

# 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

## ON-VEHICLE SERVICE

### BATTERY CHECK

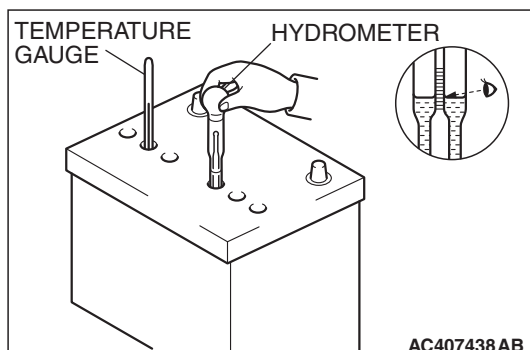
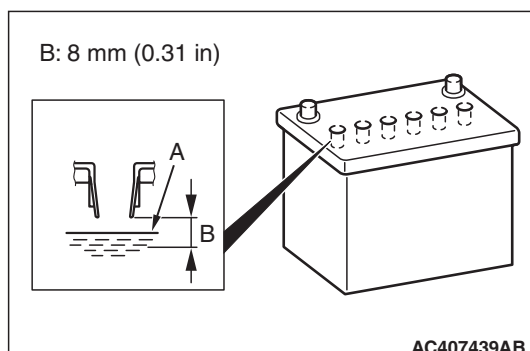
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**⚠ WARNING**

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

### BATTERY VISUAL INSPECTION (1)

1. Ensure that the battery electrolyte level A within the range B shown in the figure. Add if the level is lower than the specified range.



2. Use a hydrometer and temperature gauge to check the specific gravity of the electrolyte.

**Standard value:**

**1.220 – 1.290 [ at 20°C (68°F)]**

The specific gravity of electrolyte depends on its temperature. Use the formula below to determine the proper value.

**Conversion on centigrade**

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

**Conversion on Fahrenheit**

$$D_{20} = (t - 68) \times 0.0007 + D_t$$

$D_{20}$  : Specific gravity as if electrolyte temperature is 20°C (68°F)

$D_t$  : Measured specific gravity

$t$  : Measured temperature

### BATTERY VISUAL INSPECTION (2)

Make sure the ignition switch is in "LOCK" (OFF) position and all battery feed accessories are OFF.

1. Disconnect the negative cable from the battery before disconnecting the positive cable.

**⚠ WARNING**

**Care should be taken in the event the battery case is cracked or leaking to protect hands from the electrolyte. A suitable pair of rubber gloves (not the household type) should be worn when removing battery by hand.**

2. Remove the battery from the vehicle.



3. Inspect battery carrier for damage caused by loss of acid from the battery. If acid damage is present, it is necessary to clean area with a solution of clean warm water and baking soda. Scrub area with a stiff bristle brush. Wipe clean with a cloth moistened with ammonia or baking soda in water.
4. Clean the battery, especially the top with same solutions as described in step 3.
5. Inspect the battery case and cover for cracks. If cracks are present, battery must be replaced.
6. Clean the battery post with a suitable battery post cleaning tool.
7. Clean the inside surfaces of the terminal clamps with a suitable battery terminal cleaning tool. Replace damaged or frayed cables and broken terminal clamps.
8. Install the battery in the vehicle.
9. Connect the positive and negative cables to the battery in that order.
10. Tighten the clamp nut securely.

## BATTERY CHARGING

M1541001100770

### **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 fully discharged condition (flat discharged) is shown below. When the specific gravity of electrolyte keeps 1.22 – 1.29 for more than one hour, charging should be stopped.

### Charge Rate Chart

BATTERY	BCI GROUP SIZE 86	BCI GROUP SIZE 24
Slow charging	4 amps 21 hours	4 amps 21 hours

## BATTERY TEST

M1541001201662

### BATTERY TESTING PROCEDURE

#### STEP 1. Check the battery cables.

Remove the negative cable, then the positive cable.  
Check for dirty or corroded connections.

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

**YES :** Clean the battery cables. Then go to Step 2.

**NO :** Go to Step 2.

#### STEP 2. Check the battery post.

Check for loose battery post.

**Q: Are the battery posts faulty?**

**YES :** Replace the battery. Then go to Step 4.

**NO :** Go to Step 3.



**STEP 3. Check the battery case 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. Then go to Step 4.  
**NO** : Go to Step 4.

**STEP 4. Check the open circuit voltage.**

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

**Q: Is open circuit voltage 12.4 volts or more?**

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

**STEP 5. Battery charging**

Charge the battery. (See CHARGE RATE CHART [P.54A-7](#))

**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**

LOAD TEST	260 AMPS	270 AMPS
Cranking ratio [-18°C (0°F)]	525 amps	550 amps
Reserve capacity	90 minutes	115 minutes
Application	BCI Group size 86	BCI Group size 24

**LOAD TEST CHART**

TEMPERATURE °C (°F)	21 (70) AND ABOVE	16 (60)	10 (50)	4 (40)	-1 (30)	-7 (20)	-12 (10)	-18 (0)
Minimum voltage	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

**IGNITION SWITCH****GENERAL DESCRIPTION****IGNITION KEY REMINDER TONE ALARM**

The ETACS-ECU operates the ignition key reminder tone alarm function under the following conditions:

- Ignition key position: "LOCK" (OFF) position
- Ignition key: Inserted in the ignition key cylinder
- Driver's door: open

However, the light reminder tone alarm will take precedence over this function.

**DOOR LOCK PREVENTION FUNCTION**

If the key is left in the ignition switch while the driver's door opened or the assistant door opened, all doors are automatically unlocked to prevent locking the ignition key in the vehicle after the door is locked.

**IGNITION KEY REMINDER TONE ALARM AND DOOR LOCK PREVENTION FUNCTION DIAGNOSIS**

The Ignition key reminder tone alarms and door lock prevention function are controlled by the Simplified

Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).



## TROUBLE SYMPTOM CHART

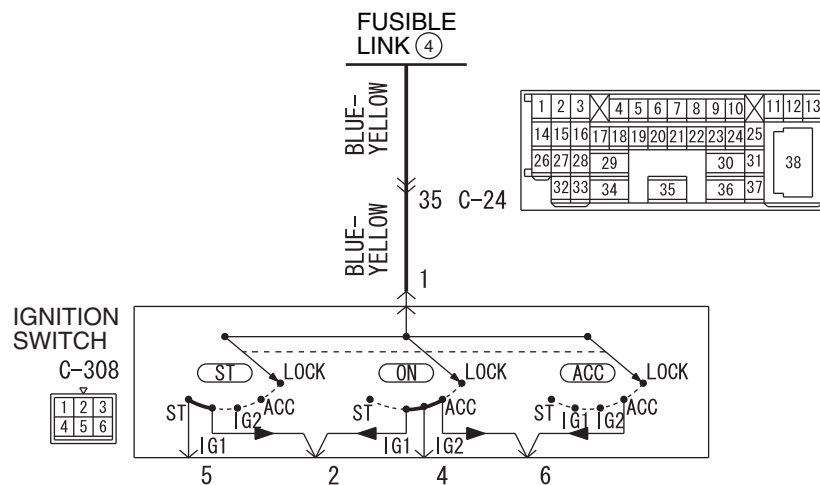
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Trouble symptom	Reference page
Malfunction of the ignition switch power supply system	P.54A-9

## SYMPTOM PROCEDURES

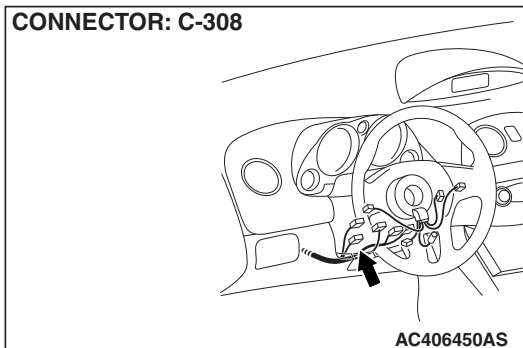
## Malfunction of the ignition switch power supply system

Ignition Switch Power Supply Circuit



WAP54M016A

CONNECTOR: C-308



## 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

- Malfunction of the ignition switch
- Damaged harness wires and connectors

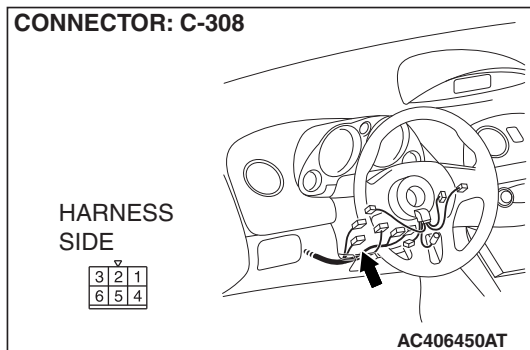
## DIAGNOSIS

## Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set



## CONNECTOR: C-308



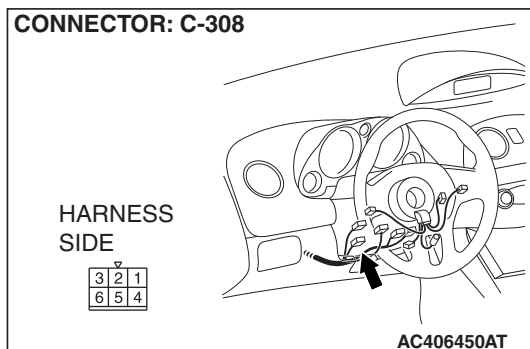
**STEP 1. Check ignition switch connector C-308 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is ignition switch connector C-308 in good condition?**

**YES :** Go to Step 2.

**NO :** Repair the defective connector.

## CONNECTOR: C-308



**STEP 2. Check the battery power supply circuit to the ignition switch. Measure the voltage at ignition switch connector C-308.**

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

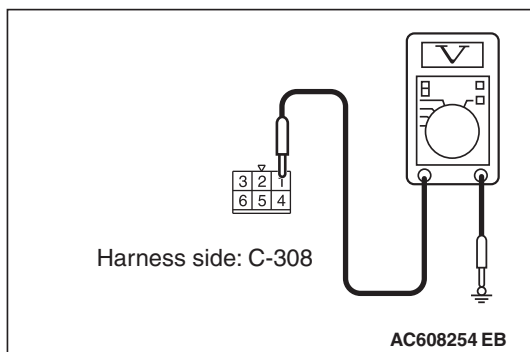
(2) Measure the voltage between terminal 1 and ground.

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

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

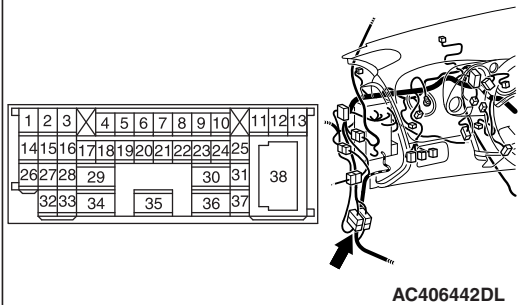
**YES :** Go to Step 4.

**NO :** Go to Step 3.





CONNECTOR: C-24

**STEP 3. Check the Wiring harness between ignition switch connector C-308 (terminal No.1) and fusible link (4).**

*NOTE: Prior to the wiring harness inspection, check intermediate connector C-24, and repair if necessary.*

- Check the battery power supply line for open circuit.

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

**YES :** Go to Step 5.

**NO :** Repair the wiring harness.

**STEP 4. Check the ignition switch.**

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

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

**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.00-14](#)).

**NO :** Return to Step 1.



## IGNITION SWITCH

## REMOVAL AND INSTALLATION

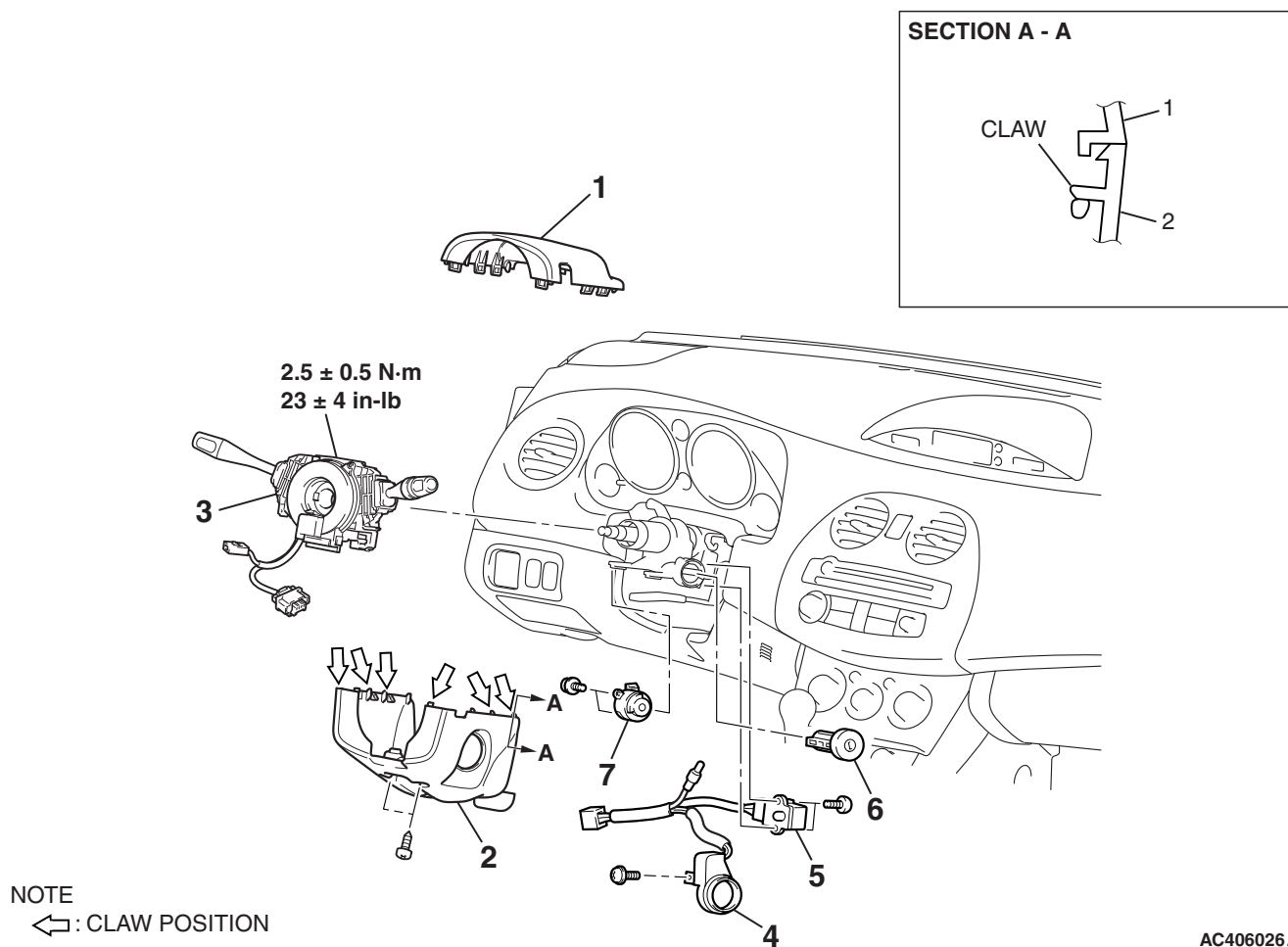
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**⚠ WARNING**

- Before removing the steering wheel, air bag module assembly and clock spring refer to **GROUP 52B, Service Precautions (P.52B-28)** and **Air Bag Module and Clock Spring (P.52B-423)**.
- When removing and installing the steering wheel, do not let it bump against the air bag module.

**⚠ CAUTION**

When the steering lock cylinder is replaced, register the encrypted code. Refer to **P.54A-19**.



AC406026AB

**IGNITION SWITCH REMOVAL  
STEPS**

- STEERING WHEEL ASSEMBLY (REFER TO GROUP 37, STEERING WHEEL **P.37-27**.)
- 1. STEERING COLUMN UPPER COVER
- 2. STEERING COLUMN LOWER COVER

&lt;&lt;A&gt;&gt;

**IGNITION SWITCH REMOVAL  
STEPS (Continued)**

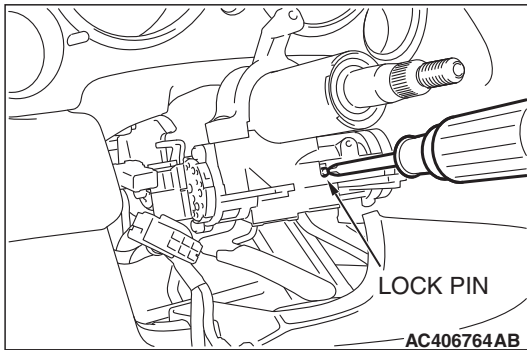
- 3. CLOCK SPRING AND COLUMN SWITCH ASSEMBLY (REFER TO GROUP 52B, AIR BAG MODULE(S) AND CLOCK SPRING **P.52B-423**.)
- 4. KEY RING ANTENNA
- 5. KEY REMINDER SWITCH
- 6. STEERING LOCK CYLINDER
- 7. IGNITION SWITCH



## REMOVAL SERVICE POINTS

## &lt;&lt;A&gt;&gt; STEERING LOCK CYLINDER REMOVAL

1. Insert the key in the steering lock cylinder and turn it to the "ACC" position.
2. Using a small Phillips head screwdriver, pull the steering lock cylinder toward you.

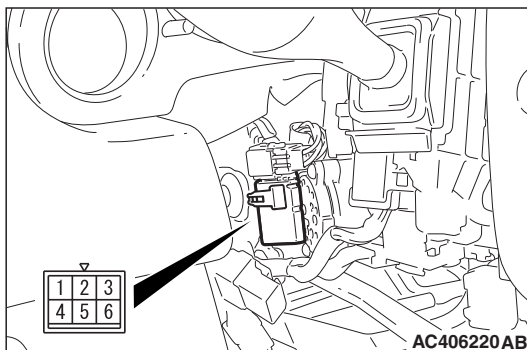


## INSPECTION

M1543019504986

## IGNITION SWITCH CONTINUITY CHECK

Disconnect ignition switch connector C-308 without removing the ignition switch and steering lock cylinder. Then check the continuity.

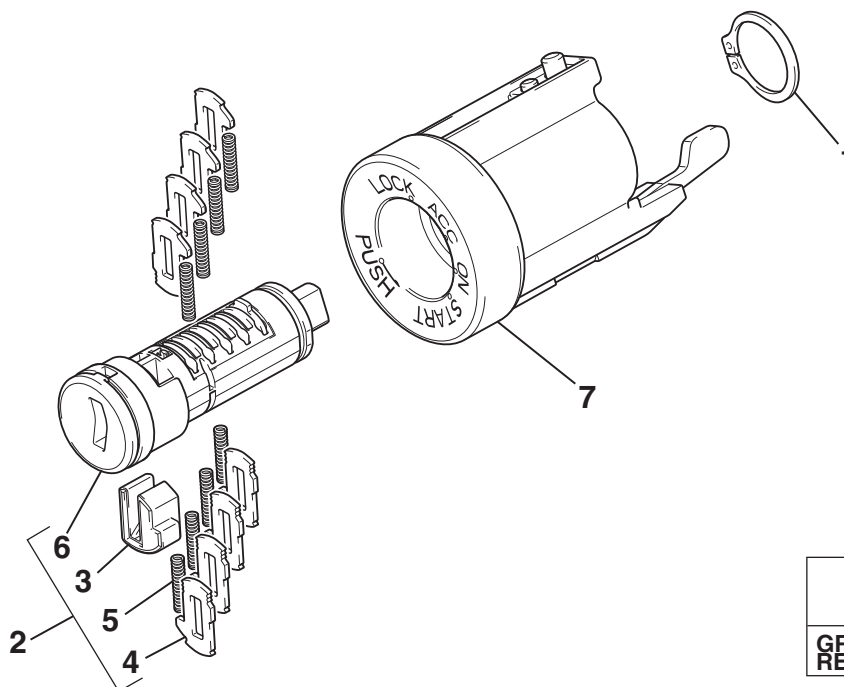


SWITCH POSITION	CONNECT TESTER BETWEEN:	SPECIFIED CONDITION
"LOCK" (OFF)	1-2, 1-4, 1-5, 1-6	Open circuit
"ACC"	1-6	Continuity exists (2 ohms or less)
"ON"	1-2, 1-4, 1-6	Continuity exists (2 ohms or less)
"START"	1-2, 1-5	Continuity exists (2 ohms or less)



## HANDLE LOCK CYLINDER DISASSEMBLY AND ASSEMBLY

M1541200800026



AC602566AB

**DISASSEMBLE STEPS**

1. RETAINER
- >>B<< 2. CYLINDER SUB-ASSEMBLY
3. ACTUATOR
- >>A<< 4. TUMBLER

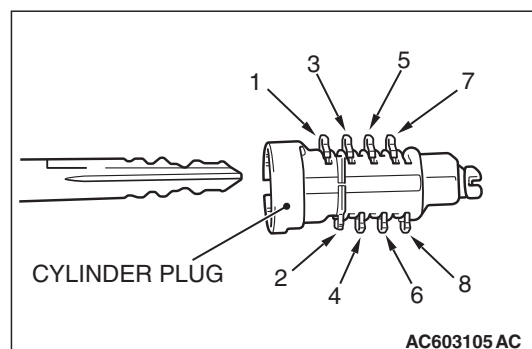
**DISASSEMBLE STEPS**

5. TUMBLER SPRING
6. CYLINDER PLUG
7. CASE SUB-ASSEMBLY

**ASSEMBLY SERVICE POINT****>>A<< TUMBLER ASSEMBLY**

<How to select the tumbler when the tumbler layout information can be obtained by the key code>

1. From the key code select the proper tumbler combinations required to make a functional lock, reference key biting and tumbler placement chart (refer to table 1).
2. Tumblers load from both sides of the cylinder.
3. Locate the tumbler chamber that is closest to the head of the cylinder plug. That is tumbler ward number of the key code. Tumbler ward number 3, 5 and 7 are also located on that side of the cylinder plug (odd on one side even on other).
4. Place one tumbler spring in each of the four spring pockets.



AC603105 AC



5. Using the appropriate tumbler number (tumbler number is stamped on tumbler and matches cut depth) place a tumbler in each chamber and depress tumbler tilting slightly towards the spring. The tumbler should drop freely in place and be retained. After all tumblers are inserted into the cylinder plug insert the key to make sure the tumblers drop flush with the cylinder plug body. If one does not remove and replace with the correct tumbler that matches the cut of the key.
6. Turn the cylinder plug over and repeat the same process for chambers 2, 4, 6, and 8. Insert the key and make sure all the tumblers drop flush with the diameter of the cylinder.

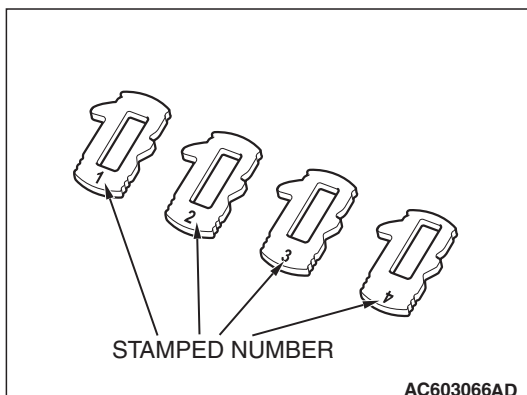
**Table 1: Key code to tumbler placement**

	HEAD OF KEY/CYLINDER								TIP OF KEY
Notch location	1	2	3	4	5	6	7	8	
All Ignitions	X	X	X	X	X	X	X	X	All spaces
Door	X	X	X	X	X	X	X	X	All spaces
Deck	X	X	X	X	X	X	X	X	All spaces
Trunk Release				X	X	X	X	X	5 spaces
I/P					X	X	X	X	Last 4 spaces

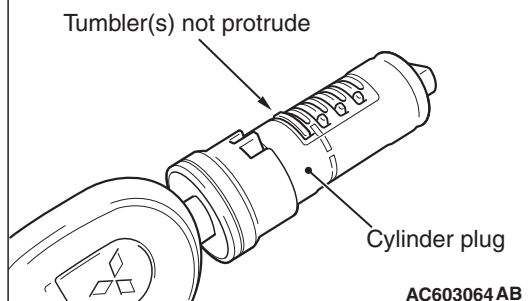
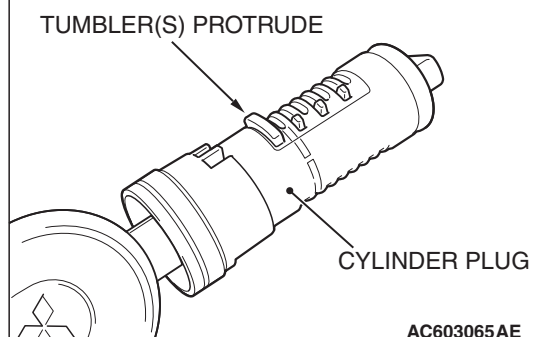
**NOTE:** The mark X in the table indicates the stamped number (from 1 to 4) on the tumbler.

**<How to select the tumbler when the tumbler layout information cannot be obtained by the key code>**

1. The repair kit contains 20 tumblers (five tumblers for each No. 1 to 4.)
2. Insert the tumbler spring into the cylinder plug spring pocket.
3. Set the tumbler No. 1 onto the cylinder plug tumbler chamber, and insert the key. Then, check that the tumbler is not protruding from the cylinder plug.



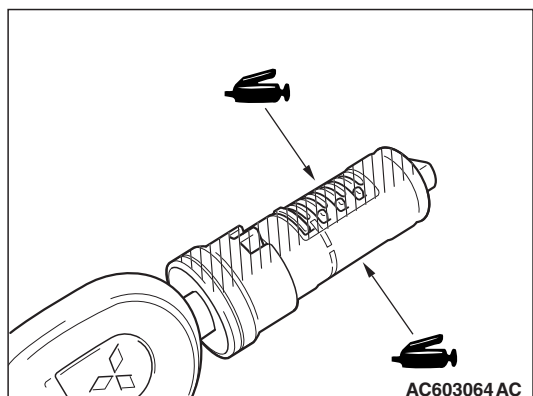


**Correct****INCORRECT**

4. When the tumbler is not protruding, the correct tumbler is selected. Otherwise, the wrong tumbler is selected. If the wrong tumbler has been selected, remove the tumbler No. 1, and set the tumbler in the order from No. 2 to 4. Then, check the key insertion state and select the tumbler which does not protrude from the cylinder plug.
5. Repeat the steps previously mentioned, and set the correct tumbler into all tumbler chambers. Insert the key at last, and check that all the tumblers are clearly arranged, not protruding from the cylinder plug.

**>>B<< CYLINDER SUB-ASSEMBLY ASSEMBLY**

Apply the supplied grease to body surfaces of the cylinder opposite of the tumblers, in the keyway of the cylinder plug head and actuator pocket, and the inside diameter of the case.





## IMMOBILIZER SYSTEM

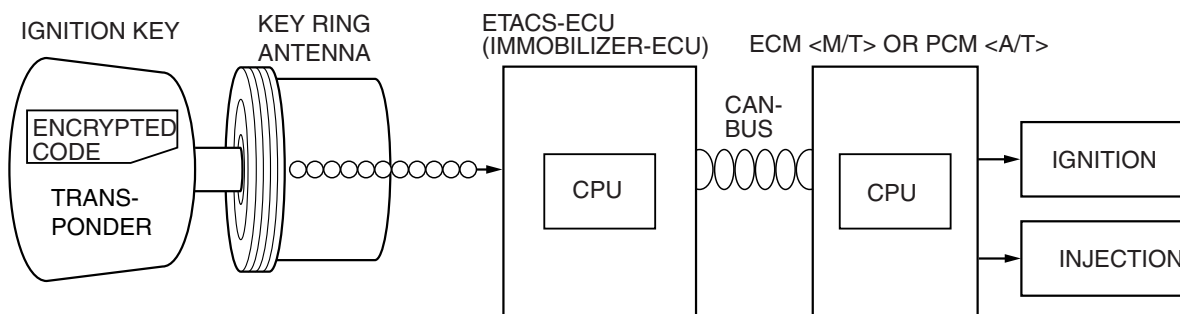
### GENERAL DESCRIPTION

M1543000100643

The engine immobilizer system prevents the engine from starting and immobilizes the vehicle if a key other than the key registered for that vehicle is used in an attempt to start the engine after forced entry. The engine immobilizer system consists of the ignition key, the key ring antenna, the ETACS-ECU (immobilizer-ECU), and the engine control module (ECM) <M/T> or powertrain control module (PCM) <A/T>. It has these functions:

The system is designed to be maintenance-free because the power source for the transponder is supplied by the ETACS-ECU (immobilizer-ECU) via the key ring antenna. Two ignition keys are provided, and up to eight keys can be registered to one vehicle (one receiver) as needed. There are 4 billion combinations for the encrypted code. In addition, one part of the code is changed each time the key is switched on, which improves security by preventing theft using a copied encrypted code.

### CONSTRUCTION DIAGRAM

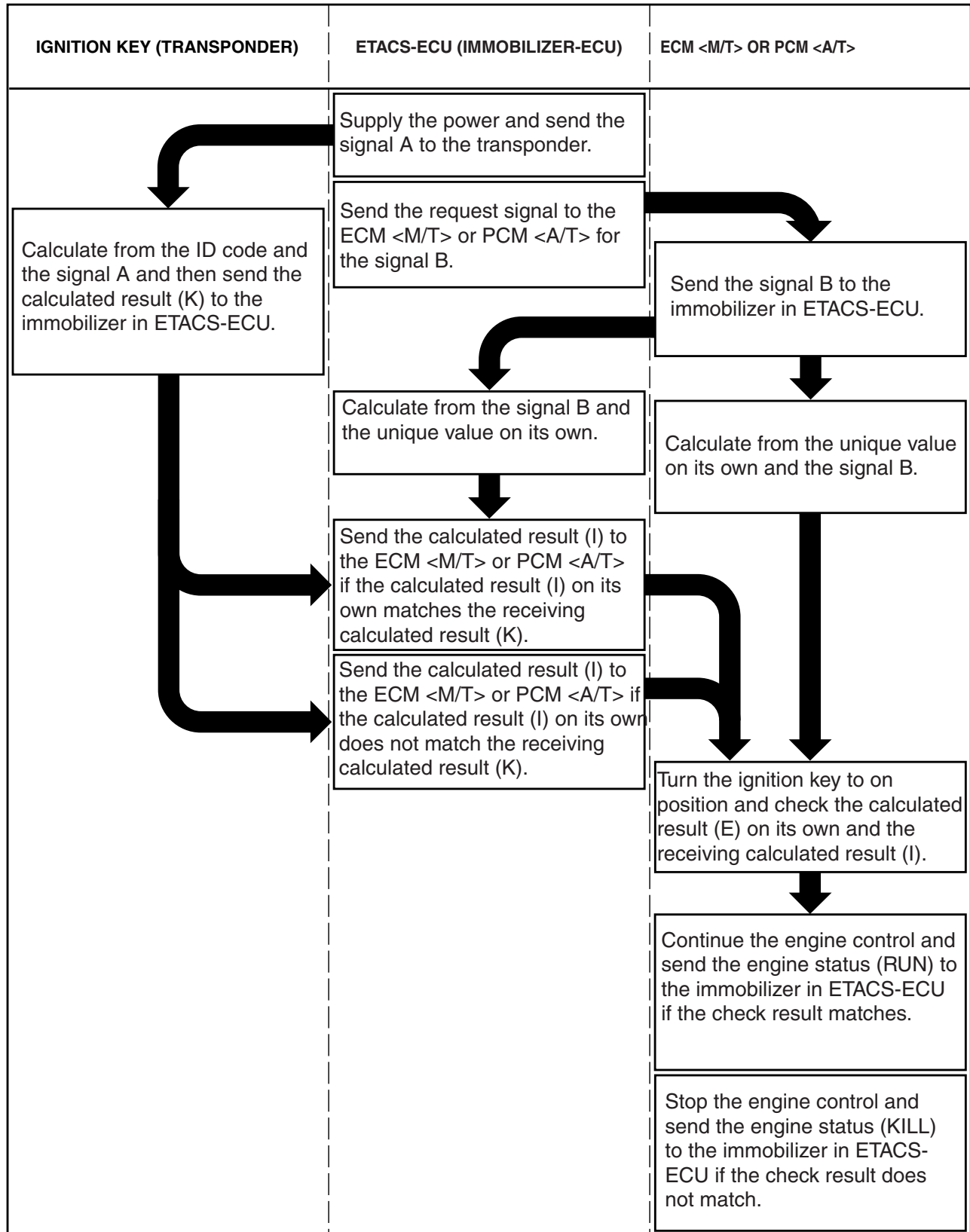


AC406526AB



**OPERATION**

With the ignition switch "ON" position, the immobilizer system operates as follows.



AC406584AB



## ENCRYPTED CODE REGISTRATION CRITERIA TABLE

M1543026000293

**⚠ CAUTION**

Do not replace the engine-ECU <M/T> or the engine-A/T-ECU <A/T> and the ETACS-ECU simultaneously. Always replace either one of the ECUs first, and register the encrypted code.

Then, replace the other ECU.

The ignition key contains a transponder (small transmitter), which retains an unique encrypted code.

When replacing the parts of the immobilizer system, always register the encrypted code or VIN, or both of them according to the list below. The ETACS-ECU can retain a maximum of eight different encrypted codes. This means that a maximum of eight ignition keys can be registered.

ITEM	OPERATION	Reference page
When the ECM <M/T> or PCM <A/T> is replaced	Record the VIN.	Refer to GROUP 00, Precautions Before Service <a href="#">P.00-24</a> .
When the ETACS-ECU is replaced	After recording the VIN, register all the ignition keys again.	Recording of the VIN: Refer to GROUP 00, Precautions Before Service <a href="#">P.00-24</a> . Reregistration of the ignition key: Refer to <a href="#">P.54A-46</a> .
When the ignition key ring antenna is replaced	Registration not needed	–
When the ignition key is added	Register all the ignition keys again.	Refer to <a href="#">P.54A-46</a> .
When the ignition key is lost	Register all the ignition keys except the lost ignition key again.	
When the ignition key set or the ignition key cylinder is replaced (When all the ignition keys are changed)	Register all the ignition keys according to the tag on the ignition key set.	

**NOTE:** The engine does not start until the matching has been completed.

## IMMOBILIZER SYSTEM DIAGNOSIS

## INTRODUCTION TO IMMOBILIZER SYSTEM DIAGNOSIS

M1543009901649

**⚠ CAUTION**

The encrypted code should always be re-registered when replacing the ETACS-ECU (immobilizer-ECU).

The immobilizer system consists of the ETACS-ECU (immobilizer-ECU), ECM <M/T> or PCM <A/T>, ignition key and ignition key ring antenna. If the engine cannot be started by using a registered ignition key, one of these components may be defective. If the

immobilizer system has immobilized the engine, MFI system DTC P0513 will be set. In this case, follow the immobilizer system troubleshooting.



## IMMOBILIZER SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1543006900885

Use the following steps to plan your diagnostic strategy.

1. Gather information about the problem from the customer.
2. Verify that the condition as described by the customer exists.
3. Check the vehicle for any immobilizer system DTCs.
4. If you cannot verify the condition and there are no immobilizer system DTCs, the malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).
5. If you can verify the condition but there are no immobilizer system DTCs, or the system cannot communicate with scan tool MB991958, refer to the Symptom Chart and find the fault [P.54A-30](#).
6. If there is an immobilizer system DTC, record the DTC, then erase it from the memory using scan tool MB991958.
7. Recreate the immobilizer system DTC set conditions to see if the same immobilizer system DTC will reset.
  - (1) If the same immobilizer system DTC resets, perform the appropriate diagnostic procedure. Refer to Diagnostic Trouble Code Chart [P.54A-22](#).
  - (2) If the same immobilizer system DTC does not reset, the malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

## DIAGNOSIS FUNCTION

M1543007000830

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

## Required Special Tools:

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

**⚠ CAUTION**

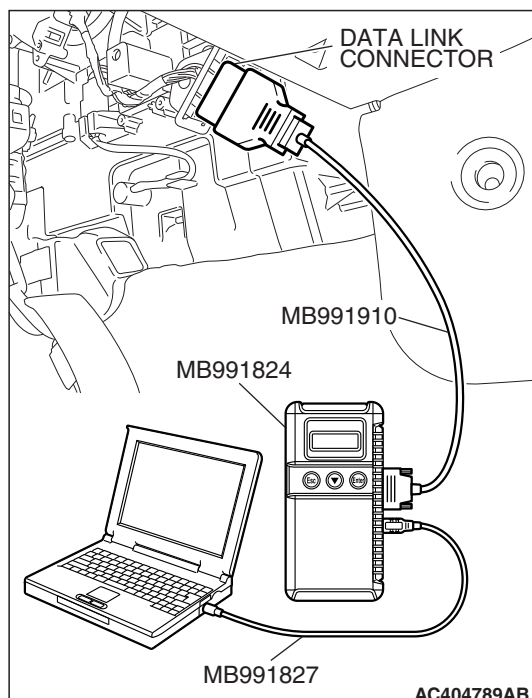
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

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

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

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





## HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

### Required Special Tools:

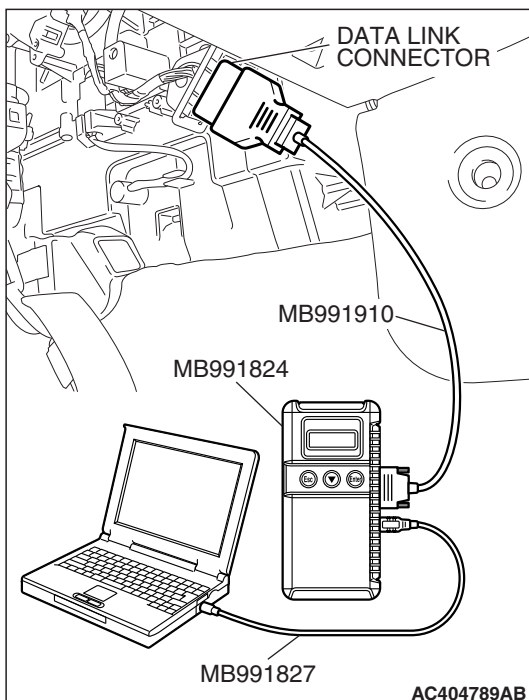
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

### CAUTION

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

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

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "IMMOBILIZER" from the "POWER TRAIN" tab.
6. Select "Self-diagnosis."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.



## HOW TO READ DATA LIST

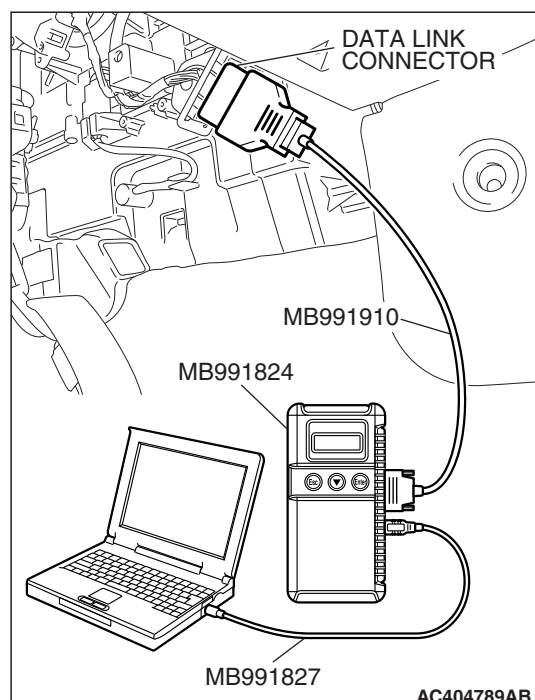
### Required Special Tools:

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

### CAUTION

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





1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "IMMOBILIZER" from the "POWER TRAIN" tab.
6. Select "Data List."
7. Choose an appropriate item and select the "OK" button.

## DIAGNOSTIC TROUBLE CODE CHART

M1543007100804

### **CAUTION**

During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are sets, erase them all.

Use the following chart to develop proper diagnostic strategy.

DTC NO.	DESCRIPTION	REFERENCE PAGE
B1702*	Reception error of transponder data.	<a href="#">P.54A-23</a>
B1703*	Transponder data inconsistent.	<a href="#">P.54A-26</a>
B1731	Immobilizer communication failure.	<a href="#">P.54A-27</a>
B1761	VIN not recorded.	<a href="#">P.54A-29</a>

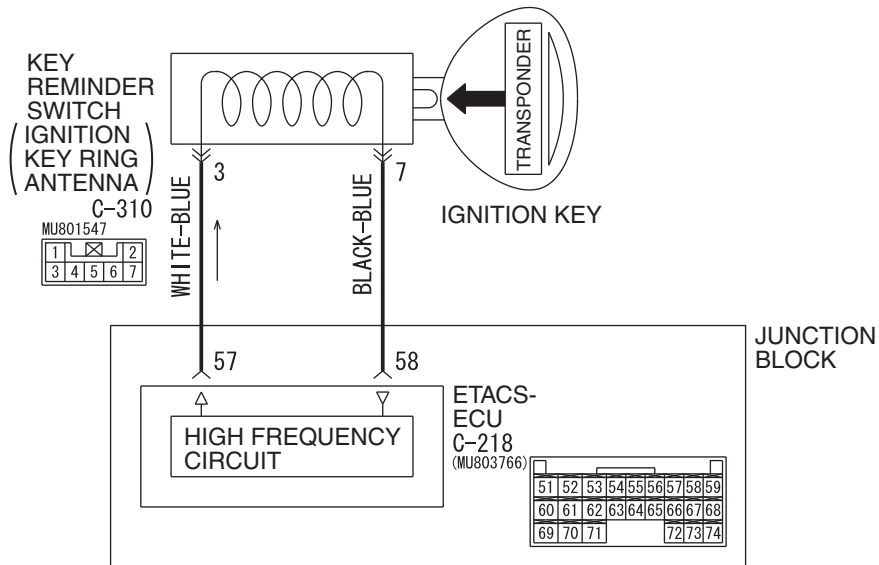
NOTE: \*: The DTC for a past problem is not sent.



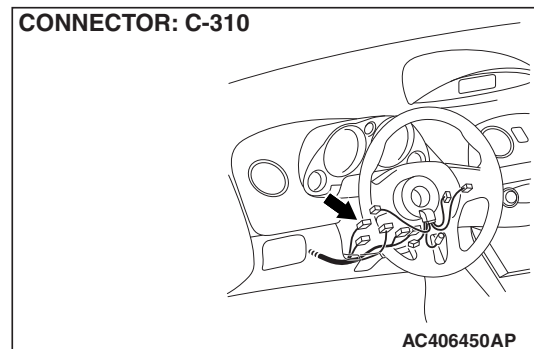
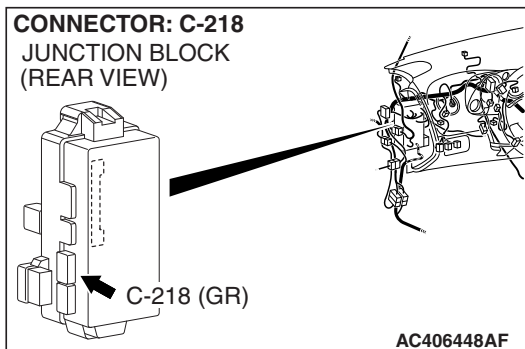
## DIAGNOSTIC TROUBLE CODE PROCEDURES

## DTC B1702: Reception Error of Transponder Data.

Ignition Key Ring Antenna and Immobilizer-ECU Circuit



W6P54M105A



## CIRCUIT OPERATION

The ignition key is powered by the ignition key ring antenna. The ignition key then sends an encrypted code. The key reminder switch (ignition key ring antenna) receives the encrypted code, and determines if the ignition key is registered.

## DTC SET CONDITION

- DTC B1702 may be set if other ignition keys or things that interfere communication (such as magnets and equipment that generates radio waves) are in the vicinity of the ignition switch as it is being started.

- The transponder encrypted code is not sent to the ETACS-ECU immediately after the ignition switch is turned to "ON" position.

**NOTE:** DTC B1702 is always output together with MFI system DTC P0513.

## TROUBLESHOOTING HINTS

- Radio interference of the encrypted code
- Malfunction of the transponder
- Malfunction of the ETACS-ECU



**DIAGNOSIS****Required Special Tools:**

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

**STEP 1. Check for presence of other key or things that interferes communication (such as magnets and equipment that generates radio waves) near the key in the ignition.**

**Q: Is there any other key near the key in the ignition?**

**YES :** Move the other key or things that interferes communication (such as magnets and equipment that generates radio waves) well away from key being used. Retest the system.

**NO :** Go to Step 2.

**STEP 2. Check that the engine start using the spare ignition key which encrypted code has been registered.**

**Q: Does the engine start using the spare ignition key for which the encrypted code has been registered?**

**YES :** Replace the ignition key and then register the encrypted code (Refer to [P.54A-46](#)). Retest the system.

**NO :** Go to Step 3.

**STEP 3. Recheck for diagnostic trouble code.**

**⚠ CAUTION**

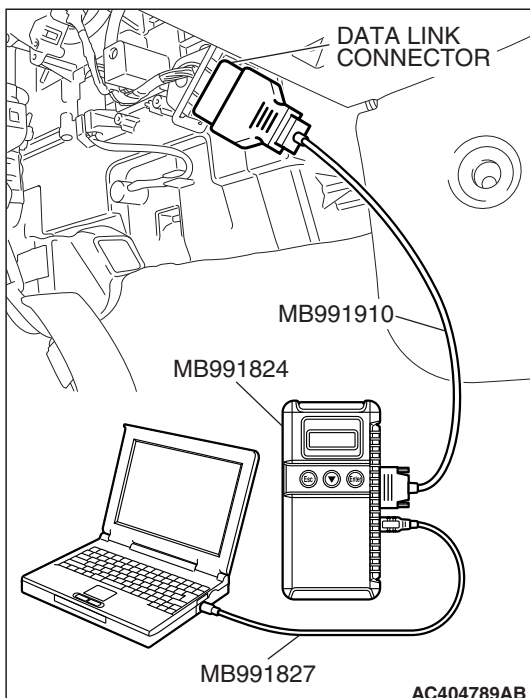
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Use scan tool MB991958 to check immobilizer system diagnostic trouble codes.
- (4) Turn the ignition switch to "LOCK"(OFF) position.
- (5) Disconnect scan tool MB991958.

**Q: Which DTC is set, DTC B1702 or B1703?**

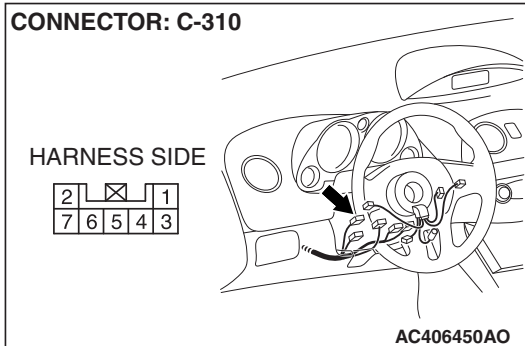
**DTC B1703 is set :** Refer to DTC B1703 [P.54A-26](#).

**DTC B1702 is set :** Go to Step 4.





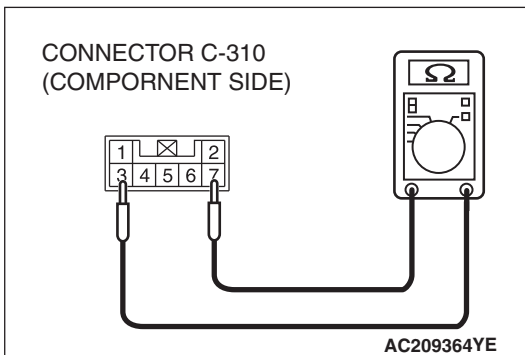
CONNECTOR: C-310



**STEP 4. Check the key reminder switch (ignition key ring antenna).**

Check the key ring antenna continuity.

- (1) Disconnect key reminder switch (ignition key ring antenna) connector C-310, and check at the component side.



- (2) Measure the resistance value between terminal number 3 and terminal number 7.

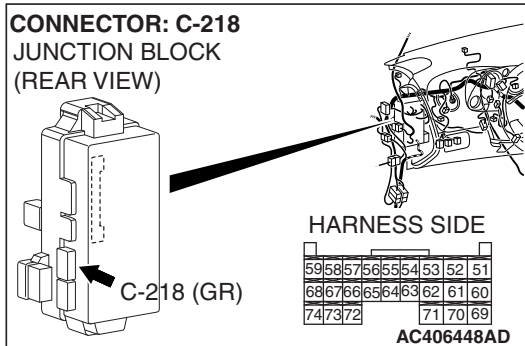
**OK: Continuity exists (2 Ω or less)**

**Q: Is the check key reminder switch (ignition key ring antenna) in good condition?**

**YES :** Go to Step 5.

**NO :** Replace the key reminder switch (ignition key ring antenna). Retest the system.

CONNECTOR: C-218  
JUNCTION BLOCK  
(REAR VIEW)



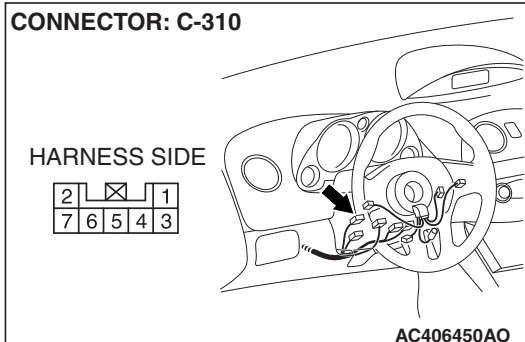
**STEP 5. Check ETACS-ECU connector C-218 and key reminder switch (ignition key ring antenna) connector C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are ETACS-ECU connector C-218 and key reminder switch (ignition key ring antenna) connector C-310 in good condition?**

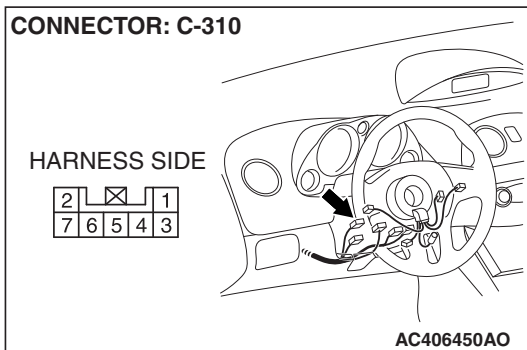
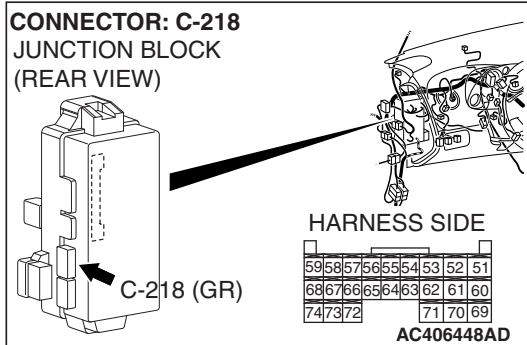
**YES :** Go to Step 6.

**NO :** Repair or replace the damage component(s). Confirm that scan tool MB991958 communicates normally.

CONNECTOR: C-310







**STEP 6.** Check the wiring harness between ETACS-ECU connector C-218 (terminal 57 and 58) and key reminder switch (ignition key ring antenna) connector C-310 (terminal 3 and 7).

**Q:** Are the wiring harness between ETACS-ECU connector C-218 (terminal 57 and 58) and key reminder switch (ignition key ring antenna) connector C-310 (terminal 3 and 7) in good condition?

**YES :** Replace the ETACS-ECU and then register the encrypted code (Refer to P.54A-46). Retest the system.

**NO :** Repair or replace the damaged component(s). Confirm that scan tool MB991958 communicates normally.

## DTC B1703: Transponder Data Inconsistent

### DTC SET CONDITION

The encrypted code sent by the transponder is not the same encrypted code which is registered in the ETACS-ECU.

**NOTE:** DTC B1703 is always set together with MFI system DTC P0513.

### TROUBLESHOOTING HINTS

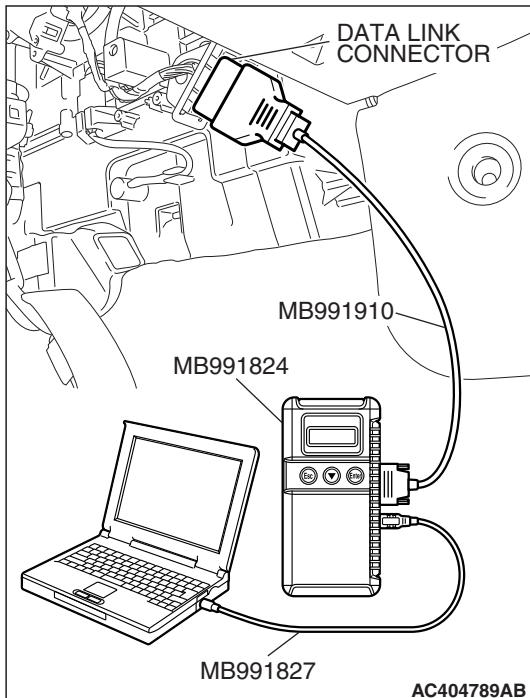
- The encrypted code in the ignition key has not been properly registered
- Malfunction of ETACS-ECU

### DIAGNOSIS

#### Required Special Tools:

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



**Recheck for diagnostic trouble code.**

Register all the ignition key encrypted code again, and recheck for diagnostic trouble code.

- (1) Turn the ignition switch to "ON" position.
- (2) Register all the ignition keys again (Refer to [P.54A-46](#)).
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Turn the ignition switch to "ON" position.
- (5) Erase the diagnostic trouble code.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.
- (7) Turn the ignition switch to "ON" position.
- (8) Check if the diagnostic trouble code is set.
- (9) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the diagnostic trouble code set?**

**YES :** Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-19](#)). Retest the system.

**NO :** The procedure is complete.

**DTC B1731: Immobilizer Communication Failure****DTC SET CONDITION**

If the ETACS-ECU cannot receive the signal from the ECM <M/T> or PCM <A/T>, DTC B1731 will be set.

**TECHNICAL DESCRIPTION (COMMENT)**

If a data error is detected in the ECM <M/T> or the PCM <A/T>, diagnosis code No. B1731 will be set.

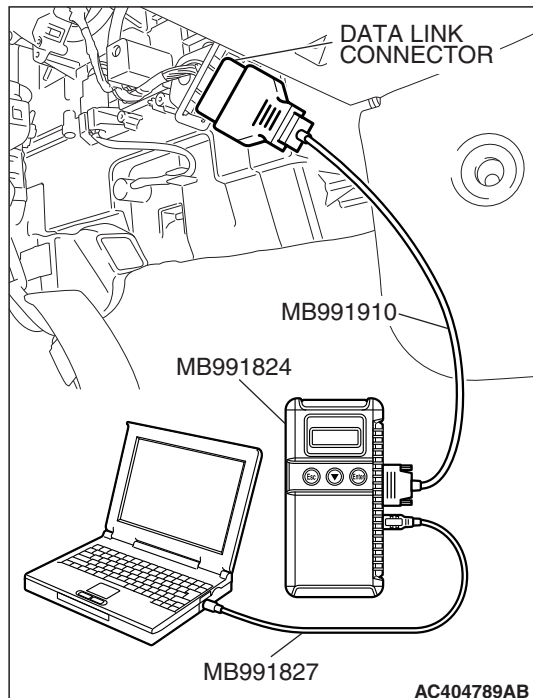
**TROUBLESHOOTING HINTS**

- Damaged wiring harness or connector.
- Malfunction of the ECM <M/T> or the PCM <A/T>
- Malfunction of the ETACS-ECU.

**DIAGNOSIS****Required Special Tools:**

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





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

**⚠ CAUTION**

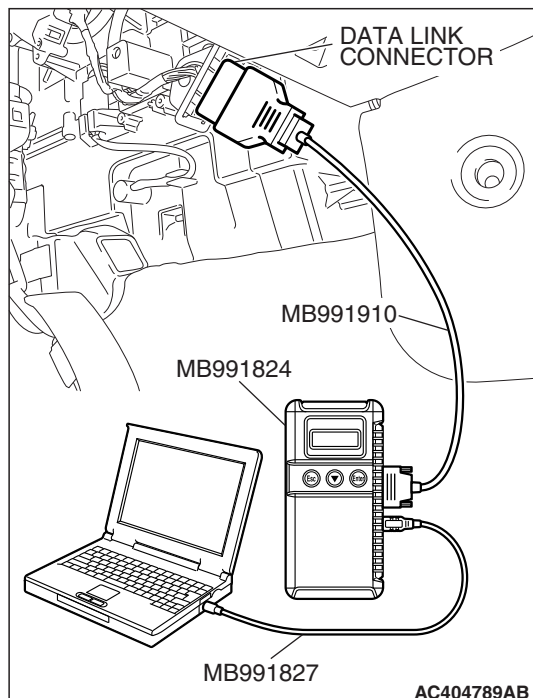
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (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 lines (Refer to GROUP 54C, precautions on how to repair the can bus lines [P.54C-9](#)).



**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the diagnostic trouble code is set.

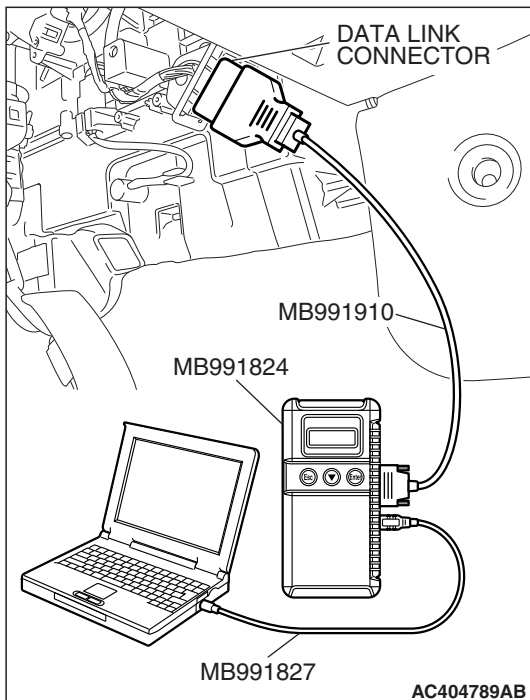
- (1) Turn the ignition switch to "ON" position.
- (2) Erase the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Turn the ignition switch to "ON" position.
- (5) Check if the diagnostic trouble code is set.
- (6) Turn the ignition switch to the "LOCK" (OFF)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

**Q: Is the diagnostic code set?**

**YES :** Replace the ECM <M/T> or the PCM <A/T>, and then record the VIN (Refer to [P.54A-19](#)). Then go to Step 3.

**NO :** The procedure is complete.



**STEP 3. Recheck for diagnostic trouble code.**

Recheck if the diagnostic trouble code is set.

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

**Q: Is the diagnostic code set?**

**YES :** Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-19](#)). Retest the system.

**NO :** The procedure is complete.

**DTC B1761: VIN Not Registered****TECHNICAL DESCRIPTION (COMMENT)**

If the VIN data are not written when the ETACS-ECU is replaced, the ETACS-ECU sets diagnosis code No.B1761.

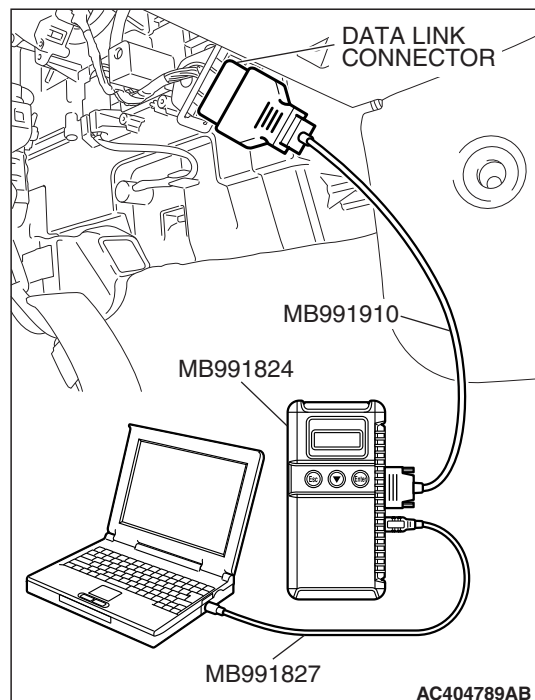
**TROUBLESHOOTING HINTS**

- Malfunction of the ETACS-ECU

**DIAGNOSIS****Required Special Tools:**

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





Recheck for diagnostic trouble code.

**⚠ CAUTION**

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

- (1) Use the scan tool MB991958 to write the VIN data. Refer to GROUP 00 – Precautions Before Service [P.00-24](#).
- (2) Turn the ignition switch from "LOCK" (OFF) position to "ON" position.
- (3) On completion, check that the diagnostic trouble code is not reset.

**Q: Is the diagnostic trouble code set?**

**YES** : Replace the ETACS-ECU and then register the encrypted code (Refer to [P.54A-46](#)).

**NO** : The procedure is complete.

## SYMPTOM CHART

M1543007201718

**⚠ CAUTION**

During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are set, erase them all.

SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
Communication with scan tool MB991958 is impossible.	–	Refer to GROUP 54B, Symptom procedures <a href="#">P.54B-82</a> .
The ignition key cannot be registered.	1	<a href="#">P.54A-31</a>
Engine cranks, but does not start.	2	<a href="#">P.54A-32</a>
The immobilizer indicator light does not illuminate.	3	<a href="#">P.54A-36</a>



## SYMPTOM PROCEDURES

## INSPECTION PROCEDURE 1: The Ignition Key cannot be Registered.

## TECHNICAL DESCRIPTION (COMMENT)

The ignition key transponder or the ETACS-ECU is suspected to be defective.

## TROUBLESHOOTING HINTS

- Malfunction of the ignition key
- Malfunction of ETACS-ECU

## Required Special Tools:

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

## STEP 1. Check the diagnostic trouble code.

Use scan tool MB991958 to check if DTC B1702 or B1703 is set.

**CAUTION**

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

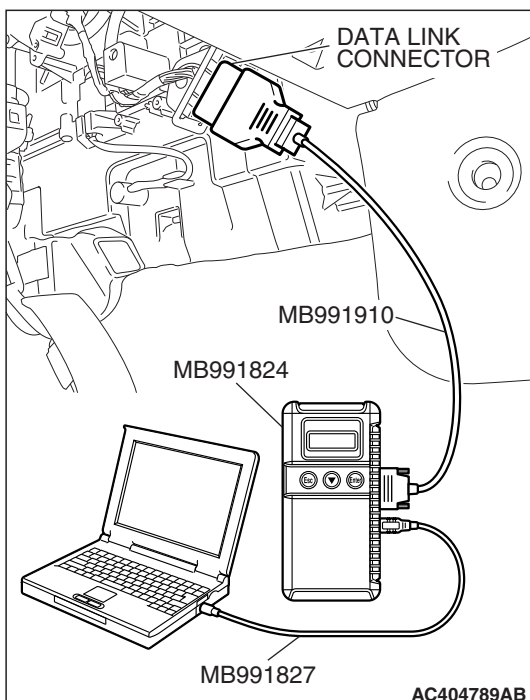
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the immobilizer system diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

## Q: Does DTC B1702 or B1703 resets?

**DTC B1702 is set.** : Refer to DTC B1702 [P.54A-23](#).

**DTC B1703 is set.** : Refer to DTC B1703 [P.54A-26](#).

**No DTC is set.** : Replace the ignition key that cannot be registered. Then go to Step 2.



## STEP 2. Retest the system.

Register the ignition key.

## Q: Does registered ignition key function properly?

**YES** : The procedure is complete.

**NO** : Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-19](#)). Retest the system.



**INSPECTION PROCEDURE 2: Engine Cranks, but does not Start.****TECHNICAL DESCRIPTION**

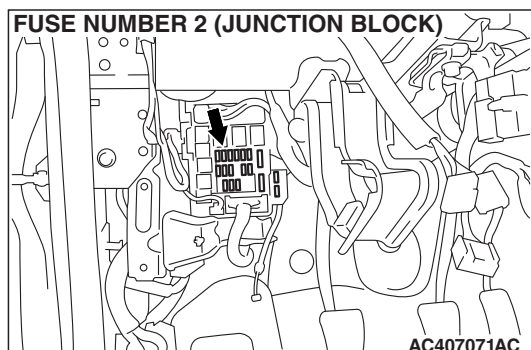
If the engine cranks, but does not start, an MFI system problem may exist in addition to a malfunctioning immobilizer system. The engine will not start if the ignition key has not been properly registered.

**TROUBLESHOOTING HINTS**

- Malfunction of MFI system
- Malfunction of ETACS-ECU
- Malfunction of fuse number 2 (junction block)
- VIN is not recorded.
- Encrypted code is not registered.

**DIAGNOSIS****Required Special Tools:**

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

**STEP 1. Check the fuse number 2 (junction block).**

Check that fuse number 2 (junction block) is in good condition.

**Q: Is fuse number 2 (junction block) in good condition?**

**YES :** Go to Step 2.

**NO :** Repair the fuse number 2 (junction block).

**STEP 2. Check the ECM <M/T> or the PCM <A/T>.**

Check the replacing the ECM <M/T> or the PCM <A/T>.

**Q: Was the ECM <M/T> or the PCM <A/T> replaced?**

**YES :** Go to Step 5.

**NO :** Go to Step 3.

**STEP 3. Check the ETACS-ECU.**

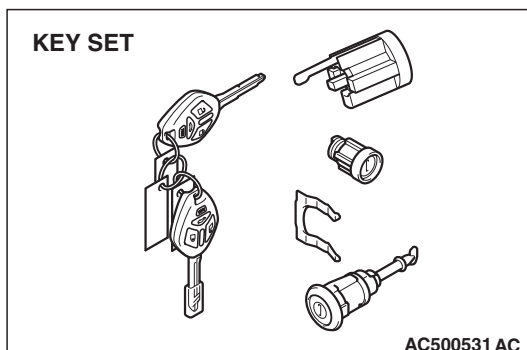
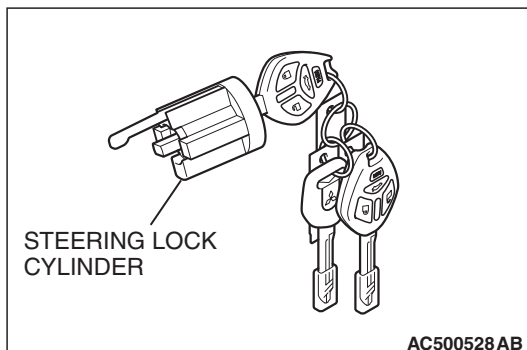
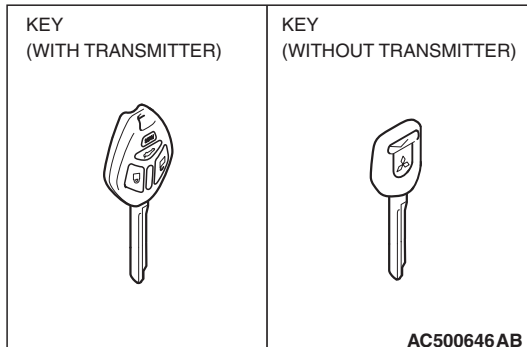
Check the replacing the ETACS-ECU.

**Q: Was the ETACS-ECU replaced?**

**YES :** Go to Step 6.

**NO :** Go to Step 4.



**STEP 4. Check the ignition key.**

Check if the ignition key is replaced.

*NOTE: When adding the ignition key separately, or replacing the steering lock cylinder or key set as shown, replace the ignition key for starting engine to register the encrypted code.*

**Q: Was the ignition key replaced?**

**YES** : Go to Step 7.

**NO** : Go to Step 8.

**STEP 5. Check the VIN.****Q: Is the VIN recorded?**

**YES** : Go to Step 8.

**NO** : Record the VIN (Refer to [P.54A-19](#)).

**STEP 6. Check the VIN.****Q: Is the VIN recorded?**

**YES** : Go to Step 7.

**NO** : Record the VIN (Refer to [P.54A-19](#)). Then go to Step 7.

**STEP 7. Check the encrypted code.****Q: Is the encrypted code reregistered?**

**YES** : Go to Step 8.

**NO** : Register the encrypted code again (Refer to [P.54A-19](#)).



**STEP 8. Check the battery voltage.**

Measure the battery voltage during cranking.

**Q: Is the voltage 8 volts or more?**

**YES** : Go to Step 9.

**NO** : Check the condition of the battery. Refer to [P.54A-6](#).

**STEP 9. Using scan tool MB991958, read the diagnostic trouble code.****⚠ CAUTION**

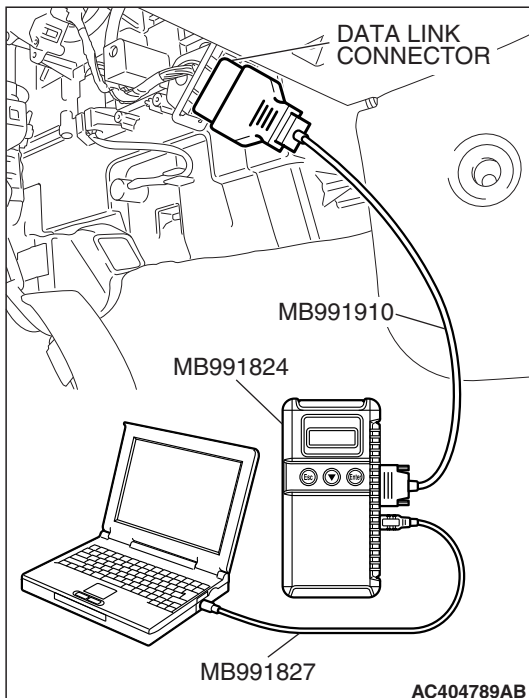
To prevent damage to scan tool MB991958, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Have any DTCs set?**

**Yes** : Refer to Diagnostic trouble code chart [P.54A-22](#).

**No** : Go to Step 10.

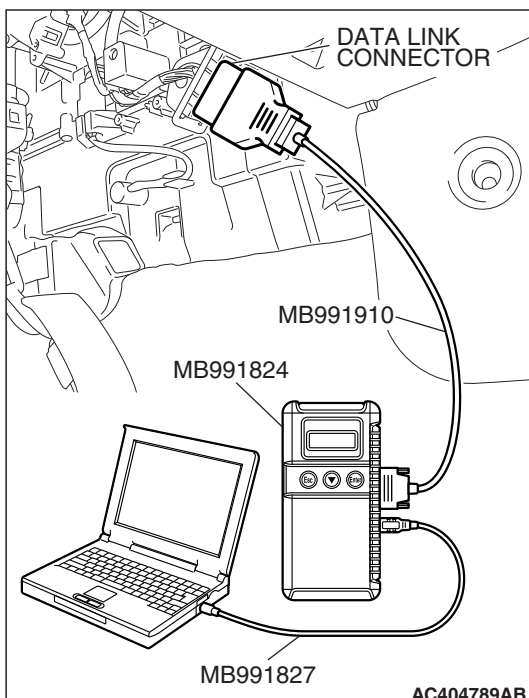
**STEP 10. Using scan tool MB991958, read the MFI system diagnostic trouble code.**

- (1) Turn the ignition switch "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

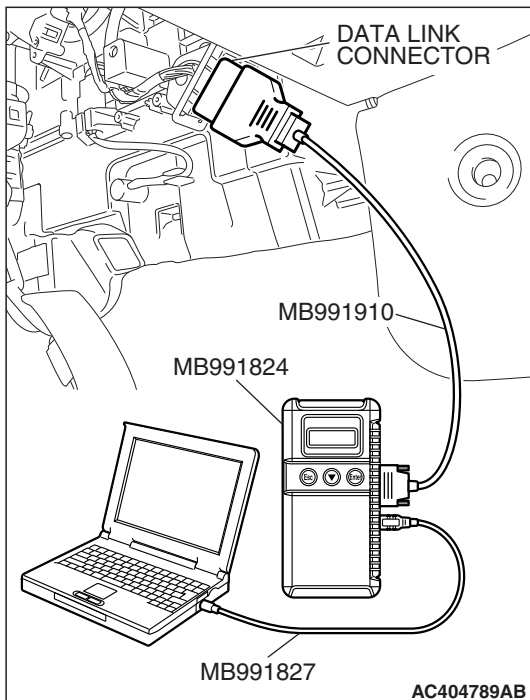
**Q: Have any MFI system DTCs set?**

**Yes** : Refer to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-834](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-869](#) <3.8L ENGINE>.

**No** : Go to Step 11.





**STEP 11. Using scan tool MB991958, other system check data list.**

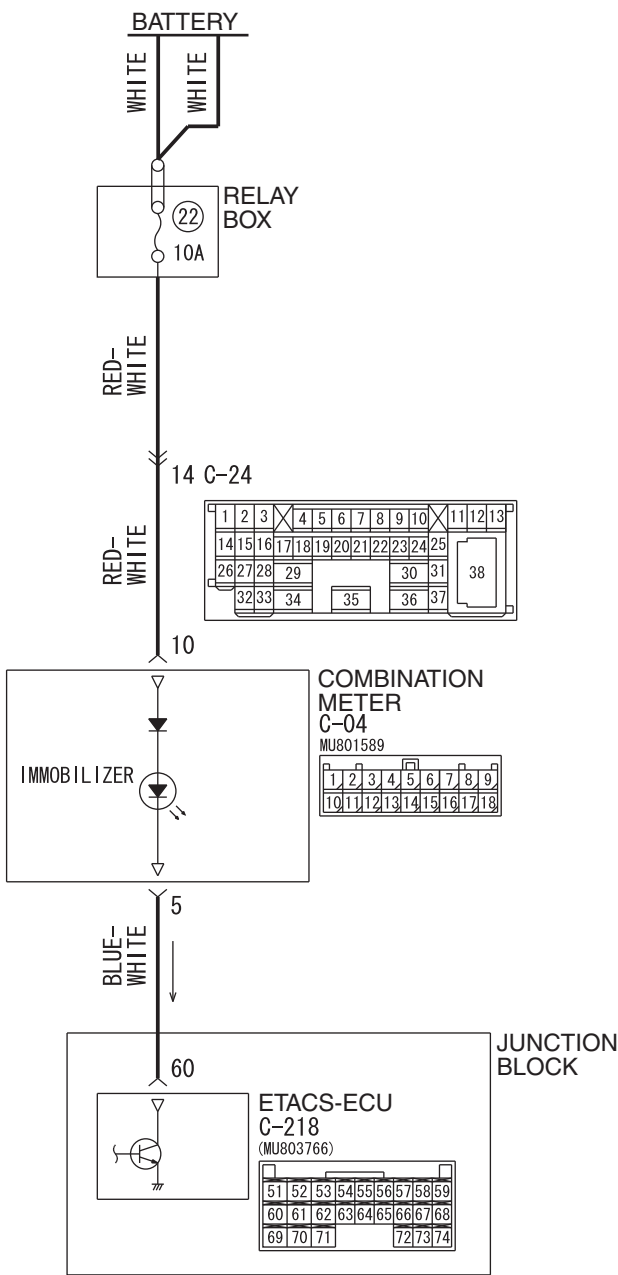
- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13A-1179](#) <2.4L ENGINE> or GROUP 13B, Data List Reference Table [P.13B-1227](#) <3.8L ENGINE>.
  - Item 18: Cranking signal (ignition switch-ST).
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the cranking signal (ignition switch-ST) "ON" position?****YES :** Go to Step 12.**NO :** Refer to GROUP 13A, MFI Diagnosis – Symptom Chart [P.13A-46](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis – Symptom Chart [P.13B-49](#) <3.8L ENGINE>.**STEP 12. Reregistration of the ignition key**Register the encrypted code again (Refer to [P.54A-19](#)).**Q: Does the engine start?****YES :** The procedure is complete.**NO :** Go to Step 13.**STEP 13. Replace the ECM <M/T> or PCM <A/T>.**Replace the ECM <M/T> or PCM <A/T>, and then record the VIN (Refer to [P.54A-19](#)).**Q: Does the engine start?****YES :** The procedure is complete.**NO :** Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-19](#)).



INSPECTION PROCEDURE 3: The Immobilizer Indicator Light does not illuminate.

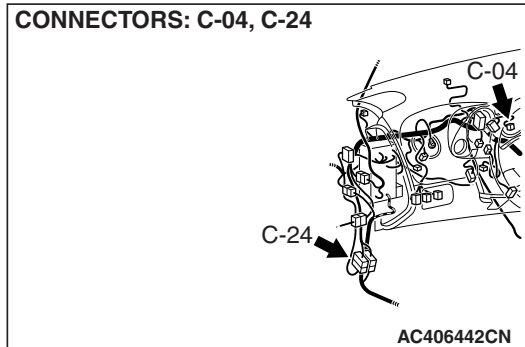
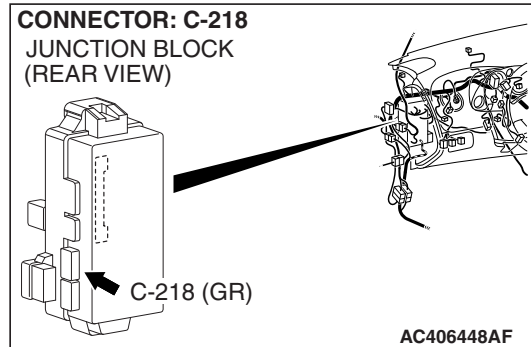
Immobilizer Indicator Light Circuit



W6P54M100A



CONNECTORS: C-04, C-24

CONNECTOR: C-218  
JUNCTION BLOCK  
(REAR VIEW)**CIRCUIT OPERATION**

The immobilizer indicator starts flashing in approximately 10 seconds after the additional key registration mode is entered. It illuminates for 3 seconds after the additional key registration of the unregistered key is completed or after the registration completion judgment of the registered key. In addition, when a read error is detected, the immobilizer indicator stops flashing after read error judgment.

**TECHNICAL DESCRIPTION (COMMENT)**

The immobilizer indicator light or a malfunction of the combination meter or ETACS-ECU.

**TROUBLESHOOTING HINTS**

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

**DIAGNOSIS****Required Special Tool:**

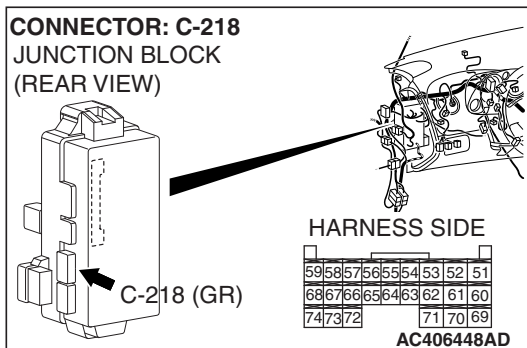
- MB991223: Harness Set

**STEP 1. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector**

**Q: Is ETACS-ECU connector C-218 in good condition?**

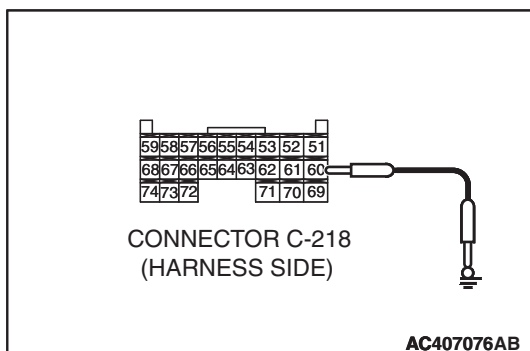
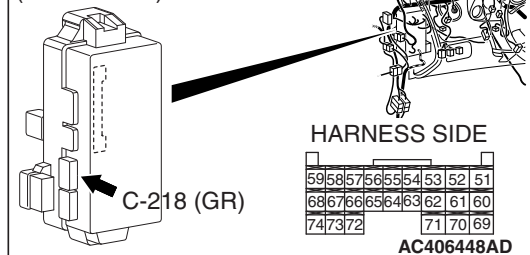
**YES :** Go to Step 2.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Confirm that scan tool MB991958 communicates normally.

CONNECTOR: C-218  
JUNCTION BLOCK  
(REAR VIEW)



**CONNECTOR: C-218**  
JUNCTION BLOCK  
(REAR VIEW)



**STEP 2. Check the immobilizer indicator light circuit of ETACS-ECU connector C-218.**

- (1) Disconnect the ETACS-ECU connector C-218 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Connect terminal 60 to the ground.

**Q: Does only the immobilizer indicator light illuminate? (other indicator lights are in good condition)**

**YES :** Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-19](#)). Retest the system.

**NO :** Go to Step 3.

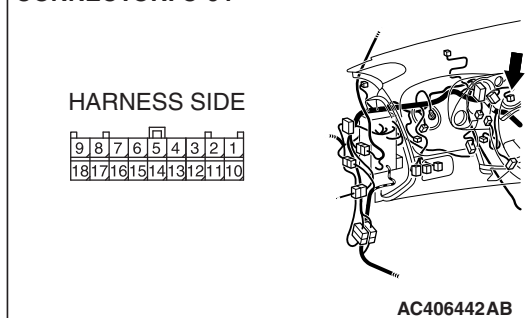
**STEP 3. Check ETACS-ECU connector C-218 and combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are ETACS-ECU connector C-218 and combination meter connector C-04 in good condition?**

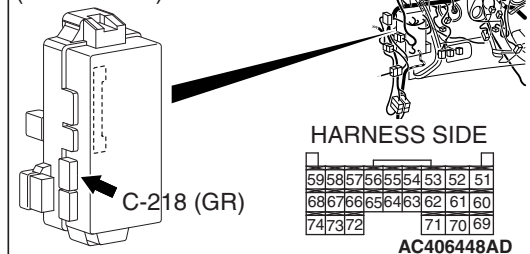
**YES :** Go to Step 4.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Confirm that the immobilizer indicator light illuminates normally.

**CONNECTOR: C-04**



**CONNECTOR: C-218**  
JUNCTION BLOCK  
(REAR VIEW)

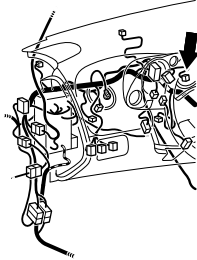




**CONNECTOR: C-04**

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

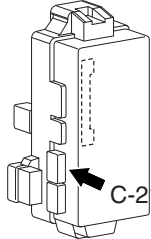
**STEP 4. Check the wiring harness between combination meter connector C-04 (terminal 5) and ETACS-ECU connector C-218 (terminal 60).**

- Check the signal line for open circuit.

**Q: Is the wiring harness between combination meter connector C-04 (terminal 5) and ETACS-ECU connector C-218 (terminal 60) in good condition?**

**YES :** Go to Step 5.

**NO :** Repair the wiring harness. Confirm the immobilizer indicator light illuminates normally.

**CONNECTOR: C-218**  
JUNCTION BLOCK  
(REAR VIEW)

C-218 (GR)

HARNESS SIDE

59	58	57	56	55	54	53	52	51
68	67	66	65	64	63	62	61	60
74	73	72				71	70	69

AC406448AD

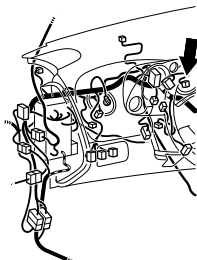
**STEP 5. Measure the voltage at combination meter connector C-04 in order to check the battery circuit of power supply system to the combination meter.**

- (1) Turn the ignition switch to the "LOCK" (OFF) position.
- (2) Disconnect combination meter connector C-04, and measure at the wiring harness side.

**CONNECTOR: C-04**

HARNESS SIDE

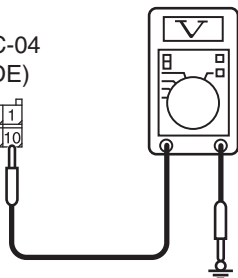
9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

CONNECTOR C-04  
(HARNESS SIDE)

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC209365NX

- (3) Measure the voltage between terminal 10 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is measured voltage approximately 12 volts?**

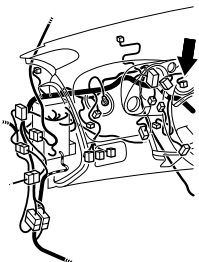
**YES :** Go to Step 8.

**NO :** Go to Step 6.



**CONNECTOR: C-04****HARNESS SIDE**

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

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

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

**YES :** Go to Step 7.

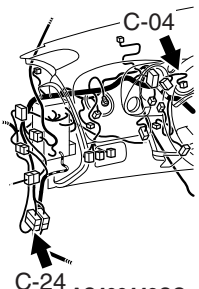
**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Confirm the immobilizer indicator light illuminates normally.

**CONNECTORS: C-04, C-24****C-04 HARNESS SIDE**

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10

**C-24**

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	
26	27	28	29					30	31			
32	33	34		35		36	37			38		



AC406442CO

**STEP 7. Check the wiring harness between combination meter connector C-04 (terminal 10) and the battery.**

*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between combination meter connector C-04 (terminal 10) and the battery in good condition?**

**YES :** Go to Step 8.

**NO :** Repair the wiring harness. Check to see that all meters operate.

**STEP 8. Retest the system.**

**Q: Is the malfunction eliminated?**

**YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points-How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.



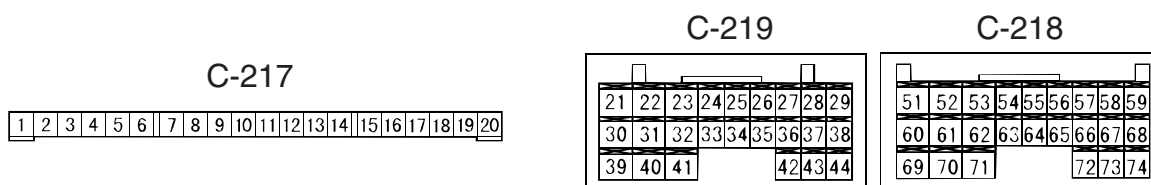
## DATA LIST REFERENCE TABLE

M1543007300648

ITEM NO.	INSPECTION ITEM	INSPECTION REQUIREMENT	NORMAL CONDITION
01	Memorized transponder keys	–	Number of memorized transponder keys

## CHECK AT ETACS-ECU (IMMOBILIZER-ECU) TERMINAL

M1543007601374



AC101265AF

**NOTE:** \*:The terminal No.1 to 20 connectors cannot be measured as the ETACS-ECU is installed directly on the junction block. Therefore, this information is only for reference.

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Output to power window relay	When the power windows can work	Battery positive voltage
2	Battery positive voltage (for central door lock)	Always	Battery positive voltage
3	Ground (for ECU)	Always	1 V or less
4	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
5	Output to dome light	When dome light is on	2 V or less
6	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
7	–	–	–
8	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
9	Output to turn-signal light (RH)	When turn-signal light (RH) is on	Battery positive voltage
10	Input from door switch (LH)	Door switch (LH): ON (driver's door open)	1 V or less
11	Battery power supply for turn-signal light	Always	Battery positive voltage
12	Output to door lock	When door lock actuator is operating (doors locked)	Battery positive voltage
13	Output to door unlock (excluding driver's door)	When door lock actuator is operating (doors unlocked)	Battery positive voltage
14	Output to turn-signal light (LH)	When turn-signal light (LH) is on	Battery positive voltage
15	–	–	–
16	Output to rear wiper	When rear wiper is operating	Battery positive voltage
17	Output to automatic stop signal to rear wiper	When rear wiper is operating	Battery positive voltage



TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
18	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
19	–	–	–
20	Battery power supply (for ECU)	Always	Battery positive voltage
21	–	–	–
22	Output to door unlock (for driver's door)	When driver's door lock actuator is operating (doors unlocked)	Battery positive voltage
23	Output to rear washer	When rear washer is operating	Battery positive voltage
24	–	–	–
25	Input of door lock key cylinder switch (UNLOCK) signal	Door lock key cylinder switch: UNLOCK	1 V or less
26 – 29	–	–	–
30	Input of key reminder switch signal	Key reminder switch: ON (when ignition key is removed)	1 V or less
31	–	–	–
32	Output to liftgate lock	When liftgate lock actuator is operating (liftgate locked)	Battery positive voltage
33	Input of door lock switch (LOCK) signal	Door lock switch (incorporated in power window switch): LOCK	1 V or less
34	Input of door lock switch (UNLOCK) signal	Door lock switch (incorporated in power window switch): UNLOCK	1 V or less
35	–	–	–
36	Input of door lock actuator (LH) "UNLOCK" signal	Door lock actuator (LH): UNLOCK	1 V or less
37	–	–	–
38	Ground (for sensor)	Always	1 V or less
39	Input from backup light switch	Backup light switch: ON	Battery positive voltage
40	–	–	–
41	Input of liftgate lock release handle	Liftgate lock release handle: ON	1 V or less
42	Input of door lock key cylinder switch (LOCK) signal	Door lock key cylinder switch: LOCK	1 V or less
43	Input of passenger's door lock actuator (UNLOCK) signal	Passenger's door lock actuator: UNLOCK	1 V or less
44	Output to horn relay	When a horn sounds by the keyless entry horn answerback function	2 V or less
45 – 50	–	–	–
51	Output to data link connector	When input check signal is output	0 – 12 V (when input pulse signal is fluctuating)

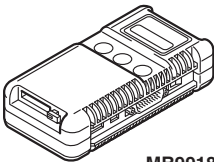
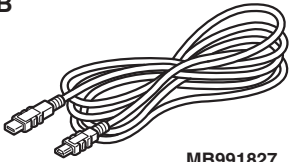
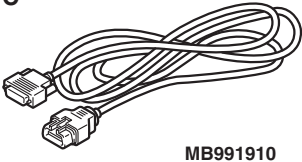
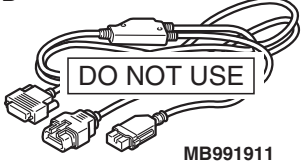
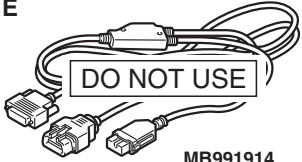
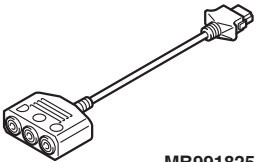
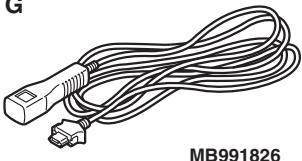


TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
52	Output to luggage compartment light	When luggage compartment light is on	2 V or less
53	–	–	–
54	Input of front fog light switch signal	Front fog light switch: ON	1 V or less
55	Input of hazard warning light switch signal	Hazard warning light switch: ON (When the switch is depressed)	1 V or less
56	Ground (for sensor)	Always	1 V or less
57	Output of key ring antenna signal	–	–
58	Input of key ring antenna signal	–	–
59	SWS communication line	Always	0 – 12 V (pulse signal)
60	Output to immobilizer indicator light	When immobilizer indicator light is on	Battery positive voltage
61	–	–	–
62	Input from liftgate latch switch	Liftgate latch switch: ON (liftgate open)	1 V or less
63, 64	–	–	–
65	Input from door switch (RH)	Door switch (RH): ON (passenger's door open)	1 V or less
66	Input of signal from variable intermittent wiper control switch	Ignition switch: "ACC," Variable intermittent wiper control switch: "FAST" to "SLOW"	From 0 to 2.5 V
67	Input of diagnosis indication selection	When scan tool is connected	1 V or less
68	Output of data request signal	Always	0 – 12 V (pulse signal)
69	Output to ignition key hole illumination light	When ignition key hole illumination light is on	1 V or less
70	–	–	–
71	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
72 – 74	–	–	–


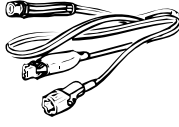
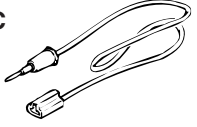
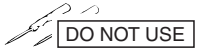
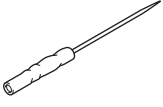


## SPECIAL TOOLS

M1543000602569

TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
<p><b>A</b></p>  <p>MB991824</p> <p><b>B</b></p>  <p>MB991827</p> <p><b>C</b></p>  <p>MB991910</p> <p><b>D</b></p>  <p>MB991911</p> <p><b>E</b></p>  <p>MB991914</p> <p><b>F</b></p>  <p>MB991825</p> <p><b>G</b></p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826</p> <p>M.U.T.-III sub assembly</p> <p>A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III main harness C (for Chrysler models only) F: M.U.T.-III measurement adapter G: M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>Reading diagnostic trouble code</p> <p><b>⚠ CAUTION</b></p> <p><b>For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.</b></p>



TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
<p><b>A</b></p>  <p><b>B</b></p>  <p><b>C</b></p>  <p><b>D</b></p>  <p>MB991223AZ</p>	<p>MB991223</p> <p>A: MB991219</p> <p>B: MB991220</p> <p>C: MB991221</p> <p>D: MB991222</p> <p>Harness set</p> <p>A: Test harness</p> <p>B: LED harness</p> <p>C: LED harness adapter</p> <p>D: Probe</p>	<p>General service tool (jumper)</p>	<p>Making voltage and resistance measurements during troubleshooting</p> <p>A: Connect pin contact pressure inspection</p> <p>B: Power circuit inspection</p> <p>C: Power circuit inspection</p> <p>D: Commercial tester connection</p>
 <p>MB992006</p>	<p>MB992006</p> <p>Extra fine probe</p>	<p>—</p>	<p>Making voltage and resistance measurement during troubleshooting</p>



## ON-VEHICLE SERVICE

ENCRYPTED CODE REGISTRATION  
PROCEDURE

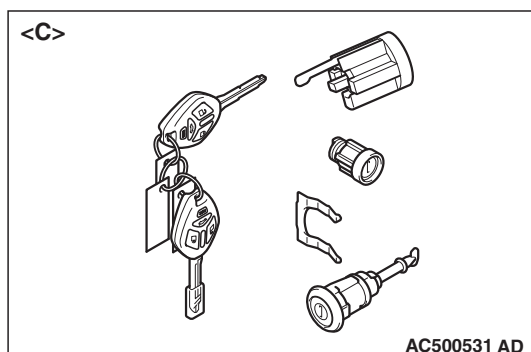
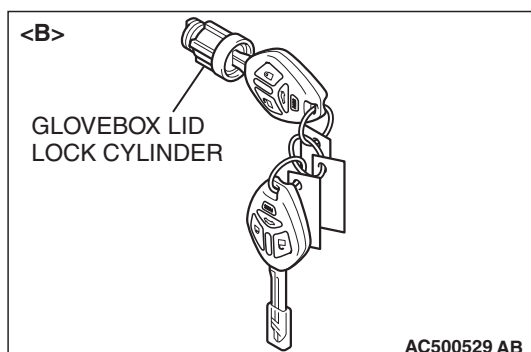
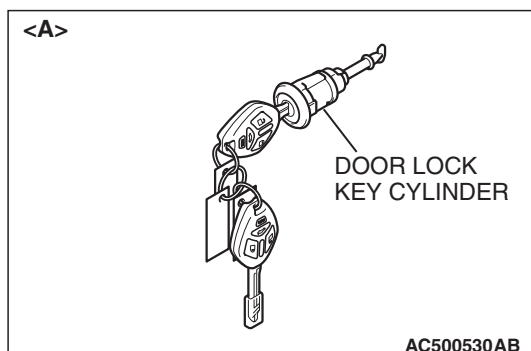
M1543008100733

**⚠ CAUTION**

- When registering encrypted codes again, keep all the ignition keys that are already registered. If the encrypted codes are registered again, all the encrypted codes that were registered before will be erased. For this reason, keep all the ignition keys that are already registered.
- Do not register the ignition keys other than the ignition key that starts the engine. (When replacing by the door lock key cylinder of illustration <A> or the glove box lid lock cylinder of illustration <B>, the engine cannot start if the encrypted code is registered with the bar code on the ignition key supplied simultaneously. If the ignition key using for each lock cylinder and starting engine is used as a common ignition key, replace by the key set of illustration <C>.)
- When the transmitter is replaced, the transmitter must be registered after registering the encrypted code. For the registration of the transmitter, refer to GROUP 42, How to Register Secret Code [P.42-116](#).

If the ignition key is replaced or additional keys are requested, the encrypted codes of all ignition keys must be registered. (A maximum of eight ignition keys can be registered.)

**NOTE:** The encrypted codes can be registered using the ignition key and barcode No.





**PRECAUTIONS DURING SERVICE**

If all functions do not work, check the diagnostic trouble code, and repair the system. Then, repeat the operation.

If a wrong password is entered consecutively five times by scan tool (M.U.T.-III sub assembly), the immobilizer-ECU judges that the system is operated incorrectly. Then, the engine immobilization mode is set, and the ECU stops the engine and all special functions are stopped. In addition, when the ignition switch is held at the ON position for approximately 20 minutes with engine immobilization mode, "incorrect operation, engine immobilization mode" is cancelled.

**ENCRYPTED CODE REGISTRATION USING  
IGNITION KEY <REGISTRATION USING SCAN  
TOOL MB991958 (M.U.T.-III SUB ASSEMBLY)>**

When the ECM <M/T>, PCM <A/T> or the ETACS-ECU is replaced, or the ignition key is lost or additional keys are requested, the ignition key must be used to register encrypted codes.

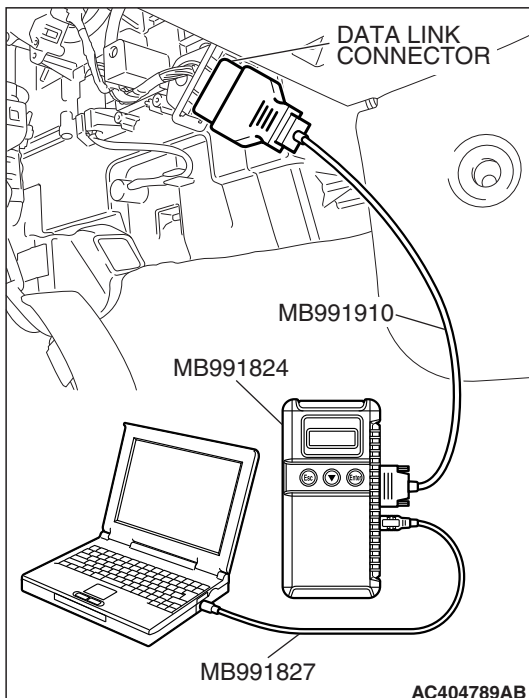
**Required Special Tools:**

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

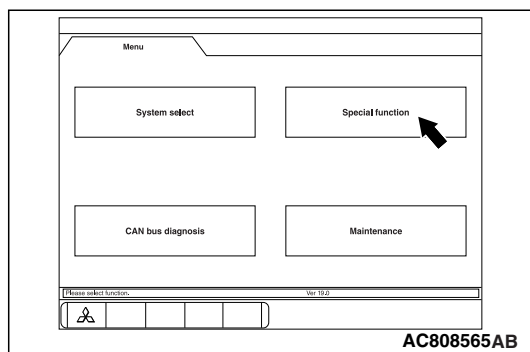
**⚠ CAUTION**

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

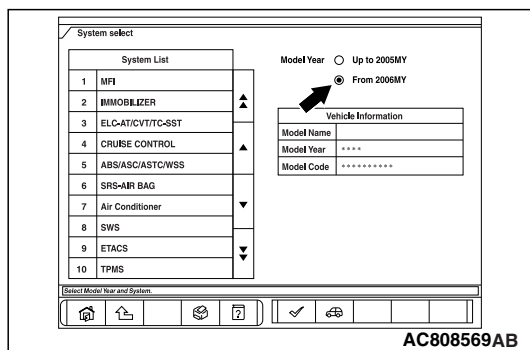
1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.



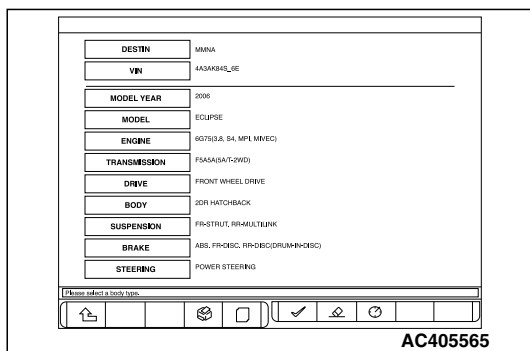




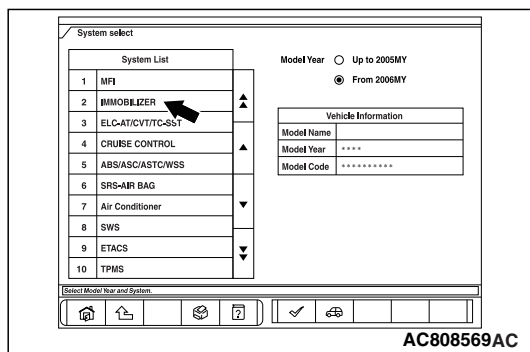
3. Select "System select."



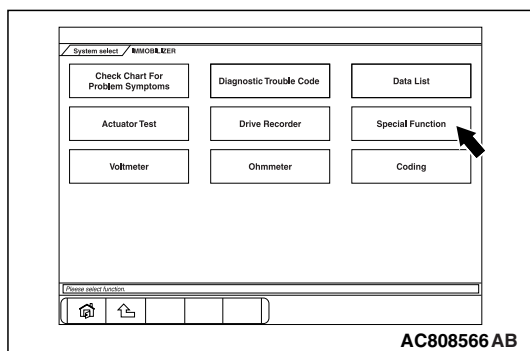
4. Choose "From 2006."



5. Enter the VIN code of the vehicle that is registered. Then, press "OK" button.

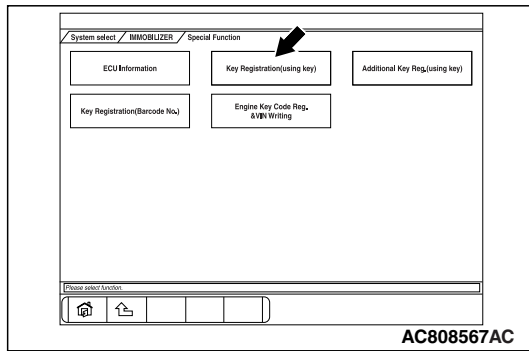


6. Select "IMMOBILIZER."

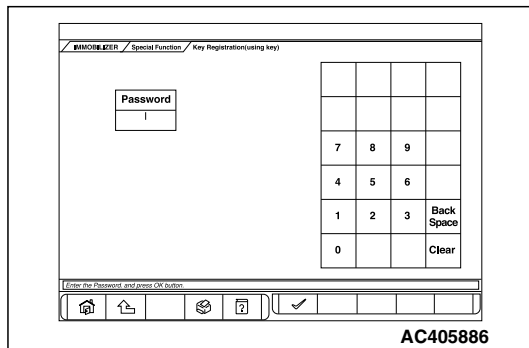


7. Select "Special Function."

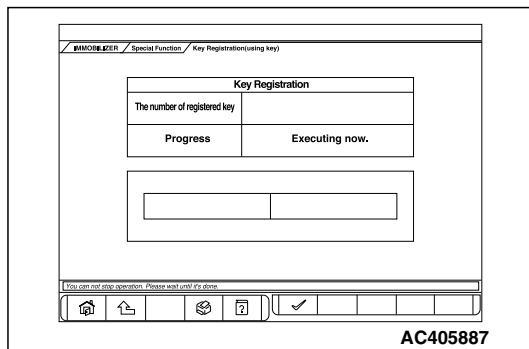




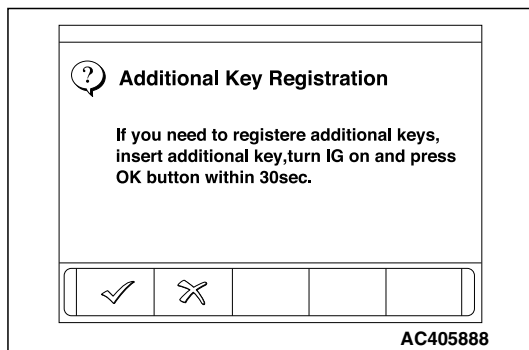
8. Select "Key Registration (using key)."



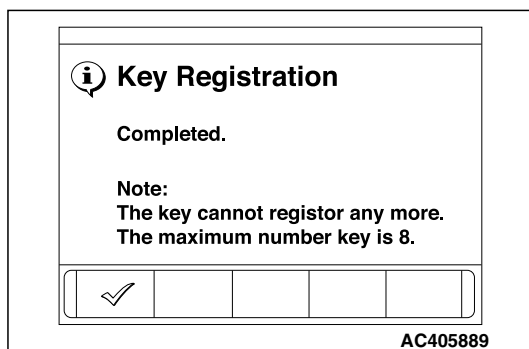
9. Enter the password of the vehicle, and press the OK button.



10.Registration of the ignition key will be started.



11. When the ignition key registration is finished, the additional key registration menu is displayed. To register the additional key, insert the key and turn the ignition switch to the "ON" position. Then, press the OK button. Press the CANCEL button to terminate the ignition key registration.



12. A maximum of eight ignition keys can be registered. When the registration of the eighth ignition key is finished, key registration completion menu is displayed. Press the OK button and finish the ignition key registration.



**ENCRYPTED CODE REGISTRATION USING  
IGNITION KEY <REGISTRATION USING IGNITION  
KEY ONLY>**

When the ignition key is lost or additional keys are requested, the ignition key must be used to register encrypted codes.

**⚠ CAUTION**

**Two ignition keys that have been registered are needed.**

1. Turn the ignition switch to the "ON" position using the registered ignition key and keep it there for 5 seconds.
2. Turn the ignition switch to the "LOCK" (OFF) position, and remove the registered ignition key.
3. Within 30 seconds after the ignition key is removed, insert the other registered ignition key that has already been registered and turn the ignition switch to the "ON" position.
4. The immobilizer indicator light starts flashing in approximately 10 seconds after the ignition switch is turned to the "ON" position.
5. When the immobilizer indicator light starts flashing, turn the ignition switch to the "LOCK" (OFF) position and remove the ignition key.

*NOTE: When an error occurs while the immobilizer indicator light is flashing, the immobilizer indicator light extinguishes.*

6. Within 30 seconds after the immobilizer indicator light flashes in Step 5, insert the ignition key to be added and turn the ignition switch to the "ON" position.
7. When registering another ignition key, repeat the procedure from the beginning.

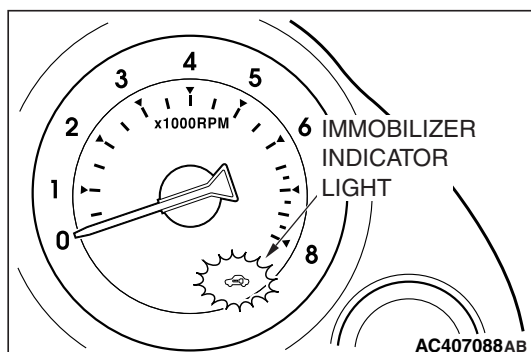
**NOTE:**

**<When the additional ignition key cannot be registered>**

- When the immobilizer indicator is not illuminated during registration
- When the immobilizer indicator light does not change in 3 seconds after carrying out step 6

**<When the additional registration of the ignition key terminates automatically>**

- When 30 seconds have passed before inserting the ignition key in Step 3 after the ignition key is removed in Step 2.
- When 30 seconds have passed after the immobilizer indicator light flashed





**ENCRYPTED CODE REGISTRATION USING  
BARCODE NO.**

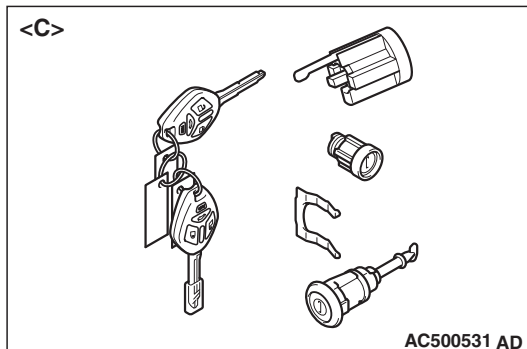
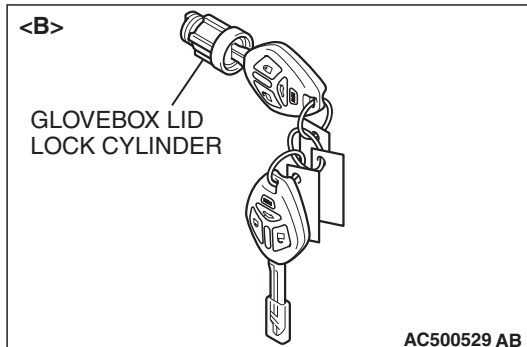
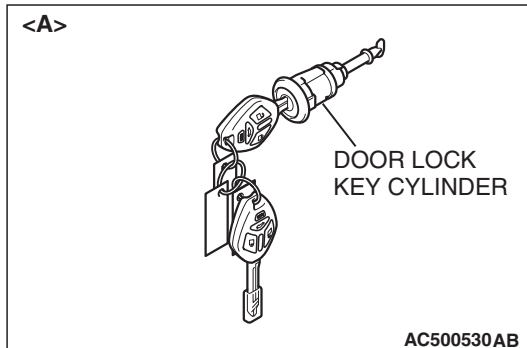
When the ignition key that starts the engine is replaced due to the replacement of the ignition key set, the ignition key cylinder, etc., the barcode No. must be used to register encrypted codes.

**⚠ CAUTION**

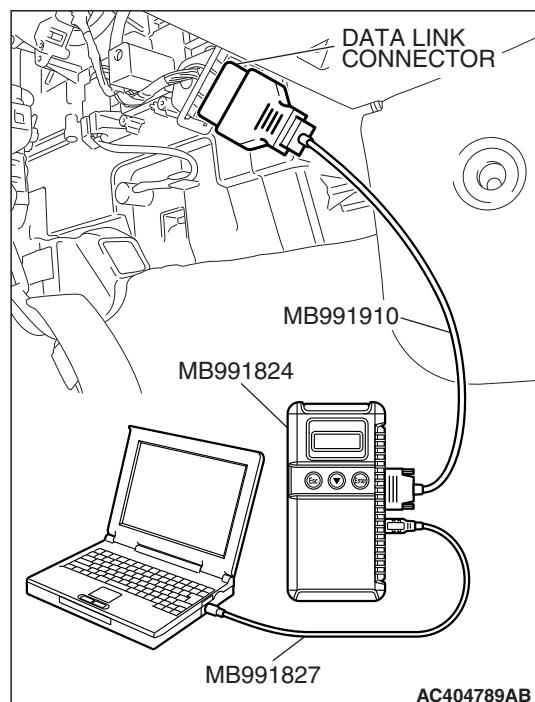
- Do not register the ignition keys other than the ignition key that starts the engine. (When replacing by the door lock key cylinder of illustration <A> or the glove box lid lock cylinder of illustration <B>, the engine cannot start if the encrypted code is registered with the bar code on the ignition key supplied simultaneously. If the ignition key using for each lock cylinder and starting engine is used as a common ignition key, replace by the key set of illustration <C>.)
- After the ignition key registration is finished, discard the barcode plate correctly at Mitsubishi dealer. The barcode plate has important information of the immobilizer system. Therefore, improper disposal of the barcode plate may decrease the security level.
- When the transmitter is replaced, the transmitter must be registered after registering the encrypted code. For the registration of the transmitter, refer to GROUP 42, How to Register Secret Code [P.42-116](#).

**Required Special Tools:**

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

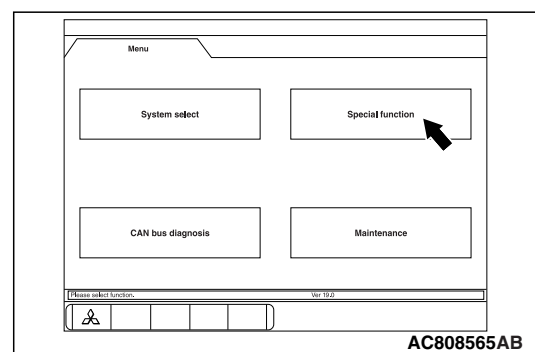




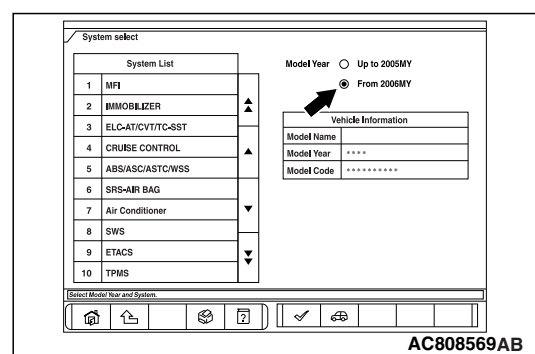
**CAUTION**

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

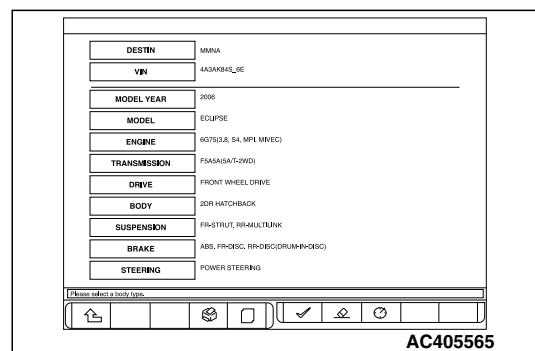
1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.



3. Select "System select."



4. Choose "From 2006."



5. Enter the VIN code of the vehicle that is registered. Then, press "OK" button.



6. Select "IMMOBILIZER."

System select

System List	
1	MFI
2	IMMOBILIZER
3	ELC-AT/CT/TC-SS
4	CRUISE CONTROL
5	ABS/ASC/ASC/WSS
6	SRS-AIR BAG
7	Air Conditioner
8	SWS
9	ETACS
10	TPMS

Model Year ☐ Up to 2005MY  
☒ From 2006MY

Vehicle Information	
Model Name	
Model Year	****
Model Code	*****

Select Model Year and System

AC808569AC

7. Select "Special Function."

System select / IMMOBILIZER

Check Chart For Problem Symptoms	Diagnostic Trouble Code	Data List
Actuator Test	Drive Recorder	Special Function
Voltmeter	Ohmmeter	Coding

Please select function

AC808566AB

8. Select "Key Registration (Barcode No.)."

System select / IMMOBILIZER / Special Function

ECU Information	Key Registration(using key)	Additional Key Reg.(using key)
Key Registration(Barcode No.)	Engine Key Code Reg. & VR Writing	

Please select function

AC808567AD

9. Enter the password of the vehicle, and press the OK button.

IMMOBILIZER / Special Function / Key Registration(Barcode No.)

Password

7	8	9
4	5	6
1	2	3
0		Back Space
		Clear

Enter the Password and press OK button

AC405890



IMMOBILIZER / Special Function / Key Registration(Barcode No.)

key ID 1 0123ABCD	key ID 2 0123ABCD	key ID 3(OP) 0123ABCD
----------------------	----------------------	--------------------------

1	2	3	4	5	6	7	8	9	0	<	>	Tab
A	B	C	D	E	F					Back Space	Clear	

Enter key ID, and press the OK button. Key and lock are indicated in shaded red box.

AC405891

10. Enter the ID on the bar code plate which is attached to the ignition key, and press the OK button.

I-ID1: 00000000  
I-ID2: 00000000  
I-ID3: 00000000  
KN: △△△△

AC405906

? Key Registration(Barcode No.)

Do you want to start Registration?

AC405892

11. When the execution confirmation menu of the key registration (Barcode No.) is displayed, press the OK button.

i Key Registration(Barcode No.)

Completed.

AC405893

12. When the key registration completion menu is displayed, press the OK button.



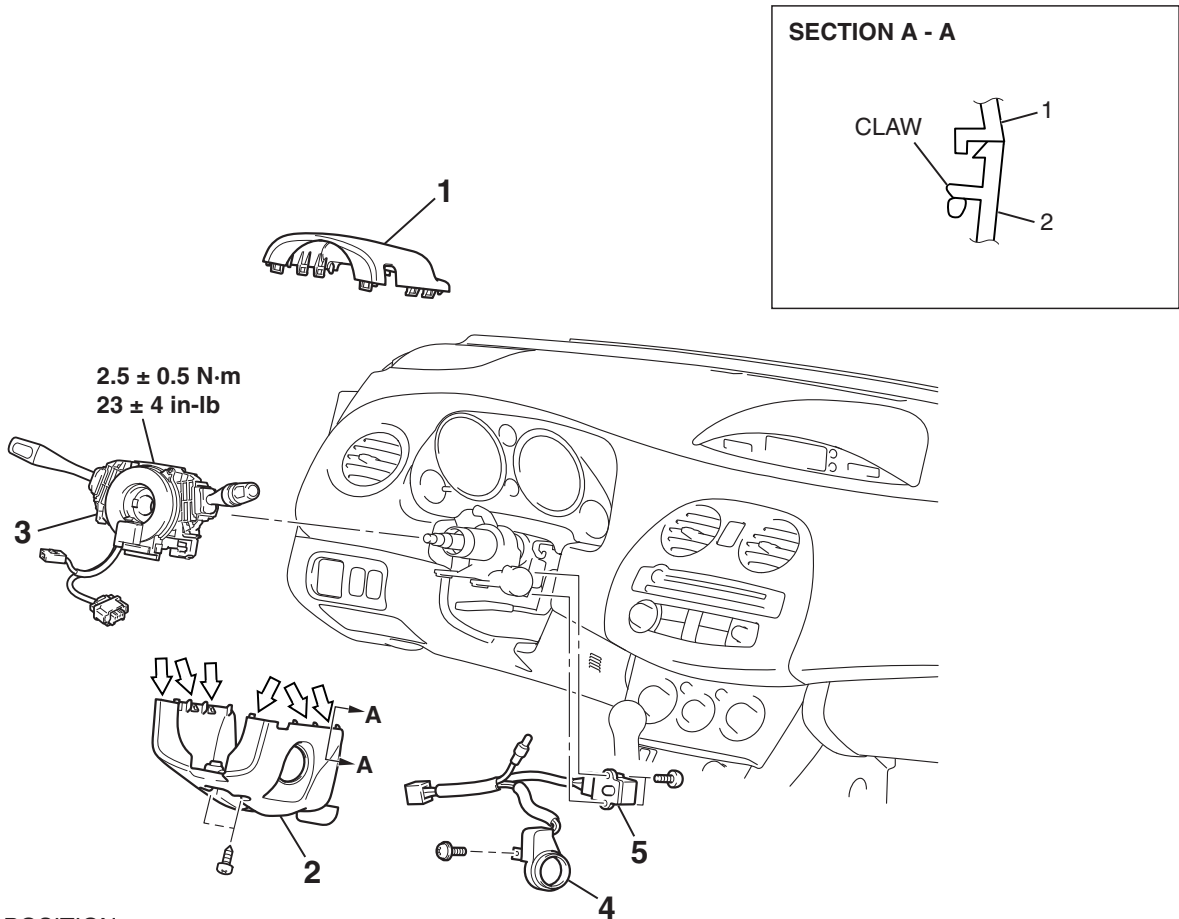
## KEY RING ANTENNA

### REMOVAL AND INSTALLATION

M1543031600019

**⚠ WARNING**

- Before removing the steering wheel, air bag module assembly and clock spring refer to **GROUP 52B, Service Precautions (P.52B-28)** and **Air Bag Module and Clock Spring (P.52B-423)**.
- When removing and installing the steering wheel, do not let it bump against the air bag module.



NOTE

↔: CLAW POSITION

AC407233AB

**KEY RING ANTENNA REMOVAL STEPS**

- STEERING WHEEL ASSEMBLY (REFER TO GROUP 37, STEERING WHEEL P.37-27.)
- 1. STEERING COLUMN UPPER COVER
- 2. STEERING COLUMN LOWER COVER

**KEY RING ANTENNA REMOVAL STEPS (Continued)**

- 3. CLOCK SPRING AND COLUMN SWITCH ASSEMBLY (REFER TO GROUP 52B, AIR BAG MODULE(S) AND CLOCK SPRING P.52B-423.)
- 4. KEY RING ANTENNA
- 5. KEY REMINDER SWITCH

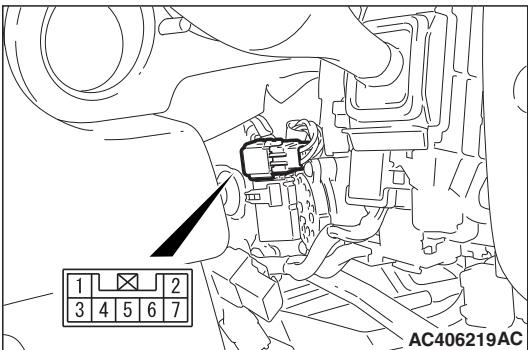


INSPECTION

M1543019504997

KEY REMINDER SWITCH CHECK

- 1. Disconnect key reminder switch connector C-310 without removing the key reminder switch and steering lock cylinder.
- 2. Check for continuity between terminal 4 and terminal 6.



STATUS OF IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Removed	4-6	Continuity exists (2 ohms or less)
Inserted	4-6	Open circuit

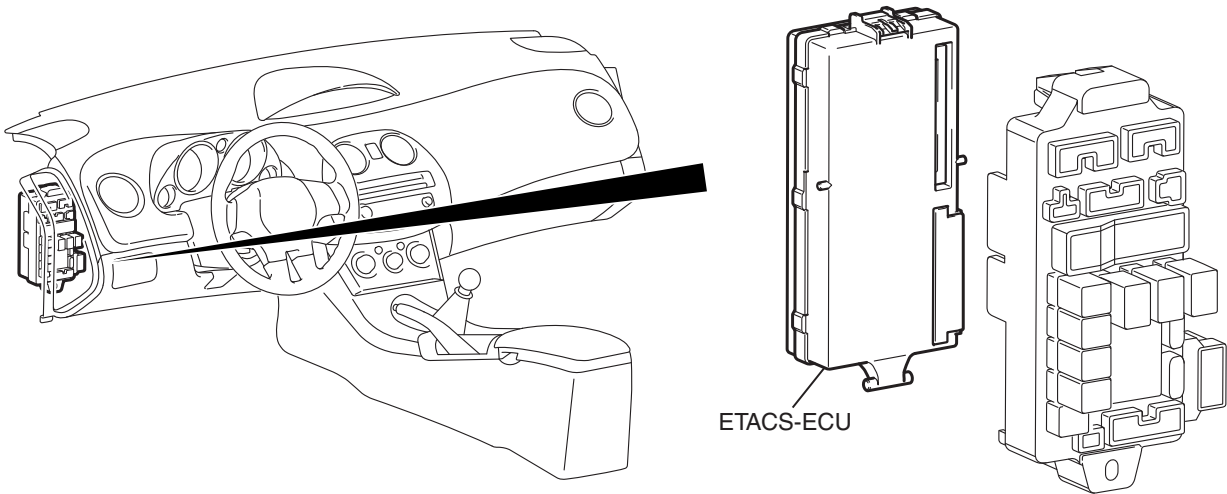
ETACS-ECU

REMOVAL AND INSTALLATION

M1543031800013

**CAUTION**

When the ETACS-ECU is replaced, register the encrypted code. Refer to [P.42-116](#).



AC406463 AB



## COMBINATION METER ASSEMBLY

### GENERAL DESCRIPTION

M1543000101000

Some of the combination meter indications are based on information from ECUs via CAN bus communication. If there is any failure in the meters connected via the CAN bus communication, diagnose the CAN bus communication system. The following instruments, indicator lights and warning lights in the combination meter are controlled by ECUs via CAN bus communication.

ITEM	INSTRUMENTS, INDICATORS, AND WARNING LIGHTS	ECU SENDING DATA VIA CAN COMMUNICATION
Meter	Tachometer	ECM <M/T> or PCM <A/T>
	Speedometer	
	Engine coolant temperature gauge	
	Odometer	
Indicator light	High-beam	ETACS-ECU
	Turn-signal	
	Front fog	
	Door ajar	
	A/T shift position <A/T>	PCM <A/T>
	Auto cruise	ECM <M/T> or PCM <A/T>
	ASC/TCL	TCL/ASC-ECU
	ASC OFF	
Warning light	Service engine soon	ECM <M/T> or PCM <A/T>
	ABS	TCL/ASC-ECU
	SRS	SRS-ECU

### COMBINATION METERS DIAGNOSIS

#### DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1543006900896

Use these steps to plan your diagnostic troubleshooting strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding a combination meter fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find and repair the malfunction by following the symptom chart.
4. Verify that the malfunction has been eliminated.

### DIAGNOSIS FUNCTION

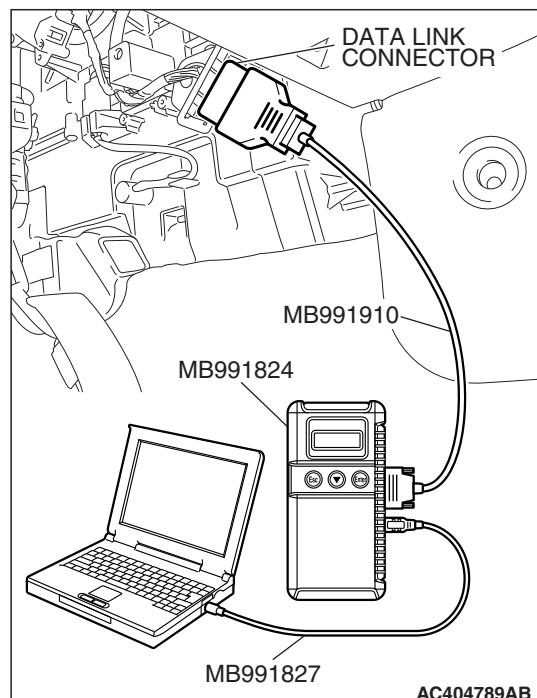
M1543007000841

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

##### Required Special Tools:

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



**⚠ CAUTION**

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

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

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

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

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

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

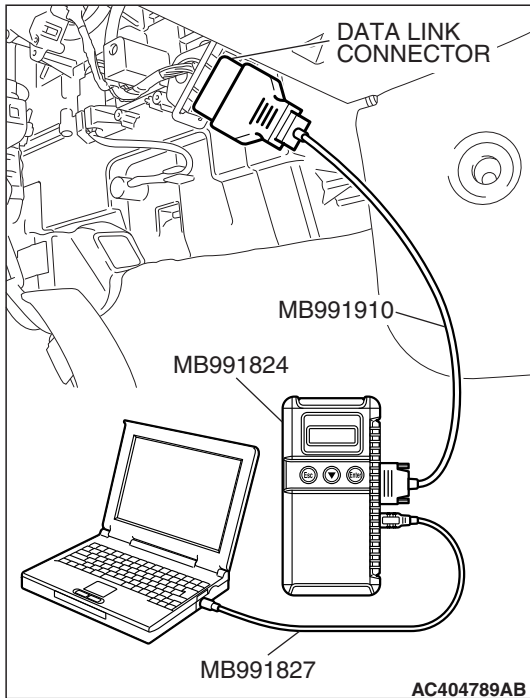
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**⚠ CAUTION**

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

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





1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "Meter" from the "BODY" tab.
6. Select "Diagnostic Trouble Code" to read the DTC.
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

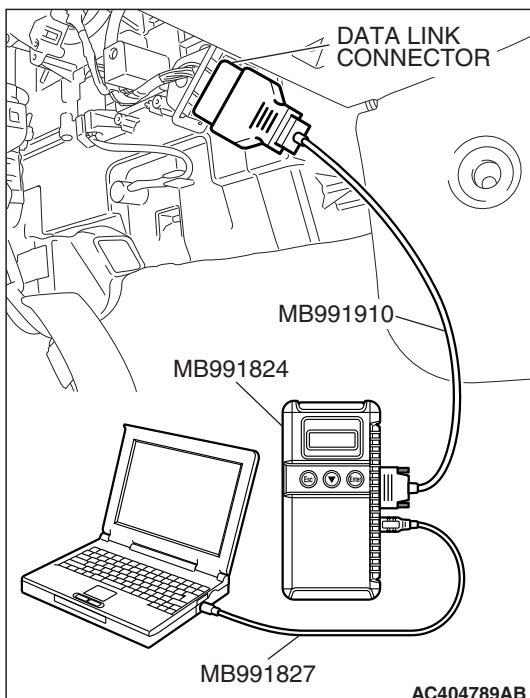
## HOW TO DIAGNOSE THE CAN BUS LINES

### Required Special Tools:

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

### **CAUTION**

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



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



## DIAGNOSTIC TROUBLE CODE CHART

M1543007101432

**⚠ CAUTION**

During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are set, erase them all.

DTC NO.	DIAGNOSTIC ITEM	REFERENCE PAGE
B1200	Defective odometer	P.54A-60
B1201	Defective fuel gauge	P.54A-62
U1073	Bus off	P.54A-78
U1100	ECM <M/T> or PCM <A/T> time-out (related to engine)	P.54A-80
U1101	PCM time-out (related to A/T) <A/T>	P.54A-84
U1102	TCL/ASC-ECU time-out	P.54A-87
U1109	ETACS-ECU time-out	P.54A-90
U1112	SRS-ECU time-out	P.54A-92
U1114	TPMS-ECU time-out	P.54A-95
U1120	Failure information on ECM <M/T> or PCM <A/T> (related to engine)	P.54A-97
U1206	Flag invalid	P.54A-100
U1434	Failure information on TPMS-ECU	P.54A-103

## DIAGNOSTIC TROUBLE CODE PROCEDURES

**DTC B1200: Defective odometer****⚠ CAUTION**

- If DTC B1200 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**CIRCUIT OPERATION**

The combination meter receives a signal from the ECM <M/T> or PCM <A/T> and displays the driven distance.

**DTC SET CONDITION**

If an abnormal value is sent from the odometer, the combination meter sets DTC B1200.

**TECHNICAL DESCRIPTION (COMMENT)**

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

**TROUBLESHOOTING HINTS**

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



## DIAGNOSIS

### Required Special Tools:

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

### Recheck for diagnostic trouble code.

Recheck if the diagnostic trouble code is set.

#### **⚠ CAUTION**

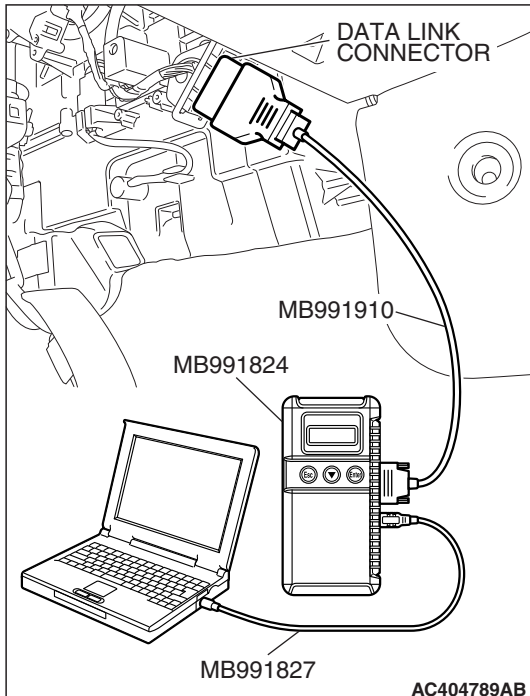
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Erase the diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Turn the ignition switch to "ON" position.
- (6) Drive the vehicle and check that the diagnostic trouble code is not set.
- (7) Turn the ignition switch to the "LOCK" (OFF) position.

### Q: Is the check result normally?

**YES** : An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

**NO** : Replace the combination meter.

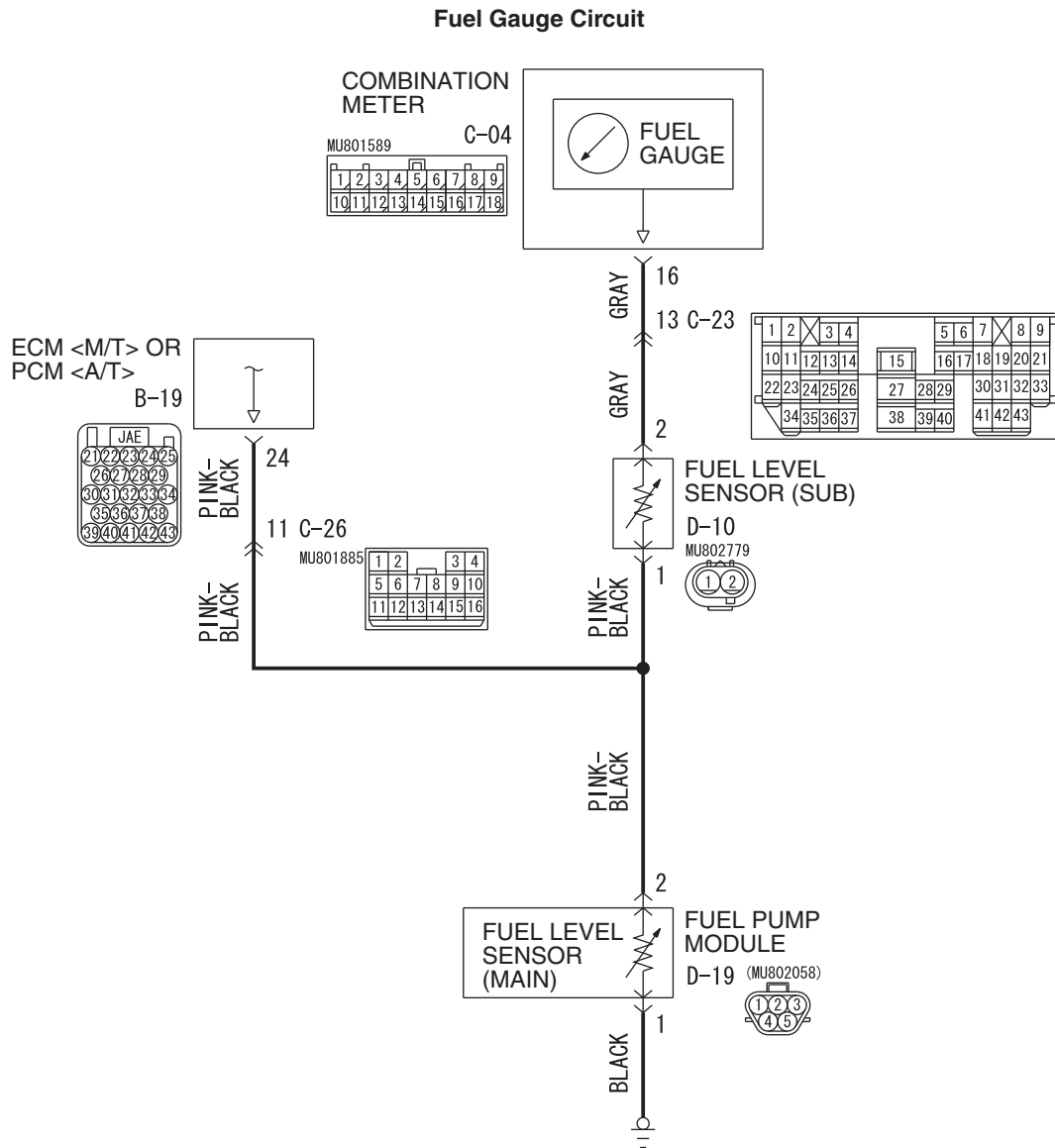




## DTC B1201: Defective fuel gauge

**CAUTION**

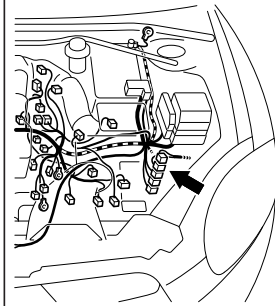
- If DTC B1201 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.



W6P54M006A

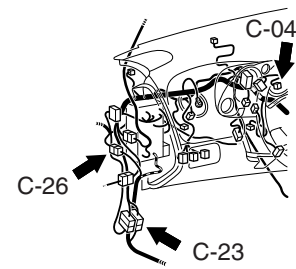


CONNECTOR: B-19



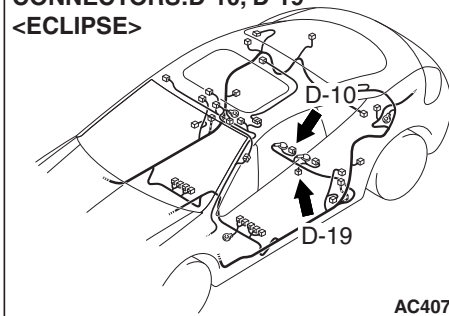
AC406440AC

CONNECTORS: C-04, C-23, C-26



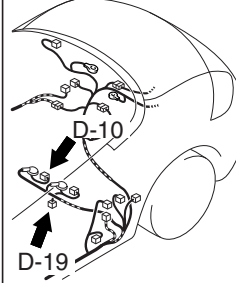
AC406442AB

CONNECTORS: D-10, D-19  
<ECLIPSE>



AC407245AK

CONNECTORS: D-10, D-19  
<ECLIPSE SPYDER>



AC509379AD

## CIRCUIT OPERATION

The fuel gauge displays the amount of the remaining fuel on the combination meter.

## DTC SET CONDITION

DTC B1201 is set if an open circuit and short to ground in the fuel sender circuit are detected for 64 seconds or more when the ignition switch is ON.

## TECHNICAL DESCRIPTION (COMMENT)

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

## TROUBLESHOOTING HINTS

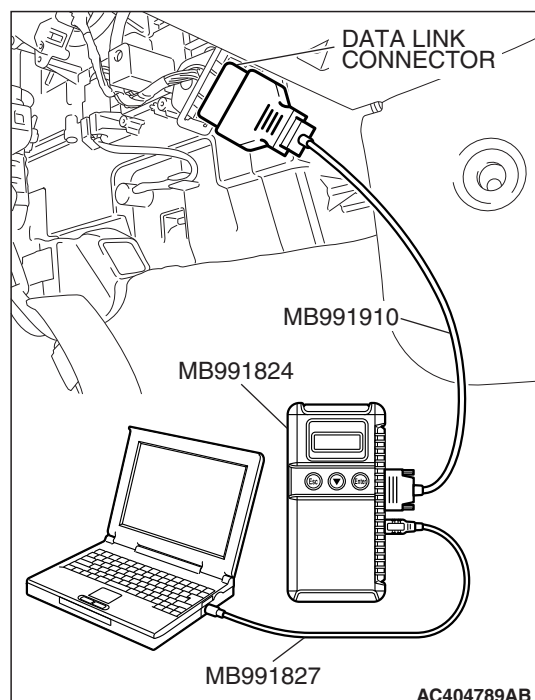
- Malfunction of ECM <M/T> or PCM <A/T>.
- Malfunction of fuel level sensor (sub).
- Malfunction of fuel pump module.
- Malfunction of combination meter.
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

## DIAGNOSIS

### Required Special Tools:

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





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

Check if an MFI system diagnostic trouble code is set.

#### ⚠ CAUTION

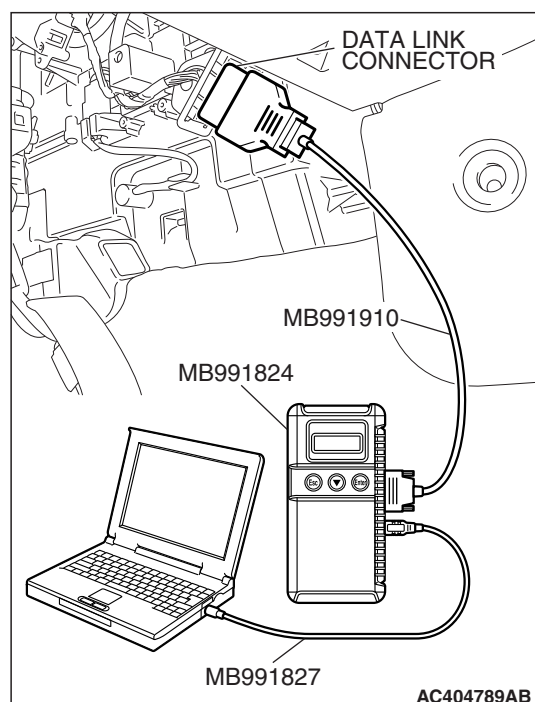
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

#### Q: Have any MFI system DTCs set?

**YES :** Refer to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-834](#) <2.4 L engine> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-869](#) <3.8 L engine>.

**NO :** Go to Step 2.



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

- (1) Start the engine.
- (2) Set scan tool MB991958 to the data reading mode.
  - Item 06: fuel gauge (Input).
    - Fuel gauge unit resistance value and M.U.T.-III displayed value agree with each other.
  - Item 07: fuel gauge (Target).
    - Fuel gauge and M.U.T.-III displayed values agree with each other.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

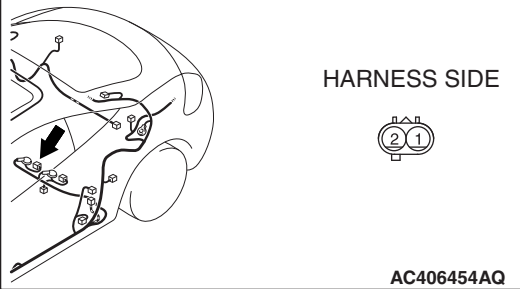
#### Q: Is the check result normal?

**YES :** Go to Step 18.

**NO :** Go to Step 3.



**CONNECTOR: D-10 <ECLIPSE>**



**CONNECTOR: D-10 <ECLIPSE SPYDER>**



**STEP 3. Check fuel level sensor (sub) connector D-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is fuel level sensor (sub) connector D-10 in good condition?**

**YES :** Go to Step 4.

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

**STEP 4. Check the fuel level sensor (sub).**

Check to see if the fuel level sensor (sub) is normal. Refer to [P.54A-134](#).

**Q: Is the fuel level sensor (sub) normal?**

**YES :** Go to Step 5.

**NO :** Replace the fuel level sensor (Refer to GROUP 13C, Fuel Tank [P.13C-11](#)).



**CONNECTOR: D-19 <ECLIPSE>****CONNECTOR: D-19 <ECLIPSE SPYDER>**

**STEP 5. Check fuel pump module connector D-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is fuel pump module connector D-19 in good condition?**

**YES :** Go to Step 6.

**NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the combination meter works normally.

**STEP 6. Check the fuel pump module.**

Check to see if the fuel pump module is normal. Refer to [P.54A-134](#).

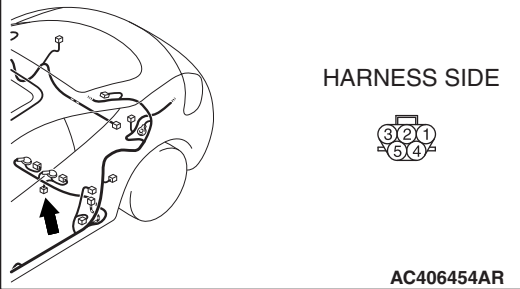
**Q: Is the fuel pump module normal?**

**YES :** Go to Step 7.

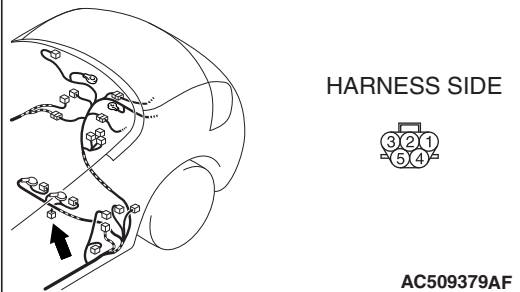
**NO :** Replace the fuel pump module (Refer to GROUP 13C, Fuel Tank [P.13C-11](#)). The fuel gauge should now operate normally.



**CONNECTOR: D-19 <ECLIPSE>**



**CONNECTOR: D-19 <ECLIPSE SPYDER>**



**STEP 7. Check the ground circuit to the fuel pump module.  
Measure the resistance at fuel pump module connector D-19.**

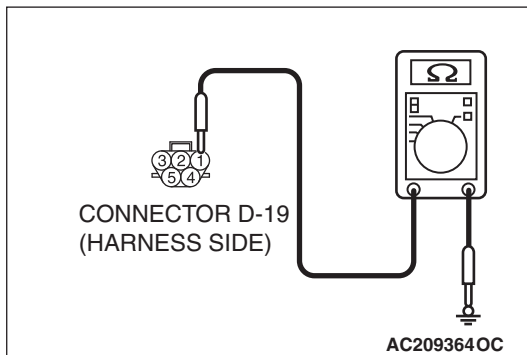
- (1) Disconnect fuel pump module connector D-19 and measure the resistance available at the harness side of the connector.

- (2) Measure the resistance value between terminal 1 and ground.  
• The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 9.

**NO :** Go to Step 8.





**CONNECTOR: D-19 <ECLIPSE>****CONNECTOR: D-19 <ECLIPSE SPYDER>****STEP 8. Check the wiring harness between fuel pump module connector D-19 (terminal 1) and ground.**

- Check the ground wire for open circuit.

**Q: Is the wiring harness between fuel pump module connector D-19 (terminal 1) and ground in good condition?**

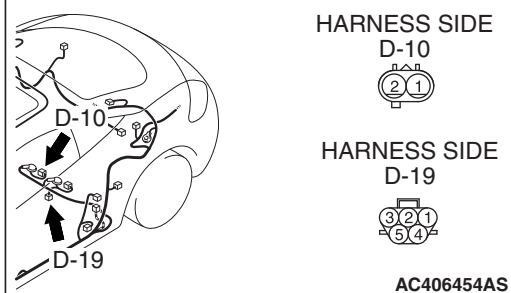
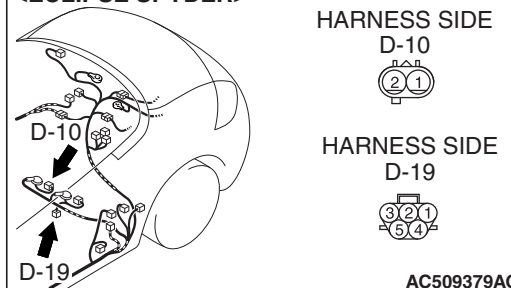
**YES :** An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

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

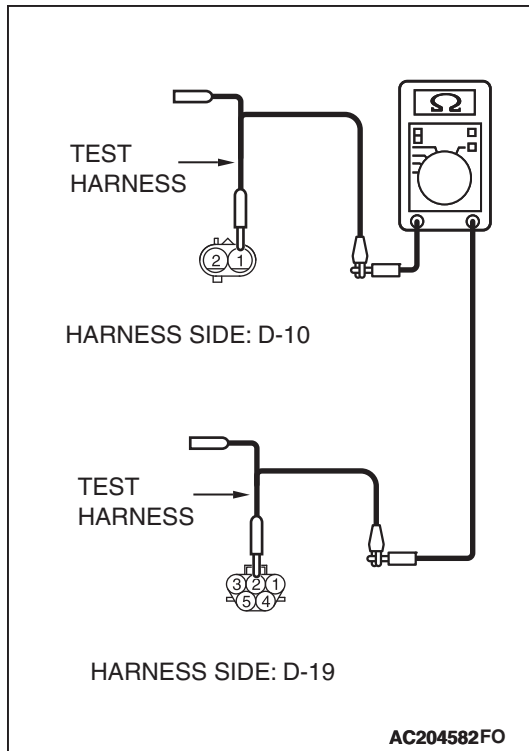
**STEP 9. Check the wiring harness between fuel level sensor (sub) connector D-10 (terminal 1) and fuel pump module connector D-19 (terminal 2).**

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

- (1) Disconnect fuel level sensor (sub) connector D-10 and fuel pump module connector D-19, and measure the resistance at the wiring harness side.

**CONNECTORS: D-10, D-19 <ECLIPSE>****CONNECTORS: D-10, D-19  
<ECLIPSE SPYDER>**





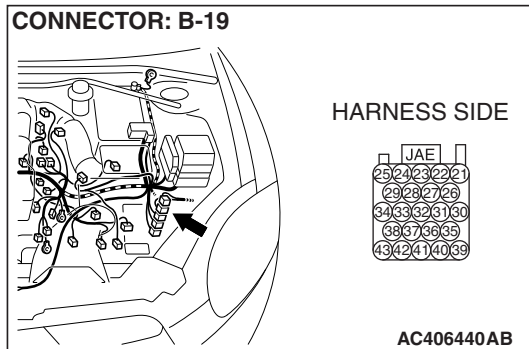
- (2) Measure the resistance between fuel level sensor (sub) connector D-10 terminal 1 and fuel pump module connector D-19 terminal 2.

- The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 10.

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

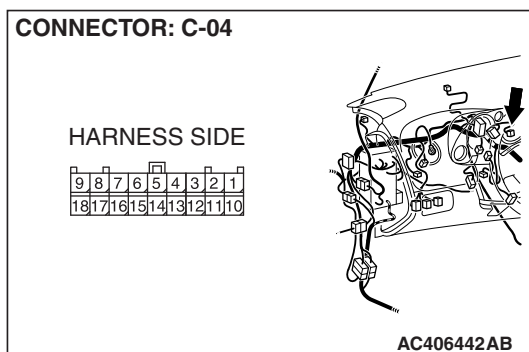


**STEP 10. Check combination meter connector C-04 and ECM <M/T> or PCM <A/T> connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are combination meter connector C-04 and ECM <M/T> or PCM <A/T> connector B-19 in good condition?**

**YES :** Go to Step 11.

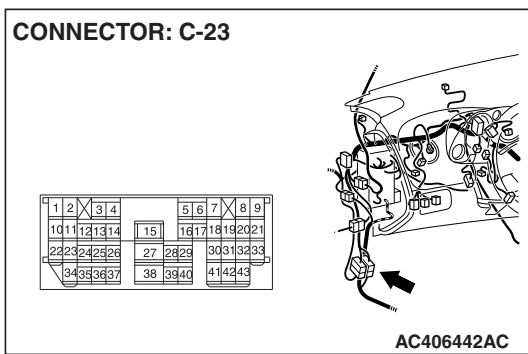
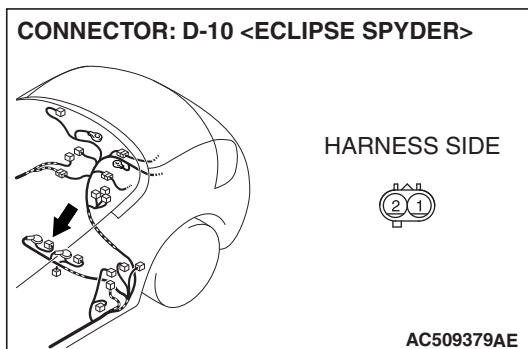
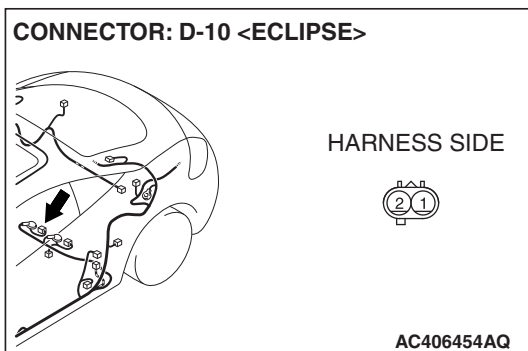
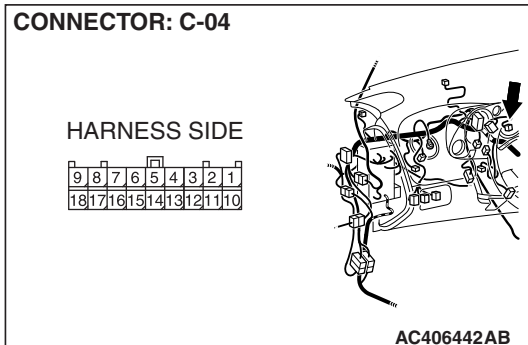
**NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the combination meter works normally.





**STEP 11. Check the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2).**

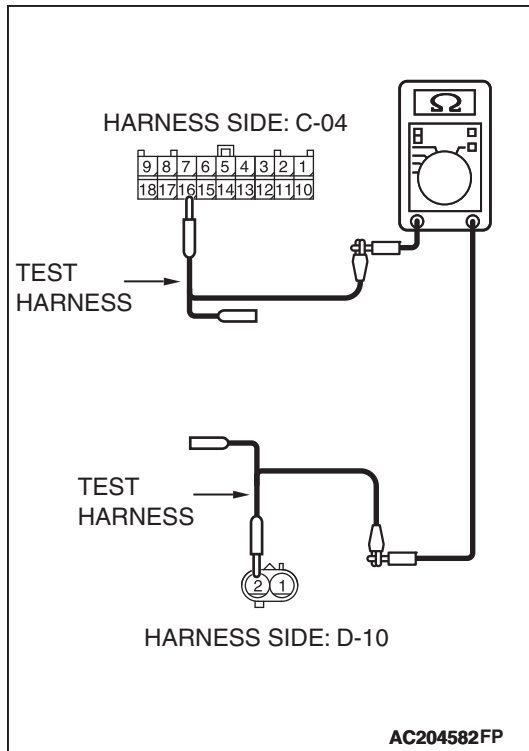
- Check the communication lines for open circuit and short circuit.



*NOTE: Also check intermediate connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

- (1) Disconnect combination meter connector C-04 and fuel level sensor (sub) connector D-10, and measure the resistance at the wiring harness side.





- (2) Measure the resistance between combination meter connector C-04 terminal 16 and fuel level sensor (sub) connector D-10 terminal 2.

- The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 12.

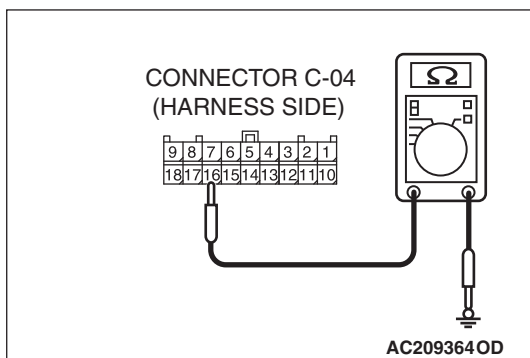
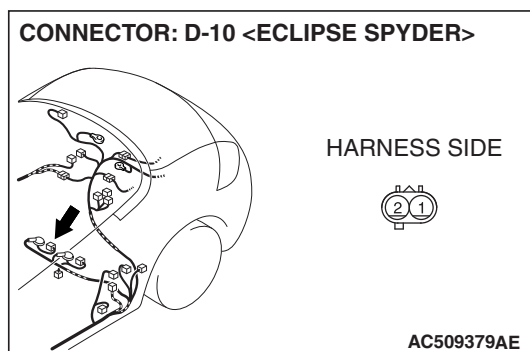
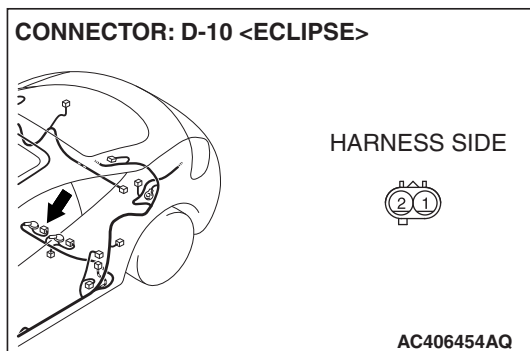
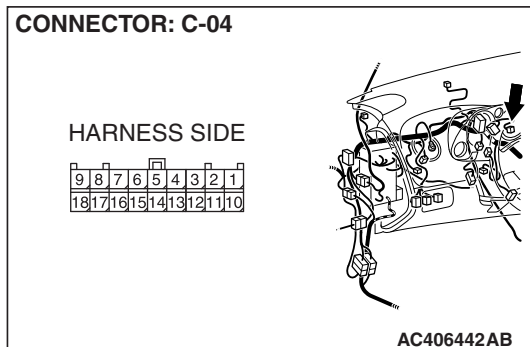
**NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the combination meter works normally.



**STEP 12. Check the ground circuit to the combination meter. Measure the resistance at combination meter connector C-04.**

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

(1) Disconnect combination meter connector C-04 and fuel level sensor (sub) connector D-10, and measure the resistance available at the harness side of the combination meter connector C-04.



(2) Measure the resistance value between terminal 16 and ground.

- The resistance should be 1 k $\Omega$  or more.

**Q: Is the measured resistance 1 k $\Omega$  or more?**

**YES :** Go to Step 14.

**NO :** Go to Step 13.



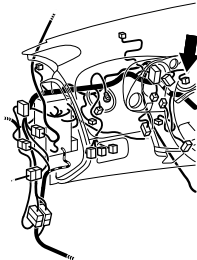
**STEP 13. Check the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2).**

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

**CONNECTOR: C-04**

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

**CONNECTOR: D-10 <ECLIPSE>**

HARNESS SIDE



AC406454AQ

**CONNECTOR: D-10 <ECLIPSE SPYDER>**

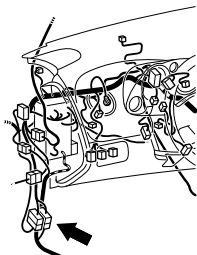
HARNESS SIDE



AC509379AE

**CONNECTOR: C-23**

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45



AC406442AC

**NOTE:** Also check intermediate connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2) in good condition?**

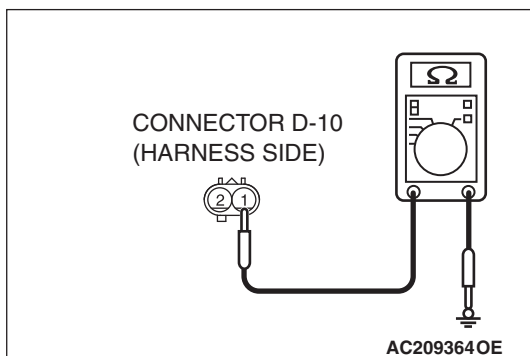
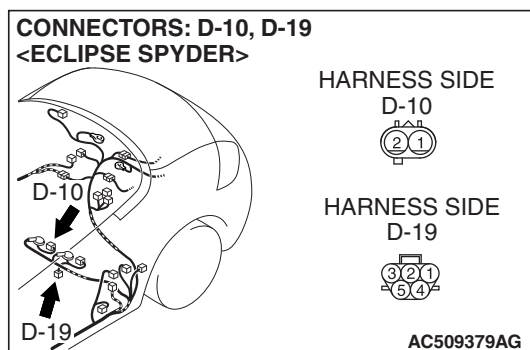
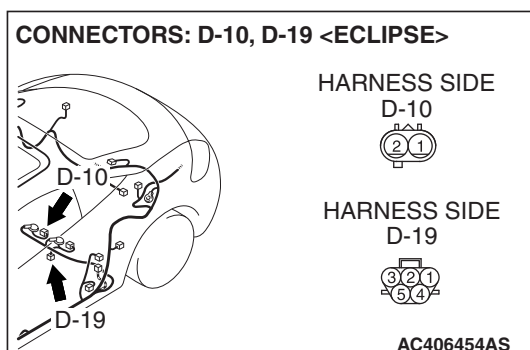
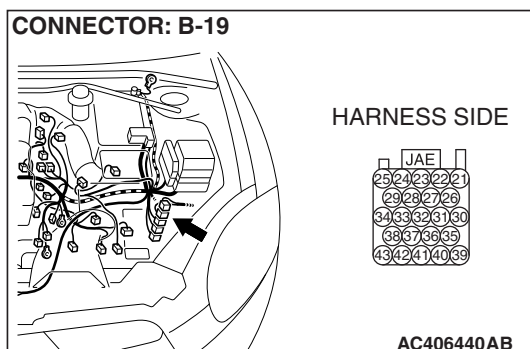
**YES :** An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).



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

**STEP 14. Check the wiring harness between fuel level sensor (sub), the fuel pump module and the ECM <M/T> or PCM <A/T> for short to ground. Measure the resistance at fuel level sensor (sub) connector D-10.**

- (1) Disconnect fuel level sensor (sub) connector D-10, fuel pump module connector D-19 and ECM <M/T> or PCM <A/T> connector B-19, and measure the resistance available at the harness side of the fuel level sensor (sub) connector D-10.



- (2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 1 kΩ or more.

**Q: Is the measured resistance 1 kΩ or more?**

**YES :** Go to Step 17.

**NO :** Go to Step 15.



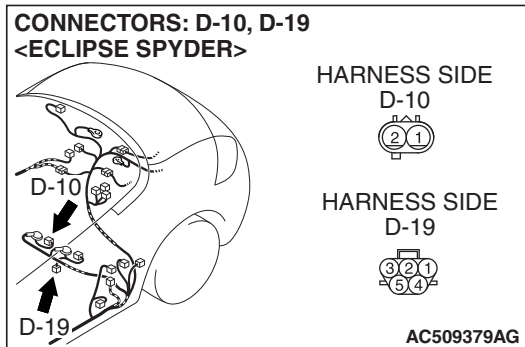
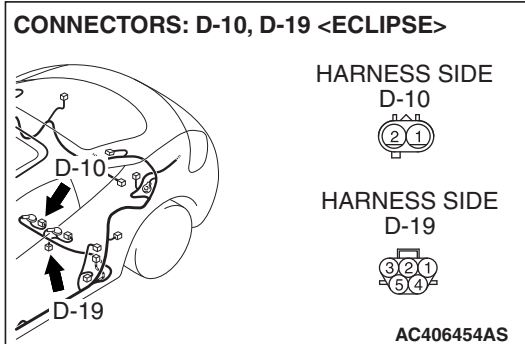
**STEP 15. Check the wiring harness between fuel level sensor (sub) connector D-10 (terminal 1) and fuel pump module connector D-19 (terminal 2).**

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

**Q: Is the wiring harness between fuel level sensor connector D-10 (terminal 1) and fuel pump module connector D-19 (terminal 2) in good condition?**

**YES :** Go to Step 16.

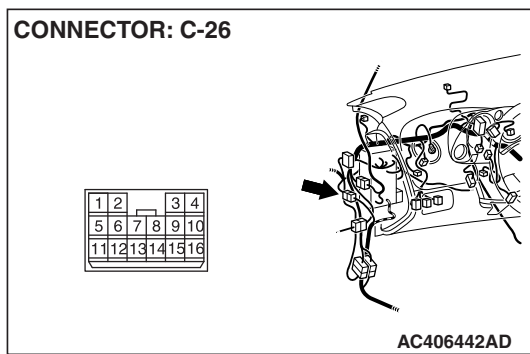
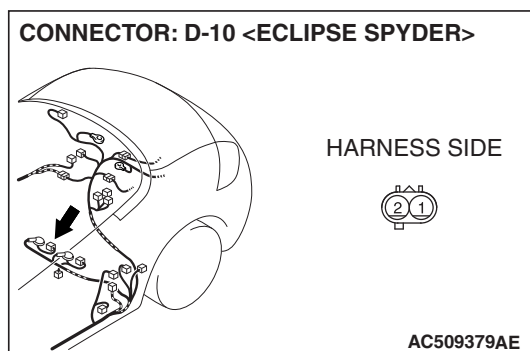
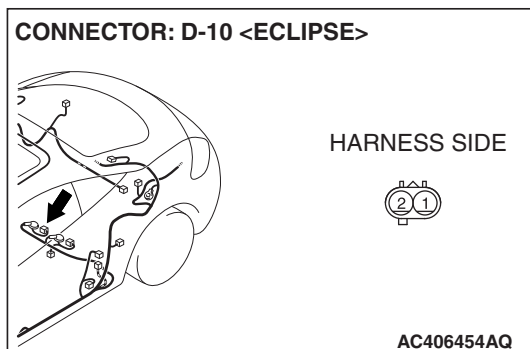
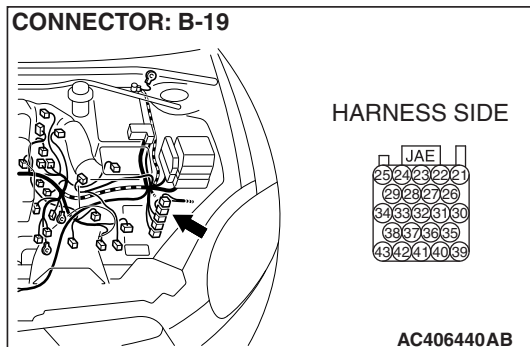
**NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the combination meter works normally.





**STEP 16. Check the wiring harness between fuel level sensor (sub) connector D-10 (terminal 1) and ECM <M/T> or PCM <A/T> connector B-19 (terminal 24).**

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



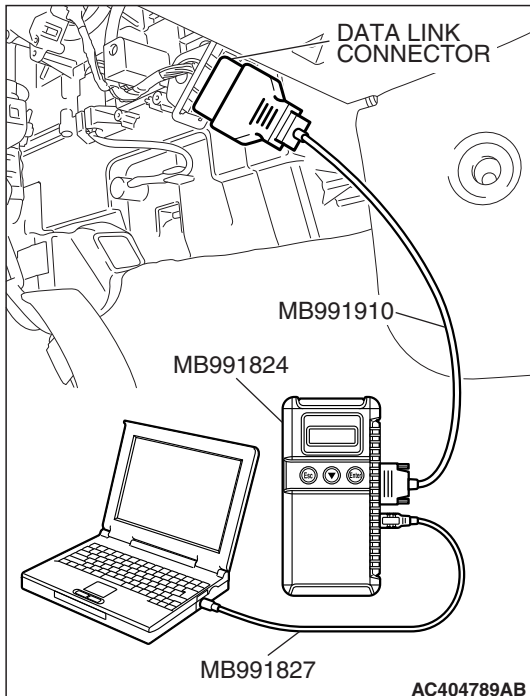
**NOTE:** Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between fuel level sensor connector D-10 (terminal 1) and ECM <M/T> or PCM <A/T> connector B-19 (terminal 24) in good condition?**

**YES :** Go to Step 17.

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





**STEP 17. Recheck the diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

**⚠ CAUTION**

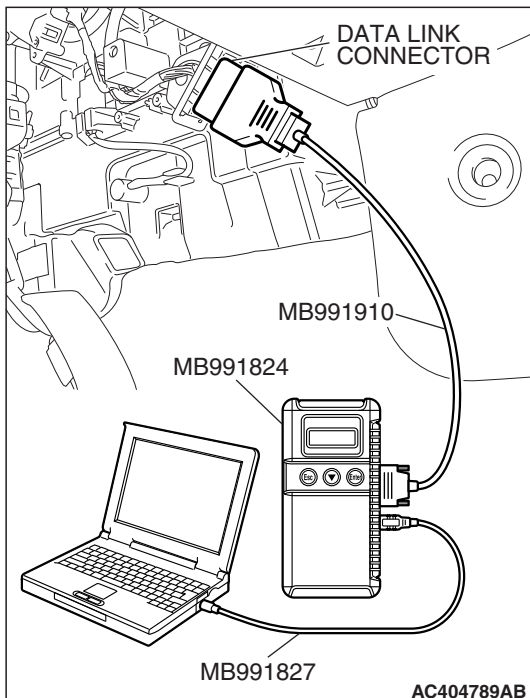
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Erase the diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.
- (5) Turn the ignition switch to "ON" position.
- (6) Check if the diagnostic trouble code is set.
- (7) Turn the ignition switch to the "LOCK" (OFF) position.

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

**YES :** The procedure is complete.

**NO :** Replace ECM <M/T> or PCM <A/T>. When the ECM <M/T> or PCM <A/T> is replaced, register the encrypted code. Refer to GROUP 42, Encrypted Code Registration Criteria Table [P.42-116](#).



**STEP 18. Recheck for diagnostic trouble code.**

Recheck if the diagnostic trouble code is set.

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

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.

**NO :** Replace combination meter.



**DTC U1073: Bus off**

---

**⚠ CAUTION**

- If DTC U1073 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**CIRCUIT OPERATION**

Some instruments of the combination meter are linked to the CAN bus line. Both the combination meter and the ECM <M/T> or PCM <A/T> have a terminator resistor.

**DTC SET CONDITION**

If the combination meter ceases communicating once (i.e. bus off) and then returns to it, the combination meter will not communicate for five minutes immediately after that point. This five minute period is called "Penalty mode." Immediately after the combination meter returns to communication, the DTC is set.

**TECHNICAL DESCRIPTION (COMMENT)**

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

**TROUBLESHOOTING HINTS**

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

**DIAGNOSIS****Required Special Tools:**

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

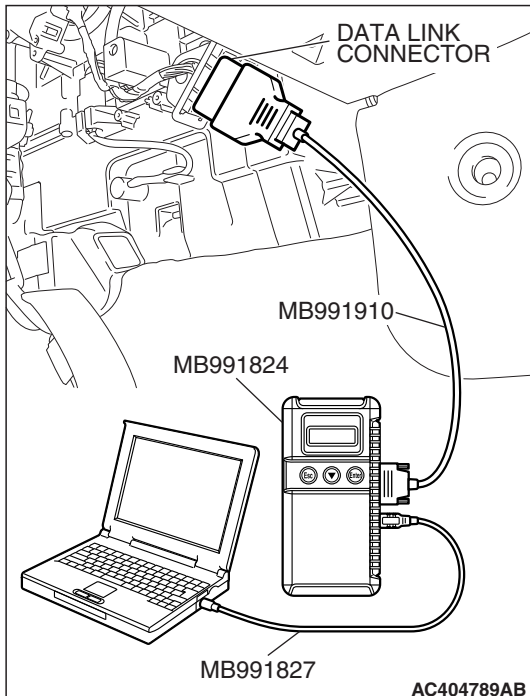
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).



**STEP 2. Recheck for diagnostic trouble code.**

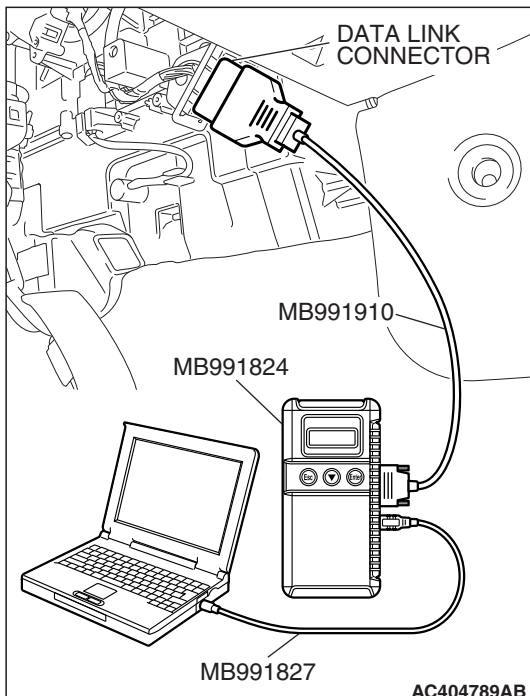
Recheck if the diagnostic trouble code is set.

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

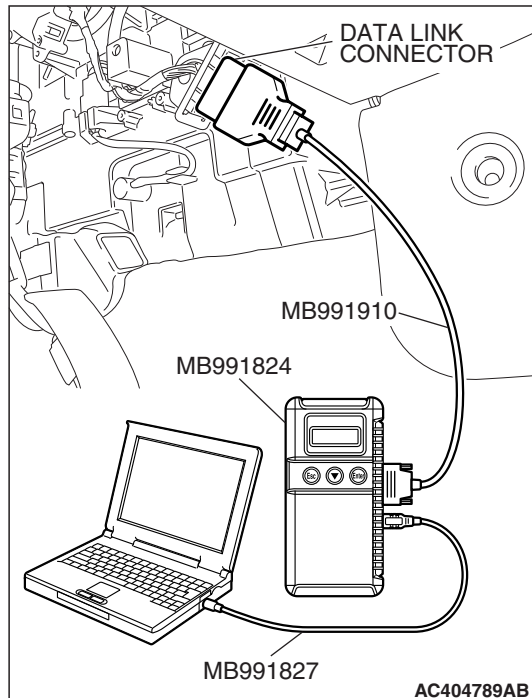
**Q: Is the check result satisfactory?**

**YES :** An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Go to Step 3.





**STEP 3. Recheck for diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result satisfactory?**

**YES** : The procedure is complete.

**NO** : Go to Step 1.

**DTC U1100: ECM <M/T> or PCM <A/T> time-out (related to engine)****CAUTION**

- If DTC U1100 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**DTC SET CONDITION**

The combination meter receives engine control system-related signals from the ECM <M/T> or PCM <A/T> via CAN bus lines. If the display unit cannot receive the necessary signals, DTC U1100 will be set.

**TECHNICAL DESCRIPTION (COMMENT)****CAUTION**

If the ignition switch is turned to the ON position without starting the engine, DTC (past trouble) U1100 may be set on the combination meter (incorporating meter-ECU) after three minutes.

**Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the ECM <M/T> or PCM <A/T> and the combination meter, the power supply system to the ECM <M/T> or PCM <A/T>, the ECM <M/T> or PCM <A/T> itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ECM <M/T> or PCM <A/T> and the combination meter, and the power supply system to the ECM <M/T> or PCM <A/T>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-16](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN*



bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).

## TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunction of ECM <M/T> or PCM <A/T>.
- Malfunction of combination meter

## DIAGNOSIS

### Required Special Tools:

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

#### CAUTION

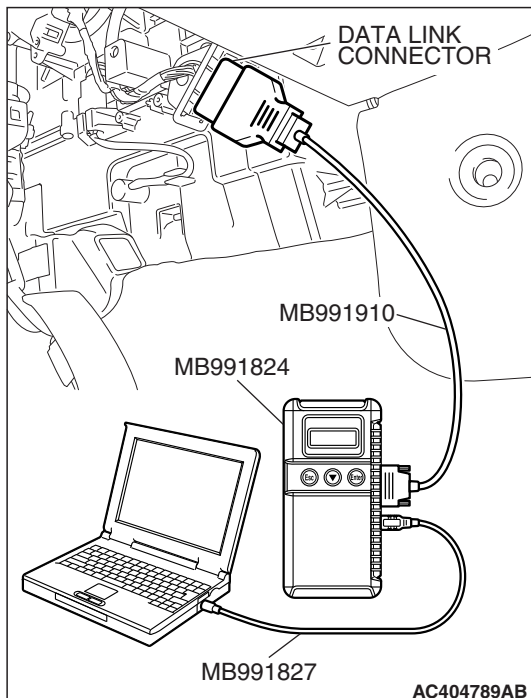
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

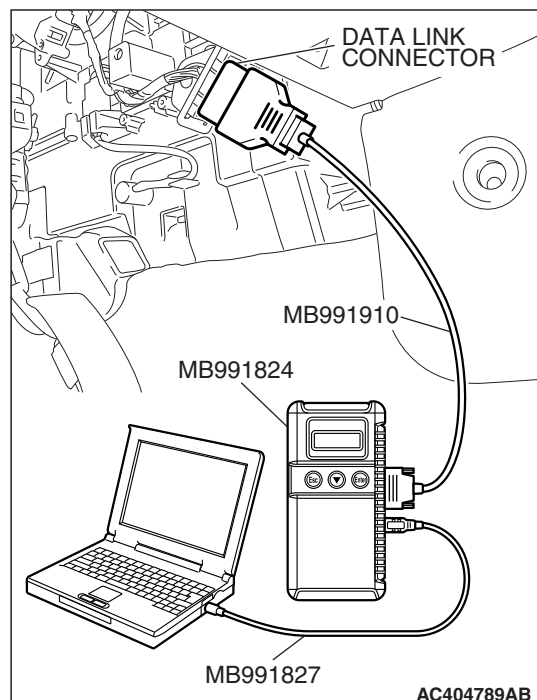
### Q: Is the check result satisfactory?

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).






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

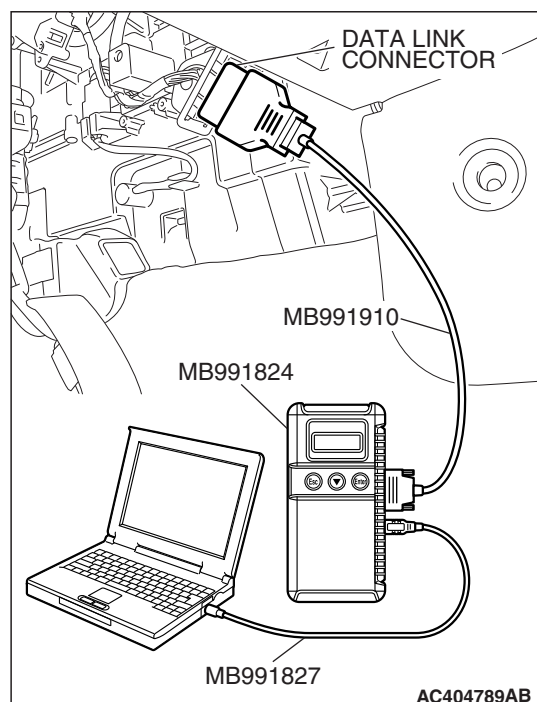
Check if an MFI system diagnostic trouble code is set.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES :** Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4 L engine> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8 L engine>.

**NO :** Go to Step 3.


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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check if a diagnostic trouble code, which relates to CAN communication-linked systems below, is set.

**ABS-ECU**

- DTC U1100: ECM <M/T> or PCM <A/T> time-out (related to Engine)

**A/C-ECU**

- DTC U1100: ECM <M/T> or PCM <A/T> time-out (related to Engine)

**ETACS-ECU**

- DTC U1100: ECM <M/T> or PCM <A/T> time-out (related to Engine)

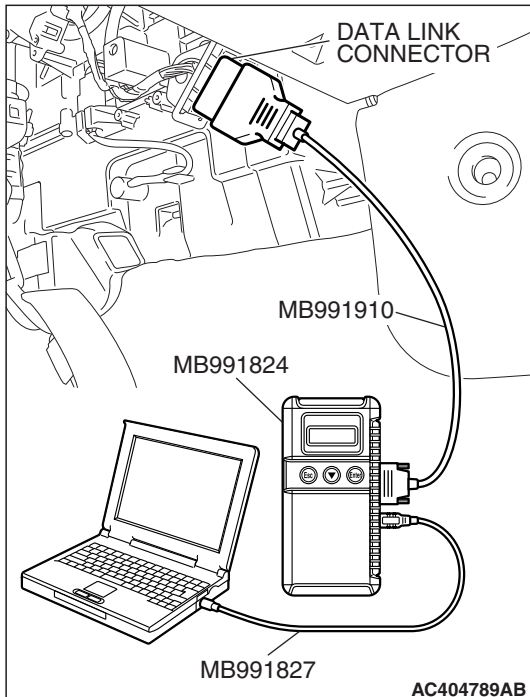
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES :** Go to Step 4.

**NO :** Go to Step 5.





**STEP 4. Recheck for diagnostic trouble code.**

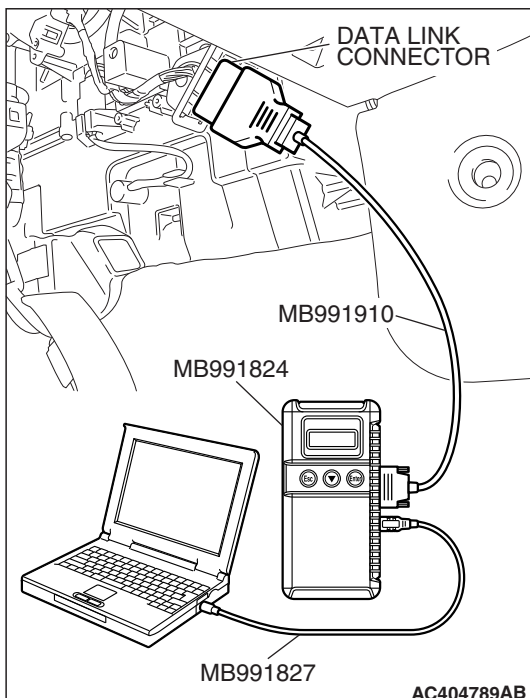
When the ECM <M/T> or PCM <A/T> is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-19](#), and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result normally?**

**YES :** An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Replace the combination meter.



**STEP 5. Recheck for diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result normally?**

**YES :** An intermittent malfunction is suspected. 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.



**DTC U1101: PCM time-out (related to A/T) <A/T>****⚠ CAUTION**

- If DTC U1101 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**DTC SET CONDITION**

- The combination meter receives A/T control system-related signal from the PCM via CAN bus lines. If the display unit cannot receive the necessary signals, DTC U1101 will be set.

**TECHNICAL DESCRIPTION (COMMENT)****⚠ CAUTION**

If the ignition switch is turned to the "ON" position without starting the engine, DTC (past trouble) U1101 may be set on the combination meter (incorporating meter-ECU) after three minutes.

**Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the PCM and the combination meter, the power supply system to the PCM, the PCM itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the PCM and the combination meter, and the power supply system to the PCM. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-16](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).*

**TROUBLESHOOTING HINTS**

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunction of the PCM.
- Malfunction of the combination meter

**DIAGNOSIS****Required Special Tools:**

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

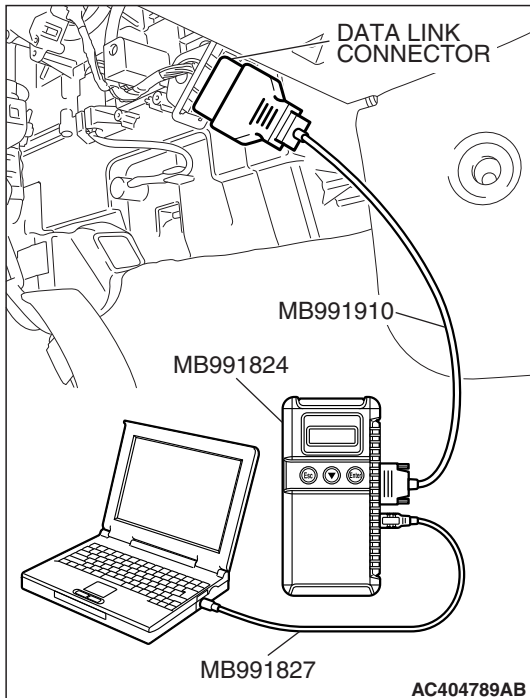
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).



**STEP 2. Using scan tool MB991958, read the A/T system diagnostic trouble code.**

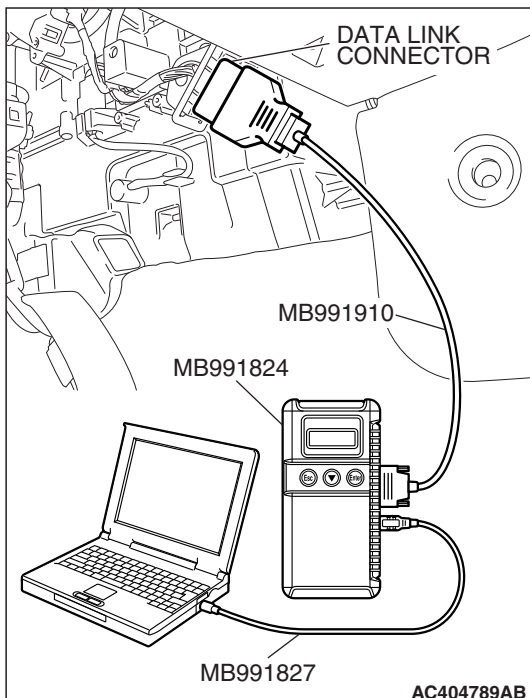
Check if an A/T system diagnostic trouble code is set.

- (1) Turn the ignition switch "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

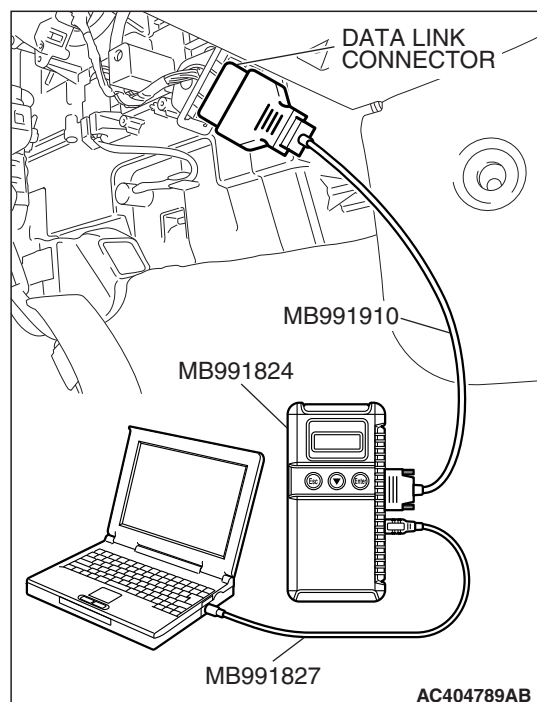
**Q: Is the DTC set?**

**YES :** Diagnose the A/T system by referring to GROUP 23A, A/T Diagnosis – Diagnostic Trouble Code Chart [P.23A-65](#).

**NO :** Go to Step 3.







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

- (1) Turn the ignition switch to the "ON" position.
- (2) Check if a diagnostic trouble code, which relates to CAN communication-linked systems below, is set.

ABS-ECU

- DTC U1101: PCM time-out (related to A/T)

ETACS-ECU

- DTC U1101: PCM time-out (related to A/T)

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

#### Q: Is the DTC set?

**YES** : Go to Step 4.

**NO** : Go to Step 5.

### STEP 4. Recheck for diagnostic trouble code.

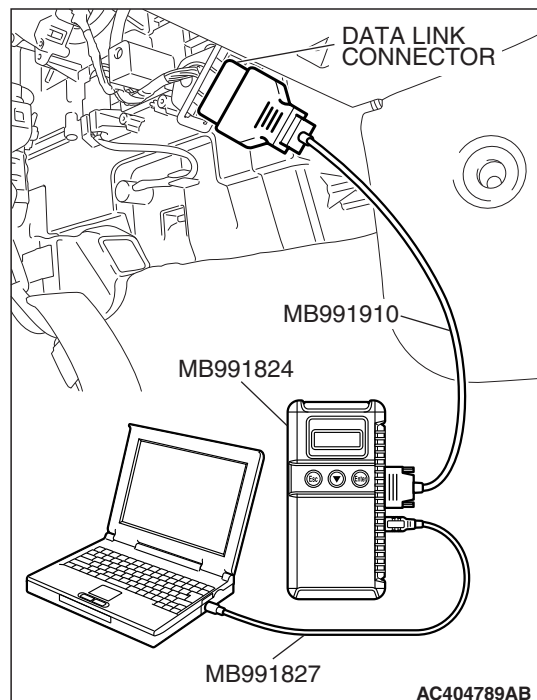
When the PCM is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-19](#), and then check that the diagnostic trouble code is not reset.

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

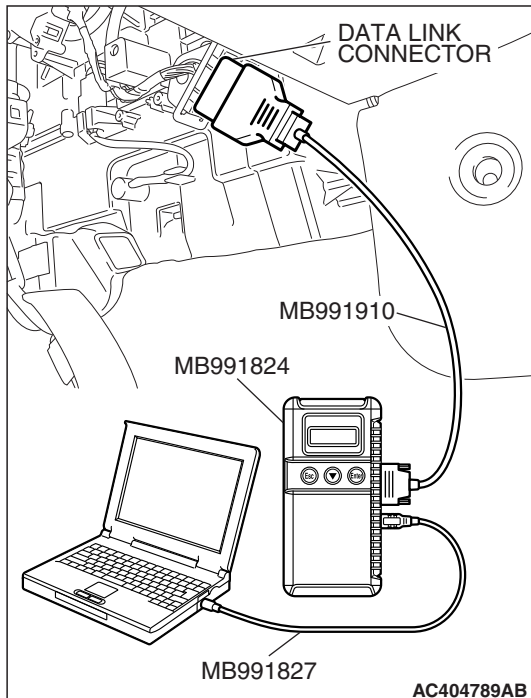
#### Q: Is the check result normally?

**YES** : An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

**NO** : Replace the combination meter.





**STEP 5. Recheck for diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result normally?**

**YES :** An intermittent malfunction is suspected. 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.

**DTC U1102: TCL/ ASC-ECU time-out****⚠ CAUTION**

- If DTC U1102 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**DTC SET CONDITION**

The combination meter communicates with the TCL/ASC-ECU through CAN bus lines. If it cannot receive all the necessary signals from the TCL/ASC-ECU, DTC U1102 is set.

**TECHNICAL DESCRIPTION (COMMENT)****⚠ CAUTION**

If the ignition switch is turned to the "ON" position without starting the engine, DTC (past trouble) U1100, U1101 and U1102 may be set on the combination meter after one minute.

**Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the TCL/ASC-ECU and the combination meter, the power supply system to the TCL/ASC-ECU, the TCL/ASC-ECU itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the TCL/ASC-ECU and the combination meter, and the power supply system to the TCL/ASC-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).*



**TROUBLESHOOTING HINTS**

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of TCL/ASC-ECU
- Malfunction of combination meter

**DIAGNOSIS****Required Special Tools:**

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

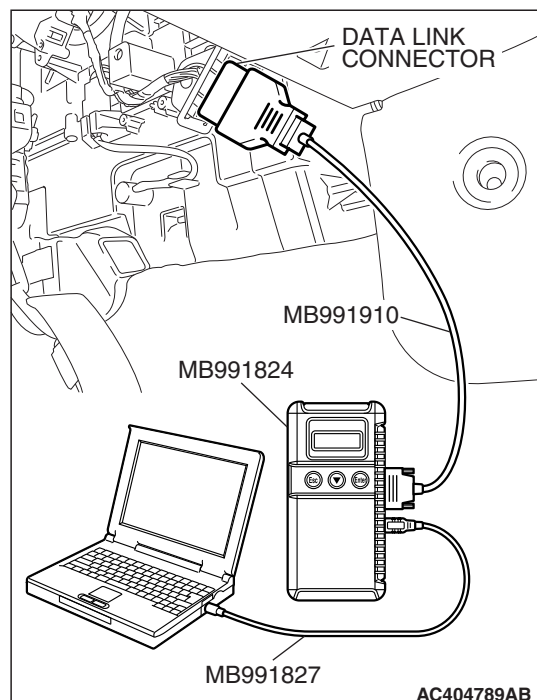
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

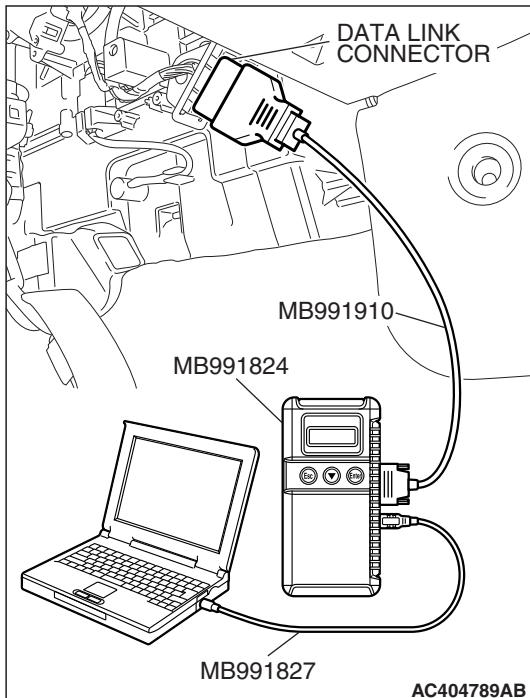
**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).







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

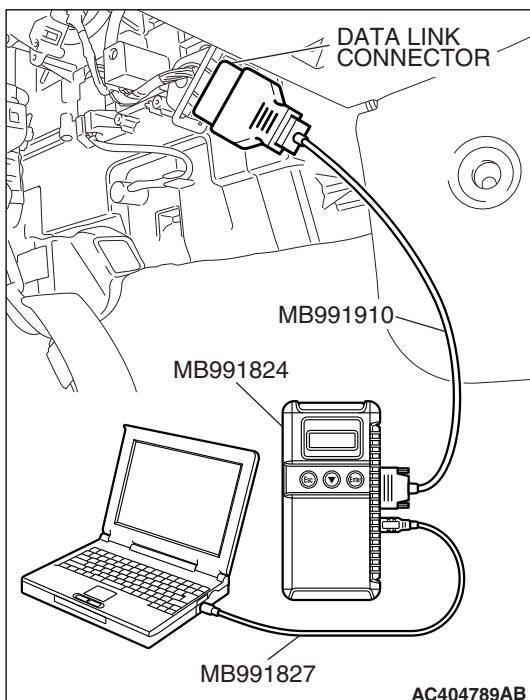
Check that the TCL/ASC-ECU sets a diagnostic trouble code.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES** : Refer to GROUP 35C, Diagnosis – Diagnostic Trouble Code Chart [P.35C-14](#).

**NO** : Go to Step 3.



**STEP 3. Recheck for diagnostic trouble code.**

Recheck if the diagnostic trouble code is set.

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

**Q: Is the check result satisfactory?**

**YES** : The procedure is complete.

**NO** : Replace the combination meter.



**DTC U1109: ETACS-ECU time-out****⚠ CAUTION**

- If DTC U1109 is set in the combination meter, diagnose the CAN main bus line.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**CIRCUIT OPERATION**

The ETACS-ECU communicates with the combination meter and the powertrain control module via CAN bus line to obtain necessary information. Both the combination meter and the powertrain control module have terminator resistors.

**DTC SET CONDITION**

The combination meter receives signal from the ETACS-ECU via CAN bus lines. If it cannot receive all the necessary signals from the ETACS-ECU, DTC U1109 is set.

**TECHNICAL DESCRIPTION (COMMENT)****Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the combination meter, the power supply system to the ETACS-ECU, the ETACS-ECU itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the combination meter, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).*

**TROUBLESHOOTING HINTS**

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

**DIAGNOSIS****Required Special Tools:**

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

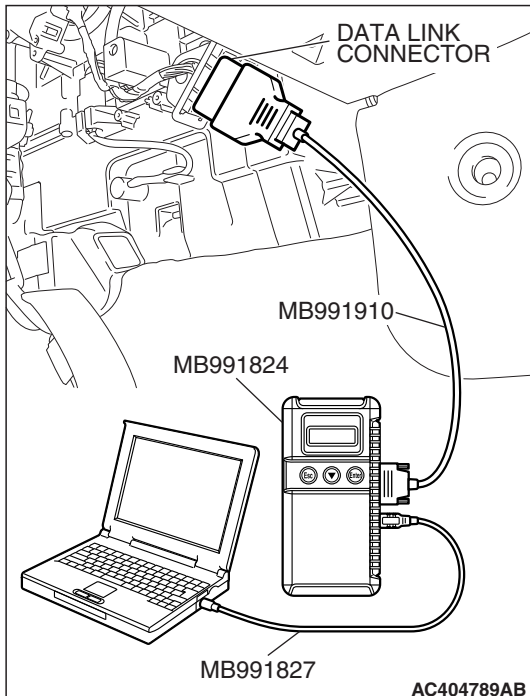
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).



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

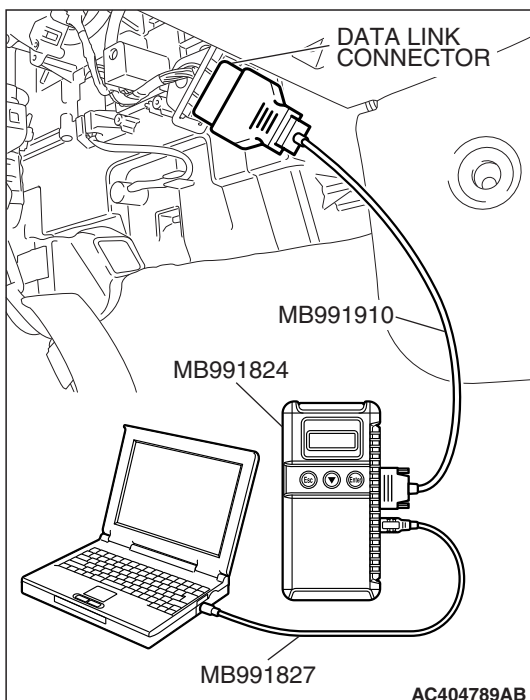
Check that the ETACS-ECU sets a diagnostic trouble code.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

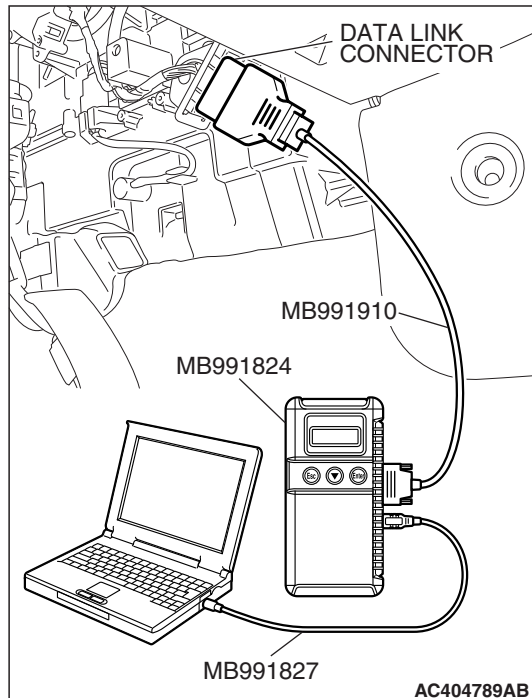
**Q: Is the DTC set?**

**YES :** Diagnose the SWS system by referring to [P.54B-26](#).

**NO :** Go to Step 3.





**STEP 3. Recheck for diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result normally?**

**YES** : The procedure is complete.

**NO** : Go to Step 1.

**DTC U1112: SRS-ECU time-out****CAUTION**

- If DTC U1112 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**DTC SET CONDITION**

The combination meter communicates with the SRS-ECU through CAN bus lines. If it cannot receive all the necessary signals from the SRS-ECU, DTC U1112 is set.

**TECHNICAL DESCRIPTION (COMMENT)****Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the SRS-ECU and the combination meter, the power supply system to the SRS-ECU, the SRS-ECU itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the SRS-ECU and the combination meter, and the power supply system to the SRS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).*



## TROUBLESHOOTING HINTS

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

## DIAGNOSIS

### Required Special Tools:

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

#### **CAUTION**

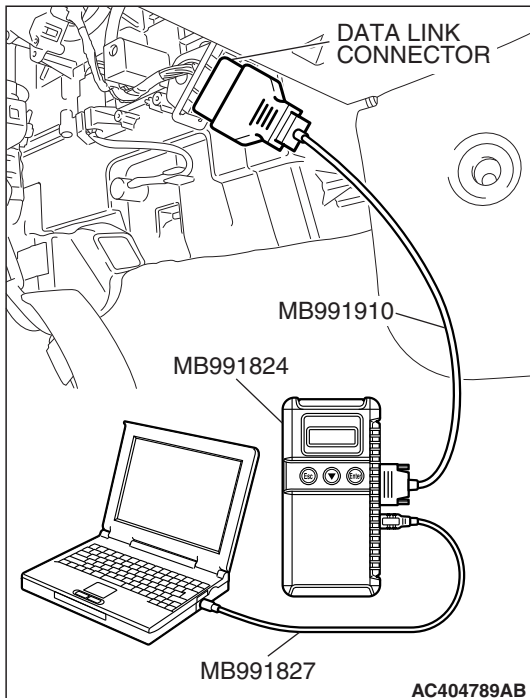
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

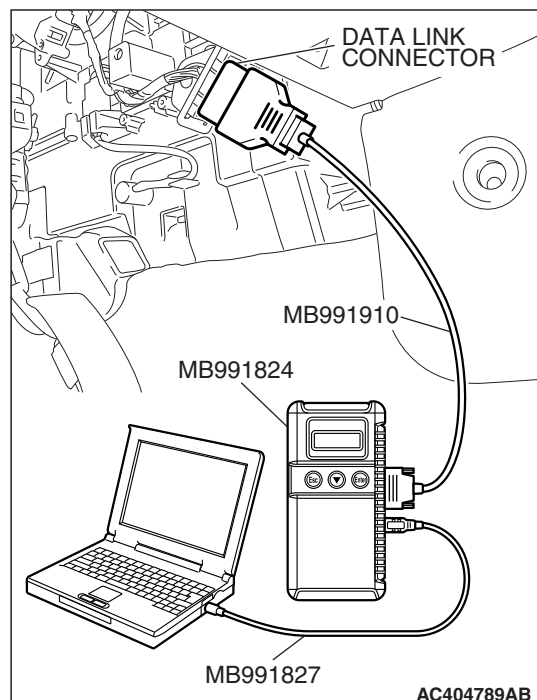
#### Q: Is the check result satisfactory?

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).







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

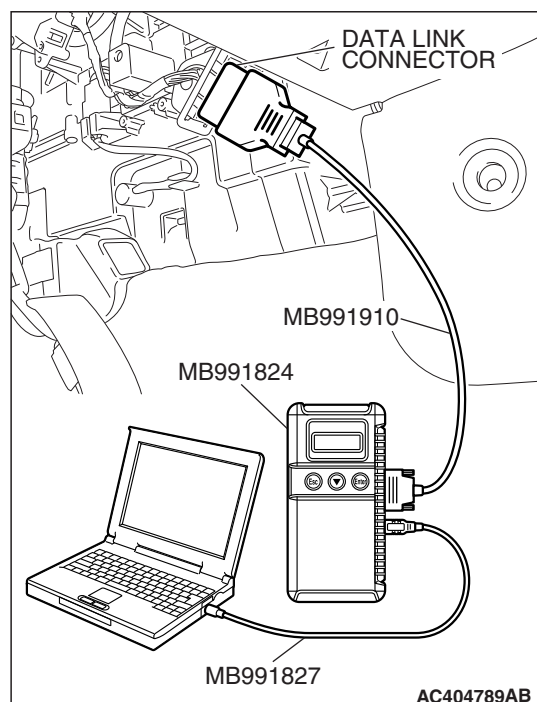
Check that the SRS-ECU sets a diagnostic trouble code.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

#### Q: Is the DTC set?

**YES** : Refer to GROUP 52B, Diagnosis-Diagnostic Trouble Code Chart [P.52B-33](#).

**NO** : Go to Step 3.



### STEP 3. Recheck for diagnostic trouble code.

Recheck if the diagnostic trouble code is set.

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

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

**YES** : A poor connection, open circuit or other intermittent malfunction is present in the lines between the SRS-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO** : Replace the combination meter.



**DTC U1114: TPMS-ECU time-out****⚠ CAUTION**

- If DTC U1114 is set in the combination meter, always diagnose the CAN bus lines.
- Whenever the ECU is replaced, ensure that the communication circuit is normal.

**DTC SET CONDITION**

The combination meter communicates with the TPMS-ECU through CAN bus lines. If it cannot receive all the necessary signals from the SRS-ECU, DTC U1114 is set.

**TECHNICAL DESCRIPTION (COMMENT)****Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the TPMS-ECU and the combination meter, the power supply system to the TPMS-ECU, the TPMS-ECU itself, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the TPMS-ECU and the combination meter, and the power supply system to the TPMS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

*NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN bus line Diagnostics Flow [P.54C-10](#)).*

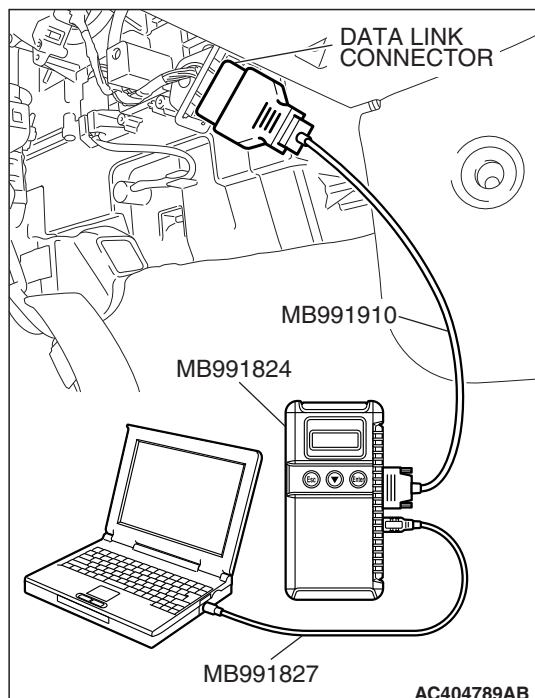
**TROUBLESHOOTING HINTS**

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

**DIAGNOSIS****Required Special Tools:**

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

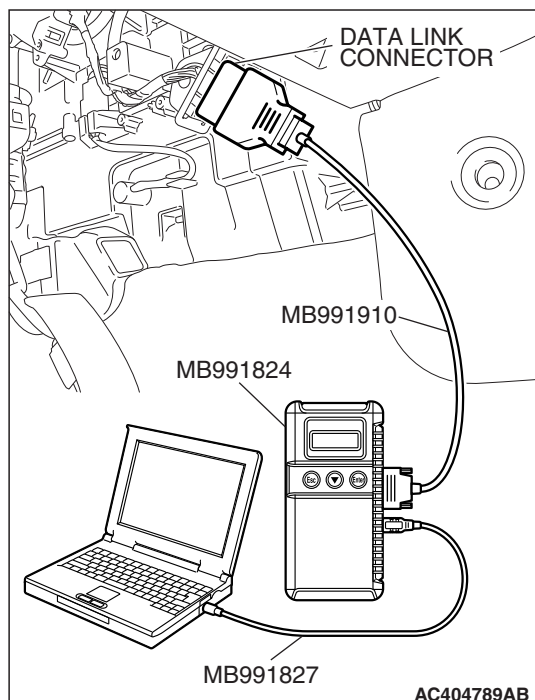
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).

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

Check that the TPMS-ECU sets a diagnostic trouble code.

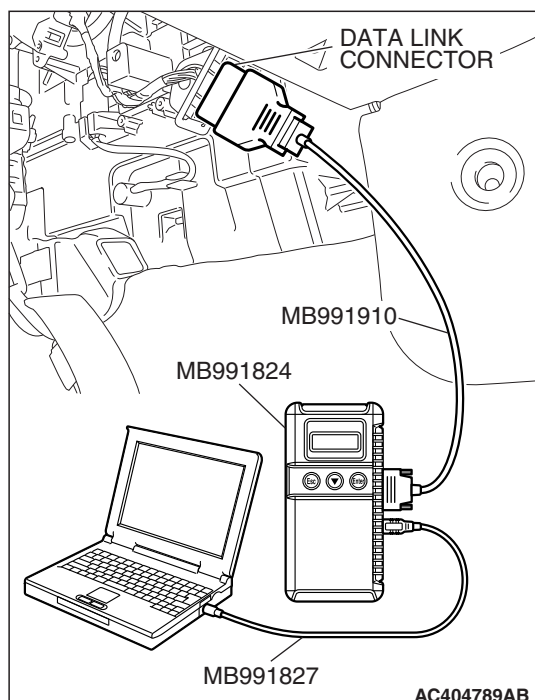
- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES** : Refer to GROUP 31, Diagnosis - Diagnostic Trouble Code Chart [P.31-13](#).

**NO** : Go to Step 3.



**STEP 3. Recheck for diagnostic trouble code.**

Recheck if the diagnostic trouble code is set.

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

**Q: Is the check result satisfactory?**

**YES :** A poor connection, open circuit or other intermittent malfunction is present in the lines between the SRS-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.

**DTC U1120: Failure information on ECM <M/T> or PCM <A/T> (related to engine)****CAUTION**

- If DTC U1120 is set in the combination meter, diagnose the CAN main bus line.
- If DTC U1120 has been set, SWS related DTC 021 is also set. After SWS has been diagnosed, don't forget to erase DTC 021.

**DTC SET CONDITION**

The combination meter communicates with the ECM <M/T> or PCM <A/T> via CAN bus line. If failure information is sent to the ECM <M/T> or PCM <A/T>, DTC U1120 will be set.

**TECHNICAL DESCRIPTION (COMMENT)****Current trouble**

- The ECM <M/T> or PCM <A/T> or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the ECM <M/T> or PCM <A/T> and the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

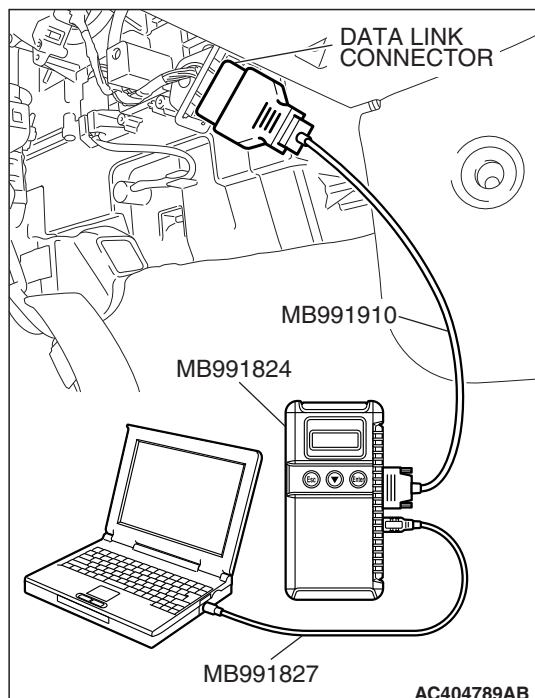
**TROUBLESHOOTING HINTS**

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of ECM <M/T> or PCM <A/T>
- Malfunction of combination meter

**DIAGNOSIS****Required Special Tools:**

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



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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

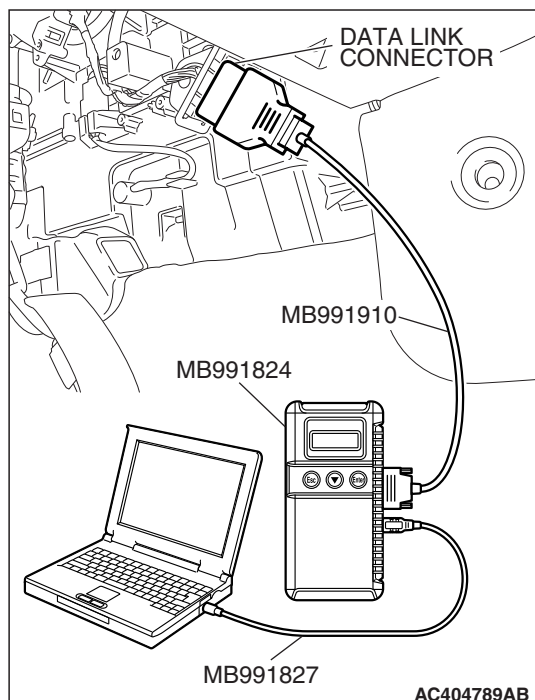
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).

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

Check if an MFI system diagnostic trouble code is set.

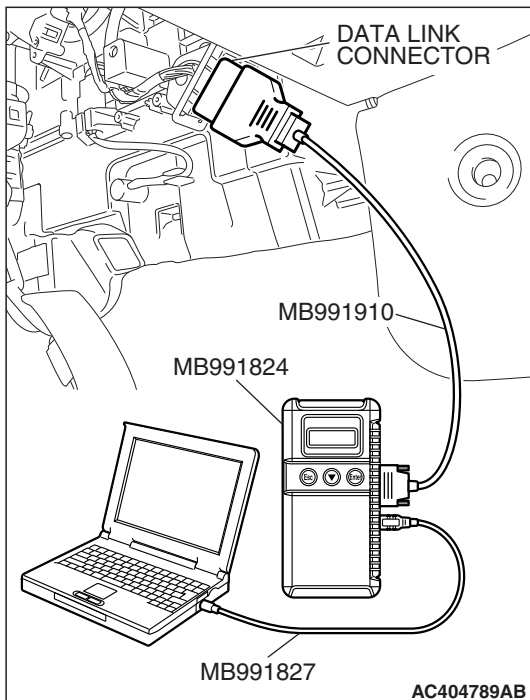
- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES :** Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4 L engine> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8 L engine>.

**NO :** Go to Step 3.





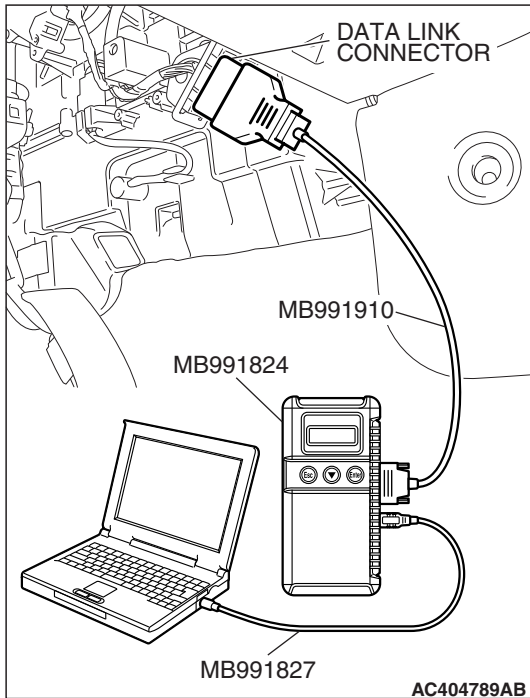
**STEP 3. Using scan tool MB991958, read the for any diagnostic trouble code.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check if a diagnostic trouble code, which relates to CAN communication-linked systems below, is set.
  - ETACS-ECU
  - A/C-ECU
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES** : Go to Step 4.

**NO** : Go to Step 5.



**STEP 4. Recheck for diagnostic trouble code.**

When the ECM <M/T> or PCM <A/T> is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-19](#), and then check that the diagnostic trouble code is not reset.

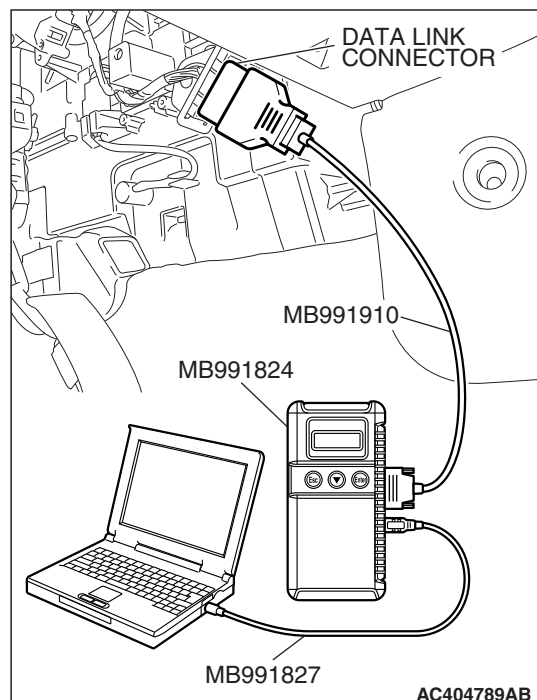
- (1) Turn the ignition switch to "ON" position.
- (2) Erase the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Turn the ignition switch to "ON" position.
- (5) Check if the diagnostic trouble code is set.
- (6) Turn the ignition switch to the "LOCK" (OFF)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

**Q: Is the check result normally?**

**YES** : The procedure is complete.

**NO** : Replace the combination meter.



**STEP 5. Recheck for diagnostic trouble code.**

Replace the combination meter, and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result normally?**

**YES** : The procedure is complete.

**NO** : Go to Step 1.

**DTC U1206: Flag invalid****CAUTION**

If DTC U1206 is set in the combination meter, diagnose the CAN main bus line.

**TROUBLE JUDGMENT**

When the ignition switch is in the "LOCK" (OFF) position, the combination meter receives door-open signal or communication standby instruction from the ETACS-ECU and keeps CAN communication. If there is a contradiction between these two signals, DTC U1206 will be set.

**COMMENTS ON TROUBLE SYMPTOM****Current trouble**

- The door switch system of the ETACS-ECU, the ETACS-ECU, or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the ETACS-ECU and the door switch, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

**POSSIBLE CAUSES**

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



## DIAGNOSIS

### Required Special Tools:

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

#### **⚠ CAUTION**

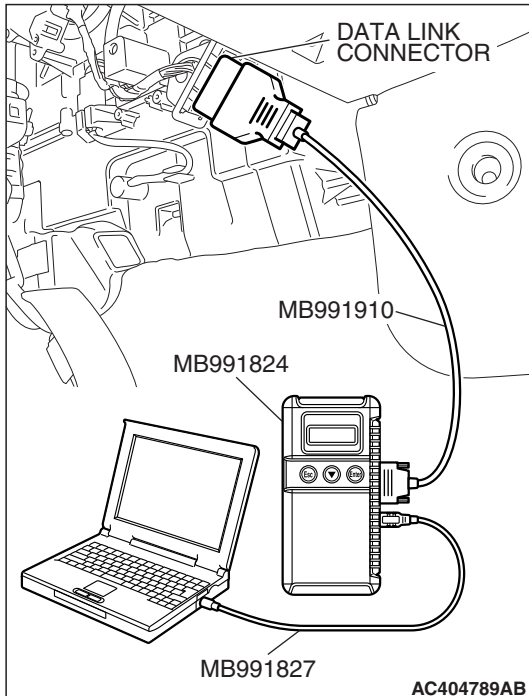
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

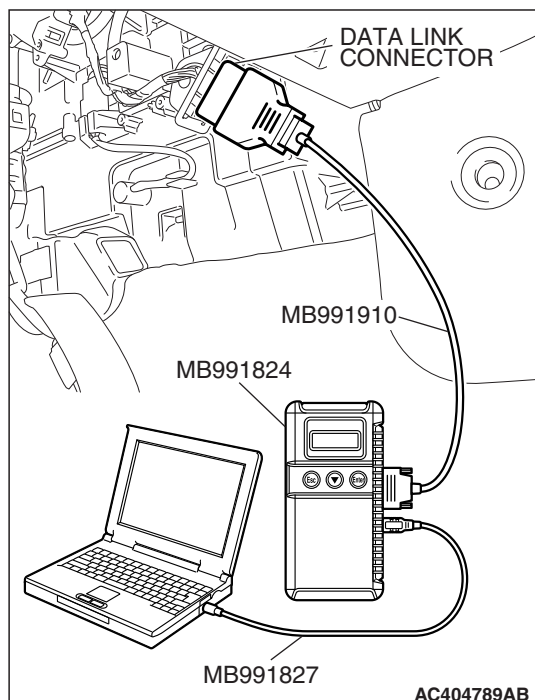
#### **Q: Is the check result satisfactory?**

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).





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

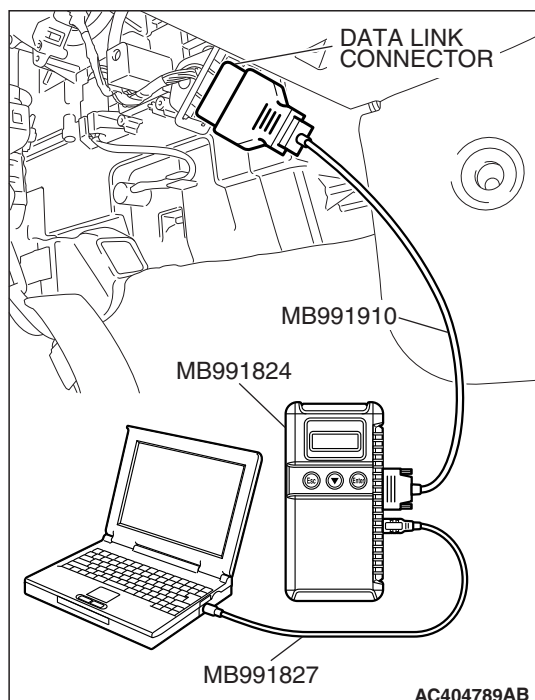
Check that the ETACS-ECU sets a diagnostic trouble code.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES** : Diagnose the SWS system by referring to [P.54B-26](#).

**NO** : Go to Step 3.

**STEP 3. Recheck for diagnostic trouble code.**

When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-19](#), and then check that the diagnostic trouble code is not reset.

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

**Q: Is the check result satisfactory?**

**YES** : The procedure is complete.

**NO** : Replace the combination meter.



**DTC U1434: Failure information on TPMS-ECU****⚠ CAUTION**

- If DTC U1434 is set in the combination meter, diagnose the CAN main bus line.
- If DTC U1434 has been set, SWS related DTC 021 is also set. After SWS has been diagnosed, don't forget to erase DTC 021.

**DTC SET CONDITION**

The combination meter communicates with the TPMS-ECU (TPMS receiver) via CAN bus line. If failure information is sent to the combination meter, DTC U1434 will be set.

**TECHNICAL DESCRIPTION (COMMENT)****Current trouble**

- The TPMS-ECU (TPMS receiver) or the combination meter may be defective.

**Past trouble**

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the TPMS-ECU (TPMS receiver) and the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-14](#)).

**TROUBLESHOOTING HINTS**

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of TPMS-ECU (TPMS receiver)
- Malfunction of combination meter

**DIAGNOSIS****Required Special Tools:**

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

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

Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

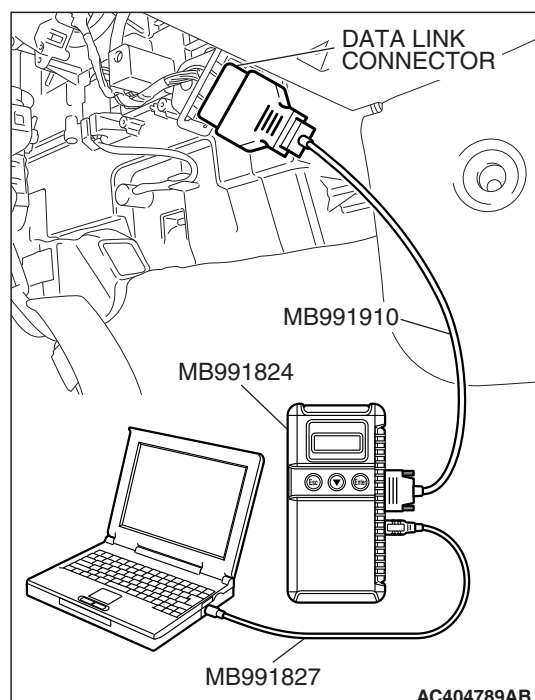
**To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

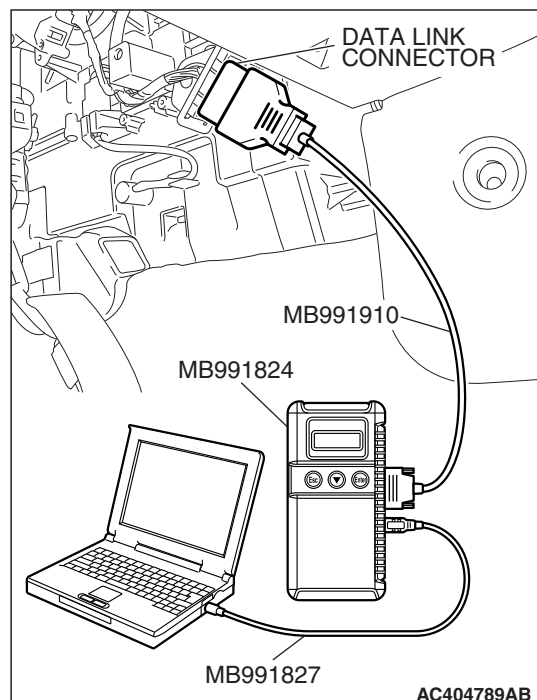
**Q: Is the check result satisfactory?**

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).







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

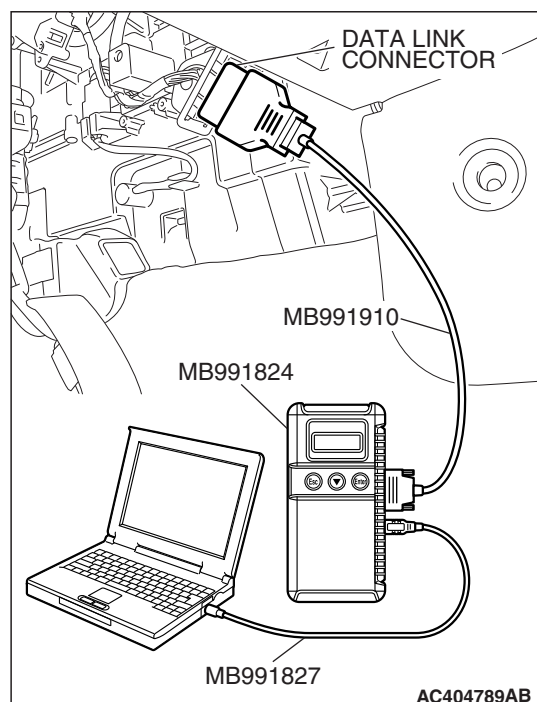
Check if an TPMS diagnostic trouble code is set.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

#### Q: Is the DTC set?

**YES** : Diagnose the TPMS by referring to GROUP 31, Diagnosis – Diagnostic Trouble Code Chart [P.31-13](#).

**NO** : Go to Step 3.



### STEP 3. Recheck for diagnostic trouble code.

Check that the diagnostic trouble code is not reset.

- (1) Turn the ignition switch to "ON" position.
- (2) Erase the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Turn the ignition switch to "ON" position.
- (5) Read the diagnostic trouble code.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

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

**YES** : The procedure is complete.

**NO** : Replace the combination meter.



## SYMPTOM CHART

M1543007201729

**⚠ CAUTION**

During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are set, erase them all.

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Communication with scan tool is not possible.	1	P.54A-105
Power supply circuit.	2	P.54A-107
Odometer and trip meter are not displayed.	3	
No needle meters work.	4	
When the ignition switch is turned to the ON position, the indicator and warning lights do not illuminate.	5	
Speedometer does not work (other meters work).	6	P.54A-112
The fuel gauge needle moves excessively.	7	P.54A-115
Tachometer does not work (other meters work).	8	
Fuel gauge does not work (other meters work).	9	
Engine coolant temperature gauge does not work (other meters work).	10	P.54A-121
The fuel warning light does not illuminate or go out.	11	P.54A-123

## SYMPTOM PROCEDURES

## INSPECTION PROCEDURE 1: Communication with scan tool is not possible.

## CIRCUIT OPERATION

The combination meter is linked to the data link connector via CAN bus line to communicate with the scan tool.

## TECHNICAL DESCRIPTION (COMMENT)

If the system does not communicate with scan tool, power supply to data link connector or CAN bus lines may be defective.

## TROUBLESHOOTING HINTS

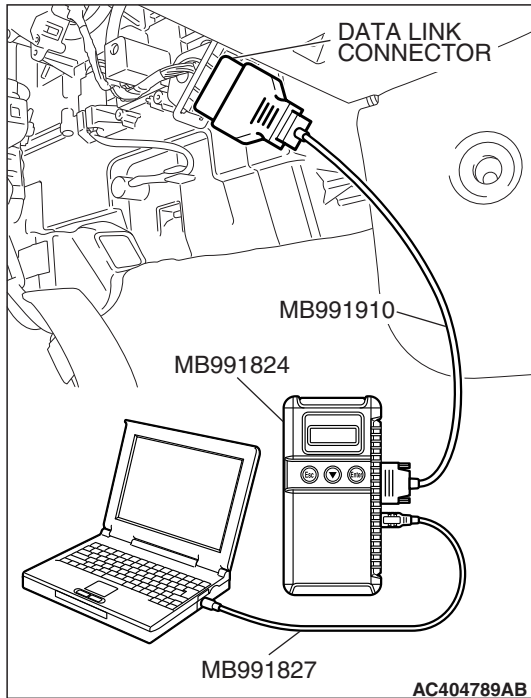
- Malfunction of the combination meter
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

## DIAGNOSIS

## Required Special Tools:

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





**Using scan tool MB991958, diagnose the CAN bus line.**  
Use scan tool MB991958 to diagnose the CAN bus lines.

**⚠ CAUTION**

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

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Diagnose the power supply circuit. Refer to [P.54A-107](#).

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).



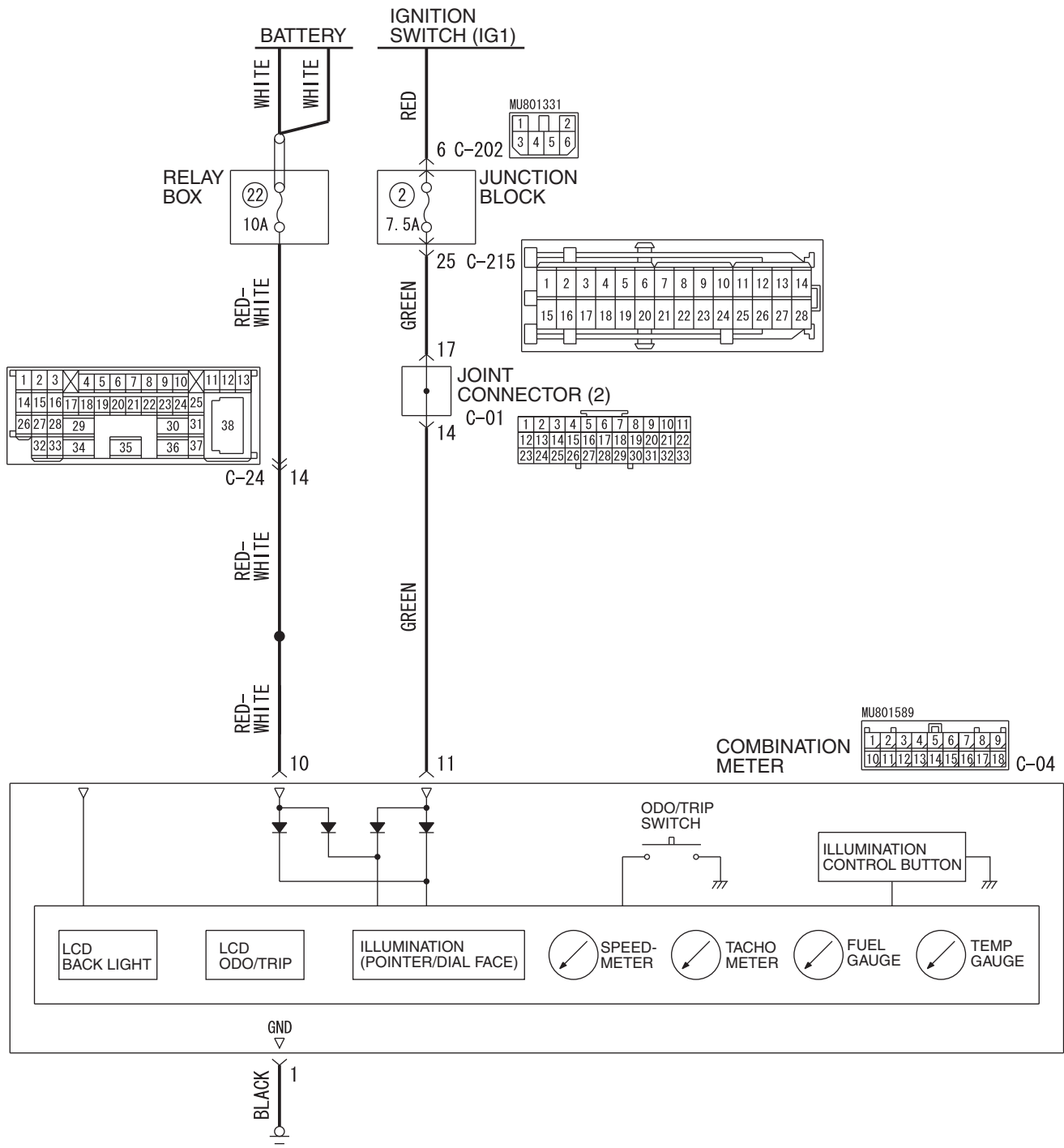
INSPECTION PROCEDURE 2: Power supply circuit.

INSPECTION PROCEDURE 3: Odometer and trip meter are not displayed.

INSPECTION PROCEDURE 4: No needle meters work.

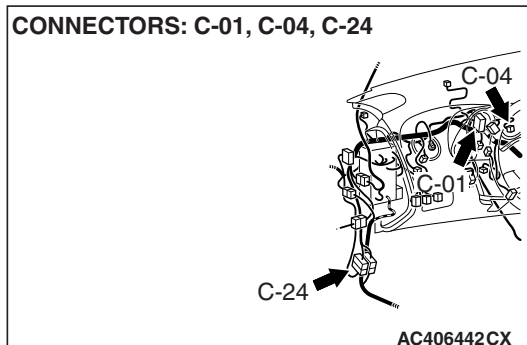
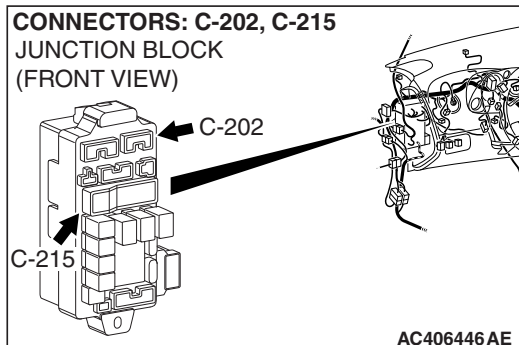
INSPECTION PROCEDURE 5: When the ignition switch is turned to the ON position, the indicator and warning lights do not illuminate.

Combination Meter Power Supply Circuit





CONNECTORS: C-01, C-04, C-24

CONNECTORS: C-202, C-215  
JUNCTION BLOCK  
(FRONT VIEW)**CIRCUIT OPERATION**

The combination meter is energized by the battery through ignition switch (IG1).

**TECHNICAL DESCRIPTION (COMMENT)**

If the odometer and trip meter are not displayed or no needle meters work, power supply and ground system to the combination meter, or the combination meter itself may be defective.

**POSSIBLE CAUSES**

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

**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness set
- MB992006: Extra Fine Probe

**STEP 1. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

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

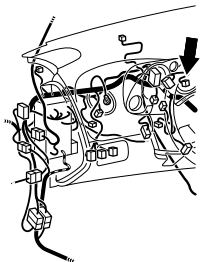
**YES :** Go to Step 2.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The combination meter works normally.

CONNECTOR: C-04

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



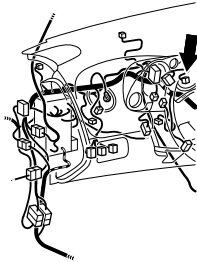
AC406442AB



CONNECTOR: C-04

HARNESS SIDE

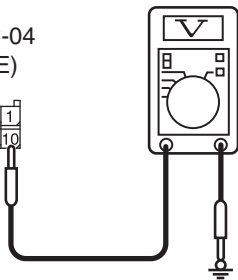
9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

CONNECTOR C-04  
(HARNESS SIDE)

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC209365NZ

**STEP 2. Measure at combination meter connector C-04 in order to power supply circuit to combination meter (battery power supply).**

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

(2) Measure the voltage between terminal 10 and ground.  
• The voltage should measure approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 4.

**NO :** Go to Step 3.

**STEP 3. Check the wiring harness between combination meter connector C-04 (terminal 10) and the battery.**

• Check the power supply line for open circuit and short circuit.

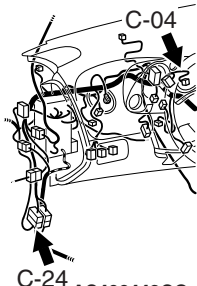
CONNECTORS: C-04, C-24

C-04 HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10

C-24

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	
26	27	28	29					30	31			
32	33	34		35				36	37			
										38		



AC406442CO

**NOTE:** Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**Q: Is the wiring harness between combination meter connector C-04 (terminal 10) and the battery in good condition?**

**YES :** Retest the system.

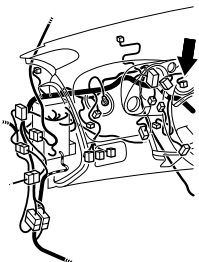
**NO :** Repair the wiring harness. Check that the combination meter is normally.



**CONNECTOR: C-04**

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



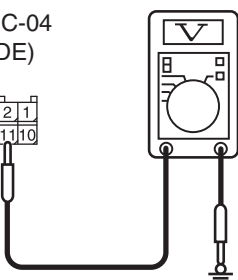
AC406442AB

**STEP 4. Measure the voltage at combination meter connector C-04 in order to power supply circuit to combination meter (IG1 power supply).**

- (1) Disconnect combination meter connector C-04, and measure at the wiring harness side.
- (2) Turn the ignition switch to "ON" position.

CONNECTOR C-04  
(HARNESS SIDE)

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC209365OA

- (3) Measure the voltage between terminal 11 and ground.
  - The voltage should measure approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 6.

**NO :** Go to Step 5.

**STEP 5. Check the wiring harness between combination meter connector C-04 (terminal 11) and the ignition switch (IG1).**

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

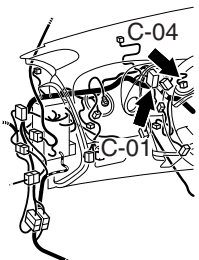
**CONNECTORS: C-01, C-04**

C-01

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

C-04  
HARNESS SIDE

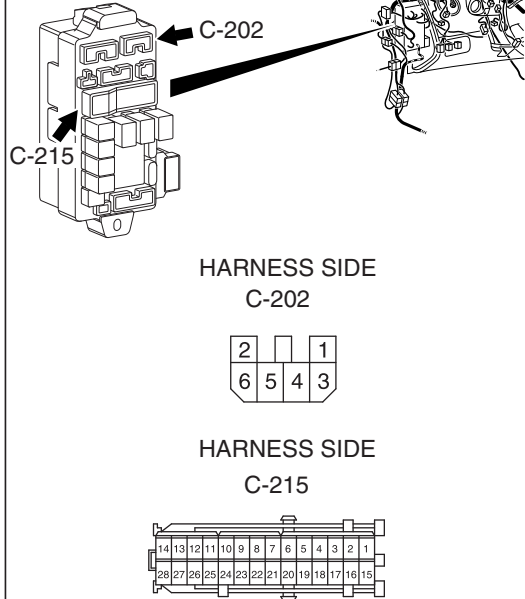
9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442CW



**CONNECTORS: C-202, C-215**  
JUNCTION BLOCK  
(FRONT VIEW)



HARNESS SIDE  
C-202

2		1
6	5	4

HARNESS SIDE  
C-215

14	13	12	11	10	9	8	7	6	5	4	3	2	1
28	27	26	25	24	23	22	21	20	19	18	17	16	15

AC406447AB

**NOTE:** Also check joint connector (2) C-01, junction block connector C-202 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If inspecting joint connector (2) C-01 or junction block connector C-202 or C-215 is damaged, repair or replace. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between combination meter connector C-04 (terminal 11) and the ignition switch (IG1) in good condition?

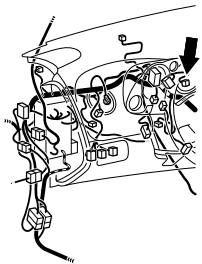
**YES :** Refer to ignition switch diagnosis [P.54A-9](#).

**NO :** Repair the wiring harness. Check that the combination meter is normally.

**CONNECTOR: C-04**

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

**STEP 6. Measure the resistance at combination meter connector C-04 in order to the ground circuit to the combination meter.**

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

(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

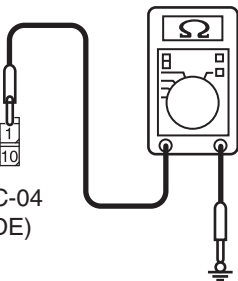
**Q:** Is the measured resistance 2 ohms or less?

**YES :** Go to Step 8.

**NO :** Go to Step 7.

CONNECTOR C-04  
(HARNESS SIDE)

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



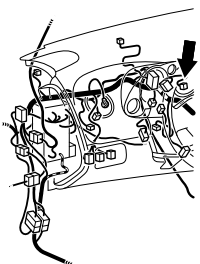
AC209364OG



CONNECTOR: C-04

HARNESS SIDE

9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11	10



AC406442AB

**STEP 7. Check the wiring harness between combination meter connector C-04 (terminal 1) and ground.**

- Check the ground wire for open circuit.

**Q: Is the wiring harness between combination meter connector C-04 (terminal 1) and ground in good condition?**

**YES :** Retest the system.

**NO :** Repair the wiring harness. Check that the combination meter is normally.

**STEP 8. Retest the system.**

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.

**INSPECTION PROCEDURE 6: Speedometer does not work (other meters work).**

**INSPECTION PROCEDURE 7: The fuel gauge needle moves excessively.**

### **CAUTION**

When the battery cable is disconnected or the combination meter is removed, the fuel gauge learned value will be erased. To let the display unit re-learn it, enter the vehicle speed (by driving the vehicle or entering simulated vehicle speed) and then stop the vehicle.

### **CIRCUIT OPERATION**

The output shaft speed sensor sends vehicle signal to the combination meter via the ECM <M/T> or PCM <A/T> and the CAN bus line.

### **TECHNICAL DESCRIPTION (COMMENT)**

If only the speedometer does not operate, the ECM <M/T> or PCM <A/T> system, the combination meter, the wiring harness or its connector may be defective. Furthermore, incorrect level of fuel is shown on the gauge, because the display unit can not learn the fuel gauge.

### **TROUBLESHOOTING HINTS**

- Malfunction of the combination meter
- Malfunction of the ECM <M/T> or PCM <A/T>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

### **DIAGNOSIS**

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

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



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

**⚠ CAUTION**

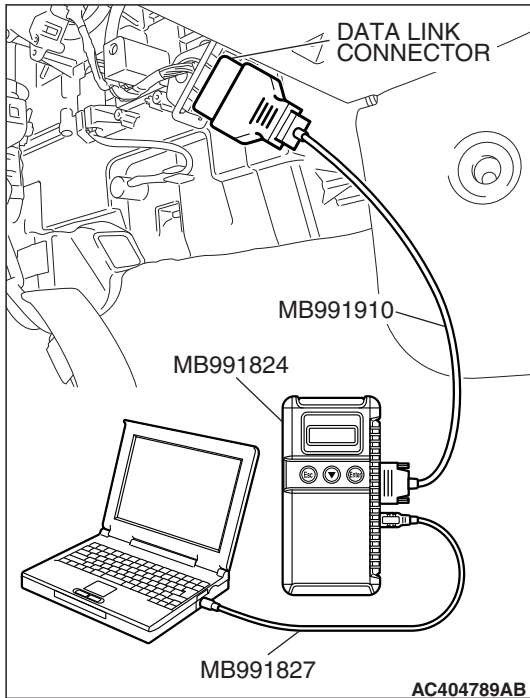
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart [P.54C-17](#)).



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

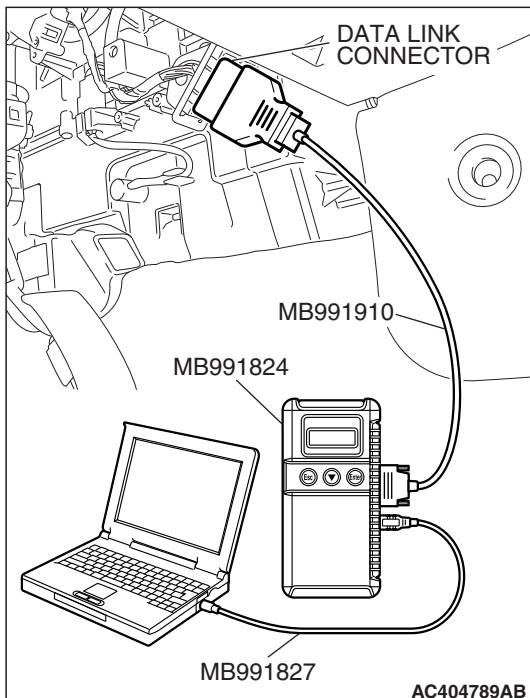
Check if an MFI system diagnostic trouble code is set.

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

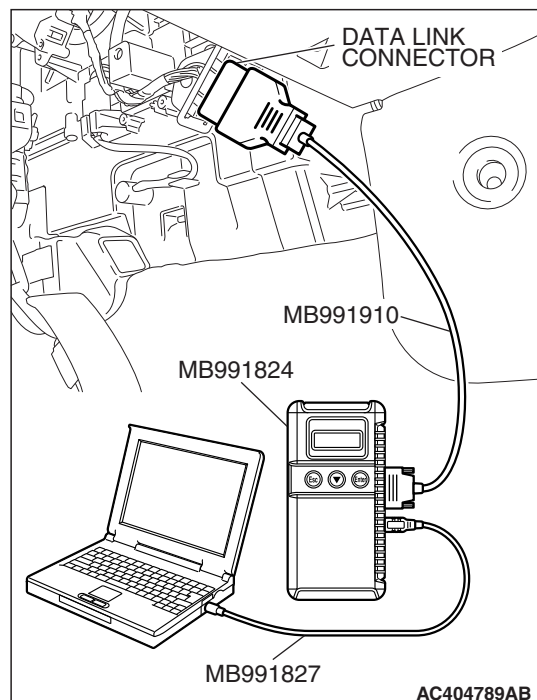
**Q: Is the DTC set?**

**YES :** Refer to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8L ENGINE>.

**NO :** Go to Step 3.





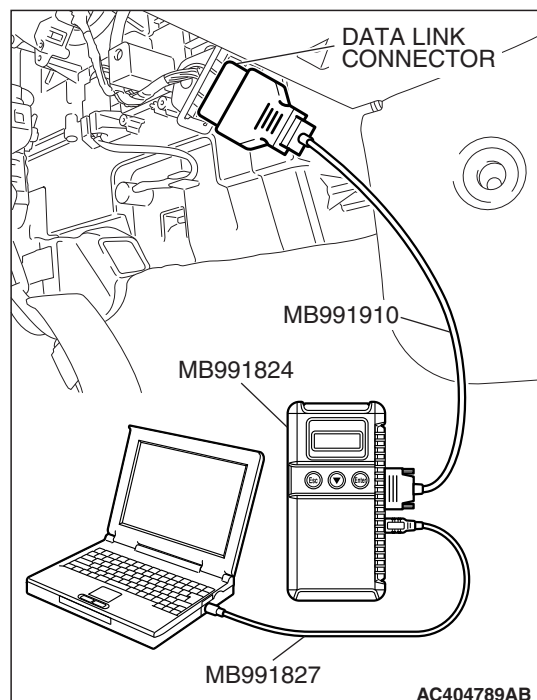
**STEP 3. Using scan tool MB991958, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the data reading mode.
  - Item 54: Speedometer (Input)
    - Speedometer and M.U.T.-III displayed values agree with each other.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the measured voltage equal to battery positive voltage?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Go to Step 4.

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

Use scan tool MB991958 to enter simulated vehicle speed.

- (1) Turn the ignition switch to "ON" position.
- (2) Select "Interactive Diagnosis" from the start-up screen.
- (3) Select "System Select."
- (4) Choose "Meter" from the "BODY" tab.
- (5) Select "Simulated vehicle Speed Output."

**OK: The speedometer shows the simulated vehicle speed.**

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

**Q: Is the check result satisfactory?**

**YES :** Go to Step 5.

**NO :** Replace the combination meter.



---

**STEP 5. Retest the system.**

Check that the speedometer works normally.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.

---

**INSPECTION PROCEDURE 8: Tachometer does not work (other meters work).**

---

**CIRCUIT OPERATION**

The ECM <M/T> or PCM <A/T> sends ignition signal to the combination meter via CAN bus line.

**TECHNICAL DESCRIPTION (COMMENT)**

If only the tachometer does not operate, the ECM <M/T> or PCM <A/T> system may not be sending ignition signal, or the combination meter, the wiring harness or its connector may be defective.

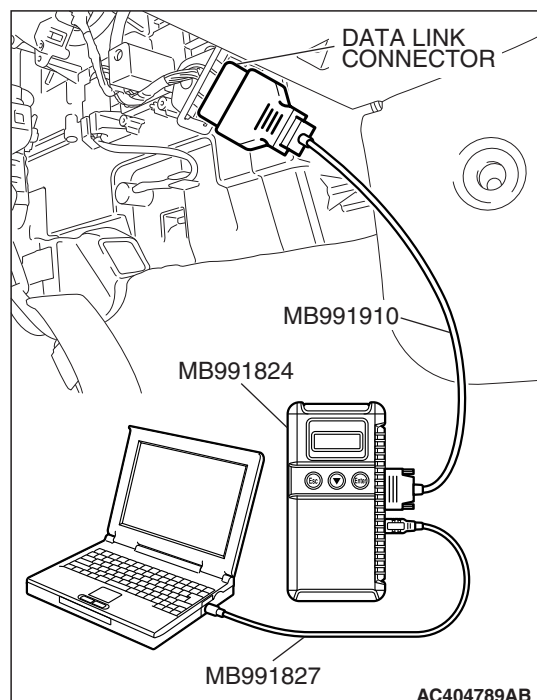
**TROUBLESHOOTING HINTS**

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

**DIAGNOSIS****Required Special Tools:**

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





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

**⚠ CAUTION**

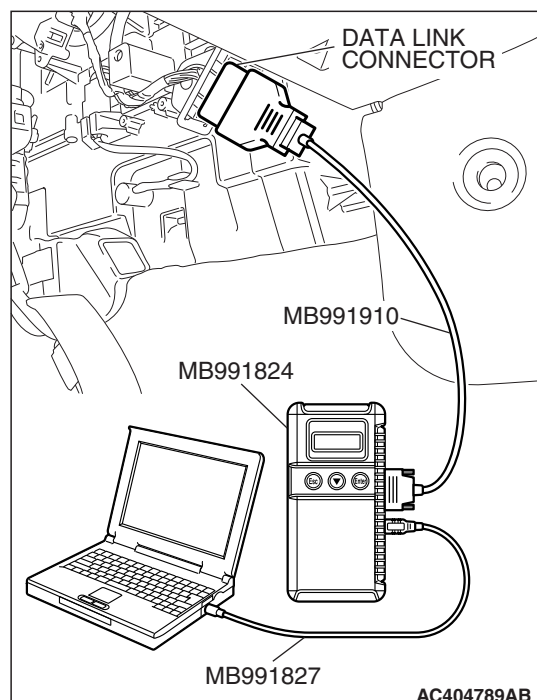
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 2.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis, Can Bus Diagnostic Chart [P.54C-17](#)).



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

Check if the MFI system diagnostic trouble code is set.

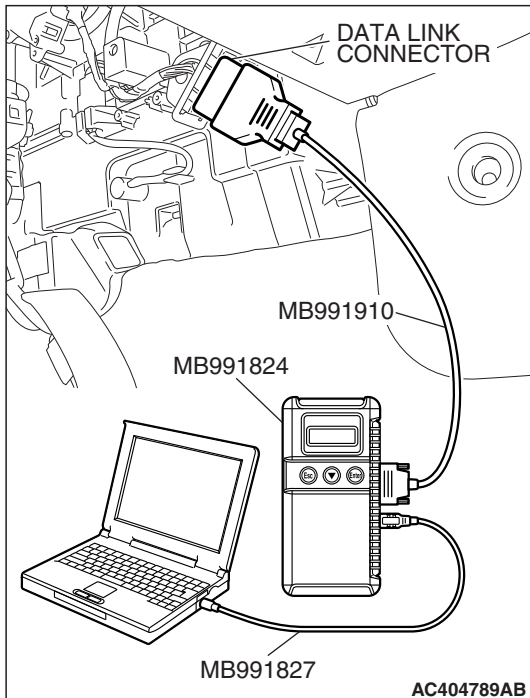
- (1) Turn the ignition switch to "ON" position.
- (2) Diagnose the CAN bus line.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES :** Refer to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4 L engine> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8 L engine>.

**NO :** Go to Step 3.





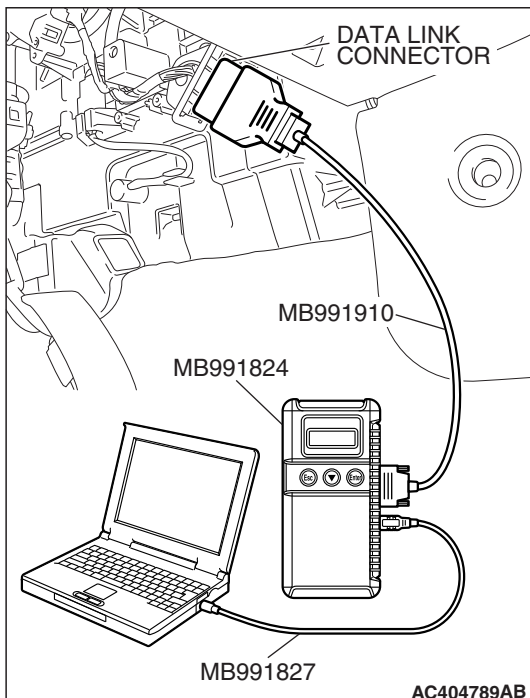
**STEP 3. Using scan tool MB991958, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the data reading mode.
  - Item 05: Tachometer
    - Tachometer displayed value and M.U.T.-III displayed value agree with each other.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result normally?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Go to Step 4.



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

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the actuator test mode.
  - Item 4: Tachometer: 0 r/min
    - The tachometer displays 0 r/min..
  - Item 5: Tachometer: 2,000 r/min
    - The tachometer displays 2,000 r/min.
  - Item 6: Tachometer: 5,000 r/min
    - The tachometer displays 5,000 r/min.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result normally?**

**YES :** Go to Step 5.

**NO :** Replace the combination meter.



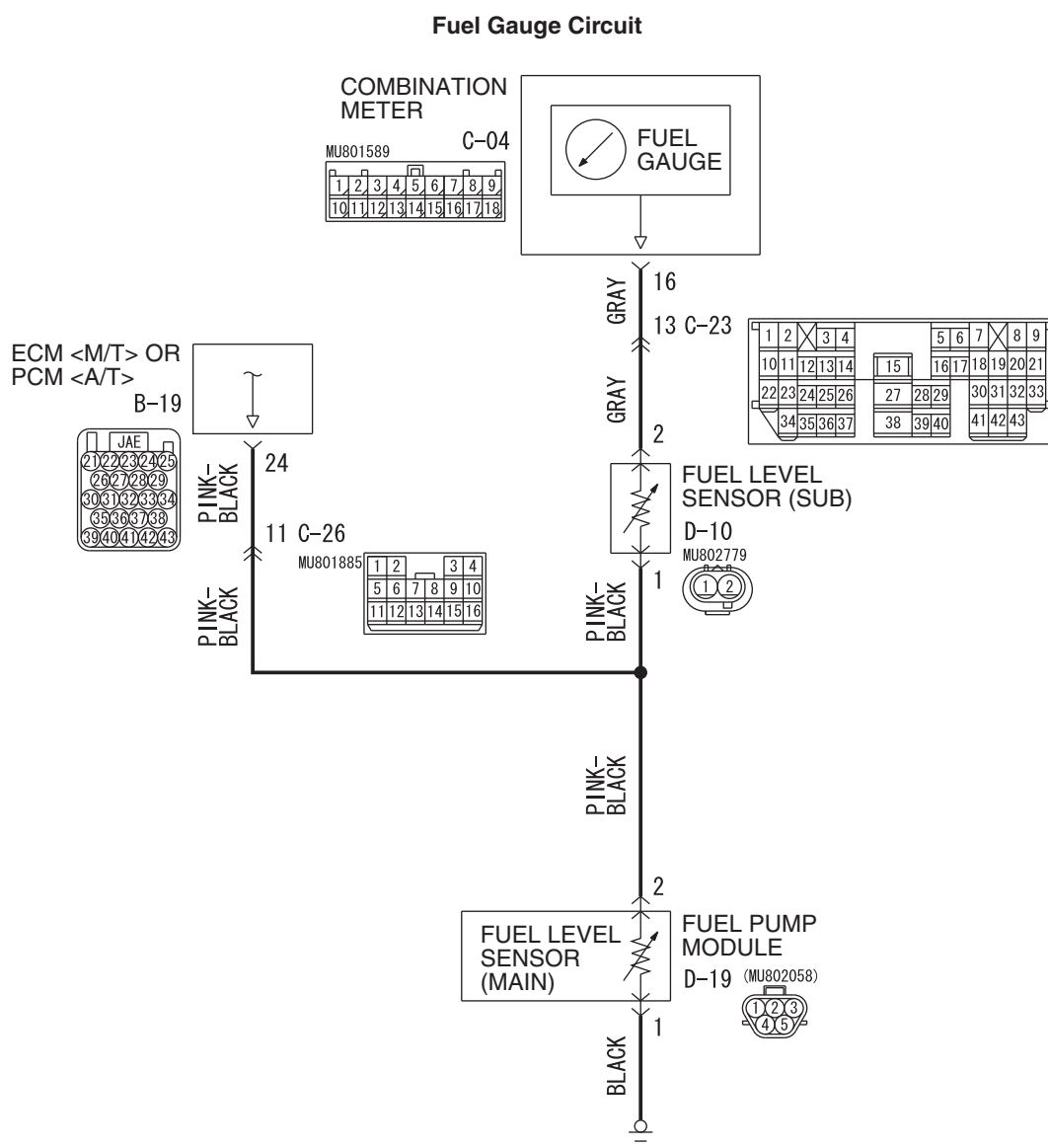
**STEP 5. Retest the system.**

Check that the tachometer works normally.

**Q: Is the check result satisfactory?**

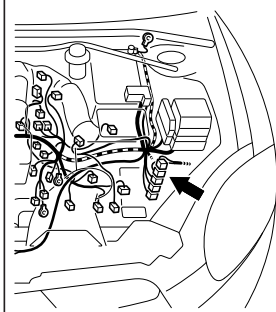
**YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.

**INSPECTION PROCEDURE 9: Fuel gauge does not work (other meters work).**

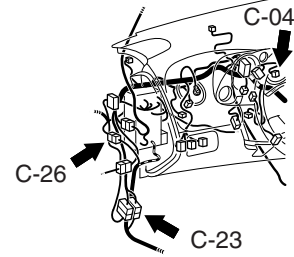


CONNECTOR: B-19



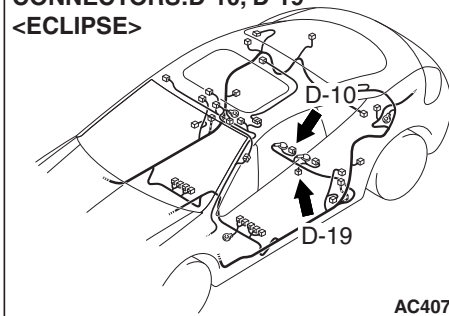
AC406440AC

CONNECTORS: C-04, C-23, C-26



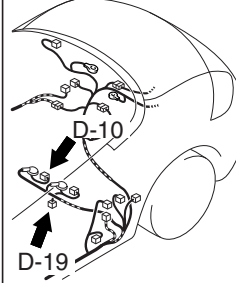
AC406442AB

CONNECTORS: D-10, D-19  
<ECLIPSE>



AC407245AK

CONNECTORS: D-10, D-19  
<ECLIPSE SPYDER>



AC509379AD

## CIRCUIT OPERATION

- The ignition switch (IG1) circuit is the power supply for the fuel gauge.
- When the float in the fuel level sensor moves, the circuit resistance will change.
- The fuel gauge needle is moved by a change in the circuit current.

## TECHNICAL DESCRIPTION (COMMENT)

If only the fuel gauge does not operate, the fuel pump module, the fuel level sensor (sub), the combination meter, wiring harness or connector(s) may be defective.

## TROUBLESHOOTING HINTS

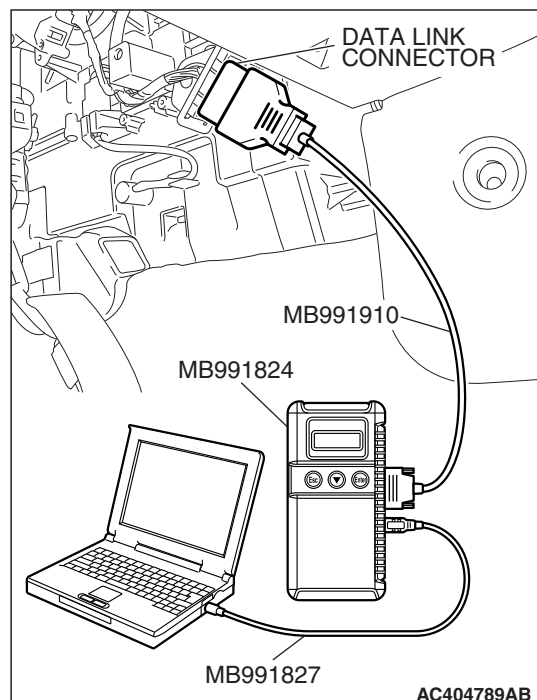
- Malfunction of the ECM <M/T> or PCM <A/T>
- Malfunction of the fuel level sensor (sub)
- Malfunction of the fuel pump module
- Malfunction of the combination meter
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

## DIAGNOSIS

### Required Special Tools:

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





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

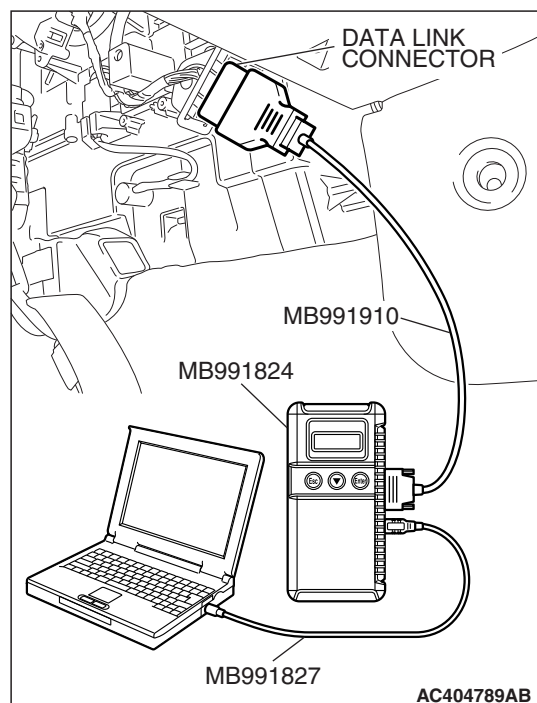
Check if an meter system diagnostic trouble code B1201 is set.

- (1) Turn the ignition switch "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

#### Q: Is the DTC B1201 set?

**YES** : Diagnose the meter system. Refer to [P.54A-60](#).

**NO** : Go to Step 2.



### STEP 2. Using scan tool MB991958, check actuator test.

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the actuator test mode.
  - Item 11: fuel gauge (Target): 0%
  - Fuel gauge shows 0 %
  - Item 8D: fuel gauge (Target): 50%
  - Fuel gauge shows 50 %
  - Item 8E: fuel gauge (Target): 100%
  - Fuel gauge shows 100 %
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

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

**YES** : An intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction [P.00-14](#).

**NO** : Replace the combination meter.



**INSPECTION PROCEDURE 10: Engine coolant temperature gauge does not work (other meters work).****CIRCUIT OPERATION**

The engine coolant temperature sensor sends signal to the combination meter via the ECM <M/T> or PCM <A/T> and the CAN bus line.

**TECHNICAL DESCRIPTION (COMMENT)**

If only the engine coolant temperature gauge does not operate, the ECM <M/T> or PCM <A/T> system, the combination meter, the wiring harness or its connector may be defective.

**TROUBLESHOOTING HINTS**

- Malfunction of the ECM <M/T> or PCM <A/T>
- Malfunction of the combination meter
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

**DIAGNOSIS****Required Special Tools:**

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

**STEP 1. Using scan tool MB991824, diagnose the CAN bus line.****⚠ CAUTION**

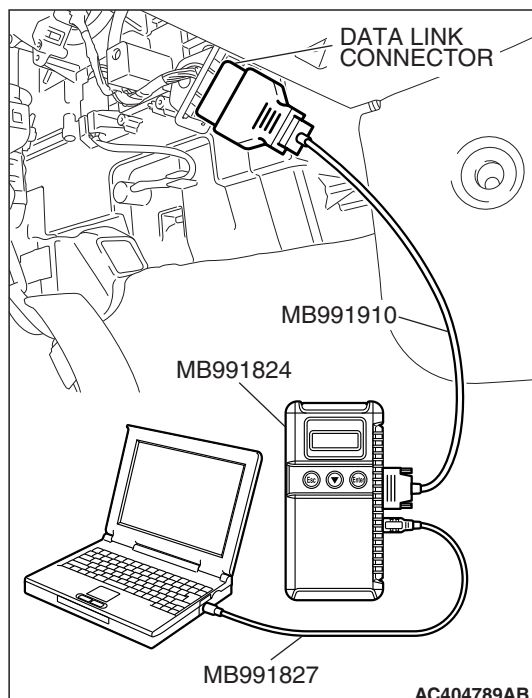
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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

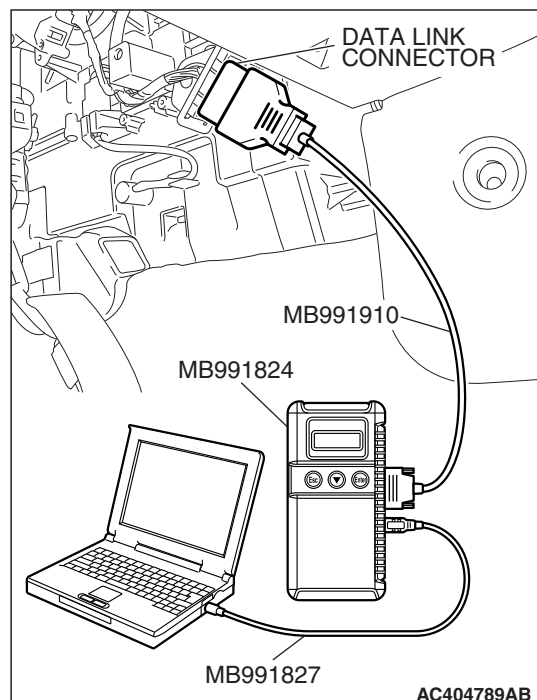
**Q: Is the check result satisfactory?**

**YES** : Go to Step 2.

**NO** : Repair the CAN bus lines. (Refer to GROUP 54C, Diagnosis – Can Bus Diagnostic Chart [P.54C-17](#)).





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

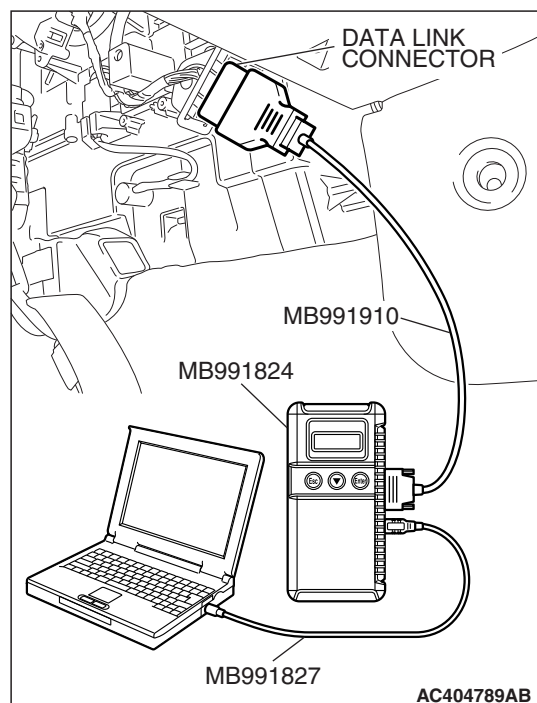
Check if an MFI system diagnostic trouble code is set.

- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

**YES :** Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4 L engine> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8 L engine>.

**NO :** Go to Step 3.

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

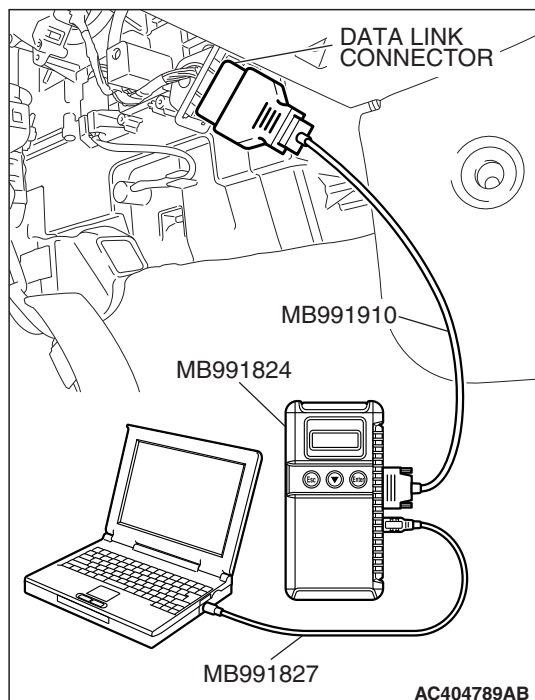
- (1) Turn the ignition switch to "ON" position.
- (2) Set scan tool MB991958 to the data reading mode.
  - Item 08: Engine coolant temperature
    - Engine coolant temperature and M.U.T.-III displayed values agree with each other.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result normally?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Go to Step 4.





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

- (1) Turn the ignition switch to "ON" position.
- (2) Set scan tool MB991958 to the actuator test mode.
  - Item 14: Water temperature gauge: 0°C (32°F)
    - Water temperature gauge shows 0°C (32°F)
  - Item 15: Water temperature gauge: 85°C (185°F)
    - Water temperature gauge shows 85°C (185°F)
  - Item 16: Water temperature gauge: 126°C (259°F)
    - Water temperature gauge shows 126°C (259°F)
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result normally?**

**YES :** Go to Step 5.

**NO :** Replace the combination meter.

**STEP 5. Retest the system.**

Check to see that the engine coolant temperature gauge operates normally.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

**NO :** Replace the combination meter.

**INSPECTION PROCEDURE 11: The Fuel Warning Light does not illuminate or go out.**

**CIRCUIT OPERATION**

The fuel warning light illuminates when the fuel gauge of the combination meter indicates a predetermined value or lower.

**TECHNICAL DESCRIPTION (COMMENT)**

If only the fuel warning light does not operate, the fuel pump module, the fuel level sensor (sub), the combination meter, wiring harness or connector(s) may be defective.

**TROUBLESHOOTING HINTS**

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



**DIAGNOSIS****Required Special Tools:**

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

**Using scan tool MB991958, check actuator test.**

**⚠ CAUTION**

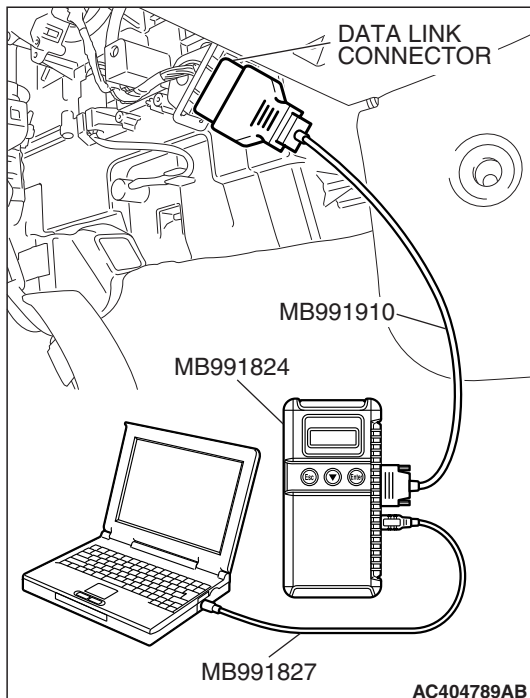
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
  - Item 20: Indicator lamp 1: ON
    - The fuel warning light illuminates.
  - Item 21: Indicator lamp 1: OFF
    - The fuel warning light goes out.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

**YES :** Carry out Inspection Procedure 9, "Fuel Gauge does not work (other meters work)" (Refer to [P.54A-118](#)).

**NO :** Replace the combination meter.





## DATA LIST REFERENCE TABLE

M1543007300972

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

ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
05	Tachometer	Start the engine.	Tachometer displayed value and M.U.T.-III displayed value agree with each other.
06	Fuel gauge(Input)	Ignition switch: ON	Fuel gauge unit resistance value and M.U.T.-III displayed value agree with each other.
07	Fuel gauge(Target)	Ignition switch: ON	Fuel gauge and M.U.T.-III displayed values agree with each other.
08	ECT sensor	Ignition switch: ON	Engine coolant temperature and M.U.T.-III displayed values agree with each other.
09	Rheostat	Ignition switch: ON	The brightness of the combination meter illumination changes.
10	ABS indicator light	–	OFF
11	Door indicator light	All doors are closed	OFF
		Any door is open	ON
13	High beam indicator light	Headlights: OFF or low-beam illuminates	OFF
		Headlights: High-beam illuminates	ON
14	Brake indicator light	<ul style="list-style-type: none"> <li>Ignition switch: ON</li> <li>Parking brake: At release</li> </ul>	OFF
		<ul style="list-style-type: none"> <li>Ignition switch: ON</li> <li>Parking brake: OPERATION</li> </ul>	ON
15	Charging indicator light	–	OFF
16	MIL	–	OFF
19	Front fog light indicator light	Front fog light: OFF	OFF
		Front fog light: ON	ON
20	Fuel warning light	–	OFF
21	Oil pressure indicator light	–	OFF
23	Seatbelt indicator light	<ul style="list-style-type: none"> <li>Ignition switch: ON</li> <li>Driver's seat belt: fastened</li> </ul>	OFF
		<ul style="list-style-type: none"> <li>Ignition switch: ON</li> <li>Driver's seat belt: Not fastened</li> </ul>	ON
24	SRS indicator light	–	OFF
26	Turn signal indicator(Left)	Turn-signal light: OFF or only right side light illuminates	OFF
		Turn-signal light: Left side light illuminates	ON



ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
27	Turn signal indicator(Right)	Turn-signal light: OFF or only left side light illuminates	OFF
		Turn-signal light: Right side light illuminates	ON
32	A/T position indicator:1	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode: 1st gear)	ON
33	A/T position indicator:2	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode: 2nd gear)	ON
34	A/T position indicator:3	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode: 3rd gear)	ON
35	A/T position indicator:4	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode: 4th gear)	ON
36	A/T position indicator:5	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode: 5th gear)	ON
39	A/T position indicator:N	Shift position: Other than N position	OFF
		Shift position: N position	ON
40	A/T position indicator:P	Shift position: Other than P position	OFF
		Shift position: P position	ON
41	A/T position indicator:R	Shift position: Other than R position	OFF
		Shift position: R position	ON
42	Odometer	Ignition switch: ON	Odometer displayed value and M.U.T.-III displayed value agree with each other.
45	Power supply voltage	Ignition switch: ON	Battery voltage
46	Speedometer(Target)	Ignition switch: ON	Speedometer and M.U.T.-III displayed values agree with each other.



ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
47	A/T position indicator:D	Shift position: Other than D position	OFF
		Shift position: D position	ON
50	Coolant Temp.confirmation flag	Ignition switch: ON	ON
51	Tire pressure indicator	–	OFF
52	Cruise control indicator	–	OFF
54	Speedometer(Input)	Ignition switch: ON	Speedometer and M.U.T.-III displayed values agree with each other.
55	Speed sensor failure flag	Ignition switch: ON	OFF
56	Speed sensor confirmation flag	Ignition switch: ON	ON
57	Vehicle stop flag	Ignition switch: ON	ON
59	ASC/TCL indicator	When TCL or ASC system is operating	ON
60	ASC OFF indicator	ASC OFF switch: ON	ON

### ACTUATOR TEST REFERENCE TABLE

M1543007400399

ITEM NO.	CHECK ITEM	TEST CONTENT	CHECK CONDITION	NORMAL CONDITION
01	Speedometer	Set the speedometer to 0 km/h	Turn the ignition switch to the "ON" position.	Speedometer shows 0 km/h
02		Set the speedometer to 40 km/h		Speedometer shows 40 km/h
03		Set the speedometer to 100 km/h		Speedometer shows 100 km/h
04	Tachometer	Set the tachometer to 0 r/min	Turn the ignition switch to the "ON" position.	Tachometer shows 0 r/min
05		Set the tachometer to 2,000 r/min		Tachometer shows 2,000 r/min
06		Set the tachometer to 5,000 r/min		Tachometer shows 5,000 r/min
11	Fuel gauge(Target)	Set the fuel gauge to 0 %	Turn the ignition switch to the "ON" position.	Fuel gauge shows 0 %
12		Set the fuel gauge to 50 %		Fuel gauge shows 50 %
13		Set the fuel gauge to 100 %		Fuel gauge shows 100 %
14	Water temperature gauge	Set the water temperature gauge to 0°C (32°F)	Turn the ignition switch to the "ON" position.	Water temperature gauge shows 0°C (32°F)
15		Set the water temperature gauge to 85°C (185°F)		Water temperature gauge shows 85°C (185°F)
16		Set the water temperature gauge to 126°C (259°F)		Water temperature gauge shows 126°C (259°F)



ITEM NO.	CHECK ITEM	TEST CONTENT	CHECK CONDITION	NORMAL CONDITION
17	Meter illumination	Set the combination meter illumination to 0 %	Turn the ignition switch to the "ON" position.	Combination meter illumination is 0 %
18		Set the combination meter illumination to 50 %		Combination meter illumination is 50 %
19		Set the combination meter illumination to 100 %		Combination meter illumination is 100 %
20	Indicator light 1	Illuminate the indicator lights and the warning lights.	Turn the ignition switch to the "ON" position.	The turn-signal indicators, the door, the front fog light, the high-beam, the brake, the check engine, the charge, the oil pressure, the SRS, the ABS, the driver's seat belt, the TCL/ASC, the ASC OFF, the Cruise control indicator light and the fuel warning light illuminate.
21		Extinguish the indicator lights and the warning lights.		The turn-signal indicators, the door, the front fog light, the high-beam, the brake, the check engine, the charge, the oil pressure, the SRS, the ABS, the driver's seat belt, the TCL/ASC, the ASC OFF, the Cruise control indicator light and the fuel warning light do not illuminate.
22	Indicator light 2	Illuminate the indicator light.	Turn the ignition switch to the "ON" position.	The immobilizer indicator light illuminates.
23		Extinguish the indicator light.		The immobilizer indicator light does not illuminate.



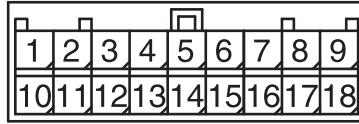
## COMBINATION METER TERMINAL CHECK

M1543026700021

Measure the voltage between terminals using a volt-meter.

COMBINATION METER CONNECTOR  
COMPONENT SIDE

C-04



AC406357AB

**⚠ CAUTION**

**Never take a measurement at terminals 3 and 4. If you do this, the CAN bus lines will be impaired.**

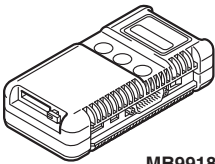
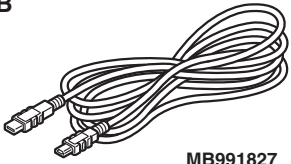
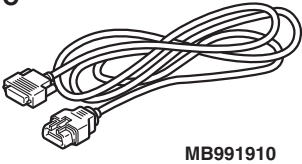
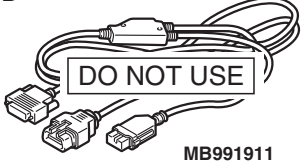
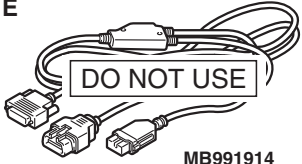
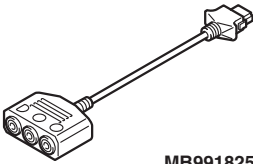
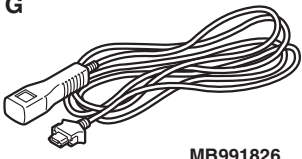
*NOTE: The combination meter connector is fixed on the instrument panel directly, so you cannot take measurement by backprobing.*

TERMINAL NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
1	Ground	Always	1 V or less
5	Immobilizer	-	-
6	Spare 1	-	-
7	Seat belt switch	Ignition switch: ON or driver's seat belt not fastened	-
8	Engine oil pressure switch	Ignition switch: ON or engine oil pressure switch: ON	-
9	Parking brake switch and brake fluid level switch	<ul style="list-style-type: none"><li>Ignition switch: ON or parking brake switch: ON</li><li>Ignition switch: ON or brake fluid level switch: ON</li></ul>	-
10	Battery power supply	Always	Battery positive voltage
11	Ignition switch (IG1) power supply	Ignition switch: ON	Battery positive voltage
13	Illumination (ground)	Always	1 V or less
15	Generator	-	-
16	Fuel gauge	-	-
17	Spare 2	-	-
18	Illumination (power supply)	Lighting switch: ON	Battery positive voltage


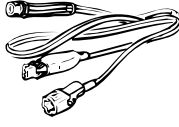
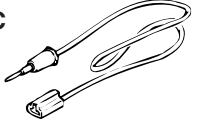
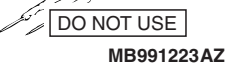
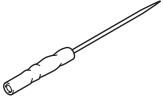


## SPECIAL TOOLS

M1543000602570

TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
<p><b>A</b></p>  <p>MB991824</p> <p><b>B</b></p>  <p>MB991827</p> <p><b>C</b></p>  <p>MB991910</p> <p><b>D</b></p>  <p>MB991911</p> <p><b>E</b></p>  <p>MB991914</p> <p><b>F</b></p>  <p>MB991825</p> <p><b>G</b></p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826</p> <p>M.U.T.-III Sub Assembly</p> <p>A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III main harness C (for Chrysler models only) F: M.U.T.-III measurement adapter G: M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p><b>⚠ CAUTION</b></p> <p><b>For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.</b></p> <ul style="list-style-type: none"> <li>• Reading diagnostic trouble code</li> <li>• Estimated vehicle speed sent</li> </ul>



TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
<p><b>A</b></p>  <p><b>B</b></p>  <p><b>C</b></p>  <p><b>D</b></p> 	<p>MB991223</p> <p>A: MB991219</p> <p>B: MB991220</p> <p>C: MB991221</p> <p>D: MB991222</p> <p>Harness set</p> <p>A: Test harness</p> <p>B: LED harness</p> <p>C: LED harness adapter</p> <p>D: Probe</p>	<p>General service tool (jumper)</p>	<p>Making voltage and resistance measurements during troubleshooting</p> <p>A: Connect pin contact pressure inspection</p> <p>B: Power circuit inspection</p> <p>C: Power circuit inspection</p> <p>D: Commercial tester connection</p>
 <p>MB992006</p>	<p>MB992006</p> <p>Extra fine probe</p>	<p>General service tool</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

## ON-VEHICLE SERVICE

### SPEEDOMETER CHECK

M1543000901211

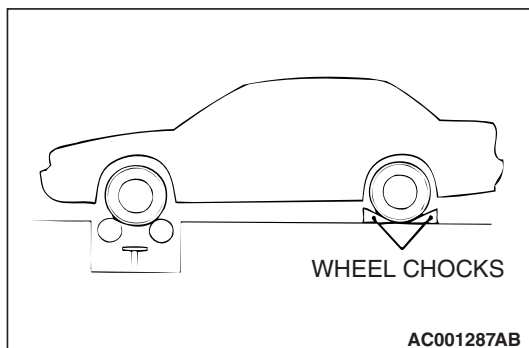
Adjust the pressure of tires to the specified level (Refer to GROUP 31, On-vehicle Service [P.31-50](#)).

1. Press the ASC OFF switch for 3 seconds or more to stop the ASC operation. <Vehicles with TCL/ASC system>

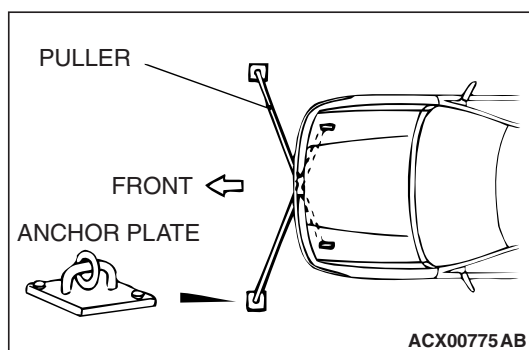
#### **CAUTION**

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

2. Set the vehicle onto a speedometer tester and use wheel chocks to hold the rear wheels.







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

**Standard value <except vehicles for CANADA>:**

STANDARD INDICATION mph (km/h)	ALLOWANCE RANGE mph (km/h)
10 (16)	8.5 – 11.5 (13.6 – 18.4)
25 (40)	23.5 – 26.5 (37.6 – 42.4)
50 (80)	48.5 – 51.5 (77.6 – 82.4)
75 (120)	73.5 – 76.5 (117.6 – 122.4)
100 (161)	98.5 – 102.5 (158.5 – 165.0)

**Standard value <vehicles for CANADA>:**

STANDARD INDICATION km/h (mph)	ALLOWANCE RANGE km/h (mph)
20 (12.4)	19.0 – 24.0 (11.8 – 14.9)
40 (24.8)	40.0 – 44.0 (24.8 – 27.3)
80 (49.7)	80.0 – 85.0 (49.7 – 52.8)
120 (74.6)	120.5 – 125.5 (74.9 – 78.0)
160 (99.4)	160.5 – 165.5 (99.7 – 102.8)

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 output shaft speed sensor and the combination meter. Check the following items.
  - Output shaft speed sensor (refer to GROUP23A, Automatic Transaxle Diagnosis [P.23A-113](#)).
  - Combination meter (refer to [P.54A-112](#).)



## TACHOMETER CHECK

### Required Special Tools:

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

### **⚠ CAUTION**

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

1. Connect scan tool MB991958 to the data link connector.
2. A/T select lever: "P" position or M/T shift lever: "N" position.
3. Turn the ignition switch to "ON" position.
4. Start the engine.
5. Run the engine.
6. Select MFI system data list and take a reading of the engine speed.

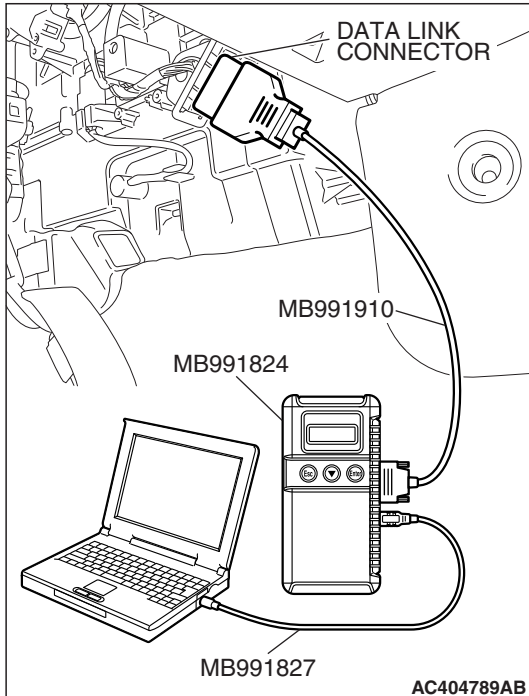
Item 22: CKP SENSOR

7. Compare the engine speed shown in the scan tool with that shown on the tachometer. The engine speeds shown on the tachometer should correspond to the table below.

*NOTE: The following standard value assumes that battery voltage is 13.5 volts.*

### Standard value:

ENGINE SPEED (r/min)	INDICATION ALLOWANCE OF TACHOMETER (r/min)
1,000	900 – 1,100
2,000	1,900 – 2,100
3,000	2,900 – 3,100
4,000	3,900 – 4,100
5,000	4,900 – 5,100
6,000	5,900 – 6,100





## FUEL LEVEL SENSOR CHECK

M1543001300134

## FUEL LEVEL SENSOR RESISTANCE

1. Remove the fuel level sensor. (Refer to GROUP 13C, Fuel Tank [P.13C-11](#).)
2. Check the resistances between fuel level sensor main terminals 1 and 2 as well as sub terminals 1 and 2 of the fuel pump module, respectively.

**Standard value:**

ITEM		FUEL LEVEL SENSOR (main)	FUEL LEVEL SENSOR (sub)
Resistance $\Omega$	Point "F" (highest)	6.5	$6.5 \pm 1.0$
	Point "E" (lowest)	45.1	$74.9 \pm 1.0$

3. Check that resistance value changes smoothly when the float moves slowly between points.
4. If all checks are correct, go to fuel unit height check. If any check is not correct, replace the fuel pump module or fuel level sensor (sub).

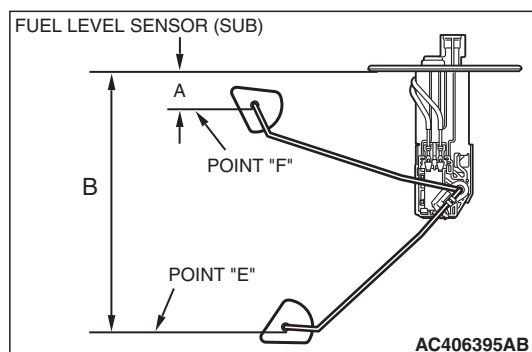
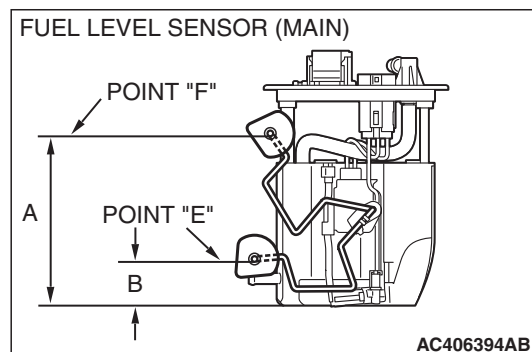
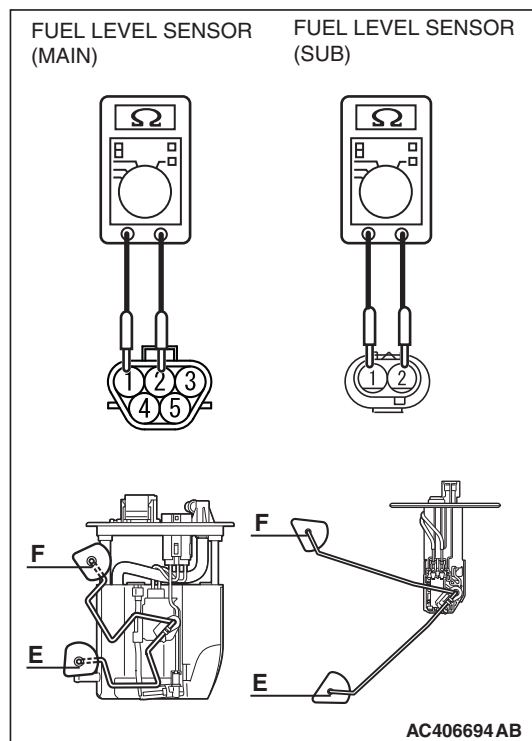
## FUEL LEVEL SENSOR FLOAT HEIGHT

1. Remove the fuel level sensor. (Refer to GROUP 13C, Fuel Tank [P.13C-11](#).)
2. Move the float and measure height A at point "F" (highest) and B at point "E" (lowest).

**Standard value:**

ITEM		FUEL LEVEL SENSOR (main)	FUEL LEVEL SENSOR (sub)
Height mm (in)	A at point "F"	131.5 (5.1)	$24.9 \pm 3.0$ ( $0.9 \pm 0.1$ )
	B at point "E"	34.5 (1.3)	$172.7 \pm 3.0$ ( $6.7 \pm 0.1$ )

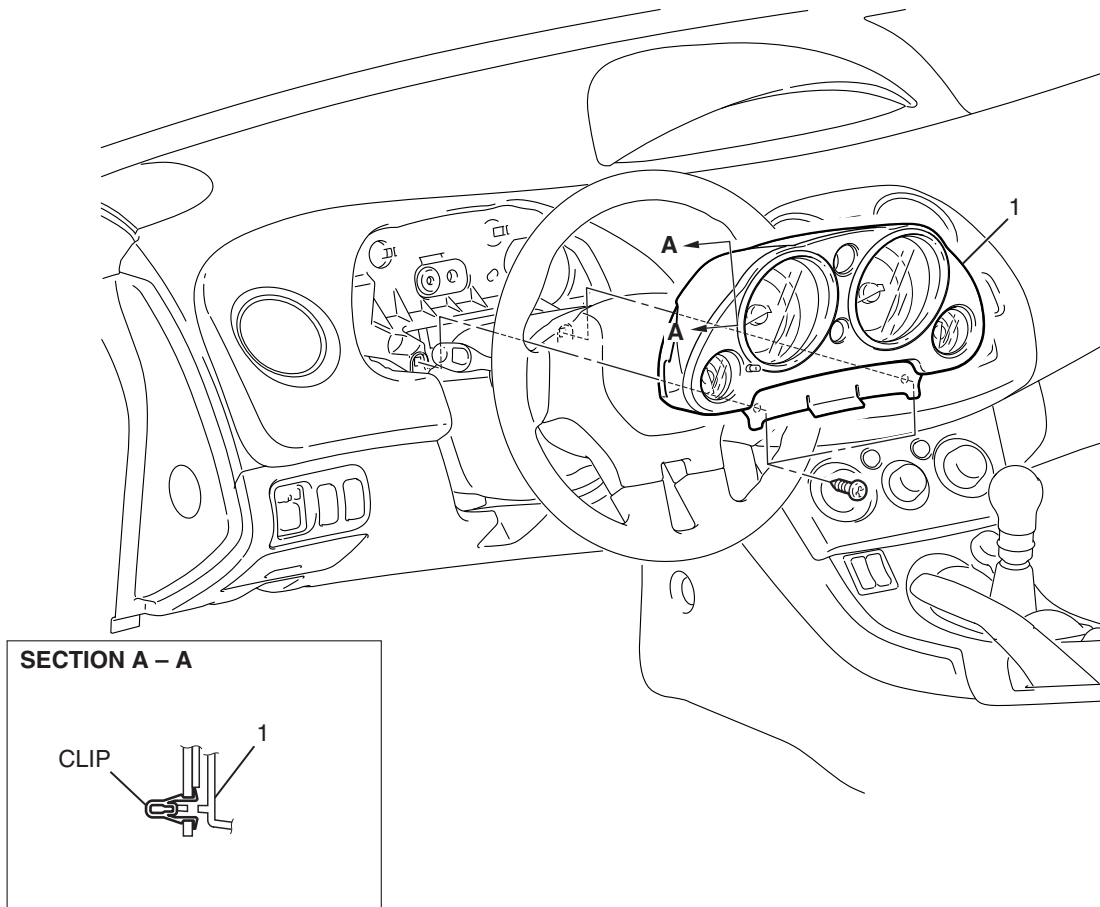
3. If any check is not correct, replace the fuel pump module or fuel level sensor (sub).





## COMBINATION METER ASSEMBLY REMOVAL AND INSTALLATION

M1543021300095



AC406540AB

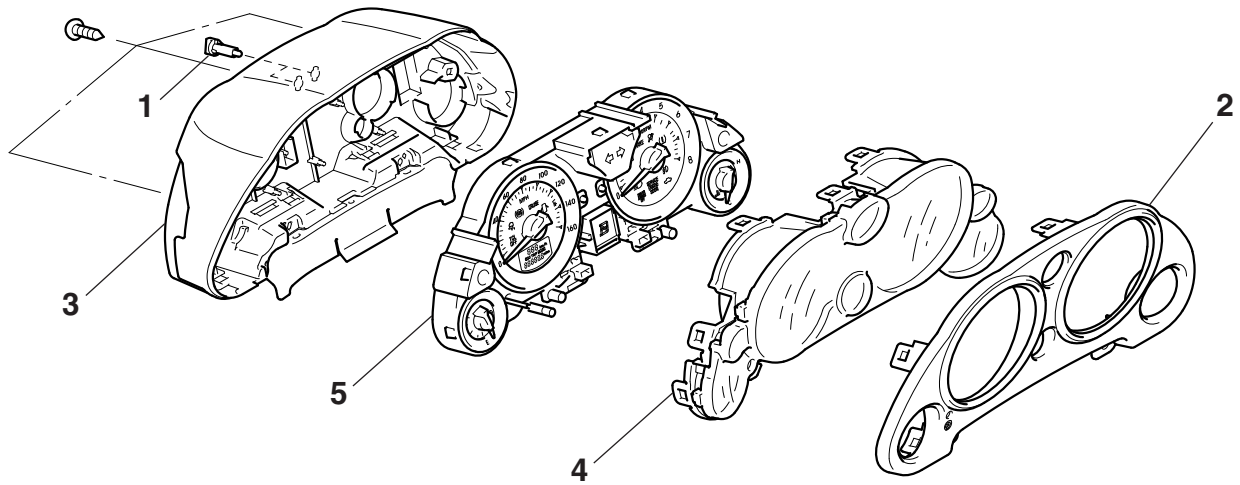
### COMBINATION METER ASSEMBLY REMOVAL STEPS

- STEERING COLUMN UPPER COVER  
(REFER TO GROUP 52A,  
INSTRUMENT PANEL REMOVAL AND  
INSTRATION [P.52A-19.](#))
1. COMBINATION METER ASSEMBLY



## DISASSEMBLY AND ASSEMBLY

M1543003100426



AC406163 AB

**DISASSEMBLY STEPS**

1. METER BULB
2. COMBINATION METER DISPLAY
3. COMBINATION METER CASE

**DISASSEMBLY STEPS (Continued)**

4. COMBINATION METER INDICATOR LENS
5. COMBINATION METER



# HEADLIGHT, FRONT SIDE MARKER LIGHT AND POSITION LIGHT ASSEMBLY

## SERVICE PRECAUTIONS DISCHARGE HEADLIGHT

M1540100300258

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

**⚠ DANGER**

- **Do not touch the socket and the connector while the headlights are on. High voltage is applied to the bulb socket and connector during headlight operation. The operator may be burnt or dead due to an electric shock by high voltage.**
- **Do not attempt to use a tester to check them. If the bulb socket and connectors should be inspected using a tester, the operator may be burnt or dead due to an electric shock by high voltage.**
- **Do not turn ON the headlights while the controller or the bulb is removed. If the headlights are turned ON with the controller or bulb removed, the operator may get burned by the high temperature of the bulb. The operator may be burnt or dead due to an electric shock by high voltage.**

- **Before service work, turn the lighting switch OFF and disconnect the battery terminal and the controller connector in a dry place. Do not touch the components with wet hands. If you work on the components with wet hands or in wet conditions, the operator may be burnt or dead due to an electric shock by high voltage.**

**⚠ WARNING**

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

**⚠ CAUTION**

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

## 1. CHECKING PROCEDURE FOR DISCHARGE HEADLIGHT RELATED PARTS (INSPECTION PROCEDURE WHEN REUSING THE CONTROLLER)

### 1 – 1 VISUAL CHECK OF CONTROLLER (CASE)

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

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

### 1 – 2 CHECK OF WIRING HARNESS BETWEEN CONTROLLER AND BULB

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

**⚠ DANGER**

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



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

### 1 – 3 CHECK OF CONTROLLER OPERATION

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

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

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

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

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

### SYMPTOM CHART

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

**NOTE:**

1. The numbers indicate the sequence in which the component is checked.
2. The troubleshooting items other than those above are controlled by the smart wiring system. For troubleshooting, refer to "GROUP 54B, Troubleshooting [P.54B-54](#)."
3. If ETACS-ECU fails, only the low-beam headlights will illuminate as a fail-safe measure.



## HEADLIGHT DIAGNOSIS

M1542010500898

The headlights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis – Symptom Chart

[P.54B-54.](#)

## ON-VEHICLE SERVICE

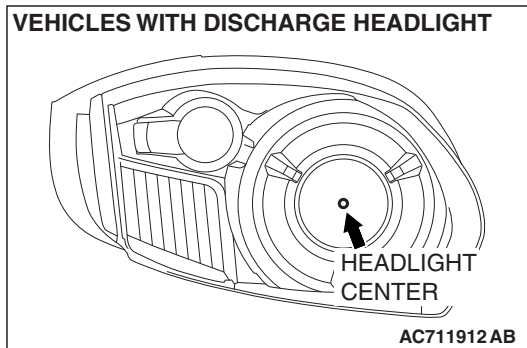
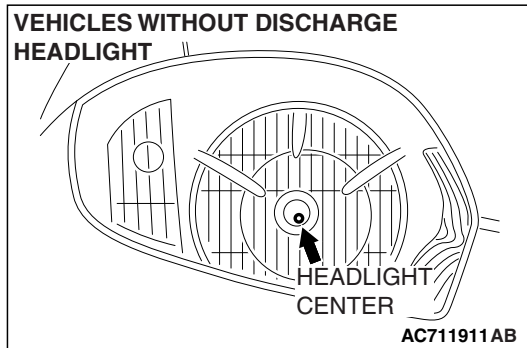
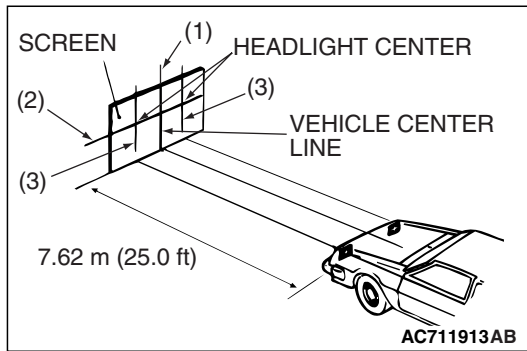
### HEADLIGHT AIMING

M1542000901241

#### PRE-AIMING INSTRUCTIONS

1. Inspect for badly 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 it is 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. Turn the headlight leveling switch to the switch position "0."  
<Vehicles with headlight manual leveling system>
7. Thoroughly clean headlight lenses.
8. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 m (25.0 ft) away from the bulb center-marks on the headlight lens.
9. Rock vehicle sideways to allow vehicle to assume its normal position.
10. Bounce the front suspension through three oscillations by applying the body weight to hood or bumper.





11. Set the distance between the screen and the bulb center marks of the headlight as shown in the illustration.

12. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:

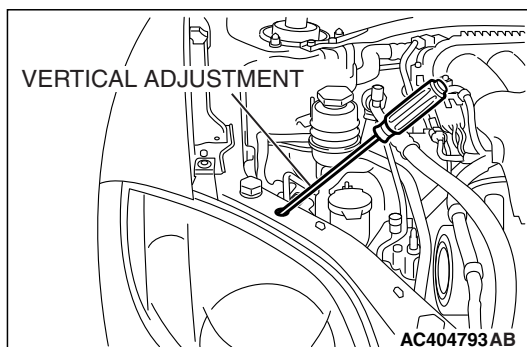
- (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
- (2) Measure the distance from the center-marks on the headlight lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
- (3) 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

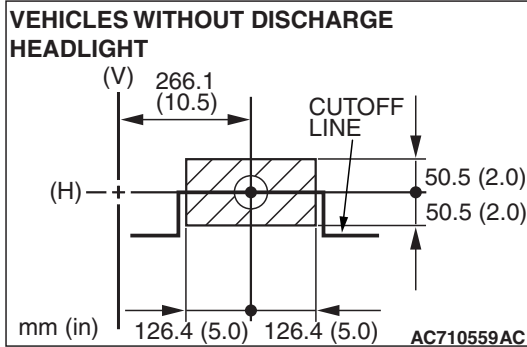
### **⚠ CAUTION**

**Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.**

1. The low beam headlight will project on the screen upper edge of the beam (cut-off).
2. Turn the adjusting screws to achieve the specified low-beam cut-off location on the aiming screen.



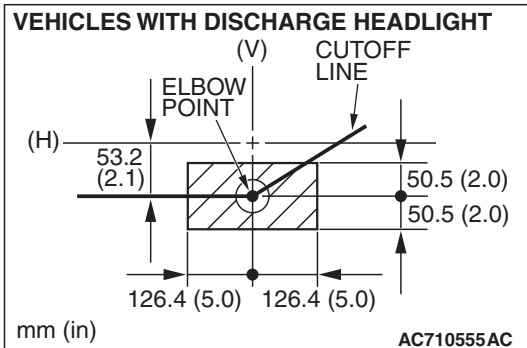




**Standard value <Vehicles without discharge headlight>:**

**(Vertical direction) Horizontal line (H)  $\pm$  50.5 mm ( $\pm$  2.0 inches) ( $\pm$  0.38 degrees angle)**

**(Horizontal direction):  $\pm$  126.4 mm ( $\pm$  5.0 inches) ( $\pm$  0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)**



**Standard value <Vehicles with discharge headlight>:**

**(Vertical direction) 53.2 mm (2.1 inches) (0.4 degrees) below horizontal line (H).  $\pm$  50.5 mm ( $\pm$  2.0 inches) ( $\pm$  0.38 degrees angle)**

**(Horizontal direction): Elbow point intersects the vertical line (V).  $\pm$  126.4 mm ( $\pm$  5.0 inches) ( $\pm$  0.95 degrees angle)**

*NOTE: There is no horizontal aim adjustment. Horizontal aim is preset and does not require adjustment. High-beam pattern should be correct when the low-beams are adjusted properly.*

## LUMINOUS INTENSITY MEASUREMENT

M1542001000679

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



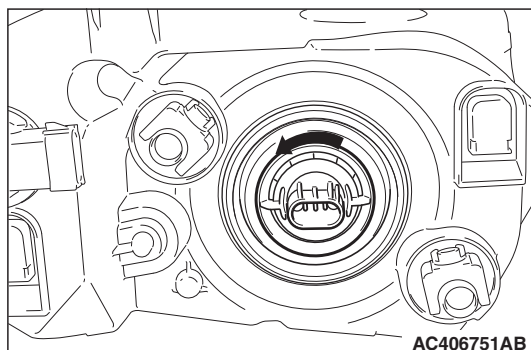
**BULB REPLACEMENT**

M1542001301736

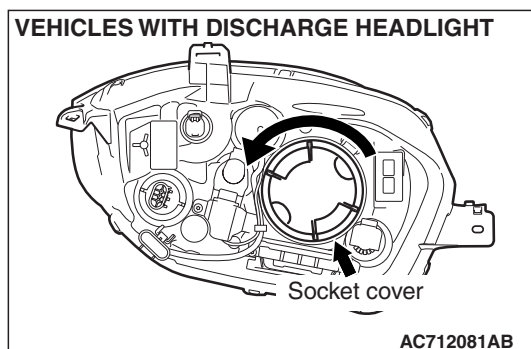
**HEADLIGHT BULB <VEHICLES WITHOUT DISCHARGE HEADLIGHT>****⚠ CAUTION**

Do not touch the surface of the bulb with hands or dirty gloves as the bulb may fail after a short time. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.

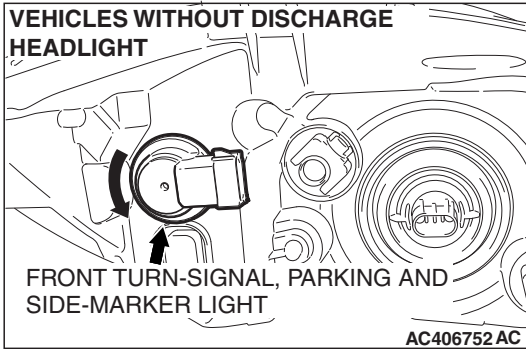
1. Disconnect the headlight connector.
2. Remove the headlight bulb by turning it counterclockwise as shown.
3. Install the headlight bulb to the headlight by pushing it in and twisting it clockwise.

**FRONT TURN-SIGNAL, PARKING AND SIDE-MARKER LIGHT BULB**

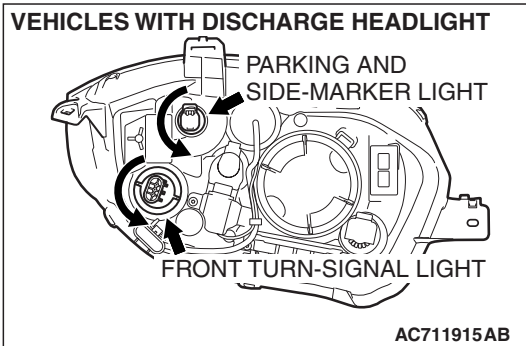
1. Remove the socket cover by turning it to create sufficient clearance for servicing. <Vehicles with discharge headlight>
2. Disconnect the front turn-signal, parking and side-marker light connector.







3. Remove the socket with the bulb by turning it counterclockwise as shown.
4. Pull out the bulb from the socket, and then replace the bulb.
5. Install the socket to the headlight by pushing it in and twisting it clockwise.



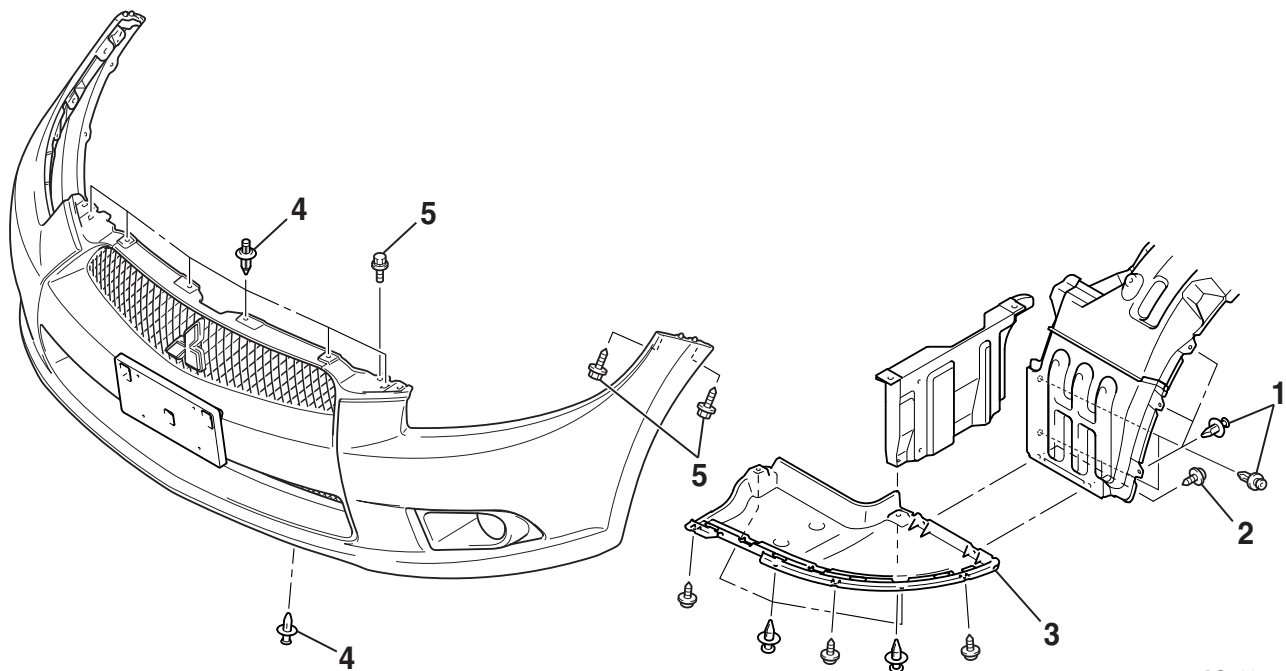
## HEADLIGHT AND FRONT COMBINATION LIGHT

### HEADLIGHT REMOVAL AND INSTALLATION

M1542001800835

#### Post-installation operation

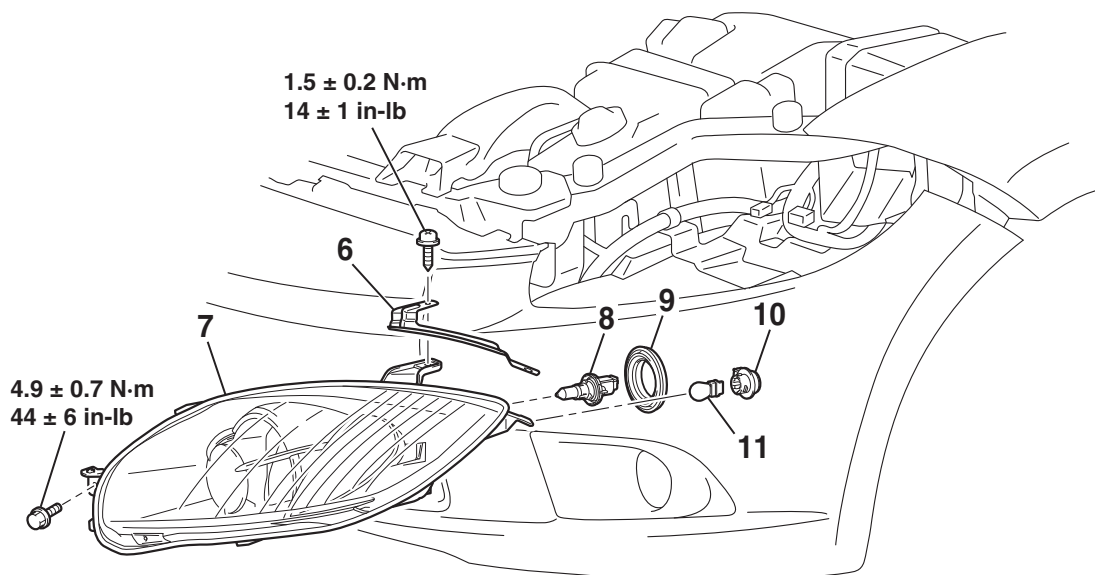
Headlight aiming adjustment (Refer to [P.54A-139](#)).



AC711965AB

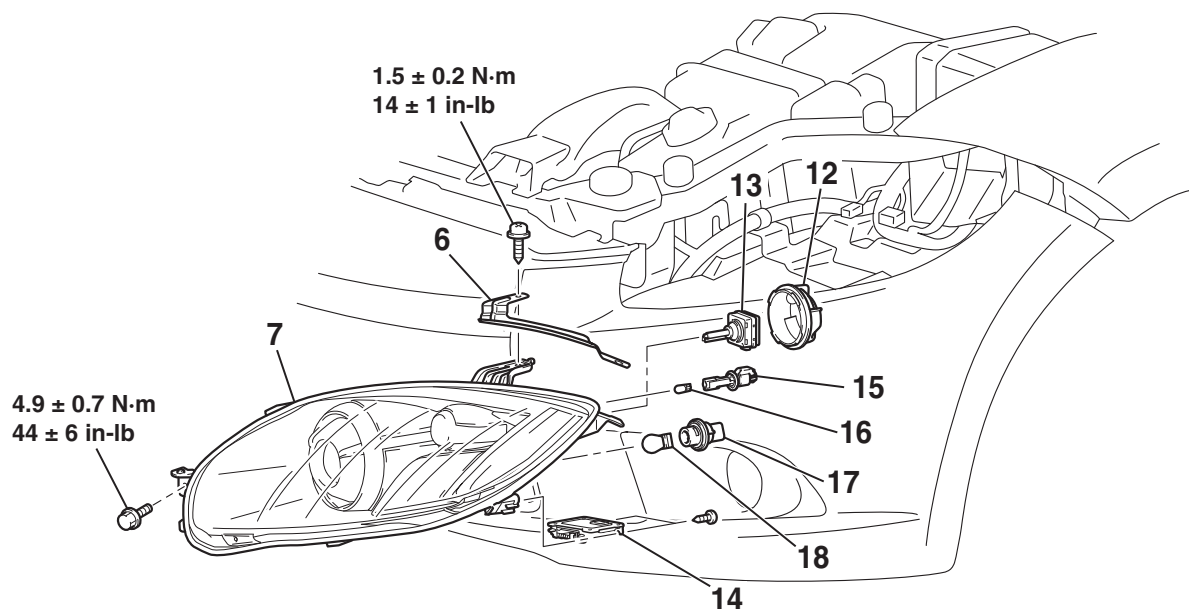


## VEHICLES WITHOUT DISCHARGE HEADLIGHT



AC711732AB

## VEHICLES WITH DISCHARGE HEADLIGHT



AC807744AB

**REMOVAL STEPS**

1. SPLASH SHIELD MOUNTING CLIPS (RELEVANT SIDE)
2. SPLASH SHIELD MOUNTING SCREWS (RELEVANT SIDE)
3. ENGINE ROOM UNDER COVER (RELEVANT SIDE)
4. FRONT BUMPER MOUNTING CLIPS (RELEVANT SIDE)
5. FRONT BUMPER MOUNTING BOLTS (RELEVANT SIDE)
6. HEADLIGHT BRACKET <ECLIPSE SPYDER>
7. HEADLIGHT ASSEMBLY

**REMOVAL STEPS (Continued)**

8. HEADLIGHT BULB <VEHICLES WITHOUT DISCHARGE HEADLIGHT>
9. BOOT <VEHICLES WITHOUT DISCHARGE HEADLIGHT>
10. SOCKET <VEHICLES WITHOUT DISCHARGE HEADLIGHT>
11. FRONT TURN-SIGNAL, PARKING AND SIDE-MARKER LIGHT BULB <VEHICLES WITHOUT DISCHARGE HEADLIGHT>

&lt;&lt;A&gt;&gt;

&lt;&lt;A&gt;&gt;



**REMOVAL STEPS (Continued)**

- <<B>> 12. HEADLIGHT BULB SOCKET COVER <VEHICLES WITH DISCHARGE HEADLIGHT>
- <<C>> >>A<< 13. HEADLIGHT BULB <VEHICLES WITH DISCHARGE HEADLIGHT>
14. HEADLIGHT CONTROL UNIT <VEHICLES WITH DISCHARGE HEADLIGHT>
15. SOCKET <VEHICLES WITH DISCHARGE HEADLIGHT>

**REMOVAL STEPS (Continued)**

16. PARKING AND SIDE-MARKER LIGHT BULB <VEHICLES WITH DISCHARGE HEADLIGHT>
17. SOCKET <VEHICLES WITH DISCHARGE HEADLIGHT>
18. FRONT TURN-SIGNAL LIGHT BULB <VEHICLES WITH DISCHARGE HEADLIGHT>

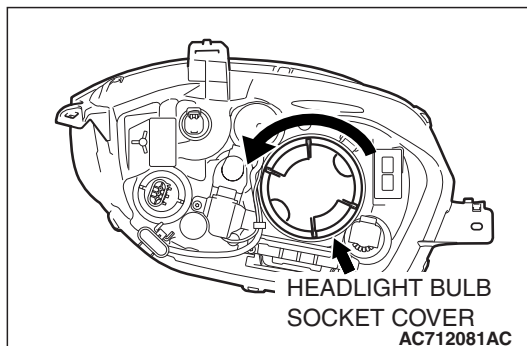
**REMOVAL SERVICE POINTS**

**<<A>> HEADLIGHT ASSEMBLY REMOVAL**

Remove the headlight bracket <ECLIPSE SPYDER> and the headlight assembly with the applicable side of the front bumper slid downward slightly.

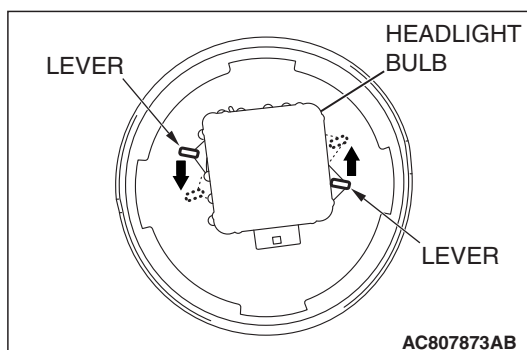
**<<B>> HEADLIGHT BULB SOCKET COVER REMOVAL <VEHICLES WITH DISCHARGE HEADLIGHT>**

Twist the headlight bulb socket cover to remove.



**<<C>> HEADLIGHT BULB REMOVAL <VEHICLES WITH DISCHARGE HEADLIGHT>**

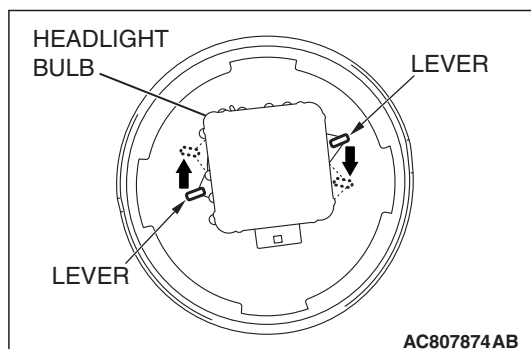
1. Remove the connector connected to the headlight bulb.
2. Operate the lever toward the direction shown.
3. Remove the headlight bulb.





## INSTALLATION SERVICE POINT

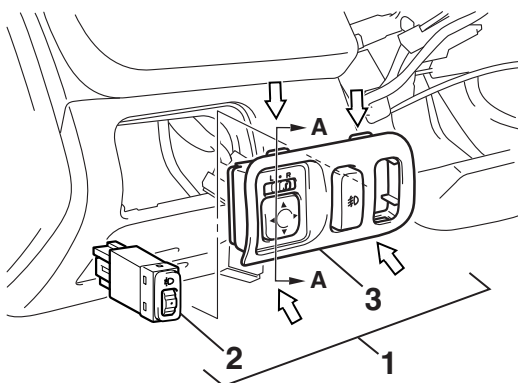
## &gt;&gt;A&lt;&lt; HEADLIGHT BULB INSTALLATION &lt;VEHICLES WITH DISCHARGE HEADLIGHT&gt;



1. Install the headlight bulb.
2. Operate the lever toward the direction shown and fix the headlight bulb.
3. Install the connector in the headlight bulb.

## HEADLIGHT LEVELING SWITCH REMOVAL AND INSTALLATION

M1542013700211

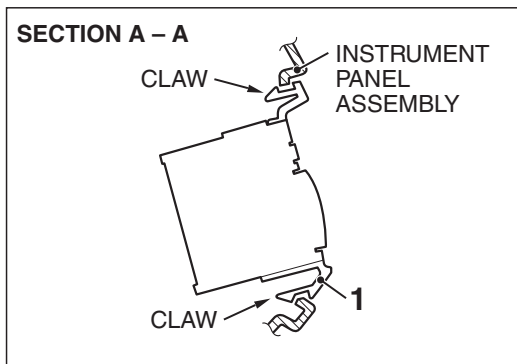


NOTE

⇐ : CLAW POSITION

## REMOVAL STEPS

1. SWITCH PANEL ASSEMBLY



AC711917AB

## REMOVAL STEPS (Continued)

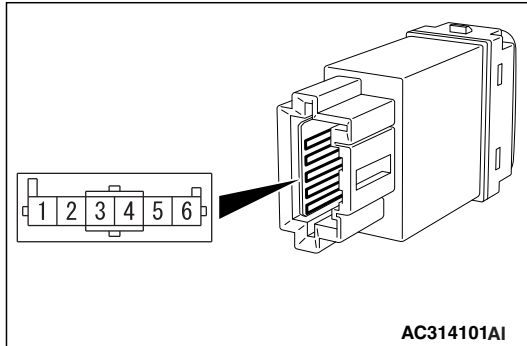
2. HEADLIGHT LEVELING SWITCH
3. SWITCH PANEL



## INSPECTION

HEADLIGHT LEVELING SWITCH CHECK  
<VEHICLES WITH HEADLIGHT MANUAL  
LEVELING SYSTEM>

M1540101300251



Measured terminals	Switch position	Resistance value $\Omega$
4 - 6	0	750
	1	1, 050
	2	1, 410
	3	1, 710
	4	2, 010
5 - 6	0, 1, 2, 3, 4	2, 830

## FOG LIGHT

## FRONT FOG LIGHT DIAGNOSIS

M1542000701946

The front fog lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).

## ON-VEHICLE SERVICE

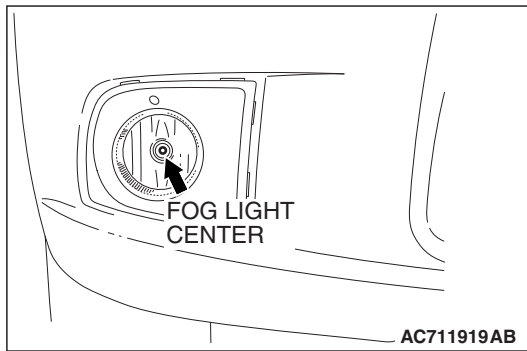
## FOG LIGHT AIMING

M1542001100999

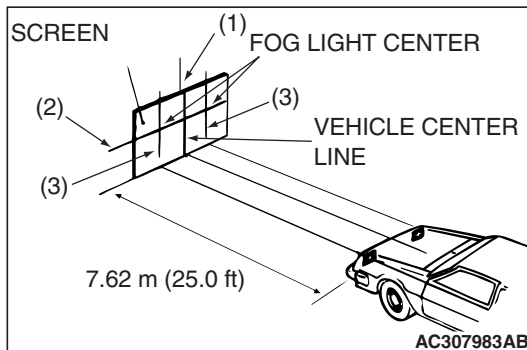
## PRE-AIMING INSTRUCTIONS

1. Inspect for badly rusted or faulty front fog light assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 kg (6.5 pounds) per gallon].
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
6. Thoroughly clean the front fog light lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 meters (25.0 ft) away from the bulb center-marks on the fog light lens.
8. Rock the vehicle sideways to allow the vehicle to assume its normal position.
9. Bounce the front suspension through three 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 fog light. Transfer the measurement to the screen. Vertical tape or mark on the screen is for reference to the center line of each fog light.

## FOG LIGHT ADJUSTMENT

1. Check if the beam shining onto the screen is at the standard value.

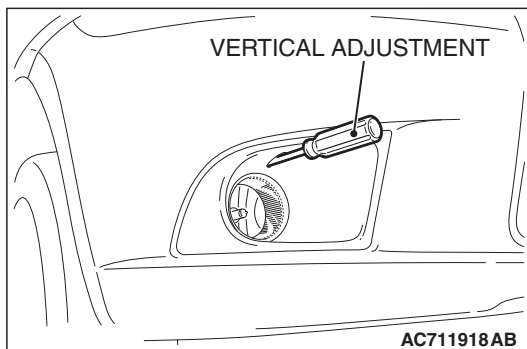
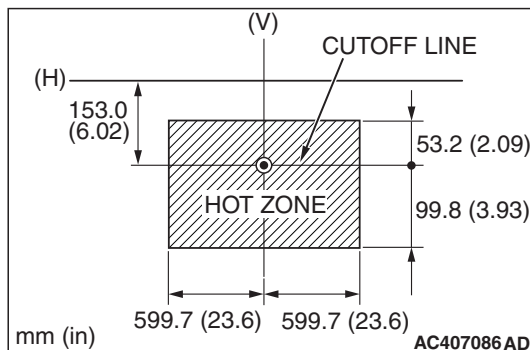
**Standard value:**

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

**Limit:**

**(Vertical direction):** Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line

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



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

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



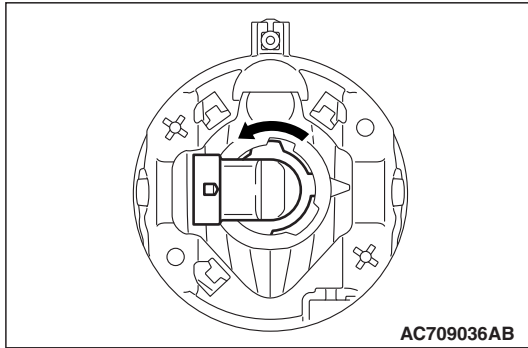
## BULB REPLACEMENT

M1542001301747

**⚠ 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 under cover mounting clips, then remove the engine room under cover.
2. Remove the socket and bulb assembly by twisting it counterclockwise.
3. Remove the fog light bulb from the connector.
4. Replace the bulb, and then install the socket and bulb assembly by twisting it clockwise.



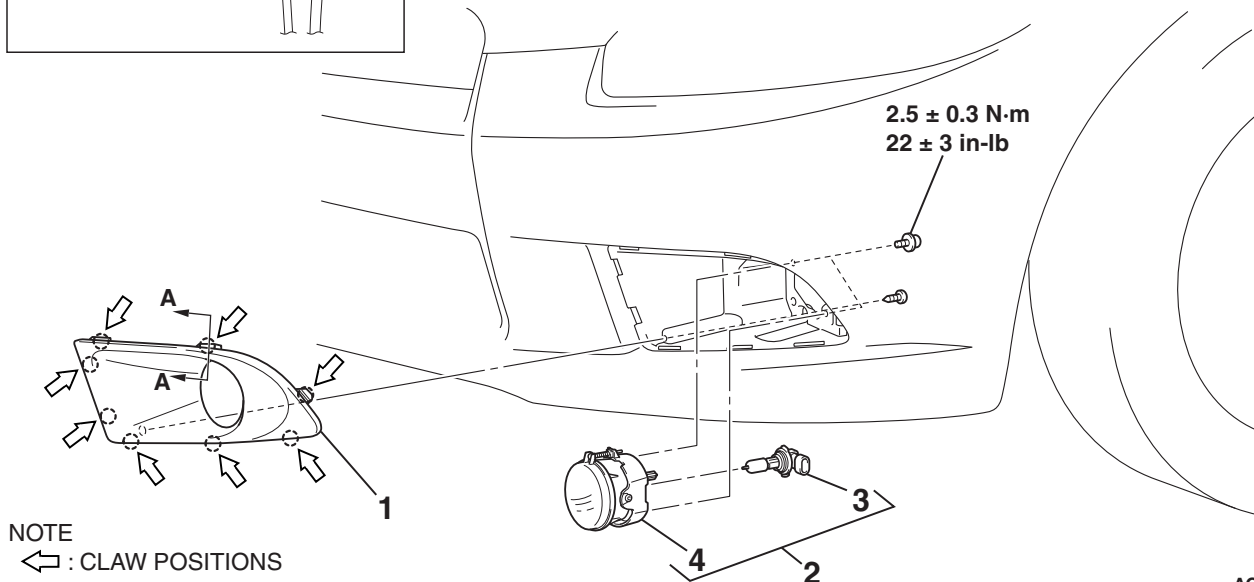
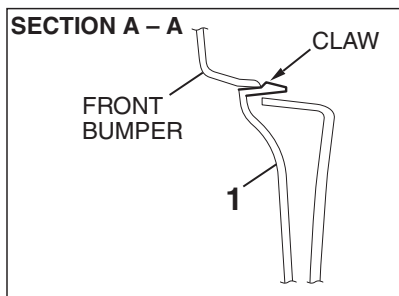
## FRONT FOG LIGHT

## FOG LIGHT REMOVAL AND INSTALLATION

M1542001501031

**Post-installation operation**

Fog light aiming (Refer to [P.54A-147](#)).



AC711964AB



REMOVAL STEPS

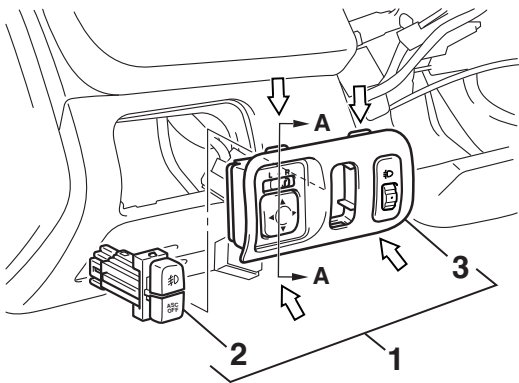
- ENGINE ROOM UNDER COVER  
(REFER TO GROUP 51, FRONT  
BUMPER ASSEMBLY AND  
RADUATOR GRILLE P.51-2.)
- FRONT FOG LIGHT BEZEL

REMOVAL STEPS (Continued)

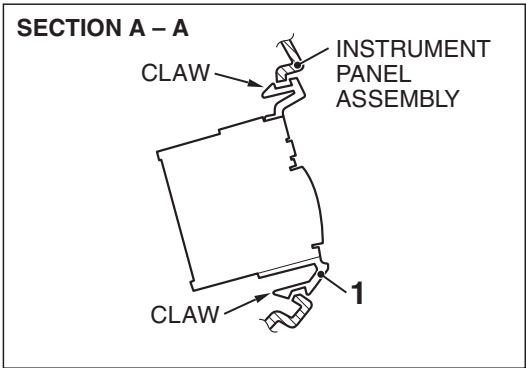
- FRONT FOG LIGHT ASSEMBLY
- BLUB
- FRONT FOG LIGHT UNIT

FOG LIGHT SWITCH REMOVAL AND INSTALLATION

M1542013900204



NOTE  
↔ : CLAW POSITION



REMOVAL STEPS

- SWITCH PANEL ASSEMBLY

REMOVAL STEPS (Continued)

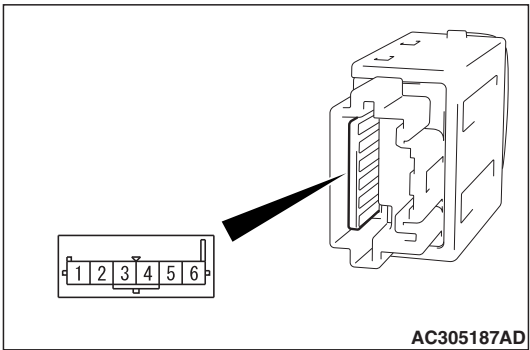
- FOG LIGHT SWITCH
- SWITCH PANEL

AC711994AB

INSPECTION

FOG LIGHT SWITCH CHECK

M1540400800061



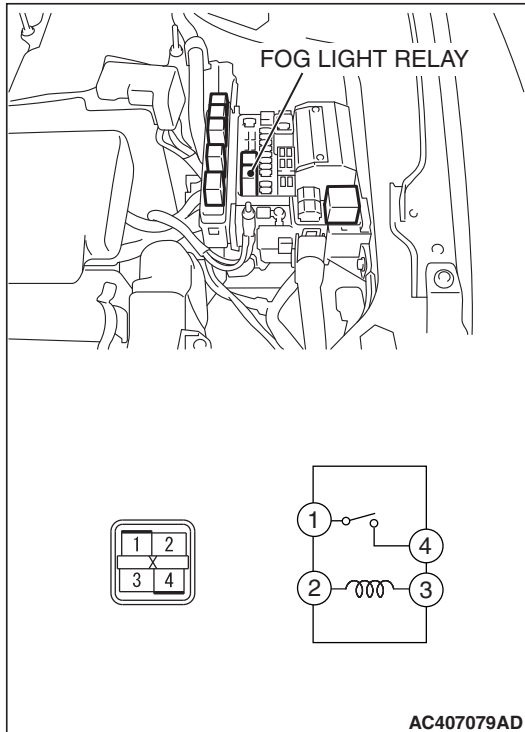
AC305187AD

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	1 – 2	Continuity exists (2 ohms or less)
Released	1 – 2	Open circuit



## FOG LIGHT RELAY CHECK

M1540400700116

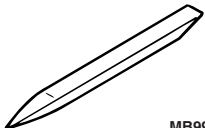


BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not supplied	1 – 4	Open circuit
<ul style="list-style-type: none"><li>Connect terminal 2 to the positive battery terminal</li><li>Connect terminal 3 to the negative battery terminal</li></ul>	1 – 4	Continuity exists (2 ohms or less)

## REAR COMBINATION LIGHT

## SPECIAL TOOL

M1542000601961

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 MB990784	MB990784 Ornament remover	General service tool	Removal of rear combination light

## DIAGNOSIS

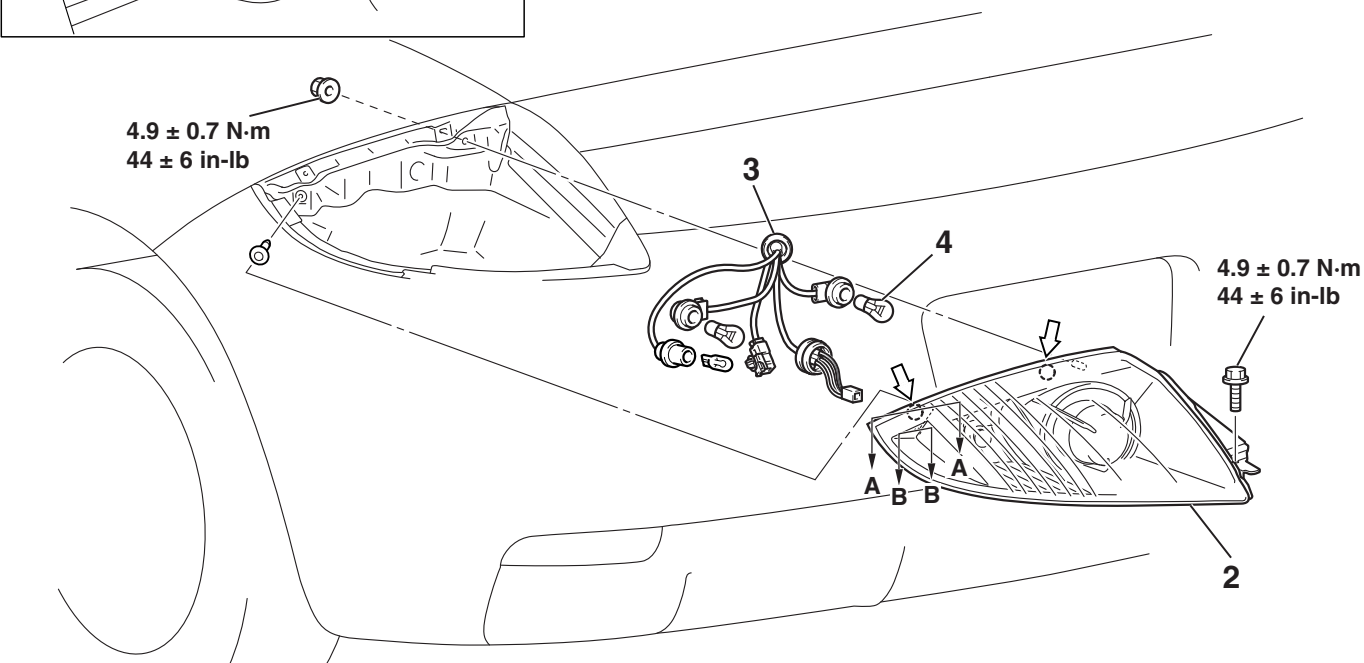
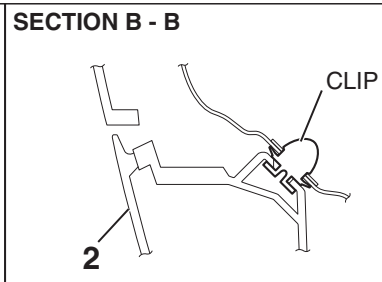
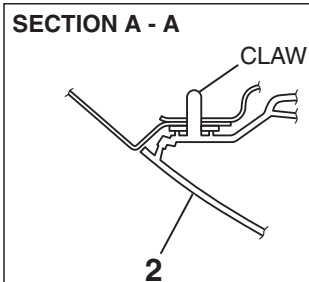
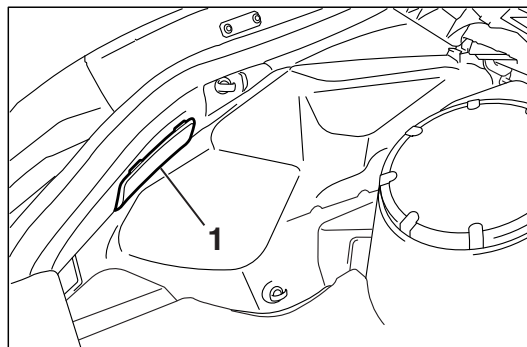
M1542000701957

The taillights and turn-signal lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).



REAR COMBINATION LIGHT  
REMOVAL AND INSTALLATION

M1542003900827



NOTE  
 : CLAW POSITION

AC406025 AB

**REMOVAL STEPS**

- REAR BUMPER EXTENSION GARNISH (REFER TO GROUP 51, REAR BUMPER ASSEMBLY P.51-4.)
1. ACCESS COVER
  2. REAR COMBINATION LIGHT

**REMOVAL STEPS (Continued)**

3. SOCKET ASSEMBLY
4. BULB

**Required Special Tool:**  
 MB990784: Ornament Remover

&lt;&lt;A&gt;&gt;

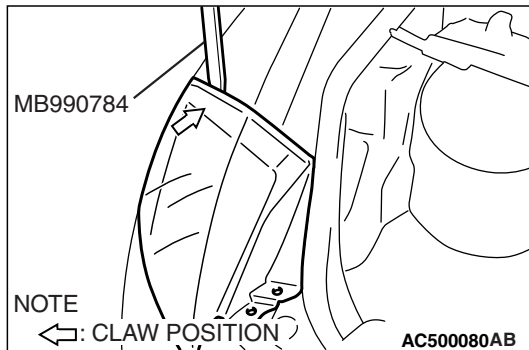
&lt;&lt;B&gt;&gt;



## REMOVAL SERVICE POINTS

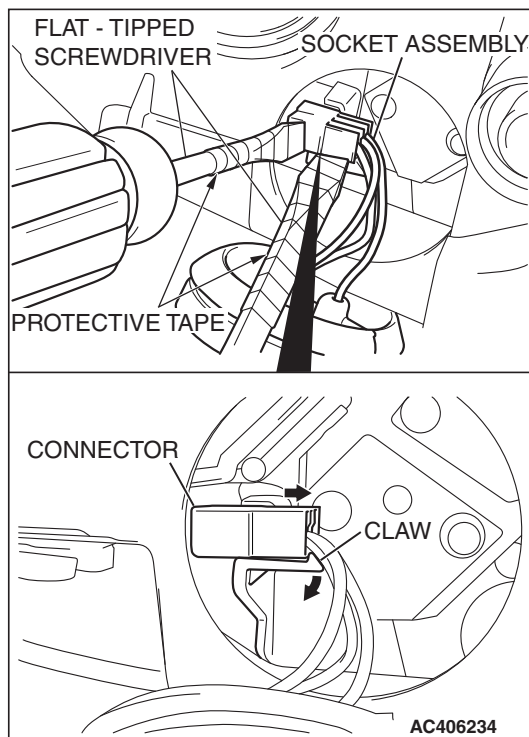
### <<A>> REAR COMBINATION LIGHT REMOVAL

Before removing the rear combination light, disengage the claw shown in the illustration using special tool MB990784.



### <<B>> SOCKET ASSEMBLY REMOVAL

Remove the socket assembly connector using a flat-tipped screwdriver as shown.





## DOME LIGHT

## DIAGNOSIS

The dome light is controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).

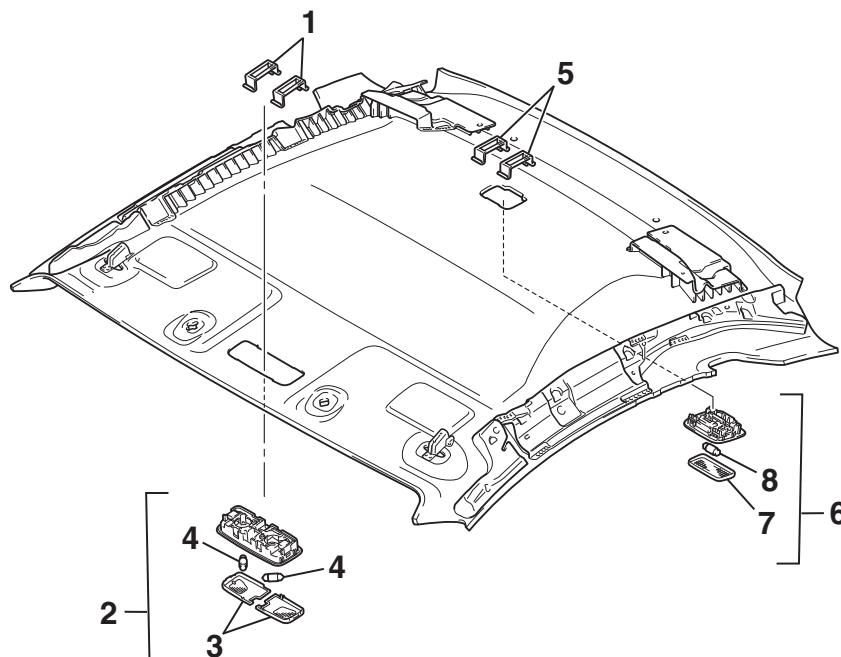
M1542000701968

## DOME LIGHT

## REMOVAL AND INSTALLATION

M1542006300181

## &lt;ECLIPSE (VEHICLES WITHOUT SUNROOF)&gt;



AC808739AB

#### FRONT DOME LIGHT ASSEMBLY REMOVAL STEPS <VEHICLES WITH BULB TYPE FRONT DOME LIGHT>

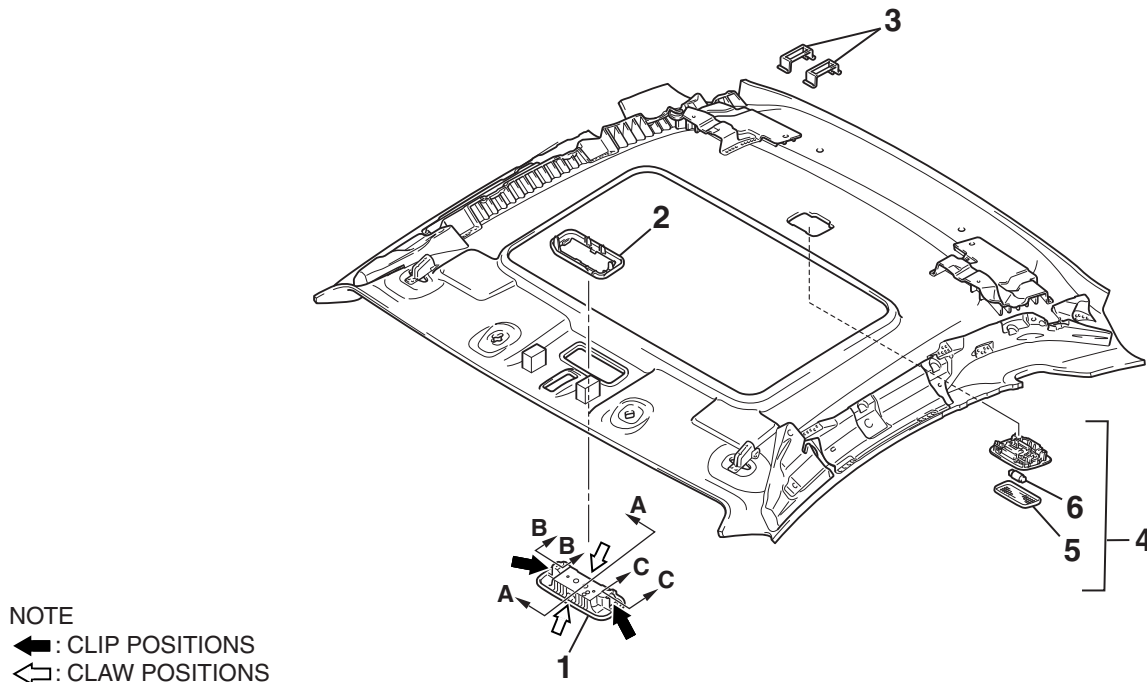
- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37](#).)
  - 1. FRONT DOME LIGHT BRACKET
  - 2. FRONT DOME LIGHT ASSEMBLY
- #### FRONT DOME LIGHT BULB REMOVAL STEPS <VEHICLES WITH BULB TYPE FRONT DOME LIGHT>
- 3. FRONT DOME LIGHT LENS
  - 4. FRONT DOME LIGHT BULB

#### REAR DOME LIGHT ASSEMBLY REMOVAL STEPS

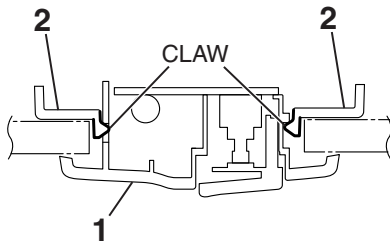
- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37](#).)
  - 5. REAR DOME LIGHT BRACKET
  - 6. REAR DOME LIGHT ASSEMBLY
- #### REAR DOME LIGHT BULB REMOVAL STEPS
- 7. REAR DOME LIGHT LENS
  - 8. REAR DOME LIGHT BULB



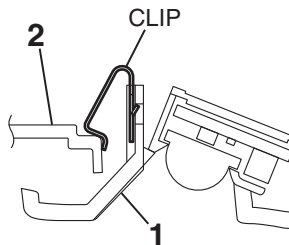
<ECLIPSE (VEHICLES WITH SUNROOF)>



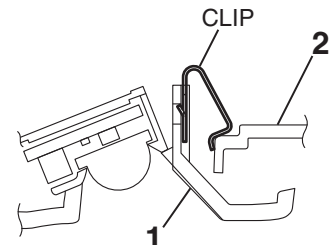
SECTION A – A



SECTION B – B



SECTION C – C



AC808740AB

**FRONT DOME LIGHT ASSEMBLY  
REMOVAL STEPS <VEHICLES  
WITH LED TYPE FRONT DOME  
LIGHT>**

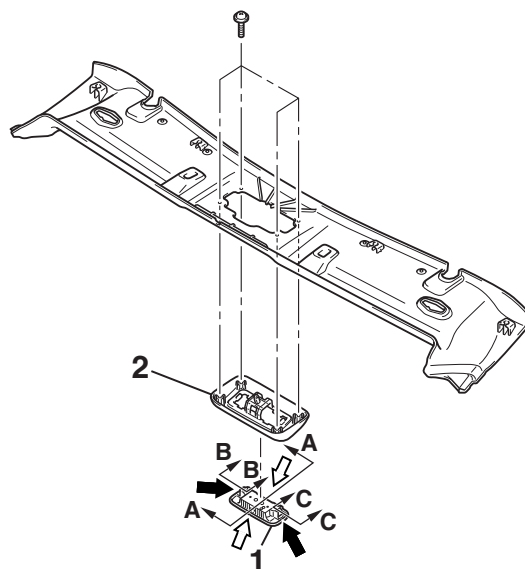
- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37.](#))
- 1. FRONT DOME LIGHT ASSEMBLY
- 2. RETAINER

**REAR DOME LIGHT ASSEMBLY  
REMOVAL STEPS**

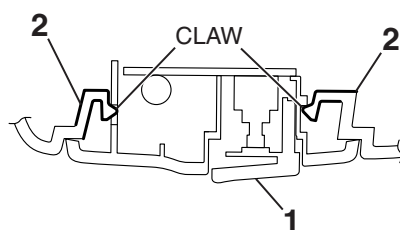
- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37.](#))
  - 3. REAR DOME LIGHT BRACKET
  - 4. REAR DOME LIGHT ASSEMBLY
- REAR DOME LIGHT BULB  
REMOVAL STEPS**
- 5. REAR DOME LIGHT LENS
  - 6. REAR DOME LIGHT BULB



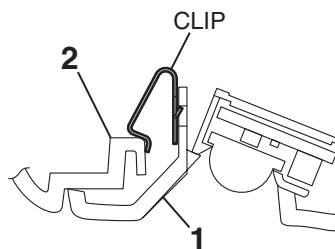
## &lt;ECLIPSE SPYDER&gt;



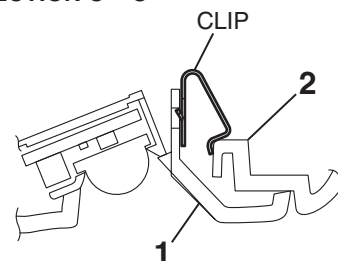
SECTION A – A



SECTION B – B



SECTION C – C



AC808494AB

**FRONT DOME LIGHT ASSEMBLY  
REMOVAL STEPS <VEHICLES  
WITH LED TYPE FRONT DOME  
LIGHTE>**

1. FRONT DOME LIGHT ASSEMBLY

**FRONT DOME LIGHT ASSEMBLY  
REMOVAL STEPS <VEHICLES  
WITH LED TYPE FRONT DOME  
LIGHTE> (Continued)**

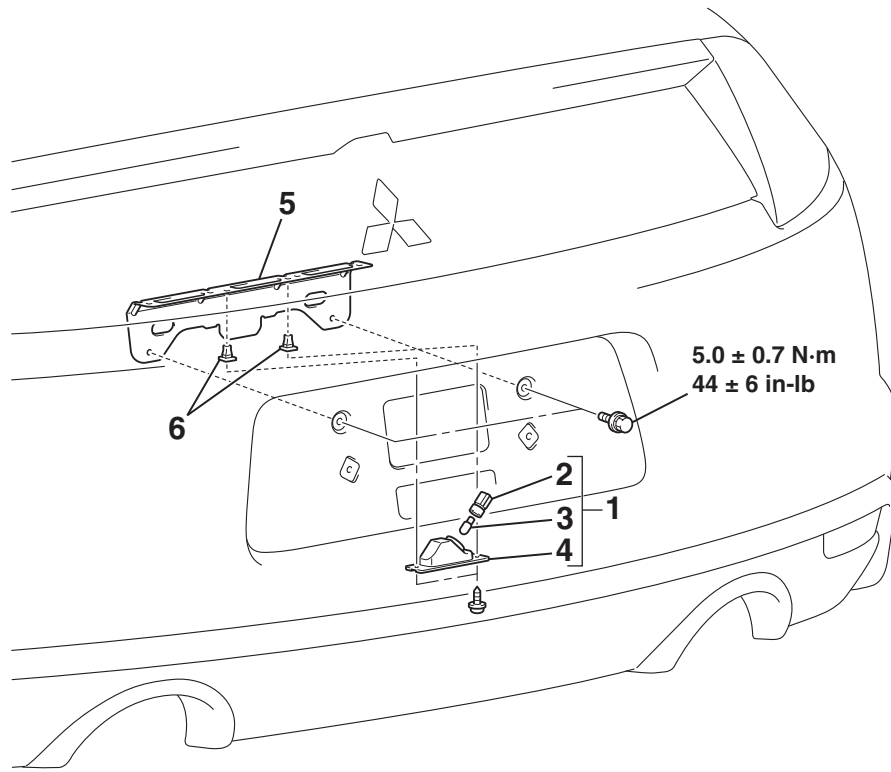
- HEADER LOWER TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
- 2. DOME LIGHT HOUSING



## LICENSE PLATE LIGHT

### REMOVAL AND INSTALLATION

M1542004200564



AC711780AB

#### REMOVAL STEPS

1. LICENSE PLATE LIGHT ASSEMBLY
2. SOCKET
3. BULB
4. LICENSE PLATE LIGHT
5. LICENSE PLATE LIGHT BRACKET
6. GROMMET

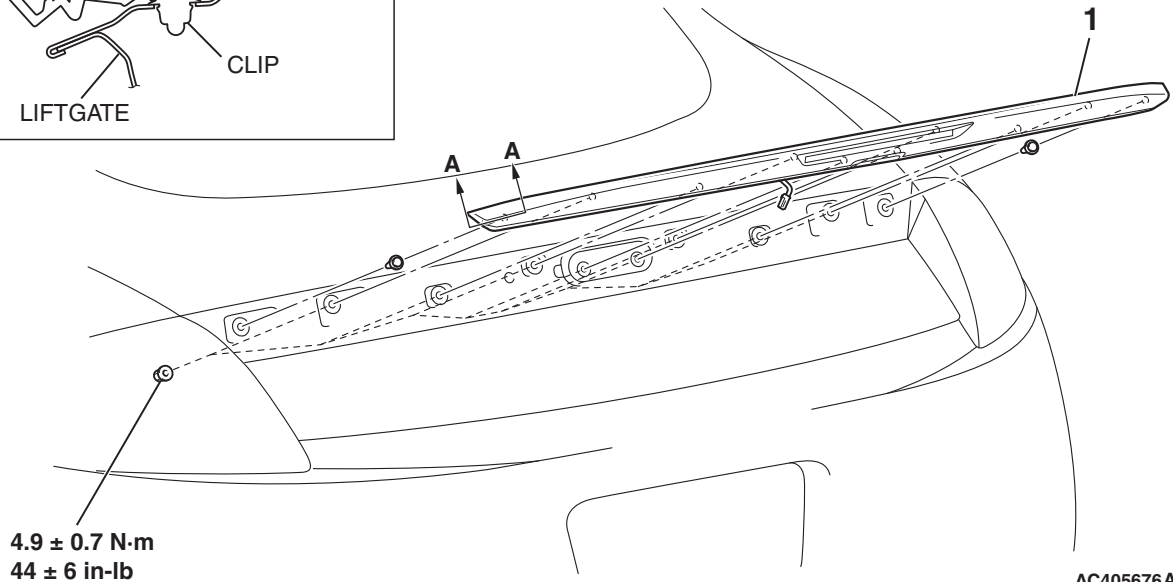
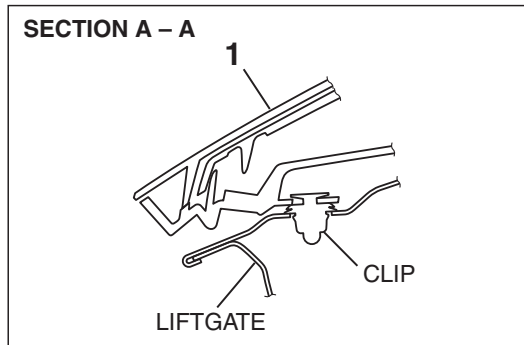


# HIGH-MOUNTED STOPLIGHT

## REMOVAL AND INSTALLATION

M1542005100894

### VEHICLES WITHOUT LARGE TYPE REAR SPOILER



#### REMOVAL STEP

- LIFTGATE LOWER TRIM (REFER TO GROUP 52A, LIFTGATE TRIM <ECLIPSE> [P.52A-36.](#))
1. HIGH-MOUNTED STOPLIGHT

### VEHICLES WITH LARGE TYPE REAR SPOILER

Refer to GROUP 51 – Rear Spoiler [P.51-9.](#)



## HAZARD WARNING LIGHT SWITCH

### HAZARD WARNING LIGHT DIAGNOSIS

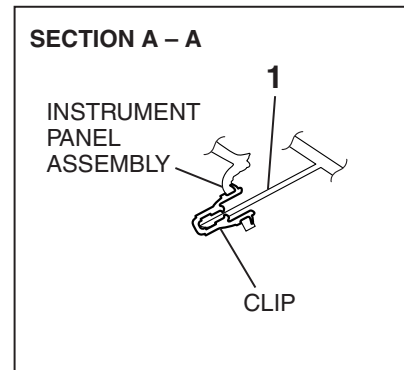
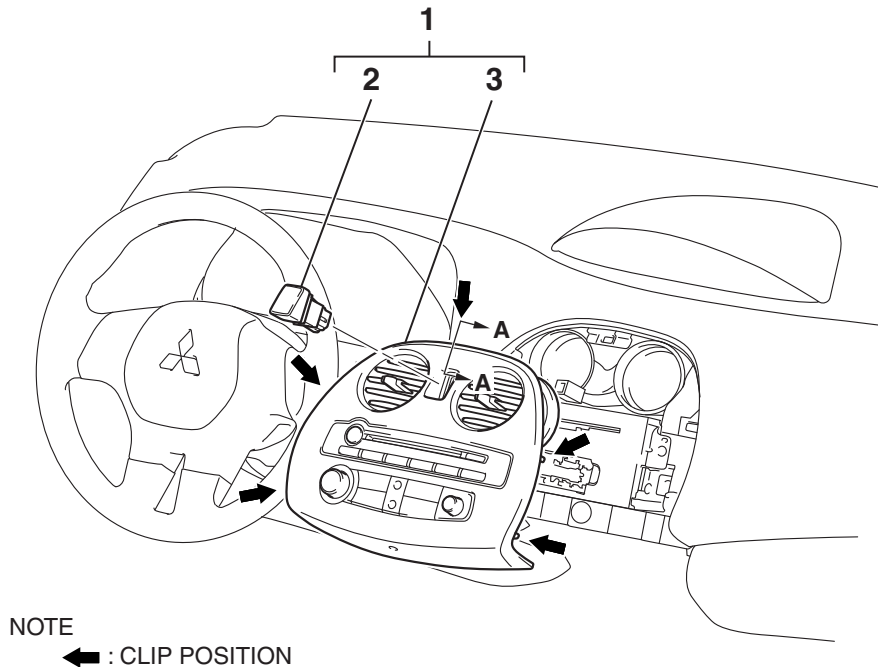
M1542000701979

The hazard warning lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).

### HAZARD WARNING LIGHT SWITCH

#### REMOVAL AND INSTALLATION

M1542006600706



AC406126AB

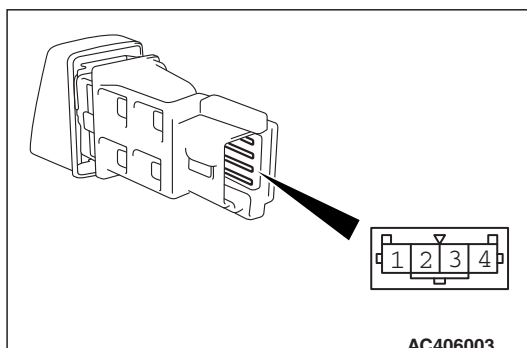
#### HAZARD WARNING LIGHT SWITCH REMOVAL STEPS

1. CENTER PANEL ASSEMBLY
2. HAZARD WARNING LIGHT SWITCH
3. CENTER PANEL

### INSPECTION

#### HAZARD WARNING LIGHT SWITCH CHECK

M1541501100270

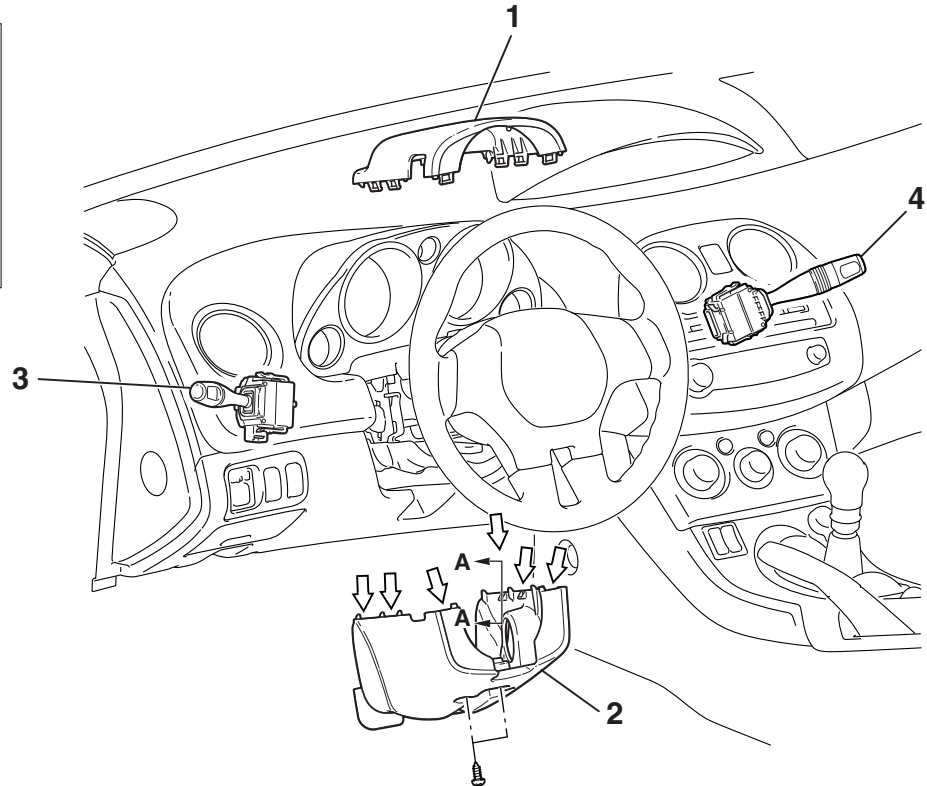
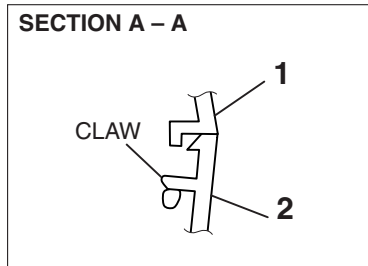


SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	1 - 2	Continuity exists (2 ohms or less)
Released	1 - 2	Open circuit



**COLUMN SWITCH****REMOVAL AND INSTALLATION**

M1543009100833

**TURN-SIGNAL LIGHT/LIGHTING SWITCH AND WINDSHIELD WIPER/WINDSHIELD WASHER SWITCH**

## NOTE

: CLAW POSITION

AC406539AB

**REMOVAL STEPS**

1. STEERING COLUMN UPPER COVER
2. STEERING COLUMN LOWER COVER
- COLUMN SWITCH CONNECTOR

**REMOVAL STEPS (Continued)**

3. TURN-SIGNAL LIGHT AND LIGHTING SWITCH
4. WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH

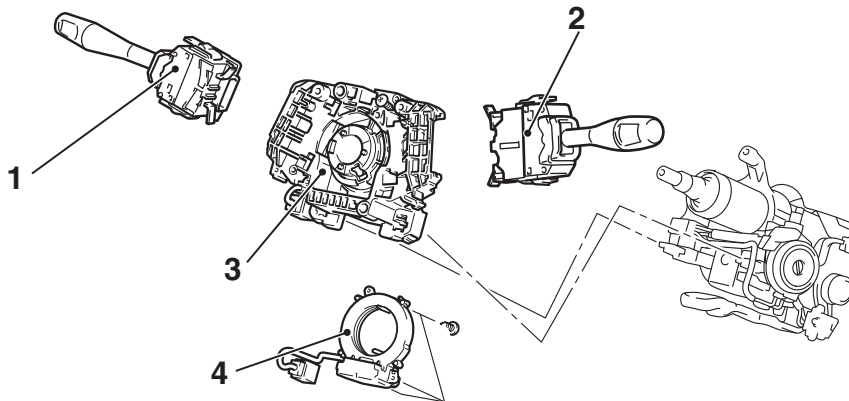
&lt;&lt;A&gt;&gt;



## COLUMN SWITCH BODY

**CAUTION**

- To remove the driver airbag module, refer to GROUP 52B – Service Precautions [P.52B-28](#) and Air Bag Module and Clock Spring [P.52B-423](#).
- When the steering wheel sensor is replaced, always carry out calibration to make ASC-ECU learn the neutral point. (Refer to GROUP 35C – On-vehicle Service-Steering Wheel Sensor Calibration [P.35C-223](#).)



AC808363AB

**REMOVAL STEPS**

- STEERING COLUMN LOWER COVER AND STEERING COLUMN UPPER COVER (REFER TO GROUP 37 STEERING COLUMN SHAFT ASSEMBLY [P.37-29](#)).
  - COLUMN SWITCH CONNECTOR
1. TURN-SIGNAL LIGHT AND LIGHTING SWITCH

**REMOVAL STEPS (Continued)**

2. WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH
  - CLOCK SPRING (REFER TO GROUP 52B - AIR BAG MODULE AND CLOCK SPRING [P.52B-423](#)).
3. COLUMN SWITCH BODY
4. STEERING WHEEL SENSOR (REFER TO GROUP 35C – STEERING WHEEL SENSOR [P.35C-231](#).)

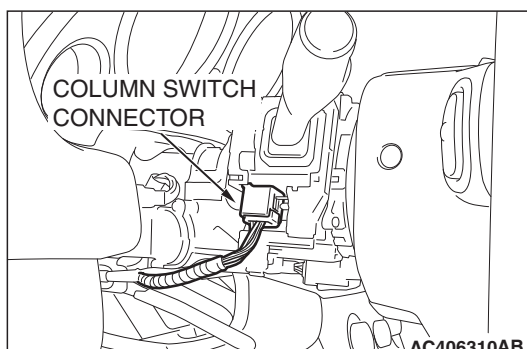
&lt;&lt;A&gt;&gt;

**REMOVAL SERVICE POINT**

## &lt;&lt;A&gt;&gt; COLUMN SWITCH CONNECTOR

**REMOVAL**

Disconnect column switch connector C-309 shown in the illustration.





## HORN

## DIAGNOSIS

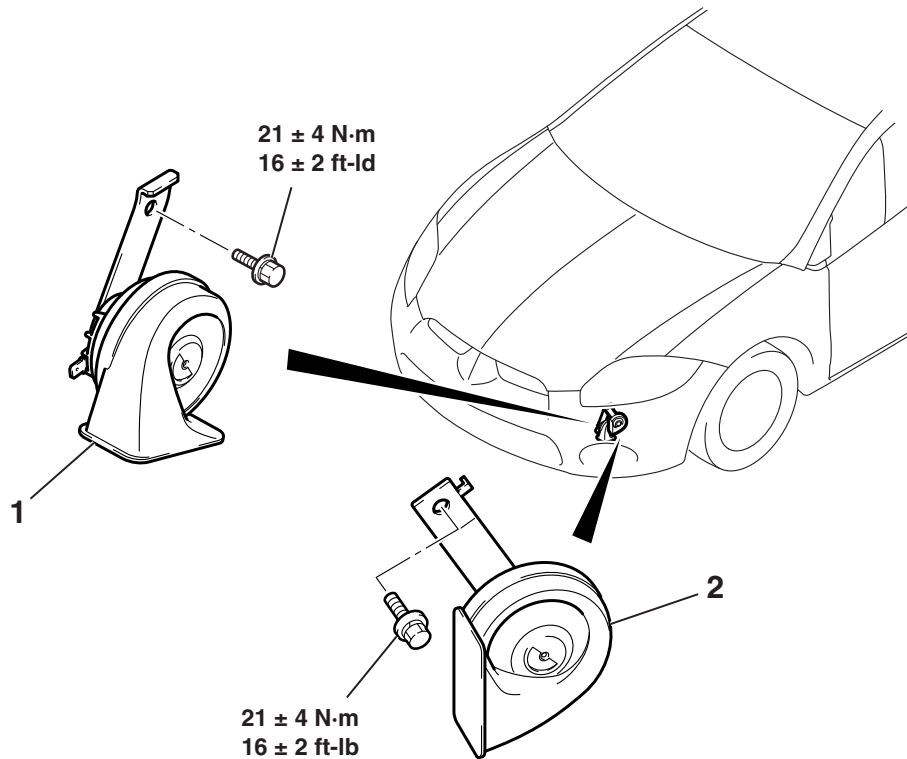
M1543000701585

The keyless entry system horn answerback are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-54](#).

## HORN

## REMOVAL AND INSTALLATION

M1543007900769



AC405618AC

## REMOVAL STEPS

- FRONT BUMPER ASSEMBLY (REFER TO GROUP 51, FRONT BUMPER ASSEMBLY AND RADIATOR GRILLE [P.51-2](#).)

## REMOVAL STEPS (Continued)

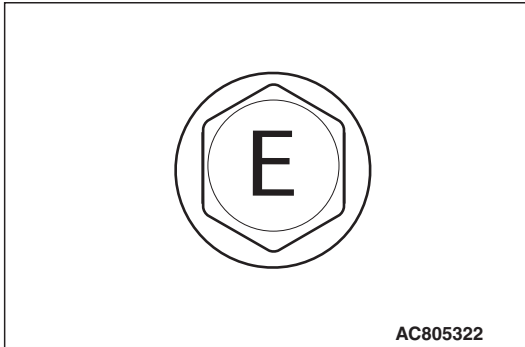
- >>A<< 1. HORN (LOW)  
>>A<< 2. HORN (HIGH)



## INSTALLATION SERVICE POINT

## &gt;&gt;A&lt;&lt; HORN (LOW) / HORN (HIGH) INSTALLATION.

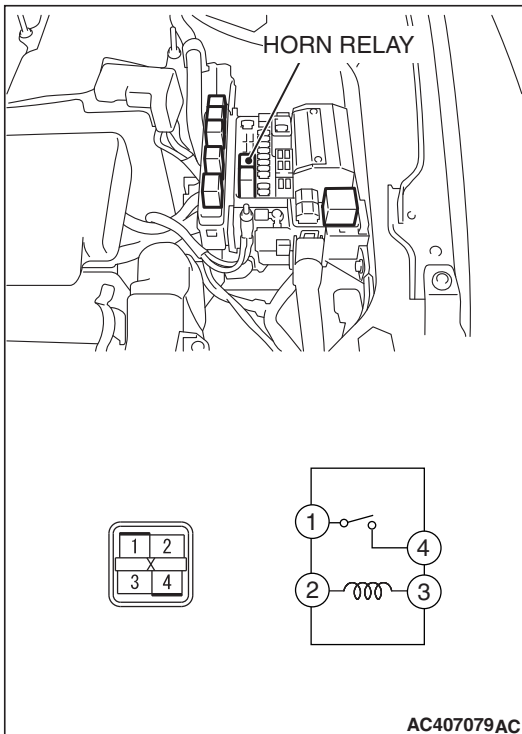
Use earth bolts as the mounting bolts for horn (low) and horn (high). Earth bolts have "E" mark on the bolt heads.



## INSPECTION

M1543019505008

## HORN RELAY CONTINUITY CHECK



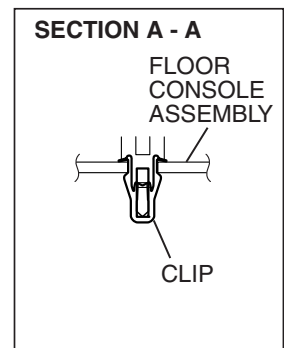
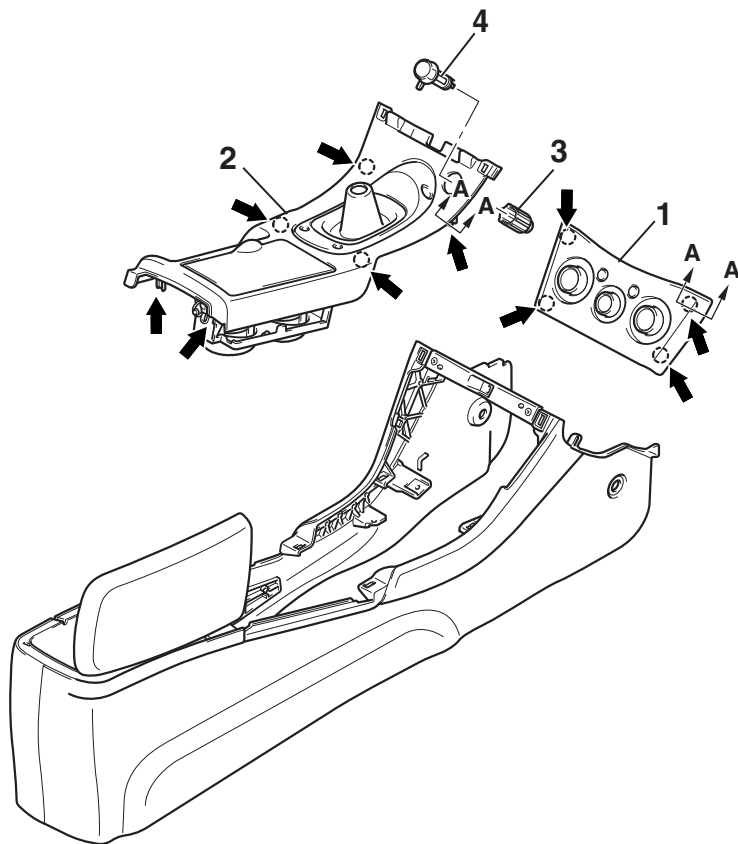
BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1-4	Open circuit
<ul style="list-style-type: none"><li>Connect terminal 2 to the positive battery terminal</li><li>Connect terminal 3 to the negative battery terminal</li></ul>	1-4	Continuity exists (2 ohms or less)



# ACCESSORY SOCKET

## REMOVAL AND INSTALLATION

M1543008900524



AC711916AD

NOTE

← : CLIP POSITION

### REMOVAL STEPS

- INSTRUMENT CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT CENTER PANEL ASSEMBLY [P.52A-19.](#))
1. HEATER CONTROL PANEL

### REMOVAL STEPS (Continued)

2. FLOOR CONSOLE CENTER PANEL ASSEMBLY
3. ACCESSORY SOCKET (ACC) COVER
4. ACCESSORY SOCKET (ACC)

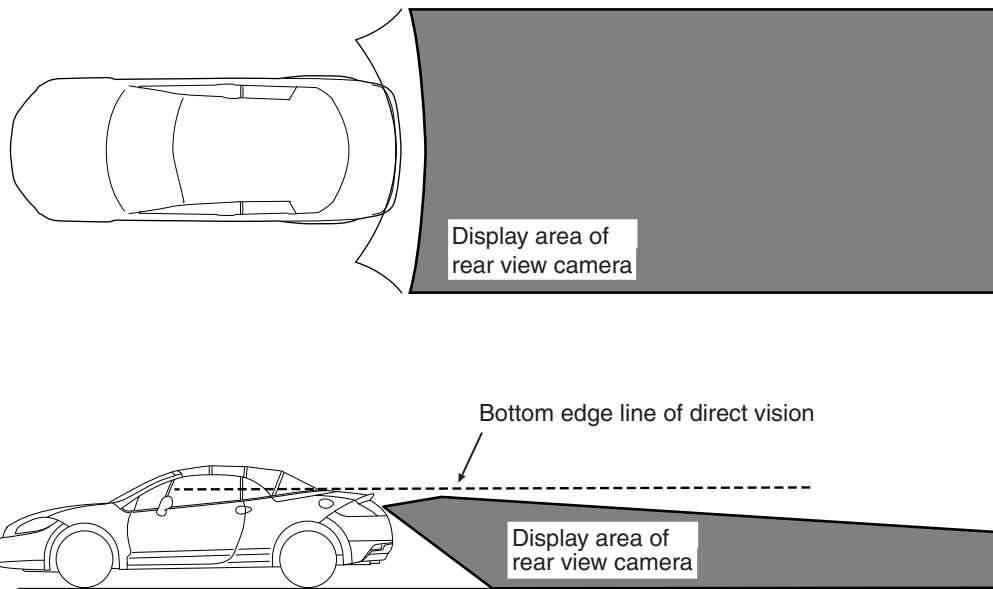
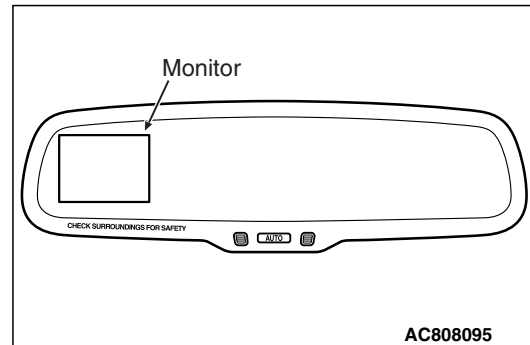
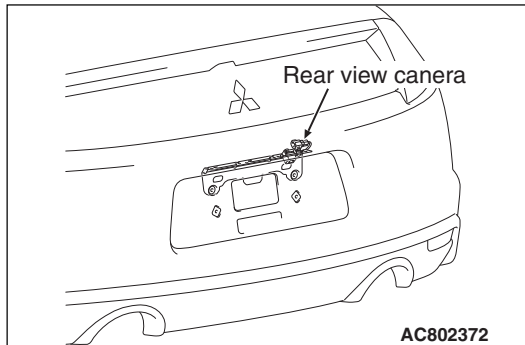


## REAR VIEW CAMERA

### GENERAL DESCRIPTION

M1540905600131

The rear view camera has been installed in the license plat light bracket. The image from the rear view camera is displayed on the monitor in the inside rear view mirror to help the visual check when the vehicle is moving backward with the inside rear view mirror.<vehicle with Rear view system>

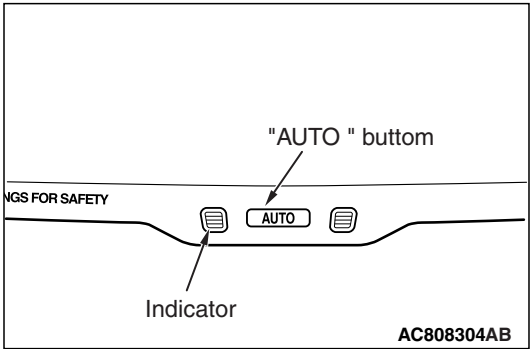


AC808038AC

### OPERATION

The image is displayed on the monitor in the inside rear view mirror when the ignition switch is "ON" or "ACC" position, and the selector or the shift lever is turned to "R" (Reverse) position.

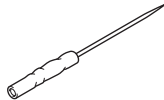




- The indicator illuminates in a blue color when the image from the rear view camera is displayed on the monitor in the inside rear view mirror.
- The image from rear view camera displayed on the monitor switches to the non-displayed state and the indicator illuminates in a red color when the image from rear view camera is displayed on the monitor and "AUTO" button is pressed.

SPECIAL TOOL

M1540902100085

TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
 MB992006	MB992006 Extra fine probe	–	Making voltage and resistance measurement during troubleshooting

TROUBLE SYMPTOM CHART

M1540900300061

Trouble symptom	Reference page
Rear view camera image is not correctly displayed	<a href="#">P.54A-167</a>



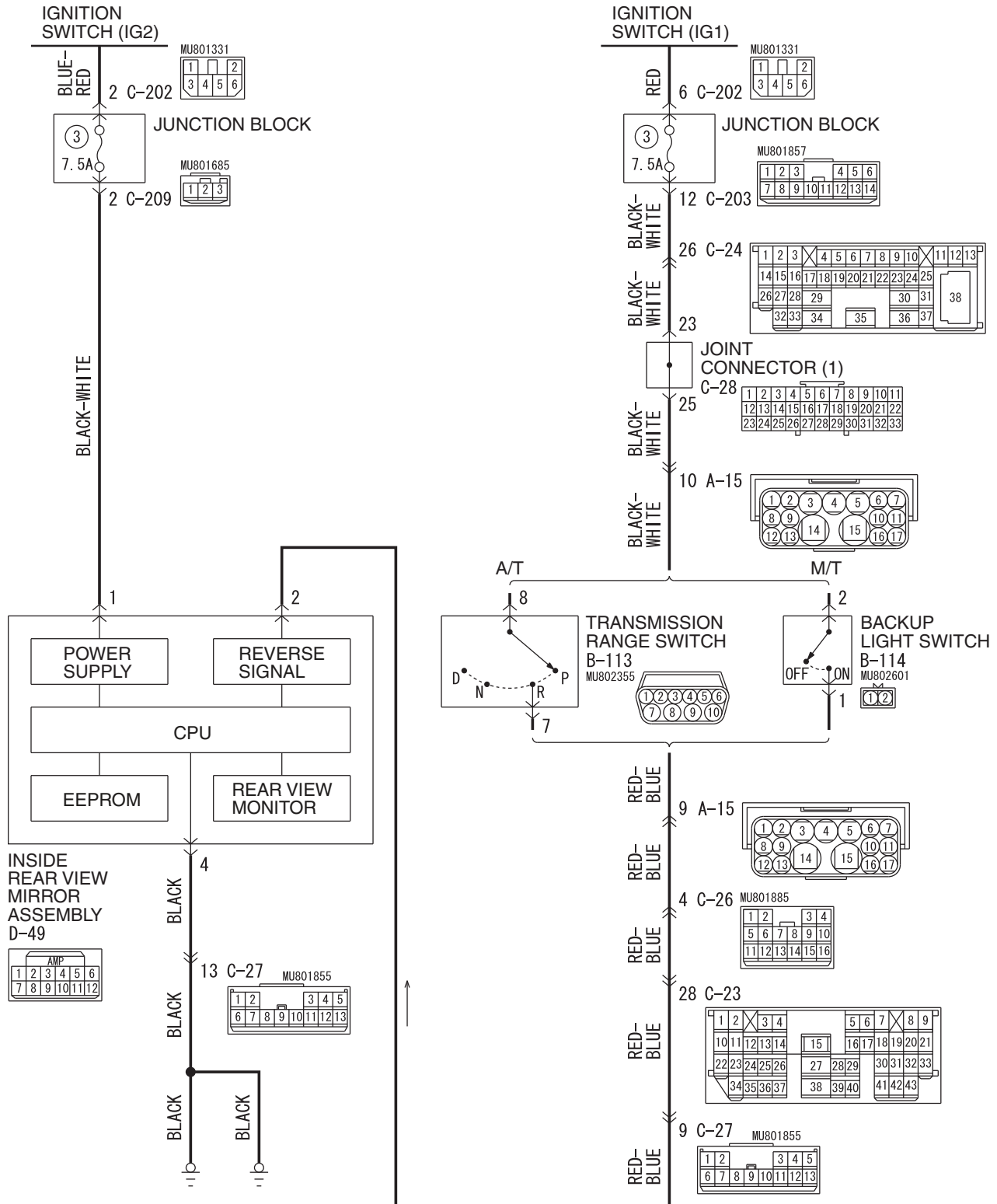
## SYMPTOM PROCEDURES

## Rear View Camera Image Is not Correctly Displayed.

**CAUTION**

Before replacing the rear view camera or inside rear view mirror assembly, ensure that the power supply circuit and the ground circuit are normal.

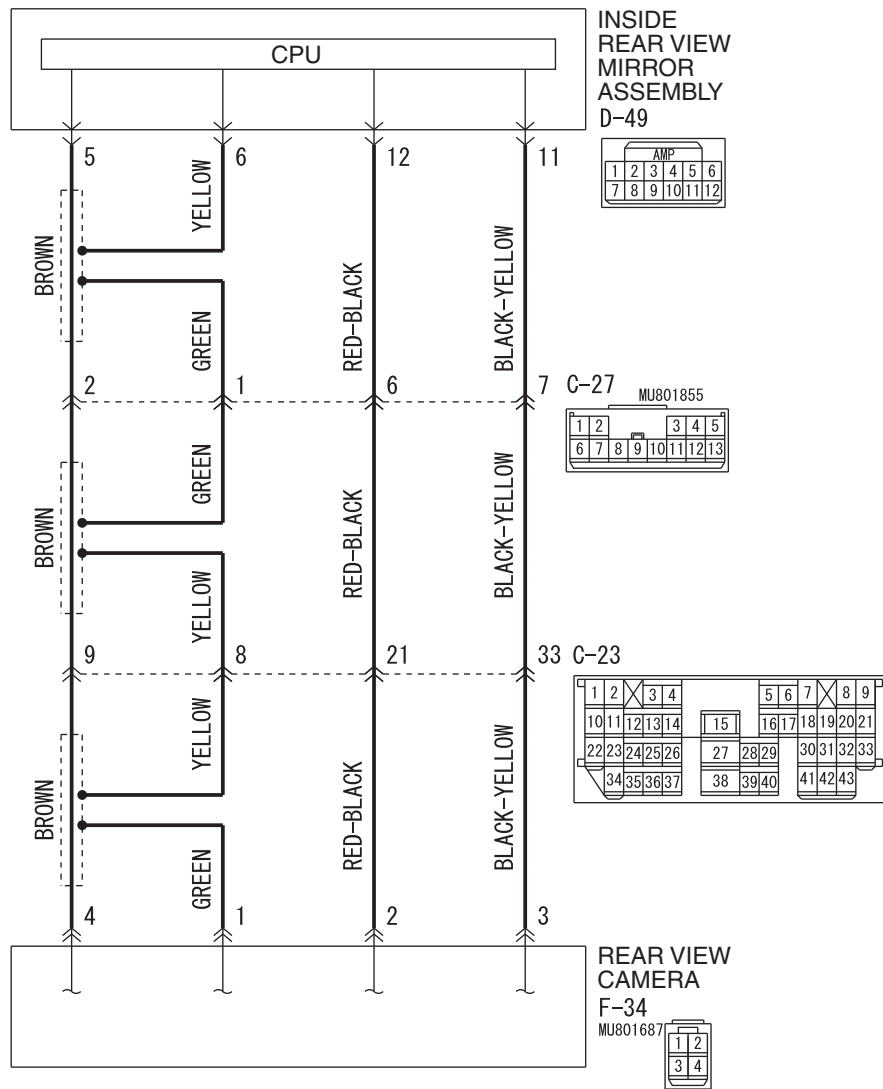
Rear View Camera Circuit



WAP54M002A

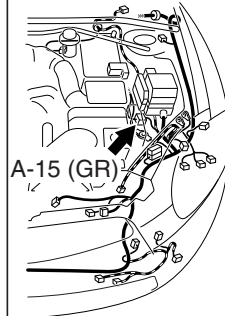


## Rear View Camera Circuit



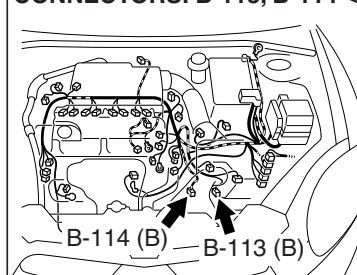
WAP54M003A

## CONNECTOR: A-15



AC711959AJ

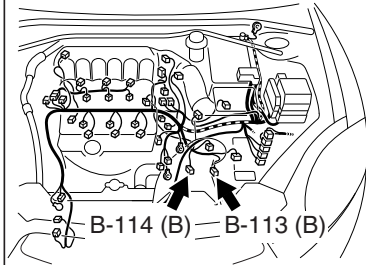
## CONNECTORS: B-113, B-114 &lt;2.4L ENGINE&gt;



AC808200AC

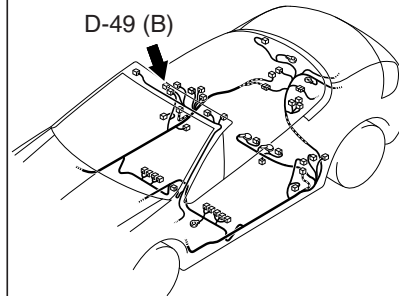


CONNECTORS: B-113, B-114 <3.8L ENGINE>



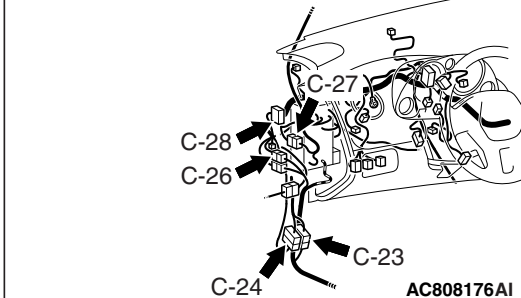
AC808201AC

CONNECTOR: D-49 <ECLIPSE SPYDER>



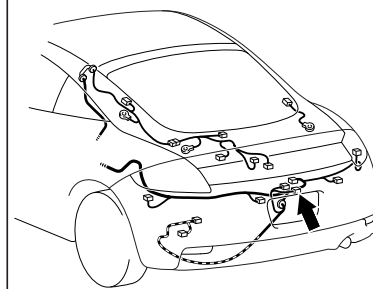
AC808185 AE

CONNECTORS: C-23, C-24, C-26, C-27, C-28



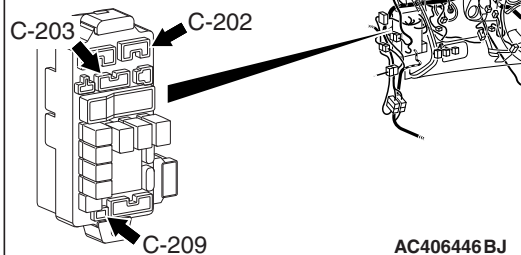
AC808176AI

CONNECTOR: F-34 <ECLIPSE>



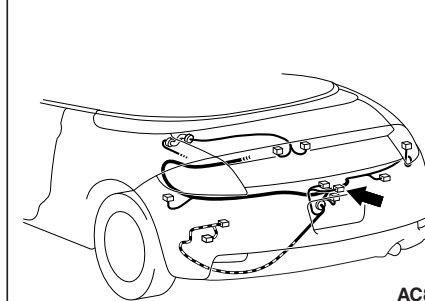
AC808231AC

CONNECTORS: C-202, C-203, C-209  
JUNCTION BLOCK  
(FRONT VIEW)



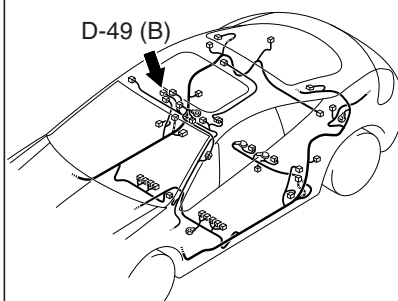
AC406446BJ

CONNECTOR: F-34 <ECLIPSE SPYDER>



AC808229AC

CONNECTOR: D-49 <ECLIPSE>



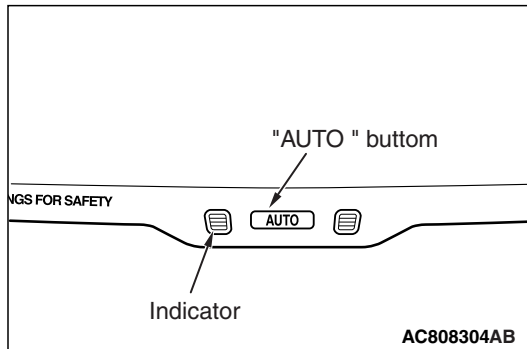
AC808184 AE

COMMENTS ON TROUBLE SYMPTOM

When the screen of rear view camera is not shown even if the selector or shift lever is "R" (Reverse) position, the rear view camera, the wiring harness, connectors, inside rear view mirror assembly, back up light switch <M/T> or transmission range switch <A/T> may be defective.

NOTE:





- If the indicator remains illuminated in a red color and the image is not displayed when the selector or the shift lever is turned to "R" (Reverse) position and "AUTO" button of inside rear view mirror assembly is pushed, the inside rear view mirror assembly has a problem.
- The inside rear view mirror assembly keeps the monitor non-displayed forcibly and illuminates the indicator when "AUTO" button is pressed and held for 12 seconds. Inside rear view mirror assembly stores the forced non-displayed state, it can be canceled by pushing "AUTO" button with the ignition switch "ON" position.

## PROBABLE CAUSES

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunction of the rear view camera
- Malfunction of the inside rear view mirror assembly
- Malfunction of the backup light switch <M/T> or transmission range switch <A/T>

## DIAGNOSTIC PROCEDURE

### STEP 1. Check the inside rear view mirror assembly.

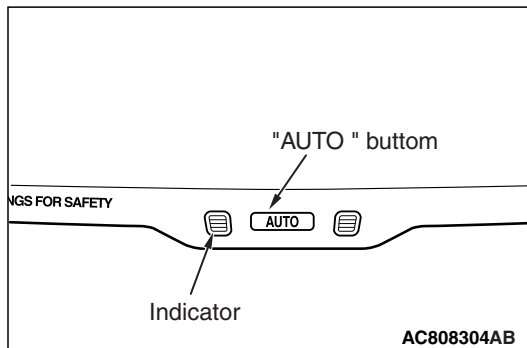
Check if the indicator of inside rear view mirror assembly illuminates in a red or blue color when the selector or the shift lever is turned to "R" (Reverse) position with the ignition switch "ON" position.

- (1) Turn the ignition switch to the "ON" position.
- (2) Move the selector or shift lever to the "R" (Reverse) position.
- (3) Check if the indicator of inside rear view mirror assembly illuminates in a red or blue color.
- (4) Check if the image from the rear view camera is displayed on the monitor when "AUTO" button is pressed shortly.

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

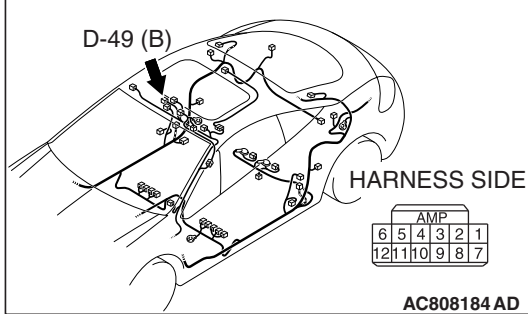
**YES :** Go to Step 14.

**NO :** Go to Step 2.

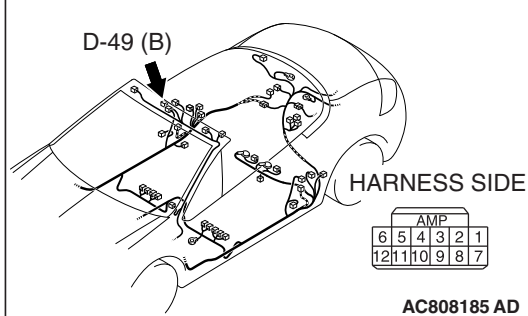




CONNECTOR: D-49 <ECLIPSE>



CONNECTOR: D-49 <ECLIPSE SPYDER>



**STEP 2.** Check inside rear view mirror assembly connector D-49 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Is inside rear view mirror assembly connector D-49 in good condition?

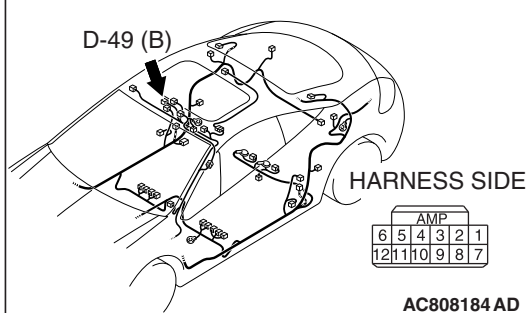
**YES :** Go to Step 3.

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

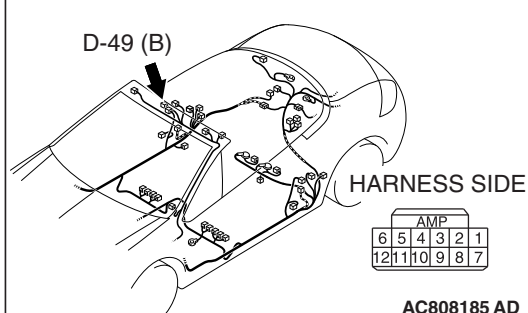
**STEP 3.** Measure the voltage at inside rear view mirror assembly connector D-49 in order to check the battery circuit of power supply system to the inside rear view mirror assembly (ignition switch IG2).

- (1) Disconnect inside rear view mirror assembly connector D-49, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.

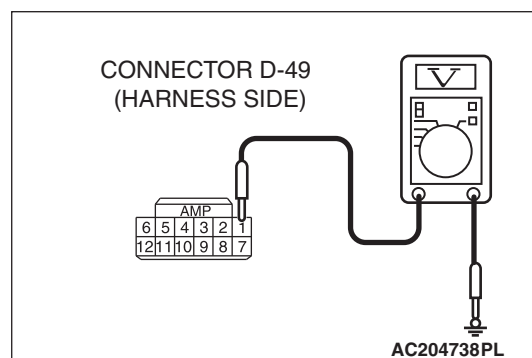
CONNECTOR: D-49 <ECLIPSE>



CONNECTOR: D-49 <ECLIPSE SPYDER>







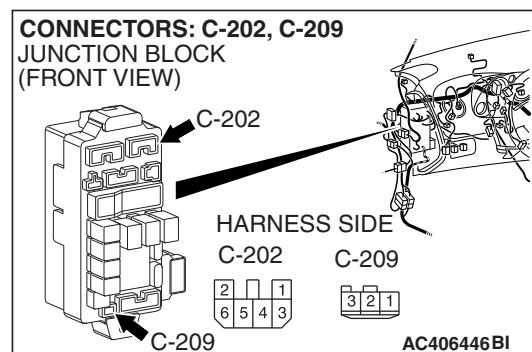
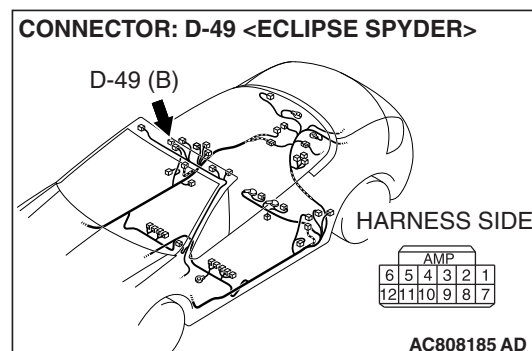
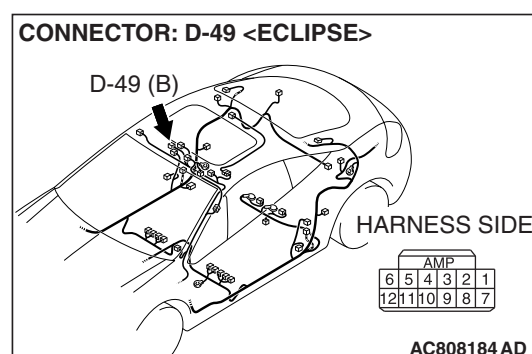
- (3) Measure the voltage between terminal 1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 5.

**NO :** Go to Step 4.

**STEP 4. Check the wiring harness between inside rear view mirror assembly connector D-49 (terminal 1) and the ignition switch (IG2).**



*NOTE: Also check junction block connectors C-202 and C-209 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-202 and C-209 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between inside rear view mirror assembly connector D-49 (terminal 1) and ignition switch (IG2) in good condition?**

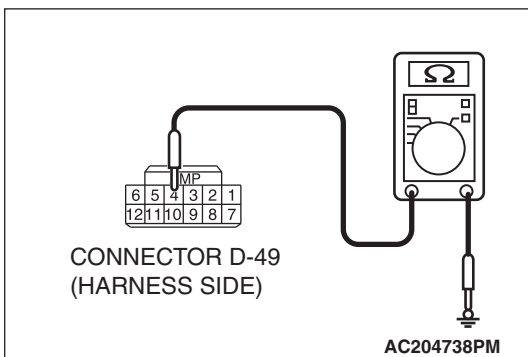
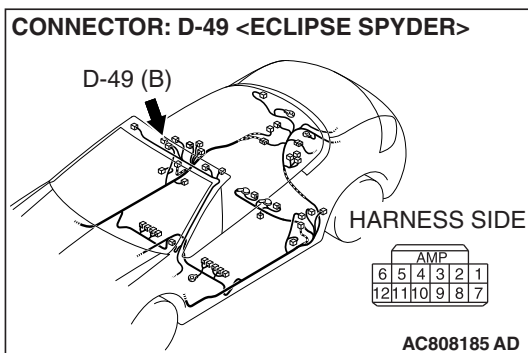
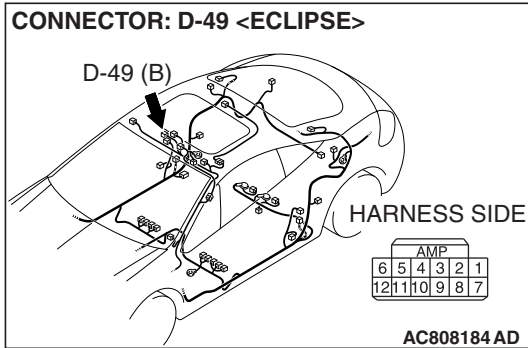
**YES :** Refer to ignition switch diagnosis [P.54A-9](#).

**NO :** Repair the wiring harness.



**STEP 5. Measure the resistance at inside rear view mirror assembly connector D-49 in order to check the ground circuit to the inside rear view mirror assembly.**

- (1) Disconnect inside rear view mirror assembly connector D-49, and measure at the wiring harness side.



- (2) Measure the resistance between terminal 4 and ground.
- The resistance should be 2 ohms or less.

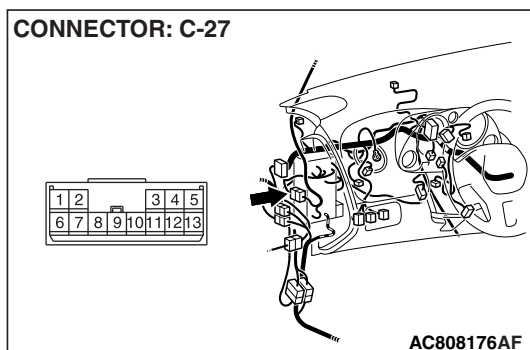
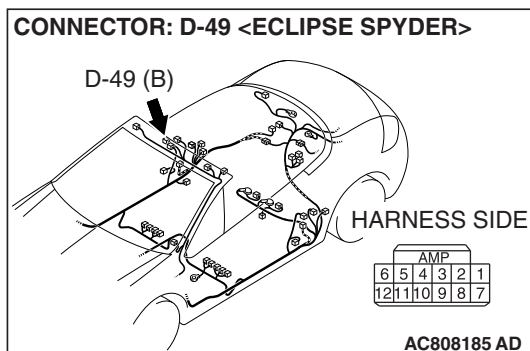
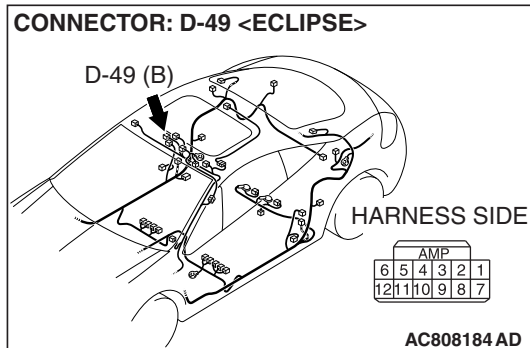
**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 7.

**NO :** Go to Step 6.



**STEP 6. Check the wiring harness between inside rear view mirror assembly connector D-49 (terminal 4) and ground.**



**NOTE:** Also check intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-27 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between inside rear view mirror assembly connector D-49 (terminal 4) and ground in good condition?**

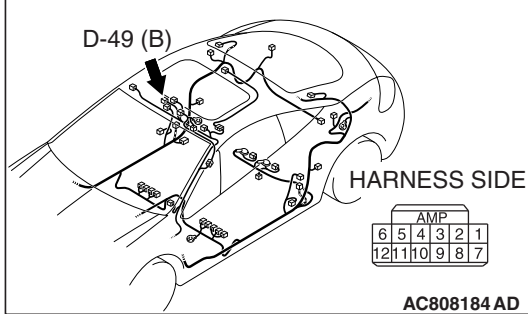
**YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00 – How to Use

Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#)).

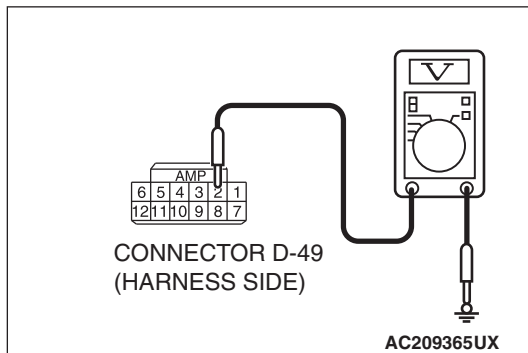
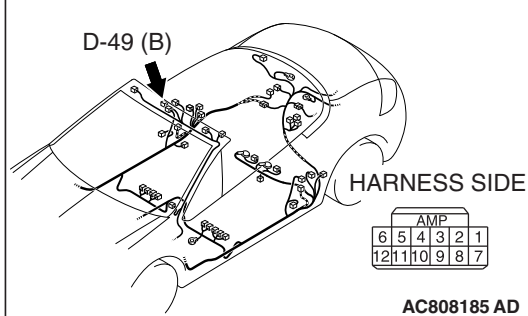
**NO :** Repair the wiring harness.



**CONNECTOR: D-49 <ECLIPSE>**



**CONNECTOR: D-49 <ECLIPSE SPYDER>**



**STEP 7. Check the ignition switch (IG1) circuit to the inside rear view mirror assembly. Measure the voltage at inside rear view mirror assembly connector D-49.**

- (1) Disconnect inside rear view mirror assembly connector D-49 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position, and move the shift lever <M/T> or the selector lever <A/T> to the "R" position.

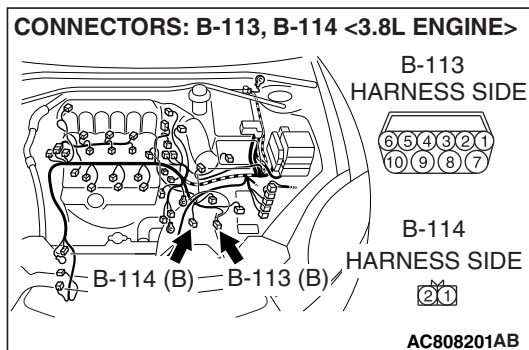
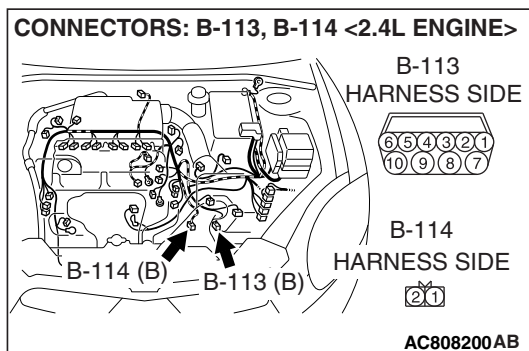
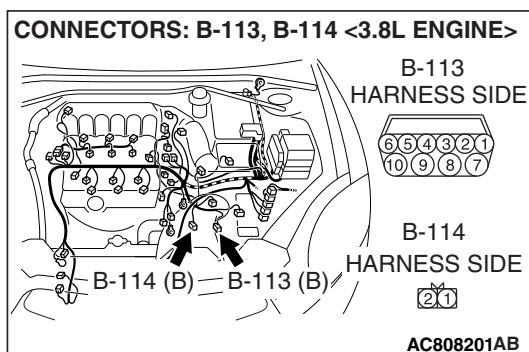
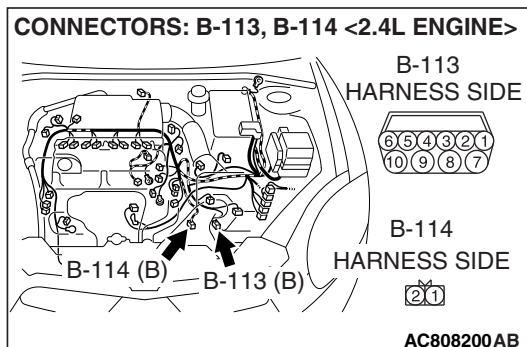
- (3) Measure the voltage between terminal 2 and ground.
  - The voltage should equal approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 14.

**NO :** Go to Step 8.





**STEP 8. Check backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T> for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T> in good condition?**

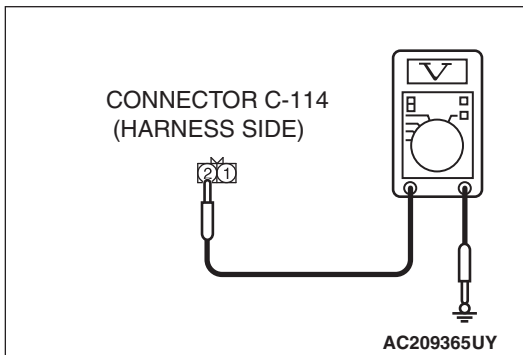
**YES :** Go to Step 9.

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

**STEP 9. Check the ignition switch (IG1) circuit to the backup light switch. Measure the voltage at backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T>.**

- (1) Disconnect backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T> and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position, and move the shift lever <M/T> or the selector lever <A/T> to the "R" position.

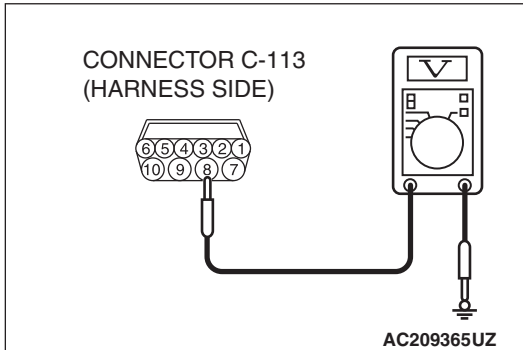




(3) Measure the voltage between terminal 2 and ground.

<M/T>

- The voltage should equal approximately 12 volts (battery positive voltage).



(4) Measure the voltage between terminal 8 and ground. <A/T>

- The voltage should equal approximately 12 volts (battery positive voltage).

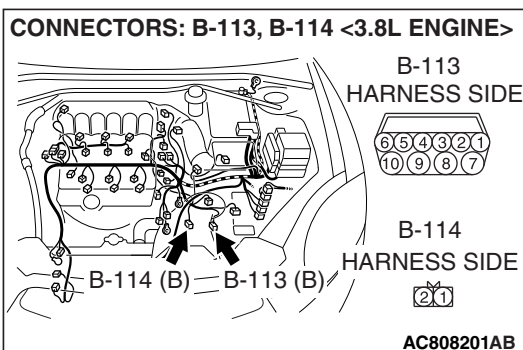
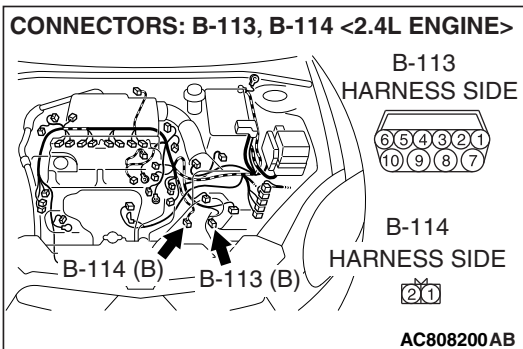
**Q: Is the measured voltage approximately 12 volts (battery positive voltage)?**

**YES <M/T> :** Go to Step 12.

**YES <A/T> :** Go to Step 11.

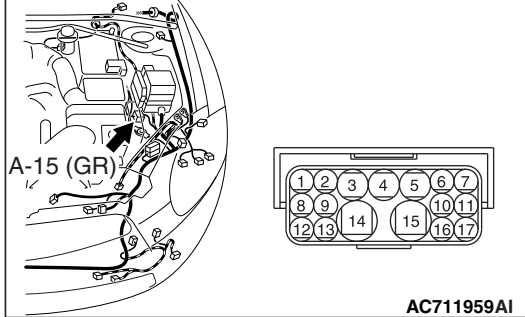
**NO :** Go to Step 10.

**STEP 10. Check the wiring harness between backup light switch connector B-114 (terminal 2) <M/T> or transmission range switch connector B-113 (terminal 8) and the ignition switch (IG1).**





## CONNECTOR: A-15



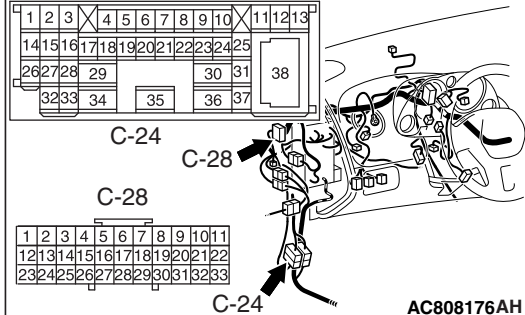
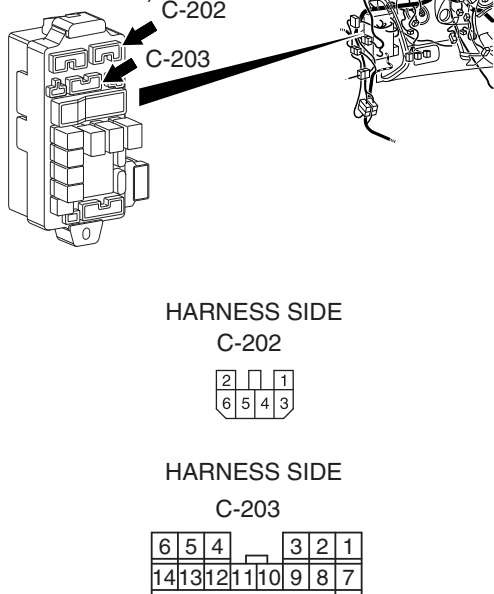
**NOTE:** Also check junction block connectors C-202 and C-203, joint connector C-28, intermediate connectors A-15 and C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-202, C-203, joint connector C-28, intermediate connectors A-15 and C-24 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between backup light switch connector B-114 (terminal 2) <M/T> or transmission range switch connector B-113 (terminal 8) <A/T> and the ignition switch (IG1) in good condition?

**YES :** Refer to ignition switch diagnosis [P.54A-9](#).

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

## CONNECTORS: C-24, C-28

CONNECTORS: C-202, C-203  
JUNCTION BLOCK  
(FRONT VIEW)**STEP 11. Check the transmission range switch and control cable.**

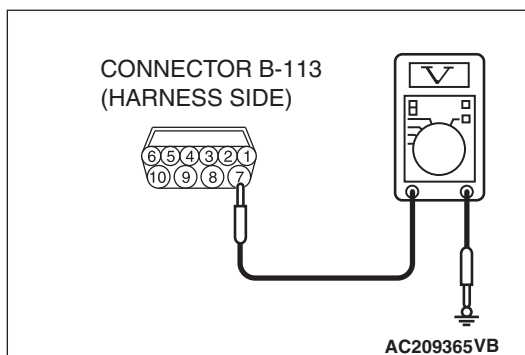
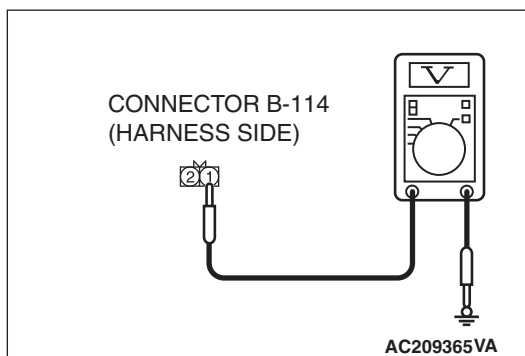
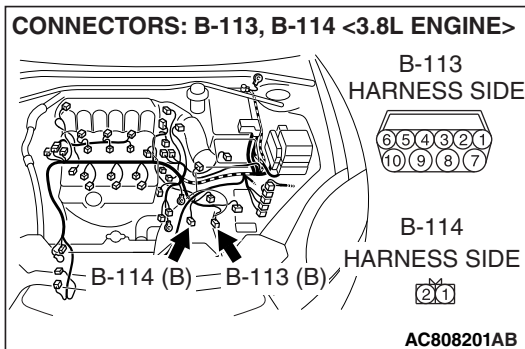
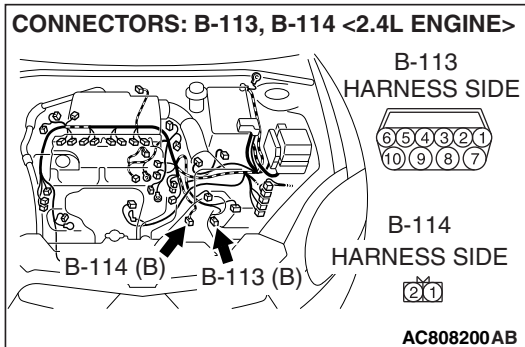
Check if the transmission range switch and control cable are adjusted normally.(GROUP 23A– On-vehicle Service, Essential Service, inhibitor switch and control cable adjustment [P.23A-396](#) <A/T>)

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

**YES :** Go to Step 12.

**NO :** Adjust the transmission range switch and control cable.





**STEP 12. Check the inside rear view mirror assembly circuit to the backup light switch <M/T> or transmission range switch <A/T>. Measure the voltage at backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T>.**

- (1) Disconnect backup light switch connector B-114 <M/T> or transmission range switch connector B-113 <A/T> and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position, and move the shift lever <M/T> or the selector lever <A/T> to the "R" position.

- (3) Measure the voltage between terminal 1 and ground. <M/T>
  - The voltage should equal approximately 12 volts (battery positive voltage).

- (4) Measure the voltage between terminal 7 and ground. <A/T>
  - The voltage should equal approximately 12 volts (battery positive voltage).

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

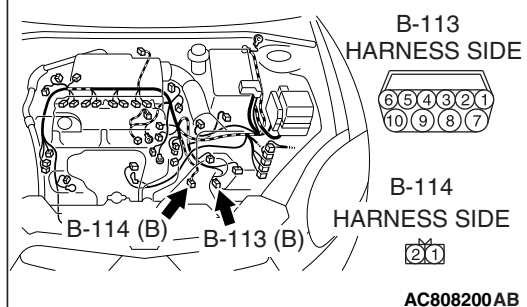
**YES :** Go to Step 13.

**NO :** Replace the backup light switch <M/T> or transmission range switch <A/T>.

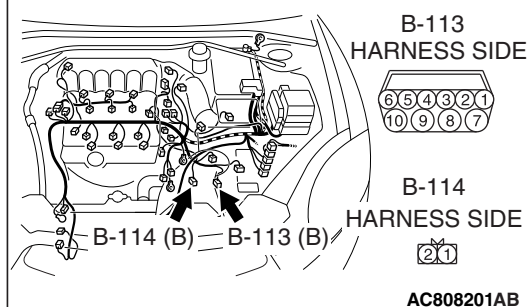


**STEP 13.** Check the wiring harness between inside rear view mirror assembly connector D-49 (terminal 2) and the backup light switch connector B-114 <M/T> (terminal 1) or transmission range switch connector B-113 <A/T> (terminal 7).

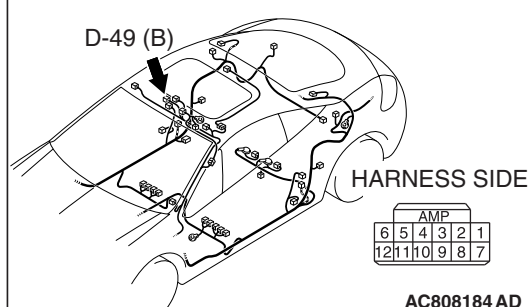
**CONNECTORS: B-113, B-114 <2.4L ENGINE>**



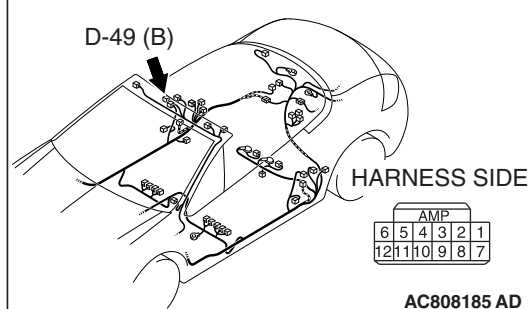
**CONNECTORS: B-113, B-114 <3.8L ENGINE>**



**CONNECTOR: D-49 <ECLIPSE>**

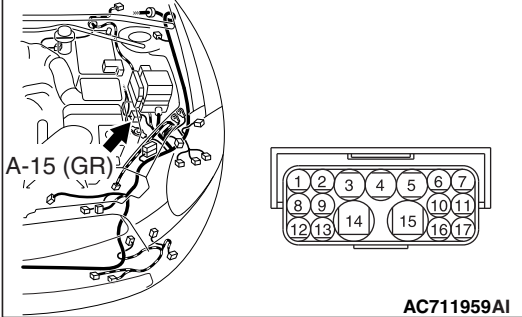


**CONNECTOR: D-49 <ECLIPSE SPYDER>**





CONNECTOR: A-15



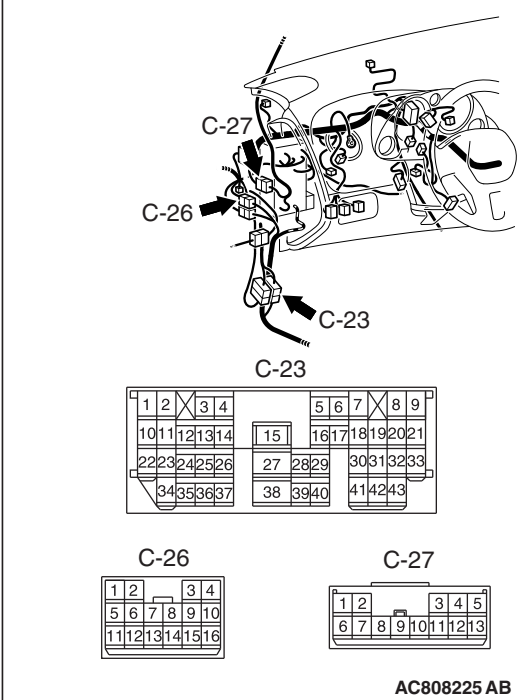
**NOTE:** Also check intermediate connectors A-15, C-23, C-26 and C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors A-15, C-23, C-26 and C-27 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between inside rear view mirror assembly connector D-49 (terminal 2) and the backup light switch connector B-114 <M/T> (terminal 1) or transmission range switch connector B-113 <A/T> (terminal 7) in good condition?

**YES :** Replace the inside rear view mirror.

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

CONNECTORS: C-23, C-26, C-27

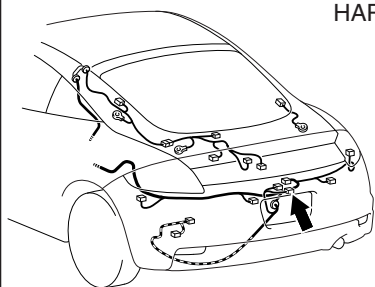




**CONNECTOR: F-34 <ECLIPSE>**

HARNESS SIDE

2	1
4	3



AC808231AB

**STEP 14.** Check rear view camera connector F-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Is rear view camera connector F-34 in good condition?

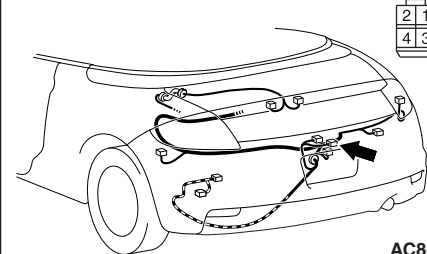
**YES :** Go to Step 15.

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

**CONNECTOR: F-34 <ECLIPSE SPYDER>**

HARNESS SIDE

2	1
4	3



AC808229AB

**STEP 15.** Check the wiring harness between inside rear view mirror assembly connector D-49 (terminals 5, 11, 12) and rear view camera connector F-34 (terminals 4, 3, 2).

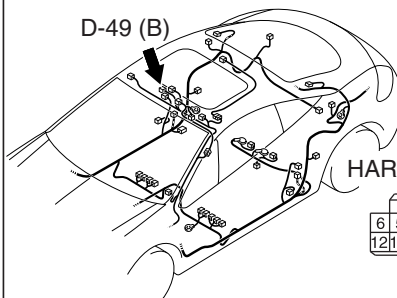
- Check the ground wire for open circuit.

**CONNECTOR: D-49 <ECLIPSE>**

D-49 (B)

HARNESS SIDE

AMP							
6	5	4	3	2	1		
12	11	10	9	8	7		



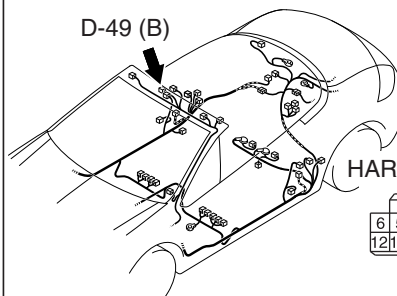
AC808184 AD

**CONNECTOR: D-49 <ECLIPSE SPYDER>**

D-49 (B)

HARNESS SIDE

AMP							
6	5	4	3	2	1		
12	11	10	9	8	7		

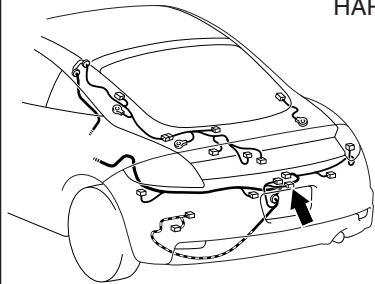


AC808185 AD



CONNECTOR: F-34 <ECLIPSE>

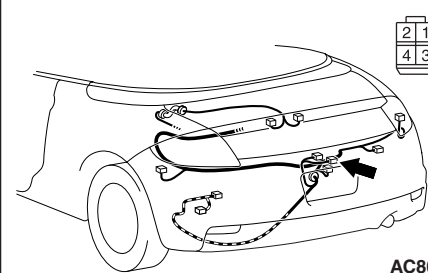
HARNESS SIDE



AC808231AB

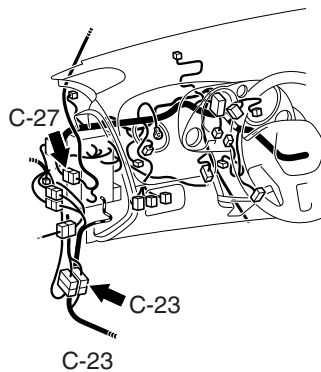
CONNECTOR: F-34 <ECLIPSE SPYDER>

HARNESS SIDE



AC808229AB

CONNECTORS: C-23, C-27



1	2	3	4		5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43						

C-27

1	2	3	4	5
6	7	8	9	10
11	12	13		

AC808225 AC

**NOTE:** Also check intermediate connectors C-23 and C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-23 and C-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between inside rear view mirror assembly connector D-49 (terminals 5, 11, 12) and rear view camera connector F-34 (terminals 4, 3, 2) in good condition?**

**YES :** Go to Step 16.

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

**STEP 16. Temporarily replace the rear view camera.**

Check that the normal conversation is possible with the rear view camera.

**Q: Is the normal conversation possible with the rear view camera?**

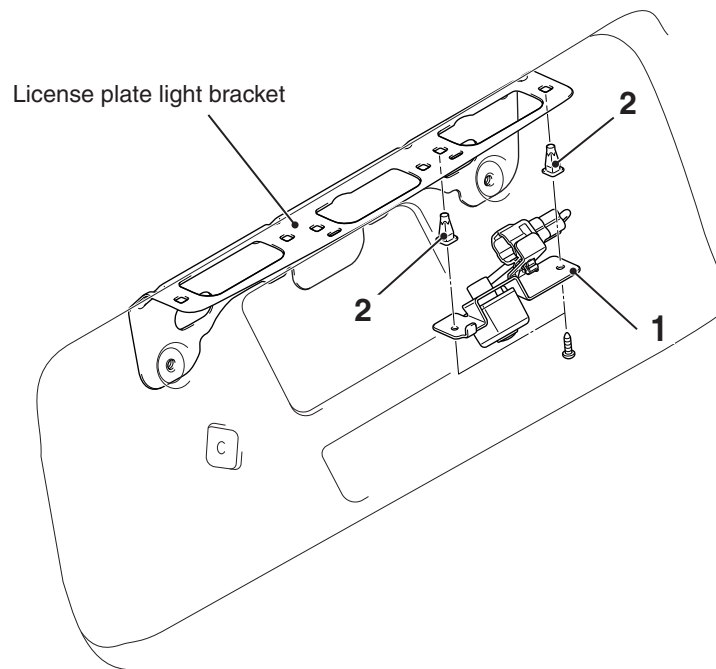
**YES :** Replace the inside rear view mirror assembly.

**NO :** Replace the rear view camera.



## REMOVAL AND INSTALLATION

M1540905500178

**Removal Steps**

1. REAR VIEW CAMERA
2. SCREW GROMMET

AC808310AB



## RADIO WITH CD PLAYER

### GENERAL DESCRIPTION

#### RADIO AND CD PLAYER

There are 2 types of audio system as follows.

##### <STANDARD AUDIO SYSTEM>

- 1-disk CD player for MP3/CD-R/CD-RW
- AM/FM electronic tuning radio
- MAX output: 140W
- AUX box and AUX adapter

##### <PREMIUM AUDIO SYSTEM>

- Rockford Fosgate® audio system.

M1544000100765

- CD player (with 6-disk CD changer incorporated) for MP3/CD-R/CD-RW with sound quality adjustment functions by digital signal processor (DSP)
- AM/FM electronic tuning radio
- Audio amplifier
- SIRIUS™ satellite radio <Vehicles with satellite radio tuner>
- MAX output: 650W
- Steering wheel with remote control radio switches
- AUX box and AUX adapter

### SPEAKER

LOCATION	SIX SPEAKERS <STANDARD AUDIO SYSTEM>	NINE SPEAKERS (SEVEN LOCATION) <PREMIUM AUDIO SYSTEM>
Instrument panel	Equipped (3.5 cm soft dome – tweeter)	Equipped (3.5 cm balanced dome – tweeter)
Front door	Equipped (full range – 6×9 inch)	Equipped (full range – 16 cm). Mid to high range oriented.
Quarter trim	Equipped (full range – 16 cm)	Equipped (2 way coaxial – 16 cm)
Luggage room	–	Equipped (25 cm –sub woofer). Low range oriented.

### AUX BOX

AUX box sends the external input sound from the AUX adapter to the radio and CD player.

## RADIO WITH CD PLAYER, SPEAKER AND ANTENNA DIAGNOSIS

### INTRODUCTION TO AUDIO SYSTEM DIAGNOSIS

M1544004700112

The diagnosis for symptoms such as noise being emitted, no sound being played, or sound coming only out of one speaker (or set of speakers) is provided.

#### AUDIO ERROR CODES

If the radio and CD player or radio and CD player with CD changer detects any malfunction in itself or the inserted CD, the error codes below will be shown on the multi-center display.

ERROR CODES	CAUSE	CAUSE OF TROUBLE AND ITS SOLUTION
E01	Focus error	If there is any problem on the CD, this error code will be shown. If no error message appears when another disc is inserted, the disc is defective. Check the items below, and take a necessary action. <ul style="list-style-type: none"><li>• Contamination, scratch, or deformation</li><li>• Formation of moisture or grease</li></ul> Insert the disc again, and check that no error appears.
E02	Abnormal disc	
E03	Mechanical error	This error codes will be shown if there is any internal mechanical or electrical problem in the radio and CD player or radio and CD player with CD changer. Replace the radio and CD player or radio and CD player with CD changer, and check that no error codes are shown.



ERROR CODES	CAUSE	CAUSE OF TROUBLE AND ITS SOLUTION
E HOT	Protection against high temperature	If the internal temperature is extremely high, this error code will be shown. Turn off the radio and CD player or radio and CD player with CD changer 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.
E Com	Communication or power supply error	If this error code is displayed, the power supply for the radio and CD player or radio and CD player with CD changer is defective. Check that the wiring of the radio and CD player or radio and CD player with CD changer is connected correctly. Check that the same error does not appear.
E DC	Detection abnormal output to the speaker	When the foreign material such as a coin and drink goes into the unit and DC offset is occurred in the signal input part of the power IC, this error code will be shown. When a liquid goes inside of the unit, turn off the radio and leave for a while and make it dry. Then turn on the radio and check the same error code does not appear. When a solid goes inside, replace the unit (head unit or amplifier).

## AUDIO SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1544004800391

Use these steps to plan your diagnostic strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding an audio system fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

## SYMPTOM CHART

M1544004901982

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
When power switch is turned "ON," no power is available.	1	<a href="#">P.54A-188</a>
Remote controlled radio switch	When remote controlled radio power switch is turned "ON," no power is available. But radio and CD player with CD changer power switch is available. <Vehicles with audio amplifier>	<a href="#">P.54A-192</a>
	The system does not recognize the remote controlled radio switch (RH) only. <Vehicles with audio amplifier>	<a href="#">P.54A-199</a>
	The system does not recognize the remote controlled radio switch (LH) only. <Vehicles with audio amplifier>	<a href="#">P.54A-201</a>
No sound. <Vehicles with audio amplifier>	5	<a href="#">P.54A-203</a>
No sound from one speaker. <Vehicles without audio amplifier>	6	<a href="#">P.54A-208</a>
No sound from door speaker or woofer. <Vehicles with audio amplifier>	7	<a href="#">P.54A-220</a>
No sound from tweeter or quarter speaker. <Vehicles with audio amplifier>	8	<a href="#">P.54A-229</a>
The sound of external input are not played.	9	<a href="#">P.54A-238</a>



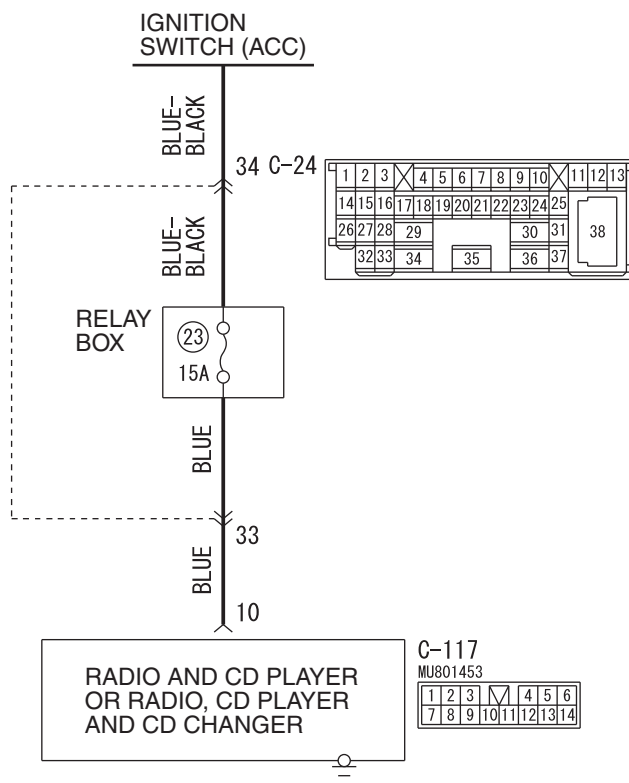
SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
Noise	Noise is present while moving (AM).	10	<a href="#">P.54A-241</a>
	Noise is present while moving (FM).	11	<a href="#">P.54A-241</a>
	Sound mixed with noise, only at night (AM).	12	<a href="#">P.54A-242</a>
	Noise is overpowering both AM and FM.	13	<a href="#">P.54A-243</a>
	Excessive noise on AM and FM.	14	<a href="#">P.54A-243</a>
	Noise is detected with engine running.	15	<a href="#">P.54A-244</a>
	Noise appears during vibration or shocks.	16	<a href="#">P.54A-246</a>
	Noise is present while moving (FM).	17	<a href="#">P.54A-247</a>
	Constant noise.	18	<a href="#">P.54A-248</a>
Radio	No reception (AM).	19	<a href="#">P.54A-248</a>
	Poor reception.	20	<a href="#">P.54A-249</a>
	Distortion on AM and/or FM.	21	<a href="#">P.54A-250</a>
	Distortion on FM only.	22	<a href="#">P.54A-250</a>
	Auto select function inoperative, too few automatic stations are selected.	23	<a href="#">P.54A-251</a>
	Preset stations are erased.	24	<a href="#">P.54A-252</a>
CD player, CD auto changer	CD can not be inserted.	25	<a href="#">P.54A-254</a>
	No sound (CD only).	26	<a href="#">P.54A-255</a>
	CD sound skips.	27	<a href="#">P.54A-255</a>
	Sound quality is poor.	28	<a href="#">P.54A-256</a>
	CD cannot be ejected.	29	<a href="#">P.54A-256</a>



## SYMPTOM PROCEDURES

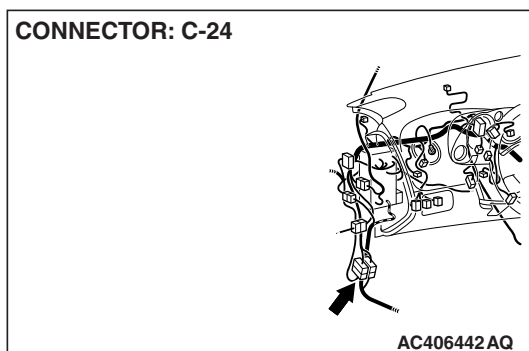
INSPECTION PROCEDURE 1: When power switch is turned "ON," no power is available.

Radio and CD Player or Radio, CD Player and CD Changer Power Supply Circuit

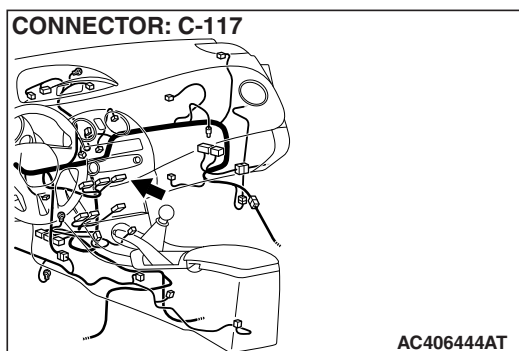


WAP54M006A

CONNECTOR: C-24



CONNECTOR: C-117



## CIRCUIT OPERATION

Power is supplied to the radio and CD player or radio and CD player with CD changer when the ignition switch is in the "ACC" position or "ON" position. When the ignition is switched on, the radio and CD player or radio and CD player with CD changer will return to the previous state when the ignition was switched off at the last time.

## TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty radio and CD player or radio and CD player with CD changer power supply circuit.

## TROUBLESHOOTING HINTS

- Damaged wiring harness or connector.
- Malfunction of the radio and CD player or radio and CD player with CD changer.



**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness set
- MB992006: Extra Fine Probe

**STEP 1. Check to see that the radio and CD player or radio and CD player with CD changer is energized when the power switch is turned ON.**

- (1) Turn the ignition switch to "ACC" position.
- (2) Turn ON the radio and CD player or radio and CD player with CD changer power switch.

**Q: Is the radio and CD player or radio and CD player with CD changer energized when the power switch is turned ON?**

**YES :** Go to Step 2.

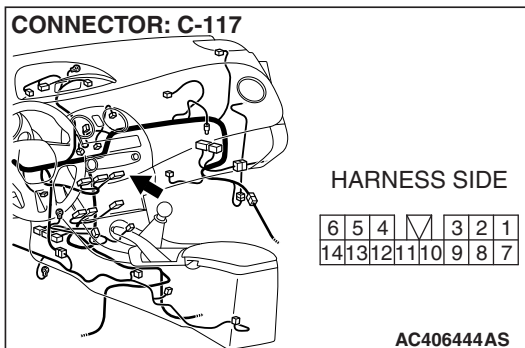
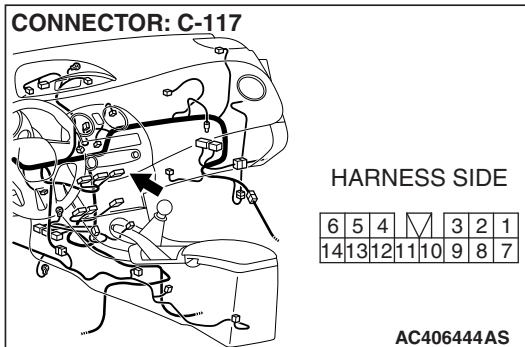
**NO :** Go to Step 5.

**STEP 2. Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are radio and CD player or radio and CD player with CD changer connector C-117 in good condition?**

**YES :** Go to Step 3.

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

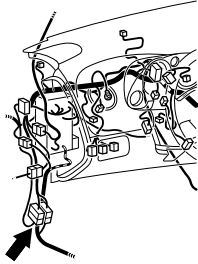


**STEP 3. Check the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 10) and the ignition switch (ACC).**



## CONNECTOR: C-24

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	
26	27	28	29					30	31		38	
32	33	34		35				36	37			



AC406442 AP

**NOTE:** Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 10) and ignition switch (ACC) in good condition?

**YES :** Go to Step 4.

**NO :** Repair the wiring harness.

#### STEP 4. Check the installation condition of the radio and CD player or radio and CD player with CD changer.

**NOTE:** The radio and CD player or radio and CD player with CD changer are grounded to the deck crossmember directly.

**Q:** Are the radio and CD player or radio and CD player with CD changer installed correctly?

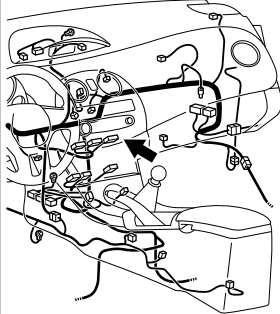
**YES :** Repair or replace the radio and CD player or radio and CD player with CD changer.

**NO :** Install the radio and CD player or radio and CD player with CD changer properly.

#### STEP 5. Measure at radio and CD player or radio and CD player with CD changer connector C-117 in order to check the battery circuit of power supply system to the radio and CD player or radio and CD player with CD changer (ignition switch ACC).

- (1) Disconnect radio and CD player or radio and CD player with CD changer connector C-117, and measure at the wiring harness side.
- (2) Turn the ignition switch to "ACC" position.

## CONNECTOR: C-117



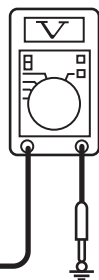
HARNESS SIDE

6	5	4	3	2	1
14	13	12	11	10	9
				8	7

AC406444 AS

CONNECTOR C-117  
(HARNESS SIDE)

6	5	4	3	2	1
14	13	12	11	10	9
				8	7



AC209365 OB

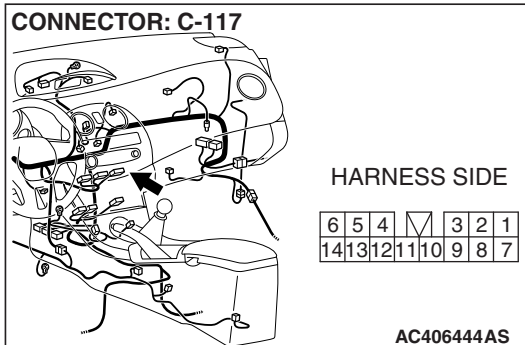
- (3) Measure the voltage between terminal 10 and ground.
  - The voltage should measure approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 8.

**NO :** Go to Step 6.





**STEP 6.** Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

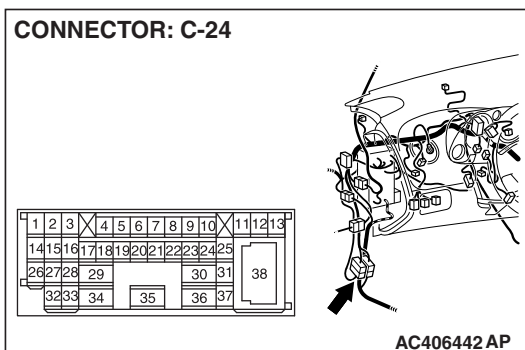
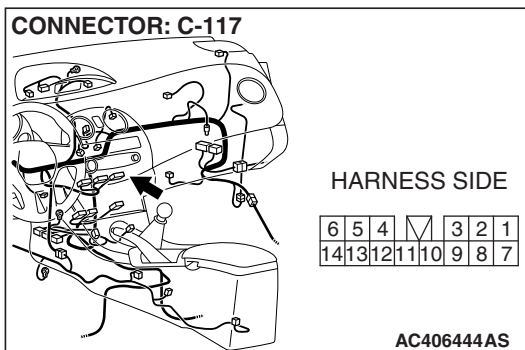
**Q:** Are radio and CD player or radio and CD player with CD changer connector C-117 in good condition?

**YES :** Go to Step 7.

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

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

**STEP 7.** Check the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 10) and ignition switch (ACC).



*NOTE:* Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2.](#)

**Q:** Is the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 10) and ignition switch (ACC) in good condition?

**YES :** Refer to ignition switch diagnosis [P.54A-9.](#)

**NO :** Repair the wiring harness.

**STEP 8.** Check the installation condition of the radio and CD player or radio and CD player with CD changer.

*NOTE:* The radio and CD player or radio and CD player with CD changer are grounded to the deck crossmember directly.

**Q:** Are the radio and CD player or radio and CD player with CD changer installed correctly?

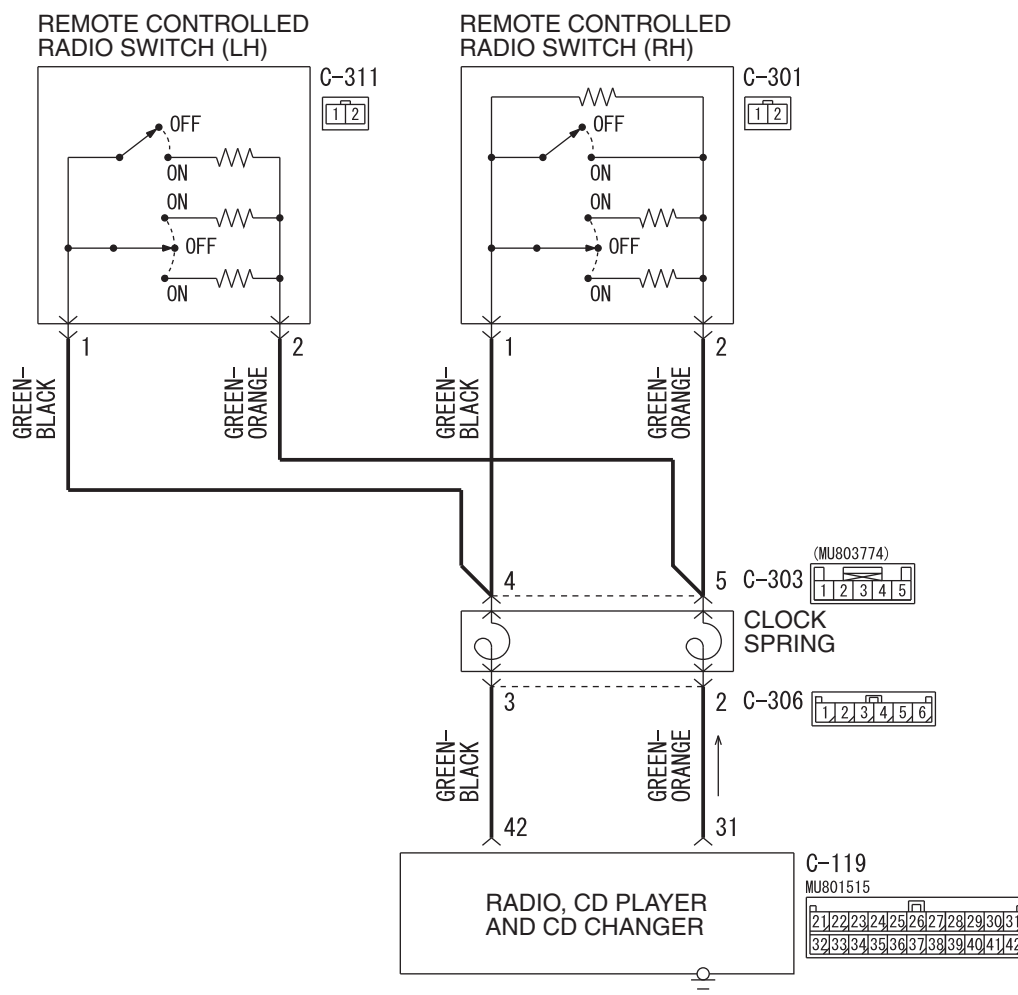
**YES :** Replace the radio and CD player or radio and CD player with CD changer.

**NO :** Install the radio and CD player or radio and CD player with CD changer properly.

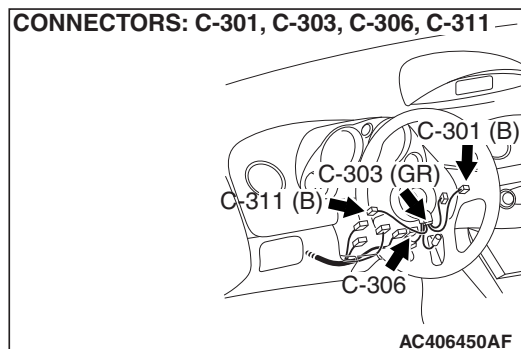
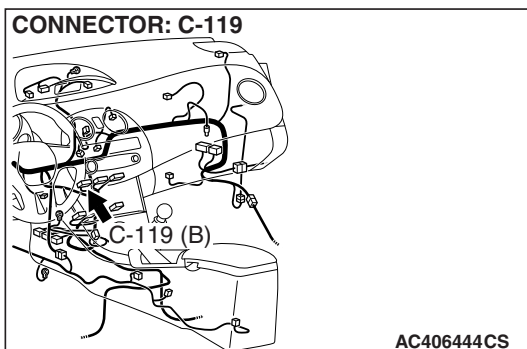


**INSPECTION PROCEDURE 2: Remote controlled radio switch: When remote controlled radio power switch is turned "ON," no power is available. But radio and CD player with CD changer power switch is available. <Vehicles with audio amplifier>**

### Remote Controlled Radio Switch Power Supply Circuit



W6P54M037A





**CIRCUIT OPERATION**

If the remote controlled radio switch is operated, the output voltage will change. The radio and CD player with CD changer operates according to the change on the voltage. You can control the mode and volume by the remote controlled radio switch (RH). You can select a CD track and pre-set radio station, and tune it by the remote controlled radio switch (LH).

**TECHNICAL DESCRIPTION (COMMENT)**

If the system does not recognize the remote controlled radio switches (RH), the clock spring or the radio and CD player with CD changer may be defective.

**TROUBLESHOOTING HINTS**

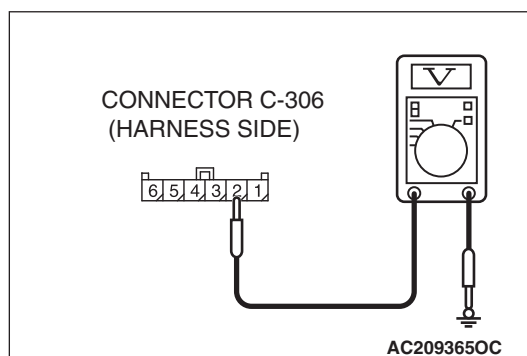
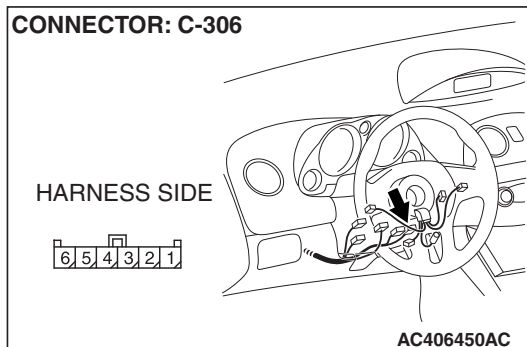
- Malfunction of the remote controlled radio switch (RH)
- Malfunction of the radio and CD player with CD changer
- Malfunction of the clock spring
- Damaged wiring harness or connectors

**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness set
- MB992006: Extra Fine Probe

**STEP 1. Measure the voltage at remote controlled radio switch power supply circuit at the clock spring connector C-306.**

- (1) Disconnect the clock spring connector C-306.
- (2) Turn the ignition switch to "ON" position.



- (3) Measure the voltage between clock spring connector C-306 (radio and CD player with CD changer side) terminal 2 and ground.

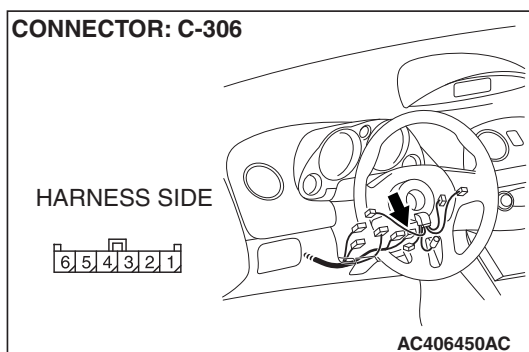
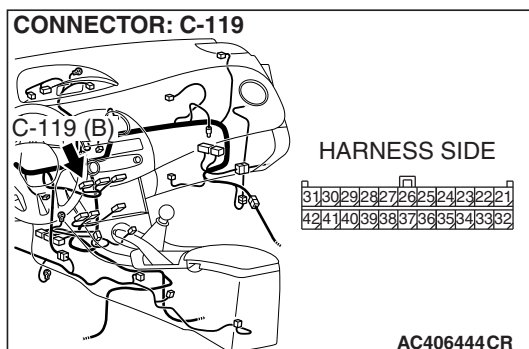
- The measured value should be approximately 5 volts.

**Q: Is the measured voltage approximately 5 volts?**

**YES :** Go to Step 4.

**NO :** Go to Step 2.



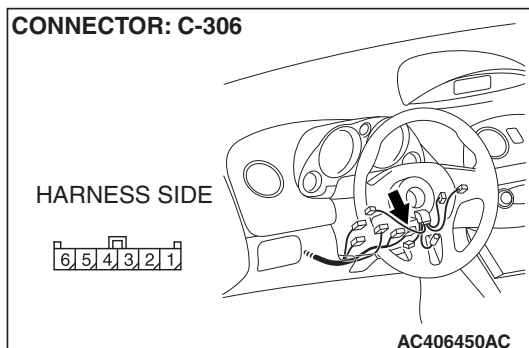
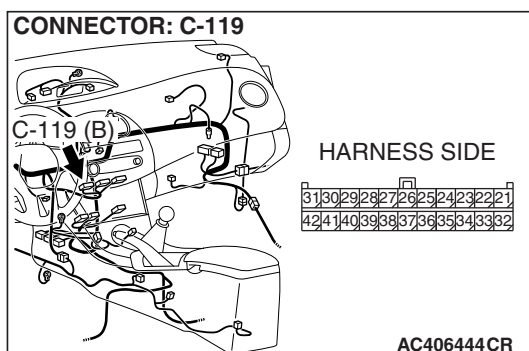


**STEP 2.** Check radio and CD player with CD changer connector C-119 and clock spring connector C-306 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Are radio and CD player with CD changer connector C-119 and clock spring connector C-306 in good condition?

**YES :** Go to Step 3.

**NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The remote controlled radio switch should work normally.



**STEP 3.** Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 31) and clock spring connector C-306 (terminal 2).

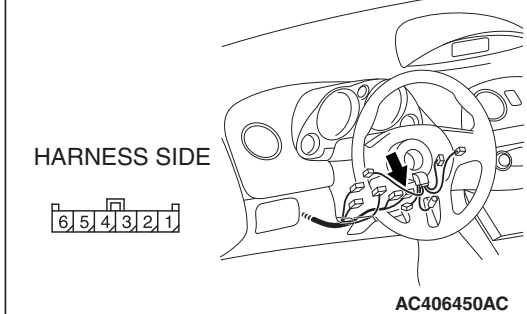
**Q:** Is the wiring harness between radio and CD player with CD changer connector C-119 (terminal 31) and clock spring connector C-306 (terminal 2) in good condition?

**YES :** Go to Step 4.

**NO :** Repair the wiring harness. The remote controlled radio switch should work normally.



CONNECTOR: C-306



**STEP 4. Measure the resistance at remote controlled radio switch ground circuit to the clock spring connector C-306.**

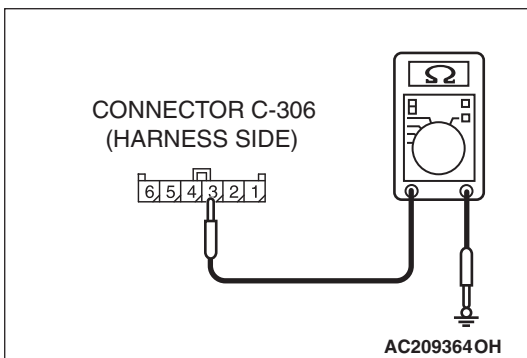
(1) Disconnect the clock spring connector C-306.

(2) Measure resistance between terminal 3 and ground.  
• The measured value should be 2 ohm or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.



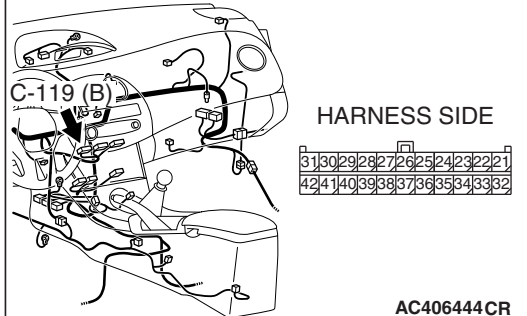
**STEP 5. Check radio and CD player with CD changer connector C-119 and clock spring connector C-306 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are radio and CD player with CD changer connector C-119 and clock spring connector C-306 in good condition?**

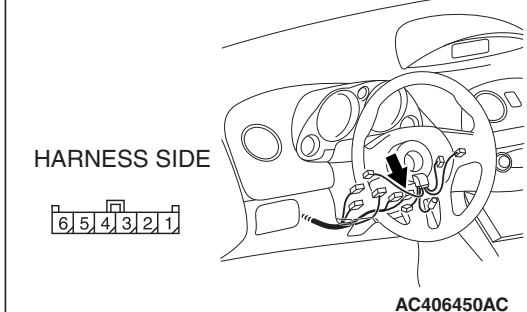
**YES :** Go to Step 6.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The remote controlled radio switch should work normally.

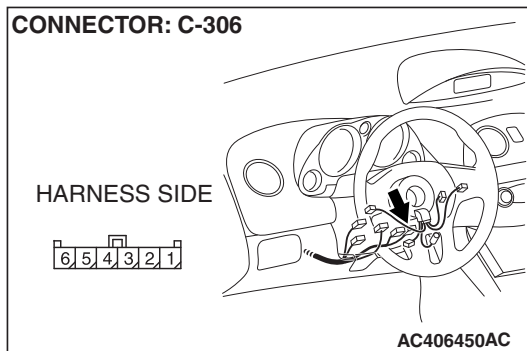
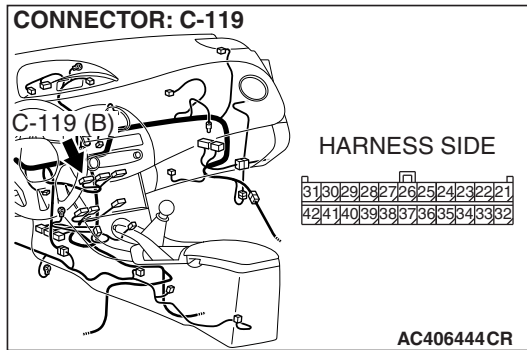
CONNECTOR: C-119



CONNECTOR: C-306







**STEP 6. Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 42) and clock spring connector C-306 (terminal 3).**

**Q: Is the wiring harness between radio and CD player with CD changer connector C-119 (terminal 42) and clock spring connector C-306 (terminal 3) in good condition?**

**YES :** Go to Step 7.

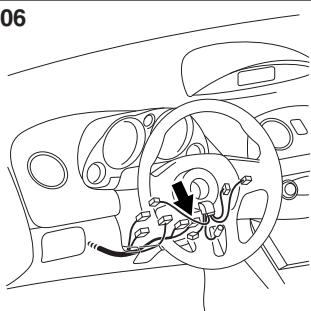
**NO :** Repair the wiring harness. The remote controlled radio switch should work normally.



## CONNECTOR: C-306

HARNESS SIDE

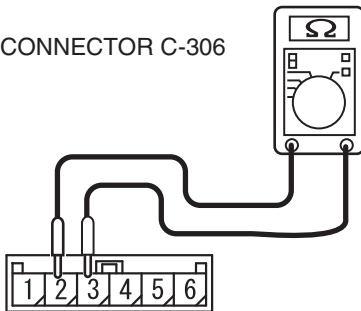
6 5 4 3 2 1



AC406450AC

## CONNECTOR C-306

1 2 3 4 5 6



AC210080AC

**STEP 7. Measure the resistance between the clock spring connector C-306 terminals.**

(1) Disconnect the clock spring connector C-306.

(2) Measure the resistance between clock spring connector C-306 (clock spring side) terminals 2 and 3. Operate the right and left remote controlled radio switches, and check that the table below is satisfied.

SWITCH POSITION	MEASUREMENT VALUE (RH SIDE SWITCH)
Not pushed	Approximately 24.0 k $\Omega$
Upper	Approximately 5.3 k $\Omega$
Center	Continuity exists (2 $\Omega$ or less)
Lower	Approximately 9.2 k $\Omega$

*NOTE: When checking the right remote controlled radio switch, do not operate the left remote controlled radio switch.*

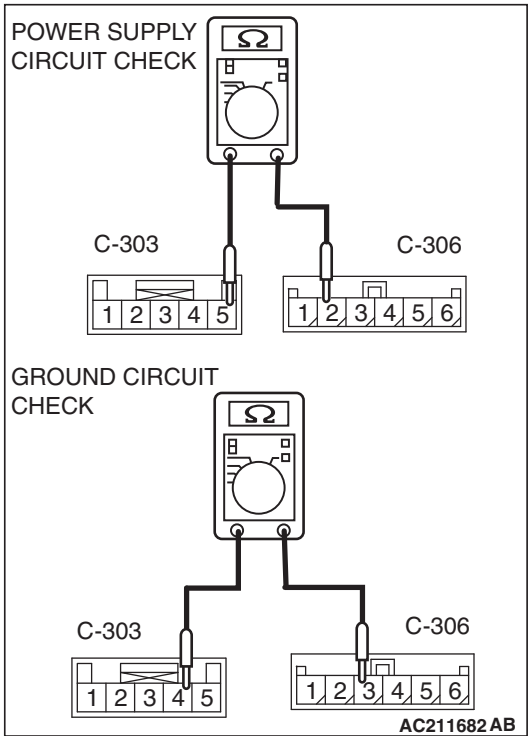
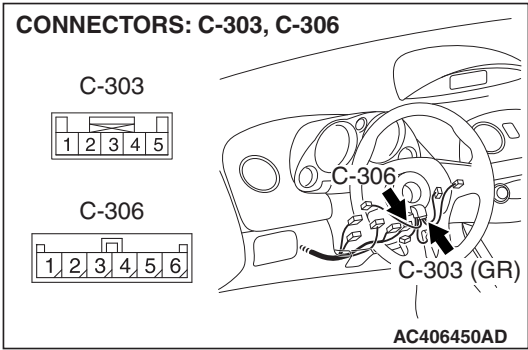
**Q: Is the resistance between terminals 2 and 3 normal?**

**YES :** This malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points-How to Cope with Intermittent Malfunction [P.00-14](#).

**NO :** Go to Step 8.



- STEP 8. Measure the resistance at clock spring terminal.**
- (1) Remove the clock spring (Refer to GROUP 52B, Air Bag Module(s) and Clock Spring [P.52B-423](#)).



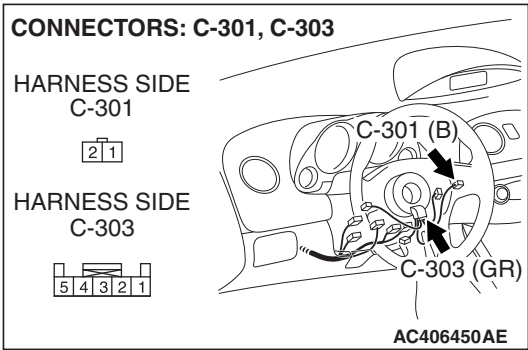
- (2) Measure the resistance at clock spring connectors C-303 and C-306.

CIRCUIT BE MEASURED	CONNECTOR (TERMINAL) TO BE CHECKED	SPECIFIED CONDITION
Power supply circuit	C-303 (terminal 5) – C-306 (terminal 2)	Continuity exists (2 Ω or less)
Ground circuit	C-303 (terminal 4) – C-306 (terminal 3)	Continuity exists (2 Ω or less)

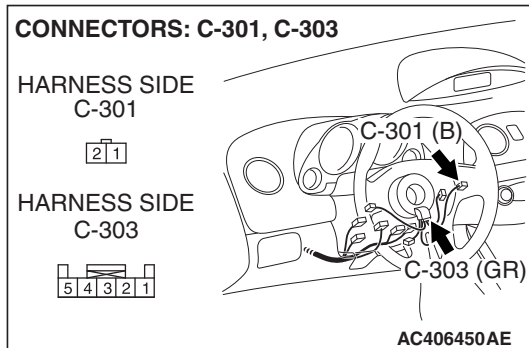
- Q: Is the measured resistance 2 ohms or less?**
- YES :** Go to Step 9.
- NO :** Replace the clock spring.

- STEP 9. Check the clock spring connector C-303 and remote controlled radio switch (RH) connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

- Q: Are clock spring connector C-303 and remote controlled radio switch (RH) connector C-301 in good condition?**
- YES :** Go to step 10.
- NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The remote controlled radio switch should work normally.





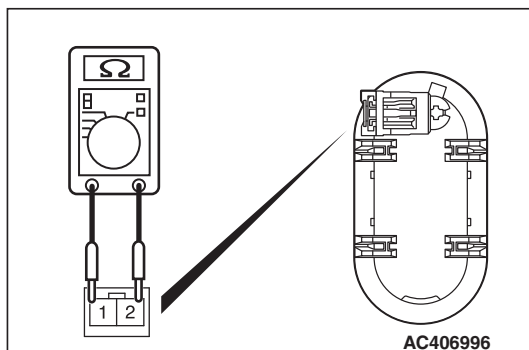


**STEP 10.** Check the wiring harness between clock spring connector C-303 (terminals 4 and 5) and remote controlled radio switch (RH) connector C-301 (terminals 1 and 2).

**Q:** Is the wiring harness between clock spring connector C-303 (terminals 4 and 5) and remote controlled radio switch (RH) connector C-301 (terminals 1 and 2) in good condition?

**YES :** Go to Step 11.

**NO :** Repair the wiring harness. The remote controlled radio switch should work normally.



**STEP 11.** Measure the resistance at remote controlled radio switch (RH).

- (1) Remove the airbag module assembly (Refer to GROUP 52B, Air Bag Module(s) and Clock Spring [P.52B-423](#)).
- (2) Measure the resistance by operating the remote controlled radio switch (RH) in each position.

SWITCH POSITION	MEASUREMENT VALUE
Not pushed	Approximately 24.0 kΩ
Upper	Approximately 5.3 kΩ
Center	Continuity exists (2 Ω or less)
Lower	Approximately 9.2 kΩ

**Q:** Are the resistance at the right remote controlled radio switch normal?

**YES :** Replace the radio and CD player with CD changer.

**NO :** Replace the remote controlled radio switch (RH).

**INSPECTION PROCEDURE 3: Remote controlled radio switch: The system does not recognize the remote controlled radio switch (RH) only. <Vehicles with audio amplifier>**

## CIRCUIT OPERATION

Refer to Inspection Procedure 2 [P.54A-192](#).

## TECHNICAL DESCRIPTION (COMMENT)

Refer to Inspection Procedure 2 [P.54A-192](#).

## TROUBLESHOOTING HINTS

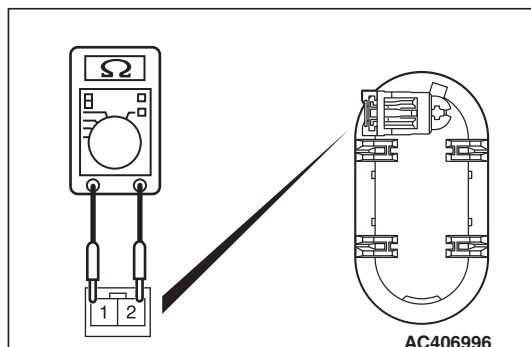
Refer to Inspection Procedure 2 [P.54A-192](#).

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe




**STEP 1. Measure the resistance at remote controlled radio switch (RH).**

- (1) Remove the airbag module assembly (Refer to GROUP 52B, Air Bag Module(s) and Clock Spring [P.52B-423](#)).
- (2) Measure the resistance by operating the remote controlled radio switch (RH) in each position.

SWITCH POSITION	MEASUREMENT VALUE
No push	Approximately 24.0 kΩ
Upper	Approximately 5.3 kΩ
Center	Continuity exists (2 Ω or less)
Lower	Approximately 9.2 kΩ

**Q: Are the resistance at the right remote controlled radio switch normal?**

**YES :** Go to Step 2.

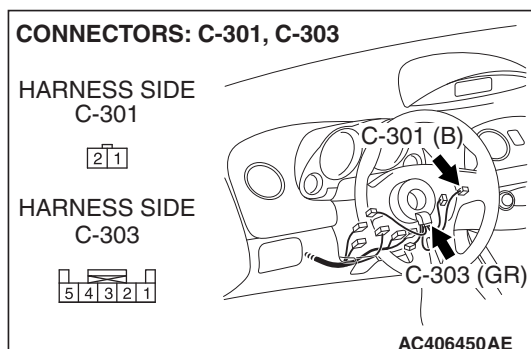
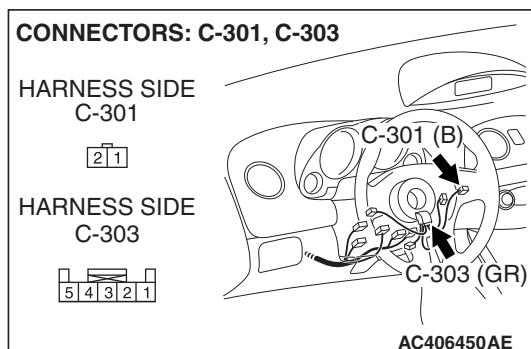
**NO :** Replace the remote controlled radio switch (RH).

**STEP 2. Check the remote controlled radio switch (RH) connector C-301 and clock spring connector C-303 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is remote controlled radio switch (RH) connector C-301 and clock spring connector C-303 in good condition?**

**YES :** Go to Step 3.

**NO :** Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The remote controlled radio switch (RH) should work normally.


**STEP 3. Check the wiring harness between remote controlled radio switch (RH) connector C-301 (terminals 1 and 2) and clock spring connector C-303 (terminals 4 and 5).**

**Q: Are the wiring harness between remote controlled radio switch (RH) connector C-301 (terminals 1 and 2) and clock spring connector C-303 (terminals 4 and 5) in good condition?**

**YES :** The procedure is complete.

**NO :** Repair the wiring harness. The remote controlled radio switch (RH) should work normally.



**INSPECTION PROCEDURE 4: Remote controlled radio switch:** The system does not recognize the remote controlled radio switch (LH) only. <Vehicles with audio amplifier>

## CIRCUIT OPERATION

Refer to Inspection Procedure 2 [P.54A-192](#).

## TECHNICAL DESCRIPTION (COMMENT)

Refer to Inspection Procedure 2 [P.54A-192](#).

## TROUBLESHOOTING HINTS

Refer to Inspection Procedure 2 [P.54A-192](#).

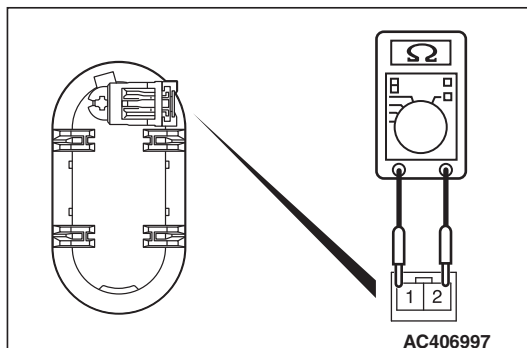
## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe

### STEP 1. Measure the resistance at remote controlled radio switch (LH).

- (1) Remove the airbag module assembly (Refer to GROUP 52B, Air Bag Module(s) and Clock Spring [P.52B-423](#)).
- (2) Measure the resistance by operating the remote controlled radio switch (LH) in each position.



SWITCH POSITION	MEASUREMENT VALUE
Not pushed	Approximately 24 k $\Omega$
Upper	Approximately 1.1 k $\Omega$
Center	Approximately 460 $\Omega$
Lower	Approximately 2.9 k $\Omega$

**Q: Is the resistance at the left remote controlled radio switch normal?**

**YES :** Go to Step 2.

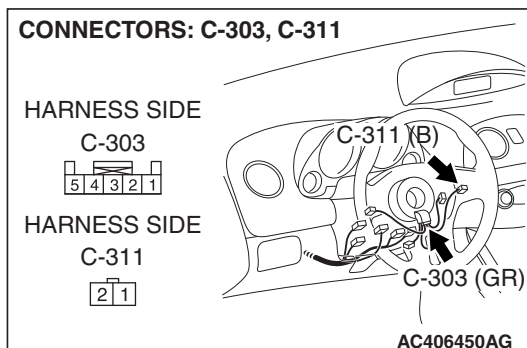
**NO :** Replace the remote controlled radio switch (LH).

### STEP 2. Check the radio switch (LH) connector C-311 and clock spring connector C-303 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

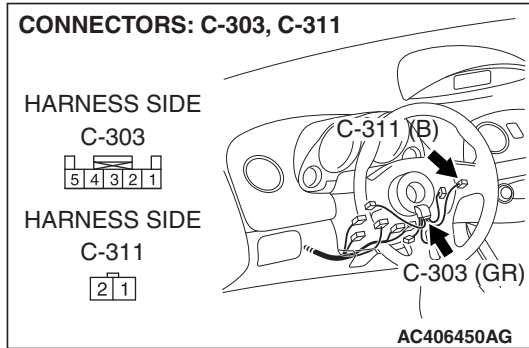
**Q: Is remote controlled radio switch (LH) connector C-311 and clock spring connector C-303 in good condition?**

**YES :** Go to Step 3.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The remote controlled radio switch (LH) should work normally.







**STEP 3. Check the wiring harness between remote controlled radio switch connector C-311 (terminals 1 and 2) and clock spring connector C-303 (terminals 4 and 5).**

**Q: Are the wiring harness between remote controlled radio switch connector C-311 (terminals 1 and 2) and clock spring connector C-303 (terminals 4 and 5) in good condition?**

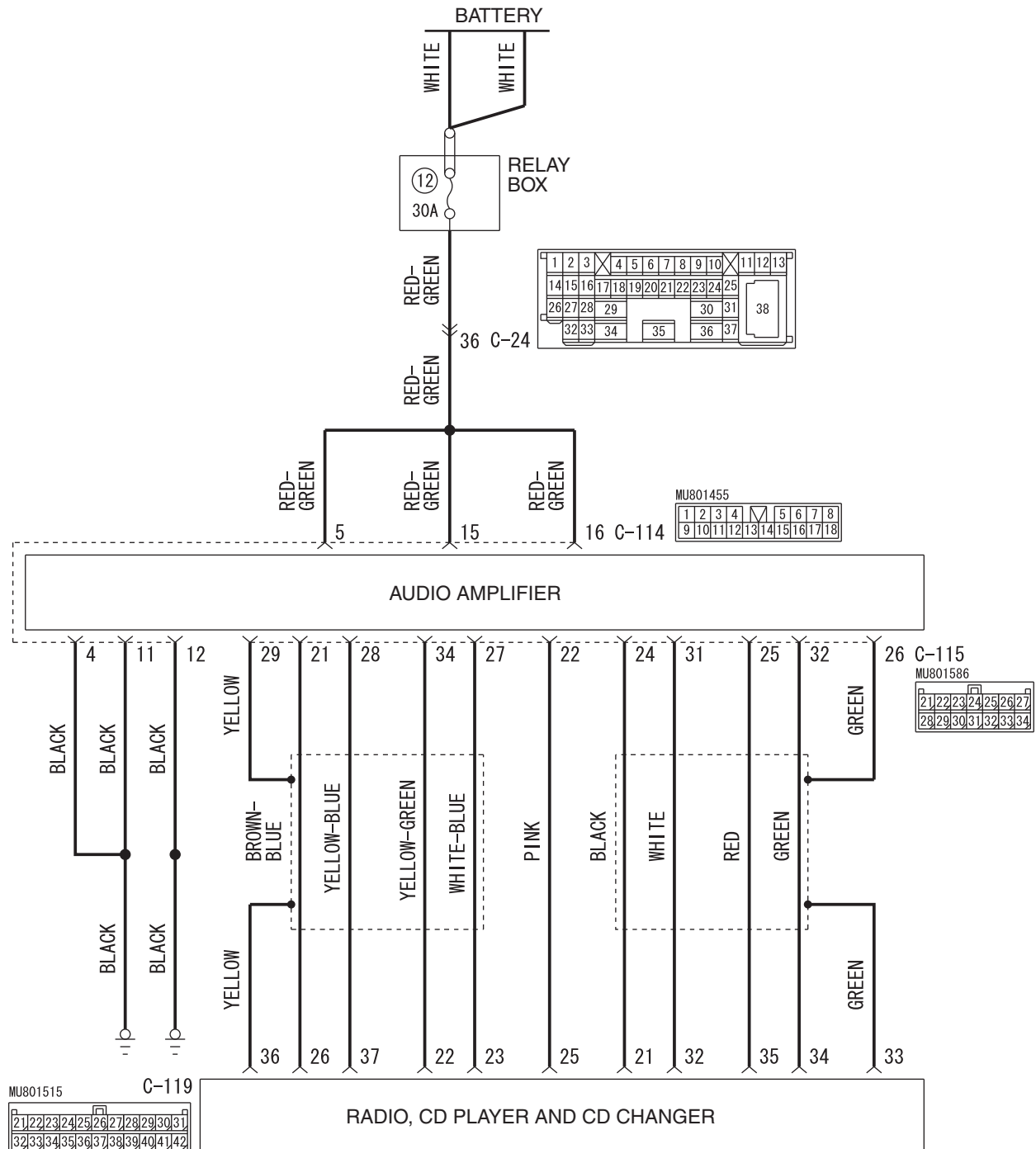
**YES :** No action to be taken.

**NO :** Repair the wiring harness. The remote controlled radio switch (LH) should work normally.



INSPECTION PROCEDURE 5: No Sound. <Vehicles with audio amplifier>

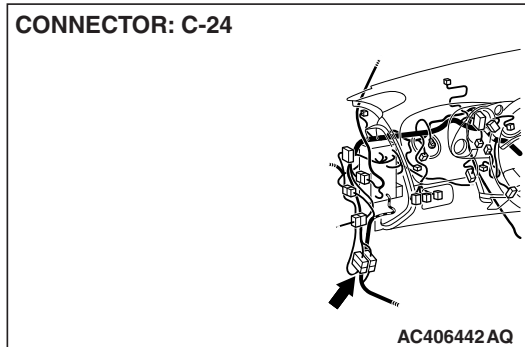
Audio Amplifier Power Supply Circuit



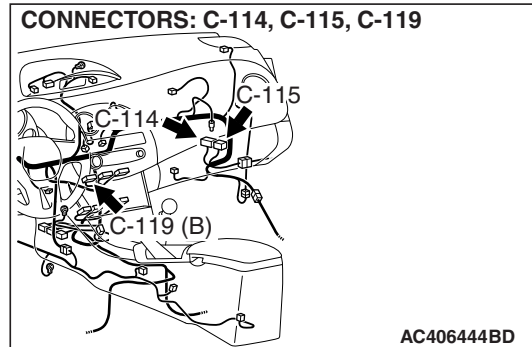
WAP54M004A



CONNECTOR: C-24



CONNECTORS: C-114, C-115, C-119

**CIRCUIT OPERATION**

Power is supplied from the battery directly to the audio amplifier.

**TECHNICAL DESCRIPTION (COMMENT)**

The cause is probably a faulty audio amplifier power supply circuit system.

**TROUBLESHOOTING HINTS**

- Damaged wiring harness or connector.
- Malfunction of the audio amplifier.

**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness set
- MB992006: Extra Fine Probe

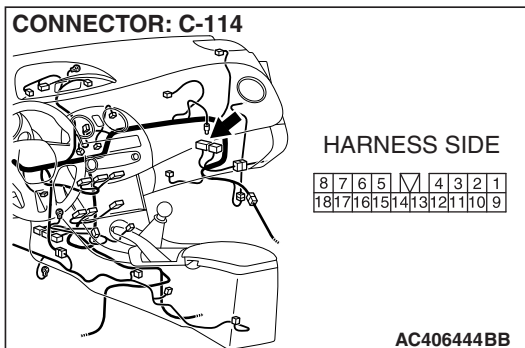
**STEP 1. Check audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is audio amplifier connector C-114 in good condition?**

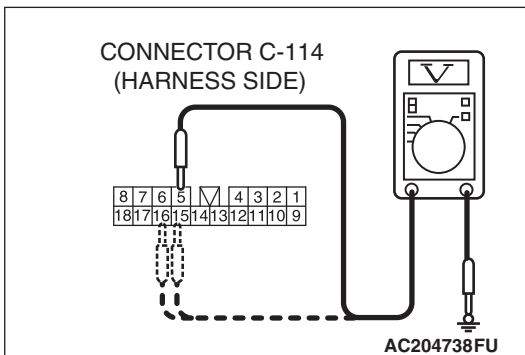
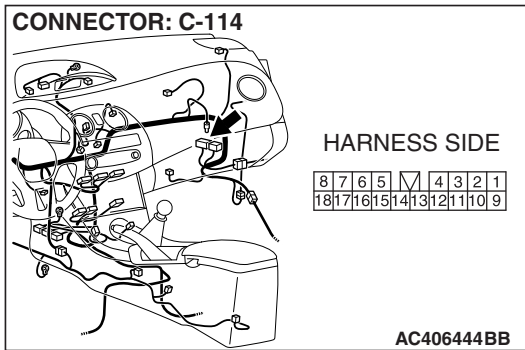
**YES :** Go to Step 2.

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

CONNECTOR: C-114







**STEP 2. Measure the voltage at audio amplifier connector C-114 in order to check the battery circuit of power supply system to the audio amplifier.**

(1) Disconnect audio amplifier connector C-114, and measure at the wiring harness side.

(2) Measure the voltage between terminal 5 and ground.

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

(3) Measure the voltage between terminal 15 and ground.

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

(4) Measure the voltage between terminal 16 and ground.

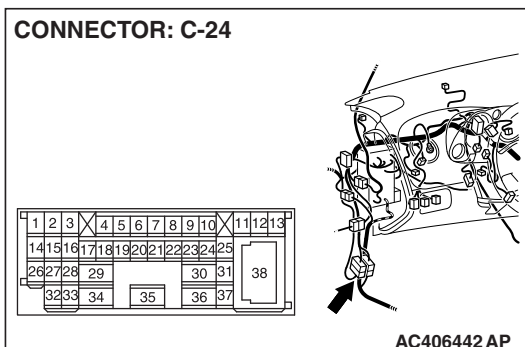
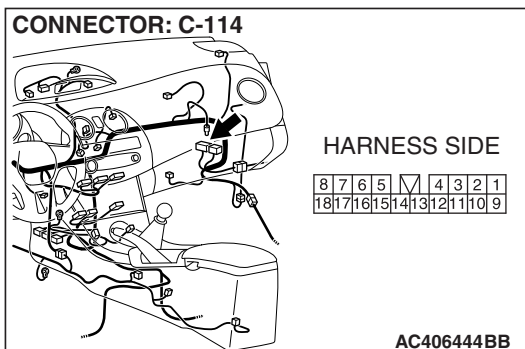
- The voltage should measure approximately 12 volts (battery positive voltage).

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

**YES :** Go to Step 4.

**NO :** Go to Step 3.

**STEP 3. Check the wiring harness between audio amplifier connector C-114 (terminal 5, 15 and 16) and the battery.**



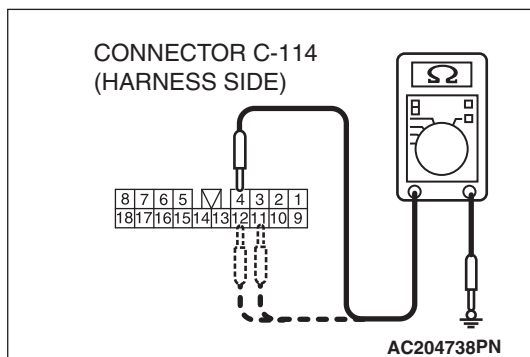
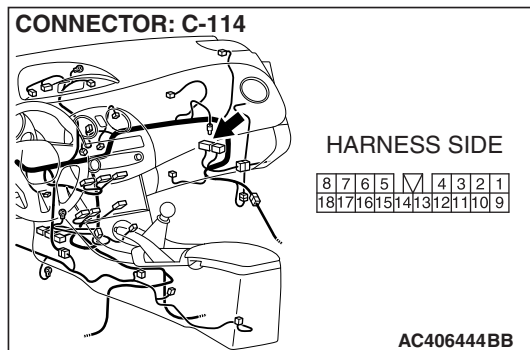
**NOTE:** Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between audio amplifier connector C-114 (terminal 5, 15 and 16) and the battery in good condition?**

**YES :** There is no action to be taken.

**NO :** Repair the wiring harness. The speakers should sound.





**STEP 4. Measure the resistance at audio amplifier connector C-114 in order to check the ground circuit to the audio amplifier.**

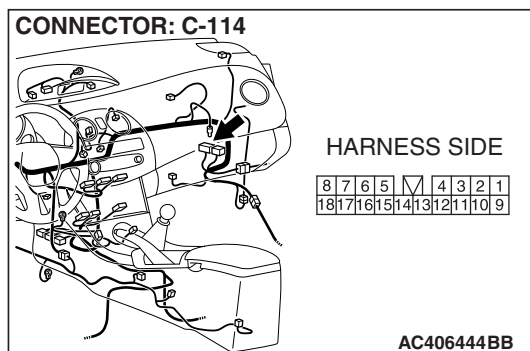
(1) Disconnect audio amplifier connector C-114, and measure at the wiring harness side.

- (2) Measure the resistance between terminal 4 and ground.
- The resistance should be 2 ohms or less.
- (3) Measure the resistance between terminal 11 and ground.
- The resistance should be 2 ohms or less.
- (4) Measure the resistance between terminal 12 and ground.
- The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 6.

**NO :** Go to Step 5.



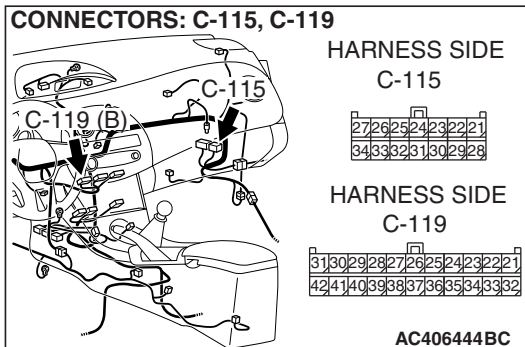
**STEP 5. Check the wiring harness between audio amplifier connector C-114 (terminal 4, 11 and 12) and ground.**

**Q: Is the wiring harness between audio amplifier connector C-114 (terminal 4, 11 and 12) and ground in good condition?**

**YES :** There is no action to be taken.

**NO :** Repair the wiring harness. The speakers should sound.



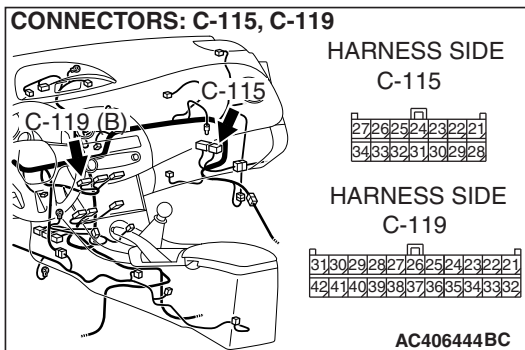


**STEP 6.** Check radio and CD player with CD changer connector C-119 and audio amplifier connector C-115 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Are radio and CD player with CD changer connector C-119 and audio amplifier connector C-115 in good condition?

**YES :** Go to Step 7.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The door speaker (LH) should sound.



**STEP 7.** Check the wiring harness between radio and CD player with CD changer connector C-119 (terminals 21, 22, 23, 25, 26, 32, 33, 34, 35, 36 and 37) and audio amplifier connector C-115 (terminals 24, 34, 27, 22, 21, 31, 26, 32, 25, 29, and 28).

**Q:** Do the speakers sound normally?

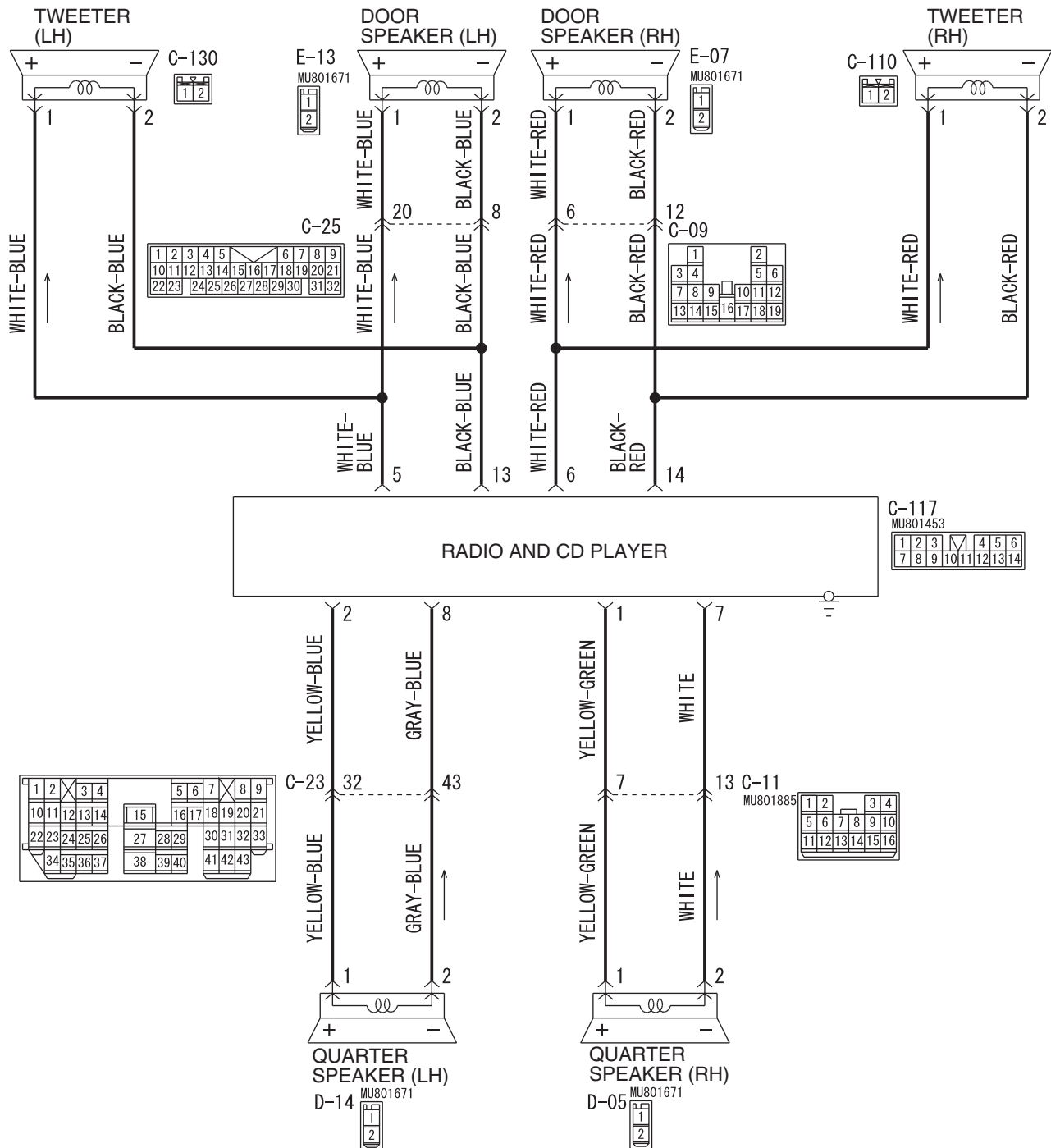
**YES :** The procedure is complete.

**NO :** Replace the audio amplifier.



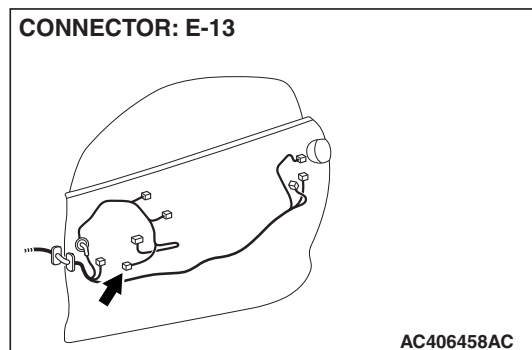
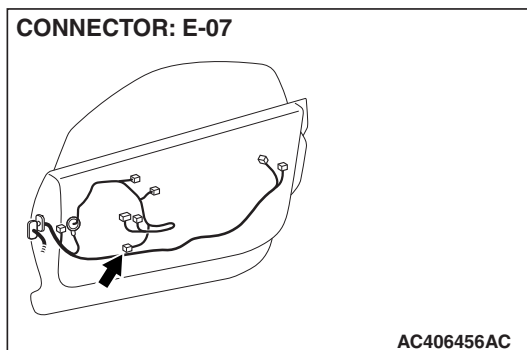
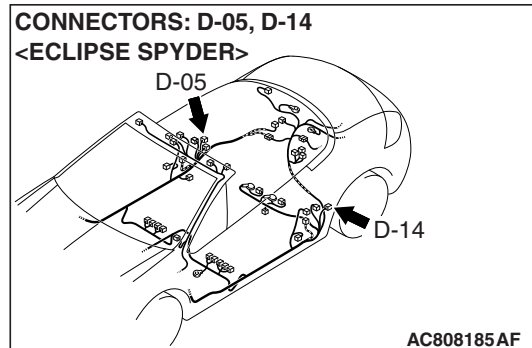
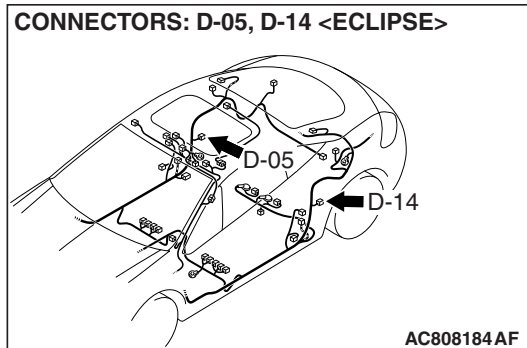
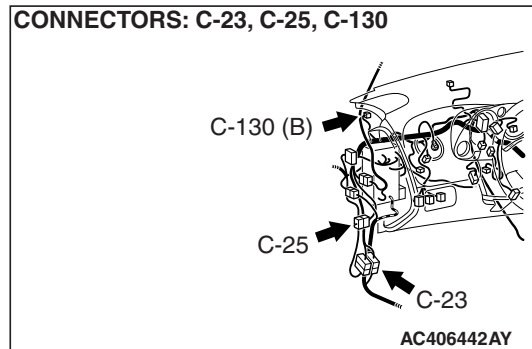
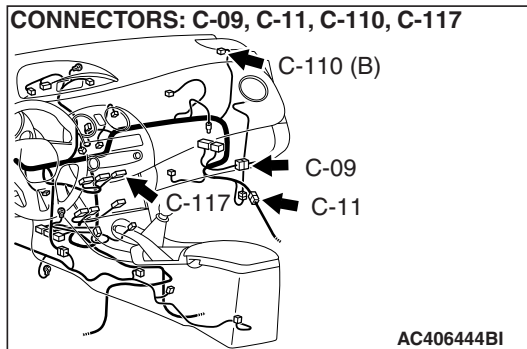
## INSPECTION PROCEDURE 6: No sound from one speaker. &lt;Vehicles without audio amplifier&gt;

Speaker System Circuit



W8P54M001A





## CIRCUIT OPERATION

The speakers sound according to audio signal output from the radio and CD player.

## TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty speaker circuit system.

## TROUBLESHOOTING HINTS

- Malfunction of the speaker.
- Damaged wiring harness or connector.
- Malfunction of the radio and CD player.

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe

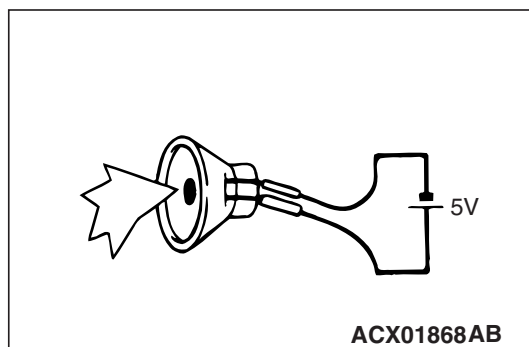
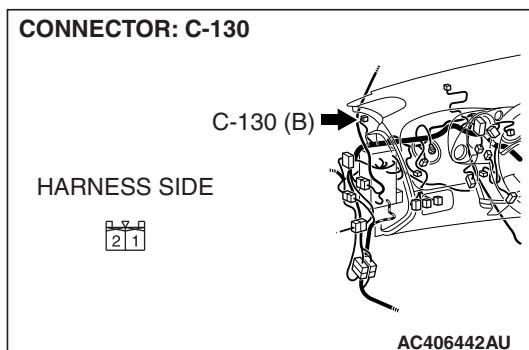
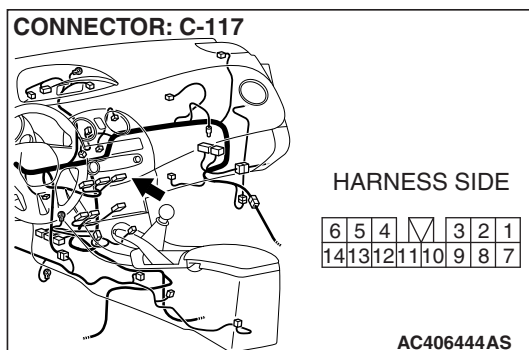


**STEP 1. Check which speaker has no sound on the vehicles with audio amplifier.**

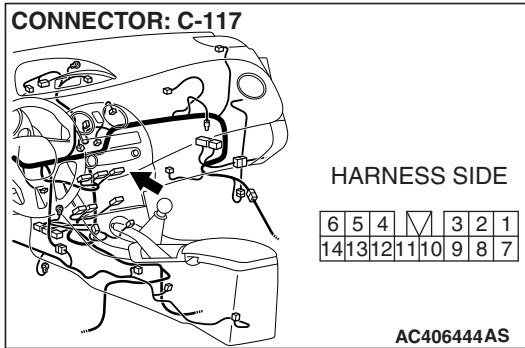
Determine which speaker does not sound.

**Q: Which speaker does not sound?****Tweeter (LH)** : Go to Step 2.**Tweeter (RH)** : Go to Step 5.**Door speaker (LH)** : Go to Step 8.**Door speaker (RH)** : Go to Step 11.**Quarter speaker (LH)** : Go to Step 14.**Quarter speaker (RH)** : Go to Step 17.**STEP 2. Check the tweeter (LH).**(1) Remove the tweeter (LH). Refer to [P.54A-261](#).

(2) Check that the tweeter (LH) generates noise when a five-volt voltage is applied on the tweeter (LH) terminal.

**Q: Is the tweeter (LH) generating noise?****YES** : Go to Step 3.**NO** : Replace the tweeter (LH). The tweeter (LH) should sound.**STEP 3. Check tweeter (LH) connector C-130 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are harness connectors C-130 and C-117 in good condition?****YES** : Go to Step 4.**NO** : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The tweeter (LH) should sound.



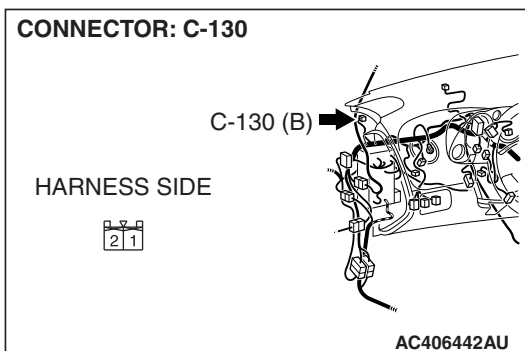


**STEP 4. Check the wiring harness between tweeter (LH) connector C-130 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 5 and 13).**

**Q: Is the wiring harness between tweeter (LH) connector C-130 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 5 and 13) in good condition?**

**YES :** The procedure is complete.

**NO :** Repair the wiring harness. The tweeter (LH) should sound.



**STEP 5. Check the tweeter (RH).**

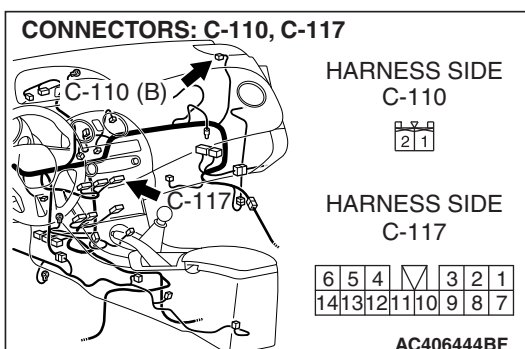
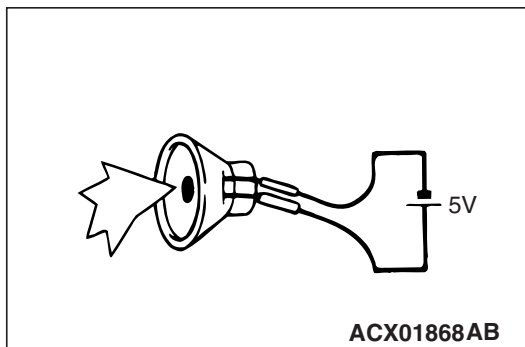
(1) Remove the tweeter (RH). Refer to [P.54A-261](#).

(2) Check that the tweeter (RH) generates noise when a five-volt voltage is applied on the tweeter (RH) terminal.

**Q: Is the tweeter (RH) generating noise?**

**YES :** Go to Step 6.

**NO :** Replace the tweeter (RH). The tweeter (RH) should sound.



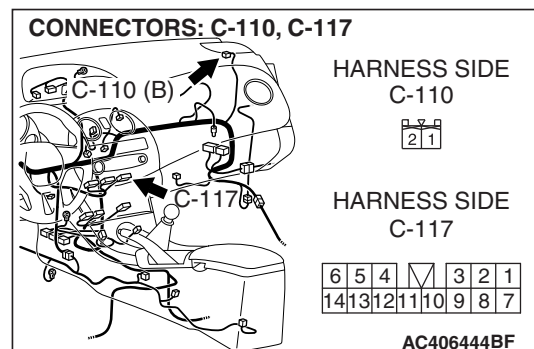
**STEP 6. Check tweeter (RH) connector C-110 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are harness connectors C-110 and C-117 in good condition?**

**YES :** Go to Step 7.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The tweeter (RH) should sound.



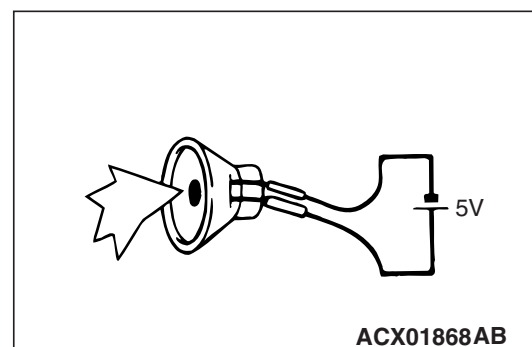


**STEP 7. Check the wiring harness between tweeter (RH) connector C-110 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 6 and 14).**

**Q: Is the wiring harness between tweeter (RH) connector C-110 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 6 and 14) in good condition?**

**YES :** The procedure is complete.

**NO :** Repair the wiring harness. The tweeter (RH) should sound.



**STEP 8. Check the door speaker (LH).**

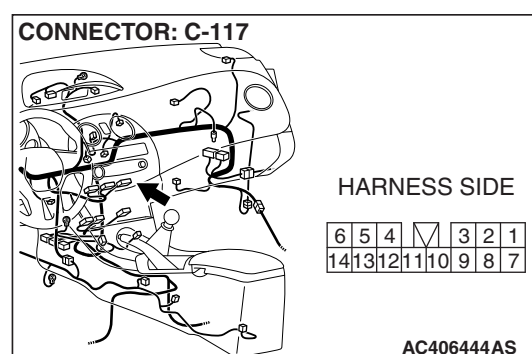
(1) Remove the door speaker (LH). Refer to [P.54A-261](#).

(2) Check that the door speaker (LH) generates noise when a five-volt voltage is applied on the door speaker (LH) terminal.

**Q: Is the door speaker (LH) generating noise?**

**YES :** Go to Step 9.

**NO :** Replace the door speaker (LH). The door speaker (LH) should sound.

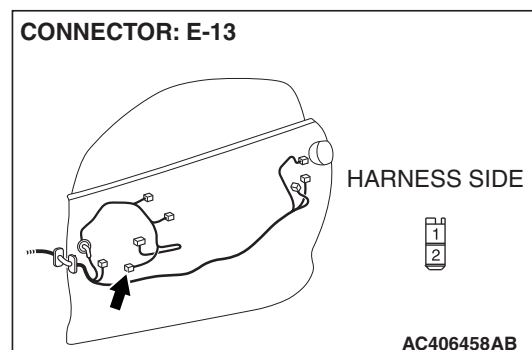


**STEP 9. Check door speaker (LH) connector E-13 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are harness connectors E-13 and C-117 in good condition?**

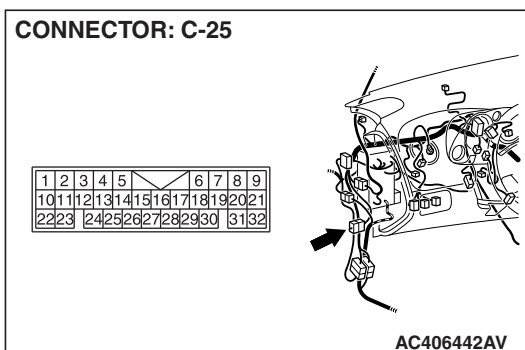
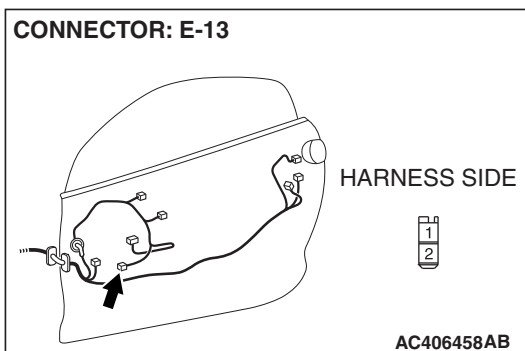
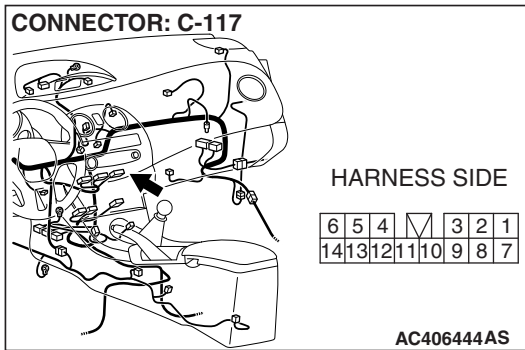
**YES :** Go to Step 10.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The door speaker (LH) should sound.





**STEP 10. Check the wiring harness between door speaker (LH) connector E-13 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 5 and 13).**



**NOTE:** Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between front door speaker (LH) connector E-13 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 5 and 13) in good condition?**

**YES :** The procedure is complete.

**NO :** Repair the wiring harness. The door speaker (LH) should sound.

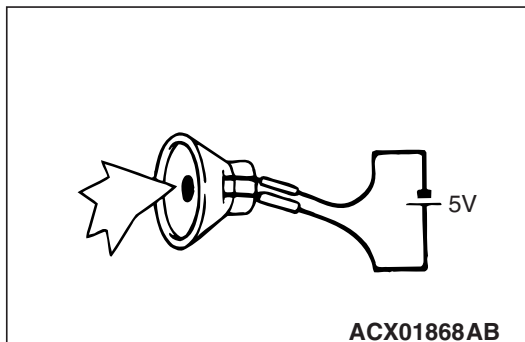
**STEP 11. Check the door speaker (RH).**

- (1) Remove the door speaker (RH). Refer to [P.54A-261](#).
- (2) Check that the door speaker (RH) generates noise when a five-volt voltage is applied on the door speaker (RH) terminal.

**Q: Is the door speaker (RH) generating noise?**

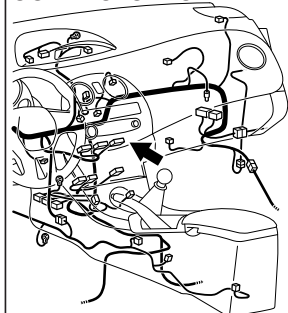
**YES :** Go to Step 12.

**NO :** Replace the door speaker (RH). The door speaker (RH) should sound.





## CONNECTOR: C-117



HARNESS SIDE

6	5	4	3	2	1
14	13	12	11	10	9
8	7				

AC406444AS

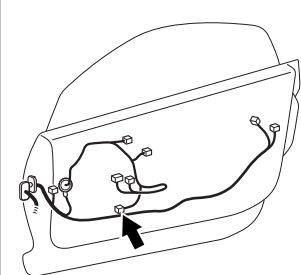
**STEP 12.** Check door speaker (RH) connector E-07 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Are harness connectors E-07 and C-117 in good condition?

**YES :** Go to Step 13.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The door speaker (RH) should sound.

## CONNECTOR: E-07



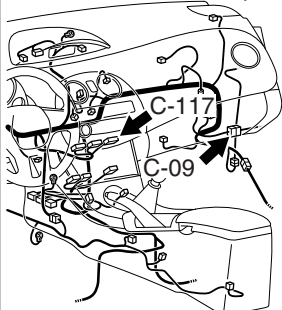
HARNESS SIDE

1
2

AC406456AB

**STEP 13.** Check the wiring harness between door speaker (RH) connector E-07 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 6 and 14).

## CONNECTORS: C-09, C-117



C-09

1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	

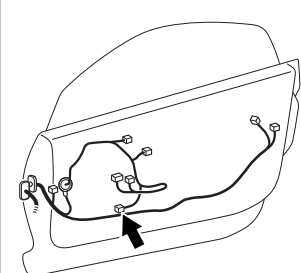
HARNESS SIDE

C-117

6	5	4	3	2	1
14	13	12	11	10	9
8	7				

AC406444BG

## CONNECTOR: E-07



HARNESS SIDE

1
2

AC406456AB



*NOTE: Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between front door speaker (RH) connector E-07 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 6 and 14) in good condition?**

**YES :** The procedure is complete.

**NO :** Repair the wiring harness. The door speaker (RH) should sound.

---

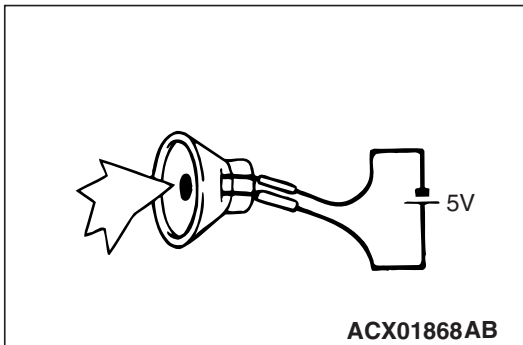
**STEP 14. Check the quarter speaker (LH).**

- (1) Remove the quarter speaker (LH). Refer to [P.54A-261](#).
- (2) Check that the quarter speaker (LH) generates noise when a five-volt voltage is applied on the quarter speaker (LH) terminal.

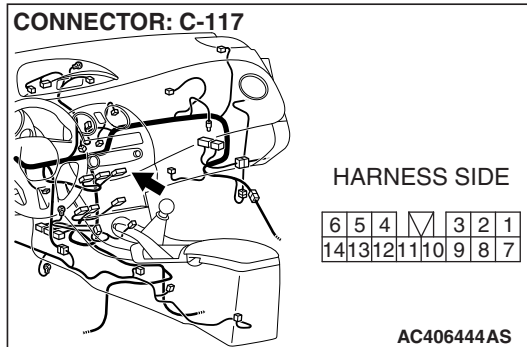
**Q: Is the quarter speaker (LH) generating noise?**

**YES :** Go to Step 15.

**NO :** Replace the quarter speaker (LH). The quarter speaker (LH) should sound.





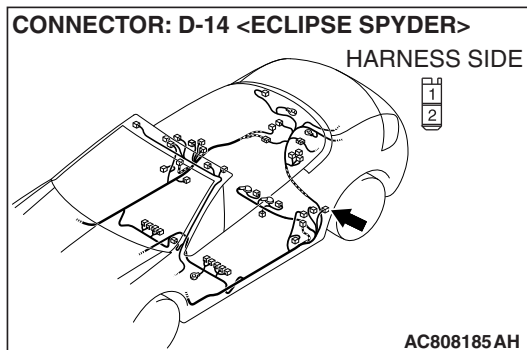
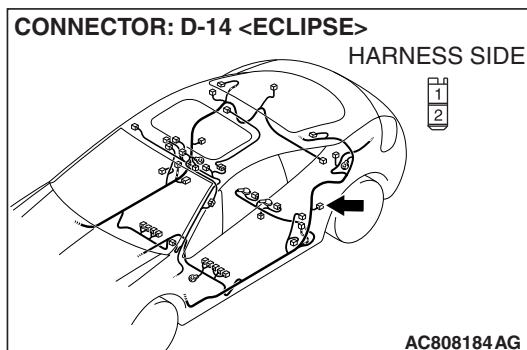


**STEP 15.** Check quarter speaker (LH) connector D-14 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Are harness connectors D-14 and C-117 in good condition?

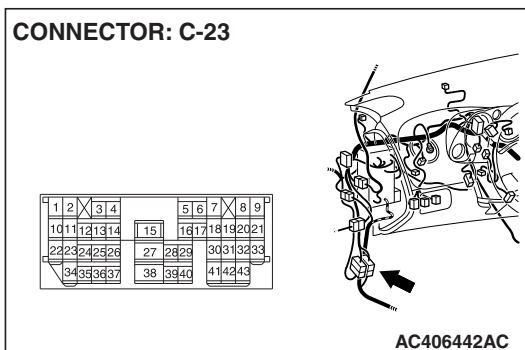
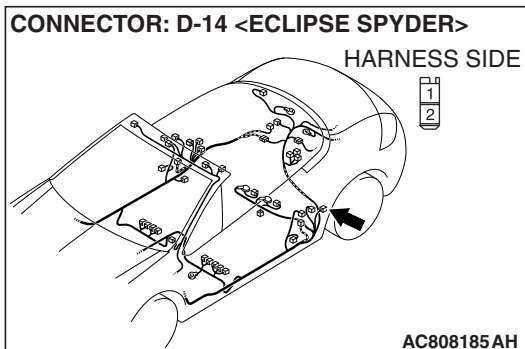
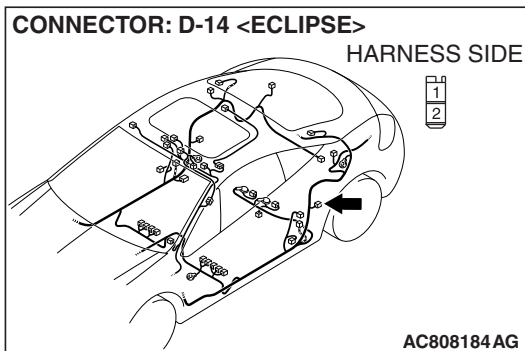
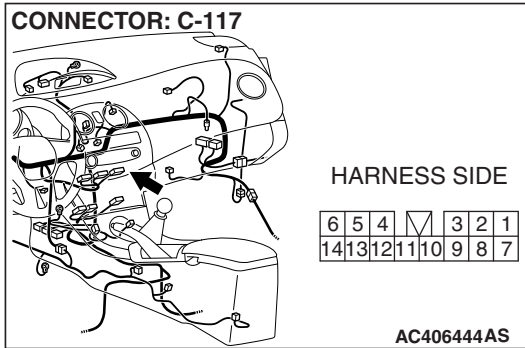
**YES :** Go to Step 16.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The quarter speaker (LH) should sound.





**STEP 16.** Check the wiring harness between quarter speaker (LH) connector D-14 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 2 and 8).



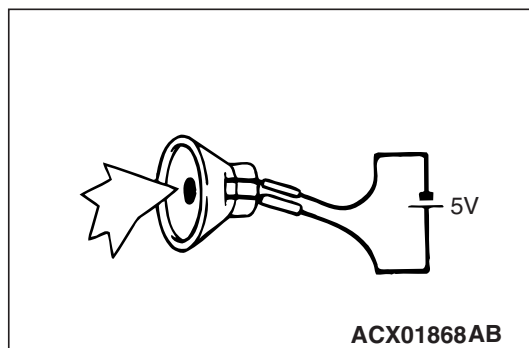
**NOTE:** Also check intermediate connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 is damaged, repair or replace the connectors as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between the rear speaker (LH) connector D-14 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 2 and 8) in good condition?

**YES :** Replace the radio and CD player. The quarter speaker (LH) should sound.

**NO :** Repair the wiring harness. The quarter speaker (LH) should sound.



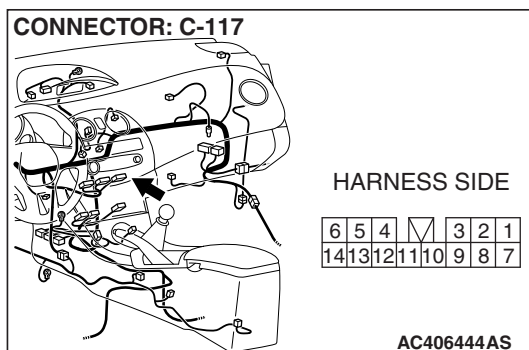
**STEP 17. Check the quarter speaker (RH).**

- (1) Remove the quarter speaker (RH). Refer to [P.54A-261](#).
- (2) Check that the quarter speaker (RH) generates noise when a five-volt voltage is applied on the quarter speaker (RH) terminal.

**Q: Is the quarter speaker (RH) generating noise?**

**YES :** Go to Step 18.

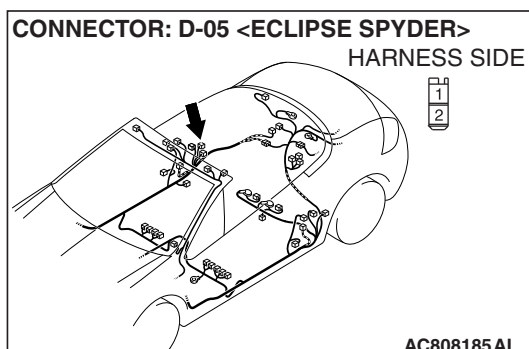
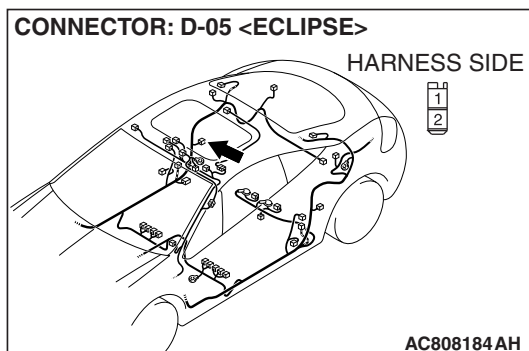
**NO :** Replace the quarter speaker (RH). The quarter speaker (RH) should sound.

**STEP 18. Check quarter speaker (RH) connector D-05 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are harness connectors D-05 and C-117 in good condition?**

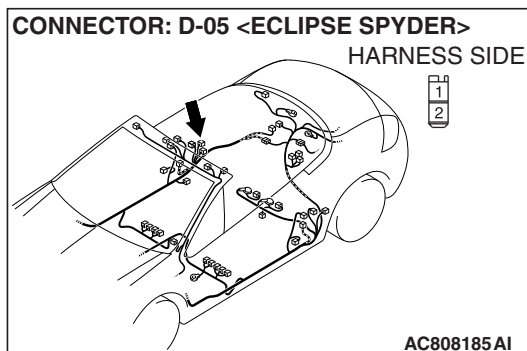
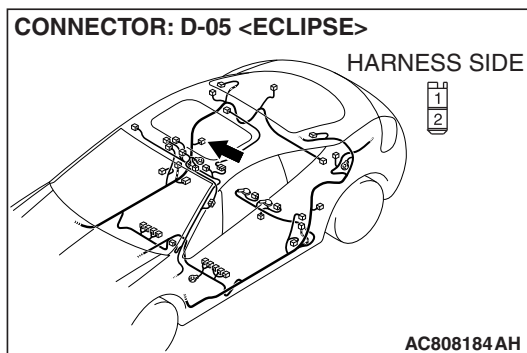
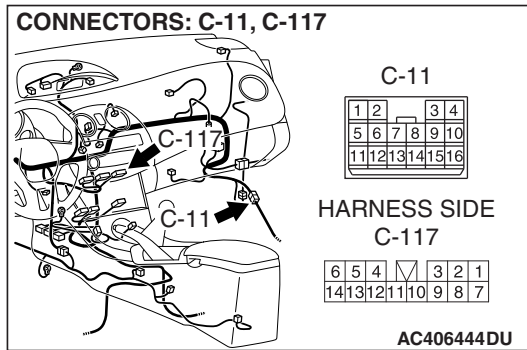
**YES :** Go to Step 19.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The quarter speaker (RH) should sound.





**STEP 19.** Check the wiring harness between rear speaker (RH) connector D-05 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 1 and 7).



**NOTE:** Also check intermediate connector C-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-11 is damaged, repair or replace the connectors as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between rear speaker (RH) connector D-05 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 1 and 7) in good condition?

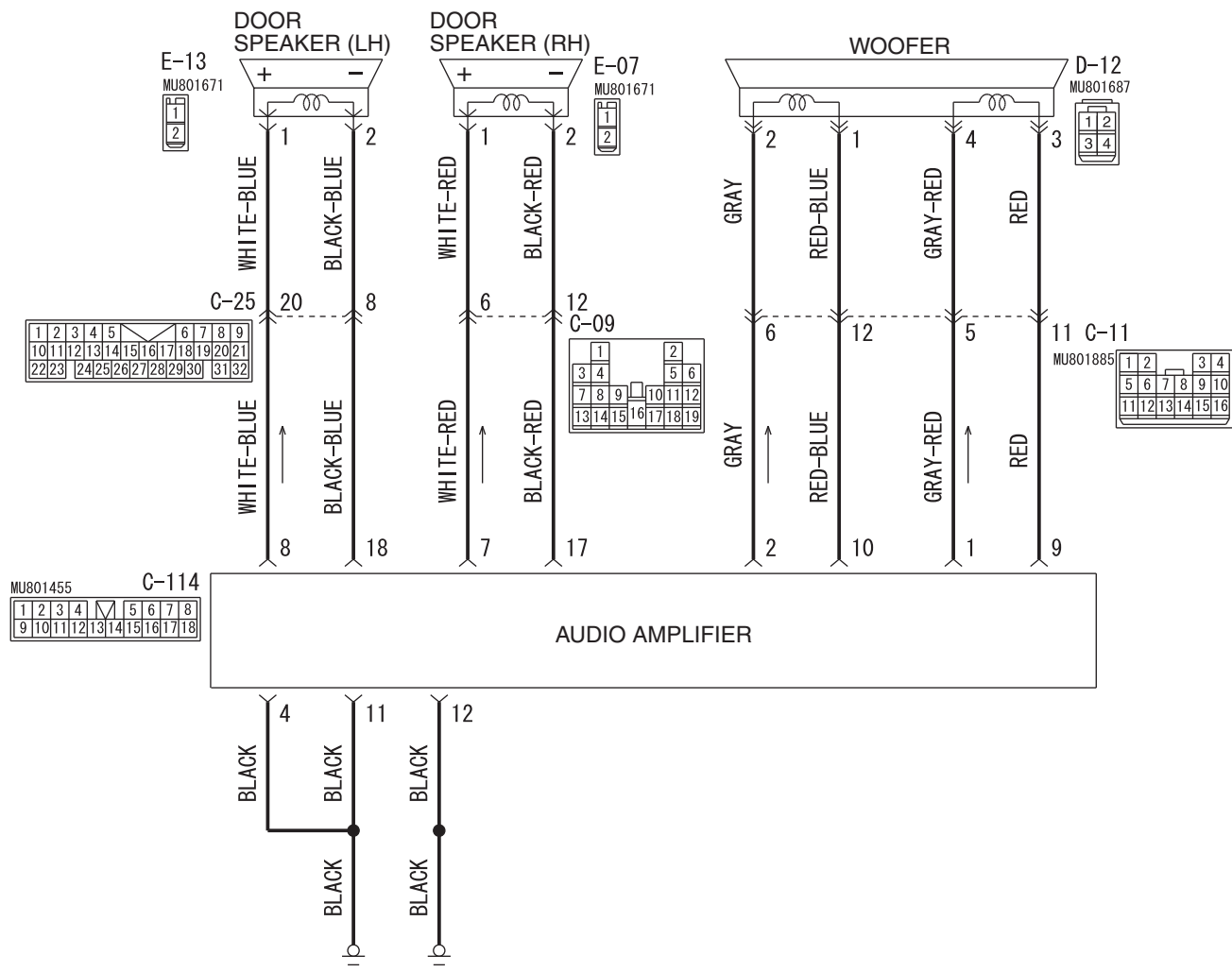
**YES :** Replace the radio and CD player. The quarter speaker (RH) should sound.

**NO :** Repair the wiring harness. The quarter speaker (RH) should sound.



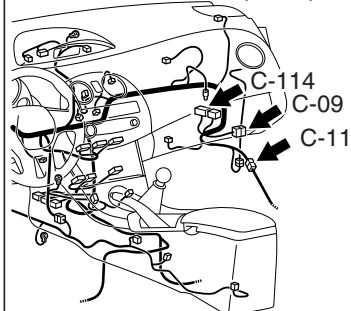
## INSPECTION PROCEDURE 7: No sound from door speaker or woofer. &lt;Vehicles with audio amplifier&gt;

Speaker System Circuit (Door Speaker and Woofer)

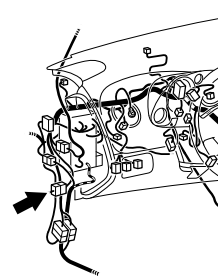


WAP54M005A

CONNECTORS: C-09, C-11, C-114

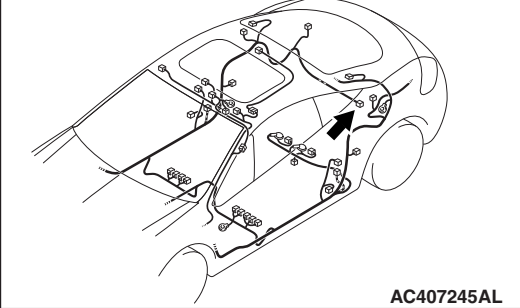


CONNECTOR: C-25



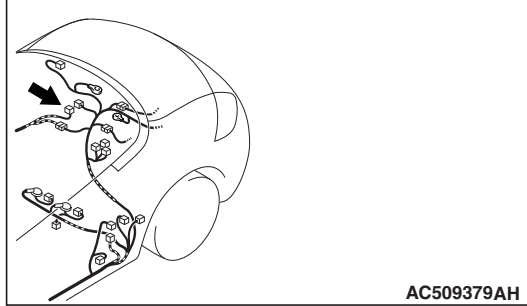


CONNECTOR: D-12 <ECLIPSE>



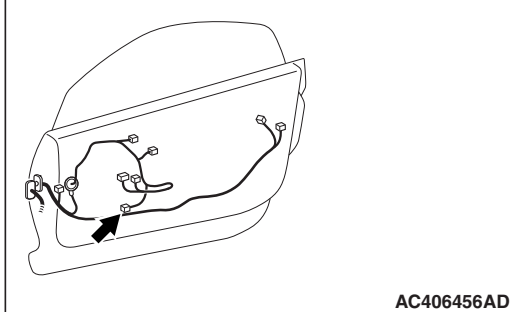
AC407245AL

CONNECTOR: D-12 <ECLIPSE SPYDER>



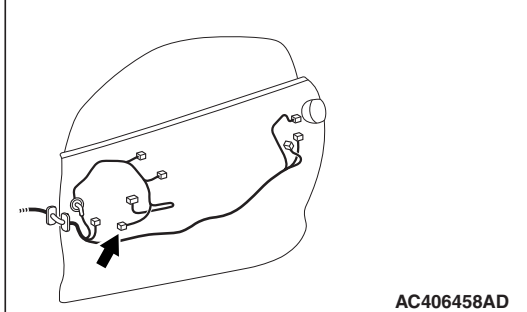
AC509379AH

CONNECTOR: E-07



AC406456AD

CONNECTOR: E-13



AC406458AD

## CIRCUIT OPERATION

The sound signals are sent from the audio amplifier. After the signals are amplified and filtered, the sound signals are sent to the speaker.

## TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty speaker circuit system.

## TROUBLESHOOTING HINTS

- Malfunction of the door speaker.
- Malfunction of the woofer.
- Malfunction of the audio amplifier.
- Damaged wiring harness or connector.

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe

### STEP 1. Check which speaker has no sound on the vehicles with audio amplifier.

Determine which speaker does not sound.

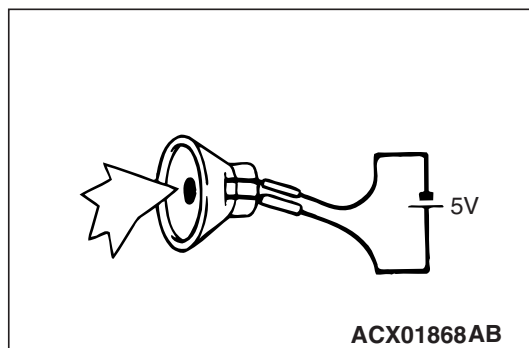
### Q: Which speaker does not sound?

**Door speaker (LH) :** Go to Step 2.

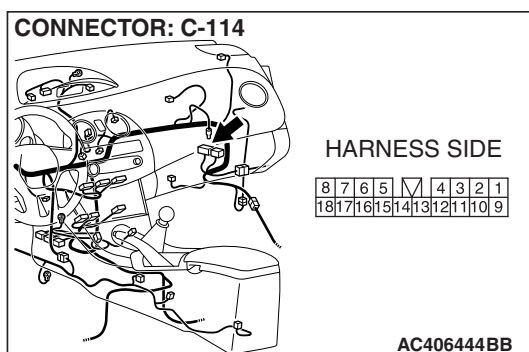
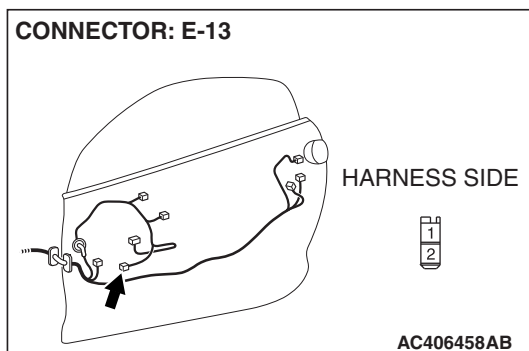
**Door speaker (RH) :** Go to Step 5.

**Woofer :** Go to Step 8.



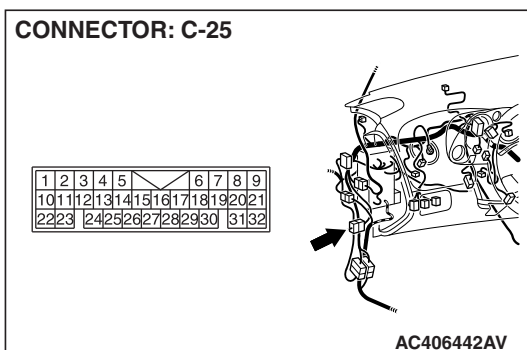
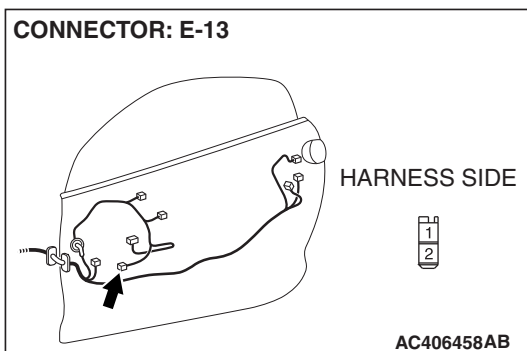
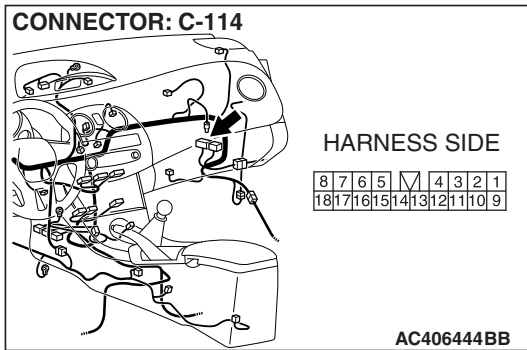
**STEP 2. Check the door speaker (LH).**

- (1) Remove the door speaker (LH). Refer to [P.54A-261](#).
- (2) Check that the door speaker (LH) generates noise when a five-volt voltage is applied on the door speaker (LH) terminal.

**Q: Is the door speaker (LH) generating noise?****YES :** Go to Step 3.**NO :** Replace the door speaker (LH). The door speaker (LH) should sound.**STEP 3. Check door speaker (LH) connector E-13 and audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are harness connectors E-13 and C-114 in good condition?****YES :** Go to Step 4.**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The door speaker (LH) should sound.



**STEP 4. Check the wiring harness between door speaker (LH) connector E-13 (terminals 1 and 2) and audio amplifier connector C-114 (terminals 8 and 18).**



**NOTE:** Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between front door speaker (LH) connector E-13 (terminals 1 and 2) and audio amplifier connector C-114 (terminals 8 and 18) in good condition?**

**YES :** Replace the audio amplifier. The door speaker (LH) should sound.

**NO :** Repair the wiring harness. The door speaker (LH) should sound.

**STEP 5. Check the door speaker (RH).**

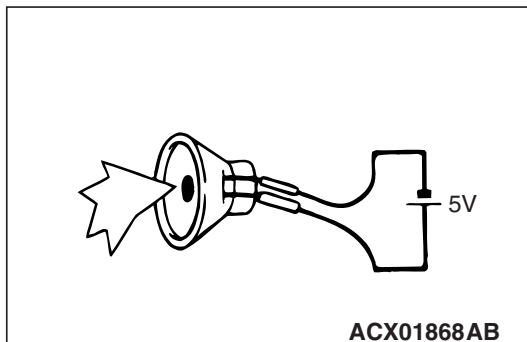
(1) Remove the door speaker (RH). Refer to [P.54A-261](#).

(2) Check that the door speaker (RH) generates noise when a five-volt voltage is applied on the door speaker (RH) terminal.

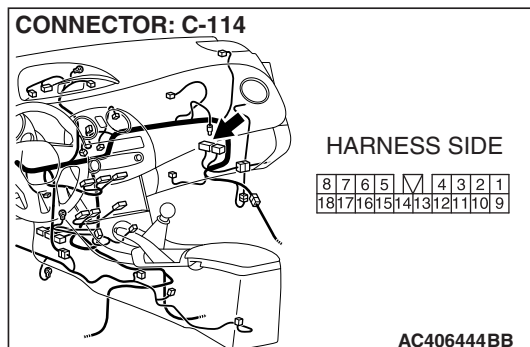
**Q: Is the door speaker (RH) generating noise?**

**YES :** Go to Step 6.

**NO :** Replace the door speaker (RH). The door speaker (RH) should sound.





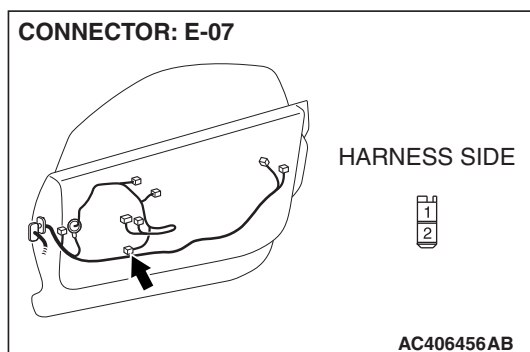


**STEP 6. Check door speaker (RH) connector E-07 and audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

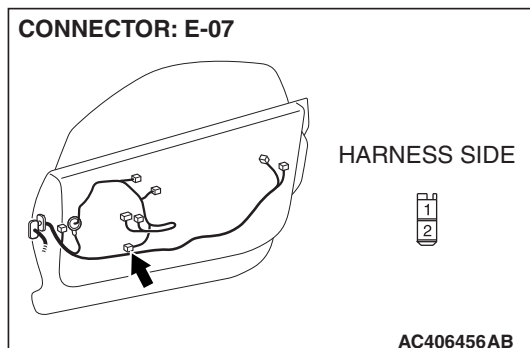
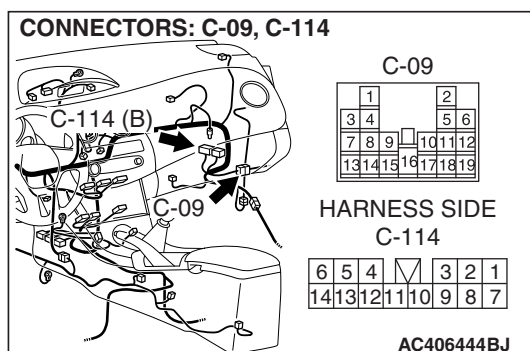
**Q: Are harness connectors E-07 and C-114 in good condition?**

**YES :** Go to Step 7.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The door speaker (RH) should sound.



**STEP 7. Check the wiring harness between door speaker (RH) connector E-07 (terminals 1 and 2) and audio amplifier connector C-114 (terminals 7 and 17).**





**NOTE:** Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between front door speaker (RH) connector E-07 (terminals 1 and 2) and audio amplifier connector C-114 (terminals 7 and 17) in good condition?**

**YES :** Replace the audio amplifier. The door speaker (RH) should sound.

**NO :** Repair the wiring harness. The door speaker (RH) should sound.

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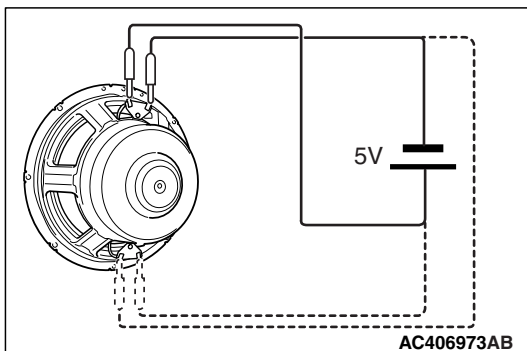
**STEP 8. Check the woofer.**

- (1) Remove the woofer. Refer to [P.54A-261](#).
- (2) Check that the woofer generates noise when a five-volt voltage is applied on the woofer terminal.

**Q: Is the woofer generating noise?**

**YES :** Go to Step 9.

**NO :** Replace the woofer. The woofer should sound.



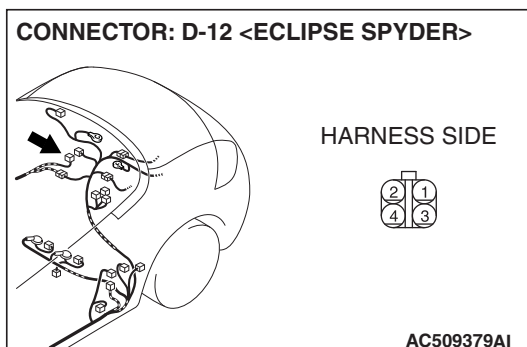
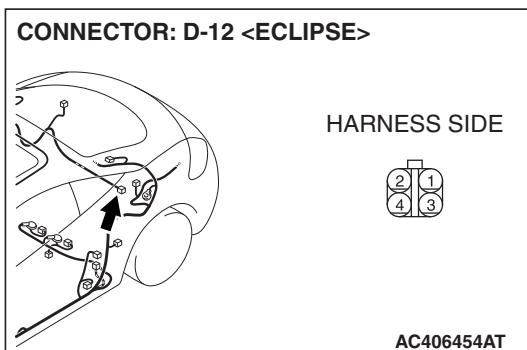
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**STEP 9. Check woofer connector D-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is harness connector D-12 in good condition?**

**YES :** Go to Step 10.

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

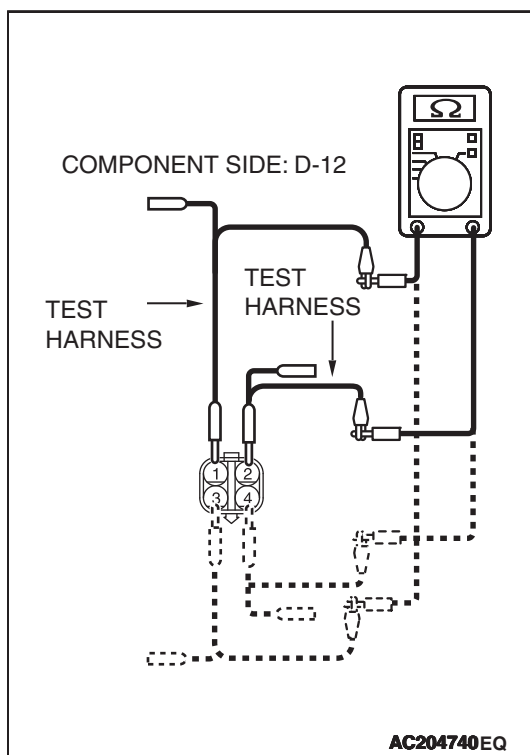
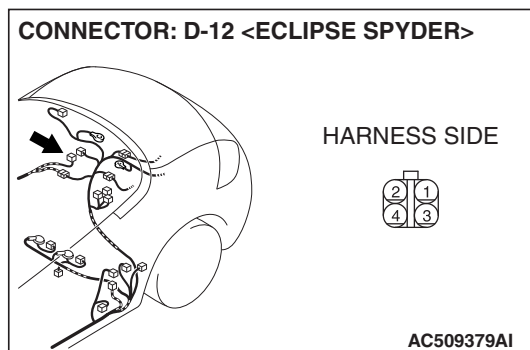
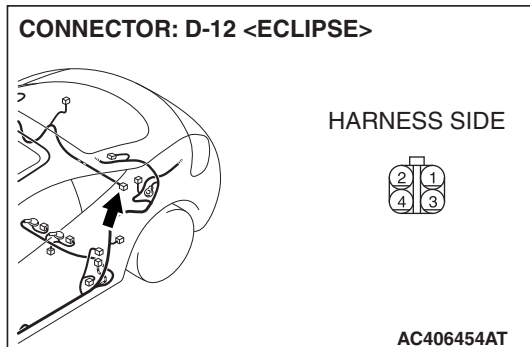




**STEP 10. Check the sub harness between the woofer and the woofer connector. Measure the resistance at woofer connector D-12.**

*NOTE: Check the sub harness with the woofer connected to the sub harness.*

- (1) Disconnect woofer connector D-12, and measure the resistance available at the component side of the connector.



- (2) Measure the resistance between woofer connector D-12 terminals 1 and 2.

- The resistance should be 2 ohms or less.

- (3) Measure the resistance between woofer connector D-12 terminals 3 and 4.

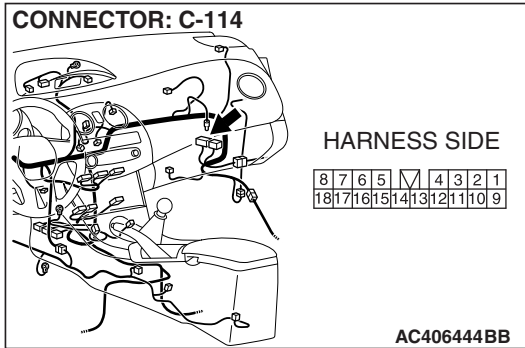
- The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 11.

**NO :** Repair the sub harness. The woofer should sound.



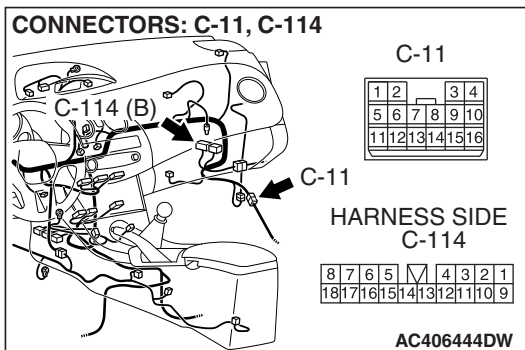


**STEP 11. Check audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

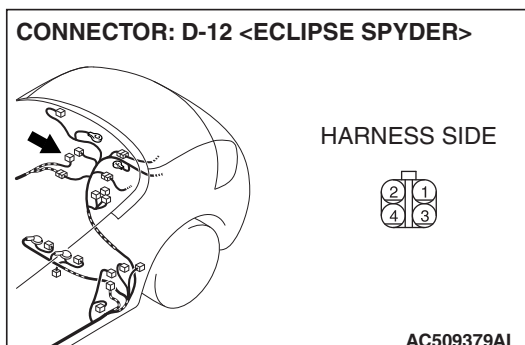
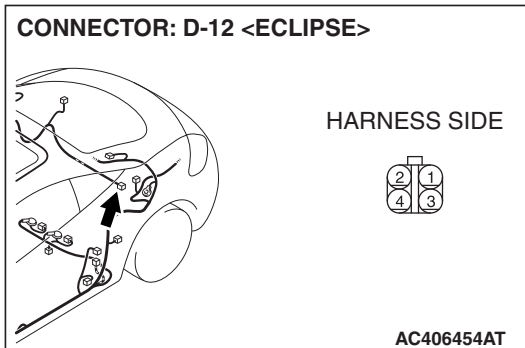
**Q: Is harness connector C-114 in good condition?**

**YES :** Go to Step 12.

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



**STEP 12. Check the wiring harness between woofer connector D-12 (terminals 1, 2, 3 and 4) and audio amplifier connector C-114 (terminals 10, 2, 9 and 1).**





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

**Q: Is the wiring harness between woofer connector D-12 (terminals 1, 2, 3 and 4) and audio amplifier connector C-114 (terminals 10, 2, 9 and 1) in good condition?**

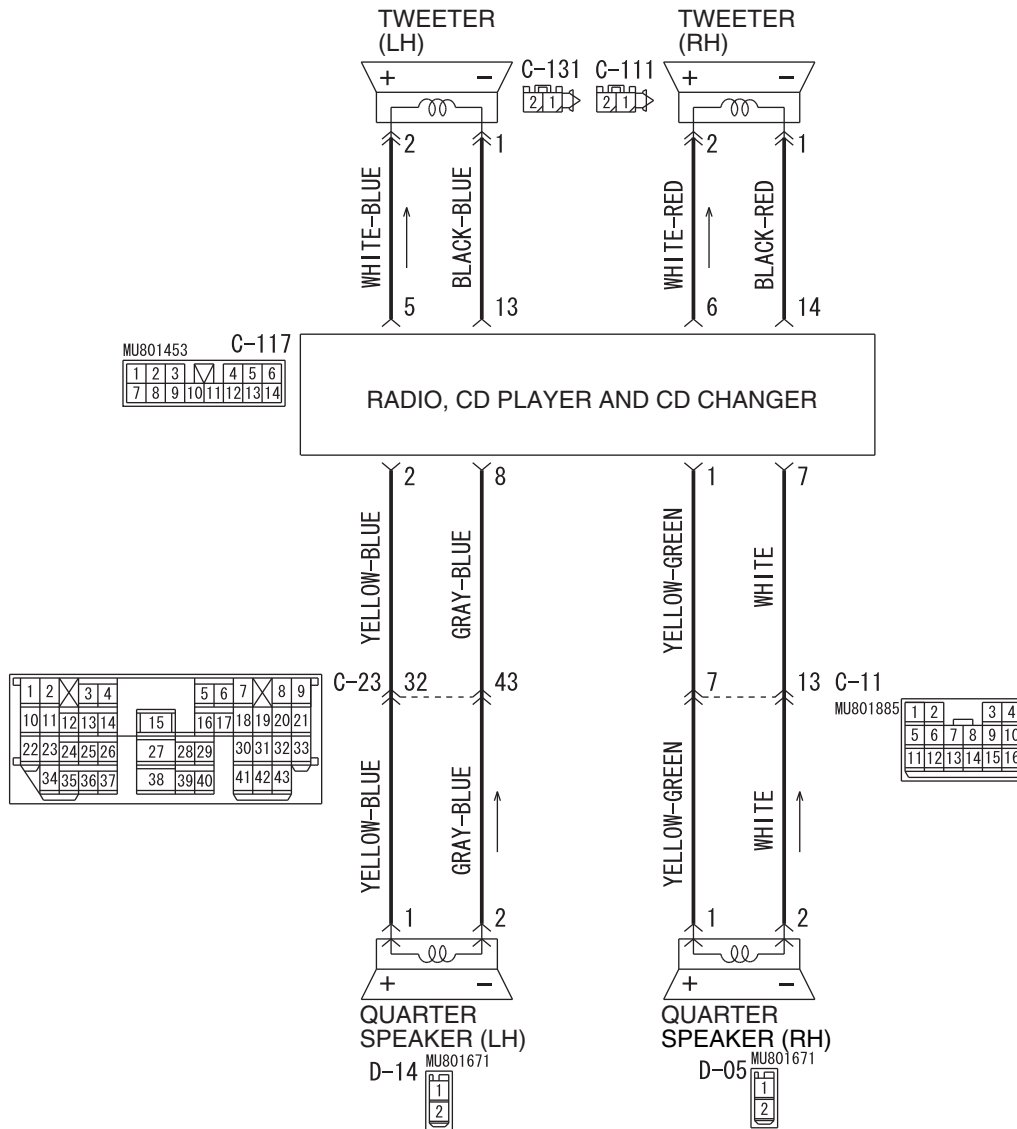
**YES :** Replace the audio amplifier. The woofer should sound.

**NO :** Repair the wiring harness. The woofer should sound.



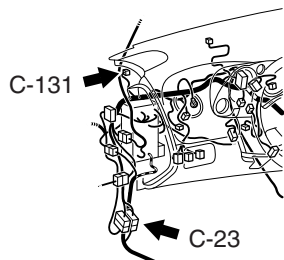
**INSPECTION PROCEDURE 8: No sound from tweeter or quarter speaker. <Vehicles with audio amplifier>**

**Speaker System Circuit (Tweeter and Quarter Speaker)**



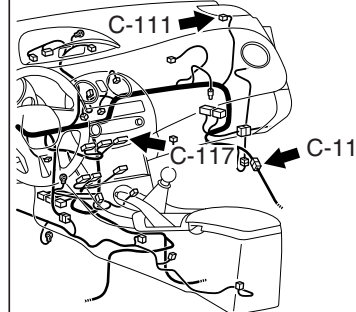
W8P54M003A

**CONNECTORS: C-23, C-131**



AC406442BB

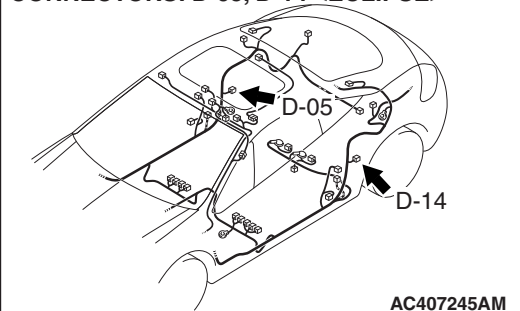
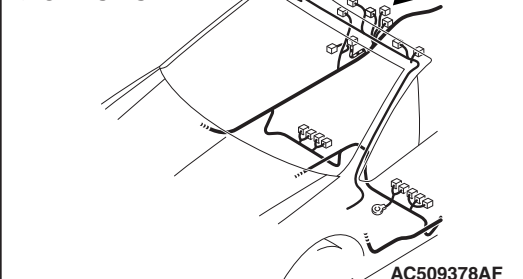
**CONNECTORS: C-11, C-111, C-117**



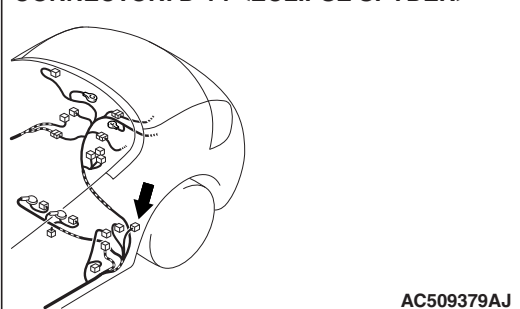
AC406444BQ



CONNECTORS: D-05, D-14 &lt;ECLIPSE&gt;

CONNECTOR: D-05  
<ECLIPSE SPYDER>

CONNECTOR: D-14 &lt;ECLIPSE SPYDER&gt;



## CIRCUIT OPERATION

The sound signals are sent from the radio and CD player with CD changer. After the signals are amplified and filtered, the sound signals are sent to the speaker.

## TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty speaker circuit system.

## TROUBLESHOOTING HINTS

- Malfunction of the tweeter.
- Malfunction of the quarter door speaker.
- Damaged wiring harness or connector.
- Malfunction of the radio and CD player with CD changer.

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe

### STEP 1. Check which speaker has no sound, on vehicles with audio amplifier.

Determine which speaker does not sound.

### Q: Which speaker does not sound?

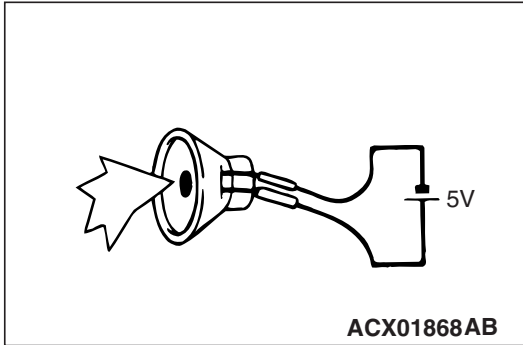
**Tweeter (LH) :** Go to Step 2.

**Tweeter (RH) :** Go to Step 5.

**Quarter speaker (LH) :** Go to Step 8.

**Quarter speaker (RH) :** Go to Step 11.



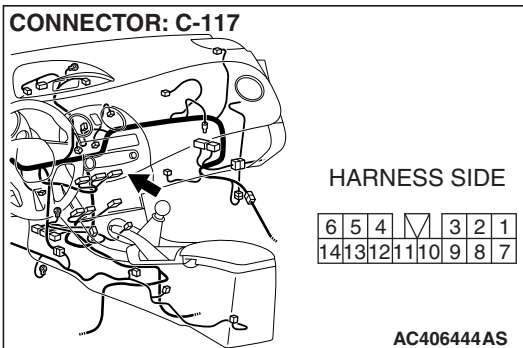
**STEP 2. Check the tweeter (LH).**

- (1) Remove the tweeter (LH). Refer to [P.54A-261](#).
- (2) Check that the tweeter (LH) generates noise when a five-volt voltage is applied on the tweeter (LH) terminal.

**Q: Is the tweeter (LH) generating noise?**

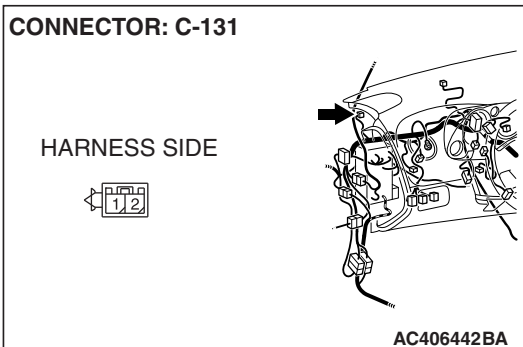
**YES** : Go to Step 3.

**NO** : Replace the tweeter (LH). The tweeter (LH) should sound.

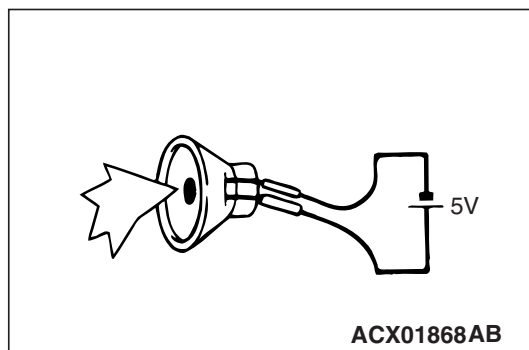
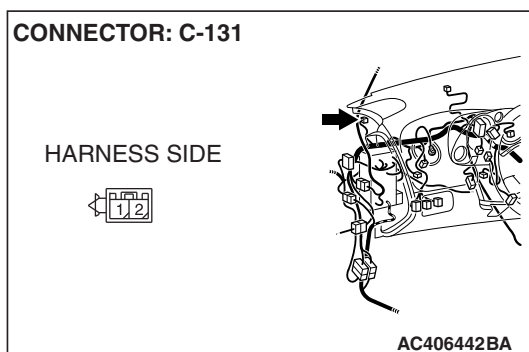
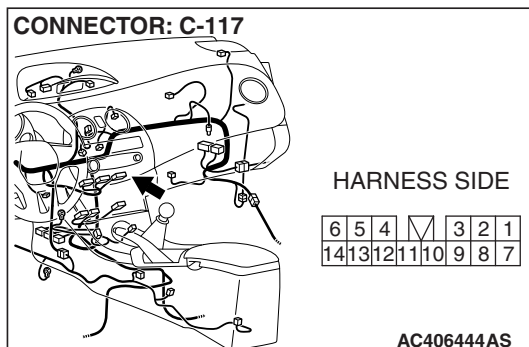
**STEP 3. Check tweeter (LH) connector C-131 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are harness connectors C-131 and C-117 in good condition?**

**YES** : Go to Step 4.

**NO** : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The tweeter (LH) should sound.







**STEP 4. Check the wiring harness between tweeter (LH) connector C-131 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 13 and 5).**

**Q: Is the wiring harness between tweeter (LH) connector C-131 (terminals 1 and 2) and audio amplifier connector C-117 (terminals 13 and 5) in good condition?**

**YES :** Replace the radio and CD player with CD changer. The tweeter (LH) should sound.

**NO :** Repair the wiring harness. The tweeter (LH) should sound.

**STEP 5. Check the tweeter (RH).**

(1) Remove the tweeter (RH). Refer to [P.54A-261](#).

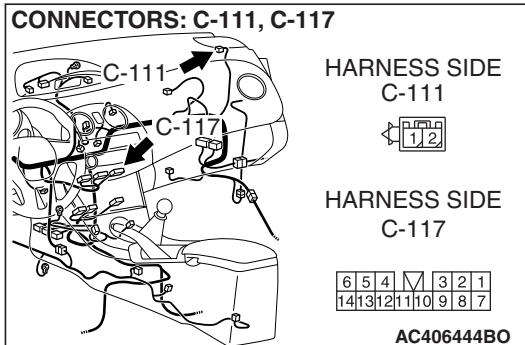
(2) Check that the tweeter (RH) generates noise when a five-volt voltage is applied on the tweeter (RH) terminal.

**Q: Is the tweeter (RH) generating noise?**

**YES :** Go to Step 6.

**NO :** Replace the tweeter (RH). The tweeter (RH) should sound.



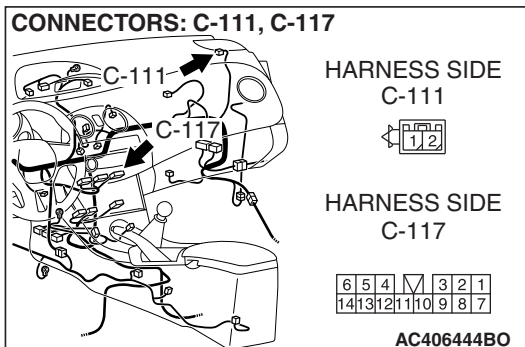


**STEP 6. Check tweeter (RH) connector C-111 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are harness connectors C-111 and C-117 in good condition?**

**YES :** Go to Step 7.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The tweeter (RH) should sound.

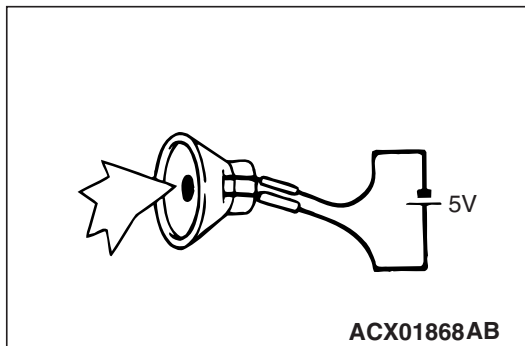


**STEP 7. Check the wiring harness between tweeter (RH) connector C-111 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 14 and 6).**

**Q: Is the wiring harness between tweeter (RH) connector C-111 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 14 and 6) in good condition?**

**YES :** Replace the radio and CD player with CD changer. The tweeter (RH) should sound.

**NO :** Repair the wiring harness. The tweeter (RH) should sound.



**STEP 8. Check the quarter speaker (LH).**

- (1) Remove the quarter speaker (LH). Refer to [P.54A-261](#).
- (2) Check that the quarter speaker (LH) generates noise when a five-volt voltage is applied on the quarter speaker (LH) terminal.

**Q: Is the quarter speaker (LH) generating noise?**

**YES :** Go to Step 9.

**NO :** Replace the quarter speaker (LH). The quarter speaker (LH) should sound.



**STEP 9.** Check quarter speaker (LH) connector D-14 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

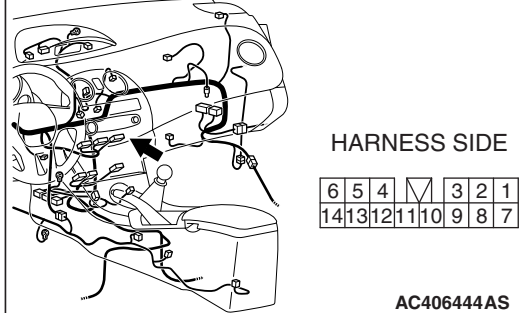
**Q:** Are harness connectors D-14 and C-117 in good condition?

**YES :** Go to Step 10.

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

[P.00E-2](#). The quarter speaker (LH) should sound.

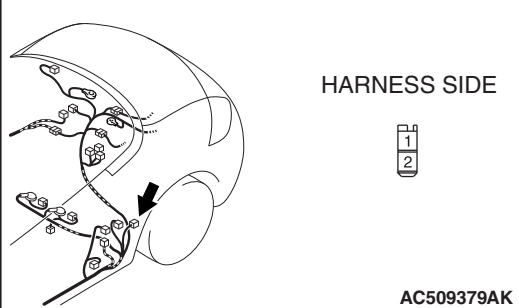
**CONNECTOR: C-117**



**CONNECTOR: D-14 <ECLIPSE>**

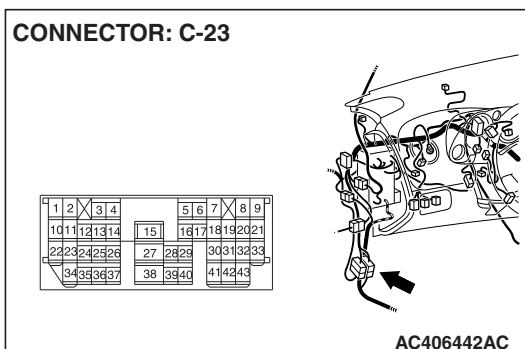
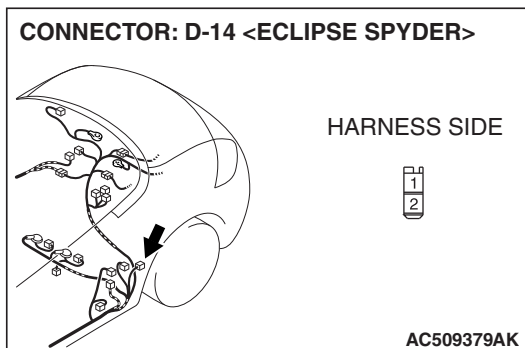
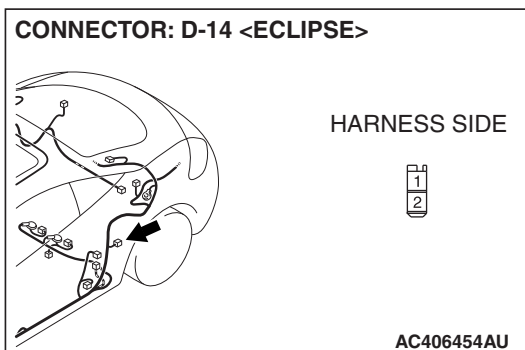
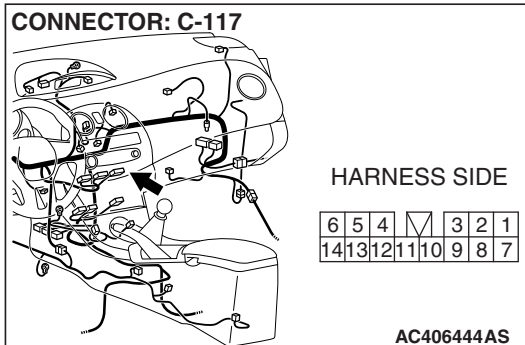


**CONNECTOR: D-14 <ECLIPSE SPYDER>**





**STEP 10.** Check the wiring harness between quarter speaker (LH) connector D-14 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 2 and 8).



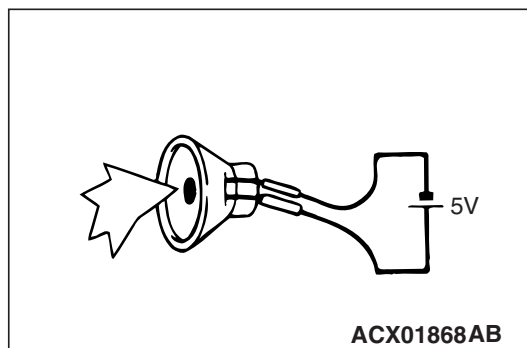
**NOTE:** Also check intermediate connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 is damaged, repair or replace the connectors as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between the quarter speaker (LH) connector D-14 (terminals 1 and 2) and audio amplifier connector C-117 (terminals 2 and 8) in good condition?

**YES :** Replace the radio and CD player with CD changer.  
The quarter speaker (LH) should sound.

**NO :** Repair the wiring harness. The quarter speaker (LH) should sound.



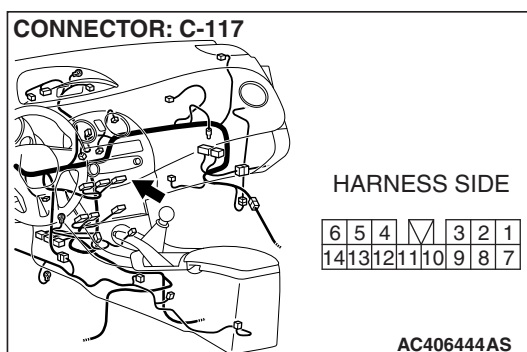
**STEP 11. Check the quarter speaker (RH).**

- (1) Remove the quarter speaker (RH). Refer to [P.54A-261](#).
- (2) Check that the quarter speaker (RH) generates noise when a five-volt voltage is applied on the quarter speaker (RH) terminal.

**Q: Is the quarter speaker (RH) generating noise?**

**YES :** Go to Step 12.

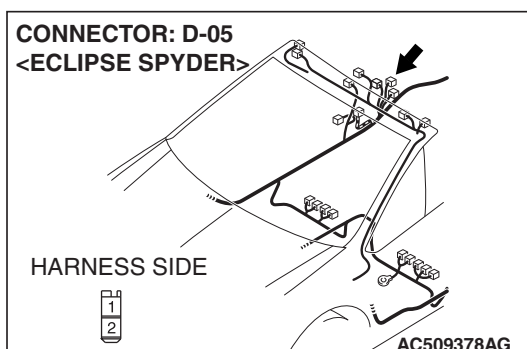
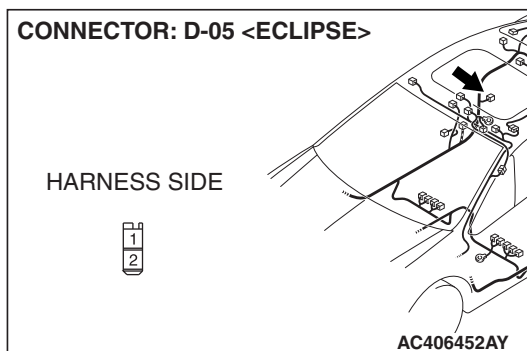
**NO :** Replace the quarter speaker (RH). The quarter speaker (RH) should sound.

**STEP 12. Check quarter speaker (RH) connector D-05 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are harness connectors D-05 and C-117 in good condition?**

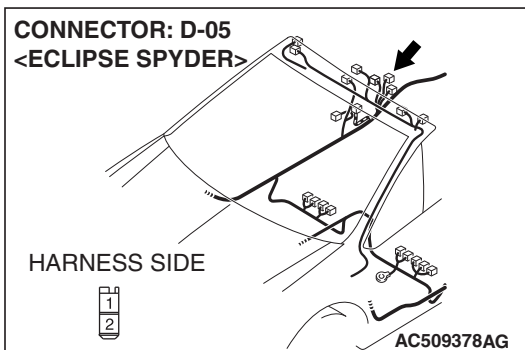
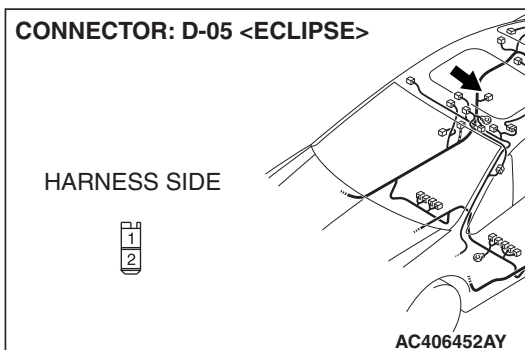
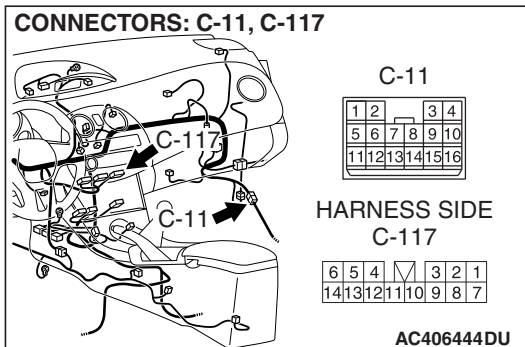
**YES :** Go to Step 13.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The quarter speaker (RH) should sound.





**STEP 13.** Check the wiring harness between quarter speaker (RH) connector D-05 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 1 and 7).



**NOTE:** Also check intermediate connector C-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-11 is damaged, repair or replace the connectors as described in GROUP 00E, *Harness Connector Inspection* [P.00E-2](#).

**Q:** Is the wiring harness between quarter speaker (RH) connector D-05 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 1 and 7) in good condition?

**YES :** Replace the radio and CD player with CD changer. The quarter speaker (RH) should sound.

**NO :** Repair the wiring harness. The quarter speaker (RH) should sound.

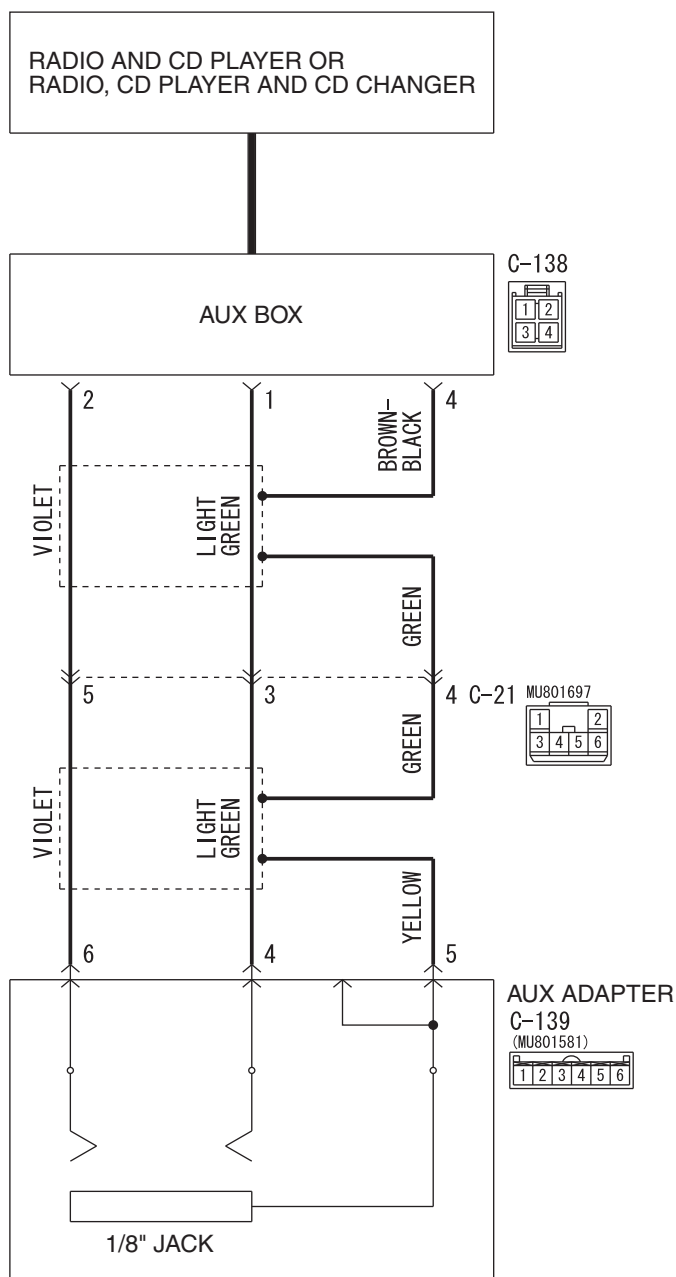


## Inspection Procedure 9: The sound of external input are not played.

**CAUTION**

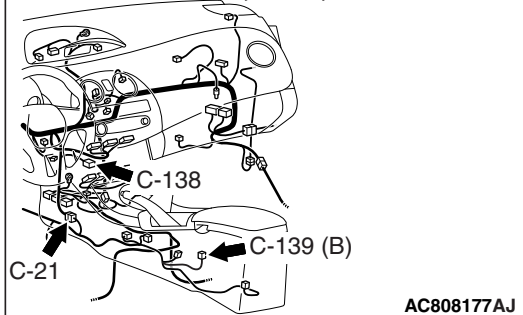
Before replacing the radio and CD player, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

## Aux Adapter Circuit





CONNECTORS: C-21, C-138, C-139

**COMMENTS ON TROUBLE SYMPTOM**

If the external input sound is not output, the radio and CD player or radio and CD player with CD changer, audio communication line of radio and CD player or radio and CD player with CD changer, or audio adapter may have a problem.

**PROBABLE CAUSES**

- The audio adapter may be defective.
- The radio and CD player or radio and CD player with CD changer may be defective.
- Damaged harness wires and connectors

**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

**STEP 1. Check the Radio and CD player or radio and CD player with CD changer.**

Check that the Radio and CD player or radio and CD player with CD changer operates normally, and the sound is output.

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

**YES** : Go to Step 2.

**NO** : Troubleshoot the radio and CD player or radio and CD player with CD changer (Refer to [P.54A-186](#)).

**STEP 2. Check the AUX mode.**

Check if the AUX mode of the radio and CD player or radio and CD player with CD changer is set.

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

**YES** : Go to Step 3.

**NO** : Set the AUX mode.

**STEP 3. Check the AUX adapter.**

Check if the AUX adapter is normal. (Refer to [P.54A-269](#).)

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

**YES** : Go to step 4.

**NO** : Replace the AUX adapter.

**STEP 4. Check that the AUX adapter and the AUX box are connected to the DIN cable normally.****Q: Are they connected to the DIN cable normally?**

**YES** : Go to Step 5.

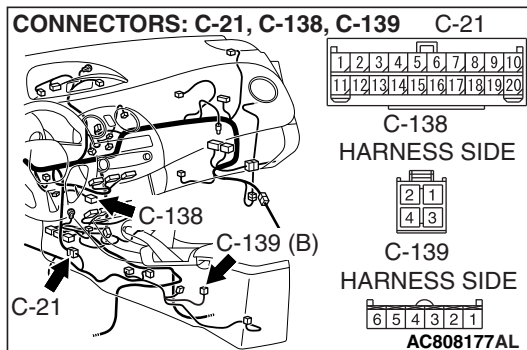
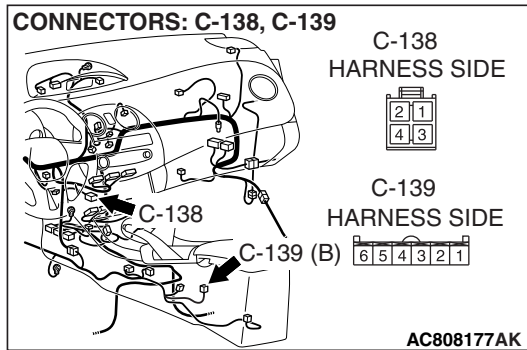
**NO** : Repair the connection.

**STEP 5. Check if the DIN cable is damaged.****Q: Is the DIN cable damaged or bent?**

**YES** : Repair or replace the DIN cable.

**NO** : Go to Step 6.





**STEP 6. Check AUX adapter connector C-139 and AUX box connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are AUX adapter connector C-139 and AUX box connector C-138 in good condition?**

**YES :** Go to step 7.

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

**STEP 7. Check the wiring harness between AUX adapter connector C-139 (terminal 5, 4, 6) and AUX box connector C-138 (terminal 4, 1, 2).**

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

*NOTE: Also check intermediate connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-21 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between AUX adapter connector C-139 (terminal 5, 4, 6) and AUX box connector C-138 (terminal 4, 1, 2) in good condition?**

**YES :** Replace the audio adapter, and go to Step 8.

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

**STEP 8. Replace the radio and CD player or radio and CD player with CD changer temporarily, and check the trouble symptom.**

Replace the radio and CD player or radio and CD player with CD changer temporarily, and check that the sound is output from the speaker.

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

**YES :** Replace the radio and CD player or radio and CD player with CD changer.

**NO :** Replace the AUX box.



**INSPECTION PROCEDURE 10: Noise: Noise is present while moving (AM).****STEP 1. Ask the driver about the noise.**

- (1) Find out the following information from the owner.
- (2) Place where the noise occurs.
- (3) Locality conditions (valley, mountain, etc).
- (4) Name and frequency of stations affected by noise.

**Q: What type of noise is detected, vehicle noise or external noise?**

**Vehicle noise :** It may not be possible to prevent noise if the signal is weak. Go to step 2.

**External noise :** In almost all cases, prevention on the receiver side is next to impossible when the signal is weak. Go to Step 4.

**STEP 2. Ask the driver about the location where the noise occurs.****Q: Does the noise occur when entering or near a particular structure (building, tunnel, mountain, etc)?**

**YES :** Go to Step 3.

**NO :** Go to Step 4.

**STEP 3. Check if the noise can be eliminated by adjusting the radio.**

- (1) Adjust the radio as follows.
- (2) Change to a different station with a stronger signal. This will boost the system's resistance to outside interference.
- (3) Suppress high tones to reduce noise.

**Q: Has the noise been eliminated?**

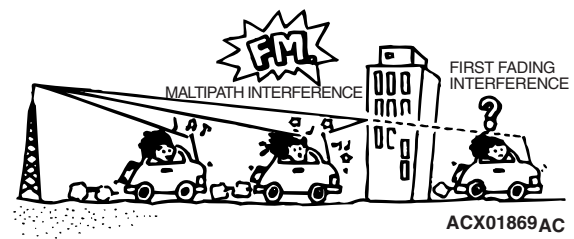
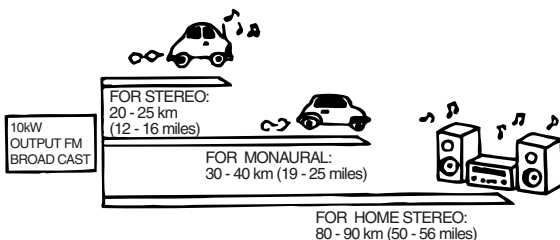
**YES :** The noise has now been eliminated. Inform the customer that it is normal to hear noise while receiving a weak station.

**NO :** Go to Step 4.

**STEP 4. Check for the noise.****Q: Does noise still exist?**

**YES :** If there is still more noise than on other similar radio, find out the type of noise. Ask the owner for the name and frequency of the affected stations, and consult with the radio manufacturer service center.

**NO :** System is operating normally.

**INSPECTION PROCEDURE 11: Noise: Noise is present while moving (FM).****DIAGNOSIS**

**NOTE:** FM waves have the same properties as light, and can be deflected and blocked. FM signal reception is severely degraded in the shadow of obstructions such as buildings or mountains. An FM receiver will then only receive a reflected signal.

1. The signal becomes weak as the distance from the station's transmission antenna increases. The signal strength received depends on the signal strength of the transmitting station and intervening obstructions such as buildings and hills. Generally speaking, the area of good reception is approximately 20 – 25 km (12 – 16 miles) for stereo reception, and 30 – 40 km (19 – 25 miles) for monaural reception.
2. The signal will becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the station transmitter and the vehicle), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>



3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. When moving, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitive buzzing.>
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

**After taking measures to prevent the noise, check that no noise occurs.**

- Change to a different station with a stronger signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Does vehicle have an antenna which extends? If not eliminate this step.

**If there is noise, the following causes can be considered.**

- If due to vehicle noise: It may not be possible to prevent noise if the signal is weak.
- If due to external noise: In almost all cases, prevention on the receiver side is not possible. Weak signals especially are susceptible to interference.

If there is more noise than on radios in other vehicles, find out the noise condition and the name and frequency of the receiving stations from the owner, and consult with the radio manufacturer's service center.

---

## INSPECTION PROCEDURE 12: Noise: Sound mixed with noise, only at night (AM).

---

The following can be considered as possible causes of noise occurring only at night.

1. It is significantly easier to receive long-distance signals at night. This means that even stations that are received without a problem during the day may experience problems at night. Remember that the weaker station is more susceptible to interference. The appearance of a beat sound may occur in the evening. A beat sound is created when two signals close in frequency interfere with each other. A common sign of this type of interference is a repetitious high-pitched sound that may overpower the desired radio station. This sound is generated not only by sound signals but electrical waves as well.
2. The charging system may also be a source of noise. When diagnosing radio noise, do not overlook the possibility of a problem with the vehicle's generator.

---

### STEP 2. Check that the noise fades away by the following action.

Tune to a station with a stronger signal.

#### Q: Does noise still exist?

**YES :** Consult the radio manufacturer's service center.

**NO :** The procedure is complete.

---

### STEP 3. Check that the noise fades away when the vehicle harness is moved away from the radio (if the harness is not in the proper position).

#### Q: Does the noise fade away when the vehicle harness is moved away from the radio (If the harness is not in the proper position)?

**YES :** Repair the wiring harness.

**NO :** If there is more noise than other radios, consult the radio manufacturer's service center.

## DIAGNOSIS

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### STEP 1. Check the vehicle's lighting system.

#### Q: Does the noise disappear when the vehicles headlights are turned "OFF"?

**YES :** Go to Step 2.

**NO :** Go to Step 3.



---

**INSPECTION PROCEDURE 13: Noise: Noise is overpowering both AM and FM.**

---

**DIAGNOSIS**

---

**STEP 1. Verify that the noise occur when the engine is stopped or the engine is running.****Q: Does noise occur when the engine is stopped or the engine is running?****When the engine is stopped :** Go to Step 2.**When the engine is running :** Check the vehicle's noise suppressor. (Refer to Inspection Procedure 15 [P.54A-244](#)).

---

**STEP 2. Check that the noise fades away by the following actions.**

(1) Tune to a station with a stronger wave.

(2) Adjust the sound quality to suppress high tones.

**Q: Is the noise eliminated?****YES :** Inspection complete.**NO :** Go to Step 3.

---

**STEP 3. Verify that the radio is correctly grounded****Q: Is the radio correctly grounded?****YES :** Go to Step 4.**NO :** Securely install the radio and CD player or the radio and CD player with CD changer to the vehicle body.

---

**STEP 4. Check the connection of the antenna plug and radio and CD player or radio and CD player with CD changer.****Q: Is the antenna plug thoroughly connected to the radio and CD player or radio and CD player with CD changer?****YES :** Go to Step 6.**NO :** Go to Step 5.

---

**STEP 5. Verify that the noise is eliminated when the antenna plug is properly attached.****Q: Is the noise eliminated?****YES :** Consult the radio manufacturer's service center.**NO :** Go to Step 6.

---

**STEP 6. Verify that the antenna is in good condition and is it properly mounted.****Q: Is the antenna in good condition and is it properly mounted?****YES :** Consult the radio manufacturer's service center.**NO :** Go to Step 7.

---

**STEP 7. Clean the antenna plug and ground wire mounting area. Mount the antenna securely.**

*NOTE: Noise encountered during FM reception only due to differences in FM and AM system, FM is not as susceptible as AM to interference from engines, power lines, lighting, etc. On the other hand, due to the characteristics of FM waves, there are sometimes cases of noise or distortion which are generated by typical noise interference (first fading and multipath). (Refer to Inspection Procedure 9 [P.54A-241](#)). <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>*

**Q: Is the antenna in good condition?****YES :** Inspection complete.**NO :** Clean or repair it.

---

**INSPECTION PROCEDURE 14: Noise: Excessive noise on AM and FM.**

---

**DIAGNOSIS**

Radio reception can be affected by Radio Frequency (RF) emissions from a variety of sources. The disturbance is even greater if the station is weak or poorly tuned. FM reception is not as sensitive to disturbances as AM. AM reception is sensitive to electrical disturbances such as power lines, lightening and other types of similar electrical phenomena.

---

**STEP 1. Check if the customer heard the noise under any of the following conditions.**

- A motorcycle was passing.
- levin was flashing.
- Passed beneath a power line.
- Passed beneath a telephone line.
- Passed by a signal generator.
- Passed by any other sources of electrical noise.
- Passed under a bridge or through a tunnel.



**Q: Did the noise occur during any of the circumstances listed above?**

**YES :** The observed noise is normal.

**NO :** Go to Step 2.

## STEP 2. Compare the customers radio to another identical model.

Operate the radio in a vehicle with a known good audio system of the same type as the customer's.

**Q: Is there more noise on the customers radio?**

**YES :** Check all power and ground connections. If all connections are in good condition, consult the radio manufacturers service center.

**NO :** The observed noise is normal.

## INSPECTION PROCEDURE 15: Noise: Noise is detected with engine running.

### DIAGNOSIS

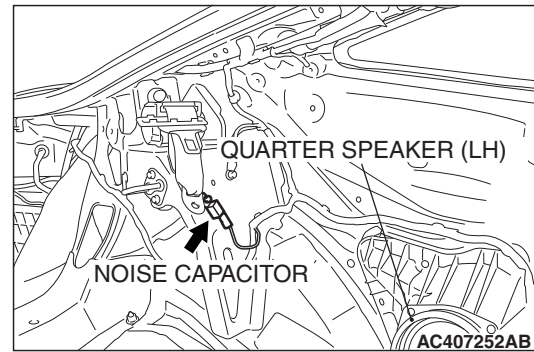
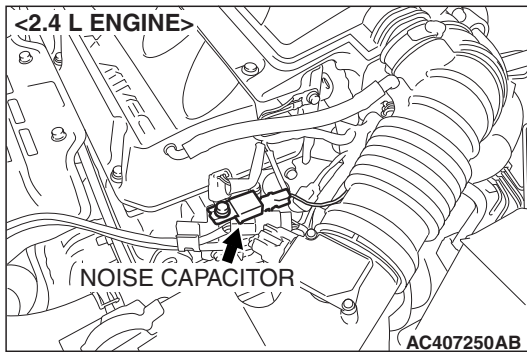
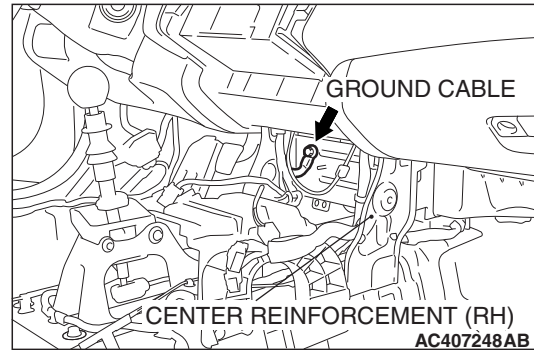
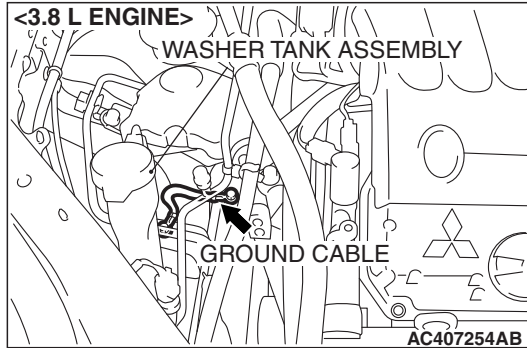
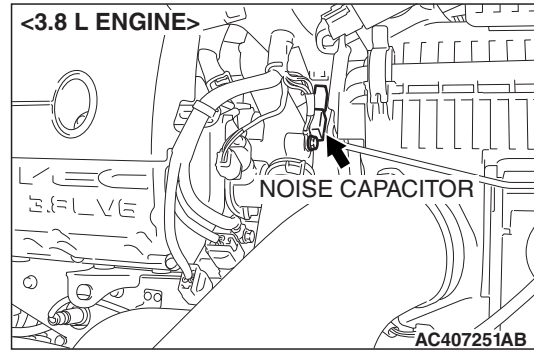
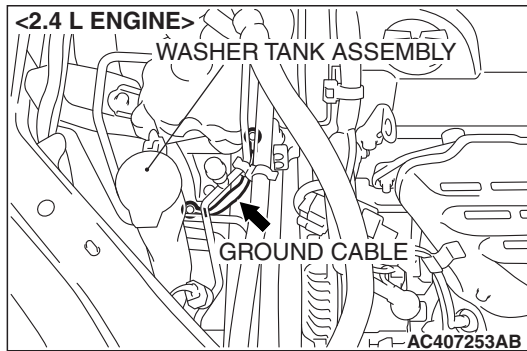
#### CAUTION

- **Never connect a noise filter to the high tension cable (spark plug wire). Spark plug wires incorporate resistors which have the effect of suppressing noise. If a spark plug wire is found to be causing noise, it must be replaced.**
- **Confirm that the noise is not from an external source.**
- **Noise prevention should be performed by suppressing strong sources of noise first.**

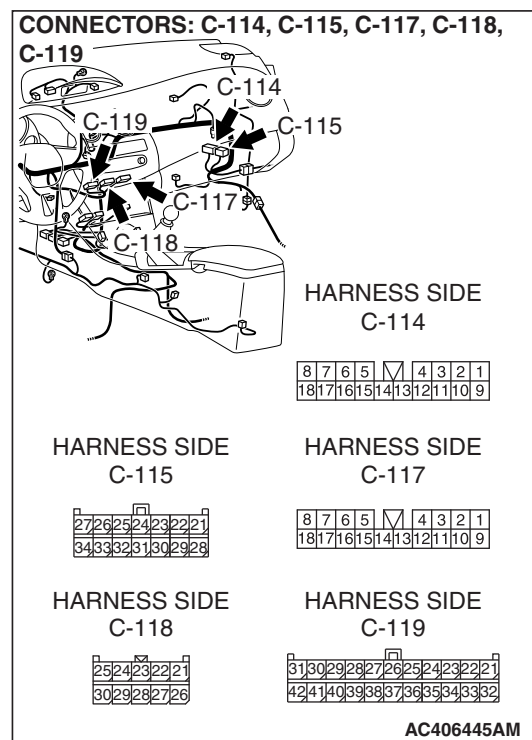
*NOTE: Voltage surges can be induced in the electrical system by the collapse of a field (i.e. When power is removed from the coil in an A/C compressor clutch). This induced voltage surge will radiate a Radio Frequency (RF) signal that is picked up by the audio unit. In the case of the compressor clutch a "pop" will be heard through the speakers. The capacitor, installed on this vehicle, will store the excess voltage and prevent the production of RF noise. This is because the capacitor will charge and discharge as the voltage fluctuates. This has the effect of "attracting" noise and bleeding it to ground without interfering with the normal flow of current through the system.*

DESCRIPTION OF NOISE	CONDITIONS	CAUSE	SOLUTION
AM, FM: ignition noise (popping, snapping, cracking, buzzing)	<ul style="list-style-type: none"> <li>• Increasing the engine speed causes the generator whine to speed up and the volume to decrease.</li> <li>• Disappears when the ignition switch is turned to "ACC", and engine is off.</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical interference from the spark plugs.</li> <li>• Engine noise.</li> </ul>	<ul style="list-style-type: none"> <li>• Check or replace the ground cable.</li> <li>• Check or replace spark plug wires.</li> <li>• Check or replace the noise capacitor.</li> </ul>
Other electrical components	–	<ul style="list-style-type: none"> <li>• Noise may intensify due to aging electrical components.</li> </ul>	<ul style="list-style-type: none"> <li>• Repair or replace the electrical components.</li> </ul>
Static electricity (cracking, crinkling)	Noise disappears when the vehicle is completely stopped.	<ul style="list-style-type: none"> <li>• Noise occurs when parts or wiring move and contact vehicle body.</li> </ul>	<ul style="list-style-type: none"> <li>• Return parts or wiring to their proper position.</li> </ul>
Static electricity (cracking, crinkling)	<ul style="list-style-type: none"> <li>• Various noises are produced depending on the body part of the vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>• This may be due to the recent removal of the front hood, bumpers, exhaust pipe and muffler, suspension, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Properly ground parts.</li> <li>• Properly ground all body parts.</li> </ul>







**INSPECTION PROCEDURE 16: Noise: Noise appears during vibration or shocks.****DIAGNOSIS****STEP 1. Check the installation of antenna feeder cable.****Q: Is the antenna feeder cable installed securely?****YES :** Go to Step 2.**NO :** Ensure that the antenna base and the radio and CD player or radio and CD player with CD changer are installed securely. Check that there is no noise.**STEP 2. Check radio and CD player or radio and CD player with CD changer connector C-117 or radio and CD player connector C-118 or radio and CD player with CD changer connector C-119 or amplifier connector C-114, C-115 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are radio and CD player or radio and CD player with CD changer connector C-117 or radio and CD player connector C-118 or radio and CD player with CD changer connector C-119 or amplifier connector C-114, C-115 in good condition?****YES :** Go to Step 3.**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that there is no noise.



---

**STEP 3. Check that noise appears when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station.**

*NOTE: Body static electricity from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. There are no measures to discharge the static electricity of the vehicle body. Check that there is no noise.*

**Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?**

**YES :** Go to Step 4.

**NO :** It may be static electricity noise.

---

**STEP 4. Verify that the radio is correctly grounded.**

**Q: Is the radio correctly grounded?**

**YES :** Go to Step 5.

**NO :** Tighten the screw securely.

---

**STEP 5. Check by replacing radio and CD player or radio and CD player with CD changer.**

**Q: Do the other radio and CD player or radio and CD player with CD changer work normally?**

**YES :** Repair or replace the original radio and CD player or radio and CD player with CD changer.

**NO :** Either repair or replace the antenna assembly.

---

## INSPECTION PROCEDURE 17: Noise: Noise is present while moving (FM).

---

### DIAGNOSIS

---

**STEP 1. Check the radio after adjusting it.**

**Q: Readjust the radio. Is the noise eliminated?**

**YES :** Check that there is no noise.

**NO :** Go to Step 2.

---

**STEP 2. Check with several broad casting.**

*NOTE: Multipath noise and fading noise: Because of the frequency of FM waves in extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.*

- **Multipath noise**

*This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*

- **Fading noise**

*This is a buzzing noise that occurs when the broadcast signal is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.*

**Q: Is the problem station or location specific?**

**YES :** The effect of an electrical field condition (multipath noise, fading noise) could be the cause. Check that there is not noise.

**NO :** Go to Step 3.



**STEP 3. Check that noise appears when the radio switch is turned on while the vehicle is stopped.**

*NOTE: Body static electricity from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. There are no measures to discharge the static electricity of the vehicle body. Check that there is no noise.*

**Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?**

**YES :** Go to Step 4.

**NO :** It may be static electricity noise.

**STEP 4. Verify that the radio is correctly grounded.**

**Q: Is the radio correctly grounded?**

**YES :** Go to Step 5.

**NO :** Check that there is no noise.

**STEP 5. Check by replacing radio and CD player or radio and CD player with CD changer.**

**Q: Do the other radio and CD player or radio and CD player with CD changer work normally?**

**YES :** Repair or replace the original radio and CD player or radio and CD player with CD changer.

**NO :** Either repair or replace the antenna assembly.

## INSPECTION PROCEDURE 18: Noise: Constant noise.

### DIAGNOSIS

Use the Symptom Chart to diagnose the possible cause(s) of the noise. Noise is often created by the following factors:

- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions

- Time period

If there are still problems with noise, even after performing inspection procedures 10 to 17, obtain information on the factors listed above. Determine whether the problem occurs on AM or FM, the station names, frequencies, etc. and contact the radio manufacturer's service center.

## INSPECTION PROCEDURE 19: Radio: No reception (AM).

### DIAGNOSIS

**STEP 1. Check to see if inspections are taking place in an area exposed to special electric fields.**

**Q: Are inspections taking place under special electric field conditions? (underground garage, inside a building, etc.)?**

**YES :** Go to Step 2.

**NO :** Go to Step 3.

**STEP 2. Move the vehicle and check the radio.**

Move the vehicle to a good reception area that is not exposed to special electric fields.

**Q: Is reception of the strongest radio frequency possible within the area?**

**YES :** There is no action to be taken.

**NO :** Go to Step 3.

**STEP 3. Tune the radio, and then check it.**

**Q: Did the sensitivity improve after tuning?**

**YES :** There is no action to be taken.

**NO :** Go to Step 4.

**STEP 4. Check the antenna plug is connected to the radio and CD player or radio and CD player with CD changer.**

**Q: Is the antenna plug thoroughly connected to the radio and CD player or radio and CD player with CD changer?**

**YES :** Go to Step 5.

**NO :** Thoroughly the antenna plug connect to the radio and CD player or radio and CD player with CD changer.



---

**STEP 5. Check by temporarily replacing radio and CD player or radio and CD player with CD changer.**

**Q: Do the other radio and CD player or radio and CD player with CD changer work normally?**

**YES :** Repair or replace the original radio and CD player or radio and CD player with CD changer.

**NO :** Either repair or replace the antenna assembly.

---

## INSPECTION PROCEDURE 20: Radio: Poor reception.

---

### DIAGNOSIS

---

**STEP 1. Check to see if inspections are taking place in an area exposed to special electric fields.**

**Q: Are inspections taking place under special electric field conditions? (underground garage, inside a building, etc.)?**

**YES :** Go to Step 2.

**NO :** Go to Step 3.

---

**STEP 2. Move the vehicle and check the radio.**

Move the vehicle to a good reception area that is not exposed to special electric fields.

**Q: Is reception of the strongest radio frequency possible within the area?**

**YES :** The procedure is complete.

**NO :** Go to Step 3.

---

**STEP 3. Tune the radio, and then check it.**

**Q: Did the sensitivity improve after tuning?**

**YES :** The procedure is complete.

**NO :** Go to Step 4.

---

**STEP 4. Check with several broadcasting stations.**

*NOTE: Two types of noise are addressed in this procedure, multipath and fading noise. The frequency of FM waves is extremely high. This makes them susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in many ways.*

- *Multipath noise is the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*
- *A fading or buzzing noise may occur when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates within a narrow range.*

**Q: Is the abnormality in reception generated only within a certain range?**

**YES :** The procedure is complete.

**NO :** Go to Step 5.

---

**STEP 5. Check the antenna plug connection to the radio and CD player or radio and CD player with CD changer.**

**Q: Is the antenna plug thoroughly connected to the radio and CD player or radio and CD player with CD changer?**

**YES :** Go to Step 6.

**NO :** Thoroughly connect the antenna plug and the radio and CD player or radio and CD player with CD changer.

---

**STEP 6. Check by replacing radio and CD player or radio and CD player with CD changer.**

**Q: Do the other radio and CD player or radio and CD player with CD changer work normally?**

**YES :** Replace the original radio and CD player or radio and CD player with CD changer. Check that a poor reception is resolved.

**NO :** Either repair or replace the antenna assembly.



---

**INSPECTION PROCEDURE 21: Radio: Distortion on AM and/or FM.**

---

**DIAGNOSIS**

---

**STEP 1. Check the level of distortion.****Q: How much distortion is there?****Ocasional distortion :** Go to Step 2.**Constant distortion :** Go to Step 3.

---

**STEP 2. Check the location of the distortion.****Q: Is there distortion when the vehicle is near the radio station?****YES :** The antenna is receiving too strong a signal.**NO :** Go to Step 3.

---

**STEP 3. Check the wires at each speaker.****Q: Are the speaker wires contacting the paper speaker cone?****YES :** Move the speaker wires away from the paper speaker cone**NO :** Go to Step 4.

---

**STEP 4. Remove the speakers, and check the paper cone for foreign material or damage.****Q: Is there foreign material or damage on the paper cone of the speaker?****YES :** Repair or replace the speakers.**NO :** Go to Step 5.

---

**STEP 5. Check for distortion with the speaker installed.****Q: Does a distortion occur?****YES :** Install the speaker securely.**NO :** Repair or replace the radio and CD player or radio and CD player with CD changer.

---

**INSPECTION PROCEDURE 22: Radio: Distortion on FM only.**

---

**DIAGNOSIS**

---

**STEP 1. Check that the distortion is present when the radio is tuned to another station.****Q: Does the distortion persist when the radio is tuned to another station?****YES :** Go to Step 2.**NO :** The signal from that station is too weak.

---

**STEP 2. Relocate the reception area and check the radio.****Q: When relocating the reception area does the distortion increase or decrease?****YES :** The cause may be multipath or fading noise. Multipath noise is the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing). A fading or buzzing noise may occur when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates within a narrow range.**NO :** Replace the radio and CD player or radio and CD player with CD changer.



---

**INSPECTION PROCEDURE 23: Radio: Auto select function inoperative, too few automatic stations are selected.**

---

## DIAGNOSIS

---

### STEP 1. Check the state of the antenna.

Check that there is no damage or crack in antenna.

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

**YES :** Go to Step 2.

**NO :** Repair or replace the antenna.

---

### STEP 2. Check the number of radio stations.

**Q: Are there sufficient numbers of radio stations within the area?**

**YES :** Go to Step 3.

**NO :** Go to Step 4.

---

### STEP 3. Check the distance from the transmission antenna.

**Q: Is there a transmission antenna within a range of 2 miles?**

**YES :** Go to Step 5.

**NO :** Go to Step 4.

---

### STEP 4. Check if there are too few radio stations and if there is no transmission antenna in the vicinity.

Execute automatic selection and check to see that the strongest radio frequency is receivable within the area.

**Q: Is reception of the strongest radio frequency possible within the area?**

**YES :** There is no action to be taken.

**NO :** Go to Step 5.

---

**STEP 5. Check to see if inspections are taking place in an area exposed to special electric fields.**

**Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?**

**YES :** Go to Step 6.

**NO :** Go to Step 7.

---

### STEP 6. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

**Q: Is reception of the strongest radio frequency possible within the area?**

**YES :** There is no action to be taken.

**NO :** Go to Step 7.

---

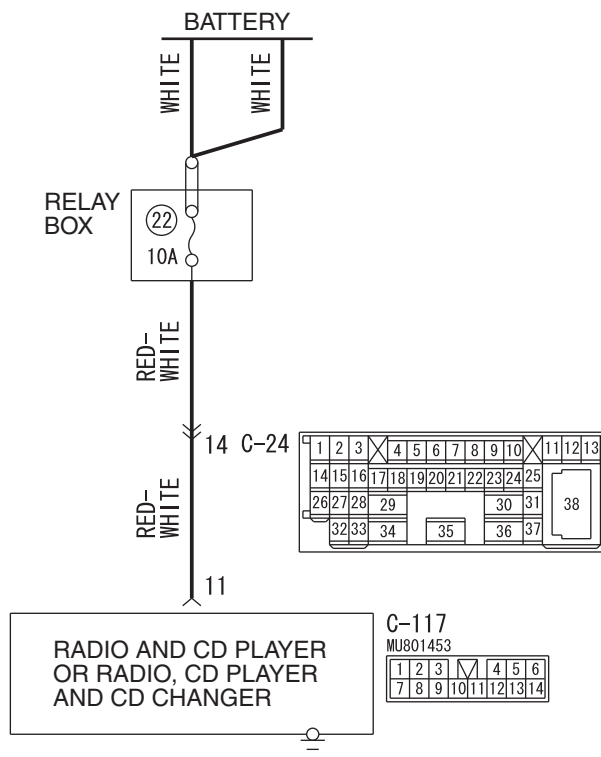
### STEP 7. Check the the antenna feeder cable connection to the radio and CD player or radio and CD player with CD changer.

**Q: Is the antenna feeder cable securely connected to the radio and CD player or radio and CD player with CD changer?**

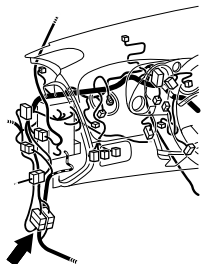
**YES :** Replace the radio and CD player or radio and CD player with CD changer.

**NO :** Connect the antenna feeder cable and the radio and CD player or radio and CD player with CD changer.

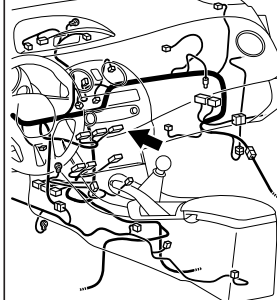


**INSPECTION PROCEDURE 24: Radio: Preset stations are erased.****Memory Backup Power Circuit**

WAP54M014A

**CONNECTOR: C-24**

AC406442AQ

**CONNECTOR: C-117**

AC406444AT

**CIRCUIT OPERATION**

Power is continuously supplied to the radio and CD player or radio and CD player with CD changer.

**TECHNICAL DESCRIPTION (COMMENT)**

The cause is probably a faulty radio and CD player or radio and CD player with CD changer memory backup power supply system circuit.

**TROUBLESHOOTING HINTS**

- Damaged wiring harness or connector.
- Malfunction of the radio and CD player or radio and CD player with CD changer.

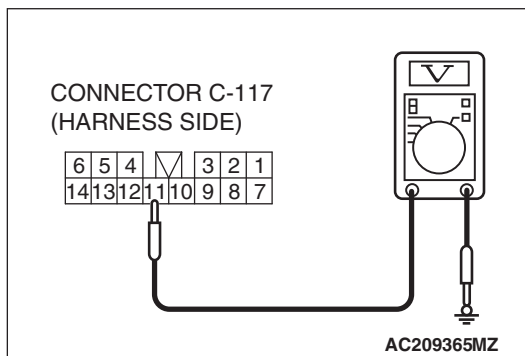
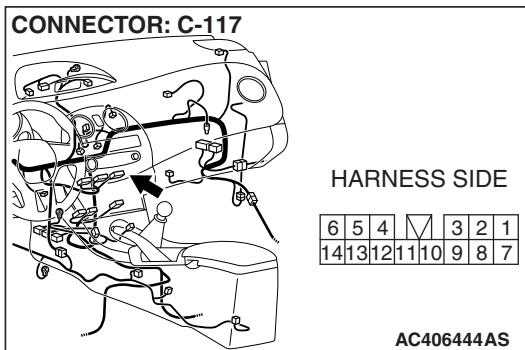


**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness set
- MB992006: Extra Fine Probe

**STEP 1. Measure at radio and CD player or radio and CD player with CD changer connector C-117 in order to check the power supply circuit to the radio and CD player or radio and CD player with CD changer (through the battery).**

- (1) Disconnect radio and CD player or radio and CD player with CD changer connector C-117, and measure at the wiring harness side.



- (2) Measure the voltage between terminal number 11 and ground.

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

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

**YES :** Replace the radio and CD player or radio and CD player with CD changer.

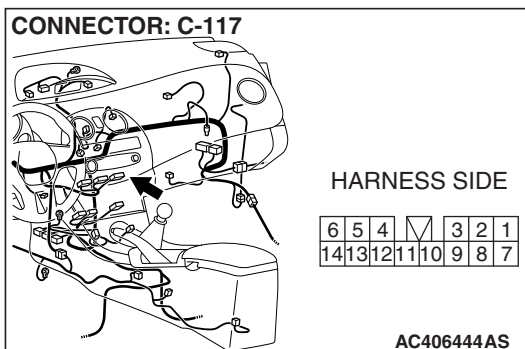
**NO :** Go to Step 2.

**STEP 2. Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is radio and CD player or radio and CD player with CD changer connector C-117 in good condition?**

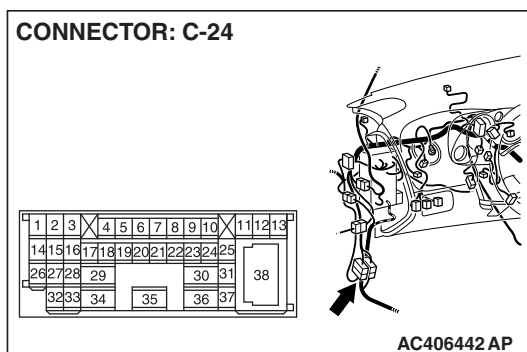
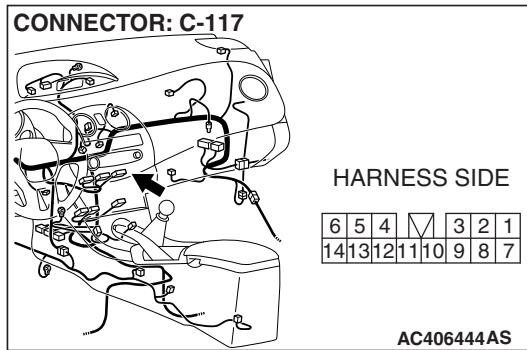
**YES :** Go to Step 3.

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





**STEP 3. Check the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 11) and the battery.**



*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between radio and CD player or radio and CD player with CD changer connector C-117 (terminal 11) and the battery in good condition?**

**YES :** Repair or replace the radio and CD player or radio and CD player with CD changer.

**NO :** Repair the wiring harness.

**STEP 4. Check the installation condition of the radio and CD player or radio and CD player with CD changer.**

*NOTE: The radio and CD player or radio and CD player with CD changer are grounded to the deck crossmember directly.*

**Q: Are the radio and CD player or radio and CD player with CD changer installed correctly?**

**YES :** Replace the radio and CD player or radio and CD player with CD changer.

**NO :** Install the radio and CD player or radio and CD player with CD changer properly.

## INSPECTION PROCEDURE 25: CD player, CD auto changer: CD can not be Inserted.

### DIAGNOSIS

**STEP 1. Check that a CD has been already loaded.**

**Q: Has a CD been already loaded?**

**YES :** Take out the CD (If the CD can not be ejected, refer to INSPECTION PROCEDURE 29 [P.54A-256](#)). Check that a CD can be inserted.

**NO :** Go to Step 2.

**STEP 2. Check how a CD is inserted.**

Ensure that the ignition switch is at 'ACC' or 'ON'.

*NOTE: If you try to load a CD when the ignition switch is at the positions other than 'ACC' or 'ON,' the CD will not be inserted completely and then rejected.*

**Q: If you try to load the CD, does the CD stops halfway and then rejected?**

**YES :** Refer to INSPECTION PROCEDURE 29 [P.54A-256](#).

**NO :** Go to Step 3.



---

**STEP 3. Check after the CD is loaded.**

*NOTE: Even though the CD is loaded, 'E01' [vehicles with multi-center display] sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.*

**Q: Though the CD is inserted completely, is 'E01' [vehicles with multi-center display] displayed and the CD ejected?**

**YES :** Go to Step 4.

**NO :** There is no action to be taken.

---

**STEP 4. Check the CD.**

Check the CD for the conditions below:

- Is the CD loaded with its label facing down?
- Is the recorded face dirty or scratched?
- Is there dew on the recorded face?

**Q: Is the CD in good condition?**

**YES :** Go to Step 5.

**NO :** The original CD is defective.

---

**STEP 5. Check again using a normal CD, which is not dirty or scratched.**

- Load another normal CD.
- Check that the CD player recognizes and plays the CD.

**Q: When you substitute another normal CD, is the CD loaded correctly?**

**YES :** The original CD is defective.

**NO :** Replace the CD player.

---

**INSPECTION PROCEDURE 26: CD player, CD auto changer: No sound (CD only).**

---

**DIAGNOSIS**

---

**STEP 1. Check again using another CD, which is not dirty or scratched.**

**Q: When you substitute another normal CD, is the CD played normally?**

**YES :** The original CD is defective. Replace the CD.

**NO :** Go to Step 2.

---

**STEP 2. Check power supply to the CD player when the ignition switch is at "ACC" or "ON" position.**

**Q: Is the radio and CD player energized when the ignition switch is turned to the "ACC" or "ON" position?**

**YES :** Replace the radio and CD player or radio and CD player with CD changer.

**NO :** Check the memory backup power supply circuit. Refer to Inspection Procedure 1 [P.54A-188](#).

---

**INSPECTION PROCEDURE 27: CD player, CD auto changer: CD sound skips.**

---

**DIAGNOSIS**

---

**STEP 1. Check the state in which the sound on the CD jumps.**

**Q: Does the sound jump when the car is parked?**

**YES :** Go to Step 2.

**NO :** Go to Step 4.

---

**STEP 2. Check the surface of the CD.**

**Q: Are there any scratches or dirt on the CD?**

**YES :** The CD is defective if there are any scratches. Replace the CD.

**NO :** Go to Step 3.



**STEP 3. Check when replacing with a CD that can be played normally without any scratches or soiling.**

**Q: Does the CD play normally when replaced with a CD that is not scratched or dirty and can play normally?**

**YES :** Defective CD used. Replace the CD.

**NO :** Go to Step 4.

**STEP 4. Check by tapping the radio and CD player or radio and CD player with CD changer.**

*NOTE: Check by using a known-good CD which is free from scratches, dirt or any other abnormality.*

**Q: Does the sound jump when tapping the radio and CD player or radio and CD player with CD changer?**

**YES :** Securely mount the radio and CD player or radio and CD player with CD changer.

**NO :** Replace the radio and CD player or radio and CD player with CD changer according to the instructions of the service shop.

---

**INSPECTION PROCEDURE 28: CD player, CD auto changer: Sound quality is poor.**

---

## DIAGNOSIS

---

**Check to see that the CD can be played normally and that it is free of any scratches or soiling.**

Replace with better sound quality CD.

**Q: Is the sound quality better replacing the CD with a clean CD without any scratches that can be played?**

**YES :** The CD is defective. Replace the CD.

**NO :** Replace the radio and CD player or radio and CD player with CD changer.

---

**INSPECTION PROCEDURE 29: CD player, CD auto changer: CD cannot be ejected.**

---

## DIAGNOSIS

---

**Check the power of ignition switch "ACC".**

**Q: Does the radio and CD player or radio and CD player with CD changer power turn ON when the ignition switch is in the "ACC" or "ON" position?**

**YES :** Either replace the radio and CD player or radio, CD player and CD changer.

**NO :** Check the memory backup power supply circuit. Refer to Inspection Procedure 1

[P.54A-188.](#)

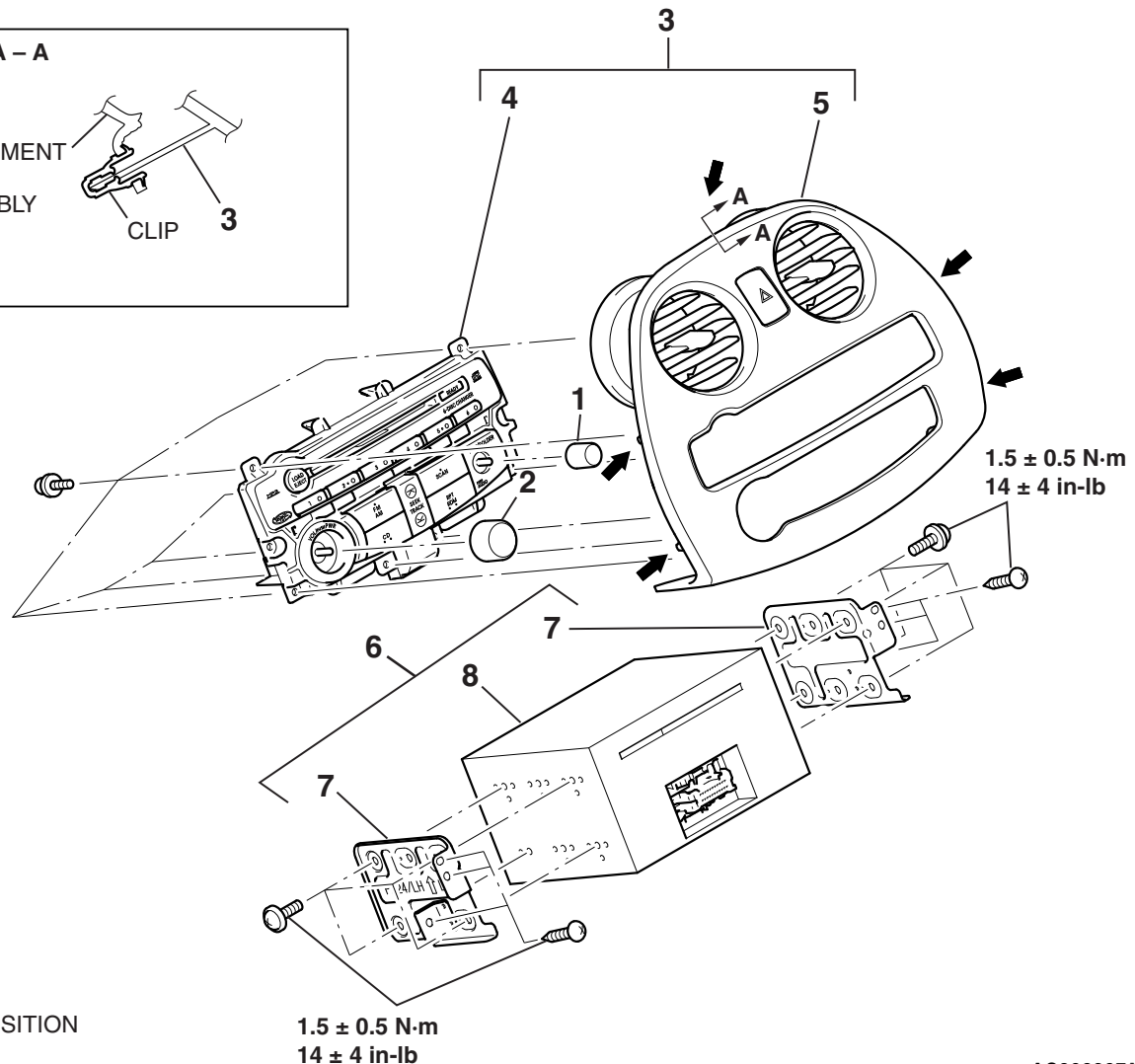
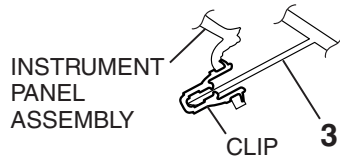


## RADIO WITH CD PLAYER

### REMOVAL AND INSTALLATION

M1544010900450

#### SECTION A - A



AC808297AB

#### RADIO REMOVAL STEPS

1. AUDIO EQUIP KNOB A
2. AUDIO EQUIP KNOB B
3. INSTRUMENT CENTER PANEL ASSEMBLY
4. RADIO PANEL
5. INSTRUMENT CENTER PANEL

#### RADIO REMOVAL STEPS (Continued)

6. RADIO, CD PLAYER ASSEMBLY OR RADIO, CD PLAYER AND CD CHANGER ASSEMBLY
7. AUDIO EQUIP BRACKET
8. RADIO, CD PLAYER OR RADIO, CD PLAYER AND CD CHANGER

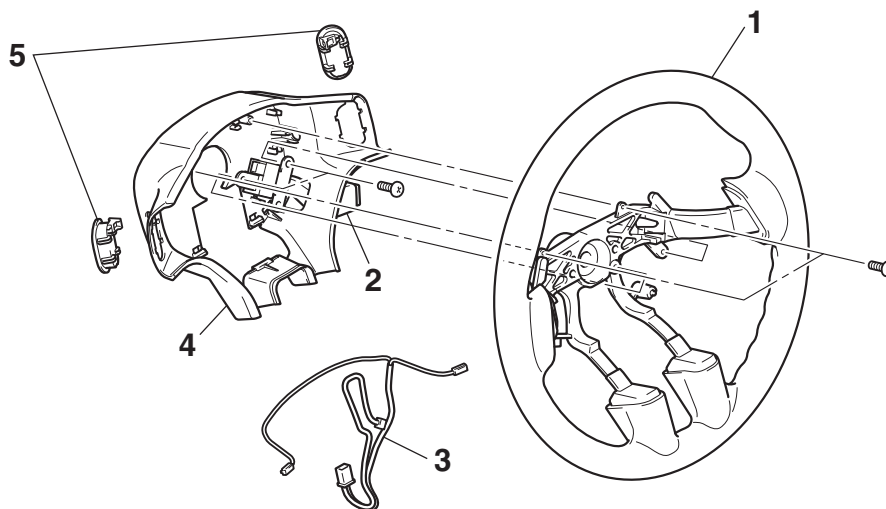


**STEERING WHEEL AUDIO REMOTE CONTROL SWITCH <VEHICLES WITH AUDIO AMPLIFIER>****REMOVAL AND INSTALLATION**

M1544010100175

**⚠ WARNING**

- Before removing the air bag module, refer to **GROUP 52B, Service Precautions P.52B-28 and Air Bag Module and Clock Spring P.52B-423.**
- When removing and installing the steering wheel, do not let it bump against the air bag module.



AC405559 AB

**REMOVAL STEP**

- AIR BAG MODULE ASSEMBLY (REFER TO GROUP 52B, AIR BAG MODULE(S) AND CLOCK SPRING P.52B-423.)
- STEERING WHEEL ASSEMBLY (REFER TO GROUP 37, STEERING WHEEL P.37-27.)

&lt;&lt;A&gt;&gt;

&gt;&gt;A&lt;&lt;

**REMOVAL STEP (Continued)**

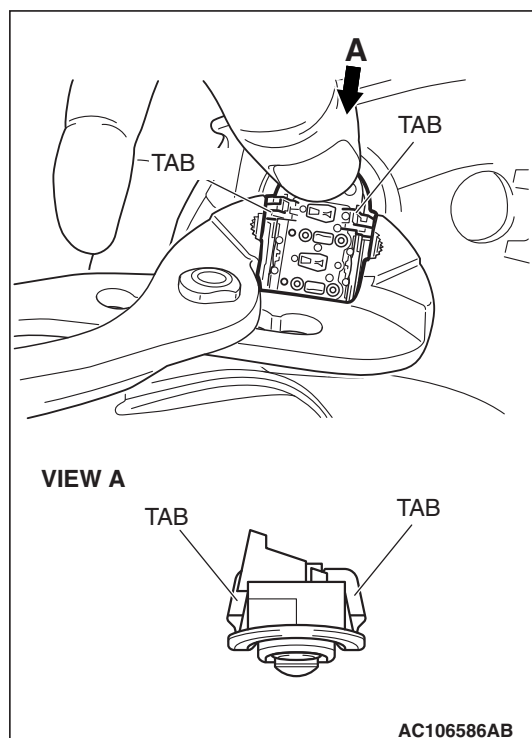
1. STEERING WHEEL
2. AUTO-CRUISE CONTROL SWITCH
3. HARNESS ASSEMBLY
4. LOWER COVER
5. REMOTE CONTROLLED RADIO SWITCH



## REMOVAL SERVICE POINT

<<A>> REMOTE CONTROLLED RADIO SWITCH  
REMOVAL

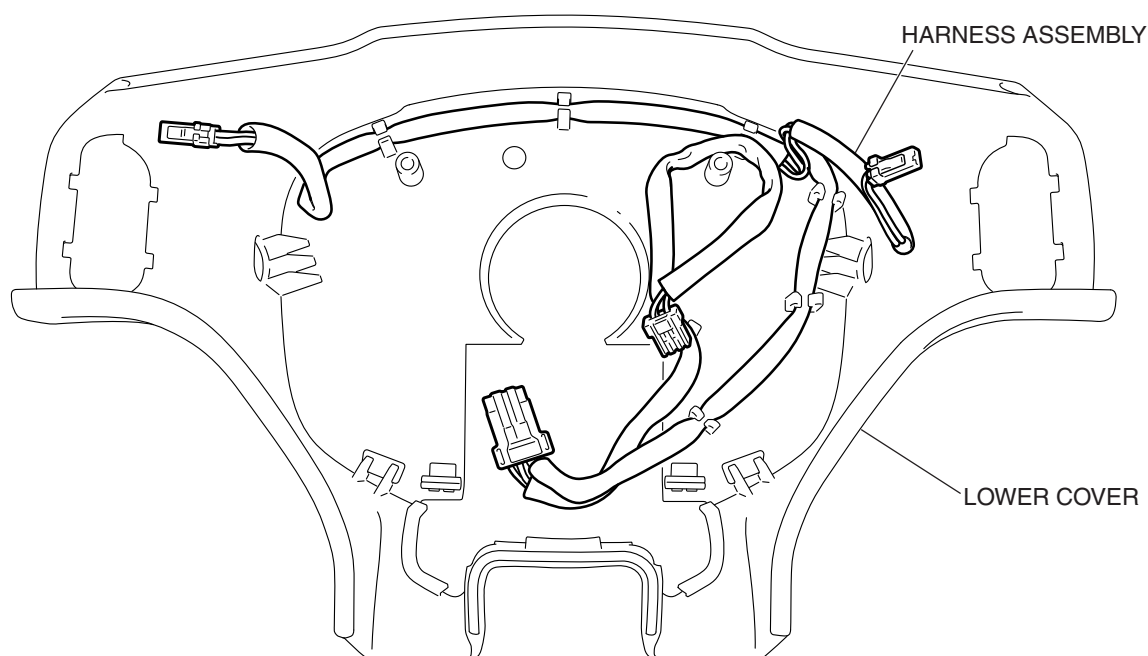
Use a tool to hold the tabs on the remote controlled radio switch, and push out the switch with your finger.



## INSTALLATION SERVICE POINT

## &gt;&gt;A&lt;&lt; HARNESS ASSEMBLY INSTALLATION

Attach the harness assembly to the position shown in the illustration.



AC405875AB

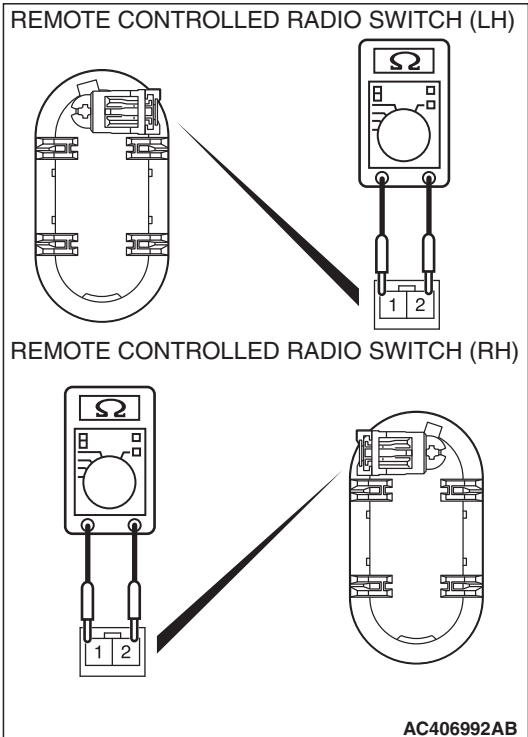


INSPECTION

M1544009700344

REMOTE CONTROLLED RADIO SWITCH  
CONTINUITY CHECK

Use an ohmmeter to measure the resistance value between the terminals.



SWITCH POSITION	MEASUREMENT VALUE (RH)	MEASUREMENT VALUE (LH)
Not pushed	Approximately 24.0 kΩ	Approximately 24 kΩ
Upper	Approximately 5.3 kΩ	Approximately 1.1 kΩ
Center	Less than 2 Ω	Approximately 460 kΩ
Lower	Approximately 9.2 kΩ	Approximately 2.9 kΩ



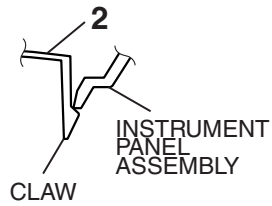
## SPEAKER

### REMOVAL AND INSTALLATION

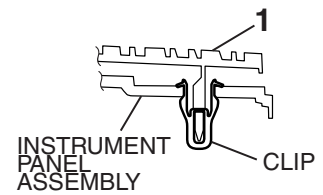
M1544002600830

#### <TWEETER/DOOR SPEAKER/QUARTER SPEAKER>

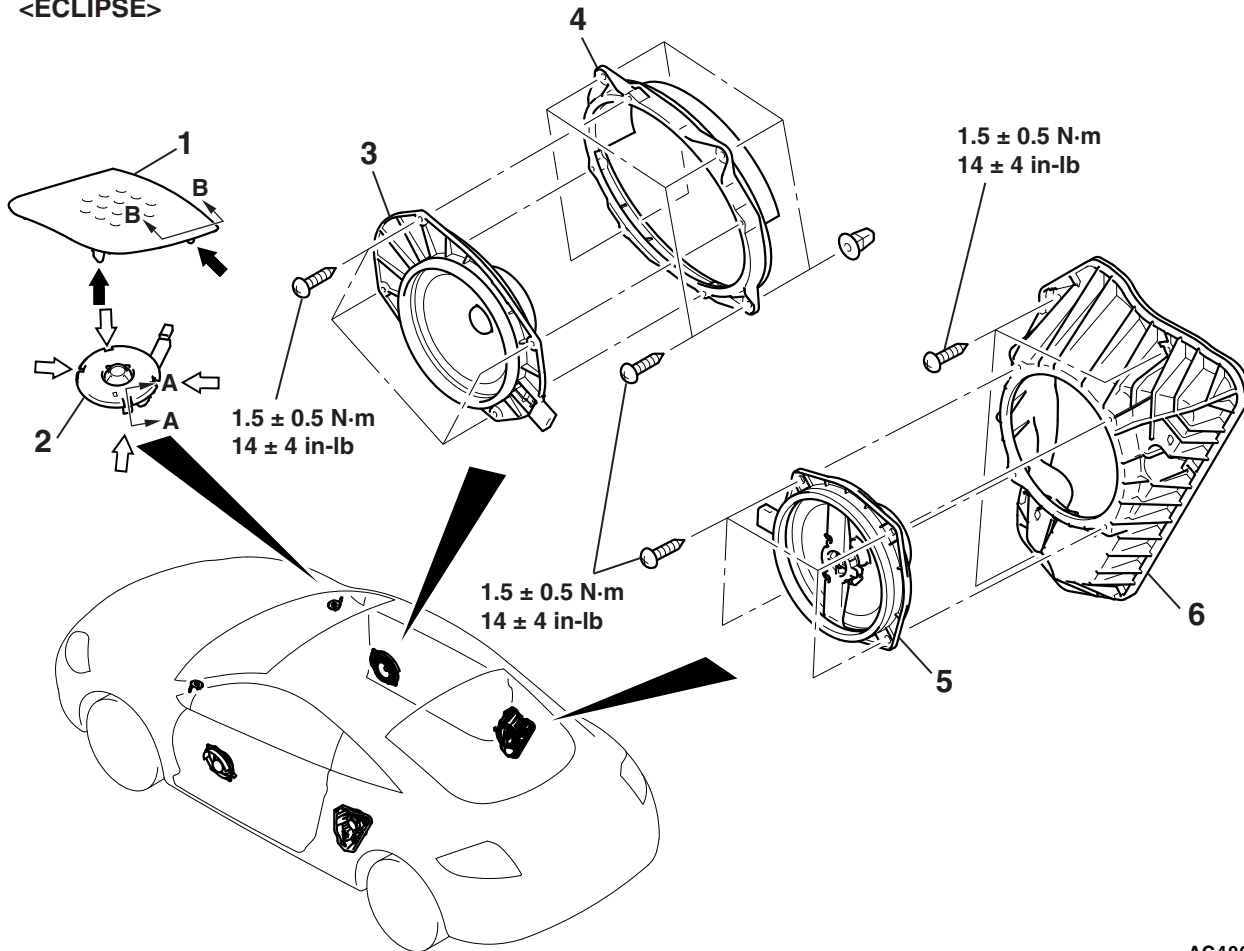
SECTION A - A



SECTION B - B



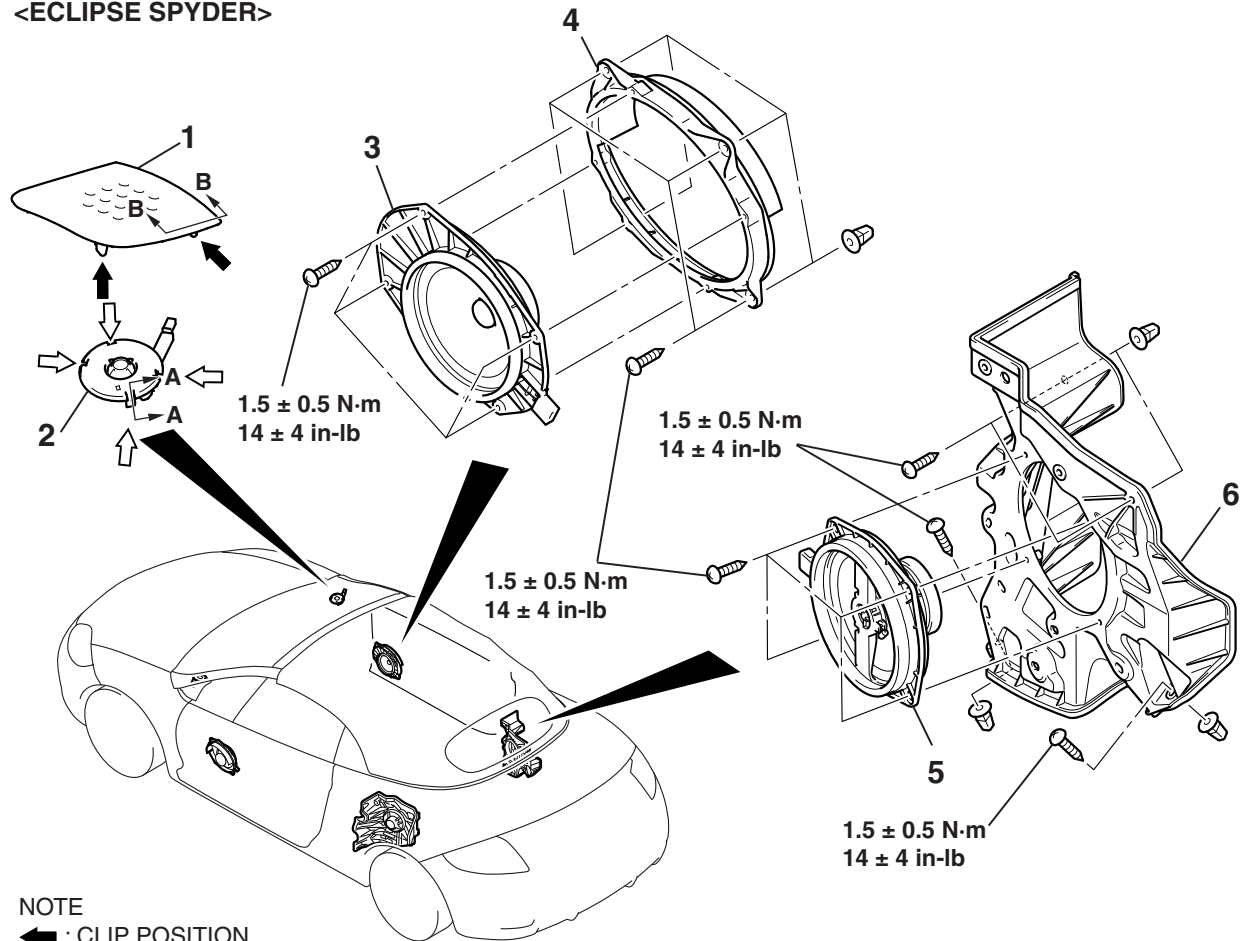
#### <ECLIPSE>



AC406111AC



## &lt;ECLIPSE SPYDER&gt;



## NOTE

- ➡ : CLIP POSITION  
 ⇨ : CLAW POSITION

AC509380AB

**TWEETER REMOVAL STEPS**

- FRONT PILLAR TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
- TWEETER GARNISH
  - TWEETER

**DOOR SPEAKER REMOVAL STEPS**

- FRONT DOOR TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))

**DOOR SPEAKER REMOVAL STEPS**

- DOOR SPEAKER
- DOOR SPEAKER BRACKET

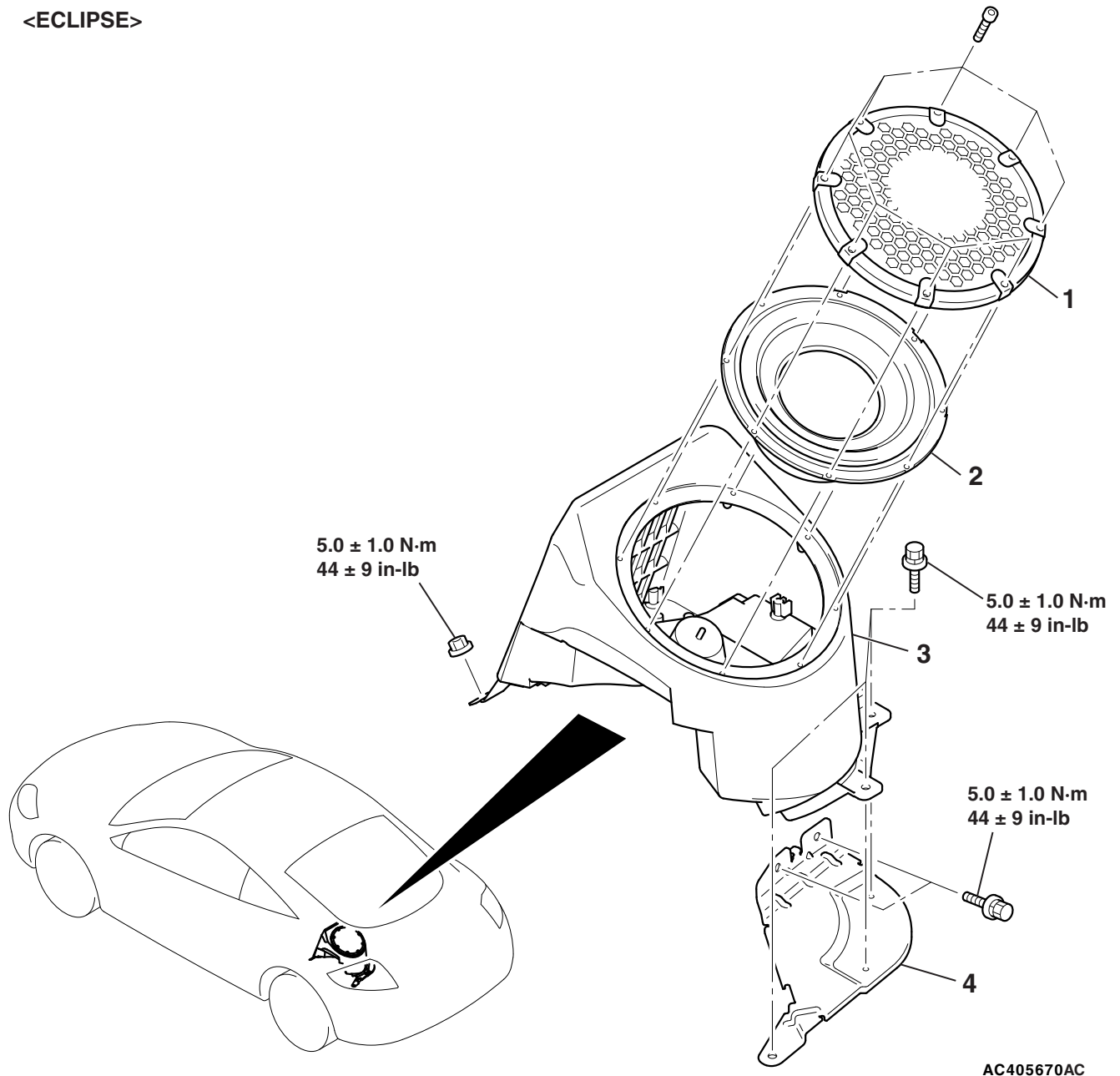
**QUARTER SPEAKER REMOVAL STEPS**

- QUARTER LOWER TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
- QUARTER SPEAKER
  - QUARTER SPEAKER BRACKET



< REAR SPEAKER (WOOFER)>

<ECLIPSE>



**WOOFER REMOVAL STEPS**  
**<ECLIPSE>**

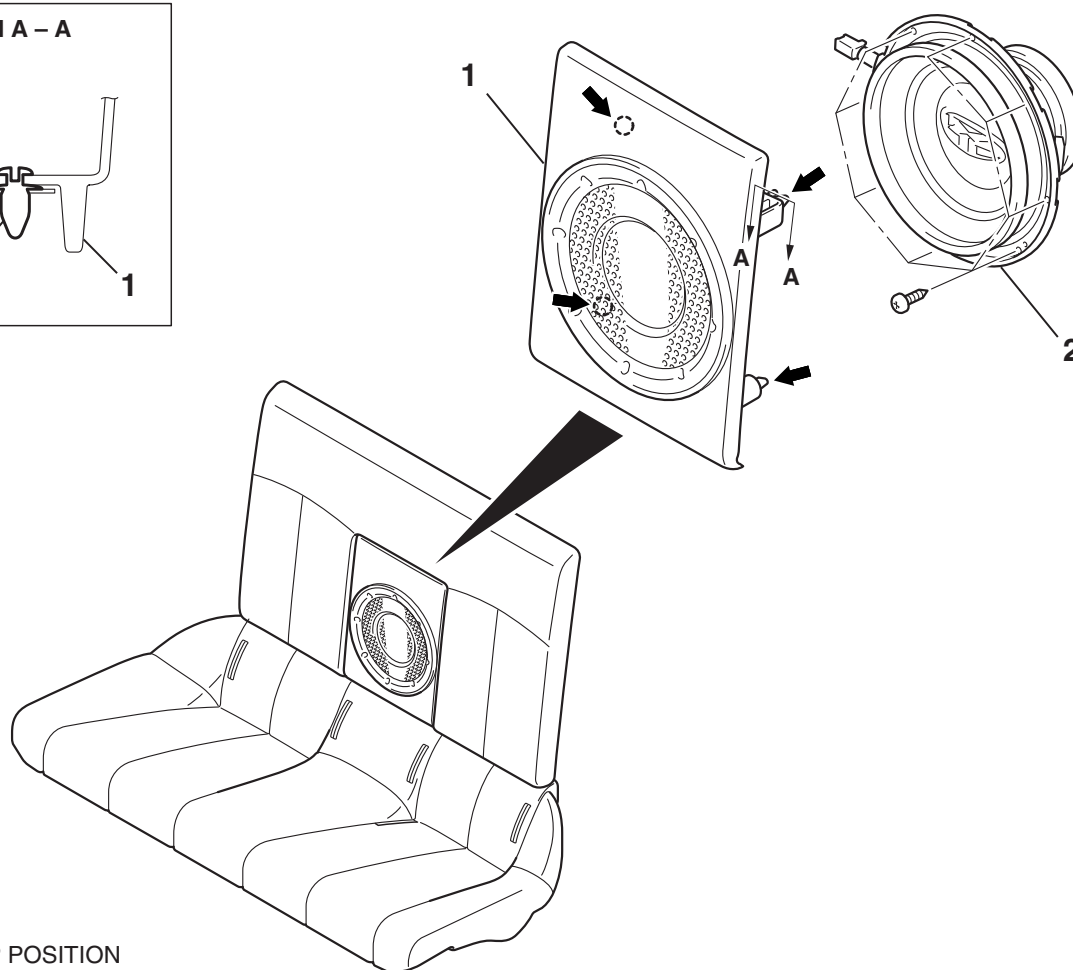
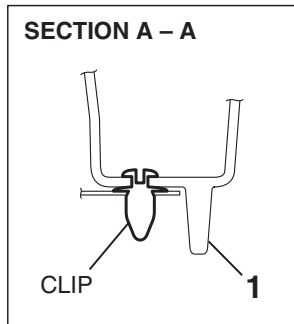
- LUGGAGE ROOM CARPET
- 1. WOOFER GARNISH

**WOOFER REMOVAL STEPS**  
**<ECLIPSE> (Continued)**

2. WOOFER
3. WOOFER COVER
4. WOOFER BRACKET



## &lt;ECLIPSE SPYDER&gt;



NOTE

← : CLIP POSITION

AC509381AB

**WOOFER REMOVAL STEPS**  
**<ECLIPSE SPYDER>**

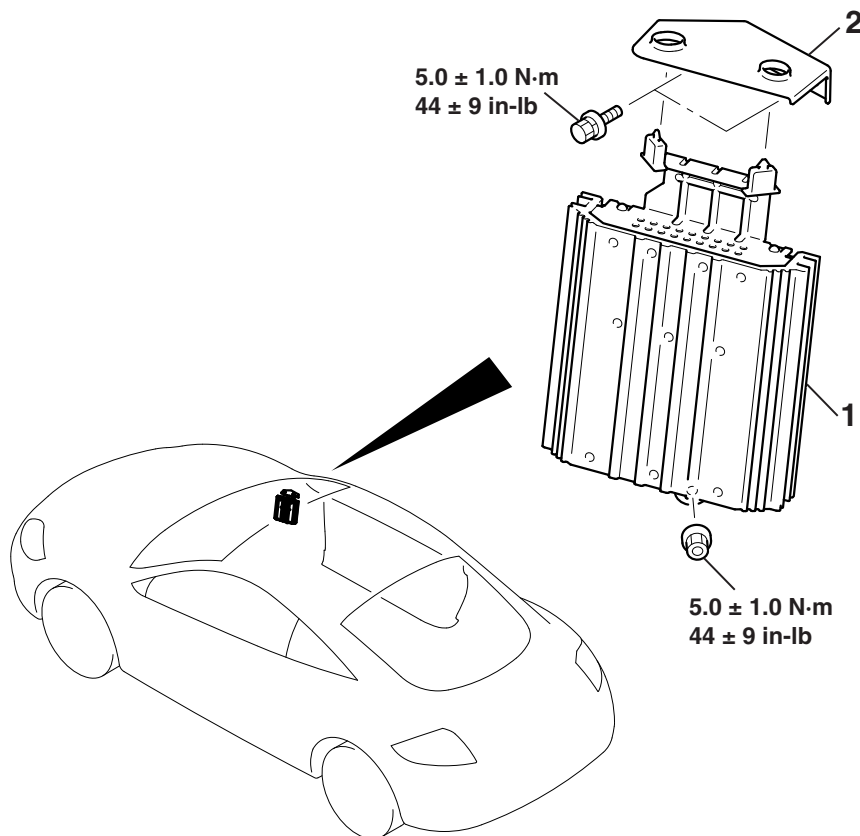
1. SPEAKER SUBWOOFER TRIM
2. WOOFER



## AMPLIFIER

### REMOVAL AND INSTALLATION

M1544004100347



AC405671 AB

#### REMOVAL STEPS

- GLOVE BOX ASSEMBLY, INSTRUMENT PANEL PARCEL BOX (REFER TO GROUP 52A, INSTRUMENT PANEL ASSEMBLY [P.52A-19.](#))
- FRONT SCUFF PLATE (RH), COWL SIDE TRIM (RH) (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))

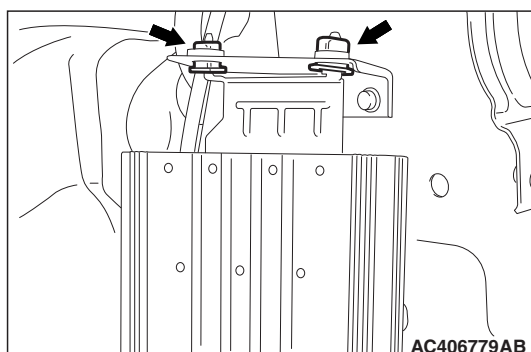
#### REMOVAL STEPS (Continued)

- ※>A< 1. AUDIO AMPLIFIER
- 2. AMPLIFIER BOX BRACKET

### INSTALLATION SERVICE POINT

#### >>A<< AUDIO AMPLIFIER INSTALLATION

Install while aligning with the amplifier mounting hole.



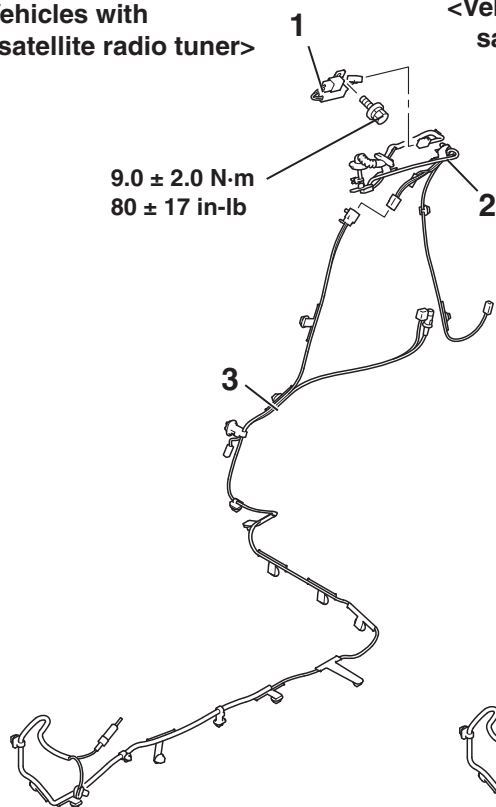
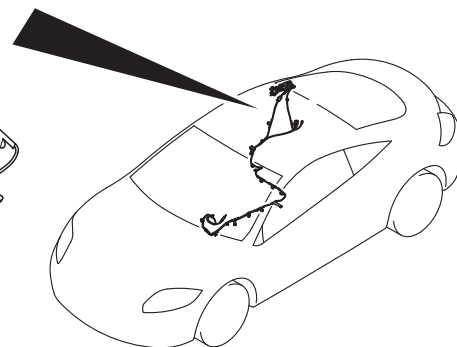
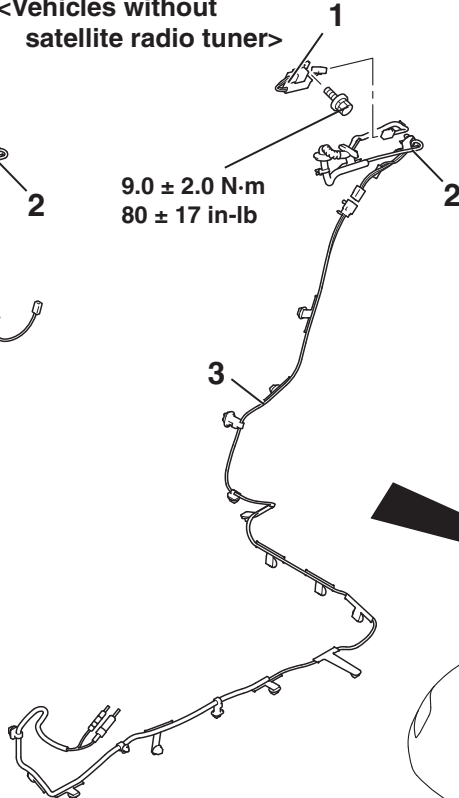


## ANTENNA

## REMOVAL AND INSTALLATION

M1544002901005

## &lt;ECLIPSE&gt;

<Vehicles with  
satellite radio tuner><Vehicles without  
satellite radio tuner>

AC808312AB

**REMOVAL STEPS <ECLIPSE>**

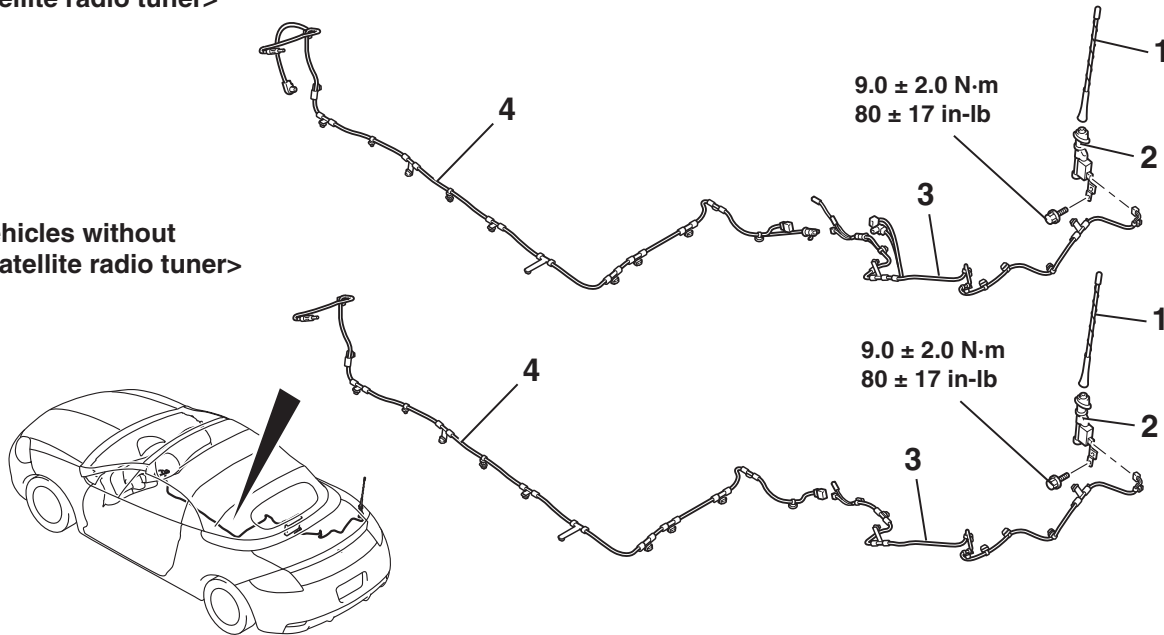
- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37.](#))
- 1. RADIO AMPLIFIER
- QUARTER TRIM LOWER (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
- 2. ANTENNA FEEDER CABLE (LIFTGATE SIDE)

**REMOVAL STEPS <ECLIPSE>**

- FLOOR CONSOLE ASSEMBLY, FLOOR CONSOLE BRACKET (REFER TO GROUP 52A, FLOOR CONSOLE ASSEMBLY [P.52A-28.](#))
- RADIO AND CD PLAYER OR RADIO AND CD PLAYER WITH CD CHANGER (REFER TO [P.54A-257.](#))
- 3. ANTENNA FEEDER CABLE



## &lt;ECLIPSE SPYDER&gt;

<Vehicles with  
satellite radio tuner><Vehicles without  
satellite radio tuner>

AC808314AB

**REMOVAL STEPS <ECLIPSE  
SPYDER>**

1. ANTENNA MAST
  - TRUNK ROOM TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
2. ANTENNA BASE
  - REAR SEATBACK PANEL (REFER TO GROUP 42, LOOSE PANEL [P.42-302.](#))
  - QUARTER TRIM LOWER (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))

**REMOVAL STEPS <ECLIPSE  
SPYDER> (Continued)**

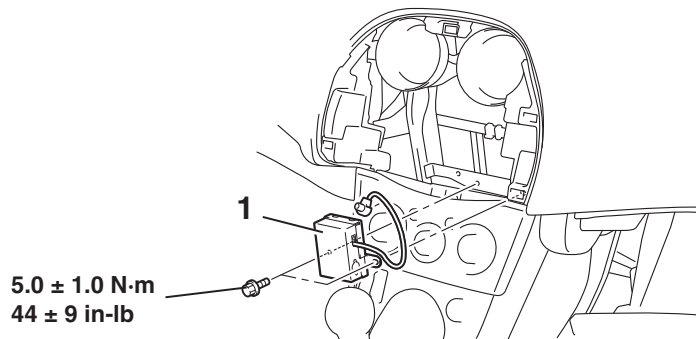
3. ANTENNA FEEDER CABLE (TRUNK SIDE)
  - FLOOR CONSOLE ASSEMBLY, FLOOR CONSOLE BRACKET (REFER TO GROUP 52A, FLOOR CONSOLE ASSEMBLY [P.52A-28.](#))
  - RADIO AND CD PLAYER WITH CD CHANGER (REFER TO [P.54A-257.](#))
4. ANTENNA FEEDER CABLE



## AUX ADAPTER

## REMOVAL AND INSTALLATION

M1544020000016



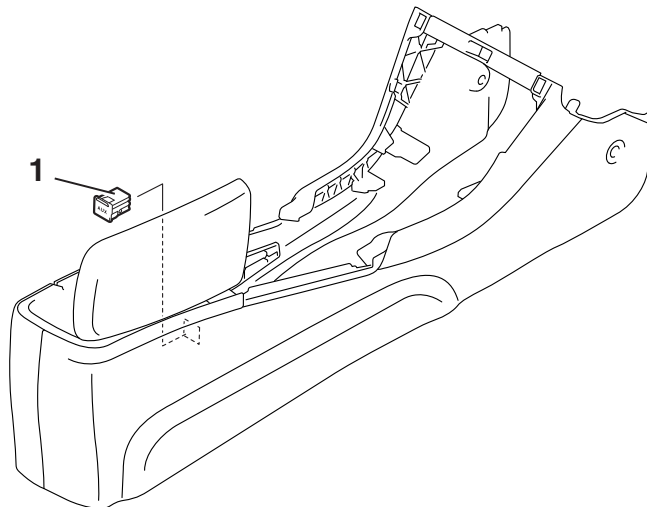
AC808282AB

## REMOVAL STEPS

- RADIO, CD PLAYER ASSEMBLY OR RADIO, CD PLAYER AND CD CHANGER ASSEMBLY (REFER TO [P.54A-257.](#))
- 1. AUX BOX

## REMOVAL AND INSTALLATION

M1544019900015



AC808284AB

## REMOVAL STEPS

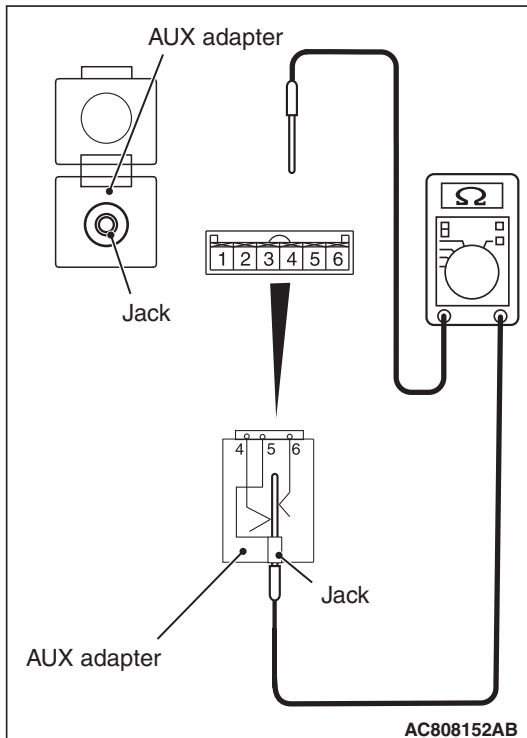
- FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A INTERIOR [P.52A-28.](#))
- 1. AUX ADAPTER



## AUX ADAPTER INSPECTION

M1544019800018

1. Remove the AUX adapter. (Refer to [P.54A-268.](#))
2. Check that continuity exists between the terminal and the jack of AUX adapter.



Terminal number	Measurement value
4	Continuity exists (2 Ω or less)
5	
6	

## SATELLITE RADIO TUNER

## GENERAL DESCRIPTION

## SATELLITE RADIO

M1544000100259

- The satellite radio is a broadcast technology that offers a clear digital sound directly by using satellites.
- The registered service provider is SIRIUS™ satellite radio.
- This service offers listeners more than 100 programs such as news, sports, music, and entertainment.

## DIAGNOSIS

## INTRODUCTION TO SATELLITE RADIO DIAGNOSIS

M1544004700189

## ERROR CODE (SIRIUS satellite radio)

The multi-center display displays the error codes below if an abnormality related to the satellite radio is detected.



ERROR CODES	CAUSE	CAUSE OF TROUBLE AND ITS SOLUTION
ANT	Antenna error	This code is displayed when there is a failure, improper connection, or open circuit in the satellite antenna base and the satellite radio tuner cannot receive normal voltage value or current value. Refer to <a href="#">P.54A-271</a> .
LINKING	Cannot pick up signal	This code is displayed when the signal is too weak and it cannot be received. Move to a place where the signal can be received easily, or check if there is foreign material that interferes with signal reception on the satellite antenna base, and remove if necessary.
CALL 888-539- SIRIUS	Unauthorized channel	This code is displayed when the channel to be received is not included in the contract with SIRIUS™ satellite radio. Contact SIRIUS™ satellite radio and make a contract for the channel.
---- (HYphen)	There is no selectable channel	There is no channel that can be selected. Cancel the SKIP settings so that the channels can be selected.
_____ (Underscore)	Channel is invalid	No program is broadcast on this channel now, or this channel cannot be received. Ask SIRIUS™ satellite radio.
SAT E	Mechanical fault or bad connection	This code is displayed when the satellite radio tuner has a mechanical problem or when an error occurs in the communication with radio and CD player. Refer to <a href="#">P.54A-272</a> .
OFFAIR	OFF AIR	This code is displayed when this channel is not broadcast at this moment, or broadcast of the satellite radio is interrupted. Check the airtime and the broadcast conditions of SIRIUS™ satellite radio.
NOT ACT	ID not registered	This code is displayed when the SIRIUS ID is not written to the satellite radio tuner. Replace the satellite radio tuner.
READ	Data reading in progress	This code is displayed when the data received is being read. Wait until reading of the data received is completed.
UPDT	Channel data updating in progress	This code is displayed when SIRIUS™ satellite radio is updating the channel data. Wait until update is completed.
SUB UPDT	Contract status updating complete	This code is displayed when the contract status is updated. This code disappears when any of the audio switch is pressed.

## SATELLITE RADIO SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1544016500029

Use these steps to plan your diagnostic strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding an satellite radio system fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

## SYMPTOM CHART

M1544004900945

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
The error code "ANT" is displayed on the multi-center display..	1	<a href="#">P.54A-271</a>
The error code "SAT E" is displayed on the multi-center display.	2	<a href="#">P.54A-272</a>



---

## SYMPTOM PROCEDURES

---

**INSPECTION PROCEDURE 1: The error code "ANT" is displayed on the multi-center display.**

---

### TECHNICAL DESCRIPTION (COMMENT)

When there is a failure in the satellite antenna base, or there is an open circuit or improper connection in the antenna feeder cable, and the satellite radio tuner cannot receive normal voltage value or current value, the error code "ANT" is displayed on the multi-center display.

### TROUBLESHOOTING HINTS

- Malfunction of the satellite antenna base.
- Malfunction of the antenna feeder cable.
- Malfunction of the satellite radio tuner.

## DIAGNOSIS

---

**STEP 1. Check if the satellite antenna base is damaged.**

**Q: Is the satellite antenna base damaged?**

**YES :** Replace the satellite antenna base.

**NO :** Go to Step 2.

---

**STEP 2. Check the connection between the satellite antenna base and the antenna feeder cable.**

**Q: Is the connection between the satellite antenna base and the antenna feeder cable normal?**

**YES :** Go to Step 3.

**NO :** Repair the connection.

---

**STEP 3. Check if the antenna feeder cable is damaged.**

**Q: Is the antenna feeder cable damaged or bent?**

**YES :** Repair or replace the antenna feeder cable.

**NO :** Go to Step 4.

---

**STEP 4. Check the connection between the antenna feeder cable and the satellite radio tuner.**

**Q: Is the connection between the antenna feeder cable and the satellite radio tuner normal?**

**YES :** Go to Step 5.

**NO :** Repair the connection.

---

**STEP 5. Temporarily replace the satellite antenna base, and check if "ANT" is displayed on the multi-center display.**

**Q: Is "ANT" displayed on the multi-center display?**

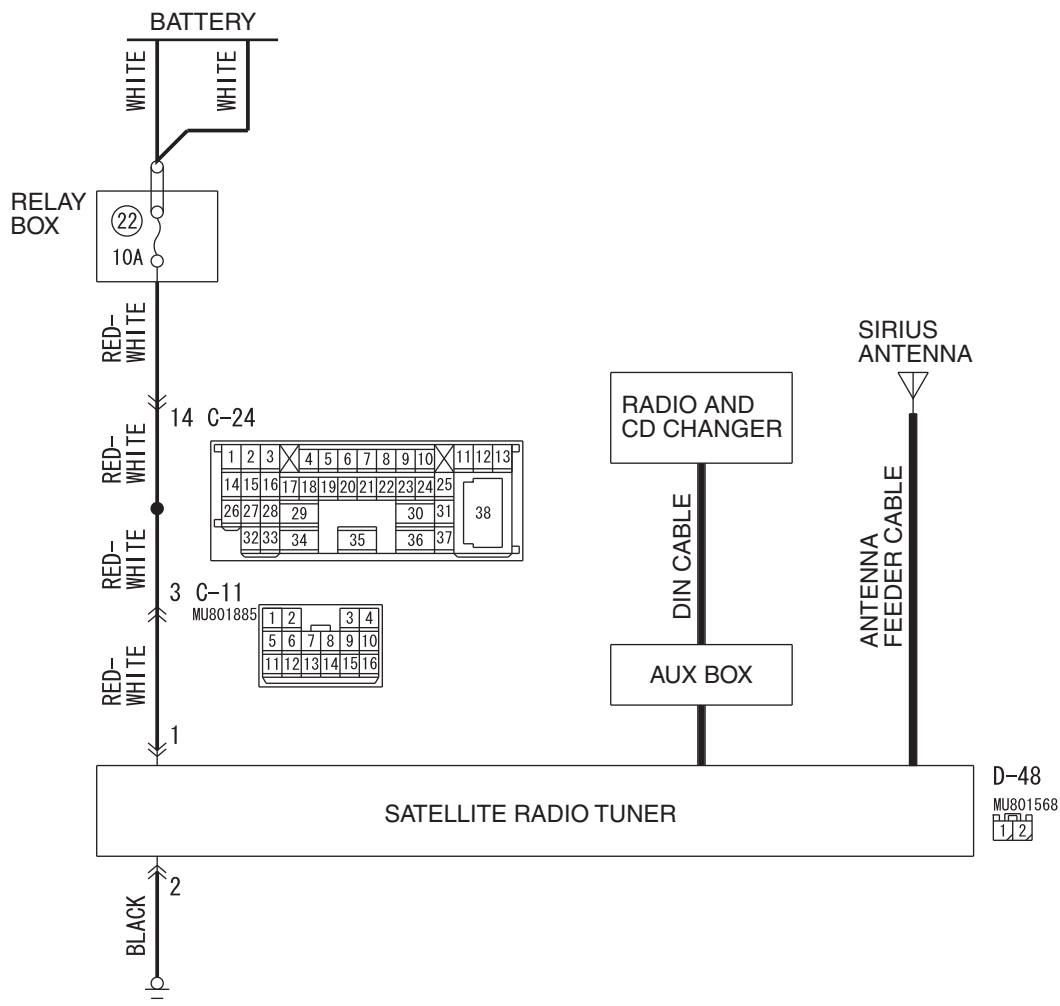
**YES :** Replace the satellite radio tuner.

**NO :** Replace the satellite antenna base.

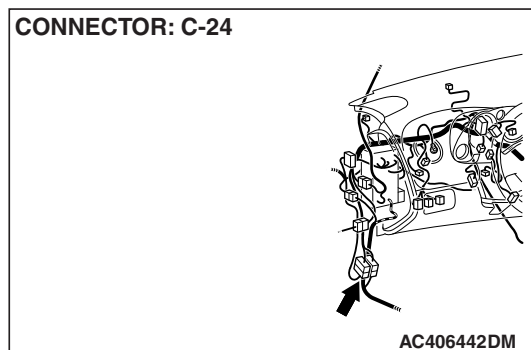
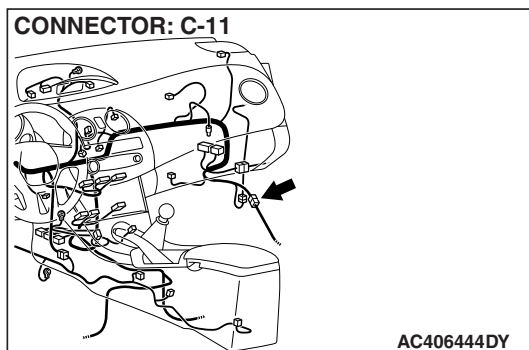


**INSPECTION PROCEDURE 2: The error code "SAT E" is displayed on the multi-center display.**

Satellite Radio Tuner Supply Circuit

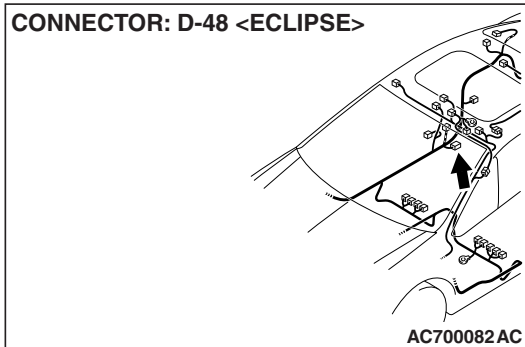


WAP54M008A

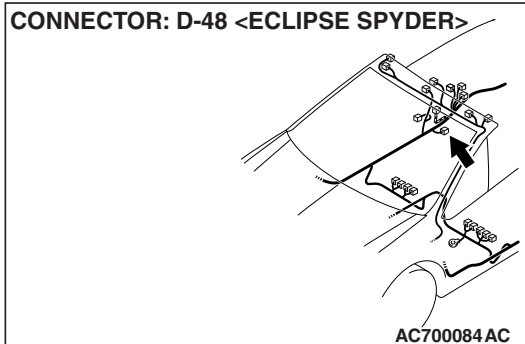




CONNECTOR: D-48 &lt;ECLIPSE&gt;



CONNECTOR: D-48 &lt;ECLIPSE SPYDER&gt;



## CIRCUIT OPERATION

Power is supplied from the battery to the satellite radio tuner. The satellite radio tuner sends and receives the ACC signal and other signals via the radio and CD player with CD changer and the DIN cable (antenna feeder cable).

## TECHNICAL DESCRIPTION (COMMENT)

When there is a failure in the satellite radio tuner, or the communication with the radio and CD player with CD changer is not normal, the error code "SAT E" is displayed on the multi-center display.

## TROUBLESHOOTING HINTS

- Malfunction of the satellite radio tuner.
- Malfunction of the DIN cable (antenna feeder cable).
- Malfunction of the radio and CD player with CD changer.
- Malfunction of the AUX BOX.
- Damaged wiring harness and connectors

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness set
- MB992006: Extra Fine Probe

**STEP 1. Check if the input of AUX adapter is sent correctly on the "AUX MODE".**

**Q: Is the input of AUX adapter is sent correctly?**

**YES :** Go to Step 2.

**NO :** Carry out the troubleshooting for AUX adapter. (Refer to [P.54A-238.](#))

**STEP 2. Check that the AUX BOX and the radio and CD player with CD changer are connected to the DIN cable normally.**

**Q: Are they connected to the DIN cable normally?**

**YES :** Go to Step 3.

**NO :** Repair the connection.

**STEP 3. Check that the satellite radio tuner and the AUX BOX are connected to the DIN cable normally.**

**Q: Are they connected to the DIN cable normally?**

**YES :** Go to Step 4.

**NO :** Repair the connection.



**STEP 4. Check if the DIN cable (antenna feeder cable) is damaged.**

**Q: Is the DIN cable (antenna feeder cable) damaged or bent?**

**YES :** Repair or replace the DIN cable (antenna feeder cable).

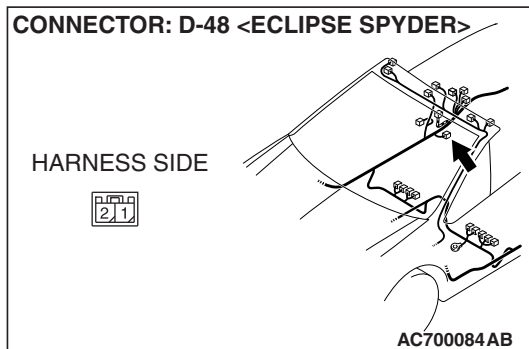
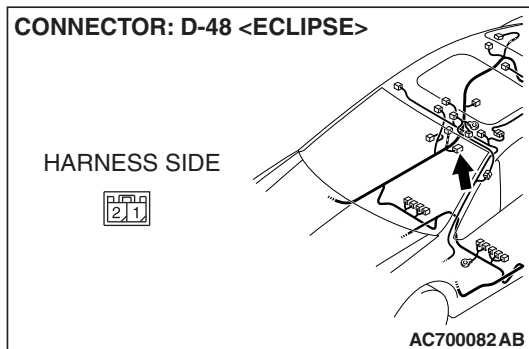
**NO :** Go to Step 5.

**STEP 5. Check satellite radio tuner connector D-48 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is satellite radio tuner connector D-48 in good condition?**

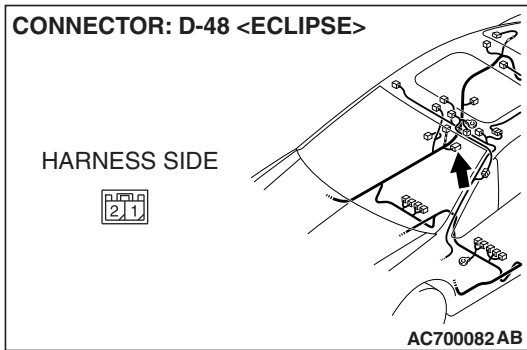
**YES :** Go to Step 6.

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

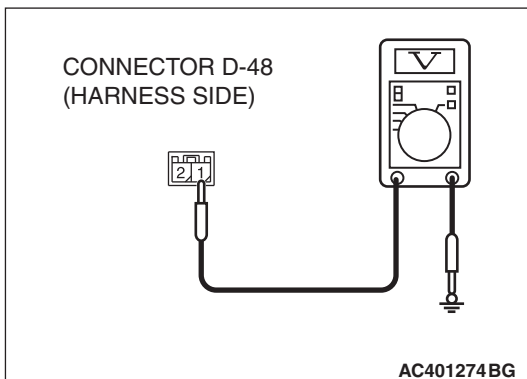
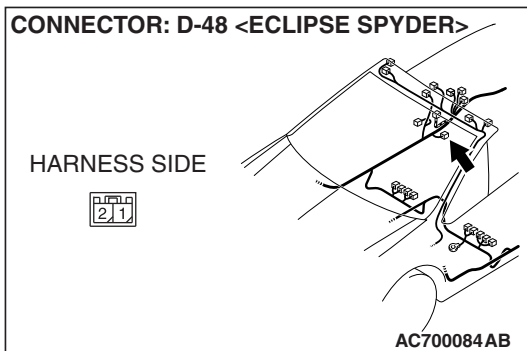




**CONNECTOR: D-48 <ECLIPSE>**



**CONNECTOR: D-48 <ECLIPSE SPYDER>**



**STEP 6. Measure the voltage at satellite radio tuner connector D-48 in order to power supply circuit to satellite radio tuner (battery).**

- (1) Disconnect satellite radio tuner connector D-48, and measure at the wiring harness side.

- (2) Measure the voltage between terminal 1 and ground.
  - The voltage should measure approximately 12 volts (battery positive voltage).

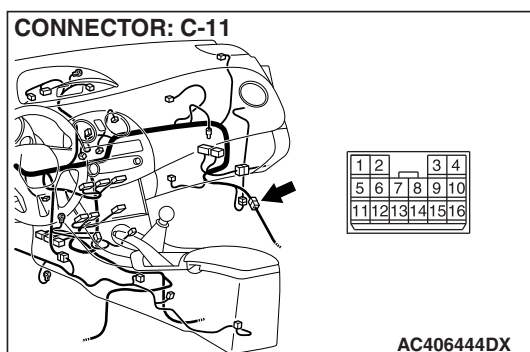
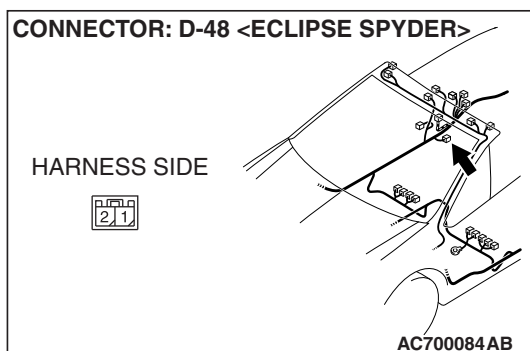
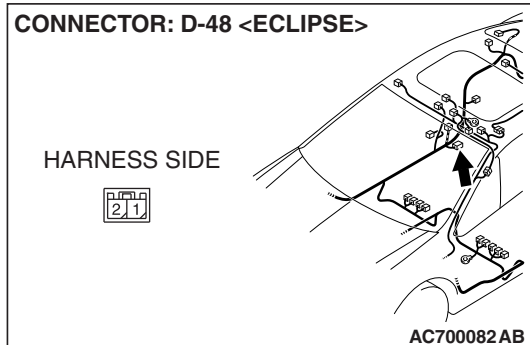
**Q: Is the measured voltage approximately 12 volts (battery positive voltage)?**

**YES :** Go to Step 8.

**NO :** Go to Step 7.



**STEP 7. Check the wiring harness between satellite radio tuner connector D-48 (terminal 1) and the battery.**

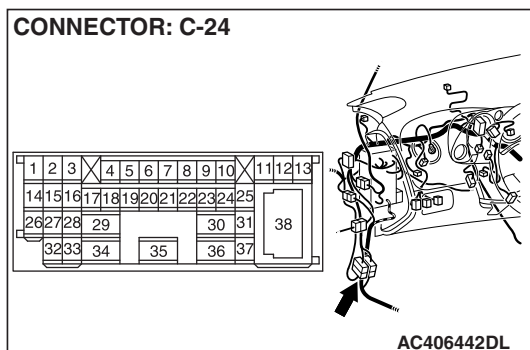


*NOTE: Also check intermediate connector C-24, C-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24, C-11 is damaged, repair or replace. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q: Is the wiring harness between satellite radio tuner connector D-48 (terminal 1) and the battery in good condition?**

**YES :** Retest the system.

**NO :** Repair the wiring harness.





**CONNECTOR: D-48 <ECLIPSE>**

HARNESS SIDE



AC700082AB

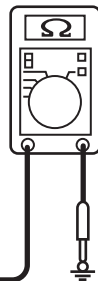
**CONNECTOR: D-48 <ECLIPSE SPYDER>**

HARNESS SIDE



AC700084AB

CONNECTOR D-48  
(HARNESS SIDE)



AC401275CB

**STEP 8. Measure the resistance at satellite radio tuner connector D-48 in order to the ground circuit to the satellite radio tuner.**

- (1) Disconnect satellite radio tuner connector D-48, and measure at the wiring harness side.

- (2) Measure the resistance value between terminal 2 and ground.

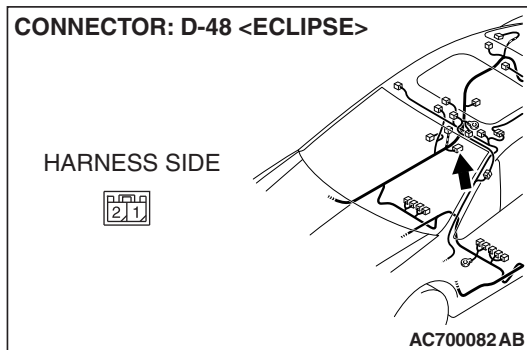
- The resistance should be 2 ohms or less.

**Q: Is the measured resistance 2 ohms or less?**

**YES :** Go to Step 10.

**NO :** Go to Step 9.



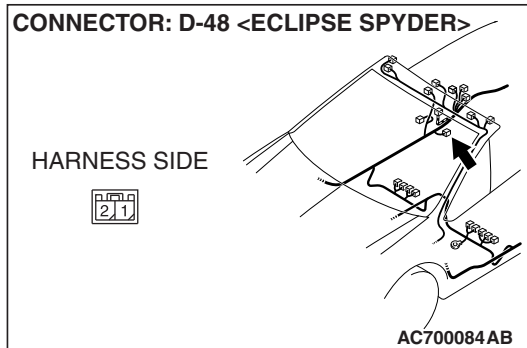
**CONNECTOR: D-48 <ECLIPSE>**

**STEP 9.** Check the wiring harness between satellite radio tuner connector D-48 (terminal 2) and ground.

**Q:** Is the wiring harness between satellite radio tuner connector D-48 (terminal 2) and ground in good condition?

**YES :** Retest the system.

**NO :** Repair the wiring harness.

**CONNECTOR: D-48 <ECLIPSE SPYDER>**

**STEP 10.** Temporarily replace the satellite radio tuner, and check if "SAT E" is displayed on the multi-center display.

**Q:** Is "SAT E" displayed on the multi-center display?

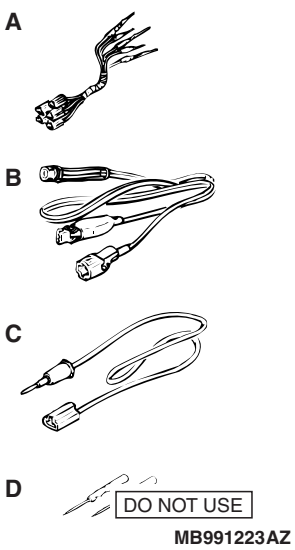
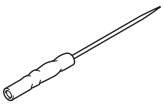
**YES :** Replace the radio and CD player with CD changer.

**NO :** Replace the satellite radio tuner.



## SPECIAL TOOL

M1544000600544

TOOL	TOOL NUMBER AND NAME	SUPER SESSION	APPLICATION
 A B C D DO NOT USE MB991223AZ	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	General service tool (jumper)	Making voltage and resistance measurements during troubleshooting A: Connect pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006 Extra fine probe	—	Making voltage and resistance measurement during troubleshooting

## ON-VEHICLE SERVICE

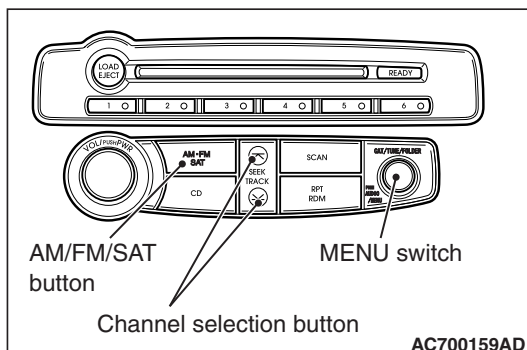
## HOW TO READ SIRIUS ID

M1544018300010

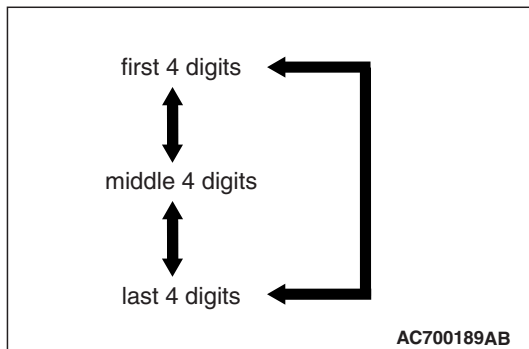
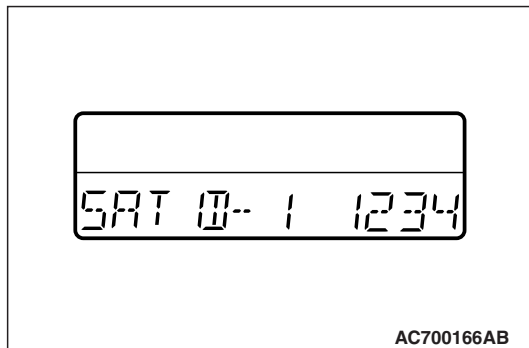
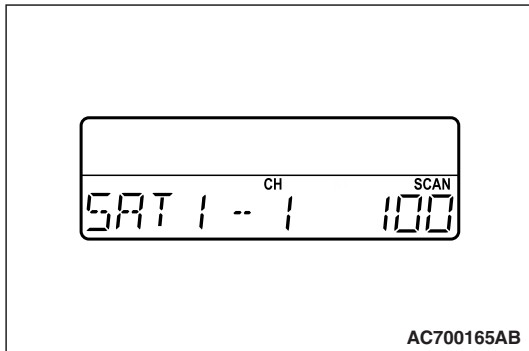
## DISPLAY THE SIRIUS ID ON THE MULTI-CENTER DISPLAY.

The SIRIUS ID registered to the satellite radio tuner can be displayed on the multi-center display.

1. Turn the ignition switch to the "ON" position or the "ACC" position to turn on the audio system.







- By pressing the AM/FM/SAT button, bands are displayed on the multi-center display in the order of "AM", "FM", "FM1", "FM2", "STA1", "STA2", "STA3", "STA4." Select a band of the satellite radio ("STA1", "STA2", "STA3", "STA4").

- Press the channel selection button to set the satellite radio channel to "CH 0."

- When "CH 0" is selected, the first 4 digits of the 12-digit SIRS ID are displayed after 2 seconds.

- When the MENU switch is turned clockwise, the middle 4 digits of the SIRS ID are displayed. When the switch is turned farther, the last 4 digits of the SIRS ID are displayed. By turning the MENU switch clockwise farther, the SIRS ID is displayed in the order of "the first 4 digits", "the middle 4 digits", and then "the last 4 digits." The SIRS ID is displayed in the reverse order when the MENU switch is turned counterclockwise.

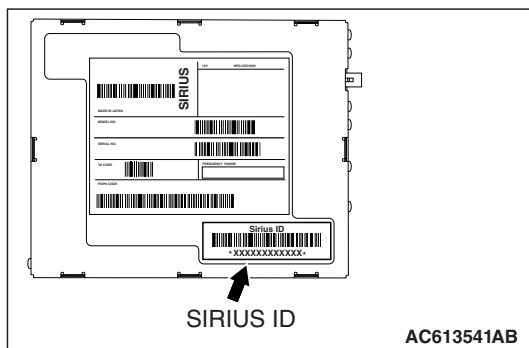
- Press the channel selection button to select a channel other than "CH 0" to terminate the SIRS ID display.

*NOTE: While the SIRS ID is displayed, if the switch is not operated for 15 seconds, the SIRS ID display disappears and "CH 0" is displayed. The SIRS ID is displayed again after 2 seconds.*

## READ THE SIRS ID DIRECTLY FROM THE SATELLITE RADIO TUNER.

The SIRS ID (12 digits) on the satellite radio tuner can be read directly.

- Remove the satellite radio tuner. Refer to [P.54A-281](#).
- Read the SIRS ID (12 digits) from the satellite radio tuner.

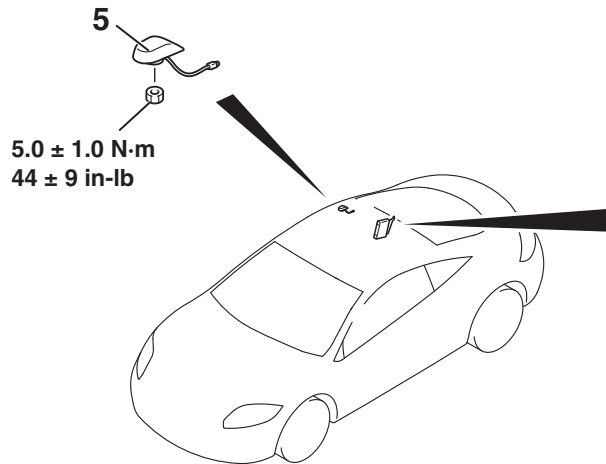




## REMOVAL AND INSTALLATION

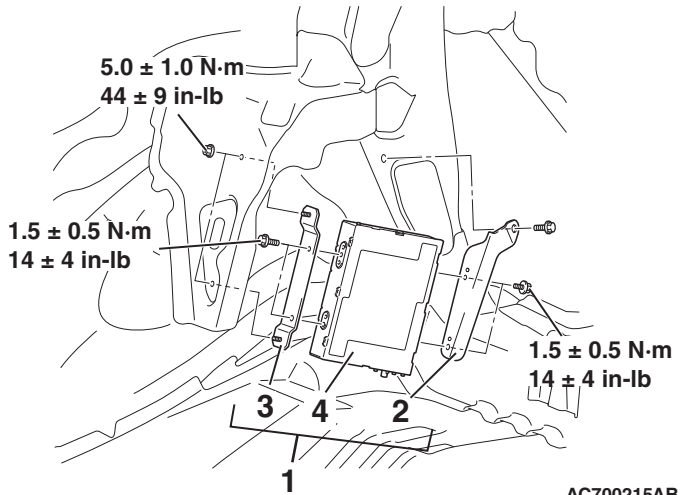
M1544016100076

### <ECLIPSE>



#### REMOVAL STEPS <SATELLITE RADIO TUNER>

- QUARTER TRIM LOWER (REFER TO GROUP 52A, TRIMS [P.52A-30](#)).
- 1. SATELLITE RADIO TUNER ASSEMBLY
- 2. AUDIO EQUIP BRACKET (REAR)



AC700215AB

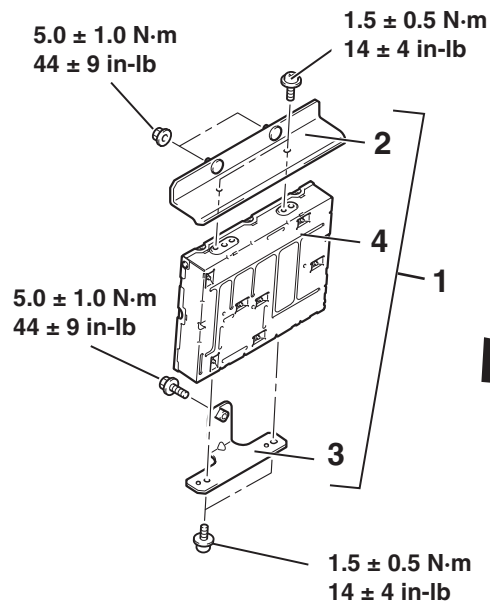
#### REMOVAL STEPS <SATELLITE RADIO TUNER> (Continued)

- 3. AUDIO EQUIP BRACKET (FRONT)
  - 4. SATELLITE RADIO TUNER
- #### REMOVAL STEPS <SATELLITE ANTENNA BASE>
- CENTER PILLAR TRIM UPPER, REAR PILLAR TRIM (REFER TO GROUP 52A, TRIMS [P.52A-30](#)).
  - 5. SATELLITE ANTENNA BASE

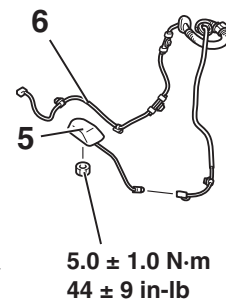
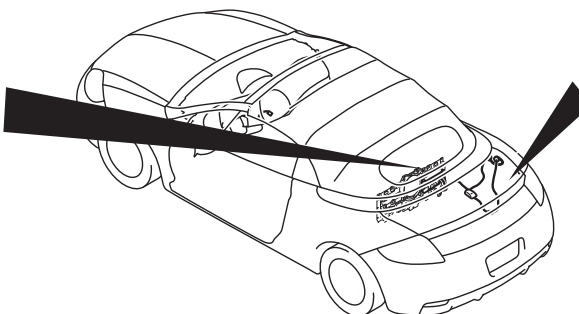
<<A>>



## &lt;ECLIPSE SPYDER&gt;

**REMOVAL STEPS <SATELLITE RADIO TUNER>**

- REAR SEATBACK PANEL (REFER TO GROUP 42, LOOSE PANEL [P.42-302](#)).
- 1. SATELLITE RADIO TUNER ASSEMBLY
- 2. AUDIO EQUIP BRACKET (UPPER)
- 3. AUDIO EQUIP BRACKET (LOWER)
- 4. SATELLITE RADIO TUNER



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**REMOVAL STEPS <SATELLITE ANTENNA BASE>**

- 5. SATELLITE ANTENNA BASE
- DRAIN TROUGH ASSEMBLY (REFER TO GROUP 42, TOPSTACK DRIVE MOTOR [P.42-276](#)).
- REAR SEATBACK PANEL (REFER TO GROUP 42, LOOSE PANEL [P.42-302](#)).
- 6. ANTENNA FEEDER CABLE

**REMOVAL SERVICE POINT****<<A>> REMOVAL OF SATELLITE ANTENNA BASE**

Lower the headlining assembly and remove it.



# HANDS-FREE CELLULAR PHONE SYSTEM

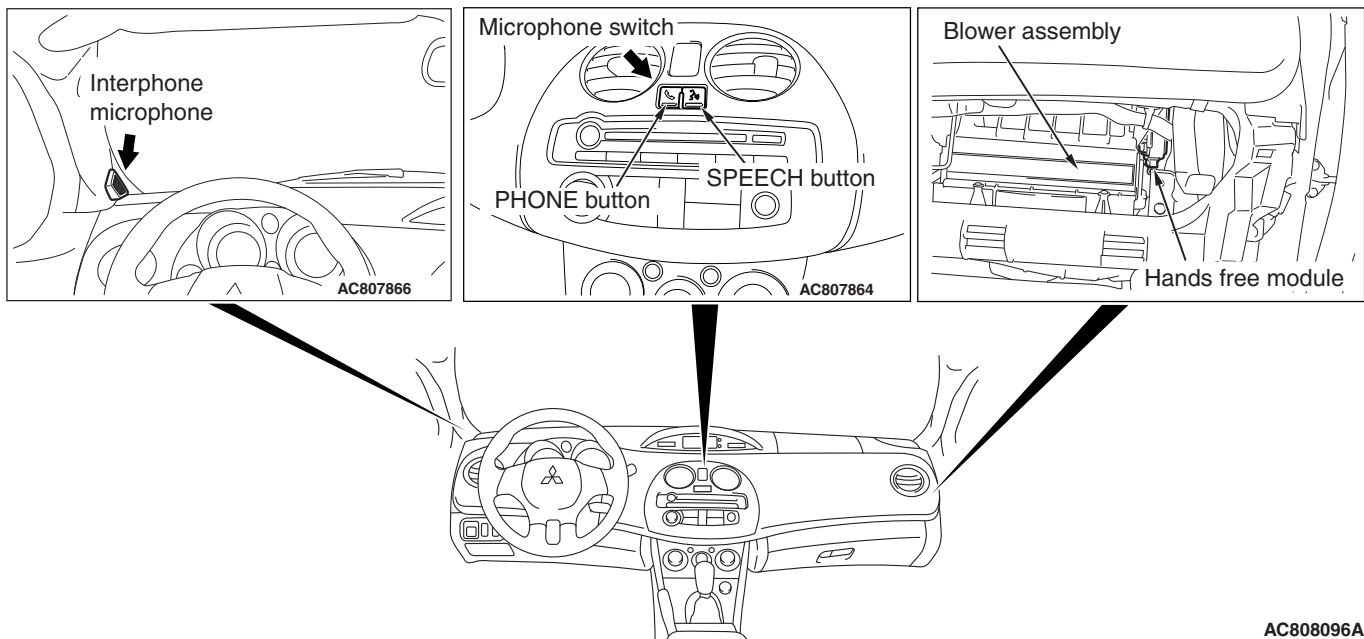
## GENERAL DESCRIPTION

M1544401200138

The hands-free module that can make a wireless connection to the Bluetooth®\* support cellular phone has been installed to the right side of the blower assembly. In addition, the microphone switch (PHONE button, SPEECH button) have been installed to the instrument center panel assembly and interphone microphone have been installed to the front pillar trim. The hands-free cellular phone system can be used through the communication between the hands-free module and the audio device.

### NOTE:

- \*: Bluetooth® is registered trademark of BLUETOOTH SIG, INC.
- Bluetooth® is the short-distance digital wireless communication technology using 2.45 GHz frequency band. The communication effective area is within 10 m, and the feature is that the communication can be achieved even when an obstacle is present between the communicating devices. However, if a metal obstacle is present, it may interfere with the Bluetooth® communication.
- Some Bluetooth® cellular phones may not be compatible with the hands free module

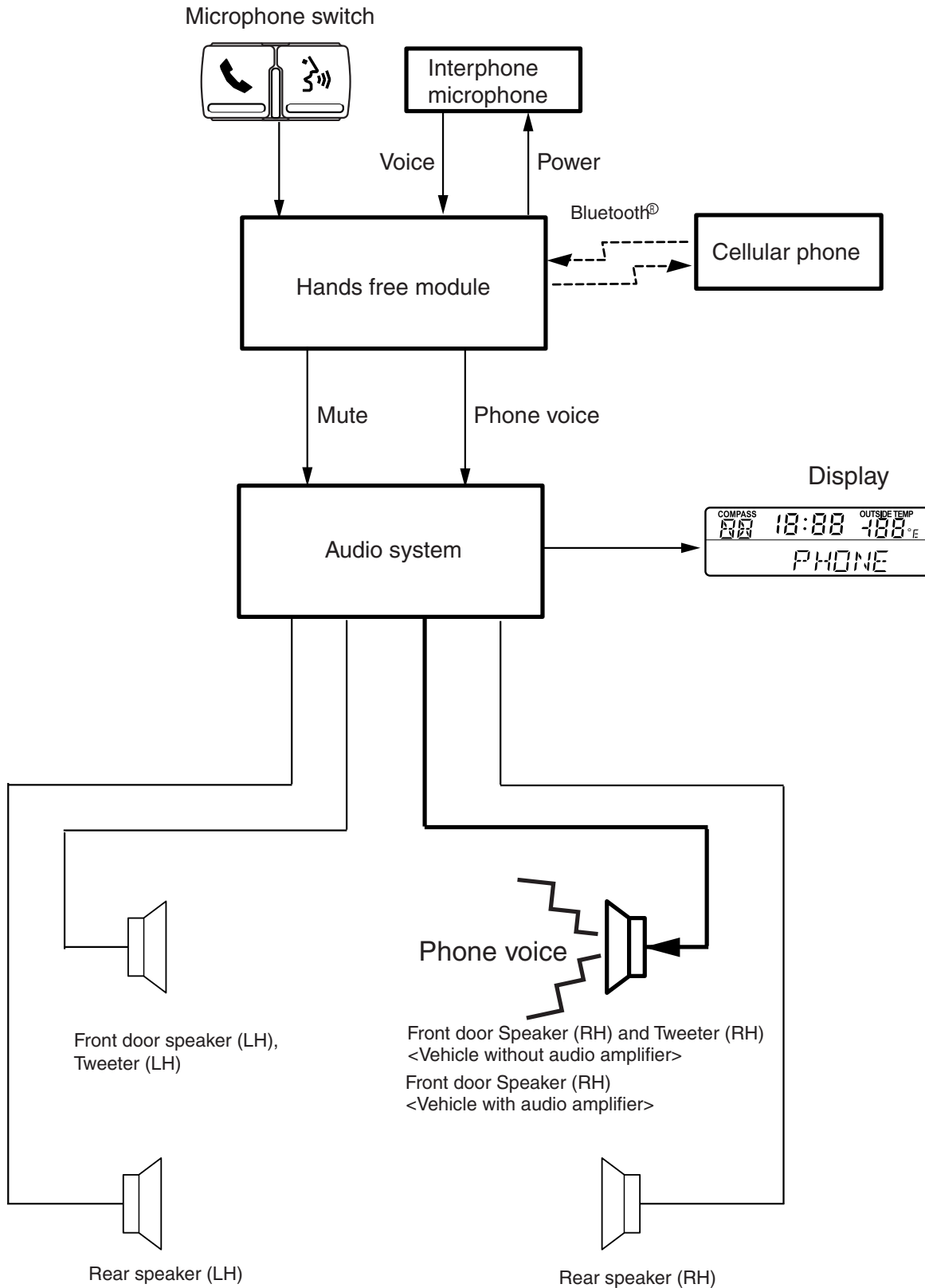


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- Pairing can be performed with 7 cellular phones at the maximum. (Some Bluetooth® cellular phones may not be compatible with the hands free module)
- When the hands free cellular phone system is used, the communication speech and voice information are output from the front door speaker (RH) and tweeter (RH) <vehicles without audio amplifier> or front door speaker (RH) <vehicles with audio amplifier>.
- While output is made from the hands-free module to the audio system, the audio system mutes audio output from the front door speaker (RH) and tweeter (RH) <vehicles without audio amplifier> or from the front door speaker (RH) <vehicles with audio amplifier> except communication speech and voice information.
- The hands-free module can store 32 registration names (4 telephone numbers for each name) per language.
- During a call, the voice output from the interphone microphone to the cellular phone can be stopped by voice operation.
- The use languages can be changed among American English, Canadian French, and American Spanish.
- While the hands-free cellular phone system is activated, the display shows "Phone" or "PHONE". However, on the multi-center display (7-inch wide liquid crystal monitor display type), "Phone" disappears in approximately 10 seconds when the screen is other than the audio screen.



## SYSTEM BLOCK DIAGRAM


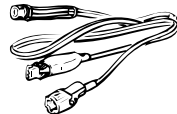
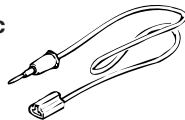
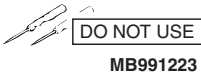
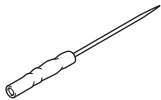


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## SPECIAL TOOLS

M1544403500072

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
<p>a</p>  <p>b</p>  <p>c</p>  <p>d</p> 	<p>MB991223</p> <p>a. MB991219</p> <p>b. MB991220</p> <p>c. MB991221</p> <p>d. MB991222</p> <p>Harness set</p> <p>a. Check harness</p> <p>b. LED harness</p> <p>c. LED harness adapter</p> <p>d. Probe</p>	<p>General service tool (jumper)</p>	<p>Continuity check and voltage measurement at harness wire or connector</p> <p>a. For checking connector pin contact pressure</p> <p>b. For checking power supply circuit</p> <p>c. For checking power supply circuit</p> <p>d. For connecting a locally sourced tester</p>
 <p style="text-align: center;">MB992006</p>	<p>MB992006</p> <p>Extra fine probe</p>	<p>–</p>	<p>Continuity check and voltage measurement at harness wire or connector</p>

## DIAGNOSIS

### INTRODUCTION TO HANDS FREE CELLULAR PHONE DIAGNOSIS

M1544404500031

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 cellular phone and hands-free module cannot be made.**

**The hands-free module does not recognize the cellular phone.**

**The Bluetooth® connection between the cellular phone and hands-free module cannot be made.**

Cause	SOLUTION
The power of the cellular phone is off.	With the power of the cellular phone turned on, check the trouble symptom again.
The model of the cellular phone is not applicable to the pairing with the hands-free module.	Check the specifications of the cellular phone on the website ( <a href="http://www.mitsubishicars.com/owners">www.mitsubishicars.com/owners</a> ). If the model is applicable, perform pairing registration in the vehicle (near the glove box).
In addition to the cellular phone to be recognized, two or more cellular phones exist in the vehicle, and the connection is made to the one with high priority level.	With the voice operation, select the cellular phone to be connected. Or, change the priority level.



Cause	SOLUTION
Power is not supplied to the hands-free module.	Turn the ignition switch to the "ON" position, and check the trouble symptom. If the voice information is not output when the SPEECH button is pressed with the ignition switch turned to the "ON" position, communication of the microphone switch may have an error, or the power system to the hands-free module may have a problem. Perform the Inspection Procedure 1 "When the SPEECH button is pressed, the voice information is not output." of the troubleshooting. (Refer to <a href="#">P.54A-288</a> .)

**Calling cannot be made using the hands-free cellular phone system.**

Cause	SOLUTION
The Bluetooth® connection is not made between the hands-free module and cellular phone.	Connect the cellular phone to the hands-free module via Bluetooth®.
The vehicle is not located in the communication area of the cellular phone.	Move the vehicle to the communication area of the cellular phone.

**The voice recognition operation cannot be performed.****The communication voice cannot be heard by the other party.**

Cause	SOLUTION
During the conversation, the interphone microphone is set to mute.	During the conversation, press the SPEECH button and set to mute off by voice recognition.
The hands-free module 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 interphone microphone. Or, customize the voice recognition using the speaker enrollment function.
The interphone microphone, or the connection has a problem.	The interphone microphone may have a problem. Perform Inspection Procedure 2 "When the SPEECH button is pressed, the voice information is output, but the voice recognition is not performed." of the troubleshooting. (Refer to <a href="#">P.54A-298</a> .) Or, with the special operation of the PHONE button, the connection of the interphone microphone can be checked. (Refer to <a href="#">P.54A-309</a> .)
The SPEECH button, or the connection has a problem.	If the voice information is not output when the SPEECH button is operated, the microphone switch has a problem. Perform the Inspection Procedure 1 "When the SPEECH button is pressed, the voice information is not output." of the troubleshooting. (Refer to <a href="#">P.54A-288</a> .)



**A call cannot be received when the PHONE button is pressed.**

**The voice information and communication voice cannot be output from the speaker.**

<b>Cause</b>	<b>SOLUTION</b>
The Bluetooth® connection is not made between the hands-free module and cellular phone.	Connect the cellular phone to the hands-free module via Bluetooth®.
The PHONE button, or the connection has a problem.	If the voice information is not output when the SPEECH button is operated, the microphone switch has a problem. Perform the Inspection Procedure 1 "When the SPEECH button is pressed, the voice information is not output." of the troubleshooting. (Refer to <a href="#">P.54A-288</a> .)
The interphone microphone, or the connection has a problem.	The interphone microphone may have a problem. Perform Inspection Procedure 2 "When the SPEECH button is pressed, the voice information is output, but the voice recognition is not performed." of the troubleshooting. (Refer to <a href="#">P.54A-298</a> .) Or, with the special operation of the PHONE button, the connection of the interphone microphone can be checked. (Refer to <a href="#">P.54A-304</a> .)

**The sound of other party cannot be heard from the speaker in the vehicle although the sound at the vehicle side can be heard by the other party.**

<b>Cause</b>	<b>SOLUTION</b>
The communication between the hands-free module and audio system has a problem	Check if the voice is normally output from the front door speaker (RH) and the tweeter (RH) with the audio system. If the voice is output normally, the communication between the hands-free module and audio system has a problem. Perform the Inspection Procedure 1 "When the SPEECH button is pressed, the voice information is not output." of the troubleshooting. (Refer to <a href="#">P.54A-288</a> .)

## TROUBLESHOOTING STRATEGY

M1540203800260

Use these steps to plan your diagnostic strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding a combination meter fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find and repair the malfunction by following the symptom chart.
4. Verify that the malfunction has been eliminated.

## TRUBLE SYMPTOM CHART

M1546001800837

<b>Inspection Procedure No.</b>	<b>Trouble symptom</b>	<b>Reference page</b>
1	When the SPEECH button is pressed, the voice information is not output.	<a href="#">P.54A-288</a>
2	When the SPEECH button is pressed, the voice information is output, but the voice recognition is not performed.	<a href="#">P.54A-298</a>
3	When the hands-free cellular phone system is activated, the audio system is not set to mute. "PHONE (phone)" is not shown on the display.	<a href="#">P.54A-302</a>



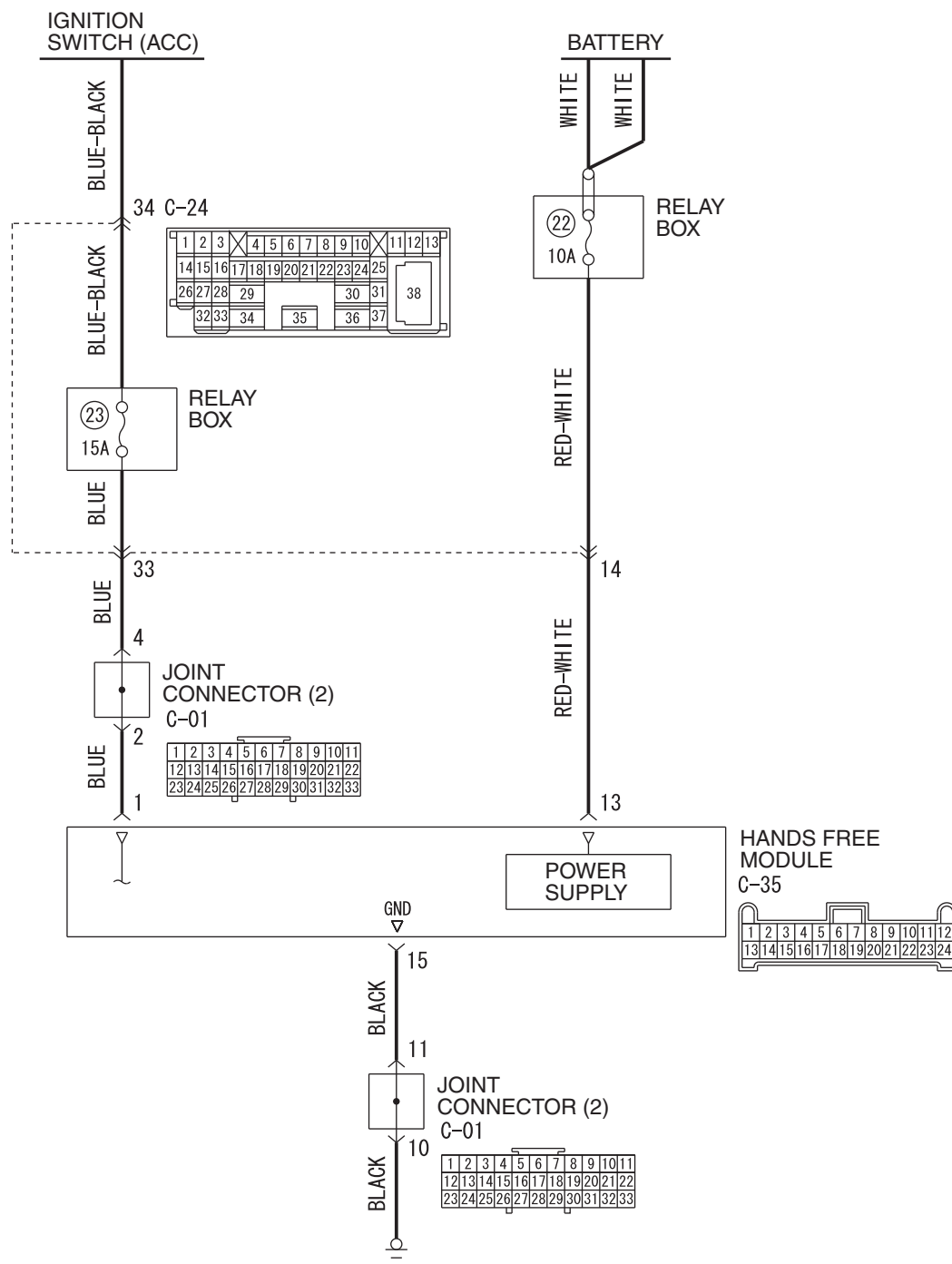
## SYMPTOM PROCEDURES

**INSPECTION PROCEDURE 1:** When the SPEECH button is pressed, the voice information is not output.

**CAUTION**

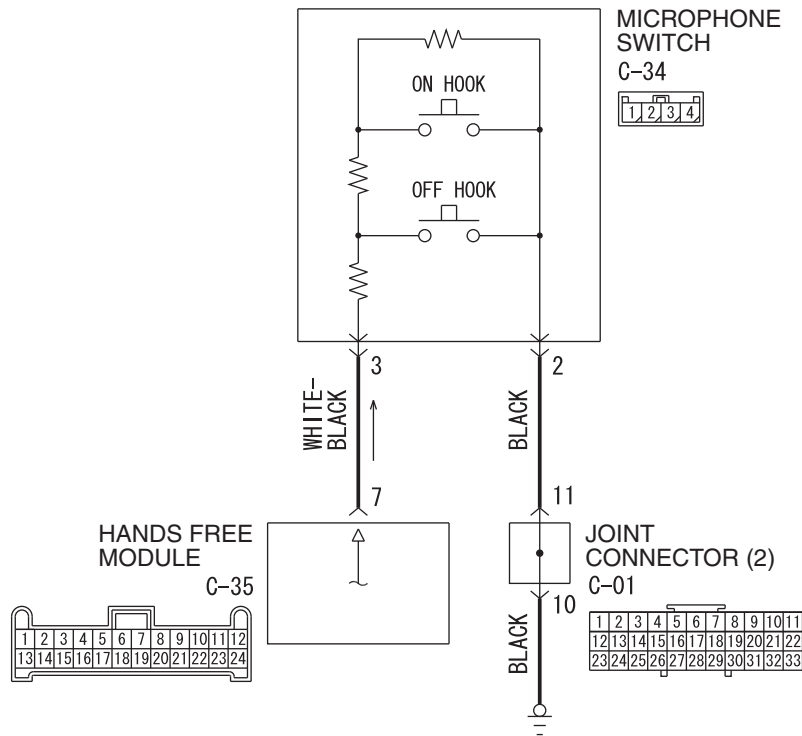
Before replacing the module, ensure that the power supply circuit and the ground circuit are normal.

Hands Free Module Power Supply Circuit



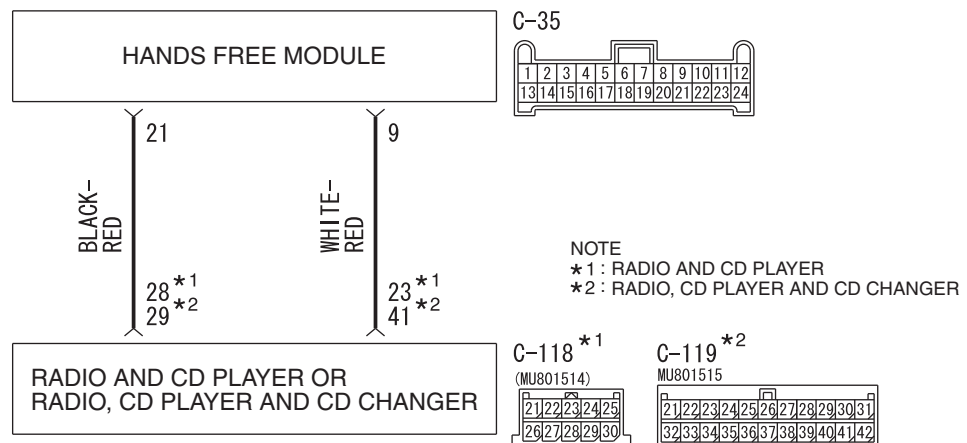


Microphone Switch Circuit



WAP54M010A

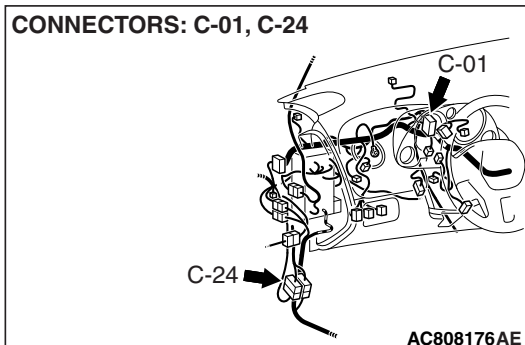
Hands Free Cellular Phone System Circuit



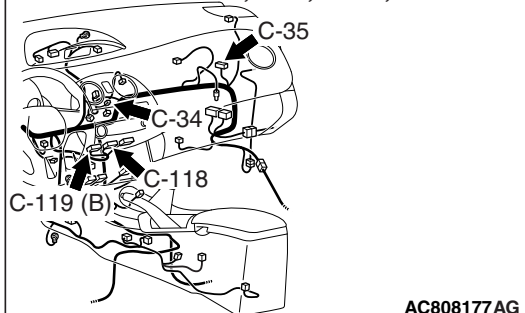
WAP54M011A



CONNECTORS: C-01, C-24



CONNECTORS: C-34, C-35, C-118, C-119



## CIRCUIT OPERATION

With the operation of the SPEECH button of the microphone switch, the hands-free module starts output to the radio and CD player or radio, CD player and CD changer for voice information. At this time, the voice information is output from the front door speaker (RH) and tweeter (RH) for the radio and CD player, and from the front speaker for the radio, CD player and CD changer.

## TECHNICAL DESCRIPTION (COMMENT)

If the voice information is not output when the SPEECH button is pressed, the microphone switch, hands-free module, radio and CD player or radio, CD player and CD changer, or power supply circuit to the hands-free module may be faulty.

## TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunctions of microphone switch
- Malfunction of hands free module
- Malfunction of radio and CD player or radio, CD player and CD changer

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

### STEP 1. Check the audio system.

Check that the audio system is activated normally, the voice is output from each speaker, and each of the audio information is shown on the display.

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

**YES** : Go to Step 2.

**NO** : Refer to G54A - radio with CD player Diagnosis  
[P.54A-186](#).

### STEP 2. Check the microphone switch.

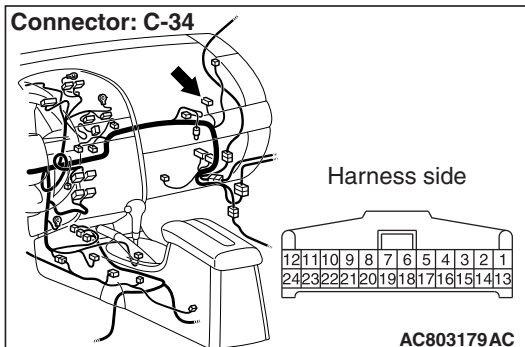
Refer to [P.54A-309](#).

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

**YES** : Go to Step 3.

**NO** : Replace the microphone switch.



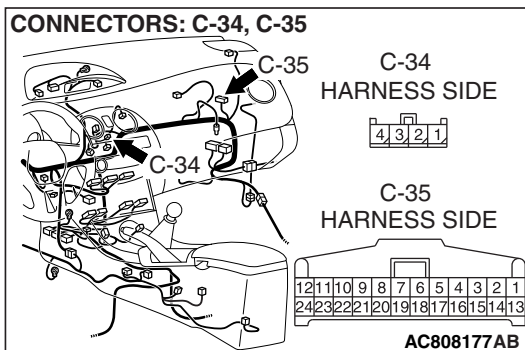


**STEP 3. Check hands-free module connector C-35 and microphone switch connector C-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are hands-free module connector C-35 and microphone switch connector C-34 in good condition?**

**YES :** Go to Step 4.

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



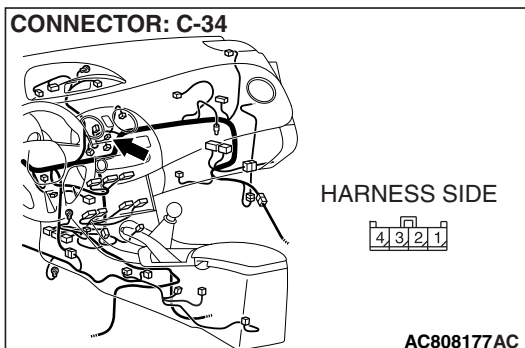
**STEP 4. Check the wiring harness between hands free module connector C-35 (terminal 7) and microphone switch connector C-34 (terminal 3).**

- Check the wiring harness for open circuit and short circuit.

**Q: Is the wiring harness between hands free module connector C-35 (terminal 7) and microphone switch connector C-34 (terminal 3) in good condition?**

**YES :** Go to Step 5.

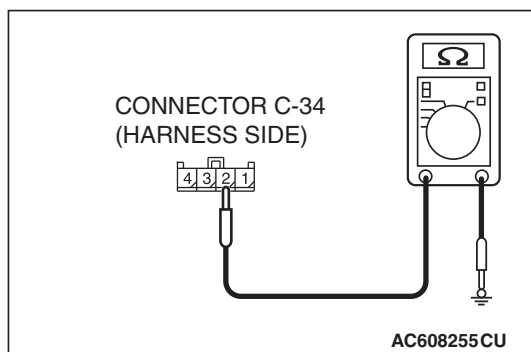
**NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



**STEP 5. Check the ground circuit to the microphone switch. Measure the resistance at microphone switch connector C-34.**

- (1) Disconnect hands free microphone switch connector C-34, and measure at the wiring harness side.





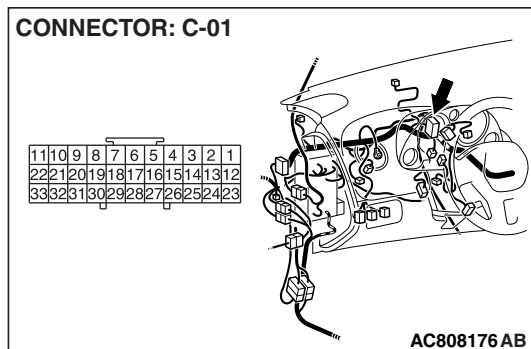
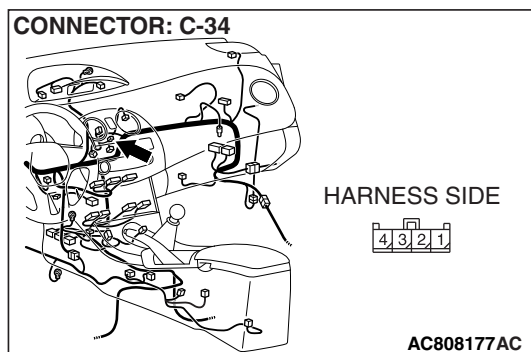
(2) Measure resistance between terminal 2 and ground.

**OK:** The resistance should be 2 ohm or less.

**Q:** Is the measured resistance 2 ohms or less?

**YES :** Go to Step 7.

**NO :** Go to Step 6.



**STEP 6. Check the wiring harness between microphone switch connector C-34 (terminal 2) and ground.**

- Check the ground wire for open circuit.

**NOTE:**

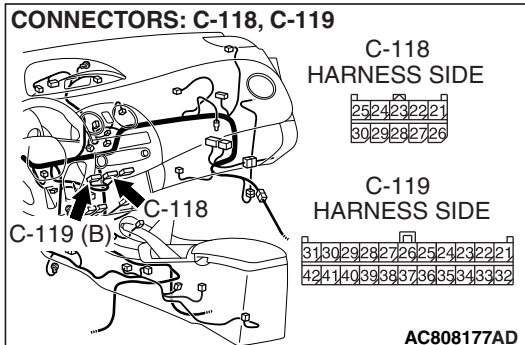
*Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*

**Q:** Is the wiring harness between microphone switch connector C-34 (terminal 2) and ground in good condition?

**YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction [P.00-14](#)).

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





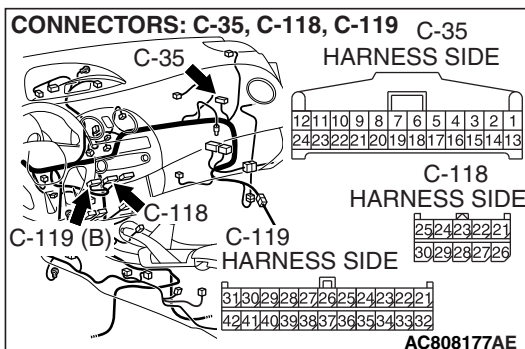
**STEP 7. Check radio and CD player C-118 or radio, CD player and CD changer C-119 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are radio and CD player C-118 or radio, CD player and CD changer C-119 in good condition?**

**YES :** Go to Step 8.

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

**P.00E-2.**



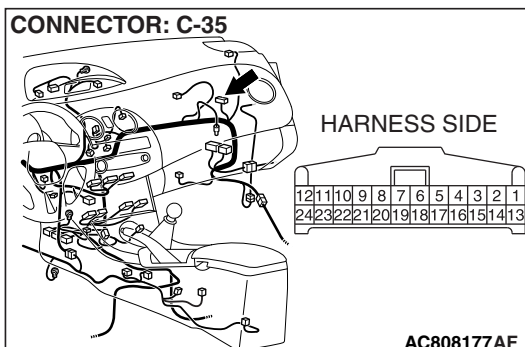
**STEP 8. Check the wiring harness between radio and CD player C-118 (terminal 23, 28) or radio, CD player and CD changer C-119 (terminal 41, 29) and hands free module connector C-35 (terminal 9, 21).**

- Check the wiring harness for open circuit and short circuit.

**Q: Is the wiring harness between radio and CD player C-118 (terminal 23, 28) or radio, CD player and CD changer C-119 (terminal 41, 29) and hands free module connector C-35 (terminal 9, 21) in good condition?**

**YES :** Go to Step 9.

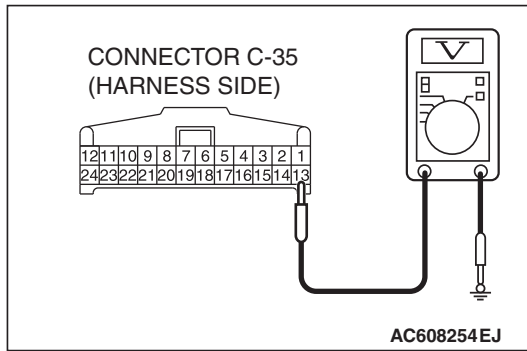
**NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.



**STEP 9. Check the power supply circuit to the hands free module. Measure the voltage at hands free module connector C-35.**

- (1) Disconnect hands free module connector C-35, and measure the voltage available at the hands free module side of the connector.





(2) Measure the voltage between terminal 13 and ground.

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

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

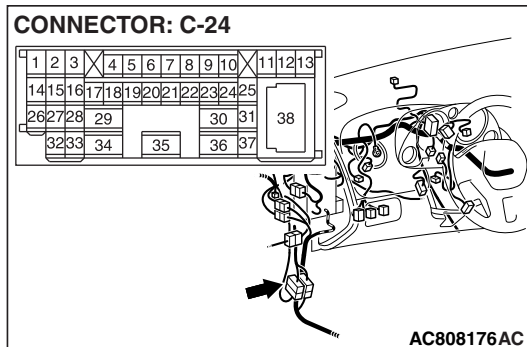
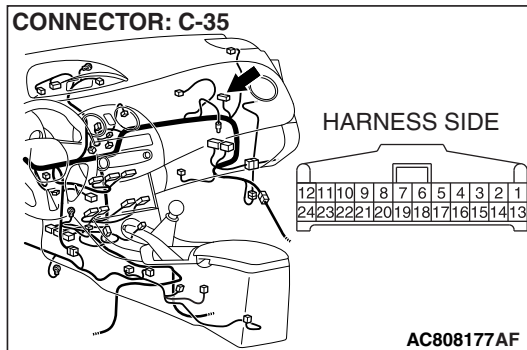
**YES :** Go to Step 11.

**NO :** Go to Step 10.

#### STEP 10. Check the wiring harness between hands free module connector C-35 (terminal 13) and battery.

- Check the wiring harness for open circuit and short circuit.

**NOTE:**



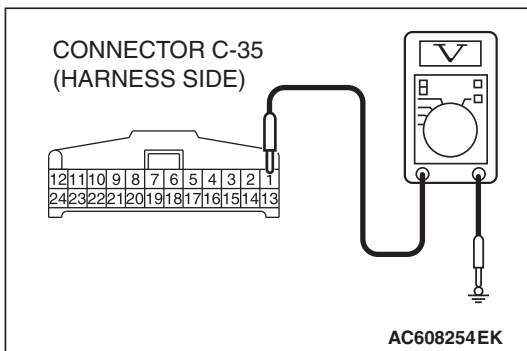
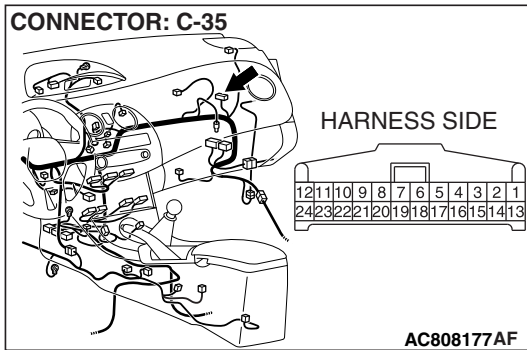
Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between hands free module connector C-35 (terminal 13) and battery in good condition?

**YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction [P.00-14](#)).

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





**STEP 11. Check the power supply circuit to the hands free module. Measure the voltage at hands free module connector C-35.**

(1) Disconnect hands free module connector C-35, and measure the voltage available at the hands free module side of the connector.

(2) Ignition switch "ACC" position.

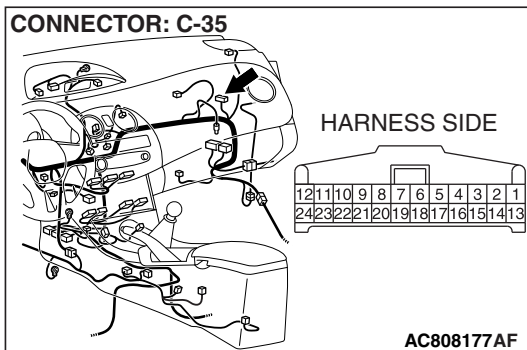
(3) Measure the voltage between terminal 1 and ground.

**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 13.

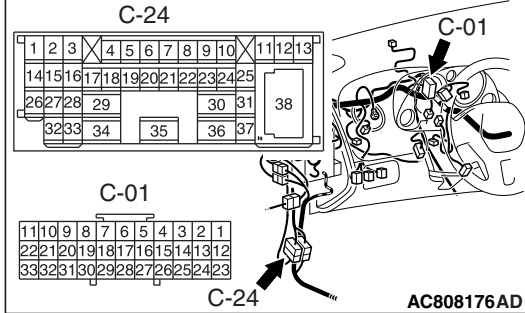
**NO :** Go to Step 12.



**STEP 12. Check the wiring harness between hands free module connector C-35 (terminal 1) and ignition switch (ACC).**

- Check the wiring harness for open circuit and short circuit.



**CONNECTORS: C-01, C-24**

**NOTE:** Also check intermediate connector C-24 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 and joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection.

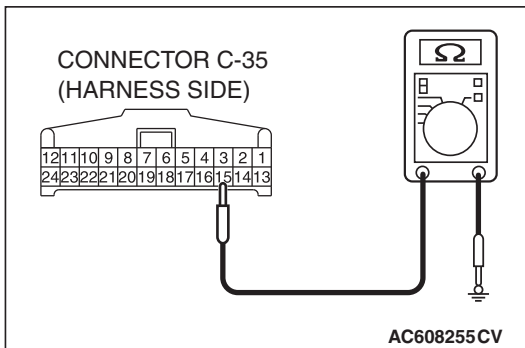
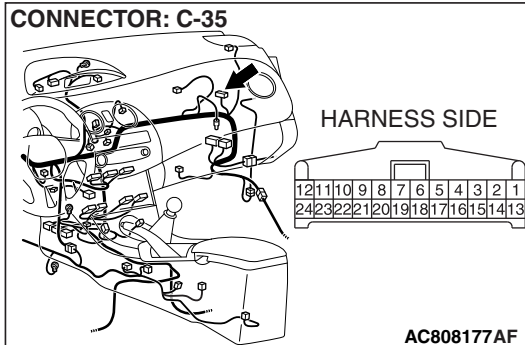
**Q:** Is the wiring harness between hands free module connector C-35 (terminal 1) and ignition switch (ACC) in good condition?

**YES :** Refer to ignition switch diagnosis P.54A-9.

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

**STEP 13. Check the ground circuit to the hands free module. Measure the resistance at hands free module connector C-35.**

(1) Disconnect hands free module connector C-35, and measure at the wiring harness side.



(2) Measure resistance between terminal 15 and ground.

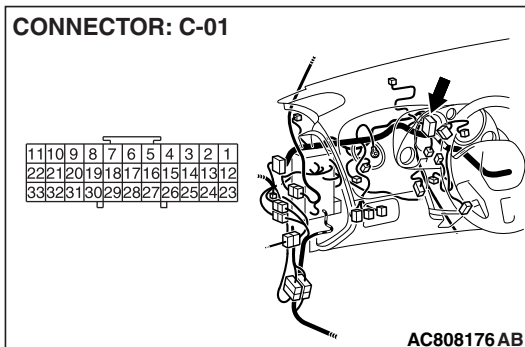
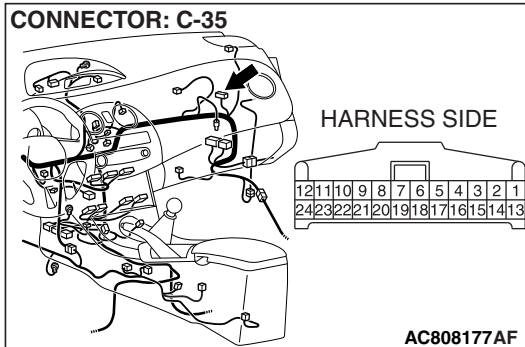
**OK:** The resistance should be 2 ohm or less.

**Q:** Is the measured resistance 2 ohms or less?

**YES :** Go to Step 15.

**NO :** Go to Step 14.





**STEP 14. Check the wiring harness between hands free module connector C-35 (terminal 15) and ground.**

- Check the ground wire for open circuit.

**NOTE:**

*Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection.*

**Q: Is the wiring harness between hands-free module connector C-35 (terminal 15) and ground in good condition?**

- YES :** The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction [P.00-14](#)).
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

**STEP 15. Temporarily replace the hands free module, and check the trouble symptom.**

Check that the normal conversation is possible with the hands free cellular phone system.

**Q: Is the normal conversation possible with the hands free cellular phone system?**

- YES :** Replace the hands free module.
- NO :** Replace the radio and CD player or radio, CD player and CD changer.

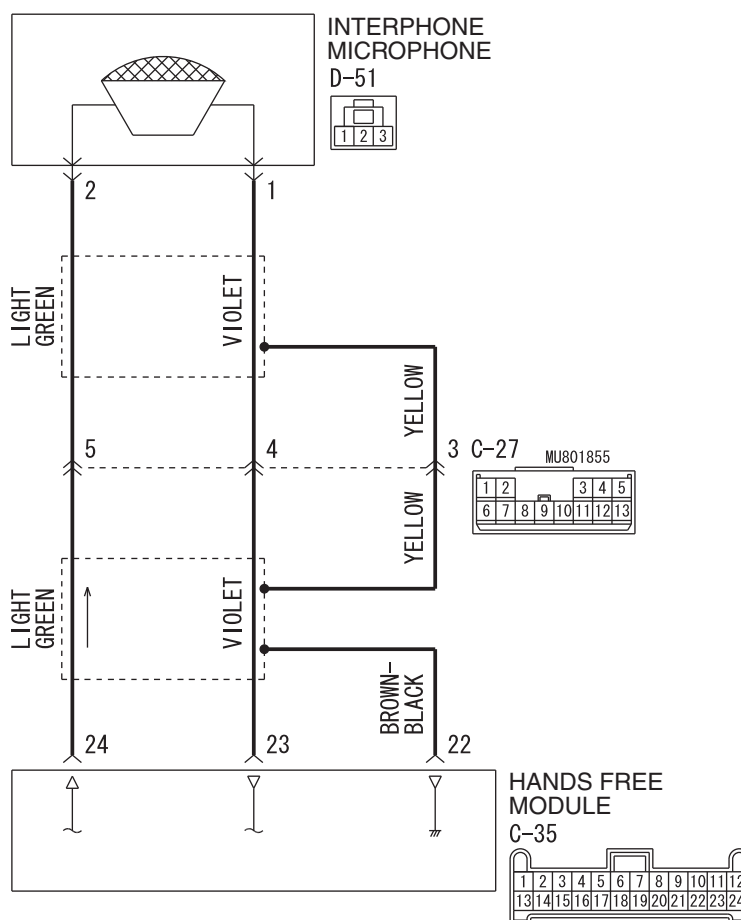


**INSPECTION PROCEDURE 2:** When the **SPEECH** button is pressed, the voice information is output, but the voice recognition is not performed.

**CAUTION**

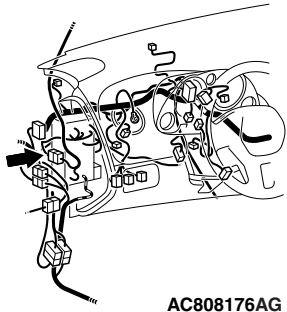
Before replacing the module, ensure that the power supply circuit and the ground circuit are normal.

Hands Free Cellular Phone System Circuit



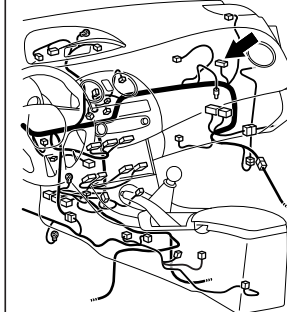
WAP54M012A

CONNECTOR: C-27



AC808176AG

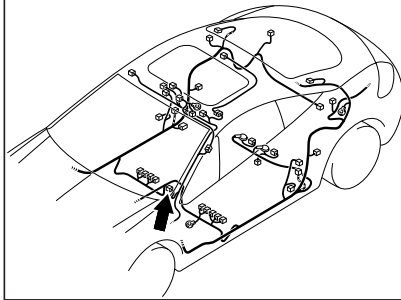
CONNECTOR: C-35



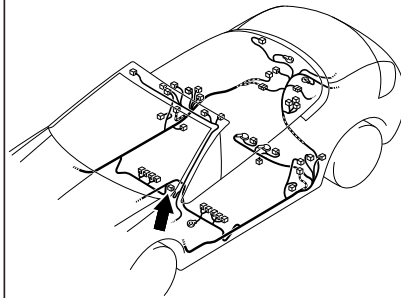
AC808177AH



CONNECTOR: D-51 <ECLIPSE>



CONNECTOR: D-51 <ECLIPSE SPYDER>



## CIRCUIT OPERATION

With the operation of the SPEECH button, the hands-free module starts voice recognition. In addition, the power source is supplied by the hands-free module.

## TECHNICAL DESCRIPTION (COMMENT)

If the voice recognition cannot be performed, the interphone microphone or hands-free module may be faulty.

## TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunctions of interphone microphone
- Malfunction of hands free module

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

---

### STEP 1. Check the interphone microphone.

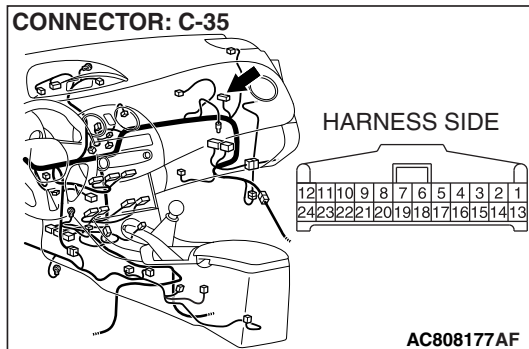
Refer to [P.54A-309](#).

### Q: Is the check result normal?

**YES** : Go to Step 4.

**NO** : Go to Step 2.





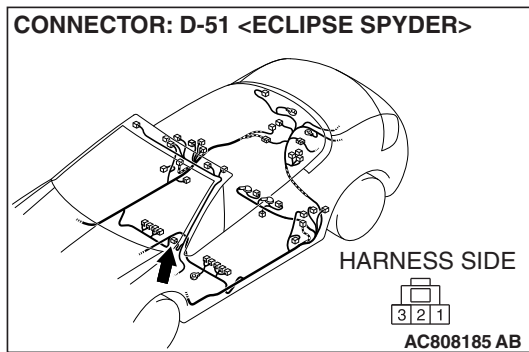
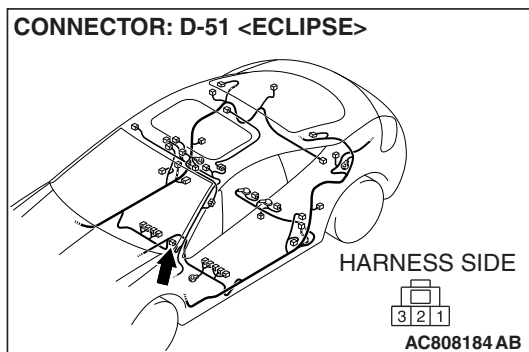
**STEP 2.** Check hands free module connector C-35 and interphone microphone connector D-51 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

**Q:** Are hands free module connector C-35 and interphone microphone connector D-51 in good condition?

**YES :** Go to Step 3.

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

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

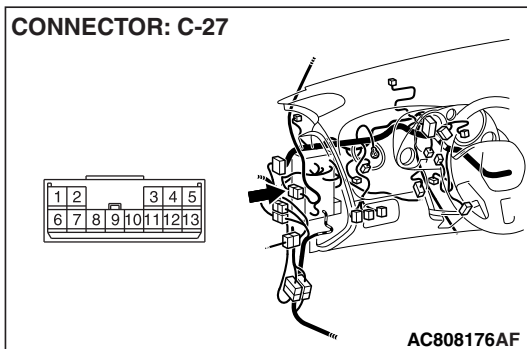
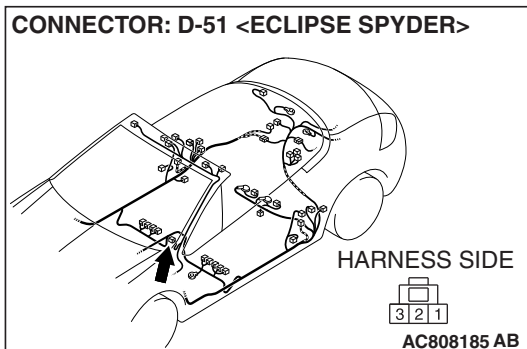
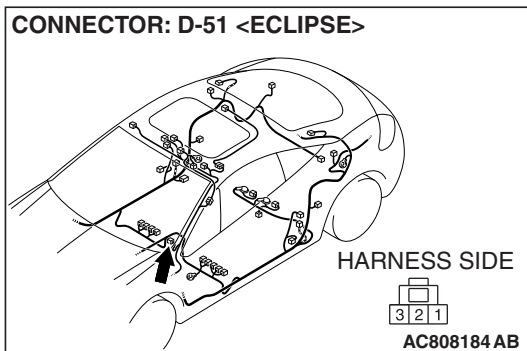
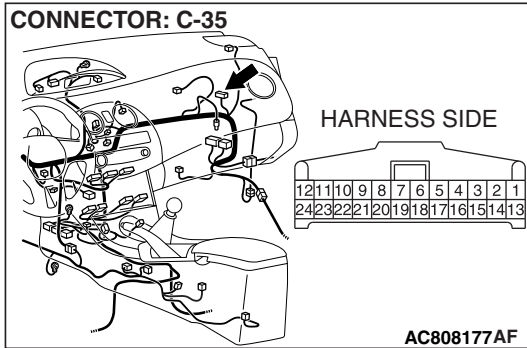




**STEP 3. Check the wiring harness between hands free module connector C-35 (terminal 24, 23) and interphone microphone connector D-51 (terminal 2, 1).**

- Check the wiring harness for open circuit and short circuit.

*NOTE: Also check intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-27 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).*



**Q: Is the wiring harness between hands free module connector C-35 (terminal 24, 23) and interphone microphone connector D-51 (terminal 2, 1) in good condition?**

**YES :** Go to Step 4.

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



**STEP 4. Temporarily replace the interphone microphone, and check the trouble symptom.**

Check that the normal conversation is possible with the hands free cellular phone system.

**Q: Is the normal conversation possible with the hands free cellular phone system?**

**YES :** Replace the interphone microphone.

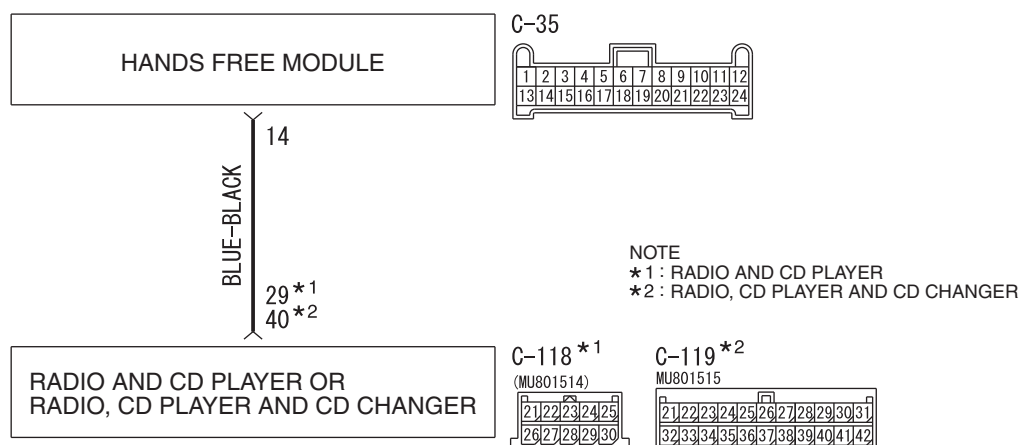
**NO :** Replace the hands free module.

**INSPECTION PROCEDURE 3:** When the hands-free cellular phone system is activated, the audio system is not set to mute. "PHONE (phone)" is not shown on the display.

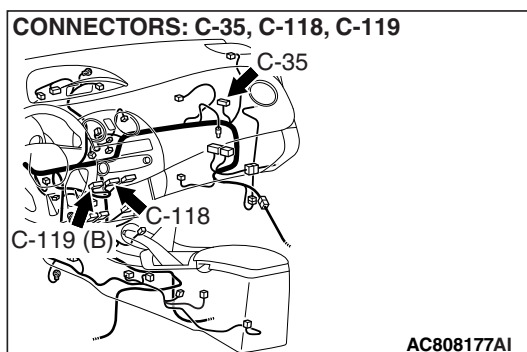
**CAUTION**

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

Hands Free Cellular Phone System Circuit



WAP54M013A

**CIRCUIT OPERATION**

If the radio and CD player or the radio, CD player and CD changer receives the signal for MUTE activation from the hands free module, the output from all the speakers other than the front door speaker (RH) or tweeter (RH) is set to 0 in any case.

**TECHNICAL DESCRIPTION (COMMENT)**

If the audio system is not set to mute while the hands-free cellular phone system is activated, the radio and CD player, radio, CD player and CD changer, or the hands-free module may be faulty.

**TROUBLESHOOTING HINTS**

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- Malfunctions of radio and CD player or radio, CD player and CD changer
- Malfunction of hands free module



## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

### STEP 1. Check the audio system.

Check that the audio system is activated normally, the voice is output from each speaker, and each of the audio information is shown on the display.

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

**YES** : Go to Step 2.

**NO** : Refer to G54A - radio with CD player Diagnosis

[P.54A-186.](#)

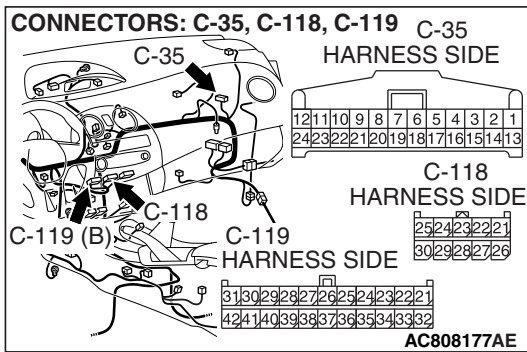
### STEP 2. Check hands free module C-35 and radio and CD player C-118 or radio, CD player and CD changer C-119 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

#### Q: Are hands free module C-35 and radio and CD player C-118 or radio, CD player and CD changer C-119 in good condition?

**YES** : Go to Step 3.

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

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



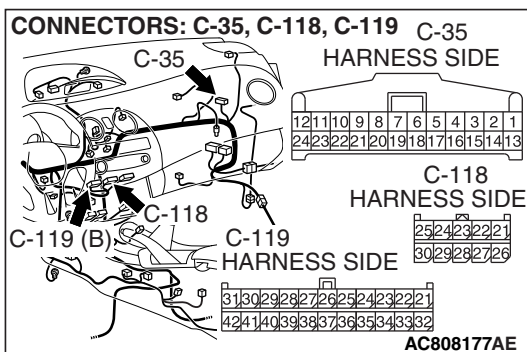
### STEP 3. Check the wiring harness between radio and CD player C-118 (terminal 29) or radio, CD player and CD changer C-119 (terminal 40) and hands free module connector C-35 (terminal 14).

- Check the wiring harness for open circuit and short circuit.

#### Q: Is the wiring harness between radio and CD player C-118 (terminal 29) or radio, CD player and CD changer C-119 (terminal 40) and hands free module connector C-35 (terminal 14) in good condition?

**YES** : Go to Step 4.

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





**STEP 4. Temporarily replace the hands free module, and check the trouble symptom.**

Check that the normal conversation is possible with the hands free cellular phone system.

**Q: Is the normal conversation possible with the hands free cellular phone system?**

**YES :** Replace the hands free module.

**NO :** Replace the radio and CD player or radio, CD player and CD changer.

**ON-VEHICLE SERVICE****PAIRING A CELLULAR PHONE OR DELETING A PHONE**

M1544403700247

**NOTE:**

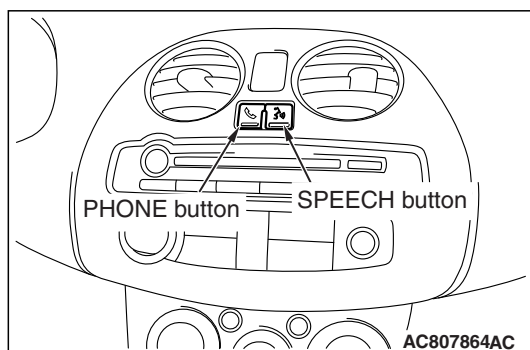
- Several Bluetooth® cellular phones may not be compatible with the hands free module
- A maximum of seven Bluetooth® cellular phones can be registered.
- The hands free cellular phone system cannot be used when a battery of Bluetooth® cellular phone was exhausted.

**PAIRING A CELLULAR PHONE**

1. Shift the selector lever to "P" (parking) position and pull the parking brake lever.
2. Turn the ignition switch to "ACC" or "ON" position.
3. Press the SPEECH button.
4. Say "Setup."
5. Say "Pairing options."
6. The voice guide will say "Do you want to Pair a phone, delete a phone or list paired phones?"
7. Say "Pair a phone."
8. The voice guide will say "This operation should only be performed while the vehicle is parked. Please say continue to perform this operation." Say "Continue."
9. The voice guide will say "Please say a 4-digit pairing code."
10. Say a 4 digit code. The 4 digit code will be registered as a pairing code for the phone.
  - When the confirmation function is on, the system will confirm whether the number said is acceptable. Answer "Yes" to go Step 10. Say "No" to return to pairing code selection.

**NOTE:**

- The pairing code entered here is only used for the Bluetooth® connection certification. It is any 4-digit code the user would like to select.
- Remember the pairing code as it needs to be keyed into the phone later in the pairing process.
- Depending on the selected Bluetooth® connection settings, entry of the pairing code may be required each time the Bluetooth® cellular phone attempts to connect to the hands free cellular phone system. Refer to your cellular phone owner's manual for connection defaults and settings.





11. The voice guide will say "Start pairing procedure on phone. See phone's manual for instructions." Refer to the owner's manual for your cellular phone and enter into the phone the pairing code that was registered in Step 10.
12. When the hands free cellular phone system finds a Bluetooth® cellular phone, the voice guide will say "Please say the name of the phone after the beep."
13. After you hear the beep, name the phone by saying a name of your preference.

**NOTE:**

- *When the hands free cellular phone system cannot recognize the Bluetooth® cellular phone, the pairing process will end and the system will beep and then return to normal status.*
  - *Try the pairing process again after reconfirming whether or not the Hands free cellular phone system supports your Bluetooth® compatible cellular phone.*
14. The voice guide will say "Assign a priority for this phone between 1 and 7 where 1 is the phone used most often."
  15. Say a number between 1 and 7 to set a priority level for the cellular phone.
    - If you selected a priority level that has already been set for a different phone, the hands free cellular phone system will ask you whether you wish to override that priority level. To override the priority level, answer "Yes." Answer "No" to return to the priority level selection in Step 14.
  16. After the voice guide says "<phone tag> set to priority <priority>," the hands free cellular phone system will start the pairing process. Wait a moment for the pairing process to complete.
    - When the confirmation function is "ON", the hands free cellular phone system will confirm the assigned phone name and priority again. Answer "Yes" to go to next step, or answer "No" to return to the priority level selection in Step 13.
  17. When the pairing process is completed, the voice guide will say "Pairing Complete." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated.

## DELETING A PHONE

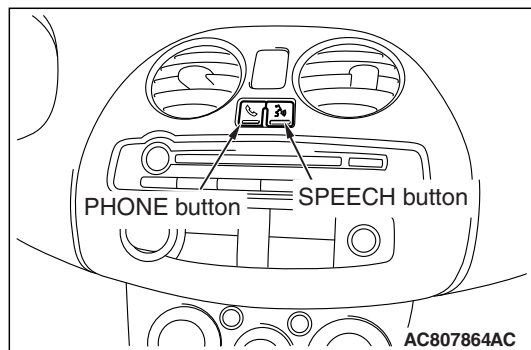
1. Turn the ignition switch to "ACC" or "ON" position.
2. Press the "SPEECH" button.
3. Say "Setup."
4. Say "Pairing options"
5. The voice guide will say "Do you want to Pair a phone, delete a phone or list paired phones?"
6. Say "Delete a phone."



7. After the voice guide says "Please say," it will read out each priority number and phone name pair in order, starting with the phone that has the highest priority level (from 1 to 7). After it completes reading all pairs, the voice guide will say "or all, or say cancel to return to main menu."
8. Say the priority number of the phone that you want to delete from the system.  
Say "All" to delete all paired phones from the system, or "Cancel" to end the deletion process and return to the main menu.
9. For confirmation purposes, the voice guide will say "Removing <phone tag> (all) is this correct?" Answer "Yes" to delete the phone(s). If you answer "No," the voice guide will ask "Which phone please?" Say again the priority number of the phone that you want to delete from the hands free cellular phone system.
10. When the phone deletion process is completed, the voice guide will say "Deleted." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated.
  - If the phone deletion process fails for some reason, the voice guide will say "Delete failed." The hands free cellular phone system will then beep and the voice recognition mode will be deactivated. Start over again from Step 1.

## ERASE THE PASSCODE

M1544403800255



The 4-digit passcode set by security function can be erased by operating the PHONE button.

1. Turn the ignition switch to the "ON" or "ACC" position.
2. Check that the hands free cellular phone system is not in voice recognition mode.
3. Press and hold the PHONE button for approximately 2 seconds (1.5 seconds or more).
4. Within approximately 10 seconds after performing step 3, press and hold the PHONE button for approximately 2 seconds (1.5 seconds or more) twice again.

**NOTE:** Even if the passcode is erased, guidance such as voice guide is not provided.

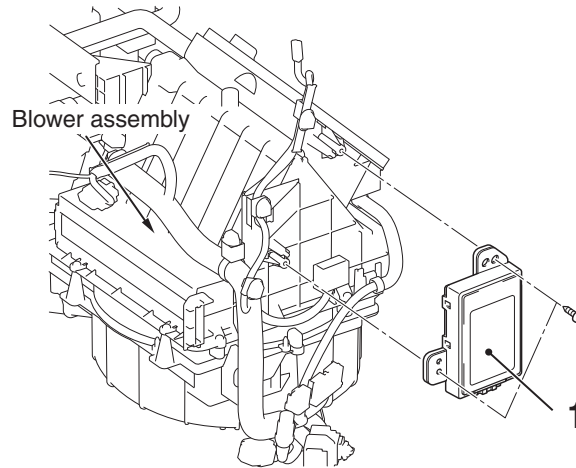
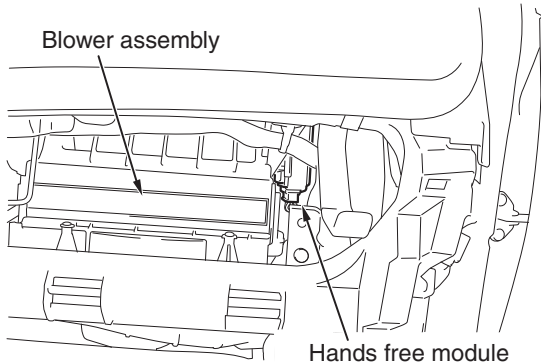
5. After the operation, check if the lock with the passcode is unlocked. If the lock is not unlocked, repeat from step 2.



## REMOVAL AND INSTALLATION

### HANDS FREE MODULE

M1544401000305



AC808163AB

#### Removal Steps

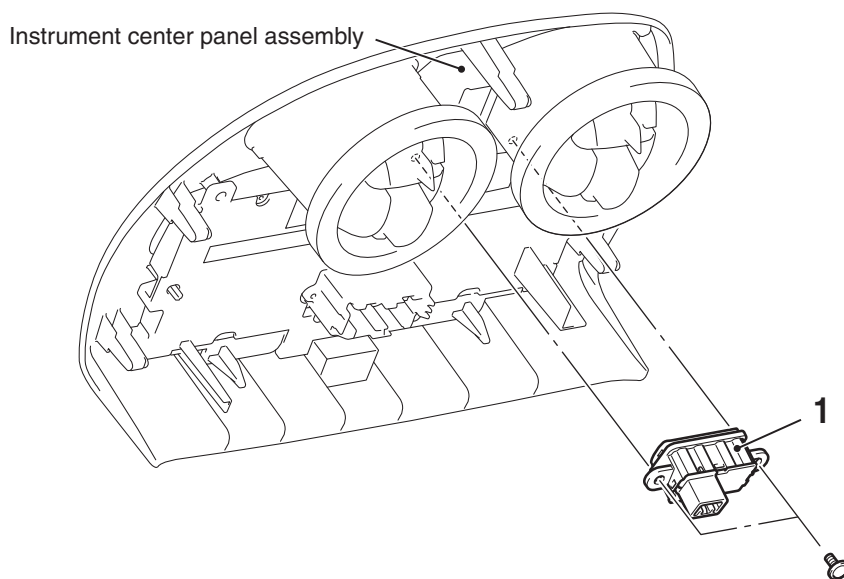
- FRONT SCUFF PLATE (RH), COWL SIDE TRIM (RH) (REFER TO GROUP 52A, TRIMS [P.52A-30.](#))
- INSTRUMENT PANEL PARCEL BOX, INSTRUMENT PANEL UNDER PASSENGER SIDE COVER, INSTRUMENT PANEL SIDE AIR OUTLET (REFER TO GROUP 52A – INSTRUMENT PANEL ASSEMBLY [P.52A-19.](#))

#### Removal Steps (Continued)

- AUDIO AMPLIFIER (REFER TO GROUP 54A – AMPLIFIER [P.54A-265.](#) <VEHICLE WITH AUDIO AMPLIFIER>
- 1. HANDS FREE MODULE



## MICROPHONE SWITCH

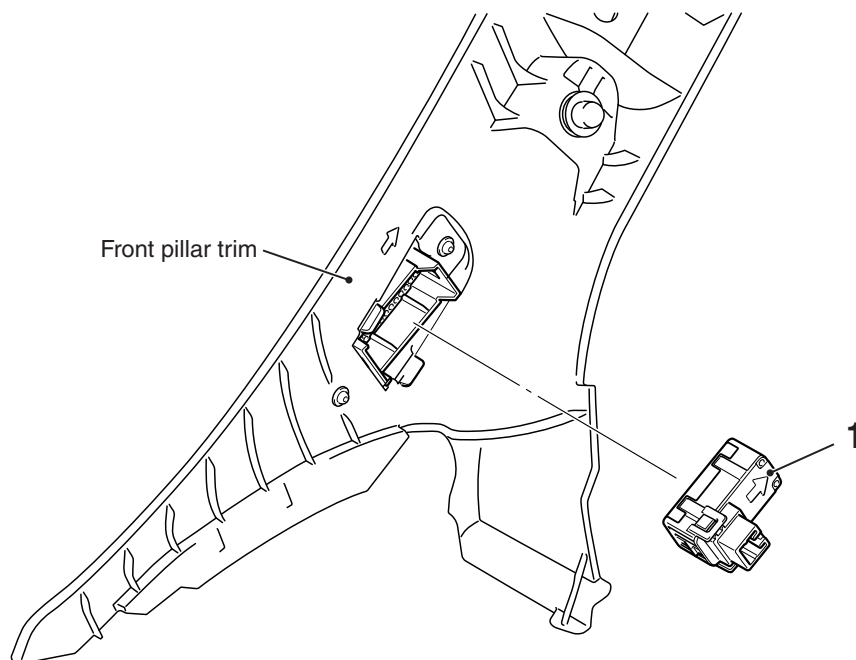


AC807865AB

- **Removal Steps**  
INSTRUMENT CENTER PANEL  
ASSEMBLY (REFER TO GROUP  
52A – INSTRUMENT PANEL  
ASSEMBLY [P.52A-19](#)).

- Removal Steps (Continued)**
1. MICROPHONE SWITCH

## INTERPHONE MICROPHONE



AC807867AB

- **Removal Steps**  
FRONT PILLAR TRIM (REFER TO  
GROUP 52A – TRIMS [P.52A-30](#)).

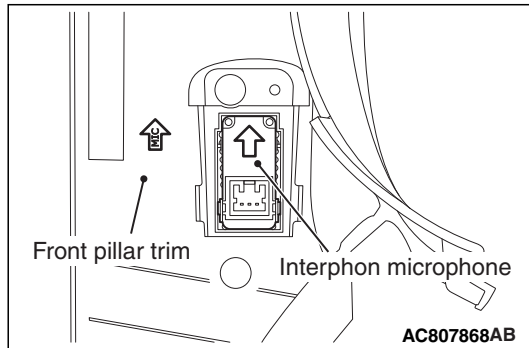
- Removal Steps (Continued)**
- >>A<< 1. INTERPHONE MICROPHONE



## INSTALLATION SERVICE POINT

### >>A<< INTERPHONE MICROPHONE INSTALLATION

Install the interphone microphone so that the arrow mark is in the same direction as the one in the front pillar trim.

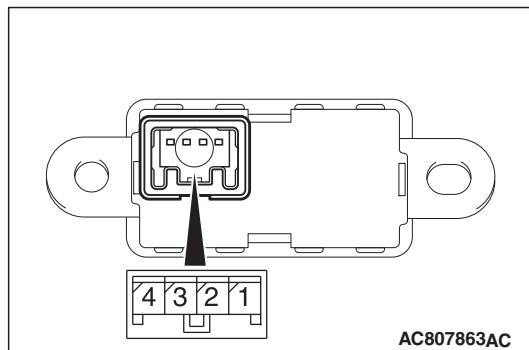


## INSPECTION

M1544404100055

### MICROPHONE SWITCH CHECK

Use an ohmmeter to measure the resistance value between the terminal.

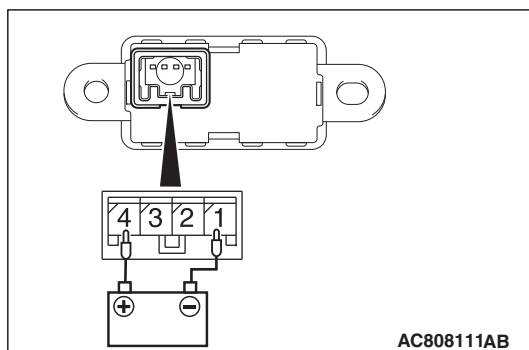


Switch position	Tester connection	Measurement value
No push	2 – 3	Approximately 1.8 k $\Omega$
SPEECH button		Approximately 51 $\Omega$
PHONE button		Approximately 281 $\Omega$

### ILLUMINATION CHECK

Apply the battery voltage of microphone switch connector terminal No. 4 and 1, and check if the microphone switch illuminates.

*NOTE: Make sure that the polarity is correct.*

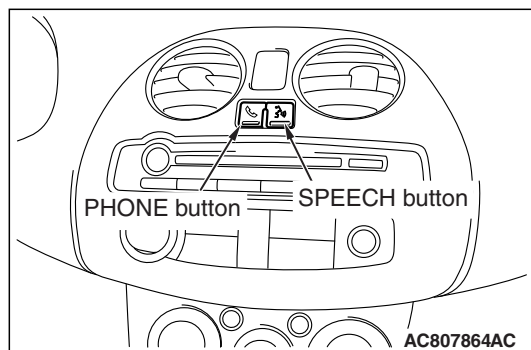




**INTERPHONE MICROPHONE CHECK**

By operating the PHONE button, the connection of the interphone microphone can be checked.

1. Turn the ignition switch to the "ON" or "ACC" position.
2. Check that the hands free cellular phone system is not in voice recognition mode.
3. Press and hold the PHONE button for approximately 5 seconds.
4. The hands-free module checks the connection with the interphone microphone. If no abnormality is present, the voice information "No faults present" is output, and if an abnormality is present, "Microphone faults" is output.

**DEFOGGER****GENERAL DESCRIPTION**

M1543000100610

**DEFOGGER OPERATION**

The defogger relay turns ON if the defogger switch built-in the A/C-ECU is turned ON when the ignition switch is in the "ON" position. When the defogger relay turns ON, power is supplied to the defogger and the defogger is activated. The defogger comes with a timer function that causes the defogger switch to automatically turn OFF about 17 minutes after the defogger switch is turned ON.

**DEFOGGER DIAGNOSIS**

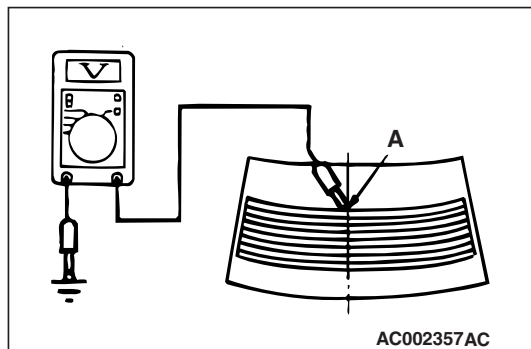
M1543000701400

The defogger is controlled by the A/C-ECU. For troubleshooting, refer to GROUP 55A, Manual A/C Diagnosis – Symptom Chart [P.55A-97](#).

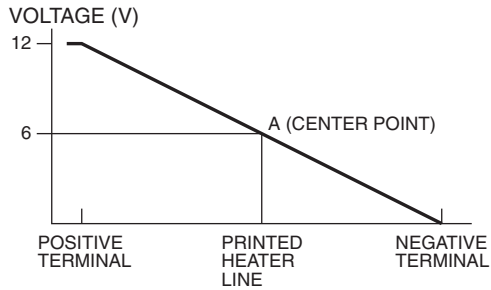
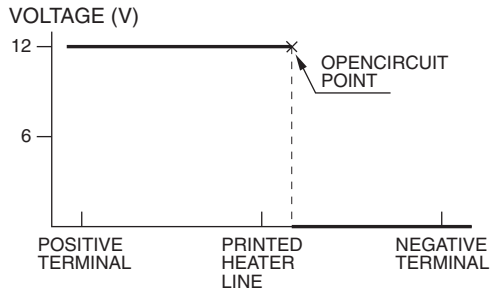
**ON-VEHICLE SERVICE****PRINTED-HEATER LINES CHECK**

M1543001800430

1. Run the engine at 2,000 r/min. Check the heater element with the battery at full.
2. Turn "ON" the rear window defogger switch. Measure the heater element voltage with an ohmmeter at the rear window glass center A. Condition is good if it indicates about 6 V.





**NORMAL CHARACTERISTIC CURVE****ABNORMAL CHARACTERISTIC CURVE**

AC407247AB

3. If 12 V is indicated at A, there is a break in the negative terminals from A. Move the test probe slowly to the negative terminal to detect where voltage changes suddenly (0V).
4. If 0 V is indicated at A, there is a break in the positive terminals from A. Detect where the voltage changes suddenly (12 V) in the same method described above.

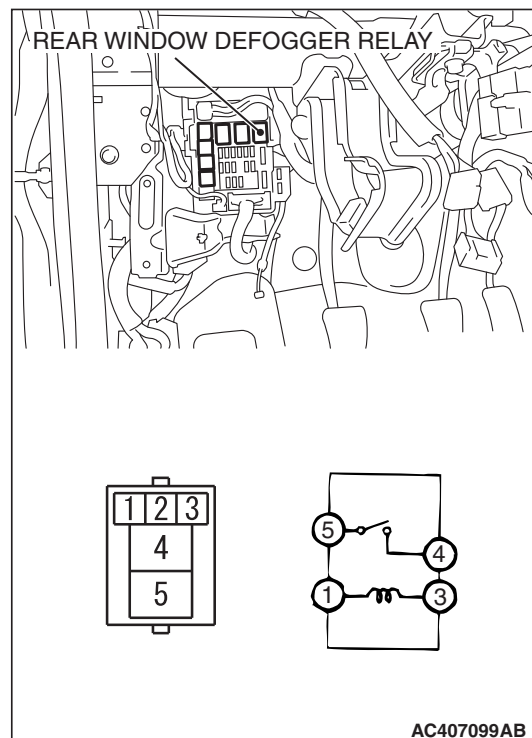
**REAR WINDOW DEFOGGER SWITCH****REMOVAL AND INSTALLATION**

Refer to GROUP 55A, Heater Control Assembly  
(Incorporated in A/C-ECU) .P.55A-196

M1543006200422

**INSPECTION****DEFOGGER RELAY CONTINUITY CHECK**

M1543019505019



AC407099AB

BATTERY VOLTAGE	CONNECT TESTER BETWEEN:	SPECIFIED CONDITION
Not applied	4-5	Open Circuit
<ul style="list-style-type: none"><li>Connect terminal 1 to the positive battery terminal</li><li>Connect terminal 3 to the negative battery terminal</li></ul>	4-5	Continuity exists (2 ohms or less)



## MULTI-CENTER DISPLAY

### GENERAL DESCRIPTION

M1543000100911

The multi-center display comes in two types.

- Clock display (incorporating clock) <TYPE1, TYPE2>
- Compass display (incorporating compass sensor) <TYPE1>
- Ambient air temperature display (communicating with the ambient temperature sensor) <TYPE1>
- Audio system operation display (communicating with radio and CD player via M bus) <TYPE1, TYPE2>
- SIRIUS satellite radio operation display (The satellite radio tuner communicates via audio system.) <TYPE1, TYPE2>

- If the wiring harness connectors are engaged correctly, check the wiring harness. If the wiring harness is in good condition, replace relevant components.

### DIAGNOSIS TIPS WHEN ONLY SPECIFIC FUNCTION(S) IS DEFECTIVE

- Check that the wiring harness connectors related to the specific function are engaged correctly. If a failure is found, repair the connectors and check the trouble symptom again.
- If the wiring harness connectors are engaged correctly, check the wiring harness. If the wiring harness is in good condition, replace relevant components, which controls that function.

### PRECAUTIONS DURING SERVICE

### DIAGNOSIS TIPS CONCERNING THE ENTIRE SYSTEM

- Check that relevant wiring harness connectors are engaged correctly. If a failure is found, repair the connectors and check the trouble symptom again.

### DIAGNOSIS

M1543007201730

### SYMPTOM CHART

#### CAUTION

During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are set, erase them all.

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
The multi-center display does not show any information.	1	<a href="#">P.54A-313</a>
"-" (Ambient air temperature sensor error) is displayed on the ambient air temperature display. <Vehicles with TYPE 1>	2	<a href="#">P.54A-320</a>
The ambient air temperature display does not change normally. <Vehicles with TYPE 1>	3	<a href="#">P.54A-323</a>
On the audio screen, "E" cannot proceed to next screen.	4	<a href="#">P.54A-327</a>
The compass cannot be calibrated manually, or goes out of calibration easily. <Vehicles with TYPE 1>	5	<a href="#">P.54A-331</a>



**INSPECTION PROCEDURE 1: The multi-center display does not Show any Information.**

**BATTERY**

**IGNITION SWITCH (ACC)**

**IGNITION SWITCH (IG1)**

**RELAY BOX**

**JUNCTION BLOCK**

**POWER SUPPLY**

**MULTI-CENTER DISPLAY UNIT**

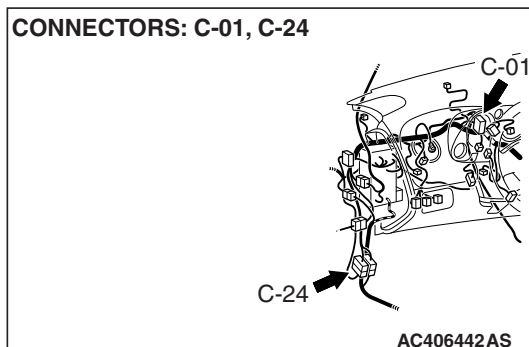
**JOINT CONNECTOR (2)**

**Wiring Details:**

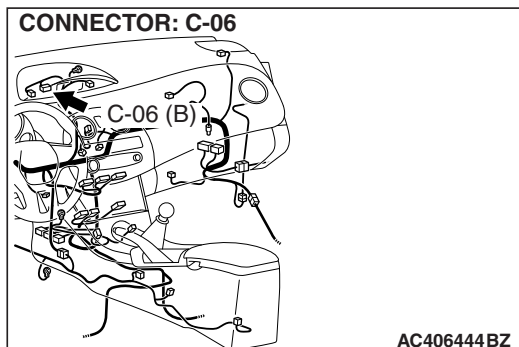
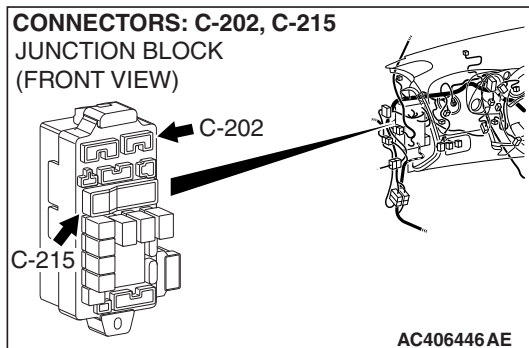
- BATTERY:** WHITE wires connect to the 10A and 15A terminals of the RELAY BOX. A RED-WHITE wire connects to terminal 1 of the POWER SUPPLY.
- IGNITION SWITCH (ACC):** BLUE-BLACK wires connect to the 23 and 15A terminals of the RELAY BOX. A BLUE wire connects to terminal 3 of the POWER SUPPLY.
- IGNITION SWITCH (IG1):** A RED wire connects to terminal 2 of the JUNCTION BLOCK. A GREEN wire connects to terminal 2 of the POWER SUPPLY.
- RELAY BOX:** The 10A and 15A terminals are connected to the 10A and 15A terminals of the JUNCTION BLOCK.
- JUNCTION BLOCK:** The 10A and 15A terminals are connected to the 10A and 15A terminals of the POWER SUPPLY.
- POWER SUPPLY:** The 10A and 15A terminals are connected to the 10A and 15A terminals of the MULTI-CENTER DISPLAY UNIT.
- MULTI-CENTER DISPLAY UNIT:** The 10A and 15A terminals are connected to the 10A and 15A terminals of the JOINT CONNECTOR (2).
- JOINT CONNECTOR (2):** The 10A and 15A terminals are connected to the 10A and 15A terminals of the POWER SUPPLY.



CONNECTORS: C-01, C-24



CONNECTOR: C-06

CONNECTORS: C-202, C-215  
JUNCTION BLOCK  
(FRONT VIEW)**CIRCUIT OPERATION**

The multi-center display unit is energized by the battery through the ignition switch (ACC) and (IG1).

**TECHNICAL DESCRIPTION (COMMENT)**

The ground circuit, the battery circuit, the ignition switch (ACC) circuit or the ignition switch (IG1) circuit is suspected to be open or defective.

**TROUBLESHOOTING HINTS**

- Malfunction of the multi-center display unit
- Damaged wiring harness and connectors

**DIAGNOSIS****Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

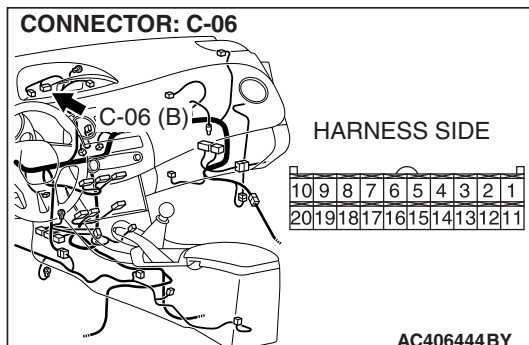
**STEP 1. Check the multi-center display unit connector C-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is the multi-center display unit connector C-06 in good condition?**

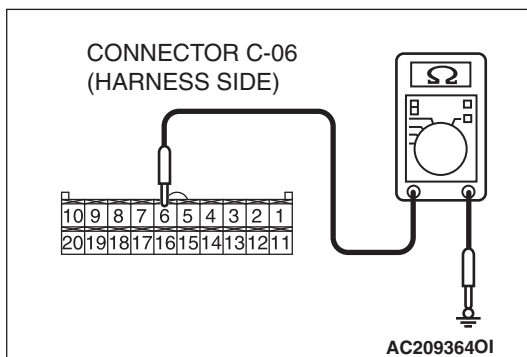
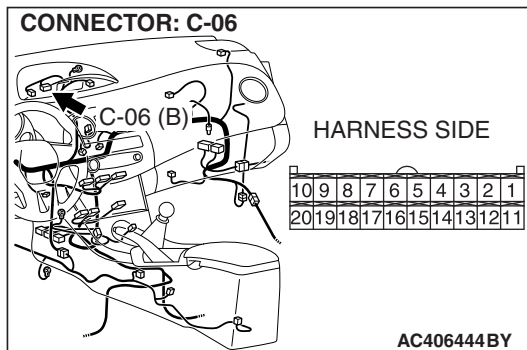
**YES :** Go to Step 2.

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

CONNECTOR: C-06







**STEP 2. Check the multi-center display unit ground circuit. Measure the resistance at the multi-center display unit connector C-06.**

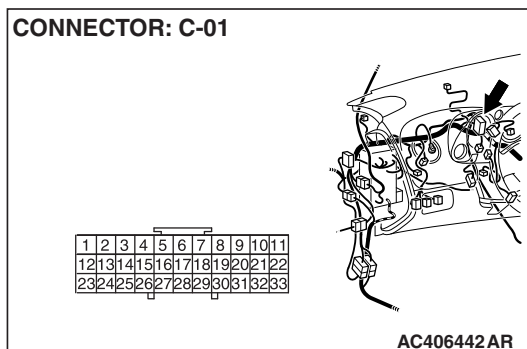
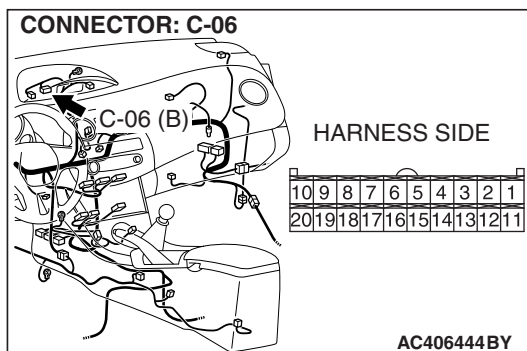
(1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.

(2) Measure the resistance between terminal 6 and ground.  
• The measured value should be 2 ohm or less.

**Q: Is the measured resistance 2 ohm or less?**

**YES :** Go to Step 4.

**NO :** Go to Step 3.



**STEP 3. Check the wiring harness between multi-center display unit connector C-06 (terminal 6) and ground.**

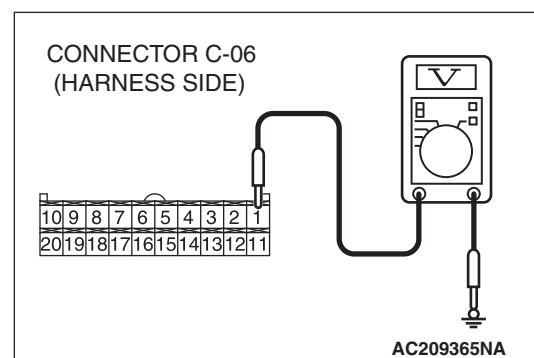
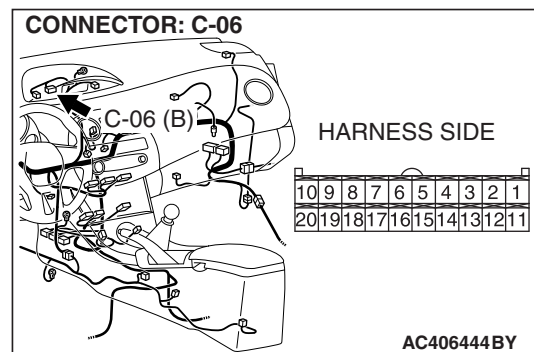
**NOTE:** After checking joint connector (2) C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. check the wires. If joint connector (2) C-01 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between multi-center display unit connector C-06 (terminal 6) and ground in good condition?**

**YES :** There is no action to be taken.

**NO :** Repair the wiring harness. The multi-center display unit should work normally.





**STEP 4. Check the multi-center display unit power supply circuit (battery). Measure the voltage at the multi-center display unit connector C-06.**

(1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.

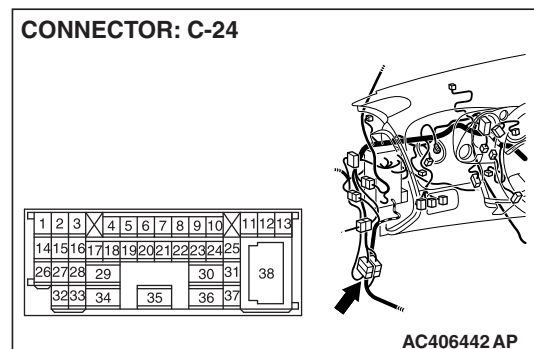
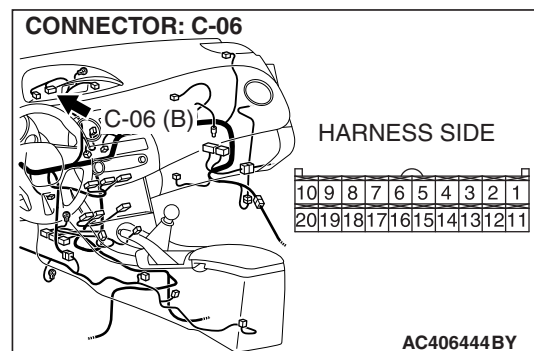
(2) Measure the voltage between terminal 1 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 6.

**NO :** Go to Step 5.



**STEP 5. Check the wiring harness between multi-center display unit connector C-06 (terminal 1) and battery.**

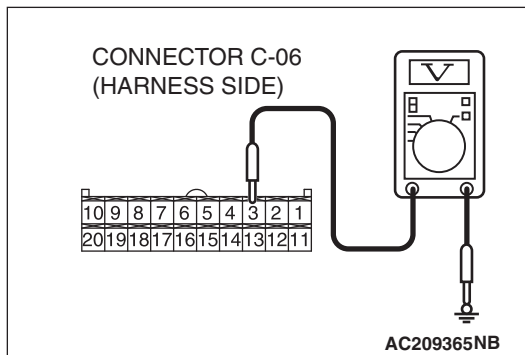
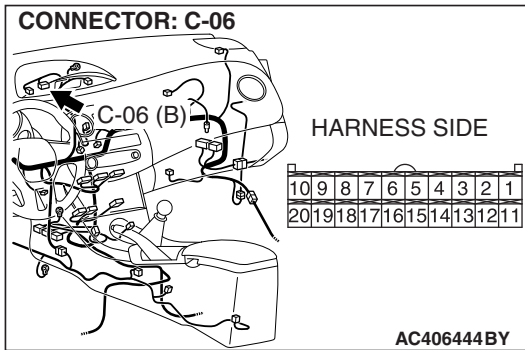
**NOTE:** Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between multi-center display unit connector C-06 and battery in good condition?**

**YES :** There is no action to be taken.

**NO :** Repair the wiring harness. The multi-center display unit should work normally.





**STEP 6. Check the multi-center display unit power supply circuit [ignition switch (ACC)]. Measure the voltage at the multi-center display unit connector C-06.**

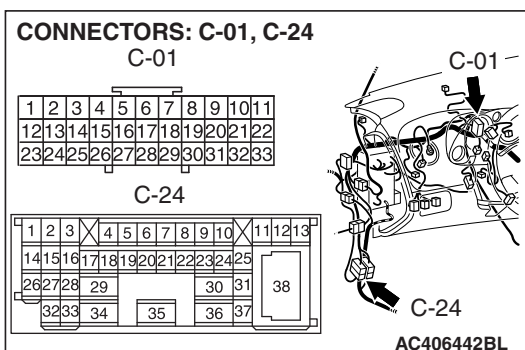
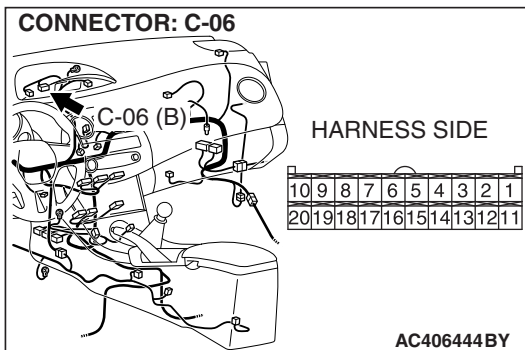
- (1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.
- (2) Turn the ignition switch to "ACC" position.

- (3) Measure the voltage between terminal 3 and ground by backprobing.
  - The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 8.

**NO :** Go to Step 7.



**STEP 7. Check the wiring harness between multi-center display unit connector C-06 (terminal 3) and ignition switch (ACC).**

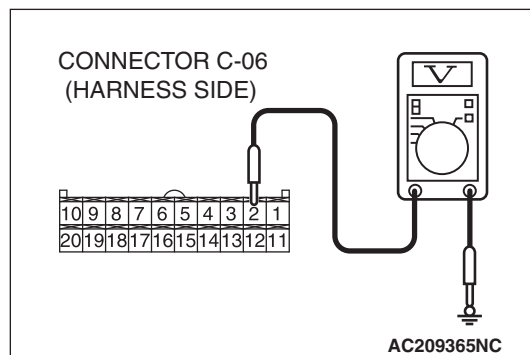
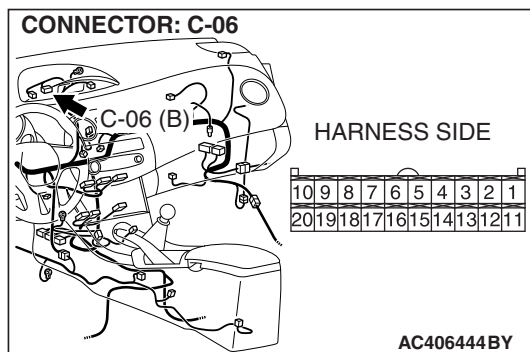
**NOTE:** Also check joint connector (2) C-01, and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If or joint connector (2) C-01 or intermediate connector C-24 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q: Is the wiring harness between multi-center display unit connector C-06 (terminal 3) and ignition switch (ACC) in good condition?**

**YES :** Refer to ignition switch diagnosis [P.54A-9](#).

**NO :** Repair the wiring harness. The multi-center display unit should work normally.





**STEP 8. Check the multi-center display unit power supply circuit [ignition switch (IG1)]. Measure the voltage at the multi-center display unit connector C-06.**

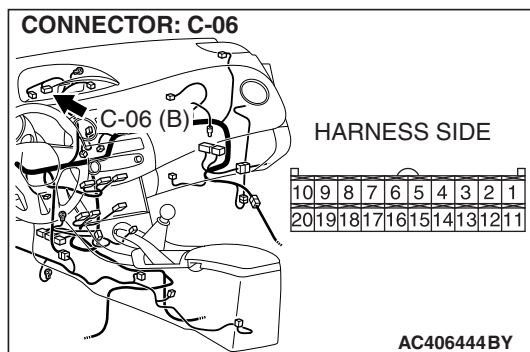
- (1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.
- (2) Turn the ignition switch to "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Replace the multi-center display unit. The multi-center display unit should work normally.

**NO :** Go to Step 9.

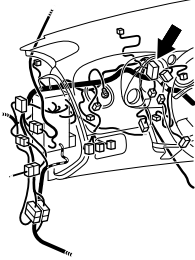


**STEP 9. Check the wiring harness between multi-center display unit connector C-06 (terminal 2) and ignition switch (IG1).**



**CONNECTOR: C-01**

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33



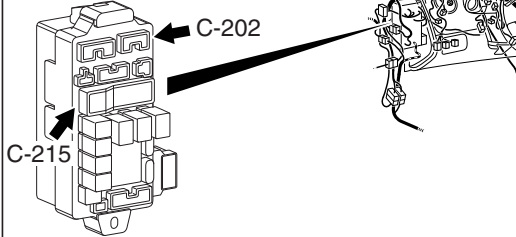
AC406442 AR

**NOTE:** Also check joint connector (2) C-01, junction block connectors C-202 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector (2) C-01 or junction block connectors C-202 or C-215 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between multi-center display unit connector C-06 (terminal 2) and ignition switch (IG1) in good condition?

**YES :** Refer to ignition switch diagnosis [P.54A-9](#).

**NO :** Repair the wiring harness. The multi-center display unit should work normally.

**CONNECTORS: C-202, C-215**  
JUNCTION BLOCK  
(FRONT VIEW)HARNESS SIDE  
C-202

2		1
6	5	4
3		

HARNESS SIDE  
C-215

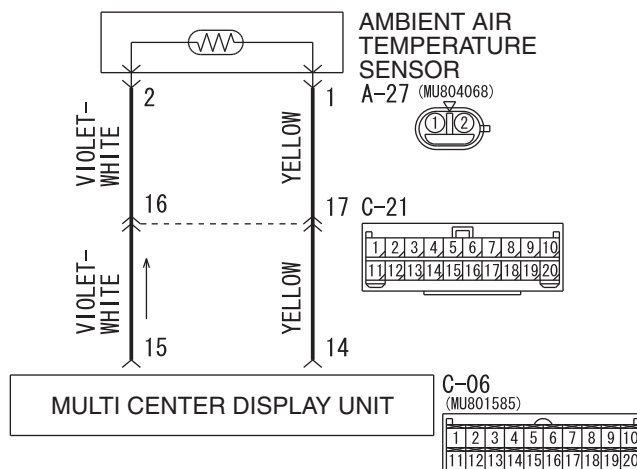
14	13	12	11	10	9	8	7	6	5	4	3	2	1
28	27	26	25	24	23	22	21	20	19	18	17	16	15

AC406447AB

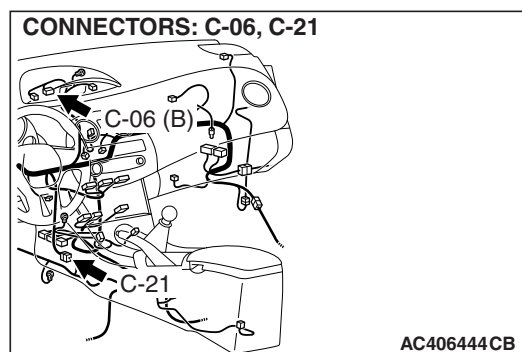
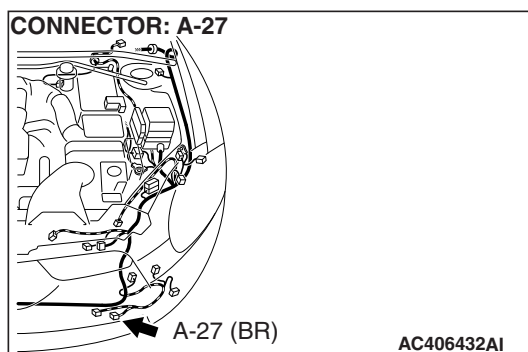


**INSPECTION PROCEDURE 2: "-" (Ambient air temperature sensor error) is displayed on the ambient air temperature display. <Vehicles with TYPE 1>**

### Ambient Air Temperature Sensor Circuit



WAP54M015A



### CIRCUIT OPERATION

The ambient air temperature sensor signal sent to multi-center display unit.

### TECHNICAL DESCRIPTION (COMMENT)

The ambient air temperature sensor circuit is suspected to be open or short.

### TROUBLESHOOTING HINTS

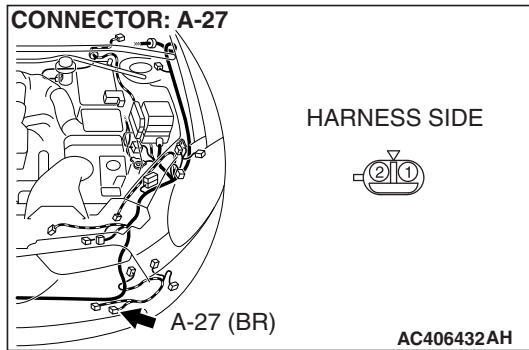
- Malfunction of the ambient air temperature sensor.
- Damaged wiring harness and connectors

### DIAGNOSIS

#### Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe



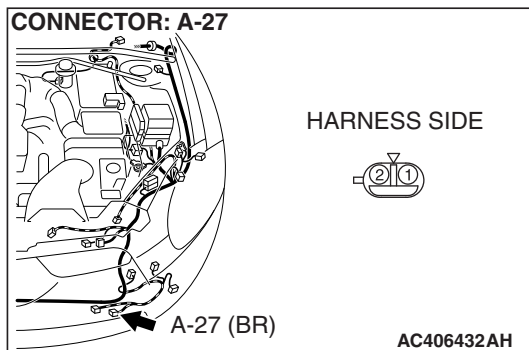


**STEP 1.** Check the ambient air temperature sensor connector A-27 and multi-center display unit connector C-06 for damage.

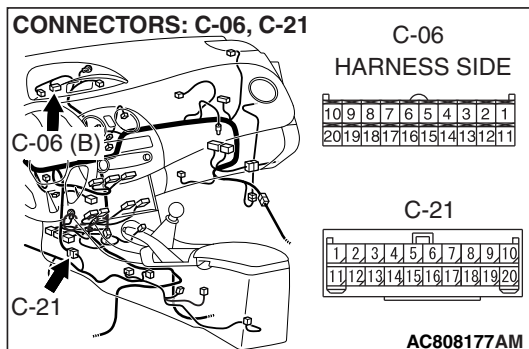
**Q:** Are the ambient air temperature sensor connector A-27 and multi-center display unit connector C-06 in good condition?

**YES :** Go to Step 2.

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



**STEP 2.** Check the wiring harness between ambient air temperature sensor connector A-27 (terminals 1 and 2) and multi-center display unit connector C-06 (terminals 14 and 15).



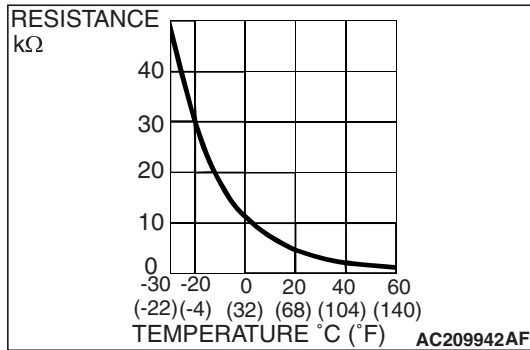
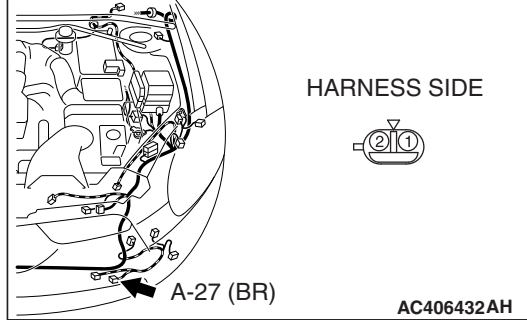
**NOTE:** After checking intermediate connector C-21, check the wires. If intermediate connector C-21 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between ambient air temperature sensor connector A-27 (terminals 1 and 2) and multi-center display unit connector C-06 (terminals 14 and 15) in good condition?

**YES :** Go to Step 3.

**NO :** Repair the wiring harness. The multi-center display unit should work normally.



**CONNECTOR: A-27****STEP 3. Check the ambient air temperature sensor**

- (1) Remove the front bumper.
- (2) Remove the ambient air temperature sensor connector A-27 (Refer to [P.54A-338](#)).

- (3) Measure the resistance between the ambient air temperature sensor connector terminals at two or more temperature condition.

**Q: Is the resistance value close to the value on the graph?**

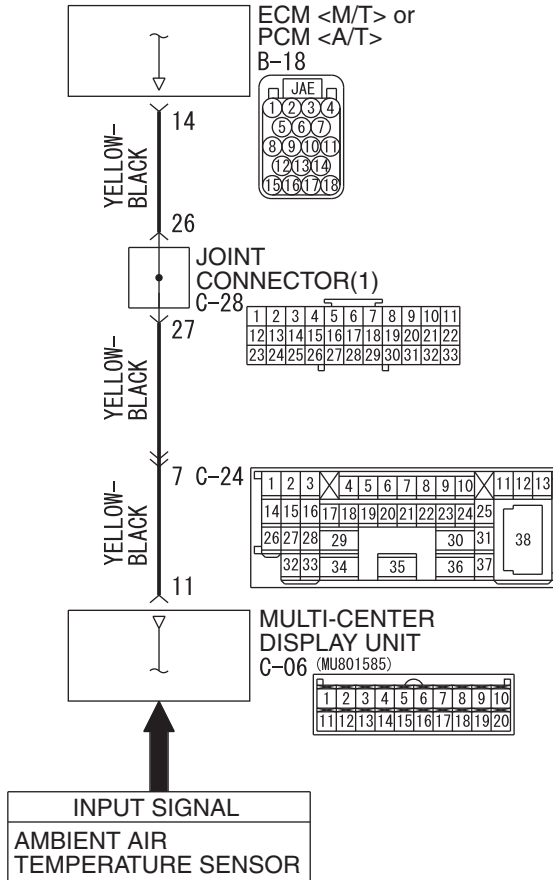
**YES :** There is no action to be taken.

**NO :** Replace the ambient air temperature sensor.

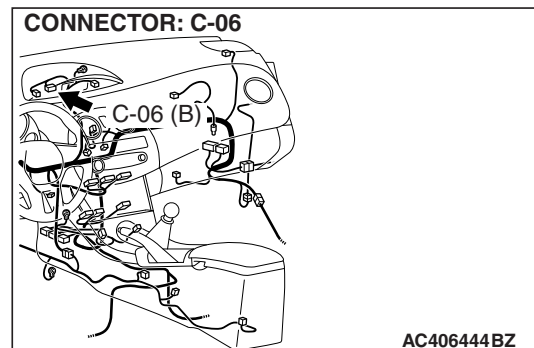
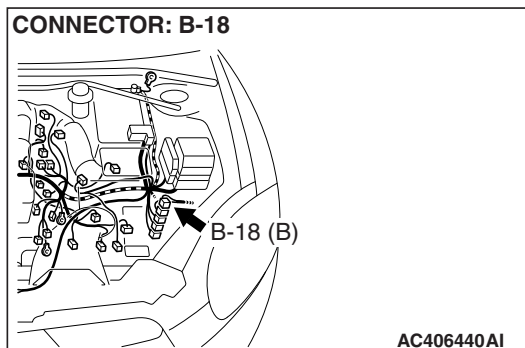


**INSPECTION PROCEDURE 3: The ambient air temperature display does not change normally.**  
**<Vehicles with TYPE 1>**

**Ambient Air Temperature Sensor Circuit**

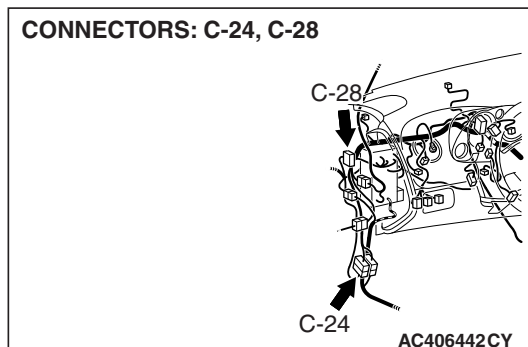


W6P54M106A





CONNECTORS: C-24, C-28



## CIRCUIT OPERATION

The ambient air temperature display in the multi-center display unit is controlled by input signals from the ambient air temperature sensor and vehicle speed signals from the ECM <M/T> or PCM <A/T>.

## TECHNICAL DESCRIPTION (COMMENT)

- If the vehicle speed does not exceed 20 km/h (12.4 mph) for 30 seconds or more, the rise in the ambient air temperature is not displayed.

- The ambient temperature sensor circuit is suspected to be open or short.

## TROUBLESHOOTING HINTS

- Malfunction of the ambient air temperature sensor.
- Malfunction of the multi-center display unit
- Malfunction of the ECM <M/T> or PCM <A/T>
- Damaged wiring harness and connectors

## DIAGNOSIS

### Required Special Tools:

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

### STEP 1. Check the display of the multi-center display.

#### Q: Is error "-" displayed?

**YES** : Carry out INSPECTION PROCEDURE 2: "-" (AMBIENT AIR TEMPERATURE SENSOR ERROR) IS DISPLAYED ON THE AMBIENT TEMPERATURE DISPLAY. Refer to [P.54A-320](#).

**NO** : Go to Step 2..

### STEP 2. Check while driving the vehicle.

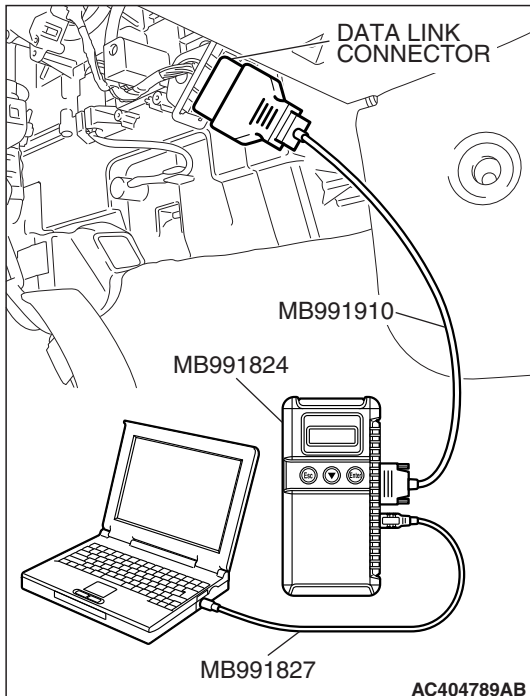
Drive the vehicle at 20 km/h (12.4 mph) or more for 30 seconds or more to check that the ambient air temperature display changes.

#### Q: Did the ambient air temperature display change?

**YES** : There is no action to be taken.

**NO** : Go to Step 3.



**STEP 3. Using scan tool MB991958, read the MFI system diagnostic trouble code.**

Check if an MFI system diagnostic trouble code is set.

**⚠ CAUTION**

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

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the MFI system diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the DTC set?**

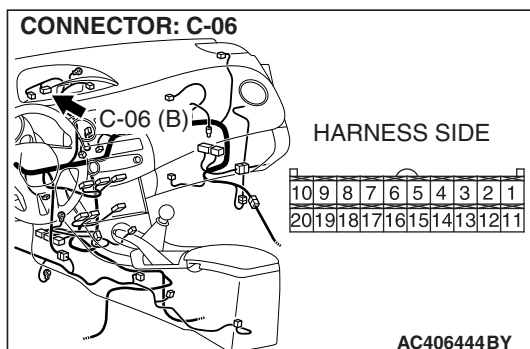
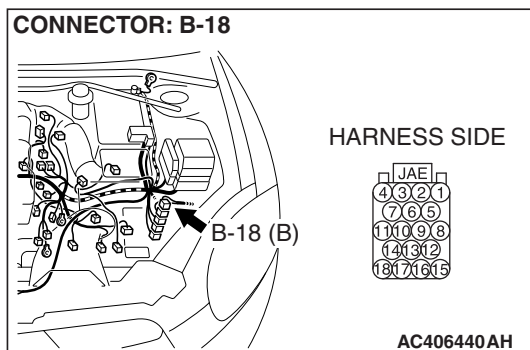
**YES :** Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13A-41](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart [P.13B-43](#) <3.8L ENGINE>.

**NO :** Go to Step 4.

**STEP 4. Check multi-center display unit connector C-06 and ECM <M/T> or PCM <A/T> connector B-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are multi-center display unit connector C-06 and ECM <M/T> or PCM <A/T> connector B-18 in good condition?**

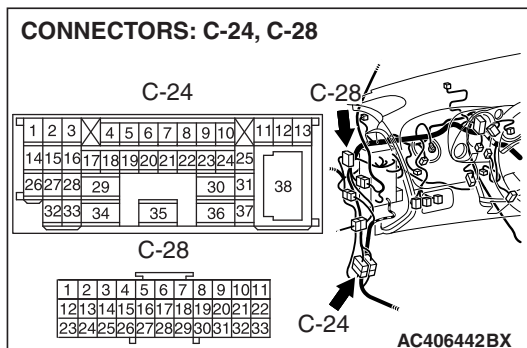
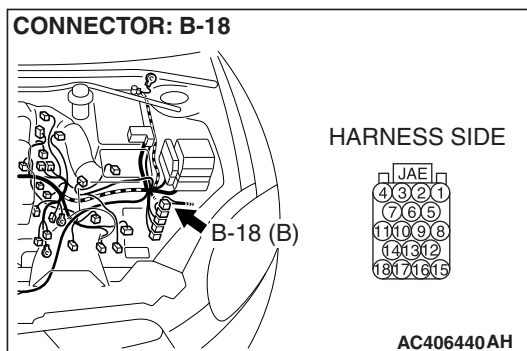
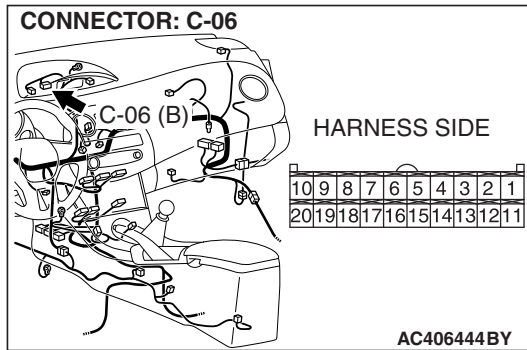
**YES :** Go to Step 5.

**NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the ambient air temperature display works normally.





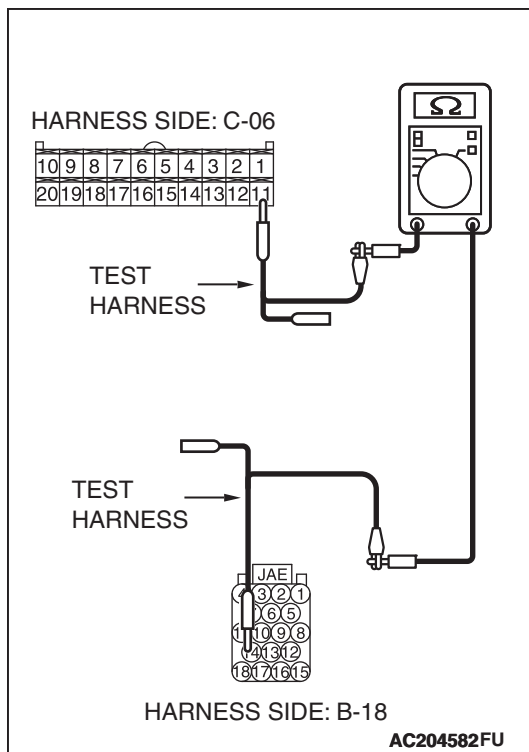
**STEP 5. Check the wiring harness between multi-center display unit connector C-06 (terminal 11) and ECM <M/T> or PCM <A/T> connector B-18 (terminal 14).**



**NOTE:** Also check intermediate connectors C-28 and C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connectors. If intermediate connectors C-28 and C-24 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

- (1) Disconnect multi-center display unit connector C-06 and ECM <M/T> or PCM <A/T> connector B-18, and measure the resistance at the wiring harness side.





- (2) Measure the resistance between multi-center display unit connector C-06 terminal 11 and ECM <M/T> or PCM <A/T> connector B-18 terminal 14.

- The resistance should be 2 ohms or less.

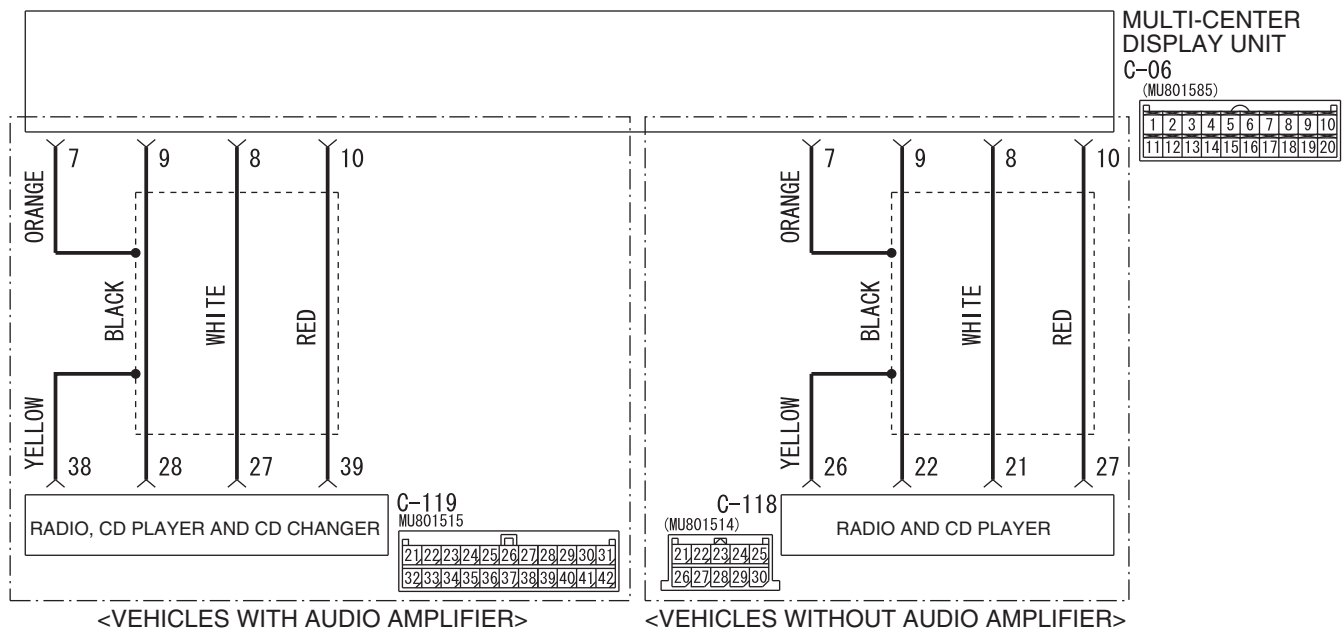
**Q: Is the measured resistance 2 ohms or less?**

**YES :** Replace the multi-center display unit.

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

#### INSPECTION PROCEDURE 4: On the Audio Screen, "E" cannot Proceed to Next Screen.

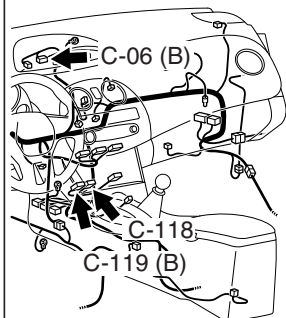
##### M-BUS Line Circuit



W8P54M005A



CONNECTORS: C-06,  
C-118 <Vehicles without audio amplifier>,  
C-119 <Vehicles with audio amplifier>



AC407011AC

## CIRCUIT OPERATION

The multi-center display unit receives information from the radio and CD player with CD changer <Vehicles with audio amplifier> or radio and CD player <Vehicles without audio amplifier> via M-bus communication to display the audio system operation condition.

## TECHNICAL DESCRIPTION (COMMENT)

The audio system operation screen will be frozen if the multi-center display have received abnormal data from the radio and CD player with CD changer <Vehicles with audio amplifier> or radio and CD player <Vehicles without audio amplifier> via M-bus communication within 30 seconds. If the abnormal data is received further 30 seconds from that point, a message "E" will be displayed.

## TROUBLESHOOTING HINTS

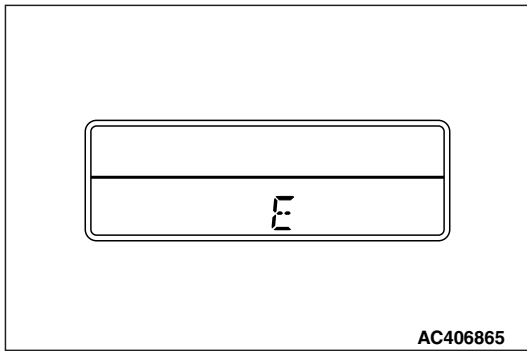
- Malfunction of multi-center display unit
- Malfunction of radio and CD player with CD changer <Vehicles with audio amplifier> or radio and CD player <Vehicles without audio amplifier>
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

## DIAGNOSIS

### Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe



**STEP 1. Check of the display.****Q:** Is "E" displayed?**YES :** Go to Step 2.**NO :** Go to Step 4.

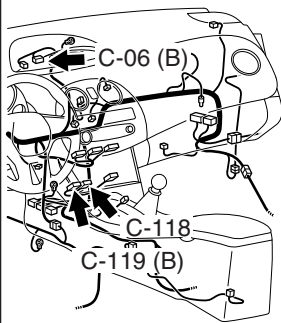
**STEP 2. Check radio and CD player with CD changer connector C-119 <Vehicles with audio amplifier> or radio and CD player connector C-118 <Vehicles without audio amplifier> and multi-center display unit connector C-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q:** Is radio and CD player with CD changer connector C-119 <Vehicles with audio amplifier> or radio and CD player connector C-118 <Vehicles without audio amplifier> and multi-center display unit connector C-06 in good condition?

**YES :** Go to Step 3.

**NO :** Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to step 1.

**CONNECTORS:** C-06,  
C-118 <Vehicles without audio amplifier>,  
C-119 <Vehicles with audio amplifier>



HARNESS SIDE  
C-06

10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

HARNESS SIDE  
C-118

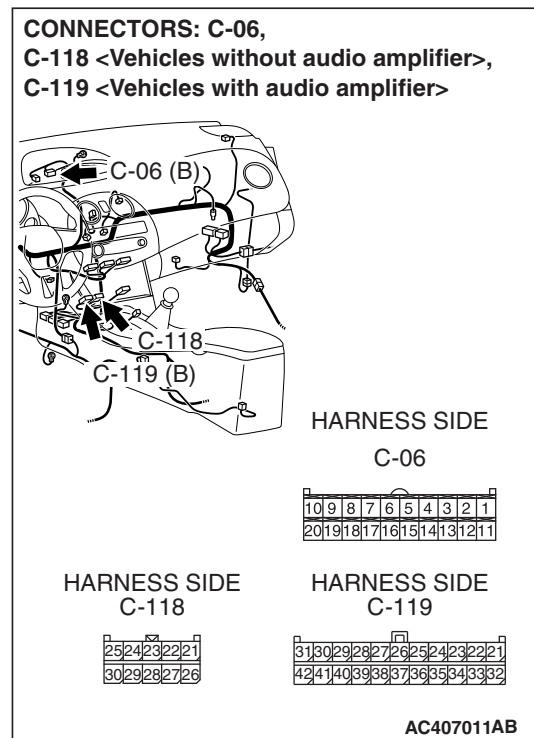
25	24	23	22	21
30	29	28	27	26

HARNESS SIDE  
C-119

31	30	29	28	27	26	25	24	23	22	21
42	41	40	39	38	37	36	35	34	33	32

AC407011AB



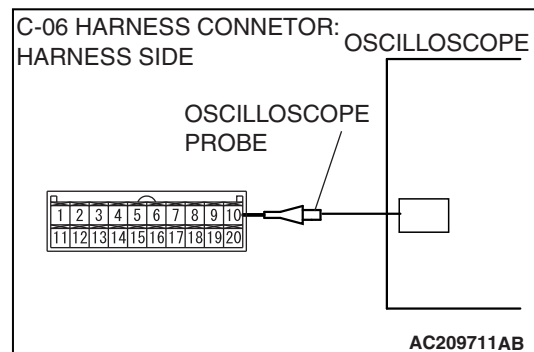


**STEP 3. Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 27, 28, 38 and 39) <Vehicles with audio amplifier> or radio and CD player connector C-118 (terminal 21, 22, 26 and 27) <Vehicles without audio amplifier> and multi-center display unit connector C-06 (terminal 8, 9, 7 and 10).**

**Q: Is the wiring harness between radio and CD player with CD changer connector C-119 (terminal 27, 28, 38 and 39) <Vehicles with audio amplifier> or radio and CD player connector C-118 (terminal 21, 22, 26 and 27) <Vehicles without audio amplifier> and multi-center display unit connector C-06 (terminal 8, 9, 7 and 10) in good condition?**

**YES :** Go to Step 4.

**NO :** Repair the wiring harness and then go to step 1.



**STEP 4.Using the oscilloscope, check the M-BUS line.**

- (1) Connect the multi-center display unit connector C-06 and radio and CD player with CD changer connector C-119 <Vehicles with audio amplifier> or radio and CD player connector C-118 <Vehicles without audio amplifier>.
- (2) Connect the oscilloscope probe to terminal 10 of the multi-center display unit connector by backprobing.
- (3) Turn the ignition switch to "ACC" position.
- (4) Operate each of the radio and CD player with CD changer switches <Vehicles with audio amplifier> or radio and CD player switches<Vehicles without audio amplifier>.

**Q: Is a wave pattern displayed?**

**YES :** Go to Step 5.

**NO :** Replace multi-center display unit and then go to Step 6.



---

**STEP 5. Retest the system**

Confirm that the audio operation screen is displayed normally.

**Q: Is the check result satisfactory?**

**YES** : Intermittent malfunction (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent malfunction [P.00-14](#)).

**NO** : Replace radio and CD player with CD changer <Vehicles with audio amplifier> or radio and CD player <Vehicles without audio amplifier> and then go to step 6 .

---

**STEP 6. Retest the system**

Confirm that the audio operation screen is displayed normally.

**Q: Is the check result satisfactory?**

**YES** : The procedure is complete.

**NO** : Go to step 1.

---

**INSPECTION PROCEDURE 5: The Compass can not be Calibrated Manually, or Goes Out of Calibration Easily. <Vehicles with TYPE 1>**

---

**TECHNICAL DESCRIPTION (COMMENT)**

The compass sensor, which measures the direction of the vehicle, is incorporated in the multi-center display unit. If the direction of the vehicle is not displayed normally by repeating the manual calibration, the compass sensor may be defective, the vehicle body may have been magnetized, or the manual calibration is performed in strongly magnetized environment.

**TROUBLESHOOTING HINTS**

- The compass sensor in the multi-center display unit is defective
- Magnetization of vehicle body
- Calibration in magnetized environment (such as factory or a high voltage conductor)

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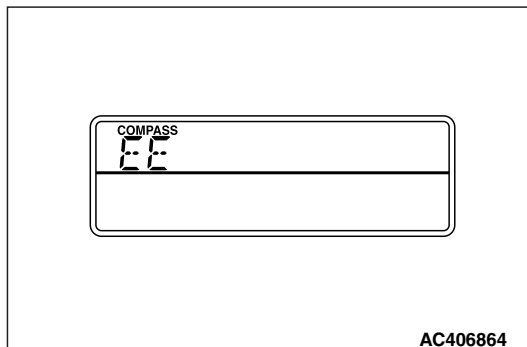
**DIAGNOSIS**

---

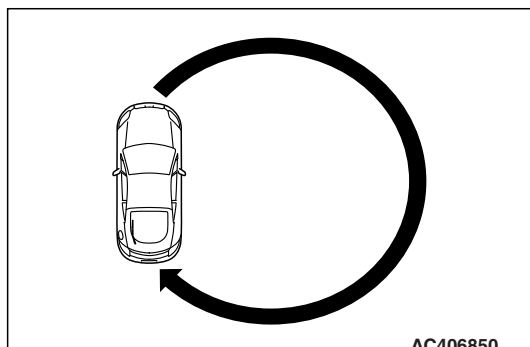
**STEP 1. Check of the display.****Q: Is "EE" displayed?**

**YES** : Replace multi-center display unit and then go to step 5.

**NO** : Go to Step 2.





**STEP 2. Confirm if the manual calibration is performed successfully.**

- (1) Park the vehicle on an open space, and confirm that the location is not magnetized strongly.
- (2) Set the manual calibration, and drive the vehicle in a circle (Refer to [P.54A-334](#)).

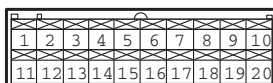
**Q: Is the manual calibration performed successfully?****YES :** Go to Step 5.**NO :** Go to Step 3.**STEP 3. Demagnetize the vehicle.**

In certain circumstances the vehicle body may be magnetized. For how to demagnetize, refer to [P.54A-337](#).

**Q: Is the demagnetization performed successfully?****YES :** Go to Step 4.**NO :** Replace multi-center display unit and go to step 4.**STEP 4. Perform the manual calibration again.****Q: Is the manual calibration performed successfully?****YES :** Go to Step 5.**NO :** Replace multi-center display unit and then go to Step 1.**STEP 5. Retest the system.****Q: Is the check result satisfactory?****YES :** The procedure is complete.**NO :** Replace multi-center display unit and then go to Step 1.**CHECK AT MULTI-CENTER DISPLAY UNIT TERMINAL**

M1543007600906

C-06 Multi-center display unit connector



AC406896 AB

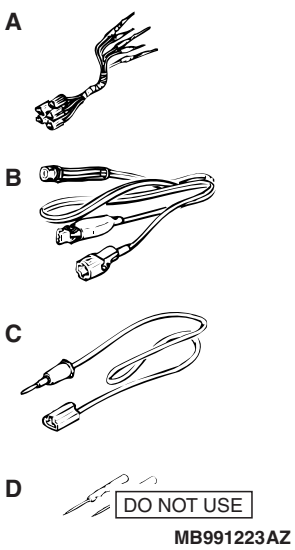
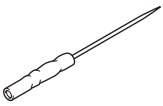


TERMINAL NO.	INPUT/OUTPUT	SIGNAL SYMBOL	TERMINAL VOLTAGE (V)	HARNESS DISCREPANCY		FAILURE SYMPTOM DUE TO HARNESS DISCREPANCY
1	Input	Battery (Battery power supply)	Battery positive voltage	Open circuit	–	Screen is not displayed. All operations are not possible.
				–	Short circuit	Fuse is blown.
2	Input	Ignition switch (IG1)	Battery positive voltage	Open circuit	–	Screen is not displayed. All operations are not possible.
				–	Short circuit	Fuse is blown.
3	Input	Ignition switch (ACC)	Battery positive voltage	Open circuit	–	Screen is not displayed. All operations are not possible.
				–	Short circuit	Fuse is blown.
4	Input	ILL + (lighting switch)	Hi: Battery positive voltage Lo: 0 – 1	Open circuit	Short circuit	Not lighted.
5	Output	ILL - (illumination light control signal)	0.4	Open circuit	Short circuit	Display brightness control is not possible.
6	–	GND	–	Open circuit	–	Screen is not displayed.
7	Input/output	SB3	–	–	–	–
8	Input/output	M-DATA (Audio)(M-BUS data signal)	• Hi: 4 – 5 • Lo: 0 – 1	Open circuit	Short circuit	"E" or "E01" to "E03" indications
9	Input/output	M-CLOCK (A/C) (M-BUS clock signal)	• Hi: 4 – 5 • Lo: 0 – 1	Open circuit	Short circuit	"E" or "E01" to "E03" indications
10	Input/output	M-BUSY (Audio)	• Hi: 5 • Lo: 0 – 1	Open circuit	Short circuit	"E" or "E01" to "E03" indications
11	Input	Vehicle speed signal	• Hi: 5 • Lo: 0 – 1	Open circuit	Short circuit	–
12, 13	No connection					
14	–	GND – TEMP	–	Open circuit	Short circuit	Ambient temperature is not displayed.
15	Input	TEMP (ambient temperature sensor signal)	0 – 5	Open circuit	Short circuit	Ambient temperature is not displayed.
16 – 20	No connection					



## SPECIAL TOOLS

M1543000602581

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 <p>MB991223AZ</p>	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	General service tool (jumper)	Making voltage and resistance measurements during troubleshooting A: Connect pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 <p>MB992006</p>	MB992006 Extra fine probe	General service tool	Making voltage and resistance measurement during troubleshooting

## ON-VEHICLE SERVICE &lt;VEHICLES WITH TYPE 1&gt;

## COMPASS CALIBRATION

M1543013800136

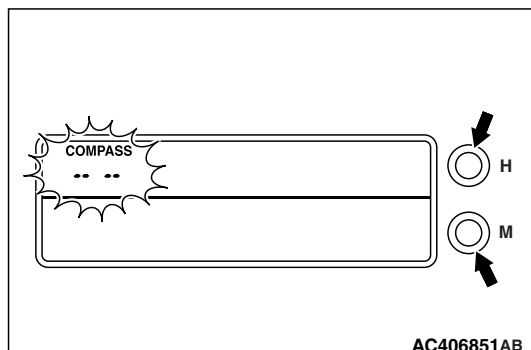
## ONE TURN MAGNETIC COMPENSATION

The compass is self-calibrating under normal driving conditions. It is not necessary to manually calibrate the compass. If manual calibration is desired, follow these instructions.

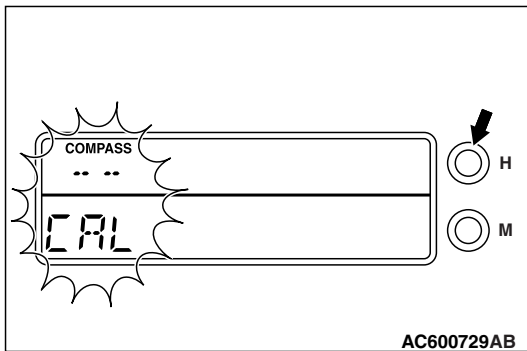
1. Turn the ignition switch to "ON" position.
2. Press the "H" switch and the "M" switch simultaneously.
3. Release the "H" switch and the "M" switch simultaneously within 10 seconds. This will switch the multi-center display to the compass setting mode, and "COMPASS" and "-- --" will flash.

**NOTE:** When any of the following conditions is met during the compass setting mode, the multi-center display cancels the compass setting mode and returns to the normal display.

- The switch is not operated for 10 seconds or more.
- The vehicle speed is 3 mph (5 km/h) or more.
- The ignition switch is turned to the "OFF" position.

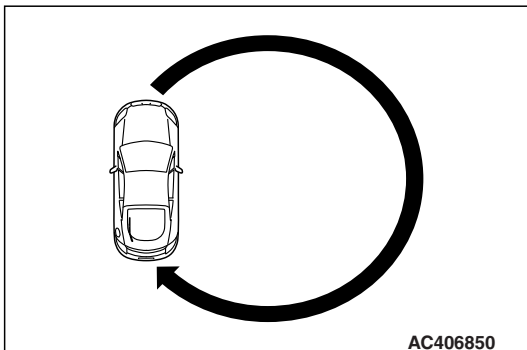






4. Press the "H" switch. This will switch the multi-center display to the calibration setting mode, and the display shows "COMPASS", "-- --", and "CAL".

*NOTE: When the ignition switch is turned to the "OFF" position or the "H" switch is pressed during the calibration setting mode, the multi-center display returns to the normal display, and shows "-- --" on the compass direction display.*



5. Drive the vehicle slowly through a 360° turn. This will complete the compass compensation, and the multi-center display returns to the normal display.

*NOTE:*

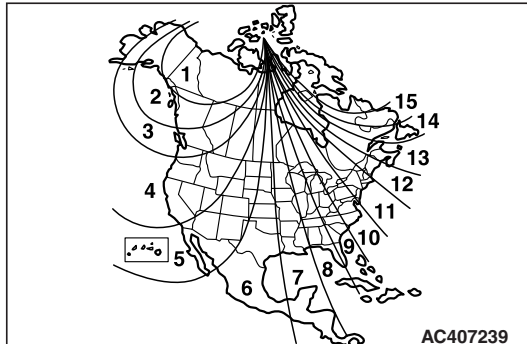
- When the "H" switch is pressed while driving the vehicle through a 360° turn, the multi-center display cancels the calibration setting mode. Then, it returns to the normal display and shows "-- --" on the compass direction display.

## DEFLECTION ANGLE COMPENSATION

### COMPASS CALIBRATION

Under certain circumstances, as during a long distance cross country trip, it will be necessary to adjust for compass variance. Compass variance is the difference between earth's magnetic north and true geographic north.

If not adjusted to account for compass variance, compass could give false readings.

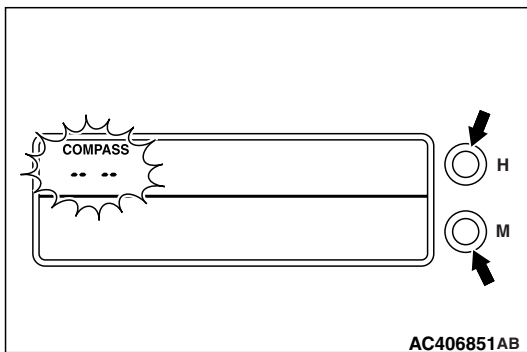


### ADJUST FOR COMPASS VARIANCE

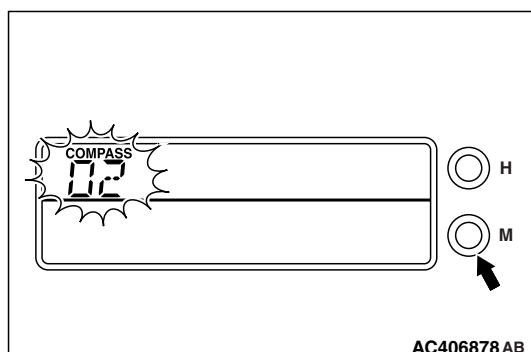
1. Turn the ignition switch to "ON" position.
2. Press the "H" switch and the "M" switch simultaneously.
3. Release the "H" switch and the "M" switch simultaneously within 10 seconds. This will switch the multi-center display to the compass setting mode, and "COMPASS" and "-- --" will flash.

*NOTE: When any of the following conditions is met during the compass setting mode, the multi-center display cancels the compass setting mode and returns to the normal display.*

- The switch is not operated for 10 seconds or more.
- The vehicle speed is 3 mph (5 km/h) or more.
- The ignition switch is turned to the "OFF" position.

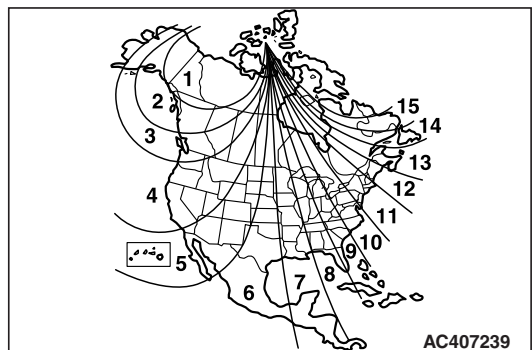




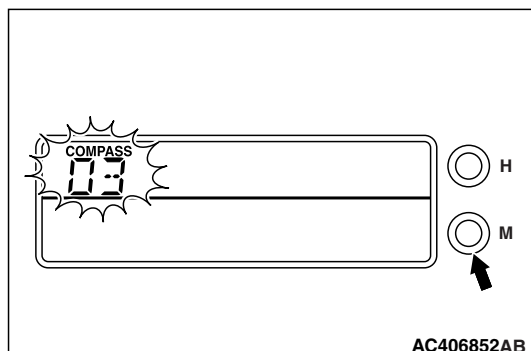


4. Press the "M" switch. This will switch the multi-center display to the zone setting mode, and the display shows "COMPASS" and "02" (when the previous zone number is 02)".

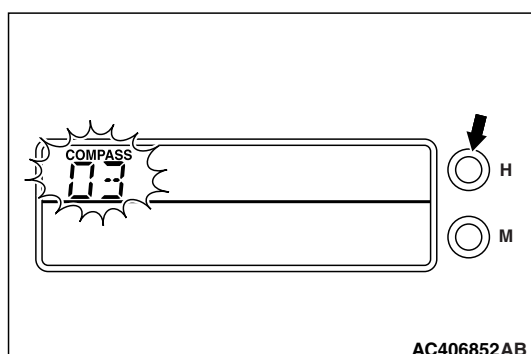
*NOTE: When the ignition switch is turned to the "OFF" position or the vehicle speed is 3 mph (5 km/h) or more during the zone setting mode, the multi-center display cancels the zone setting mode and returns to the normal display.*



5. Find current location and variance zone number on the zone map.



6. Press the "M" switch repeatedly until the correct zone number is displayed.



7. After selecting the correct zone number, press the "H" switch to set the zone number. This will complete the deflection angle compensation, and the multi-center display returns to the normal display.

If the compass deviates from the correct indication soon after repeated adjustment, have the compass checked at refer to [P.54A-331](#).

*NOTE: Do not install a ski rack, antenna, etc., which are attached to the vehicle by means of a magnet. They affect the operation of the compass.*

*NOTE: The compass may not indicate the correct compass direction when in the places shown below:*

- Tunnels
- Railroads
- Underpass/Overpass
- Transforming station
- Large metal structures
- Area over the subway

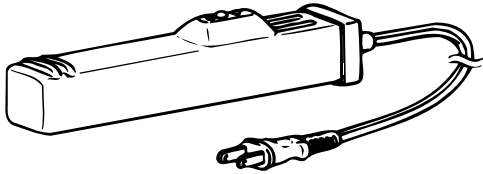


*NOTE: The compass returns to the correct compass direction vehicle moves to an area where the geomagnetism is stabilized.*

## VEHICLE MAGNETIC COMPENSATION DEMAGNETIZATION AND CORRECTION METHOD

M1543009700200

COMMERCIAL DEMAGNETIZER



AC001246AB

1. Close the sunroof.<Vehicles with sunroof>
2. Turn the ignition switch to the OFF position.
3. Demagnetize the body using a commercial demagnetizer.

4. While keeping the distance between the tip of demagnetizer and the roof panel to approximately 5 cm (2.0 inches), move the demagnetizer slowly with a sweeping manner on the rear-half surface of roof panel.

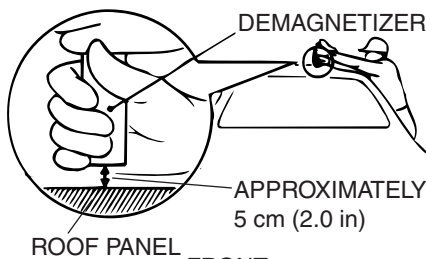
### **CAUTION**

**If the tip of demagnetizer touches the roof panel, the magnetizing condition of body becomes worse to the opposite. Absolutely avoid this.**

5. Slowly draw the demagnetizer apart from the body. Turn off the switch of demagnetizer when it is apart from the body more than 5 cm (2.0 inches).

### **CAUTION**

**If the demagnetizer is turned off near the body or it is suddenly separated from the body, the magnetizing condition of body becomes worse to the opposite. Absolutely avoid these.**

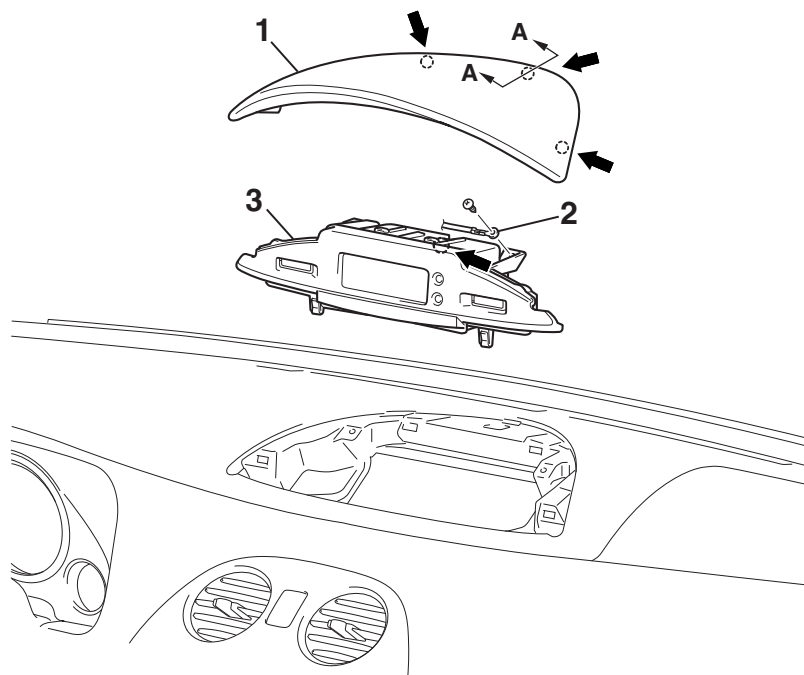
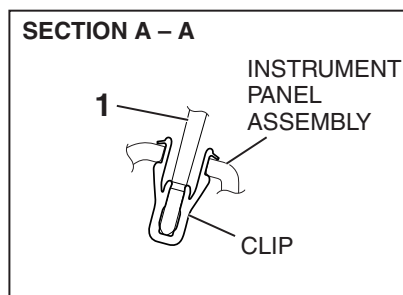


AC001247AD



MULTI-CENTER DISPLAY  
REMOVAL AND INSTALLATION

M1543013600198



## NOTE

: CLIP POSITION

AC406140AB

**REMOVAL STEPS**

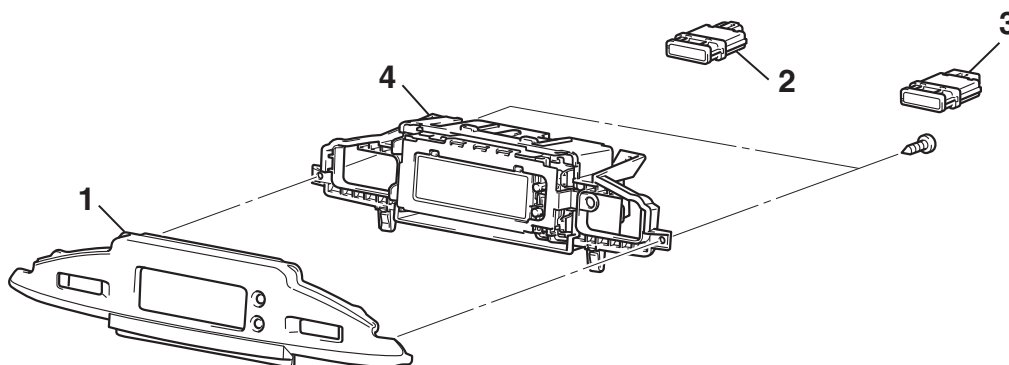
1. INSTRUMENT PANEL CENTER COVER

**REMOVAL STEPS (Continued)**

2. GROUNDING
3. MULTI-CENTER DISPLAY ASSEMBLY

## DISASSEMBLY AND ASSEMBLY

M1546503100011



AC405977 AB

**DISASSEMBLY STEPS**

1. MULTI-CENTER DISPLAY COVER
2. AIR BAG INDICATOR

**DISASSEMBLY STEPS (Continued)**

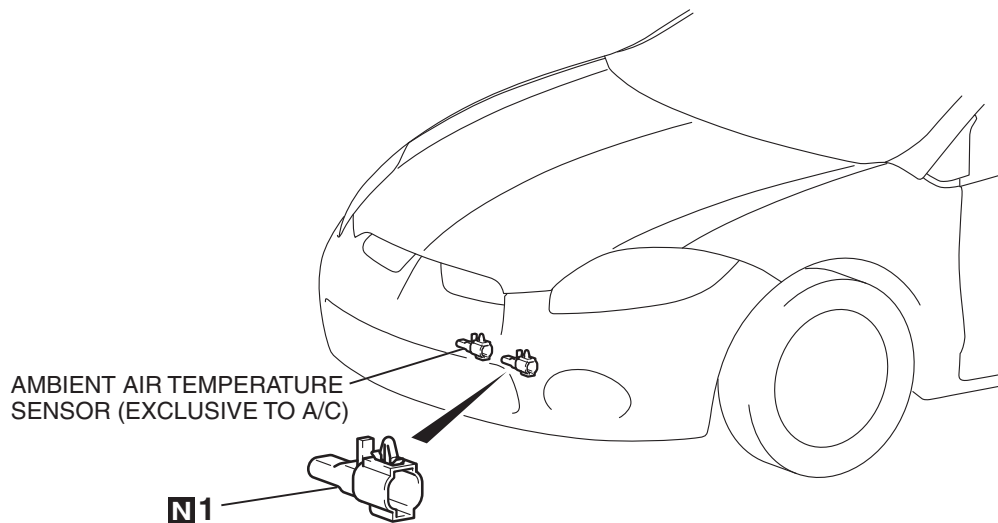
3. SEAT BELT INDICATOR
4. MULTI-CENTER DISPLAY



## AMBIENT AIR TEMPERATURE SENSOR

### REMOVAL AND INSTALLATION

M1543032700019



AC404817AB

#### REMOVAL STEP

1. AMBIENT AIR TEMPERATURE SENSOR (EXCLUSIVE TO MULTI-CENTER DISPLAY)

### INSPECTION

Refer to GROUP 55A - Ambient temperature sensor, Inspection [P.55A-206](#).

M1543019503466

## THEFT ALARM

### THEFT-ALARM SYSTEM DIAGNOSIS

M1547000700186

The theft-alarm system and panic alarm system is controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis – Symptom Chart [P.54B-54](#).

### REMOVAL AND INSTALLATION

M1547001000384

#### Theft-alarm system component parts

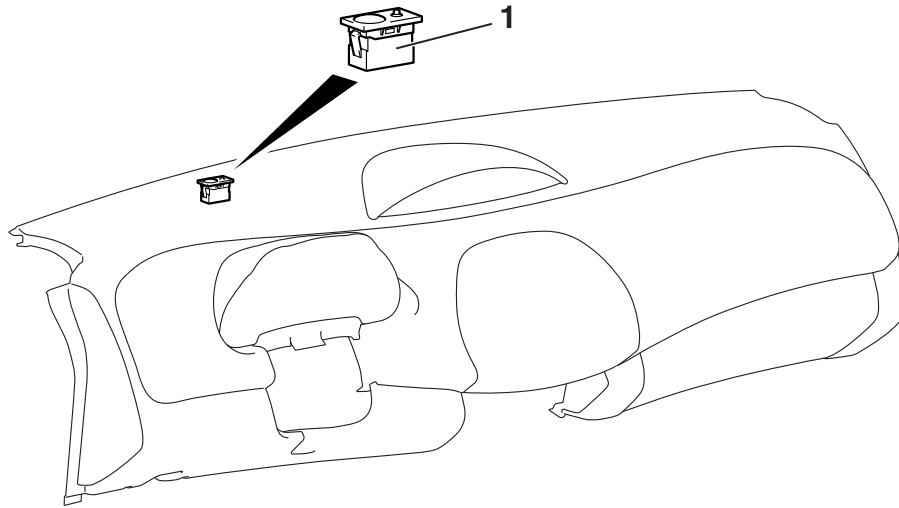
- Horn (Refer to [P.54A-162](#).)
- Door switch (Refer to GROUP 42, Door – Door Assembly [P.42-80](#).)
- Front door lock actuator (Refer to GROUP 42, Door Handle and Latch [P.42-84](#).)
- Hood switch (Refer to GROUP 42, Hood [P.42-9](#).)

- Trunk lid latch assembly (Refer to GROUP 42, Trunk lid [P.42-105](#).)
- Key reminder switch (Refer to [P.54A-12](#).)

#### Panic alarm system component parts

- Head light assembly (Refer to [P.54A-143](#).)
- Horn (Refer to [P.54A-162](#).)





AC808373AB

**SECURITY INDICATOR  
REMOVAL STEPS**

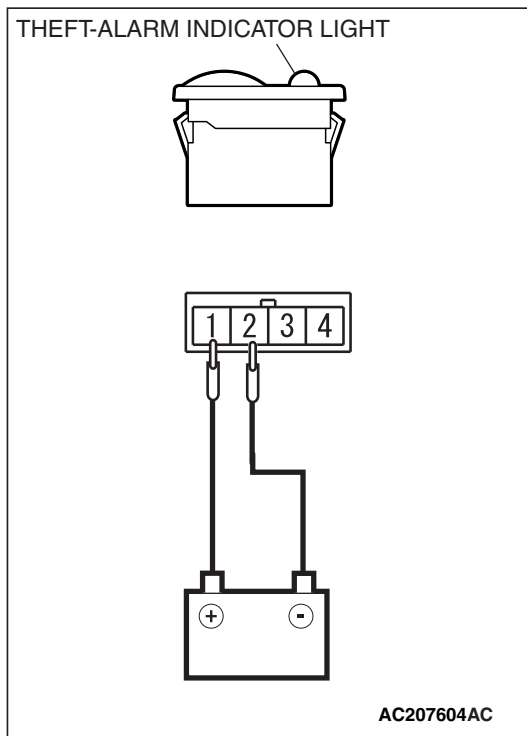
- INSTRUMENT PANEL ASSEMBLY  
(REFER TO GROUP 52A,  
INSTRUMENT PANEL [P.52A-19](#)).
1. SECURITY INDICATOR

**INSPECTION**

M1547001100165

**THEFT-ALARM INDICATOR LIGHT CHECK**

Connect the positive battery terminal to theft-alarm indicator light terminal No.1, and connect the negative battery terminal to theft-alarm indicator light terminal No.2. Then, confirm that the theft-alarm indicator light illuminates.





## SPECIFICATIONS

## FASTENER TIGHTENING SPECIFICATIONS

M1541001600184

ITEM	SPECIFICATION
Amplifier box bracket mounting bolts	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Antenna base mounting bolt	9.0 ± 2.0 N·m (80 ± 17 in-lb)
Audio amplifier mounting nut	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Clock spring and column switch assembly mounting screw	2.5 ± 0.5 N·m (23 ± 4 in-lb)
Door speaker mounting screw	1.5 ± 0.5 N·m (14 ± 4 in-lb)
Front fog light assembly mounting screw	2.5 ± 0.3 N·m (22 ± 3 in-lb)
Headlight assembly mounting bolts	4.9 ± 0.7 N·m (44 ± 6 in-lb)
Headlight assembly mounting screw	1.5 ± 0.2 N·m (14 ± 1 in-lb)
High-mounted stoplight mounting screws <Vehicles with large type rear spoiler>	2.5 ± 0.3 N·m (22 ± 3 in-lb)
High-mounted stoplight mounting nuts <Vehicles without large type rear spoiler>	4.9 ± 0.7 N·m (44 ± 6 in-lb)
Horn mounting bolts	21 ± 4 N·m (16 ± 2 ft-lb)
License plate light bracket mounting bolts	5.0 ± 0.7 N·m (44 ± 6 in-lb)
Radio amplifier mounting bolt	9.0 ± 2.0 N·m (80 ± 17 in-lb)
Radio and CD player or radio and CD player with CD changer mounting screws	1.5 ± 0.5 N·m (14 ± 4 in-lb)
AUX box mounting bolts	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Satellite antenna base mounting nut	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Satellite radio tuner mounting screws	1.5 ± 0.5 N·m (14 ± 4 in-lb)
Audio equip bracket mounting nuts and bolts	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Rear combination light mounting nuts and bolts	4.9 ± 0.7 N·m (44 ± 6 in-lb)
Quarter speaker mounting screws	1.5 ± 0.5 N·m (14 ± 4 in-lb)
Woofer cover mounting bolts and nut <ECLIPSE>	5.0 ± 1.0 N·m (44 ± 9 in-lb)
Woofer bracket mounting bolts <ECLIPSE>	5.0 ± 1.0 N·m (44 ± 9 in-lb)

## SERVICE SPECIFICATIONS

M1541000300726

## &lt;BATTERY&gt;

ITEM	STANDARD VALUE
Specific gravity of battery electrolyte [at 20°C (68°F)]	1.220 – 1.290

## &lt;COMBINATION METER&gt;

ITEM		STANDARD VALUE
Speedometer indication tolerance mph (km/h) <except vehicles for CANADA>	10 (16)	8.5 – 11.5 (13.6 – 18.4)
	25 (40)	23.5 – 26.5 (37.6 – 42.4)
	50 (80)	48.5 – 51.5 (77.6 – 82.4)
	75 (120)	73.5 – 76.5 (117.6 – 122.4)
	100 (161)	98.5 – 102.5 (158.5 – 165.0)



ITEM		STANDARD VALUE	
Speedometer indication tolerance km/h (mph) <vehicles for CANADA>		20 (12.4)	19 – 24 (11.8 – 14.9)
		40 (24.8)	40 – 44 (24.8 – 27.3)
		80 (49.7)	80 – 85 (49.7 – 52.8)
		120 (74.6)	120.5 – 125.5 (74.9 – 78.0)
		160 (99.4)	160.5 – 165.5 (99.7 – 102.8)
Tachometer indication tolerance r/min		1,000	900 – 1,100
		2,000	1,900 – 2,100
		3,000	2,900 – 3,100
		4,000	3,900 – 4,100
		5,000	4,900 – 5,100
		6,000	5,900 – 6,100
Fuel level sensor resistance Ω	Fuel level sensor (main)	Point "F" (highest)	6.5
		Point "E" (lowest)	45.1
	Fuel level sensor (sub)	Point "F" (highest)	6.5 ± 1.0
		Point "E" (lowest)	74.9 ± 1.0
Fuel level sensor float height mm (in)	Fuel level sensor (main)	A at point "F"	131.5 (5.1)
		B at point "E"	34.5 (1.3)
	Fuel level sensor (sub)	A at point "F"	24.9 ± 3.0 (0.9 ± 0.1)
		B at point "E"	172.7 ± 3.0 (6.7 ± 0.1)

## &lt;HEADLIGHT&gt;

ITEM		STANDARD VALUE	LIMIT
Headlight aiming (vertical direction) [at 7.62 m (25.0 ft)]	Vehicles without discharge headlight	Horizontal line (H) $\pm 50.5$ mm ( $\pm 2.0$ inches) ( $\pm 0.38$ degrees angle)	–
	Vehicles with discharge headlight	53.2 mm (2.1 inches) (0.4 degrees) below horizontal line (H). $\pm 50.5$ mm ( $\pm 2.0$ inches) ( $\pm 0.38$ degrees angle)	–
Headlight aiming (horizontal direction) [at 7.62 m (25.0 ft)]	Vehicles without discharge headlight	$\pm 126.4$ mm ( $\pm 5.0$ inches) ( $\pm 0.95$ degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)	–
	Vehicles with discharge headlight	Elbow point intersects the vertical line (V). $\pm 126.4$ mm ( $\pm 5.0$ inches) ( $\pm 0.95$ degrees angle)	–
Headlight intensity cd (at high-beam)		–	40,000 or more {when a screen is set 18.3m(60 ft) ahead of the vehicles}



## &lt;FRONT FOG LIGHT&gt;

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) $\pm 599.7$ mm ( $\pm 23.6$ inches) ( $\pm 4.5$ degrees angle).

## LUBRICANT

M1541201600014

## &lt;IGNITION SWITCH&gt;

ITEM	SPECIFIED LUBRICANT
Cylinder sub-assembly	Repair kit grease



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## NOTES