Voltage measurement at ETACS-ECU connector (ACCI terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ACC" position.
- (3) Check the voltage between the ETACS-ECU connector (ACCI terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO <vehicles without KOS> : Go to Step 2.

NO <vehicles with KOS> : Go to Step 3.

STEP 2. Check of short to power supply, short to ground, and open circuit in ACCI line between ignition switch (ACC) and ETACS-ECU connector

Q: Is the check result normal?

YES : Refer to Inspection Procedure "Malfunction of the ignition switch power supply system."

[P.54A-9](#)

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

STEP 3. Using scan tool (M.U.T.-III), read the KOS diagnostic trouble code**⚠ 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) [P.54A-215](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?

YES : Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).

NO : Go to Step 4.

STEP 4. Check of short to power supply, short to ground, and open circuit in ACCI line between ACC relay connector and ETACS-ECU connector**Q: Is the check result normal?**

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 5. Using scan tool (M.U.T.-III), check data list.

Check the input signals from the ignition switch (ACC).

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

Item No.	Item name	Normal condition
29	Ignition switch (ACC)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The ignition switch (IG1) signal is not received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the input signal from the ignition switch (IG1) is defective, the signal is not sent to the communication lines.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- The KOS&OSS-ECU may be defective <Vehicles with KOS>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Voltage measurement at ETACS-ECU connector (IG1 terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the voltage between the ETACS-ECU connector (IG1 terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 5.

NO <vehicles without KOS> : Go to Step 2.

NO <vehicles with KOS> : Go to Step 3.

STEP 2. Check of short to power supply, short to ground, and open circuit in IG1 line between ignition switch (IG1) and ETACS-ECU connector**Q: Is the check result normal?****YES :** Refer to Inspection Procedure "Malfunction of the ignition switch power supply system."[P.54A-9](#)**NO :** Repair the connector(s) or wiring harness.**STEP 3. Using scan tool (M.U.T.-III), read the KOS diagnostic trouble code****⚠ 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)" [P.54A-215](#)."

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

(3) Check that the KOS&OSS-ECU sets a DTC.

Q: Is the DTC set?**YES :** Diagnose the KOS&OSS-ECU. Refer to GROUP 42B, Troubleshooting [P.42B-13](#).**NO :** Go to Step 4.**STEP 4. Check of short to power supply, short to ground, and open circuit in IG1 line between IG1 relay connector and ETACS-ECU connector****Q: Is the check result normal?****YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).**NO :** Repair the connector(s) or wiring harness.**STEP 5. Using scan tool (M.U.T.-III), check data list.**

Check the input signal from the ignition switch (IG1).

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

Item No.	Item name	Normal condition
30	Ignition switch(IG1)	ON

OK: Normal condition is displayed.**Q: Is the check result normal?****YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).**NO :** Replace the ETACS-ECU.**Inspection Procedure 3: The key reminder switch signal is not received.****⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

Input signal from the key reminder switch is used to operate the functions below. If the signal is abnormal, these functions will not work normally.

- Ignition key reminder tone alarm function
- Central door locking
- Keyless entry system
- Dome light

TROUBLESHOOTING HINTS

- The key reminder switch may be defective

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

DIAGNOSIS**Required Special Tools:**

- MB992006: Extra fine probe
- MB991223: Harness set

STEP 1. Check the key reminder switch.Refer to [P.54A-12](#).**Q: Is the check result normal?****YES :** Go to Step 2.**NO :** Replace the key reminder switch.

STEP 2. Resistance measurement at key reminder switch connector (ground terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the key reminder switch 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 line between key reminder switch connector and the ground

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, short to ground, and open circuit in HL1+ line between ETACS-ECU connector and key reminder switch 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 data list.**⚠ 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) [P.54A-215](#)."
- (2) Check the input signals from the key reminder switch.
 - Ignition switch: "LOCK" (OFF) (key inserted)

Item No.	Item name	Normal condition
28	Steering lock switch	OFF

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 4: The front door lock actuator (driver's side) signal is not received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

The front door lock actuator (driver's side) input signal is used for the operation judgment of the functions below. If the signal is abnormal, these functions will not work normally.

- Central door locking
- Keyless entry system
- Dome light

TROUBLESHOOTING HINTS

- The front door lock actuator (driver's side) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Front door lock actuator (driver's side) check

Refer to GROUP 42A – Door [P.42A-58](#).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the front door lock actuator (driver's side).

STEP 2. Resistance measurement at front door lock actuator (RH) connector (ground terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the door lock actuator (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 line between front door lock actuator (RH) connector and ground

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, short to ground, and open circuit in DSWL, DSWU line between ETACS-ECU connector and front door lock actuator (RH) 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 data list.**⚠ 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) [P.54A-215](#)."
- (2) Change the status of driver's door from unlocked to locked.

Item No.	Item name	Normal condition
20	Driver's door unlock switch	ON → OFF
21	Driver's door lock switch	OFF → ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 5: The front door switch (driver's side) signal is not received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the front door switch (driver's side) input signal, the door switch (driver's side) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The front door switch (driver's side) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the installation condition.

Check that the front door switch (driver's side) is installed to the body correctly.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Correct the installation condition.

STEP 2. Front door switch (driver's side) check

Refer to GROUP 42A – Door [P.42A-66](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the front door switch (driver's side).

STEP 3. Check of short to power supply, short to ground, and open circuit in DDSW line between ETACS-ECU connector and front door switch (driver's side) connector

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. Using scan tool (M.U.T.-III), check data list.**⚠ 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) [P.54A-215](#)."

(2) Open the driver's door.

Item No.	Item name	Normal condition
19	Driver's door switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 6: The front door switch (passenger's side) signal is not received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the front door switch (passenger's side) input signal, the front door switch (passenger's side) signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

- The front door switch (passenger's side) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the installation condition.

Check that the front door switch (passenger's side) is installed to the body correctly.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Correct the installation condition.

STEP 2. Front door switch (passenger's side) check

Refer to GROUP 42A – Door [P.42A-66](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the front door switch (passenger's side).

STEP 3. Check of short to power supply, short to ground, and open circuit in ADSW line between ETACS-ECU connector and front door switch (passenger's side) connector

Q: Is the check result normal?

YES : Go to Step 4.

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

STEP 4. M.U.T.-III data list **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) [P.54A-215](#)."
- (2) Open the front passenger's door.

Item No.	Item name	Normal condition
48	Passenger's door switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection procedure 7: One of the door switch signals (including the liftgate latch switch) is not received.

 CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the rear door switch or liftgate latch switch input signal, the rear door switch signal is no longer output to the communication line.

NOTE: When the right, left rear door or the liftgate is opened, the signal is also displayed as "Rear door switch". Therefore, when "Rear door switch" signal is displayed as abnormal, you should determine which signal line is defective by opening the rear doors and the liftgate one at a time.

TROUBLESHOOTING HINTS

- The rear door switch (LH) may be defective
- The rear door switch (RH) may be defective
- The liftgate latch switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool (M.U.T.-III), check data list.

⚠ 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) [P.54A-215](#)."
- (2) Check signals from each door.
- (3) Open the driver's and passenger's doors.

Item No.	Item name	Normal condition
19	Driver's door switch	ON
48	Passenger's door switch	ON

OK: Normal condition is displayed.

- (4) Open the rear door (RH) with the other doors and the liftgate closed.

Item No.	Item name	Normal condition
49	Rear door switch	ON

OK: Normal condition is displayed.

- (5) Open the rear door (LH) with the other doors and the liftgate closed.

Item No.	Item name	Normal condition
49	Rear door switch	ON

OK: Normal condition is displayed.

- (6) Open the liftgate with the other doors closed.

Item No.	Item name	Normal condition
49	Rear door switch	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES (Normal condition is displayed) : Go to Step 6.

NO (Normal condition is not displayed for item No.

19) : Refer to Inspection Procedure 5 "The front door switch (RH) signal is not received [P.54A-244](#)."

NO (Normal condition is not displayed for item No.

48) : Refer to Inspection Procedure 6 "The front

door switch (LH) signal is not received

[P.54A-245](#)."

NO (When any of the rear doors or the liftgate is opened, normal condition is not displayed for item No. 49 for only a respective door or liftgate) : Go to Step 2.

NO (When each of the rear doors or the liftgate is opened, normal condition is displayed for item No. 49 for none of the doors or liftgate) : Go to Step 5.

STEP 2. Check the installation condition.

Check that the rear door switch or the liftgate latch switch is installed to the body correctly.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Correct the installation condition.

STEP 3. Check the rear door switches or the liftgate latch switch.

Check the rear door switches or the liftgate latch switch. (Refer to GROUP 42A – Door Assembly [P.42A-66](#) (Door Switch) or Liftgate Handle Latch [P.42A-87](#) (Liftgate latch switch).)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the rear door switch or liftgate latch switch.

STEP 4. Check the wiring harness between each rear door switch connector or the liftgate latch switch connector and the ETACS-ECU connector.

- Check of short to power supply, short to ground, and open circuit in DOOR line between ETACS-ECU connector and rear door switch (RH). <Rear door (RH)>
- Check of short to power supply, short to ground, and open circuit in DOOR line between ETACS-ECU connector and rear door switch (LH) connector. <Rear door (LH)>
- Check of short to power supply, short to ground, and open circuit in DOOR line between ETACS-ECU connector and liftgate latch switch connector. <Liftgate>

Q: Is the check result normal?

YES : Go to Step 6.

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

STEP 5. Connector check: ETACS-ECU connector (DOOR terminal)**Q: Is the check result normal?****YES :** Go to Step 6.**NO :** Repair the defective connector.**STEP 6. Using scan tool (M.U.T.-III), check data list.**

Open each of the rear doors and the liftgate.

Item No.	Item name	Normal condition
49	Rear door switch	ON

OK: When each of the doors and the liftgate is opened, normal condition is displayed for all.**Q: Is the check result normal?****YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).**NO :** Replace the ETACS-ECU.**Inspection Procedure 8: The hazard warning light switch signal is not received.****⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

Input signal from the hazard warning light switch is used to operate the functions below. If the signal is abnormal, these functions will not work normally.

- Keyless entry system (encrypted code registration)
- Hazard warning light

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the hazard warning light switch.Refer to [P.54A-140](#).**Q: Is the check result normal?****YES :** Go to Step 2.**NO :** Replace the hazard warning switch.**STEP 2. Resistance measurement at hazard warning switch connector (ground terminal)**

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the hazard warning switch 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 line between hazard warning switch connector and ground****Q: Is the check result normal?****YES :** Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).**NO :** Repair the connector(s) or wiring harness.

STEP 4. Check of short to power supply, short to ground, and open circuit in HAZ line between ETACS-ECU connector and hazard warning switch 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 data list.

⚠ 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) [P.54A-215](#)."
- (2) Check the input signals from the hazard warning switch.
 - Operate the hazard warning switch.

Item No.	Item name	Normal condition
26	Hazard warning light switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 9: The column switch signal is not received.

TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU receives the column switch signal via the LIN communication. If there is an abnormality to column switch or LIN bus line, the lights and wiper/washer do not work normally.

TROUBLESHOOTING HINTS

- The column switch assembly may be defective
- The LIN bus line may be defective

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the ETACS diagnostic trouble code

⚠ 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) [P.54A-215](#)."
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) Check if DTC is set.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Troubleshoot the ETACS-ECU (Refer to [P.54A-218](#)).

NO : Replace the column switch assembly.

Inspection Procedure 10: The stoplight switch signal is not received.**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If there is an error to the stoplight switch input signal, the stoplight switch signal is no longer output to the communication line.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the stoplight switch.

Refer to GROUP 35A – Brake Pedal [P.35A-26](#).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the stoplight switch.

STEP 2. Voltage measurement at stoplight switch connector (power supply terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Check the voltage between the stoplight switch connector (power supply terminal) and ground.

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

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check of short to power supply, short to ground, and open circuit in power supply line between stoplight switch connector and fusible link

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 4. Check of short to power supply, short to ground, and open circuit in BKLP line between ETACS-ECU connector and stoplight switch 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 data list.

⚠ 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) [P.54A-215](#)."
- (2) Check the input signals from the stoplight switch.
 - Brake pedal: depressed

Item No.	Item name	Normal condition
108	Stoplight switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 11: The rear window defogger switch signal is not received. <vehicles with manual air conditioning>

⚠ CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

Input signal from the rear window defogger switch is used to operate the functions below. If the signal is abnormal, these functions will not work normally.

- Rear window defogger

TROUBLESHOOTING HINTS

- The heater control panel (rear window defogger switch) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the rear window defogger switch.

Refer to [P.54A-140](#).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the heater control panel.

STEP 2. Resistance measurement at heater control panel connector (ground terminal)

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between the heater control panel 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 line between heater control panel connector and ground

Q: Is the check result normal?

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use

Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction

[P.00-13](#)).

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

STEP 4. Check of short to power supply, short to ground, and open circuit in DFSW line between ETACS-ECU connector and heater control panel 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 data list.**⚠ 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) [P.54A-215](#)."

(2) Check the input signals from the rear window defogger switch

- Operate the rear window defogger switch.

Item No.	Item name	Normal condition
103	Rear defogger switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 12: The rear window defogger switch signal is not received. <vehicles with automatic air conditioning>**⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

Input signal from the rear window defogger switch is used to operate the functions below. If the signal is abnormal, these functions will not work normally.

- Rear window defogger

TROUBLESHOOTING HINTS

- The auto A/C controller assembly (rear window defogger switch) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool (M.U.T.-III), check other systems data list.**⚠ 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) [P.54A-215](#)."
- (2) Check the A/C-ECU system data list.
 - Operate the rear window defogger switch.

Item No.	Item name	Normal condition
60	Rear defogger switch	OFF to ON (only when switch is operated)

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the auto A/C controller assembly.

STEP 2. Check of short to power supply, short to ground, and open circuit in DFSW line between ETACS-ECU connector and auto A/C controller assembly (A/C-ECU) connector**Q: Is the check result normal?**

YES : Go to Step 3.

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

STEP 3. Using scan tool (M.U.T.-III), check data list.

Check the ETACS-ECU system data list.

- Operate the rear window defogger switch.

Item No.	Item name	Normal condition
103	Rear defogger switch	OFF to ON (only when switch is operated)

OK: Normal condition is displayed.

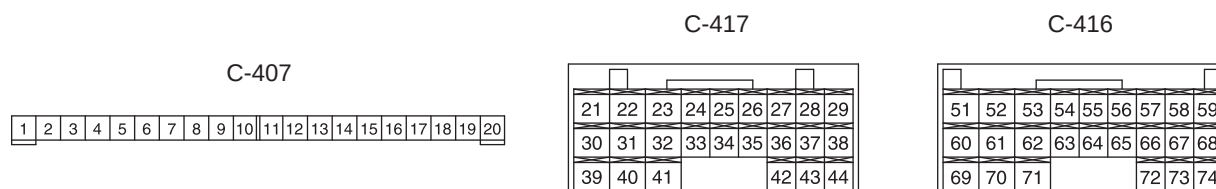
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

CHECK AT ECU TERMINAL

M1549001201860



AC706297AE

NOTE: C-407 (terminal numbers 1 to 20) cannot be measured as the ETACS-ECU is mounted on the junction block directly. The values are for reference only.

CONNECTOR: C-407

Terminal No.	Terminal code	Check item	Check condition	Normal condition
1	D/LOCK	Power supply to the central door locking system (battery positive voltage)	Always	Battery positive voltage
2	EARTH	Ground (for ECU)	Always	1 V or less
3	TURN LH	Output to left turn-signal lights	When the left turn-signal lights are on	Battery positive voltage
4	TURN RH	Output to right turn-signal lights	When the right turn-signal lights are on	Battery positive voltage
5	HAZ1	Power supply to hazard warning light (battery positive voltage)	Always	Battery positive voltage
6	F/WIP-AS	Input of windshield wiper automatic stop signal	When windshield wipers are operating	Battery positive voltage
7	F/WIP-HI	Output to windshield wiper (high-speed operation)	When windshield wipers are operating at high speed	Battery positive voltage
8	F/WIP-LO	Output to windshield wiper (low speed operation)	When windshield wipers are operating at low speed	Battery positive voltage
9	F/WIP-WASH	Output to windshield washer	When windshield washer is operating	Battery positive voltage
10	FR WIP ACC	Power supply to windshield wiper/washer (ignition switch: ACC)	Ignition switch: ACC	Battery positive voltage
11	RR WIP ACC	Power supply to rear wiper (ignition switch: ACC)	Ignition switch: ACC	Battery positive voltage

Terminal No.	Terminal code	Check item	Check condition	Normal condition
12	R/WIP-W ASH	Output to rear washer	When rear washer is operating	Battery positive voltage
13	RR WIP MTR	Output to rear wiper	When rear wiper is operating	Battery positive voltage
14	RR WIP AUTO STP	Input of rear wiper automatic stop signal	When rear wiper is operating	Battery positive voltage
15	TAIL LP	Output to taillights	When the taillights are on	Battery positive voltage
16	TAIL +B	Battery power supply (for taillights)	Always	Battery positive voltage
17	H/LP LO	Output to low-beam headlights	When low-beam headlights are on	Battery positive voltage
18	ROOM LP	Output to dome light	When the dome light is on	Pulse signal
19	H/LP HI	Output to high-beam headlights	When high-beam headlights are on	Battery positive voltage
20	ETACS +B	Battery power supply (for ECU)	Always	Battery positive voltage

CONNECTOR: C-417

Terminal No.	Terminal code	Check item	Check condition	Normal condition
21	—	—	—	—
22	RL-U	Output to central door locking (for unlocking the doors)	When the door lock actuators unlock the doors	Battery positive voltage
23	RR-L	Output to central door locking (for locking the doors)	When the door lock actuators lock the doors	Battery positive voltage
24	DHOR	Output to horn	Panic alarm system: ON	Battery positive voltage
25 – 35	—	—	—	—
36	DSWL	Input to front door lock actuator (RH) (lock switch)	Driver's door lock: locked	1 V or less
37 – 40	—	—	—	—

Terminal No.	Terminal code	Check item	Check condition	Normal condition
41	DSWU	Input to front door lock actuator (unlock switch)	Driver's door lock: Unlocked	1 V or less
42, 43	—	—	—	—
44	IG2	Power supply from ignition switch (IG2)	Ignition switch: ON	Battery positive voltage

CONNECTOR: C-416

Terminal No.	Terminal code	Check item	Check condition	Normal condition
51	DDSW	Input from driver's door switch	Driver's door switch: ON (door open)	1 V or less
52	DEF1	Output to the rear window defogger relay	When the rear window defogger are operative	Battery positive voltage
53	HL1+	Input to key reminder switch	Key reminder switch: ON (Ignition key removed)	1 V or less
54	LIN	LIN communication line	Always	0 to 12 V (pulse signal)
55	SLSO	Shift lock solenoid	When all the following conditions are met. • Ignition switch: ON • Brake pedal: depressed	Battery positive voltage
56	CANH	CAN_H	—	—
57	ANT-	Output of key ring antenna signal	Always	1V or less
58	ANT+	Input of key ring antenna signal	Always	1V or less
59	B.PW	Output to the power window relay	When the power windows are operative	Battery positive voltage
60	—	—	—	—
61	DOOR	Input from the rear door switches or liftgate switch	• One of the rear door switches: ON (door open) • Liftgate switch: ON (liftgate open)	1 V or less
62	ROOM	Output to luggage compartment light	When the luggage compartment light is on	Pulse signal
63	ADSW	Input from the front passenger's door switch	One of the front passenger's door switch: ON (door open)	1 V or less
64	WB/U	Back-up input from windshield wiper switch	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	1 V or less
65	CANL	CAN_L	—	—

Terminal No.	Terminal code	Check item	Check condition	Normal condition
66	—	—	—	—
67	FOGY	Output to front fog light	When the front fog light is on	Battery positive voltage
68	IG1	Power supply from ignition switch (IG1)	Ignition switch: ON or START	Battery positive voltage
69	DFSW	Input from rear window defogger switch	Rear window defogger switch: ON	1 V or less
70	SGND	Ground (for sensor)	Always	1 V or less
71	HAZ	Input from hazard warning light switch	Hazard warning light switch: ON	1 V or less
72	BKLP	Input from stoplight switch	Stoplight switch: ON	5 V
73	—	—	—	—
74	ACC1	Power supply from ignition switch (ACC)	Ignition switch: ON or ACC	Battery positive voltage

ON-VEHICLE SERVICE

CUSTOMIZATION FUNCTION

M1545002501839

Using the ETACS system of scan tool (M.U.T.-III), the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (initial condition)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (Initial condition)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	400ms	0.4 second (Initial condition)
		800ms	0.8 second

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (Initial condition)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function
Vehicle speed-dependent wiper	Disabling or enabling vehicle speed-dependent wiper function	inhibit	No function
		operation	With function (Initial condition)
Wiper synchronized washer	Disabling or enabling washer-linked wiper function	inhibit	No function (Only washer operation)
		operation	With function (Initial condition)
Intermittent time of rear wiper	Adjustment of rear wiper interval	8 sec.	8 second (Initial condition)
		4sec/continuous	4 second (With low speed mode)
		8sec/continuous	8 second (With low speed mode)
		16sec/continuous	16 second (With low speed mode)
		0 sec.	0second (Continuous operation)
		4 sec.	4 second
		16 sec.	16 second
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (Initial condition)
Door unlock mode	Adjustment of power door locks with selective unlocking	All Doors Unlock	The first operation of keyless entry system or unlock operation by KOS unlocks all doors.
		Dr Door Unlock	The first operation of keyless entry system or unlock operation by KOS unlocks the driver's door only, and the second unlock operation within 2 seconds after that unlocks all doors. (initial condition)
Door unlock (Shift "P" position)	Adjustment of the auto door unlock (P position) function	Disable	No function (Initial condition)
		Enable	Always with function

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Buzzer answer back	Adjusts the buzzer answer back function. <vehicles with KOS>	Not Sound Buzzer	No function
		At F.A.S.T.	Sounds when KOS is activated. (Initial condition)
		At keyless	Sounds when the keyless entry system is activated.
		At Both	Sounds when the keyless entry system or KOS is activated.
Interior light delay time	Adjustment of interior light delay shutdown time	0 sec.	0 second (no delay shutdown time)
		7.5 sec.	7.5 seconds <Initial condition (vehicles without central door locking system)>
		15 sec.	15 seconds
		30 sec.	30 seconds <Initial condition (vehicles with central door locking system)>
		60 sec.	60 seconds
		120 sec.	120 seconds
		180 sec.	180 seconds
Timer lock timer	Timer lock period adjustment	30 sec.	30 seconds (Initial condition)
		60 sec.	60 seconds
		120 sec.	120 seconds
		180 sec.	180 seconds
Horn chirp by keyless	Horn chirp by keyless entry system	Not sound horn	No horn answerback function
		Lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed once.
		W lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed twice. (initial condition)
Interior light auto cut timer	Adjustment of interior light automatic shutoff function (only dome light switch is door position)	Disable	No function
		30min	With function (Initial condition)
F.A.S.T. feature	KOS function adjustment	Both enable	All KOS functions are enabled. (Initial condition)
		Door Entry enable	Only door entry function is enabled.
		ENG start enable	Only engine starting function is enabled.
		Both disable	All KOS functions are disabled.
F.A.S.T.key detect out fm window	With/without KOS key exterior detection function	Disable	No function (Initial condition)
		Enable	With function

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Outer buzzer volume	Volume adjustment for the KOS outer buzzer	Volume 1	Quieter than the standard
		Volume 2	Standard volume (Initial condition)
		Volume 3	Louder than the standard
ACC automatic cut timer (OSS)	Disabling or enabling of ACC power auto cut function or adjustment of the time until the ACC power supply is cut off <Vehicles with OSS>.	Disable	No function
		30 min	30 minutes (initial condition)
		60 min	60 minutes

ETACS-ECU

REMOVAL AND INSTALLATION

M1545004700676

CAUTION

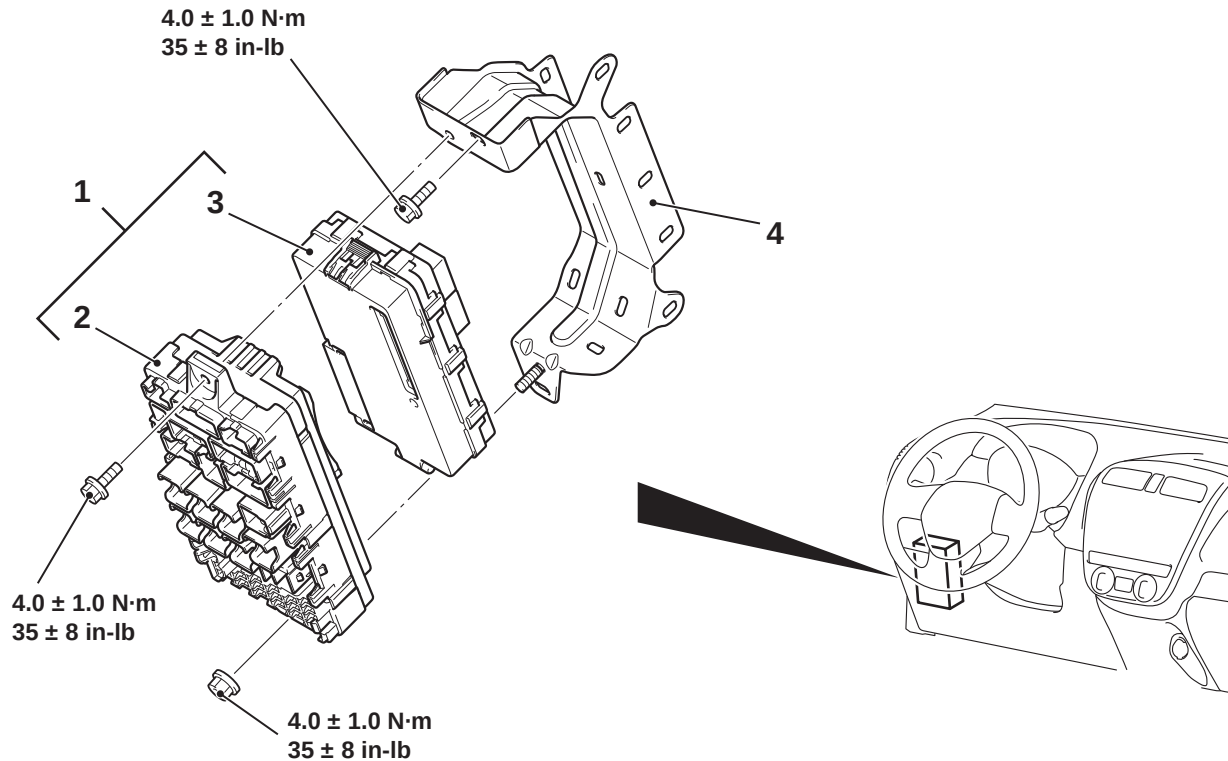
- When the ETACS-ECU is replaced, VIN writing and coding must be performed. When DTC No.B1760 "Coding not completed" or B1761 "VIN not programmed" is set in the ETACS-ECU, perform VIN writing and coding. Refer to the "M.U.T.-III operation manual" and perform coding.
- When the ETACS-ECU of vehicles without KOS is replaced, the encrypted code of the ignition key needs to be registered to the ETACS-ECU. <Vehicles with Immobilizer System> (If the encrypted code is not registered, the engine cannot be started. For the details of code registration procedure, refer to the ID registration procedure manual.)

Pre-removal operation

- Removal of Instrument panel lower assembly (Refer to GROUP 52A – Instrument Lower Panel [P.52A-6](#))

Post-installation operation

- Installation of Instrument panel lower assembly (Refer to GROUP 52A – Instrument Lower Panel [P.52A-6](#))



ACC05529AC

Removal steps

1. Junction block/ETACS-ECU
2. Junction block

Removal steps (Continued)

3. ETACS-ECU
4. Junction block bracket

PANIC ALARM

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1547001200270

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1547001501285

Trouble symptom	Reference page
Panic alarm does not work normally.	P.54A-261

SYMPTOM PROCEDURES

Panic alarm does not work normally.

CAUTION

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

TECHNICAL DESCRIPTION (COMMENT)

If keyless entry system <vehicles without KOS> or keyless operation system <vehicles with KOS> is normal, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The keyless entry system <vehicles without KOS> or keyless operation system <vehicles with KOS> may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check keyless entry system <vehicles without KOS> or keyless operation system <vehicles with KOS>.

Q: Do keyless entry system <vehicles without KOS> or keyless operation system <vehicles with KOS> work normally?

YES : Go to Step 2.

NO <vehicles without KOS> : Troubleshoot the keyless entry system (Refer to GROUP 42A, Keyless Entry System [P.42A-89](#)).

NO <vehicles with KOS> : Troubleshoot the KOS (Refer to GROUP 42B, KOS [P.42B-13](#)).

STEP 2. Check that the headlight operate.

Check that the headlight illuminate normally.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Troubleshoot the headlight. Refer to [P.54A-74](#).

STEP 3. Check of short to power supply, short to ground, and open circuit in DHOR line between horn relay connector and ETACS-ECU connector**Q: Is the check result normal?**

YES : Go to Step 4.

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

STEP 4. Retest the system.**Q: Does the panic alarm work normally?**

YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#)).

NO : Replace the ETACS-ECU.

REMOVAL AND INSTALLATION**Panic alarm system component parts**

- Headlight assembly (refer to [P.54A-98](#)).

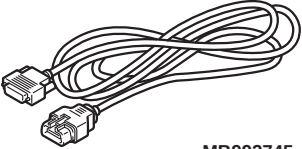
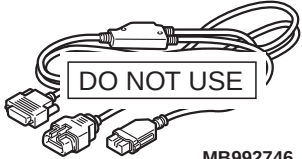
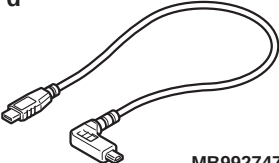
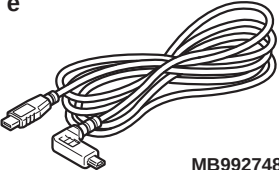
- Horn (refer to [P.54A-141](#)).

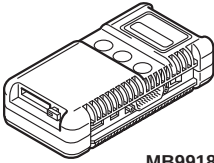
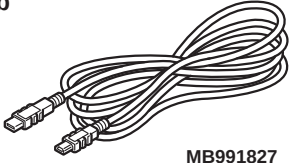
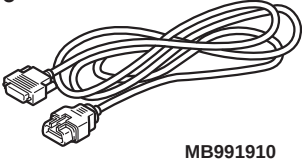
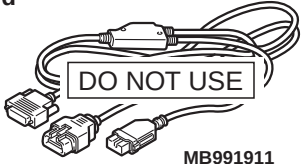
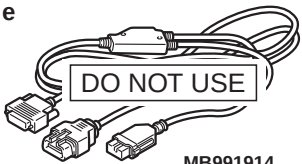
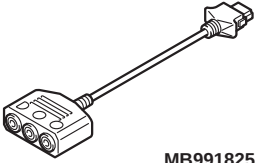
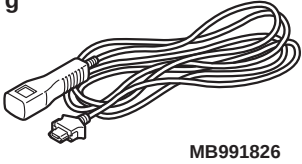
M1547002600088

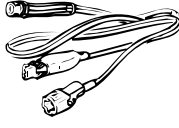
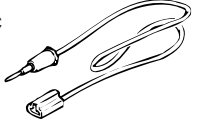
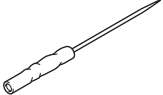
DEFOGGER

SPECIAL TOOLS

M1547000600480

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC and service data check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1540500700038

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

TROUBLE SYMPTOM CHART

M1540500800240

Trouble symptom		Reference page
The rear window defogger does not work.	<vehicles with manual air conditioning>	P.54A-266
	<vehicles with automatic air conditioning>	P.54A-268

SYMPTOM PROCEDURES

The rear window defogger does not work. <vehicles with manual air conditioning>

TECHNICAL DESCRIPTION (COMMENT)

If the rear window defogger does not work after switching on (the defogger timer will be on for approximately 20 minutes), the rear window defogger relay circuit may be defective.

NOTE: This system does not work while the engine is off.

TROUBLESHOOTING HINTS

- The rear window defogger relay may be defective
- The heater control panel may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. 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)" [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)).

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

Check that the ETACS-ECU has not set a DTC.

Q: Is the DTC stored?

YES : Carry out the DTC procedures. Refer to [P.54A-218](#).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code
Check that the engine control module has not set a DTC.**Q: Is the DTC stored?**

YES : Troubleshoot the MFI (Refer to GROUP 13A – DTC Chart [P.13A-47](#).)

NO : Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), check data list

Check the ETACS-ECU system data list.

- Start the engine.
- Turn the rear window defogger switch from off to on.

Item No.	Item name	Normal condition
103	Rear defogger switch	OFF to ON (only when switch is operated)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 5. Check the rear window defogger relay.
Refer to [P.54A-271](#).**Q: Is the check result normal?**

YES : Go to Step 6.

NO : Replace the defogger relay.

STEP 6. Voltage measurement at the rear window defogger connector.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Start the engine.
- (3) Rear window defogger switch: ON.
- (4) Measure the voltage between the rear window defogger connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 8.

STEP 7. Resistance measurement at the rear window defogger connector.

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

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 13.

NO : Repair the connector(s) or wiring harness wires between rear window defogger connector terminal and ground.

STEP 8. Voltage measurement at the rear window defogger relay connector.

- (1) Remove the relay, and measure at the junction block side.
- (2) Measure the voltage between the rear window defogger relay connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check of short to power supply, and open circuit in power supply line between rear window defogger relay connector and fusible link.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 10. Voltage measurement at the rear window defogger relay connector.

- (1) Remove the relay, and measure at the junction block side.
- (2) Ignition switch: ON.
- (3) Measure the voltage between the rear window defogger relay connector (input terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 12.

NO : Go to Step 11.

STEP 11. Check of short to power supply, and open circuit in input line between rear window defogger relay connector and ignition switch (IG2).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 12. Check of short to power supply, and open circuit in DEF1 line between rear window defogger relay connector and ETACS-ECU.

Q: Is the check result normal?

YES : Go to Step 13.

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

STEP 13. Check the rear window defogger.

Check the rear window defogger (Refer to [P.54A-271](#)).

Q: Is the check result normal?

YES : Return to Step 1.

NO : Replace the rear window glass.

The rear window defogger does not work. <vehicles with automatic air conditioning>**TECHNICAL DESCRIPTION (COMMENT)**

If the rear window defogger does not work after switching on (the defogger timer will be on for approximately 20 minutes), the rear window defogger relay circuit may be defective.

NOTE: This system does not work while the engine is off.

TROUBLESHOOTING HINTS

- The rear window defogger relay may be defective
- The A/C-ECU may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. 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)" [P.54A-215](#)."
- (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 – Troubleshooting [P.54C-12](#)).

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

Check that the ETACS-ECU has not set a DTC.

Q: Is the DTC stored?

YES : Carry out the DTC procedures. Refer to [P.54A-218](#).

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code

Check that the engine control module has not set a DTC.

Q: Is the DTC stored?

YES : Troubleshoot the MFI (Refer to GROUP 13A – DTC Chart [P.13A-47](#).)

NO : Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), check data list

Check the ETACS-ECU system data list.

- Start the engine.
- Turn the rear window defogger switch from off to on.

Item No.	Item name	Normal condition
103	Rear defogger switch	OFF to ON (only when switch is operated)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis [P.54A-239](#).

STEP 5. Check the rear window defogger relay.

Refer to [P.54A-271](#).

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the defogger relay.

STEP 6. Voltage measurement at the rear window defogger connector.

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Start the engine.
- (3) Rear window defogger switch: ON.
- (4) Measure the voltage between the rear window defogger connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 8.

STEP 7. Resistance measurement at the rear window defogger connector.

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

OK: The resistance should be 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 13.

NO : Repair the connector(s) or wiring harness wires between rear window defogger connector terminal and ground.

STEP 8. Voltage measurement at the rear window defogger relay connector.

- (1) Remove the relay, and measure at the junction block side.
- (2) Measure the voltage between the rear window defogger relay connector (power supply terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check of short to power supply, and open circuit in power supply line between rear window defogger relay connector and fusible link.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 10. Voltage measurement at the rear window defogger relay connector.

- (1) Remove the relay, and measure at the junction block side.
- (2) Ignition switch: ON.
- (3) Measure the voltage between the rear window defogger relay connector (input terminal) and the ground.

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

Q: Is the check result normal?

YES : Go to Step 12.

NO : Go to Step 11.

STEP 11. Check of short to power supply, and open circuit in input line between rear window defogger relay connector and ignition switch (IG2).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-13](#)).

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

STEP 12. Check of short to power supply, and open circuit in DEF1 line between rear window defogger relay connector and ETACS-ECU.

Q: Is the check result normal?

YES : Go to Step 13.

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

STEP 13. Check the rear window defogger.

Check the rear window defogger (Refer to [P.54A-271](#)).

Q: Is the check result normal?

YES : Return to Step 1.

NO : Replace the rear window glass.

REMOVAL AND INSTALLATION

M1540600200375

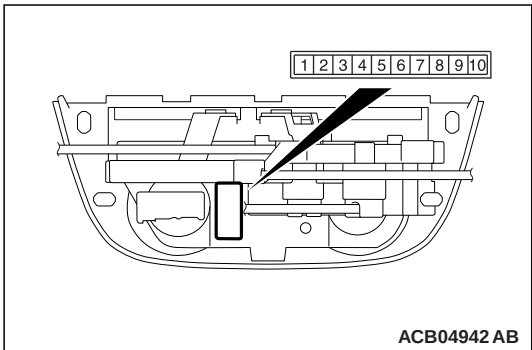
Refer to GROUP 55A – Heater Control Unit

[P.55A-29](#) <vehicles with manual air conditioning>,
GROUP 55B – Heater Control Unit [P.55B-42](#) <vehicles with automatic air conditioning>.

INSPECTION

**REAR WINDOW DEFOGGER SWITCH
CONTINUITY CHECK <VEHICLES WITH MANUAL
AIR CONDITIONING>**

M1540600400067



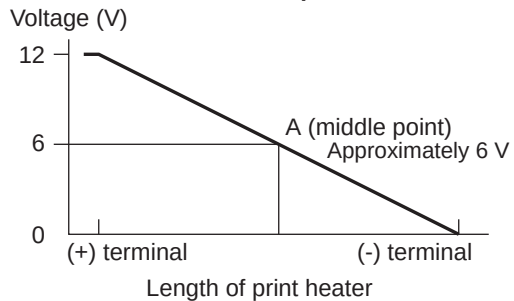
Switch position	Terminal number	Normal condition
OFF	5 – 7	No continuity
ON		Continuity exists (2 ohms or less)

ON-VEHICLE SERVICE

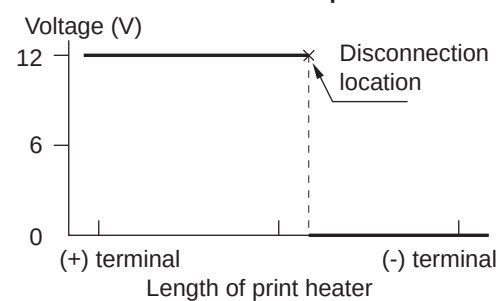
PRINTED HEATER CHECK

M1540500500476

Normal characteristics of print heater



Abnormal characteristics of print heater

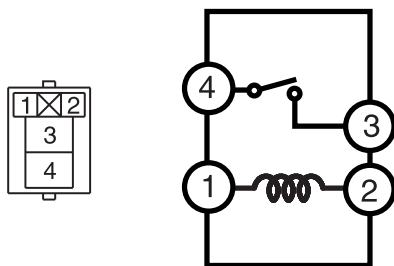
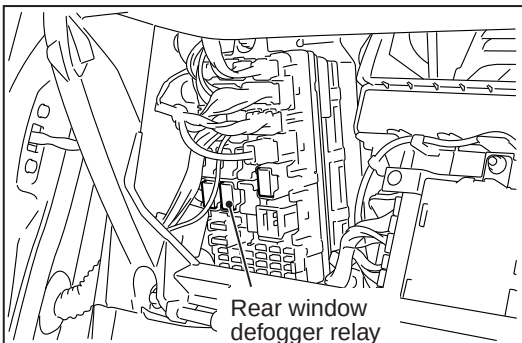


AC407247AD

1. Let the engine run (2,000 r/min), and check the printed heater with the battery fully charged.
2. With the rear window defogger switch "ON," use the circuit tester to measure the voltage of each printed heater at the rear window glass center A point. If approximately 6 V is indicated, it is judged good.
3. If the voltage of 12 V is indicated at the A point, there is an open circuit between the A point and negative terminal. Therefore, by moving the test bar slowly to the negative side, search and determine the location where the voltage changes suddenly (0 V). The location of voltage change indicates the open circuit position.
4. Also, if the voltage indicates 0 V at the A point, there is an open circuit between the A point and positive terminal. Therefore, search and determine the location of voltage change (12 V) using the above mentioned method.
5. If a malfunction such as open circuit occurs, replace the liftgate window glass.(Refer to GROUP 42A – Liftgate Window Glass [P.42A-21.](#))

REAR WINDOW DEFOGGER RELAY CHECK

M1540500600451

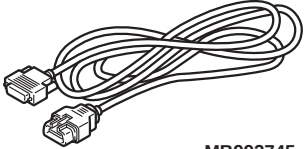
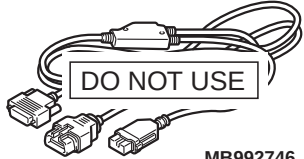
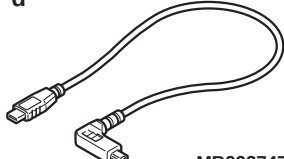
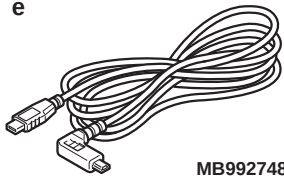


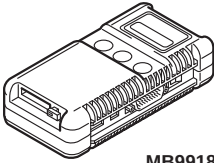
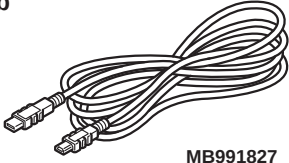
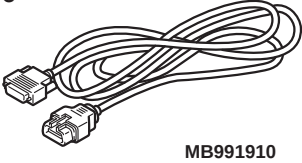
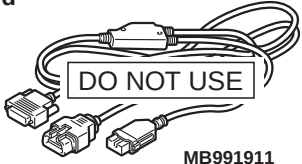
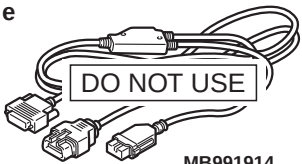
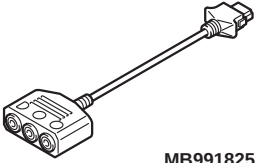
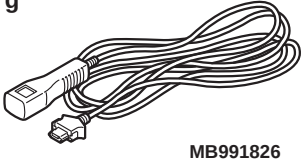
ACB05847AB

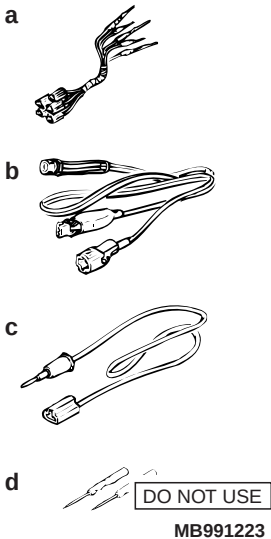
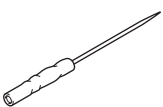
Battery voltage	Terminal number	Normal condition
At no energization	4 – 3	No continuity
With current supply [terminal 1 (+), terminal 2 (-)]		Continuity exists (2 ohms or less)

IMMOBILIZER SYSTEM <VEHICLES WITHOUT KOS>**SPECIAL TOOLS**

M1541106600131

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	DTC check.
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication)		
d  MB992747	d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
e  MB992748 ACB05421AB			

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

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

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1541106700149

Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, Troubleshooting Contents [P.00-6](#).

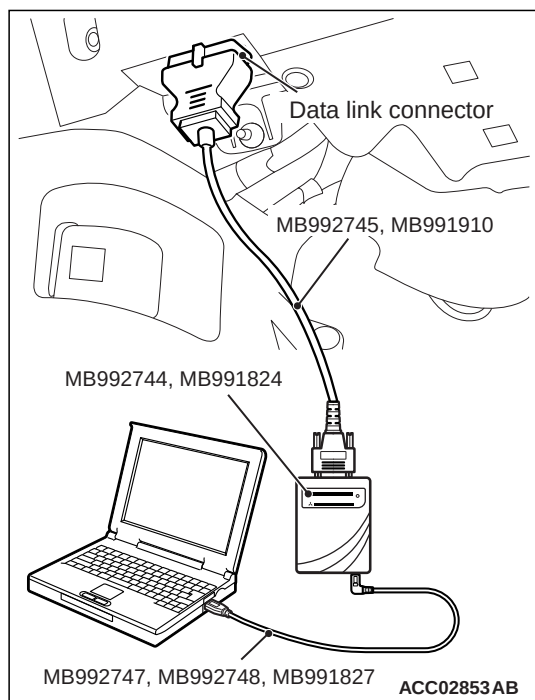
DIAGNOSTIC FUNCTION

M1541100500244

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

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



CAUTION

To prevent damage to scan tool (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. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool (M.U.T.-III) does not display.

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

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

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

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

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

CHECK OF FREEZE FRAME DATA

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

Display item list

Item No.	Item name	Data item	Unit
1	Odometer	Total driving distance after the DTC is generated	km
2	Ignition cycle	Number of times the ignition switch is turned "ON" or "LOCK (OFF)" after the past failure transition.	Number of counts is displayed.
3	Elapsed time	Total elapsed time after a DTC is generated	min

Item No.	Item name	Data item	Unit
4	Accumulated minute	Cumulative time for current malfunction of DTC	min

DIAGNOSTIC TROUBLE CODE CHART

M1541100400258

CAUTION

During troubleshooting, a DTC associated with other systems may be stored when the ignition switch is turned ON with connector(s) disconnected. On the completion of troubleshooting, confirm all systems for DTC(s). If DTC(s) are stored, erase them all.

Code No.	Diagnosis contents	Reference page
B1702	Transponder read error	P.54A-277
B1703	Transponder ID unmatched	P.54A-279
B1722	Immobilizer-antenna fail	P.54A-280
B1731	PCM authentication timeout	P.54A-281
B1766	Already learned by other vehicle	P.54A-283
B1A28	PCM authentication error	P.54A-284

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC B1702: Transponder read error

CAUTION

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

OPERATION

The key reminder switch (ignition key ring antenna) supplies the ignition key with power, and the ignition key sends the key ID to the ETACS-ECU. ETACS-ECU receives the key ID with the key ring antenna, and judges if the ignition key is the registered one.

TROUBLE JUDGMENT

- DTC No.B1702 is stored when there are other ignition keys or anything that interferes with the communication (things that generate radio waves such as magnets and an air-cleaning device that has a power plug) near the ignition key that is going to start the engine.
- If the key ID is not sent to the ETACS-ECU even when the ignition switch is turned to the ON position, DTC No.B1702 is stored.

NOTE: DTC No.B1702 is always set along with MFI system DTC No.P0513.

TROUBLESHOOTING HINTS

- Interference of the key ID

- The key ring antenna (antenna wire)* may be defective.
*NOTE: *: The DTC No. B1722 will be set if a trouble occurs in the key ring antenna.*
- The ignition key may be defective.
- The ETACS-ECU may be defective.

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the ETACS diagnostic trouble code

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) [P.54A-274](#)."
- (2) Check if DTC No. B1722 is stored in the ETACS-ECU.

Q: Is DTC No.B1722 set?

YES : Refer to [P.54A-280](#).

NO : Go to Step 2.

STEP 2. Check the ignition key inserted in the key hole for interference.

Q: Are there other ignition keys or anything that interferes with the communication (things that generate radio waves such as magnets and an air-cleaning device that has a power plug) near the ignition key inserted in the key hole?

YES : Move away or remove other ignition keys or things that interfere with the communication (things that generate radio waves such as magnets and a air-cleaning device that has a power plug) near the ignition key. Then, go to Step 4.

NO : Go to Step 3.

STEP 3. Check with the spare key that has already been registered.

Check that the engine starts using the spare key that has already been registered.

Q: Is DTC No.B1702 set?

YES : Replace the ETACS-ECU. After registering the ID codes, go to Step 4.

NO : Replace the ignition key for which DTC No.B1702 is stored, and register the ID codes again (Refer to [P.54A-290](#)). After registering the ID codes, go to Step 4.

STEP 4. Recheck for diagnostic trouble code.

- (1) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (2) On completion, check that DTC No.B1702 is not reset.

Q: Is DTC No.B1702 set?

YES : Return to Step 1.

NO : The diagnosis is complete. If another DTC is stored, refer to DTC Chart [P.54A-277](#).

DTC B1703: Transponder ID unmatched

 CAUTION

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

TROUBLE JUDGMENT

When the key ID that is sent from the transponder does not correspond to the key ID registered in the ETACS-ECU, the ETACS-ECU stores DTC No.B1703.

NOTE: DTC No.B1703 is always set along with MFI system DTC No.P0513.

TROUBLESHOOTING HINTS

- Ignition key (key ID) is not registered
- The ETACS-ECU may be defective.

DIAGNOSIS

Register all the ignition key IDs again, and recheck the DTC.

 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) [P.54A-274](#)."
- (2) Register all the ignition keys again (Refer to [P.54A-290](#)).
- (3) Turn the ignition switch from the "LOCK" (OFF) position to the ON position.
- (4) Check that DTC No.B1703 is not reset.

Q: Is DTC No.B1703 set?

YES : Replace the ETACS-ECU. After registering the ID codes, check if the DTC is stored.

NO : The diagnosis is complete. If another DTC is stored, refer to DTC Chart [P.54A-277](#).

DTC B1722: Immobilizer-antenna fail

⚠ CAUTION

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

TROUBLE JUDGMENT

DTC No.B1722 is stored when the ETACS-ECU cannot communicate with the ignition key because of defective key ring antenna (antenna wire).

TECHNICAL DESCRIPTION (COMMENT)**Current trouble**

- The wiring harness wire or connectors between the ETACS-ECU and the key ring antenna may have loose, corroded, or damage terminals, or terminals pushed back in the connector, or the key ring antenna (antenna wire) may be defective.

Past trouble

- If DTC No.B1722 is stored as a past trouble, it is possible that there were defective wiring harnesses, defective connectors or defective antennas before.

TROUBLESHOOTING HINTS

- The key ring antenna (antenna wire) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the key reminder switch (ignition key ring antenna)

- (1) Disconnect the key reminder switch (ignition key ring antenna) connector.
- (2) Take the measurements below at component-side connector.
 - There should be continuity between terminals 3 and 7.

OK: The resistance should be 2 ohms or less

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Replace the key reminder switch (ignition key ring antenna), and then go to Step 4.

STEP 2. Check of short to power supply, short to ground, and open circuit in ANT+, ANT- line between ETACS-ECU connector and key reminder switch connector

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector(s) or wiring harness, and then go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

 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) [P.54A-274](#)."
- (2) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (3) Check if DTC No.B1722 is stored as a current trouble.

Q: Is DTC No.B1722 set as a current trouble?

YES : Replace the key reminder switch (ignition key ring antenna), and then go to Step 4.

NO : If DTC No.B1722 is stored as a past trouble, erase the DTC that is stored as a past trouble, and the diagnosis is complete.

STEP 4. Recheck for diagnostic trouble code.

- (1) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (2) Check if DTC No.B1722 is stored as a current trouble.

Q: Is DTC No.B1722 set as a current trouble?

YES : Replace the ETACS-ECU. After registering the ID codes, return to Step 1.

NO : If DTC No.B1722 is stored as a past trouble, erase the DTC that is stored as a past trouble, and the diagnosis is complete.

DTC B1731: PCM authentication timeout

 CAUTION

- If DTC No.B1731 is stored in the ETACS-ECU, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TROUBLE JUDGMENT

If the ETACS-ECU cannot receive any signals from the engine control module, DTC No. B1731 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the engine control module, the power supply system to the engine control module, the engine control module itself, or the ETACS-ECU itself may be defective.

NOTE: DTC No.B1731 is always set along with MFI system DTC No.U0167.

TROUBLESHOOTING HINTS

- The engine control module may be defective
- The ETACS-ECU may be defective

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) [P.54A-274](#)."
- (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 – Troubleshooting). Repair the CAN bus line and go to Step 3.

STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is stored.

- (1) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (2) Check that DTC No.B1731 is not set as a current trouble.

Q: Is DTC No.B1731 set?

YES : Replace the ETACS-ECU. After registering the ID codes, go to Step 3.

NO : The diagnosis is complete. If another DTC is stored, refer to DTC Chart [P.54A-277](#).

STEP 3. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

- (1) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (2) Check that DTC No.B1731 is not set as a current trouble.

Q: Is DTC No.B1731 set?

YES : Replace the engine control module and resister the ID code.

NO : The diagnosis is complete. If another DTC is stored, refer to DTC Chart [P.54A-277](#).

DTC B1766: Already learned by other vehicle

 CAUTION

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

TROUBLE JUDGMENT

If the key registered for another vehicle is used to start the engine, the ETACS-ECU stores DTC No.B1766.

TROUBLESHOOTING HINTS

- Ignition key (key ID) is another vehicle's key
- Ignition key (key ID) is new key
- The ETACS-ECU may be defective

DIAGNOSIS

STEP 1. All ignition keys registration

Check that the all ignition keys are registered.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Register the all ignition keys. Refer to [P.54A-290](#).

STEP 2. 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) [P.54A-274](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting [P.54C-12](#)). Repair the CAN bus line.

STEP 3. Check with another key that has already been registered.

- (1) Turn the ignition switch to the ON position using another key that has already been registered.
- (2) Check that DTC No.B1766 is not set.

Q: Is the DTC stored?

YES : Replace the all ignition keys or by the service key set, and register the ID codes (Refer to [P.54A-290](#)). After registering the ID codes, go to Step 4.

NO : Replace the ignition key that the DTC is stored, and register the ID codes again (Refer to [P.54A-290](#)). After registering the ID codes, go to Step 4.

STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is stored.

- (1) Turn the ignition switch to the "LOCK" (OFF) position once, and then turn it to the ON position again.
- (2) Check that DTC No.B1766 is not set.

Q: Is the DTC stored?

YES : Replace the ETACS-ECU.

NO : The procedure is complete.

DTC B1A28: PCM authentication error

⚠ CAUTION

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

TROUBLE JUDGMENT

ETACS-ECU stores DTC No. B1A28 when the ETACS-ECU's key certification result and the engine control module's starting condition do not match.

TECHNICAL DESCRIPTION (COMMENT)

ETACS-ECU determines that the abnormality is present, if the key certification result OK but engine control module prohibits engine start by immobilizer function or key certification result NG but engine permits engine starts.

TROUBLESHOOTING HINTS

- The CAN bus line may be defective.
- The ETACS-ECU may be defective.
- The engine control module may be defective.
- Chassis number registered in engine control module unmatched

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) [P.54A-274](#)."
- (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 – Troubleshooting [P.54C-12](#)).

STEP 2. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code

Check if DTC is stored in the engine control module.

Q: Is the DTC stored?

YES : Troubleshoot the MFI (Refer to GROUP 13A – DTC Chart [P.13A-47](#).)

NO : Go to Step 3.

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

Check if DTC No. B1761 or B2206 is stored in the ETACS-ECU.

Q: Is the DTC stored?

YES : Perform the troubleshooting of the DTC that has been set.

NO : Go to Step 4.

STEP 4. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

- (1) Once key is removed from the ignition cylinder and then turn the ignition switch from the LOCK (OFF) position to the ON position.
- (2) Check if the DTC is stored.

Q: Is the DTC stored?

YES : Replace ETACS-ECU. Then go to Step 5.

NO : The diagnosis is complete.

STEP 5. Recheck for diagnostic trouble code.

Recheck if the DTC is stored.

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

Q: Is the DTC stored?

YES : Replace the engine control module and register the chassis number and key codes [Refer to GROUP 00 – How to Perform Chassis Number (Chassis No.) Writing [P.00-26](#)].

NO : The diagnosis is complete.

TROUBLE SYMPTOM CHART

M1541100300176

⚠ CAUTION

During troubleshooting, a DTC associated with other systems may be stored when the ignition switch is turned ON with connector(s) disconnected. On the completion of troubleshooting, confirm all systems for DTC(s). If DTC(s) are stored, erase them all.

Trouble symptom	Inspection procedure No.	Reference page
The ignition key cannot be registered with the scan tool (M.U.T.-III).	1	P.54A-286
The engine does not start (Cranking occurs but initial combustion does not).	2	P.54A-288

SYMPTOM PROCEDURES**Inspection Procedure 1: The ignition key cannot be registered with the scan tool (M.U.T.-III).****⚠ CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If only some ignition keys cannot be registered, the ignition key itself may be defective. If no ignition key can be registered, the key assembly may have already been registered for another vehicle, or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The ignition key may be defective
- The ETACS-ECU may be defective
- The engine control module may be defective
- Transponder registered for other vehicle

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) [P.54A-274](#)."
- (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 – Troubleshooting). Repair the CAN bus line.

STEP 2. Check the ignition key inserted in the key hole for interference.

Q: Are there other ignition keys or anything that interferes with the communication (things that generate radio waves such as magnets and an air-cleaning device that has a power plug) near the ignition key inserted in the key hole?

YES : Move away or remove other ignition keys or things that interfere with the communication (things that generate radio waves such as magnets and a air-cleaning device that has a power plug) near the ignition key. Then, go to step 3.

NO : Go to Step 4.

STEP 3. Retest the system.

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Go to Step 4.

STEP 4. Check which ignition key cannot be registered.

Q: Are there only some ignition keys that cannot be registered?

Only some keys : Replace the key that cannot be registered and register the ID codes (Refer to [P.54A-290](#)). After registering the ID codes, go to Step 6.

All keys : Go to Step 5.

STEP 5. Retest the system.

Check the scan tool (M.U.T.-III) screen when the key was not able to be registered.

Q: Which error message did the scan tool (M.U.T.-III) display?

Defective key : Carry out the troubleshooting for DTC No. B1722 "Immobilizer-antenna fail" (Refer to [P.54A-280](#)). Then, go to Step 6.

ECU internal error : Replace the ETACS-ECU. After registering the ID codes, go to Step 6.

STEP 6. Retest the system.

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The engine does not start (cranking occurs but initial combustion does not).

** CAUTION**

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

TECHNICAL DESCRIPTION (COMMENT)

If the fuel injection does not work, the ETACS- ECU and the MFI system may be defective. It is no problem with the malfunction above when the engine is started with unregistered ignition key.

TROUBLESHOOTING HINTS

- The engine control module may be defective
- The ETACS-ECU may be defective
- The ignition key may be defective
- VIN not written

DIAGNOSIS

STEP 1. Battery voltage check

Measure the battery voltage when cranking.

OK: 8 V or more

Q: Is the check result normal?

YES : Go to Step 2.

NO : Check the battery (Refer to [P.54A-5](#)).

STEP 2. 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) [P.54A-274](#)."

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

(3) Diagnose the CAN bus line.

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

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting [P.54C-12](#)).

STEP 3. Using scan tool (M.U.T.-III), read the engine control module diagnostic trouble code

Check if DTC is stored in the engine control module.

Q: Is the DTC stored?

YES : Troubleshoot the MFI (Refer to GROUP 13A – DTC Chart [P.13A-47](#).)

NO : Go to Step 4.

STEP 4. Using scan tool (M.U.T.-III), read the ETACS diagnostic trouble code.

Check whether the engine immobilizer system-related DTC is stored.

Q: Is the DTC stored?

YES : Refer to [P.54A-277](#).

NO : Go to Step 5.

STEP 5. Check that the engine starts.

Q: Does the engine start?

YES : The procedure is complete.

NO : Refer to GROUP 13A, Troubleshooting [P.13A-52](#). Go to Step 6.

STEP 6. Check that the engine starts.**Q: Does the engine start?****YES :** The procedure is complete.**NO :** Replace the ETACS-ECU.**DATA LIST REFERENCE TABLE**

M1541104000092

Item No.	Inspection item	Inspection requirement	Normal condition
1	Memorized transponder keys	—	Number of registered ignition keys

CHECK ETACS-ECU (IMMOBILIZER-ECU)

M1541104100226

TERMINAL VOLTAGE CHECK TABLERefer to ETACS [P.54A-253](#).**ON-VEHICLE SERVICE****HOW TO REGISTER KEY ID**

M1541104300725

For details of the key registration procedure, refer to the ID registration manual.

REMOVAL AND INSTALLATION

M1541106900206

Refer to ETACS-ECU removal and installation

[P.54A-260](#).