

GROUP 54A

CHASSIS ELECTRICAL

CONTENTS

BATTERY	54A-5	IGNITION KEY REMINDER TONE ALARM AND DOOR LOCK PREVENTION FUNCTION DIAGNOSIS	54A-8
ON-VEHICLE SERVICE	54A-5	IGNITION SWITCH	54A-9
BATTERY CHECK.....	54A-5	REMOVAL AND INSTALLATION.....	54A-9
BATTERY CHARGING.....	54A-6	INSPECTION.....	54A-10
BATTERY TEST.....	54A-6		
IGNITION SWITCH*	54A-8		
GENERAL DESCRIPTION	54A-8		

Continued on next page

WARNING

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

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

WARNING

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

NOTE

The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, 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 (*).

IMMOBILIZER SYSTEM	54A-11	STRATEGY	54A-52
GENERAL DESCRIPTION	54A-11	DIAGNOSIS FUNCTION	54A-52
ENCRYPTED CODE REGISTRATION		DIAGNOSTIC TROUBLE CODE	
CRITERIA TABLE	54A-13	CHART	54A-55
IMMOBILIZER SYSTEM		DIAGNOSTIC TROUBLE CODE	
DIAGNOSIS	54A-14	PROCEDURES	54A-55
INTRODUCTION TO IMMOBILIZER		SYMPTOM CHART	54A-93
SYSTEM DIAGNOSIS	54A-14	SYMPTOM PROCEDURES	54A-94
IMMOBILIZER SYSTEM DIAGNOSTIC		DATA LIST REFERENCE TABLE	54A-120
TROUBLESHOOTING STRATEGY ...	54A-14	ACTUATOR TEST REFERENCE	
DIAGNOSIS FUNCTION	54A-14	TABLE	54A-123
DIAGNOSTIC TROUBLE CODE CHART	54A-17	COMBINATION METER TERMINAL	
DIAGNOSTIC TROUBLE CODE		CHECK	54A-125
PROCEDURES	54A-17	SPECIAL TOOLS	54A-126
SYMPTOM CHART	54A-25	ON-VEHICLE SERVICE	54A-127
SYMPTOM PROCEDURES	54A-26	SPEEDOMETER CHECK	54A-127
DATA LIST REFERENCE TABLE	54A-37	TACHOMETER CHECK	54A-128
CHECK AT ETACS-ECU (IMMOBILIZER-ECU)		FUEL LEVEL SENSOR CHECK	54A-129
TERMINAL	54A-37	COMBINATION METER	
SPECIAL TOOLS	54A-40	ASSEMBLY	54A-131
ON-VEHICLE SERVICE	54A-42	REMOVAL AND INSTALLATION	54A-131
ENCRYPTED CODE REGISTRATION		DISASSEMBLY AND ASSEMBLY	54A-132
PROCEDURE	54A-42	HEADLIGHT, FRONT SIDE MARKER	
KEY RING ANTENNA	54A-50	LIGHT AND POSITION LIGHT	
REMOVAL AND INSTALLATION	54A-50	ASSEMBLY	54A-133
INSPECTION	54A-51	HEADLIGHT DIAGNOSIS	54A-133
ETACS-ECU	54A-51	ON-VEHICLE SERVICE	54A-133
REMOVAL AND INSTALLATION	54A-51	HEADLIGHT AIMING	54A-133
COMBINATION METER		LUMINOUS INTENSITY	
ASSEMBLY	54A-52	MEASUREMENT	54A-135
GENERAL DESCRIPTION	54A-52	BULB REPLACEMENT	54A-135
COMBINATION METERS		HEADLIGHT AND FRONT COMBINATION	
DIAGNOSIS	54A-52	LIGHT	54A-137
DIAGNOSTIC TROUBLESHOOTING		REMOVAL AND INSTALLATION	54A-137

Continued on next page

FOG LIGHT	54A-139	COLUMN SWITCH	54A-149
FRONT FOG LIGHT DIAGNOSIS .	54A-139	REMOVAL AND INSTALLATION	54A-149
ON-VEHICLE SERVICE	54A-139	HORN	54A-150
FOG LIGHT AIMING	54A-139	DIAGNOSIS <VEHICLE WITH	
BULB REPLACEMENT	54A-140	KEYLESS ENTRY SYSTEM>	54A-150
FRONT FOG LIGHT	54A-141	HORN	54A-150
REMOVAL AND INSTALLATION	54A-141	REMOVAL AND INSTALLATION	54A-150
INSPECTION	54A-142	INSPECTION	54A-151
REAR COMBINATION LIGHT	54A-143	ACCESSORY SOCKET	54A-152
SPECIAL TOOL	54A-143	REMOVAL AND INSTALLATION	54A-152
DIAGNOSIS	54A-143	RADIO WITH CD PLAYER ...	54A-154
REAR COMBINATION LIGHT	54A-143	GENERAL DESCRIPTION	54A-154
REMOVAL AND INSTALLATION	54A-143	RADIO WITH CD PLAYER, SPEAKER	
DOME LIGHT	54A-145	AND ANTENNA DIAGNOSIS	54A-155
DIAGNOSIS	54A-145	INTRODUCTION TO AUDIO SYSTEM	
DOME LIGHT	54A-145	DIAGNOSIS	54A-155
REMOVAL AND INSTALLATION	54A-145	AUDIO SYSTEM DIAGNOSTIC	
LICENSE PLATE LIGHT	54A-146	TROUBLESHOOTING STRATEGY	54A-156
REMOVAL AND INSTALLATION	54A-146	SYMPTOM CHART	54A-156
HIGH-MOUNTED STOPLIGHT	54A-147	SYMPTOM PROCEDURES	54A-158
REMOVAL AND INSTALLATION	54A-147	SPECIAL TOOL	54A-222
HAZARD WARNING LIGHT SWITCH	54A-147	RADIO WITH CD PLAYER	54A-223
HAZARD WARNING LIGHT DIAGNOSIS	54A-147	REMOVAL AND INSTALLATION	54A-223
HAZARD WARNING LIGHT SWITCH	54A-148	REMOTE CONTROLLED RADIO SWITCH	
REMOVAL AND INSTALLATION	54A-148	<VEHICLES WITH AUDIO AMPLIFIER>	54A-224
INSPECTION	54A-148	REMOVAL AND INSTALLATION	54A-224
		INSPECTION	54A-226
		SPEAKER	54A-227
		REMOVAL AND INSTALLATION	54A-227
		AMPLIFIER	54A-229
		REMOVAL AND INSTALLATION	54A-229
		ANTENNA	54A-230
		REMOVAL AND INSTALLATION	54A-230

Continued on next page

DEFOGGER..... 54A-231

GENERAL DESCRIPTION 54A-231

DEFOGGER DIAGNOSIS 54A-231

ON-VEHICLE SERVICE..... 54A-231
PRINTED-HEATER LINES CHECK ... 54A-231

**REAR WINDOW DEFOGGER
SWITCH 54A-233**
REMOVAL AND INSTALLATION 54A-233
INSPECTION..... 54A-233

MULTI-CENTER DISPLAY ... 54A-234

GENERAL DESCRIPTION 54A-234

DIAGNOSIS..... 54A-234

SYMPTOM PROCEDURES..... 54A-235
CHECK AT MULTI-CENTER DISPLAY UNIT
TERMINAL..... 54A-256

SPECIAL TOOLS..... 54A-257

ON-VEHICLE SERVICE

<VEHICLES WITH TYPE 1>..... 54A-258
COMPASS CALIBRATION..... 54A-258
VEHICLE MAGNETIC COMPENSATION 54A-260

MULTI-CENTER DISPLAY..... 54A-261
REMOVAL AND INSTALLATION..... 54A-261
DISASSEMBLY AND ASSEMBLY..... 54A-261

AMBIENT AIR TEMPERATURE

SENSOR..... 54A-262
REMOVAL AND INSTALLATION..... 54A-262
INSPECTION 54A-263

PANIC ALARM..... 54A-263

REMOVAL AND INSTALLATION 54A-263

SPECIFICATIONS 54A-264

**FASTENER TIGHTENING
SPECIFICATIONS 54A-264**

SERVICE SPECIFICATIONS..... 54A-264

BATTERY

ON-VEHICLE SERVICE

BATTERY CHECK

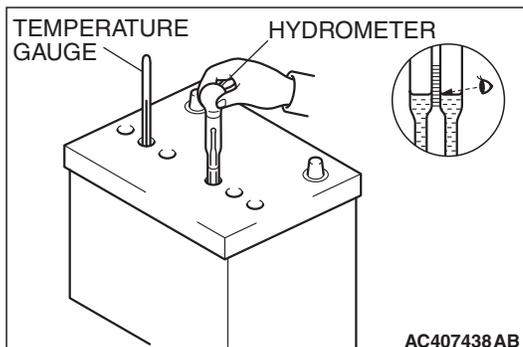
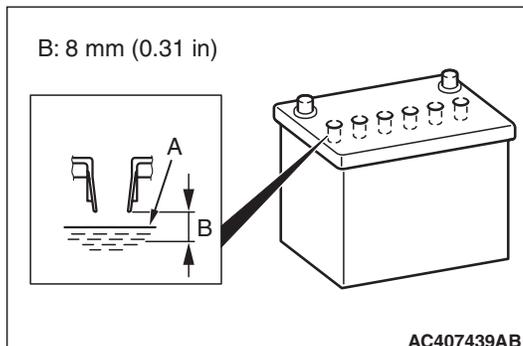
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⚠ WARNING

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

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WARNING

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

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

CHARGE RATE

Recommended rate and time for 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

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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 5.
NO : Charge the battery at 5 amps for 10.4 hours.
 Then re-test.

STEP 5. 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. Then repeat Step 4.

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 ignition key reminder tone alarm will sound under the following condition, and warn the driver to remove the ignition key.

- The driver's door is opened when the ignition switch is at "LOCK" (OFF) or "ACC" position without removing the ignition key.

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-57](#).

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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.

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IGNITION SWITCH

REMOVAL AND INSTALLATION

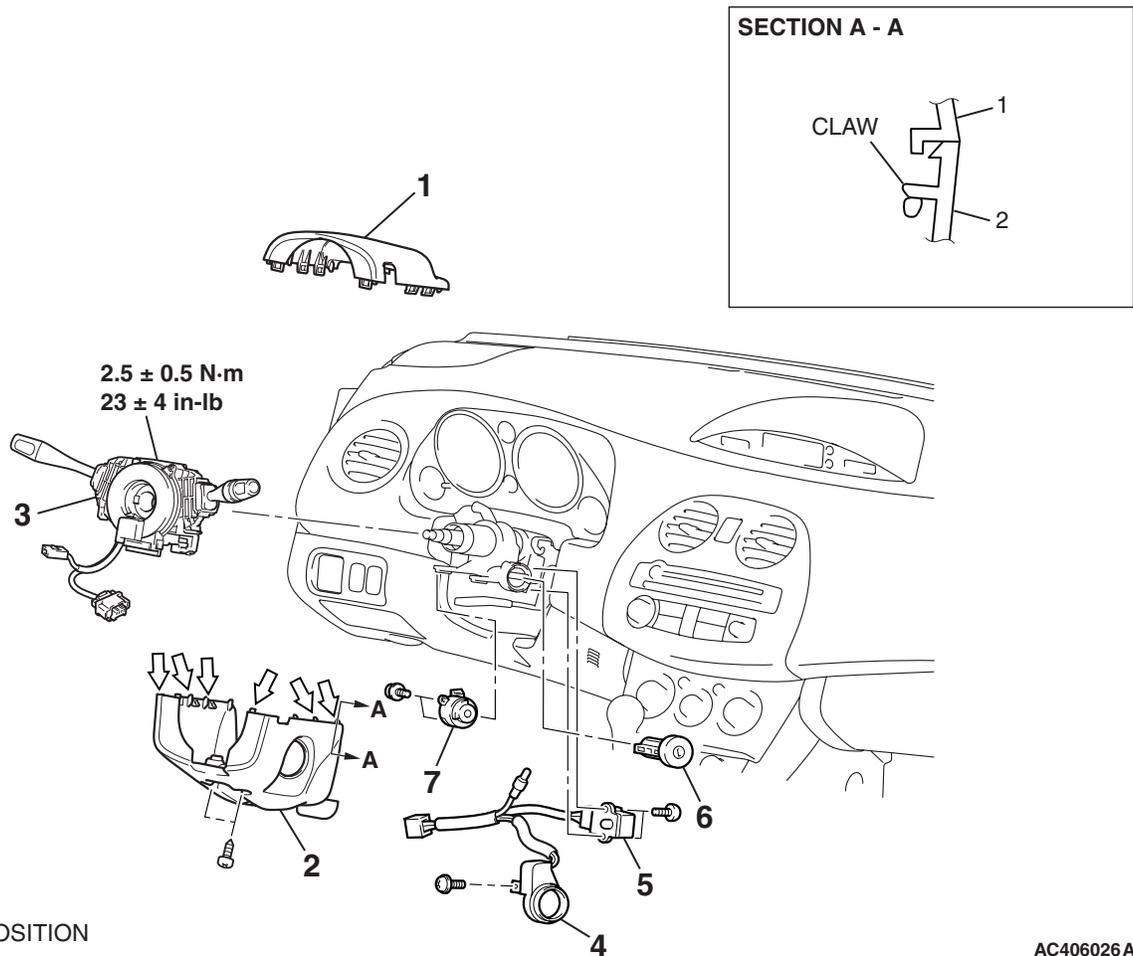
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⚠ WARNING

- Before removing the steering wheel, air bag module assembly and clock spring refer to **GROUP 52B, Service Precautions (P.52B-26)** and **Air Bag Module and Clock Spring (P.52B-408)**.
- 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-13**.



NOTE
↔: CLAW POSITION

AC406026 AB

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

IGNITION SWITCH REMOVAL STEPS (Continued)

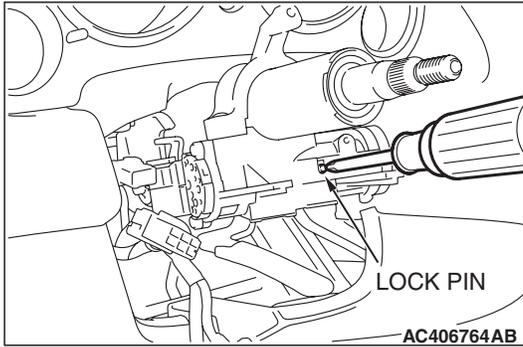
- 3. CLOCK SPRING AND COLUMN SWITCH ASSEMBLY (REFER TO GROUP 52B, AIR BAG MODULE(S) AND CLOCK SPRING **P.52B-408**.)
- 4. KEY RING ANTENNA
- 5. KEY REMINDER SWITCH
- 6. STEERING LOCK CYLINDER
- 7. IGNITION SWITCH

<<A>>

REMOVAL SERVICE POINTS

<<A>> 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.

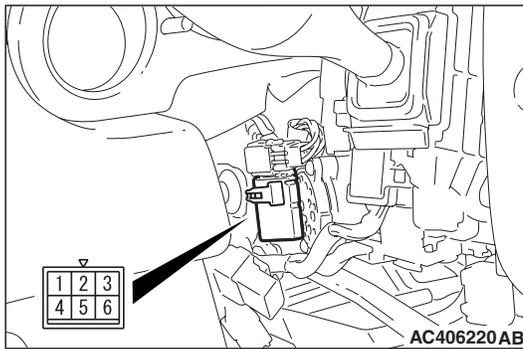


INSPECTION

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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"	1-4, 1-6	Less than 2 ohms
"ON"	1-2, 1-4, 1-5, 1-6	Less than 2 ohms
"START"	1-2, 1-5	Less than 2 ohms

IMMOBILIZER SYSTEM

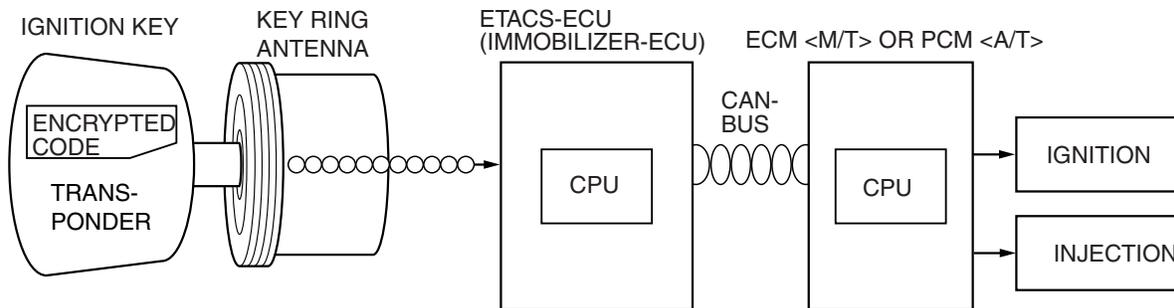
GENERAL DESCRIPTION

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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.

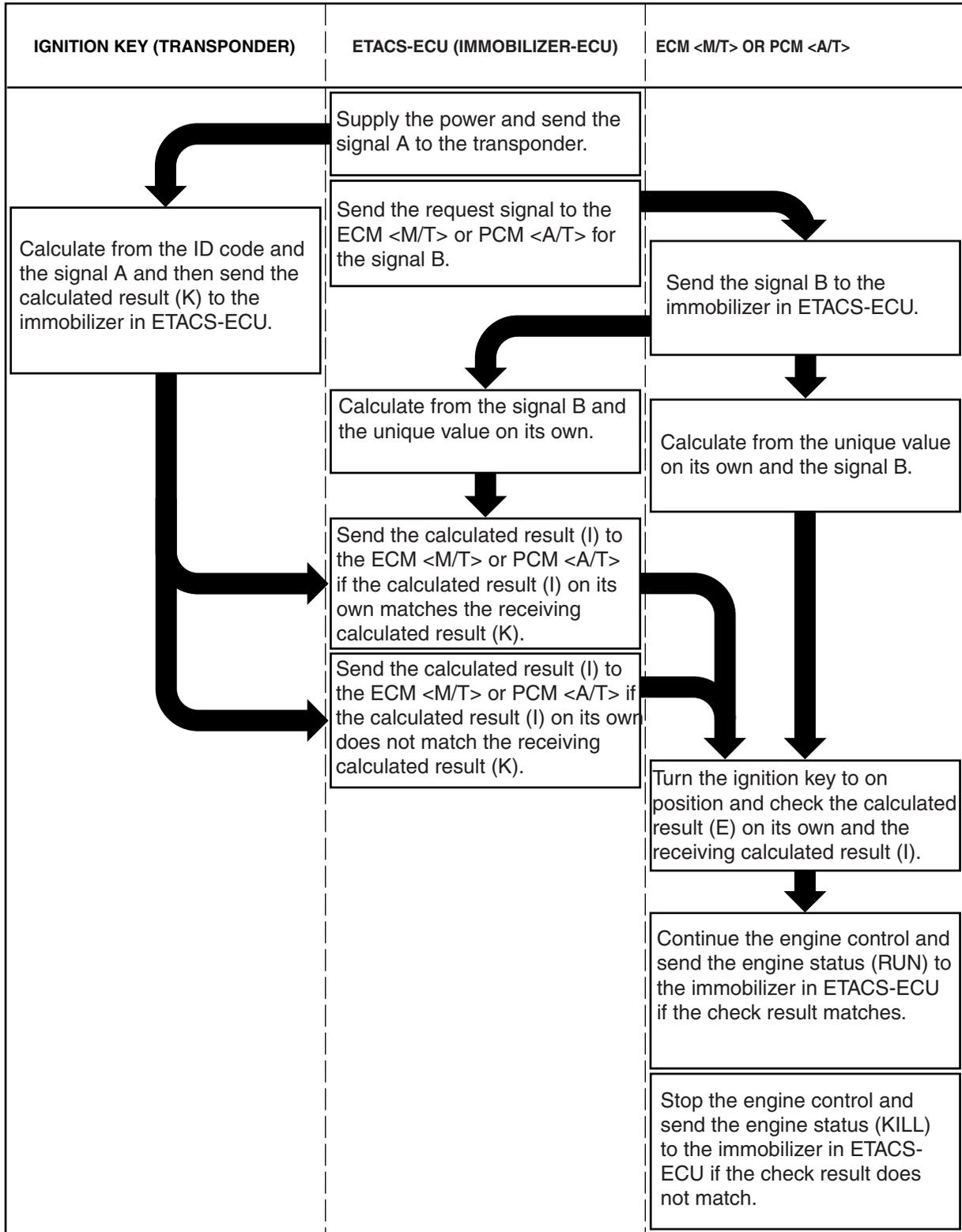
CONSTRUCTION DIAGRAM



AC406526 AB

OPERATION

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



AC406584AB

ENCRYPTED CODE REGISTRATION CRITERIA TABLE

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⚠ 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 P.00-24 .
When the ECM <M/T> or PCM <A/T> is reprogrammed	Registration not needed	–
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 P.00-24 . Reregistration of the ignition key: Refer to P.54A-42 .
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 P.54A-42 .
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-25.
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-17.
 - (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

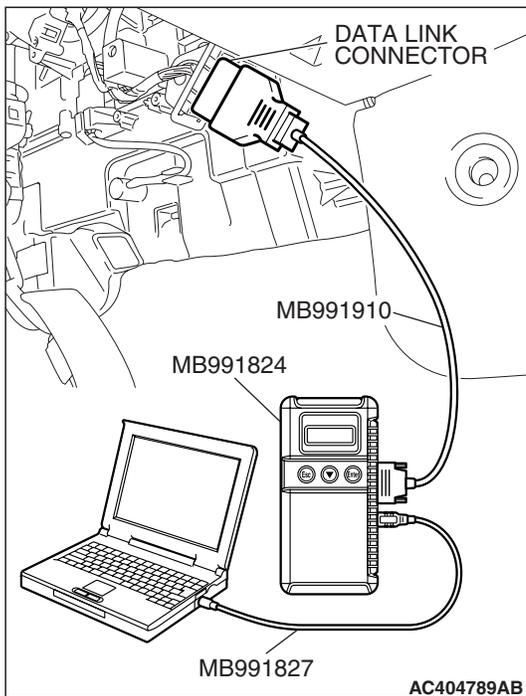
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HOW TO CONNECT SCAN TOOL (MUT-III)**Required Special Tools:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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 MUT-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

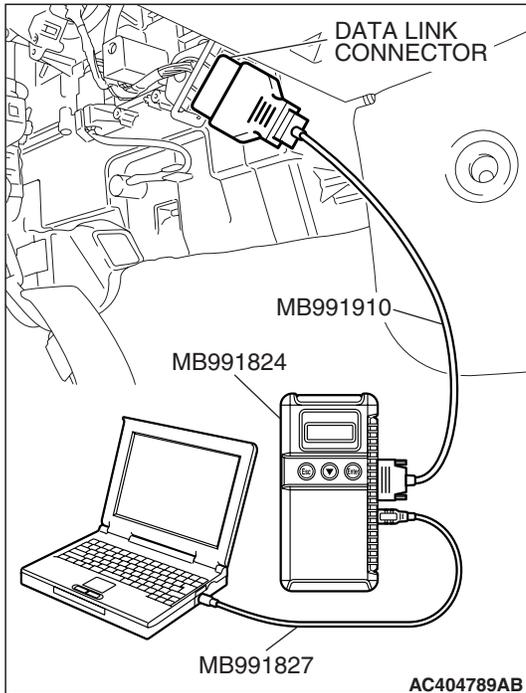
Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

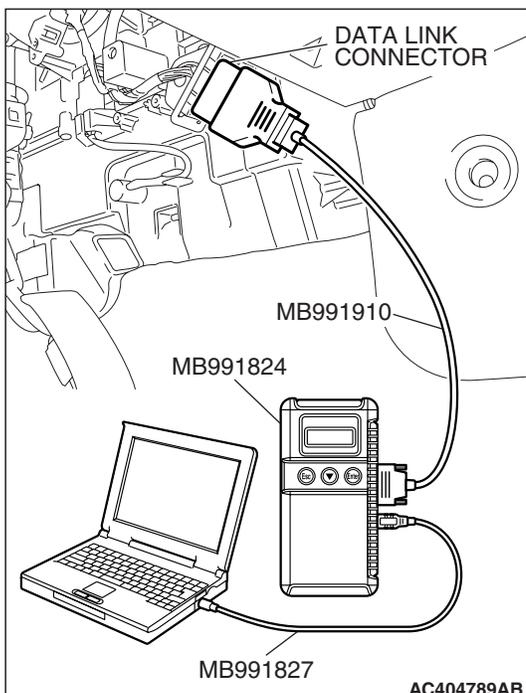
Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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.

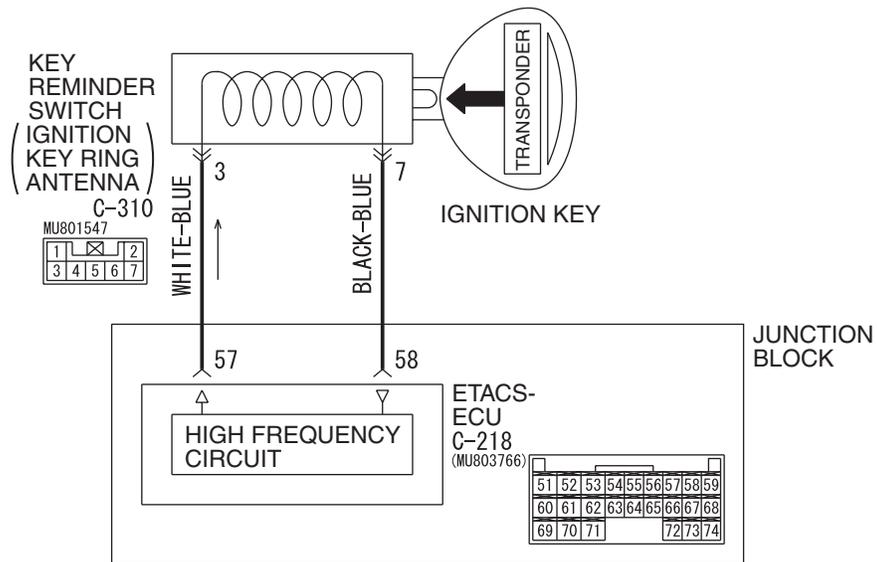
DTC NO.	DESCRIPTION	REFERENCE PAGE
B1702*	Reception error of transponder data.	P.54A-17
B1703*	Transponder data inconsistent.	P.54A-21
B1731	Immobilizer communication failure.	P.54A-22
B1761	VIN not recorded.	P.54A-24

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

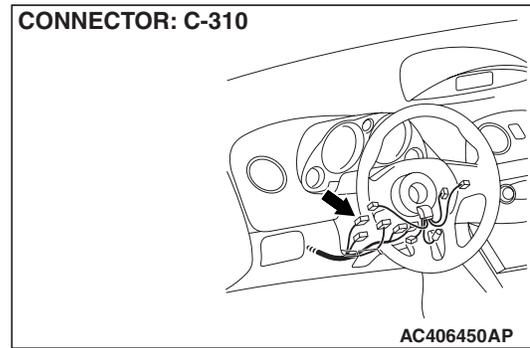
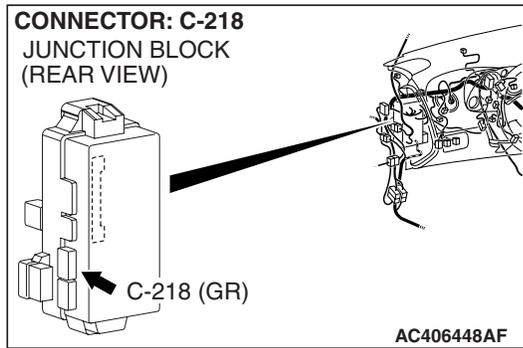
DIAGNOSTIC TROUBLE CODE PROCEDURES

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 interferes 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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-42](#)). Retest the system.

NO : Go to Step 3.

STEP 3. Recheck for diagnostic trouble code.

⚠ CAUTION

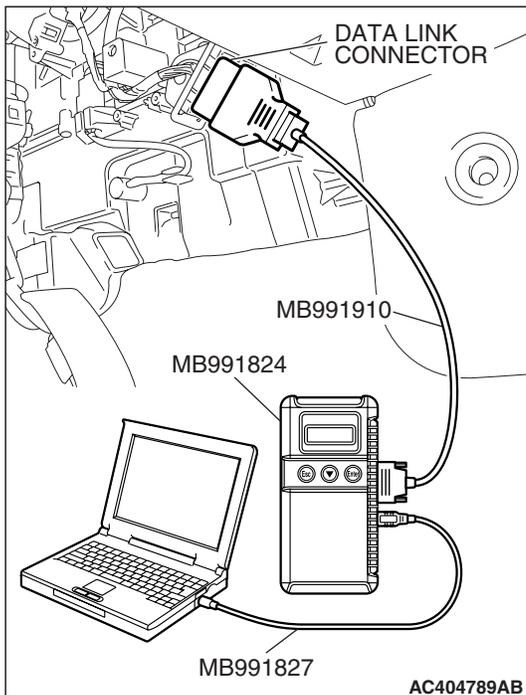
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (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?

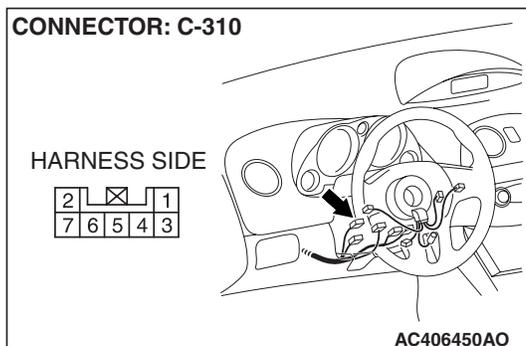
DTC B1703 is set : Refer to DTC B1703 [P.54A-21](#).

DTC B1702 is set : Go to Step 4.



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

- (1) Disconnect the key reminder switch (ignition key ring antenna) connector C-310.

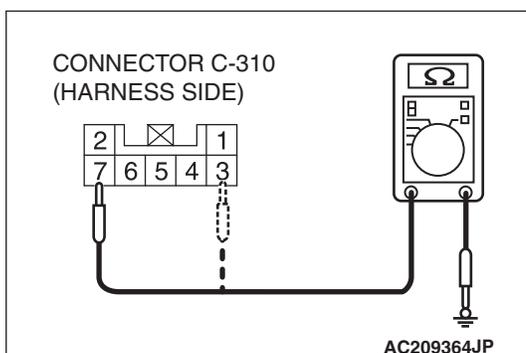


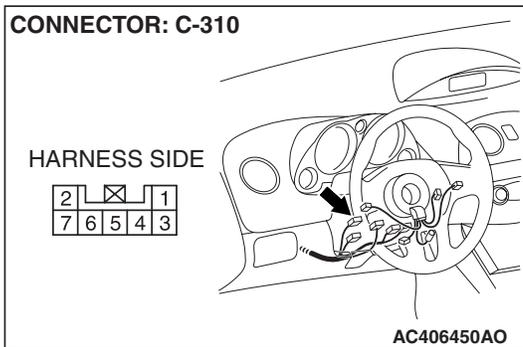
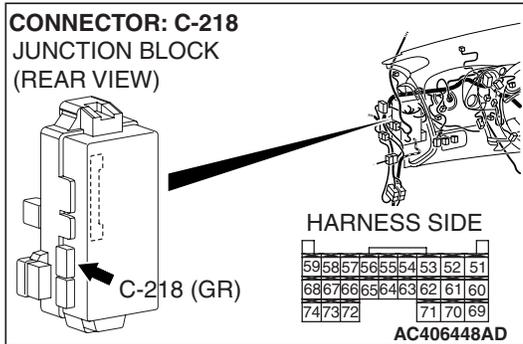
- (2) Measure the resistance value between terminal number 3 and terminal number 7 by backprobing.
 - The measured value should be 2 ohm or less.

Q: Is the check result normal?

YES : Go to Step 5.

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



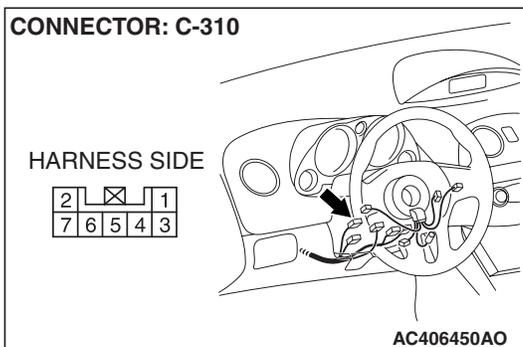
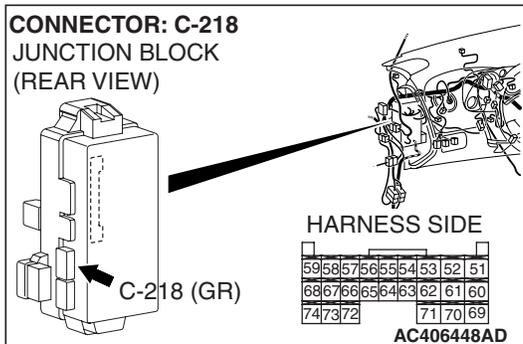


STEP 5. Check ETACS-ECU connector C-218 and key reminder switch (ignition key ring antenna) connector C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



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-42). 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Check by the other encrypted code registered ignition key.

Turn the ignition switch "ON" position with the encrypted code registered ignition key other than the one DTC is set.

Q: Is the diagnostic trouble code set?

- YES :** Register the new additional ignition key (Refer to [P.54A-13](#)). Then go to Step 2.
- NO :** Register the encrypted code again (Refer to [P.54A-13](#)). Then go to Step 2.

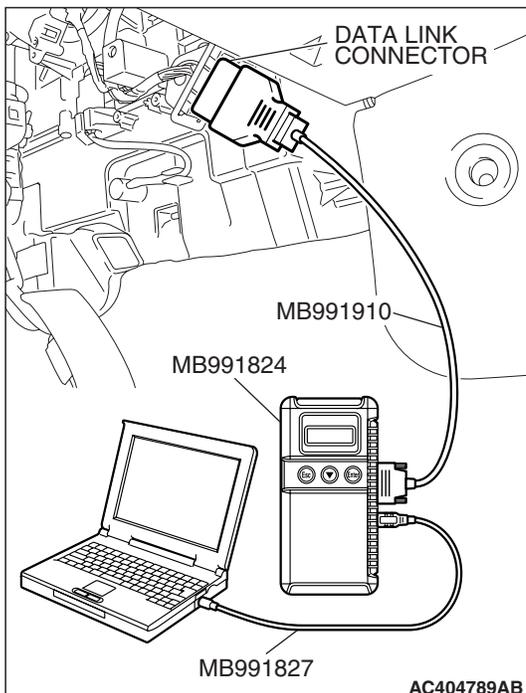
STEP 2. Recheck for diagnostic trouble code.

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 trouble code set?

- YES :** Replace the ETACS-ECU, and then record the VIN. Then, register the encrypted code again (Refer to [P.54A-13](#)). 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

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

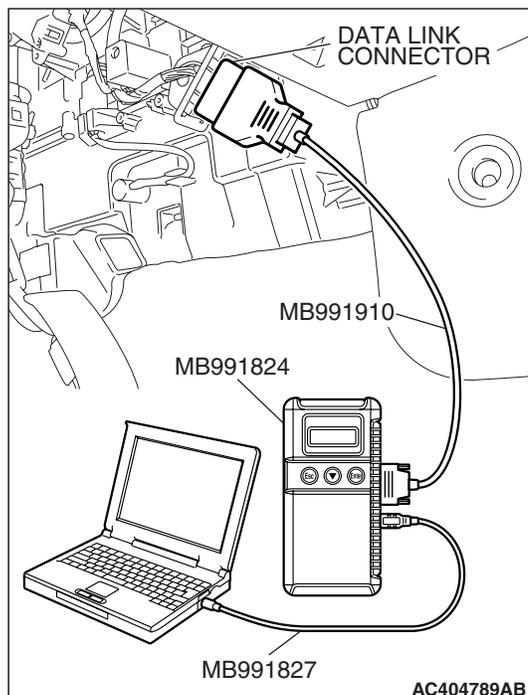
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

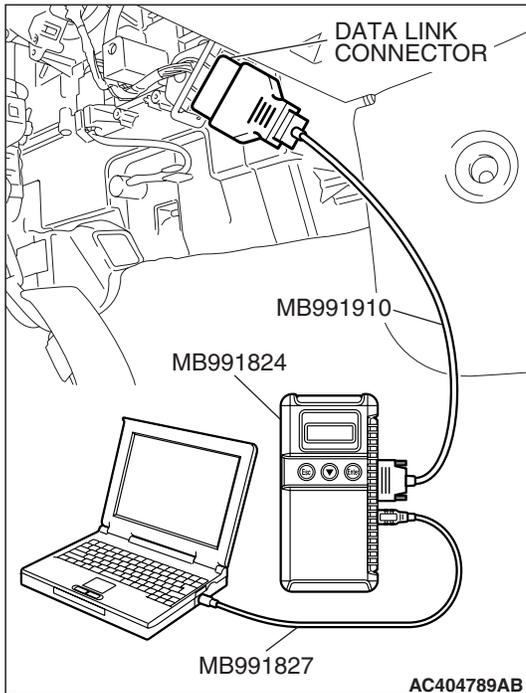
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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-5](#)).





STEP 2. Recheck for diagnostic trouble code.

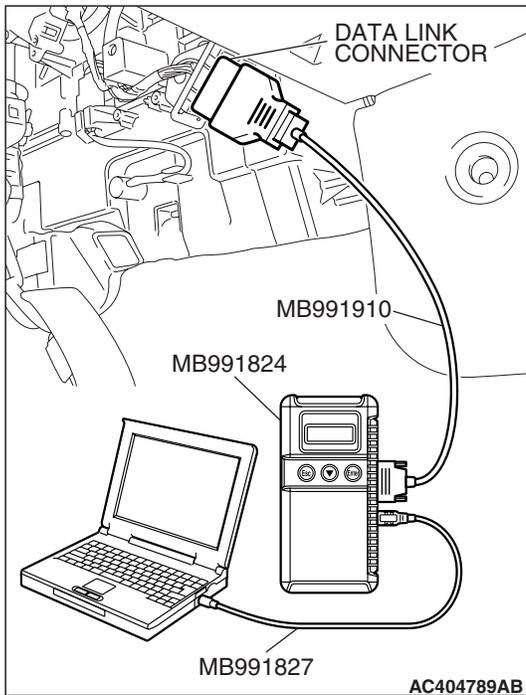
Recheck if the diagnostic trouble code is set.

- (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-13). 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-13). 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

Recheck for diagnostic trouble code.**⚠ CAUTION**

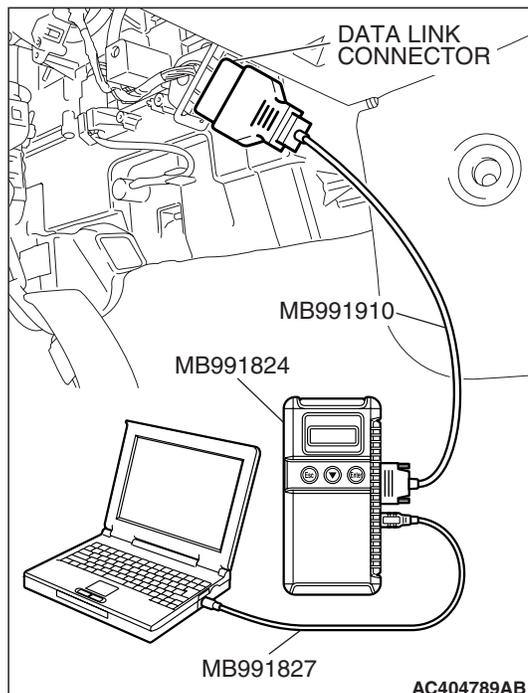
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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 : The procedure is complete.

NO : Replace the ETACS-ECU and then register the encrypted code (Refer to P.54A-42).



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 P.54B-86 .
The ignition key cannot be registered.	1	P.54A-26
Engine cranks, but does not start.	2	P.54A-27
The immobilizer indicator light does not illuminate.	3	P.54A-32

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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.

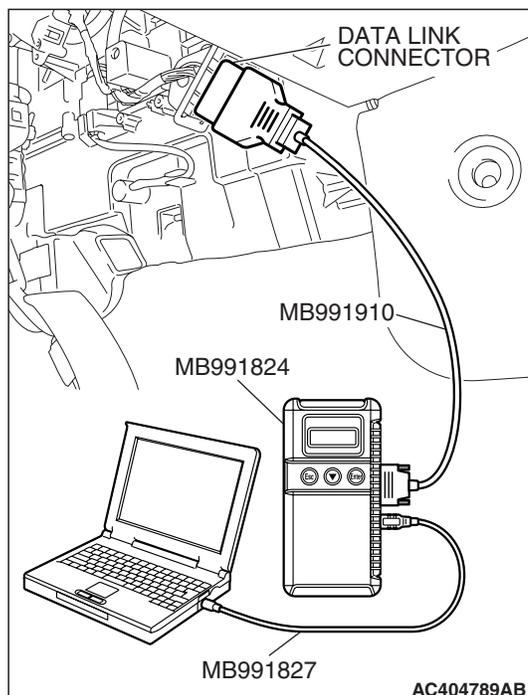
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the immobilizer system diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does DTC B1702 or B1703 resets?

DTC B1702 is set. : Refer to DTC B1702 [P.54A-17](#).

DTC B1703 is set. : Refer to DTC B1703 [P.54A-21](#).

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-13](#)). 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.

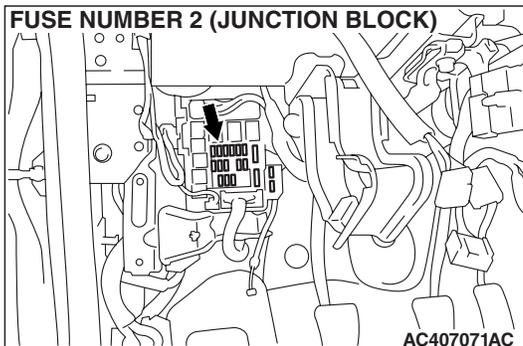
TROUBLESHOOTING HINTS

- 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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.

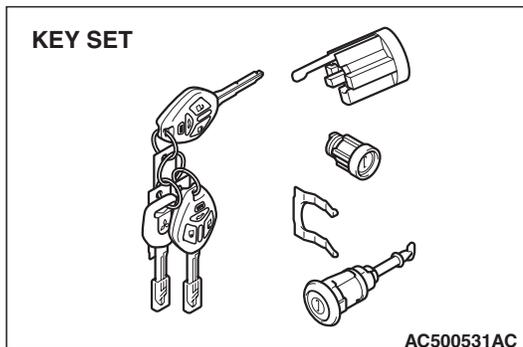
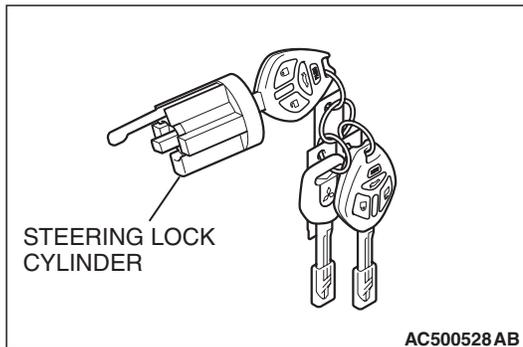
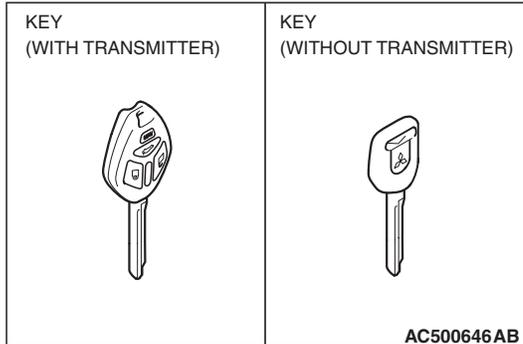
STEP 3. Check the ETACS-ECU.

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-13](#)).

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

YES : Go to Step 7.

NO : Record the VIN (Refer to [P.54A-13](#)). 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-13](#)).

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-5](#).

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

⚠ CAUTION

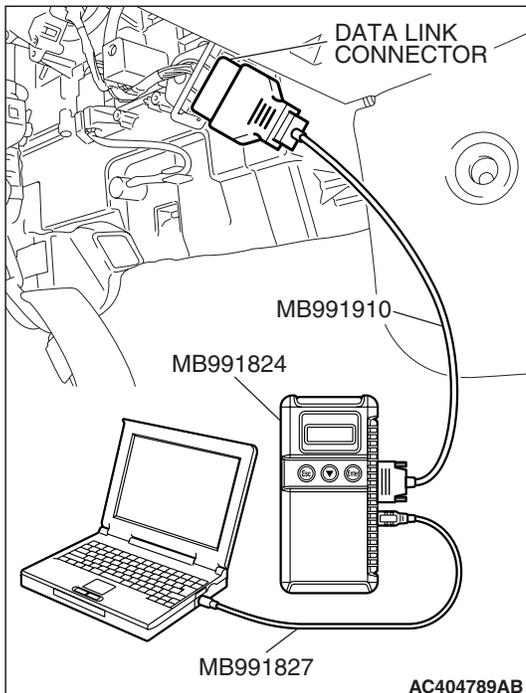
To prevent damage to scan tool MB991958, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool.

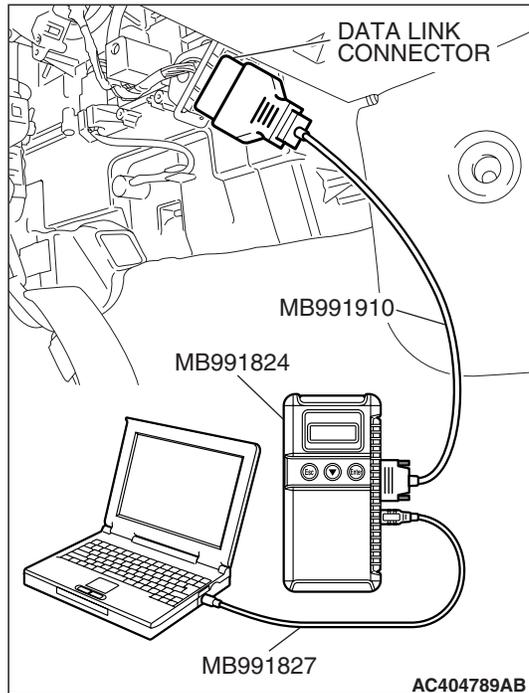
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch "ON" position.
- (3) Read the diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Have any DTCs set?

Yes : Refer to Diagnostic trouble code chart [P.54A-17](#).

No : Go to Step 10.





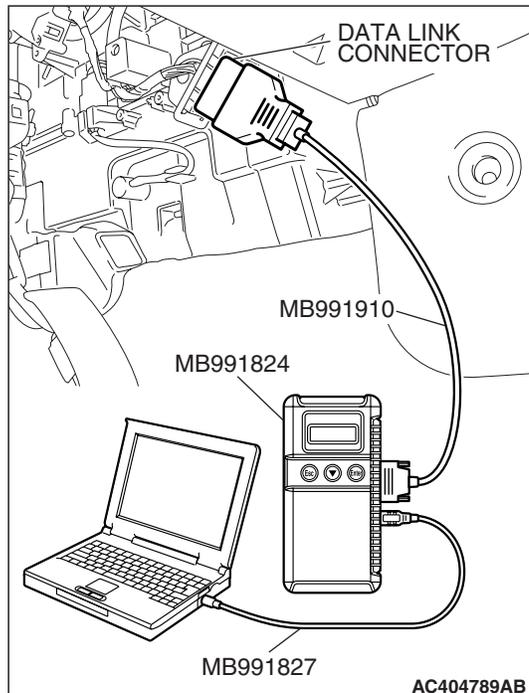
STEP 10. Using scan tool MB991958, read the MFI system diagnostic trouble code.

- (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-814](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis –Diagnostic Trouble Code Chart [P.13B-852](#) <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-1147](#) <2.4L ENGINE> or GROUP 13B, Data List Reference Table [P.13B-1230](#) <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-48](#) <3.8L ENGINE>.

STEP 12. Reregistration of the ignition key

Register the encrypted code again (Refer to [P.54A-13](#)).

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-13](#)).

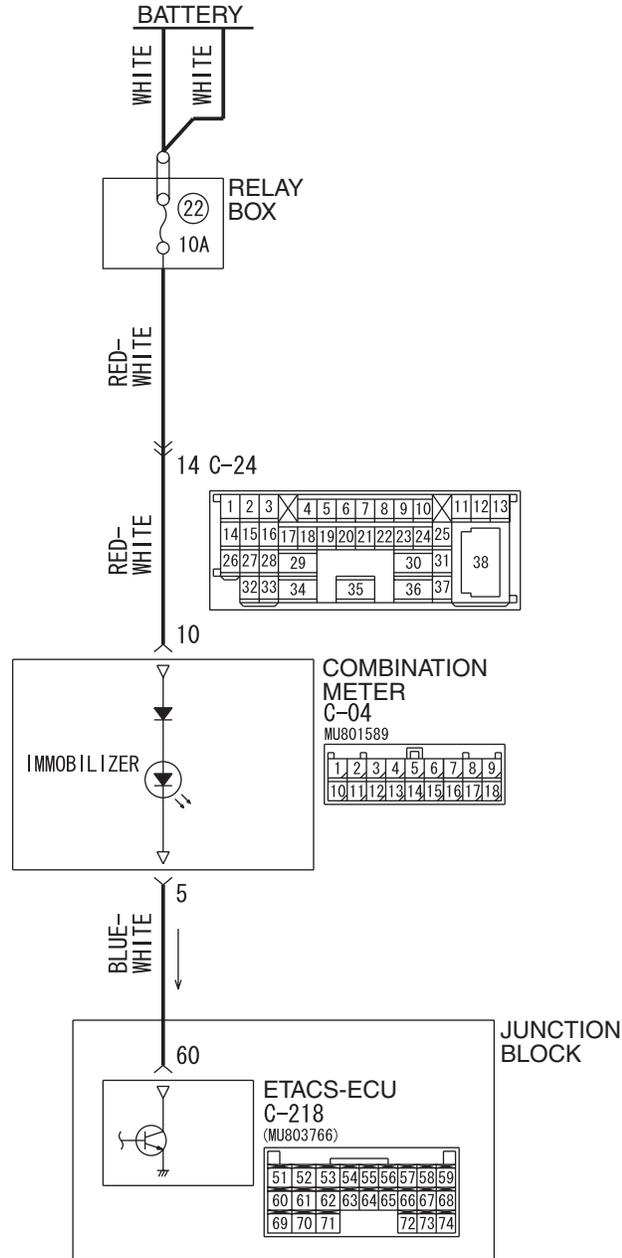
Q: Does the engine start?

YES : The procedure is complete.

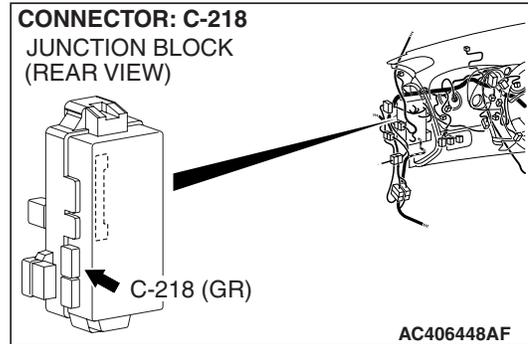
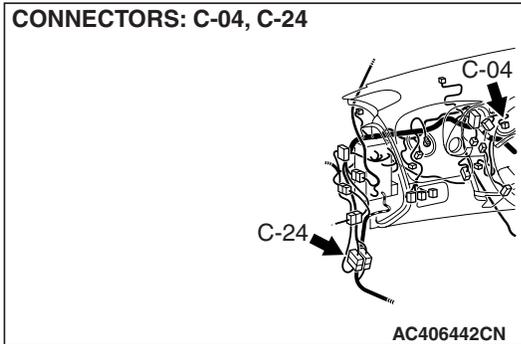
NO : Replace the ETACS-ECU, and then record the VIN.
Then, register the encrypted code again (Refer to [P.54A-13](#)).

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

Immobilizer Indicator Light Circuit



W6P54M100A



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:

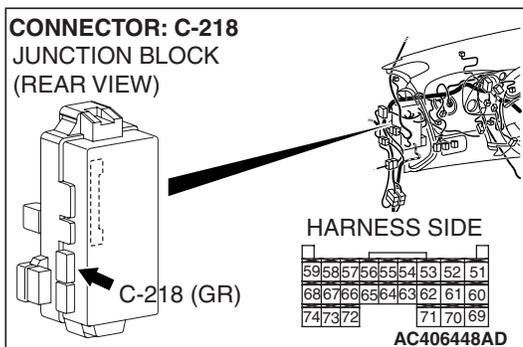
- MB991223: Harness Set

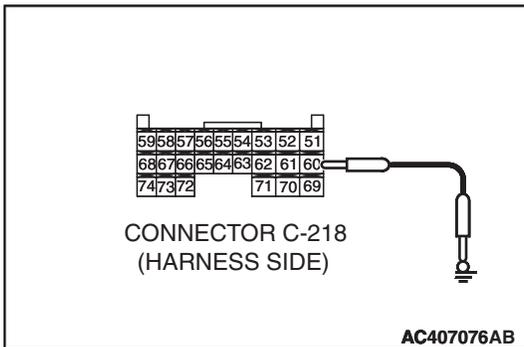
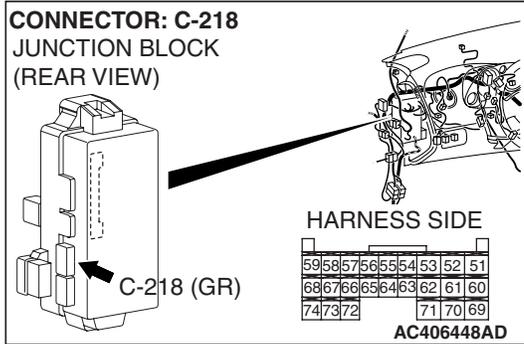
STEP 1. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector

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.





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-13](#)). Retest the system.

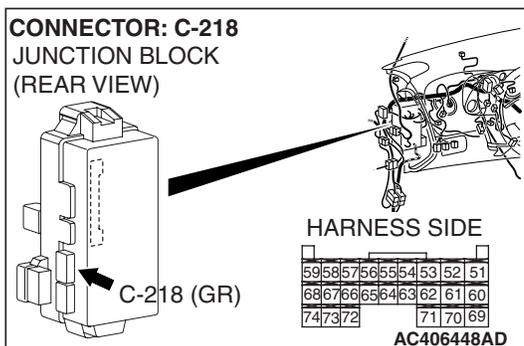
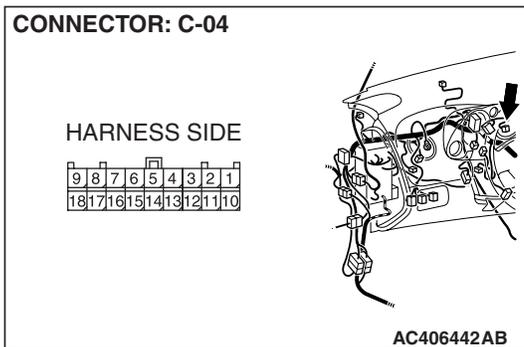
NO : Go to Step 3.

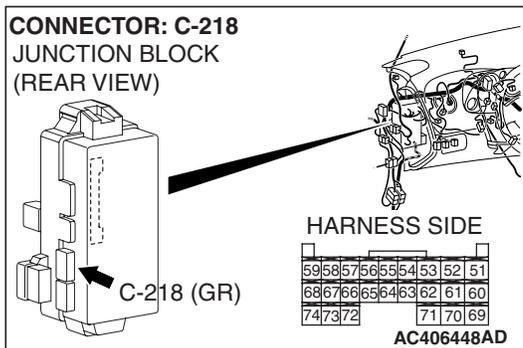
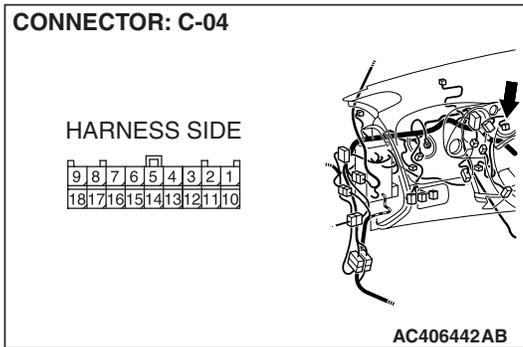
STEP 3. Check ETACS-ECU connector C-218 and combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



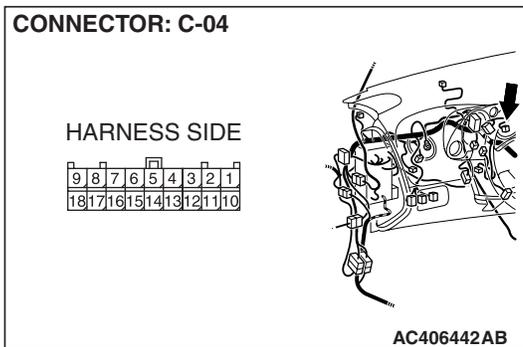


STEP 4. Check the wiring harness between combination meter connector C-04 (terminal 5) and ETACS-ECU connector C-218 (terminal 60).

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.

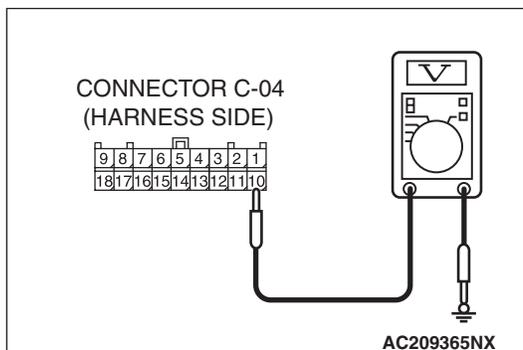
NO : Repair the wiring harness. Confirm the immobilizer indicator light illuminates normally.



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.



(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?

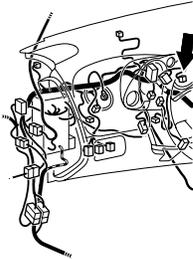
YES : Go to Step 8.

NO : Go to Step 6.

CONNECTOR: C-04

HARNES 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.

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

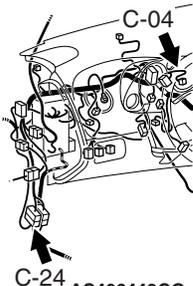
CONNECTORS: C-04, C-24

C-04 HARNES 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		38	
32	33	34		35				36	37			



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 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.

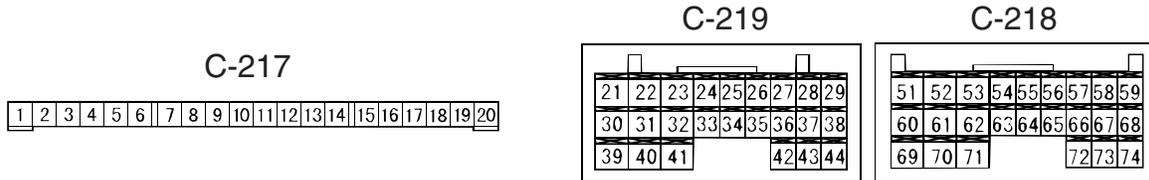
DATA LIST REFERENCE TABLE

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

M1543007600898



AC101265AF

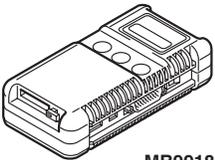
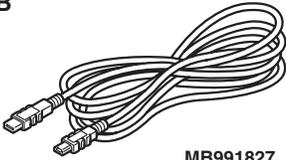
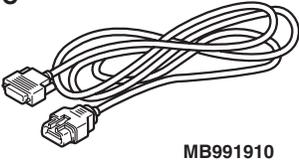
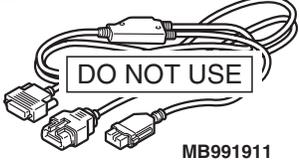
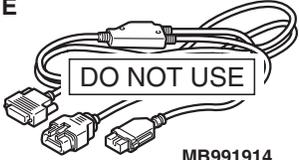
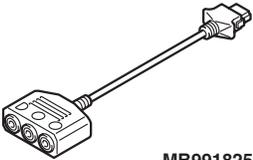
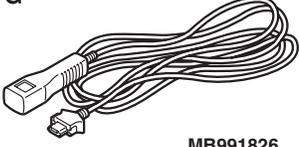
NOTE: *:The terminal No.1 to 20 connectors cannot be measured as the ETACS-ECU is installed directly on the junction block. Therefore, this information is only for reference.

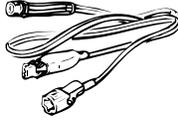
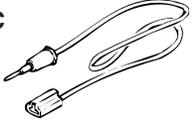
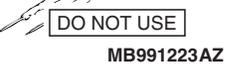
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Output to power window relay	When the power windows can work	Battery positive voltage
2	Battery positive voltage (for central door lock)	Always	Battery positive voltage
3	Ground (for ECU)	Always	0 V
4	Power supply to ignition switch (ACC)	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)	0 V
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	0 V
26 –29	–	–	–
30	Input of key reminder switch signal	Key reminder switch: ON (when ignition key is removed)	0 V
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	0 V
34	Input of door lock switch (UNLOCK) signal	Door lock switch (incorporated in power window switch): UNLOCK	0 V
35	–	–	–
36	Input of door lock actuator (LH) "UNLOCK" signal	Door lock actuator (LH): UNLOCK	0 V
37	–	–	–
38	Ground (for sensor)	Always	0 V
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	0 V
42	Input of door lock key cylinder switch (LOCK) signal	Door lock key cylinder switch: LOCK	0 V
43	Input of passenger's door lock actuator (UNLOCK) signal	Passenger's door lock actuator: UNLOCK	0 V
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	0 V
55	Input of hazard warning light switch signal	Hazard warning light switch: ON (When the switch is depressed)	0 V
56	Ground (for sensor)	Always	0 V
57	Output of key ring antenna signal	Always	0 V
58	Input of key ring antenna signal	Always	0 V
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)	0 V
63, 64	–	–	–
65	Input from door switch (RH)	Door switch (RH): ON (passenger's door open)	0 V
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	0 V
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	0 V
70	–	–	–
71	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
72 –74	–	–	–

SPECIAL TOOLS

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

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
<p>A </p> <p>B </p> <p>C </p> <p>D </p>	<p>MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222</p> <p>Harness set A: Test harness B: LED harness C: LED harness adapter 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 B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection</p>
<p></p> <p>MB992006</p>	<p>MB992006 Extra fine probe</p>	<p>—</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

ON-VEHICLE SERVICE

ENCRYPTED CODE REGISTRATION
PROCEDURE

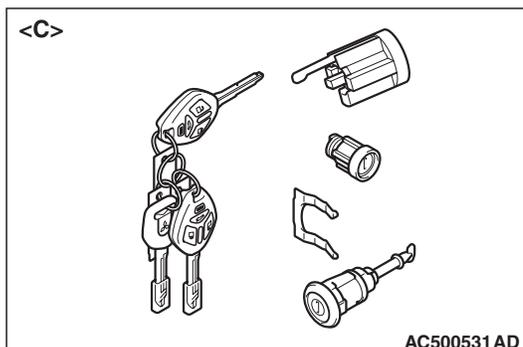
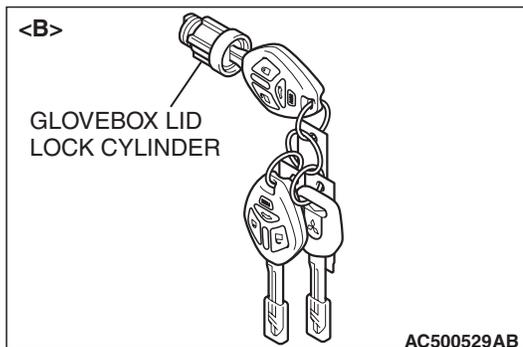
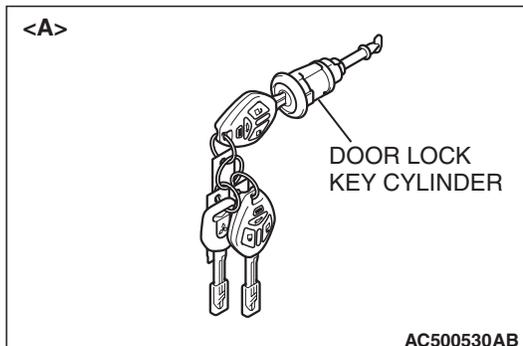
M1543008100733

⚠ 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 , 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.42-93**.

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 (MUT-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 is 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 (MUT-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.

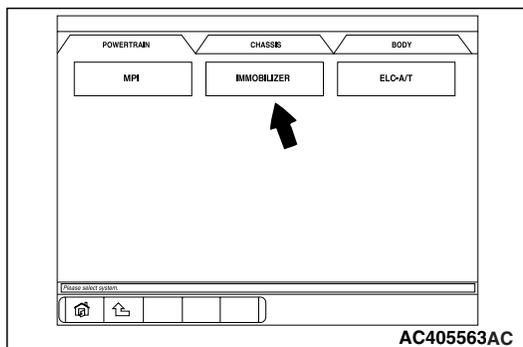
Required Special Tools:

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

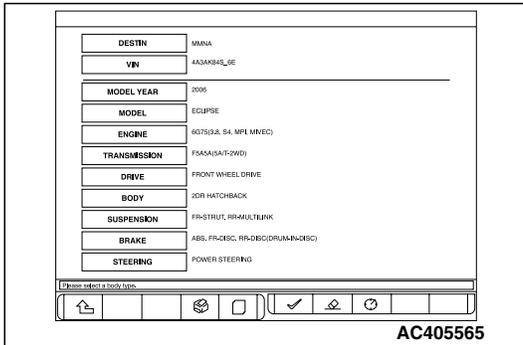
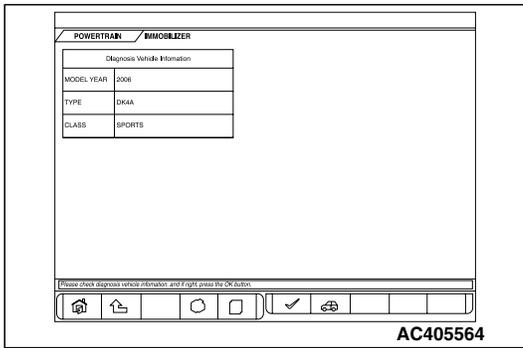
CAUTION

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

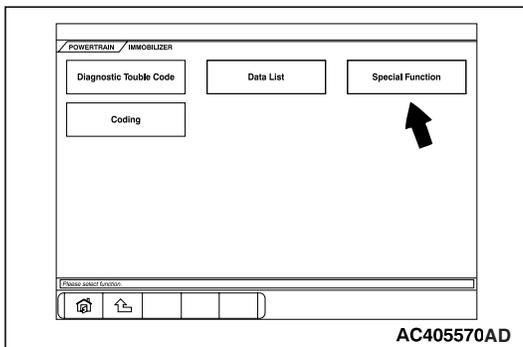
1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Choose "IMMOBILIZER" from the "POWER TRAIN" tab.



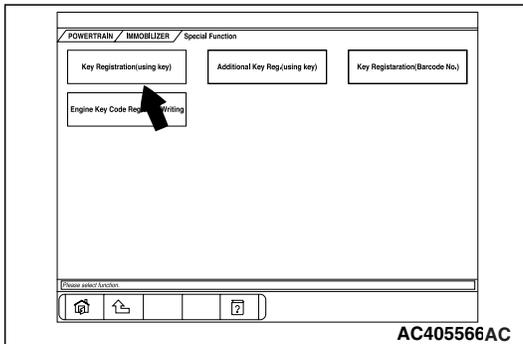
4. Enter the VIN code of the vehicle that is registered. Then, press "OK" button.



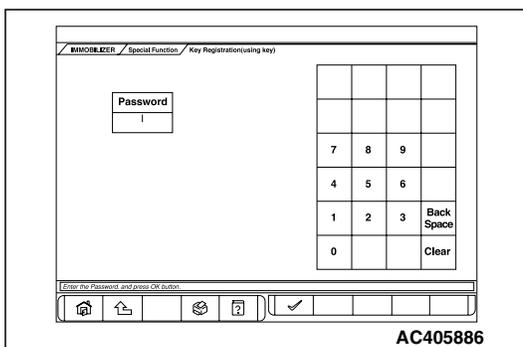
5. Select "Special Function."

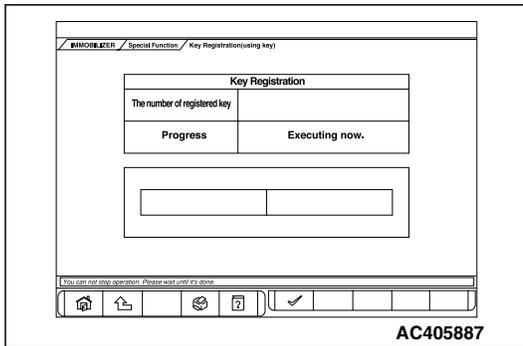


6. Select "Key Registration (using key)."

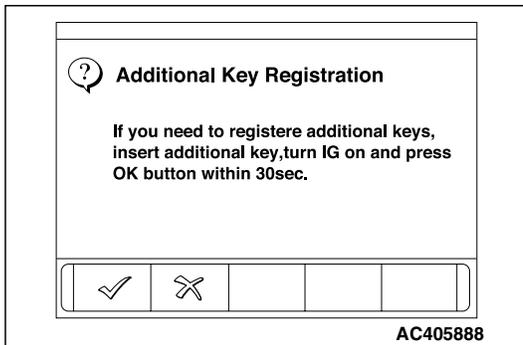


7. Enter the password of the vehicle, and press the OK button.

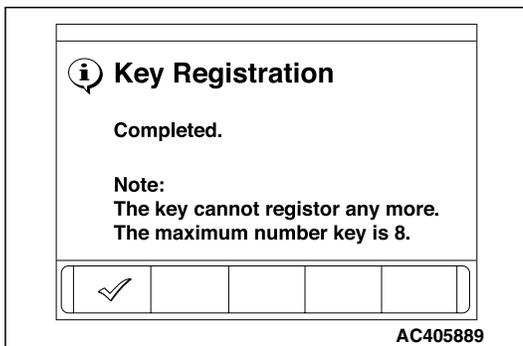




8. Registration of the ignition key will be started.



9. 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.



10. 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.

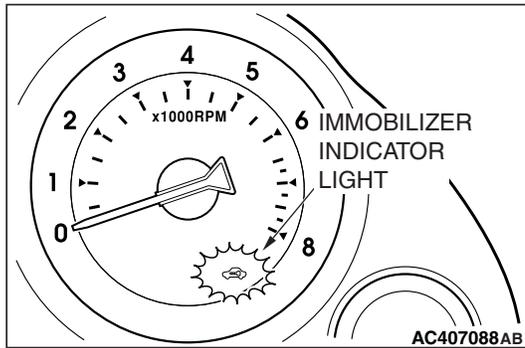
ENCRYPTED CODE REGISTRATION USING IGNITION KEY <REGISTRATION USING IGNITION KEY ONLY>

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>

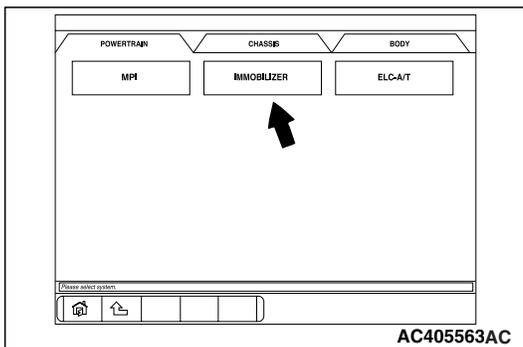
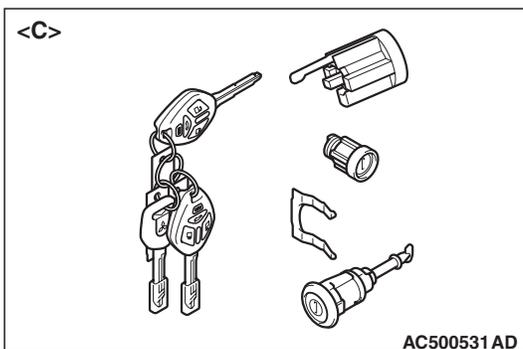
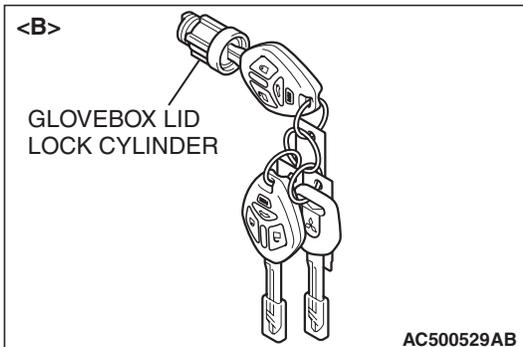
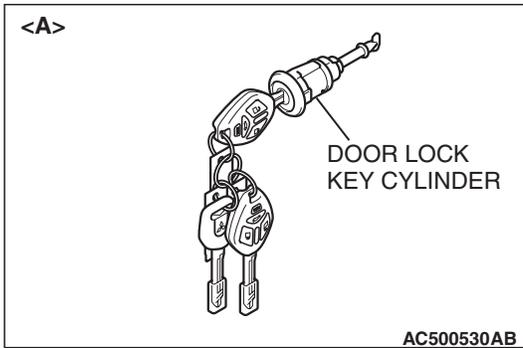
- When the immobilizer indicator is not illuminated during registration
- When the immobilizer indicator light does not change in 3 seconds after carrying out step 6

<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 , 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.42-93.

Required Special Tools:

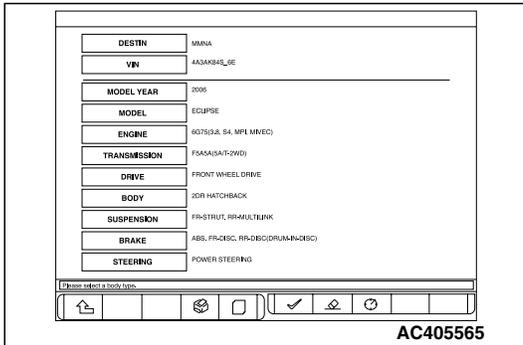
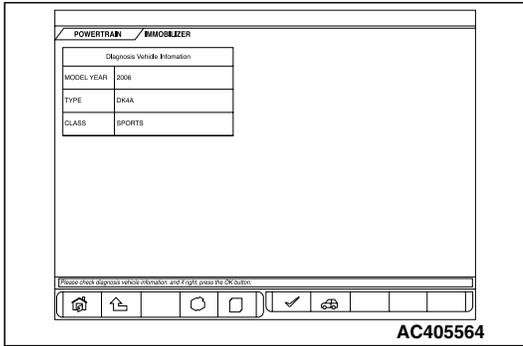
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

CAUTION

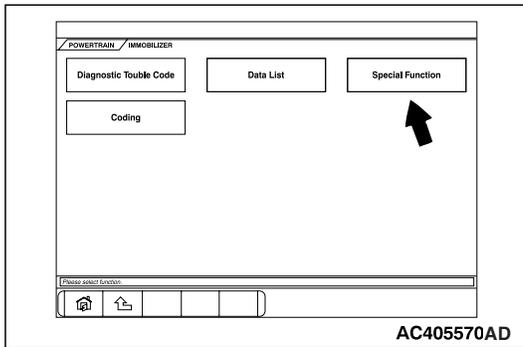
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Choose "IMMOBILIZER" from the "POWER TRAIN" tab.

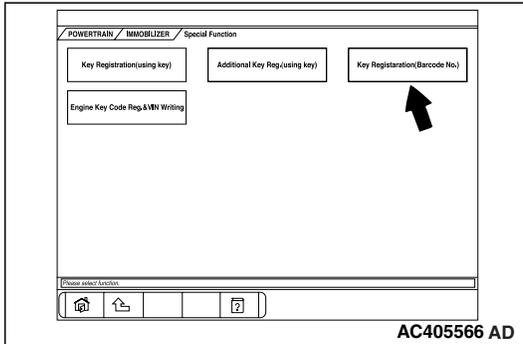
4. Enter the VIN code of the vehicle that is registered. Then, press "OK" button.



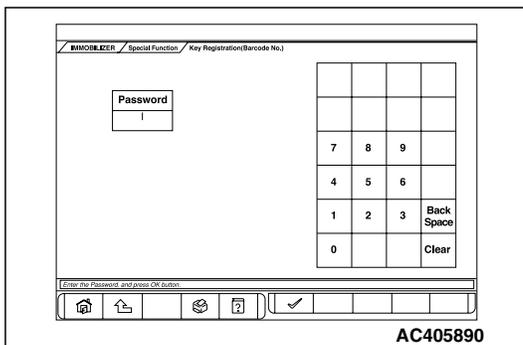
5. Select "Special Function."



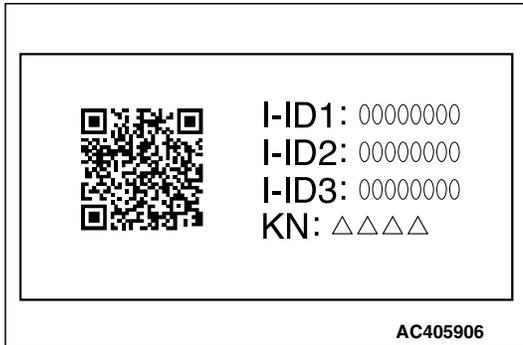
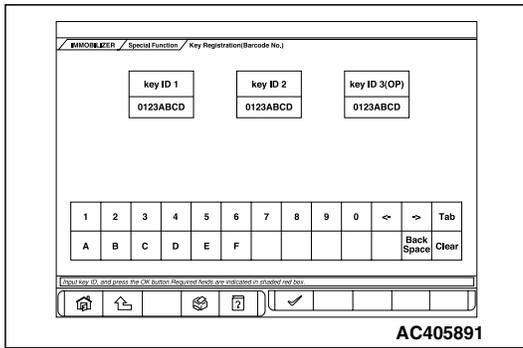
6. Select "Key Registration (Barcode No.)."



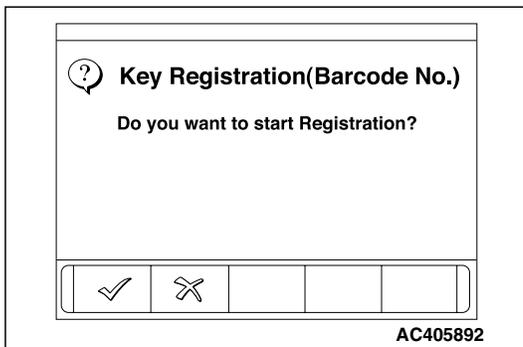
7. Enter the password of the vehicle, and press the OK button.



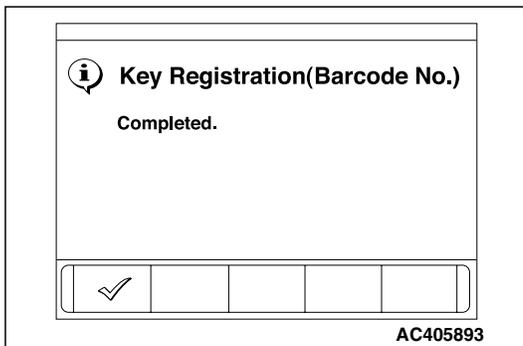
8. Enter the ID on the bar code plate which is attached to the ignition key, and press the OK button.



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



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

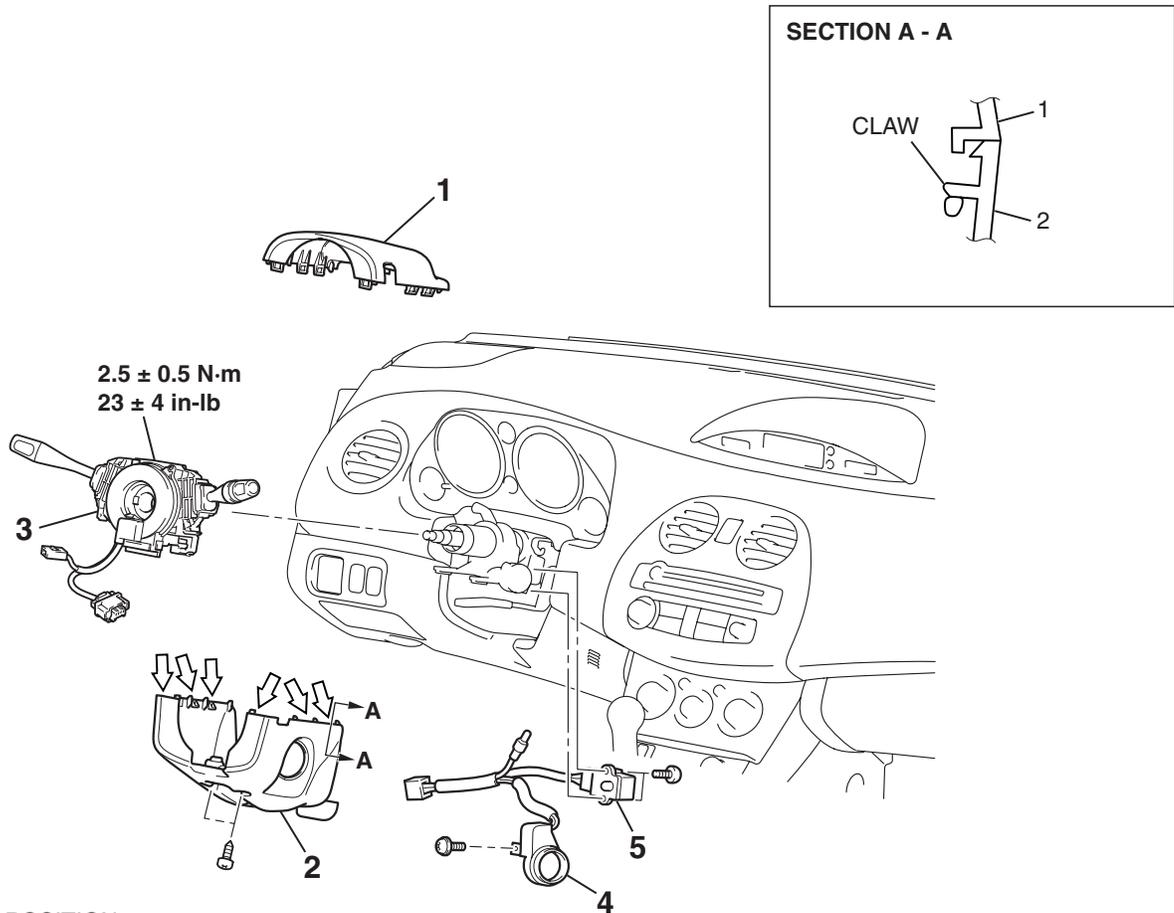


KEY RING ANTENNA REMOVAL AND INSTALLATION

M1543031600019

⚠ WARNING

- Before removing the steering wheel, air bag module assembly and clock spring refer to **GROUP 52B, Service Precautions (P.52B-26)** and **Air Bag Module and Clock Spring (P.52B-408)**.
- 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)

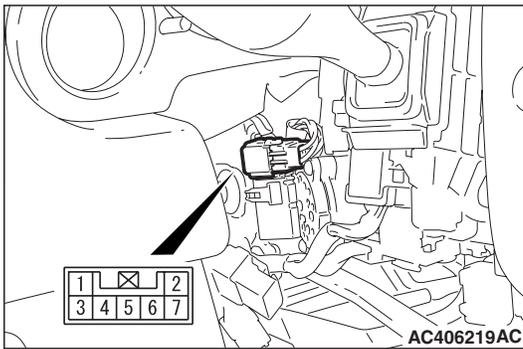
3. CLOCK SPRING AND COLUMN SWITCH ASSEMBLY (REFER TO GROUP 52B, AIR BAG MODULE(S) AND CLOCK SPRING P.52B-408.)
4. KEY RING ANTENNA
5. KEY REMINDER SWITCH

INSPECTION

M1543019503563

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	Less than 2 ohms
Inserted	4-6	Open circuit

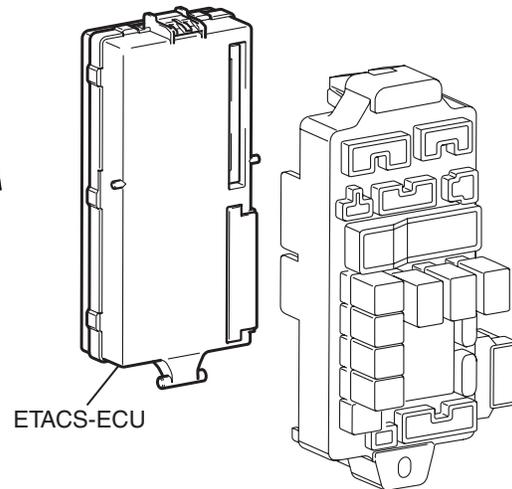
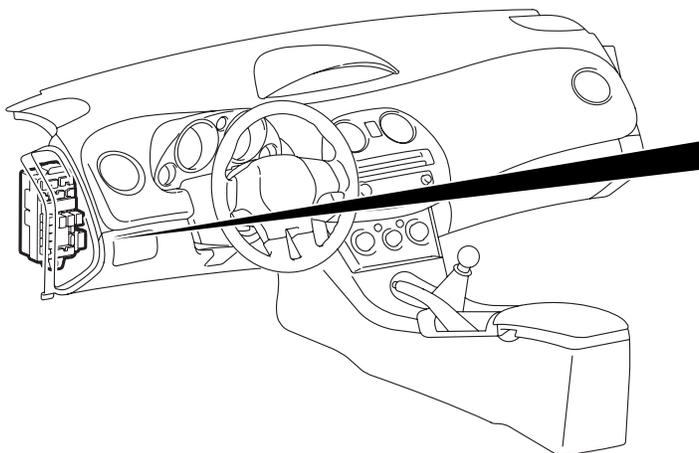
ETACS-ECU

REMOVAL AND INSTALLATION

M1543031800013

CAUTION

When the ETACS-ECU is replaced, register the encrypted code. Refer to [P.42-93](#).



AC406463 AB

COMBINATION METER ASSEMBLY**GENERAL DESCRIPTION**

M1543000100609

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>
	TCL	ABS/TCL-ECU <vehicles with TCL>
	TCL OFF	
Warning light	Service engine soon	ECM <M/T> or PCM <A/T>
	ABS	ABS-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 (MUT-III)**Required Special Tools:**

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

⚠ CAUTION

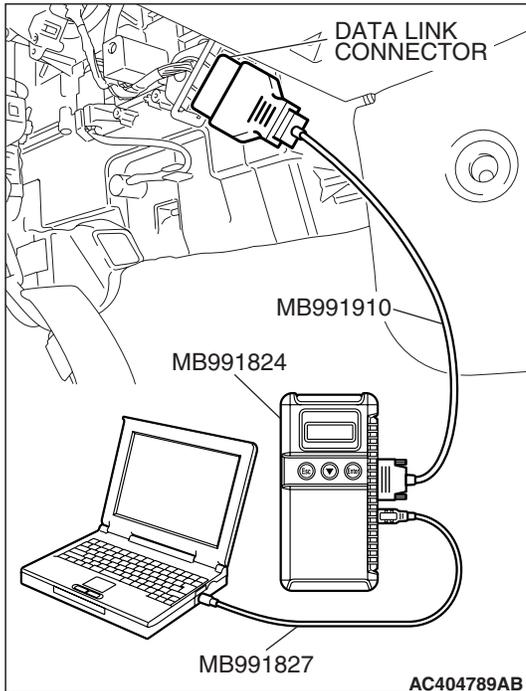
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 MUT-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

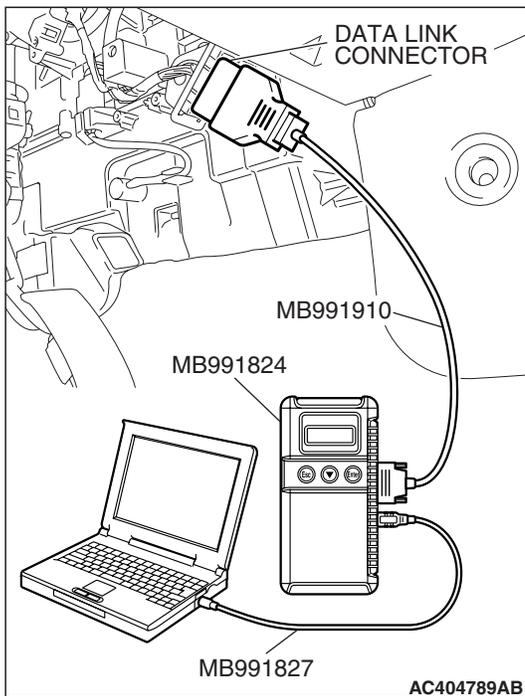
Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

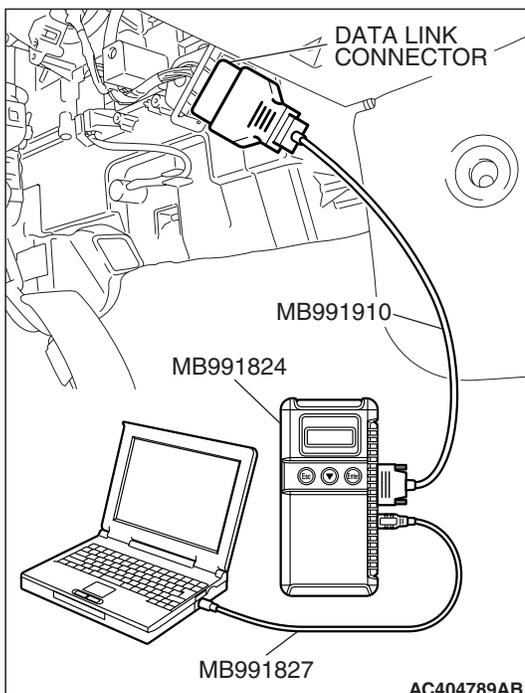
HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

⚠ 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-55
B1201	Defective fuel gauge	P.54A-57
U1073	Bus off	P.54A-70
U1100	ECM <M/T> or PCM <A/T> time-out (related to engine)	P.54A-72
U1101	PCM time-out (related to A/T) <A/T>	P.54A-76
U1102	ABS-ECU time-out	P.54A-79
U1109	ETACS-ECU time-out	P.54A-82
U1112	SRS-ECU time-out	P.54A-84
U1114*	TPMS-ECU time-out	–
U1120	Failure information on ECM <M/T> or PCM <A/T> (related to engine)	P.54A-87
U1206	Flag invalid	P.54A-90
U1434*	Failure information on TPMS-ECU	–

NOTE: *: DTC No.U1114 and U1434 does not mean that there is a problem.

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 damage 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

Recheck for diagnostic trouble code.

Recheck if the diagnostic trouble code is set.

⚠ CAUTION

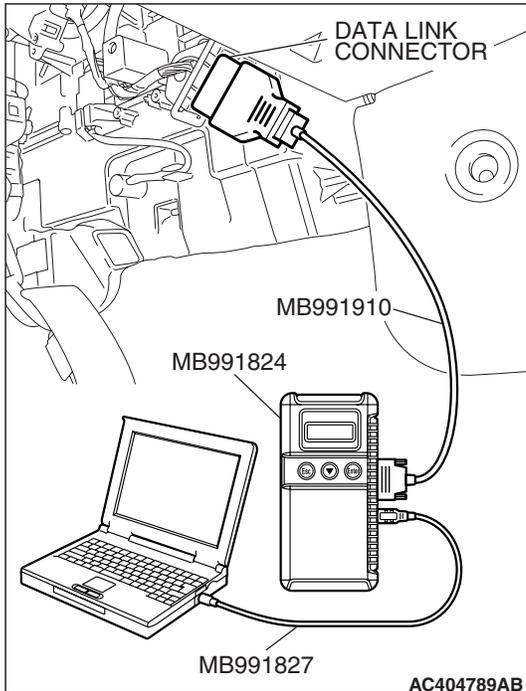
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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](#).

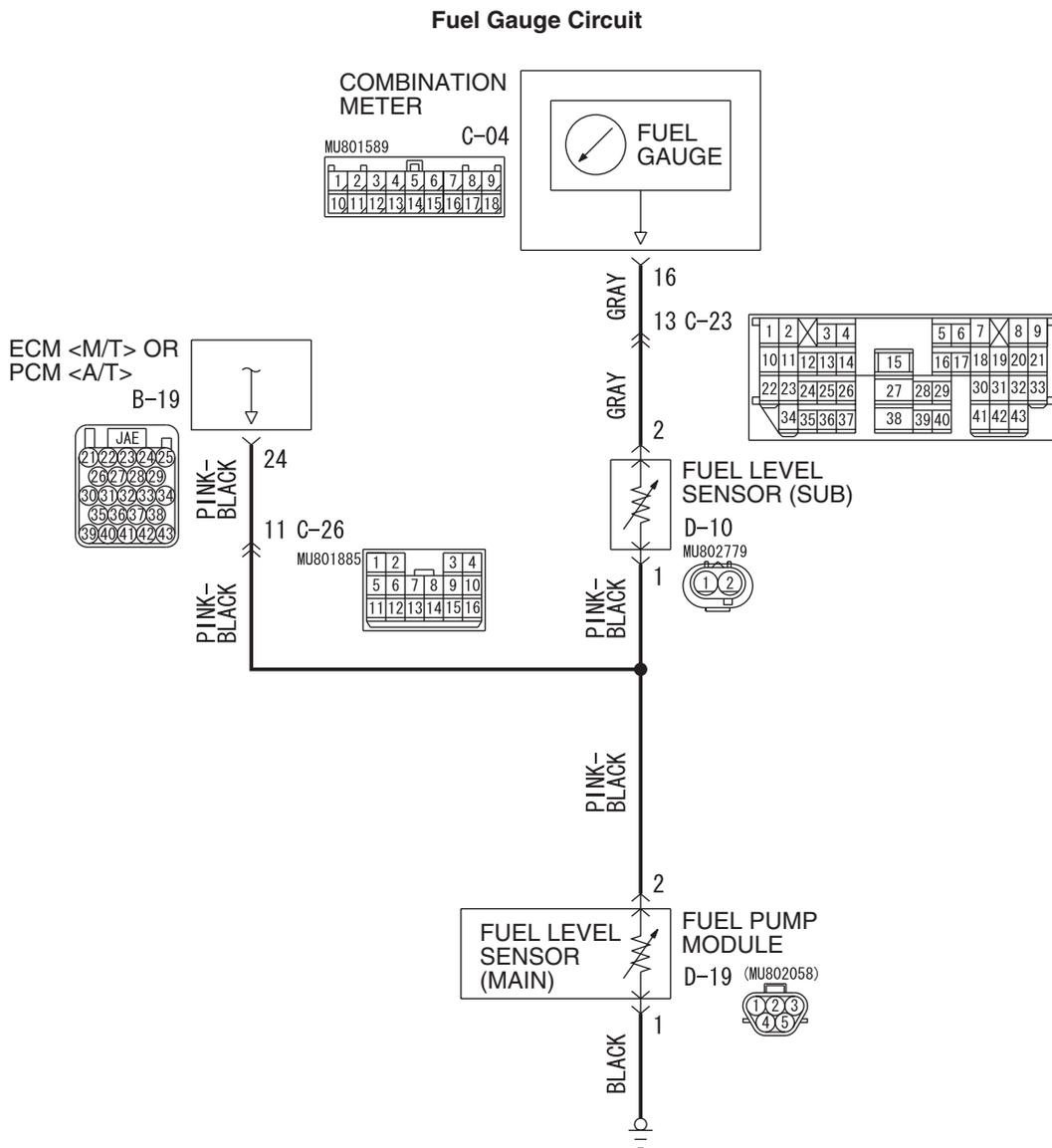
NO : Replace the combination meter.



DTC B1201: Defective fuel gauge

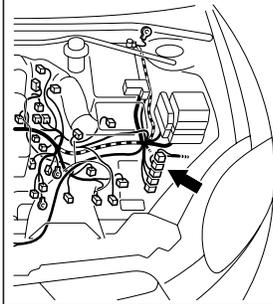
CAUTION

- 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.



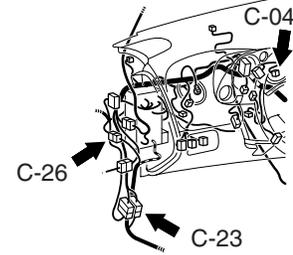
W6P54M006A

CONNECTOR: B-19



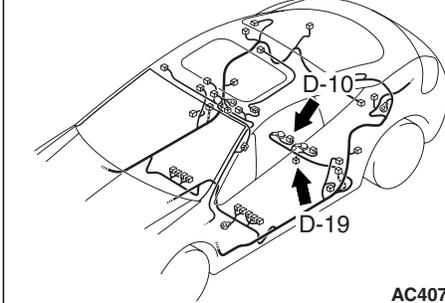
AC406440 AC

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



AC406442 AB

CONNECTORS: D-10, D-19



AC407245 AC

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

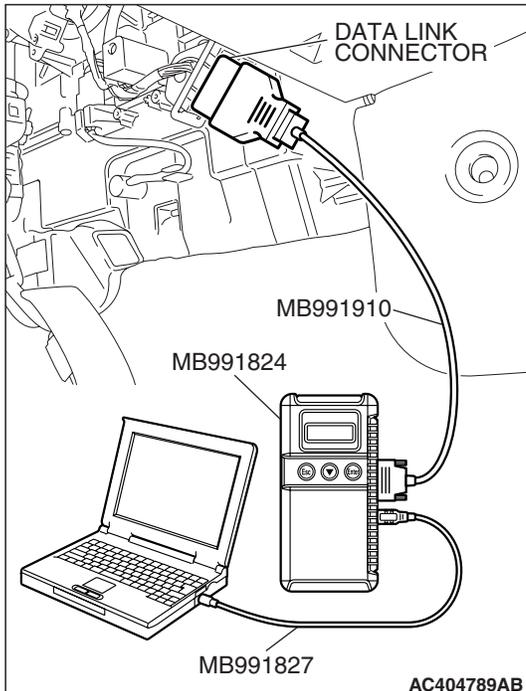
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (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-814](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis –Diagnostic Trouble Code Chart [P.13B-852](#) <3.8L ENGINE>.

NO : Go to Step 2.



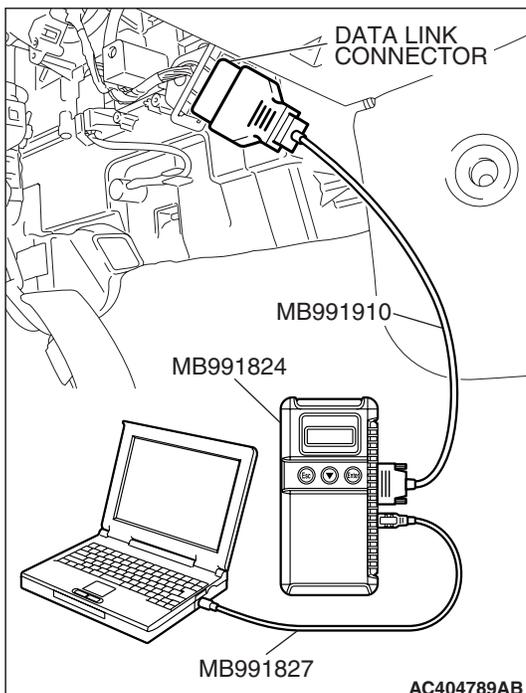
STEP 2. Using scan tool MB991958, check data list.

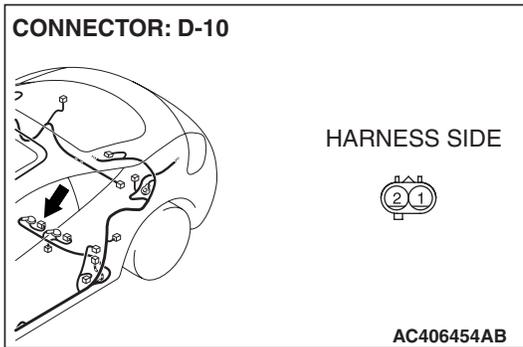
- (1) Start the engine.
- (2) Set scan tool MB991958 to the data reading mode.
 - Item 06: fuel gauge (Input).
 - Fuel gauge unit resistance value and MUT-III displayed value agree with each other.
 - Item 07: fuel gauge (Target).
 - Fuel gauge and MUT-III displayed values agree with each other.
- (3) 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.





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.

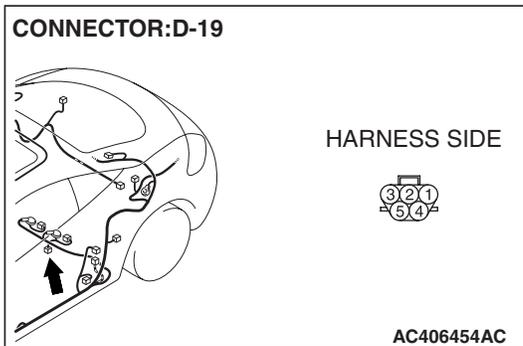
STEP 4. Check the fuel level sensor (sub).

Check to see if the fuel level sensor (sub) is normal. Refer to [P.54A-129](#).

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-9](#)).



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.

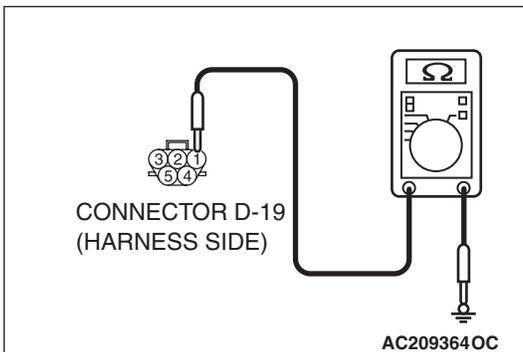
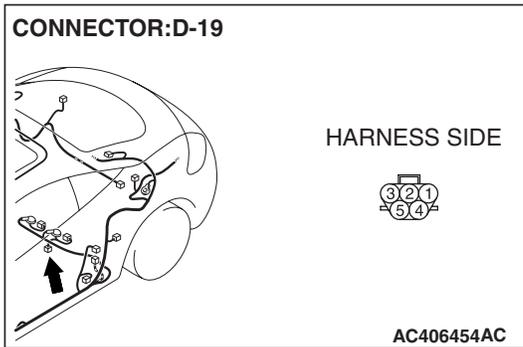
STEP 6. Check the fuel pump module.

Check to see if the fuel pump module is normal. Refer to [P.54A-129](#).

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-9](#)). The fuel gauge should now operate normally.



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.

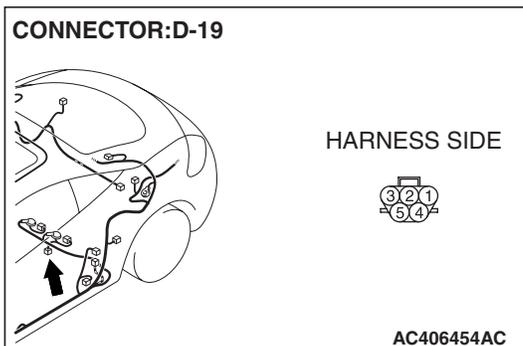
(2) Measure the resistance value between terminal 1 and ground.

- 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.

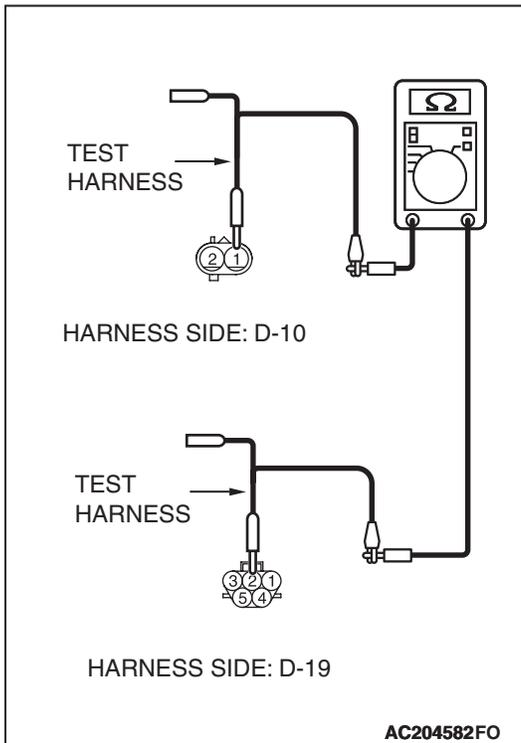
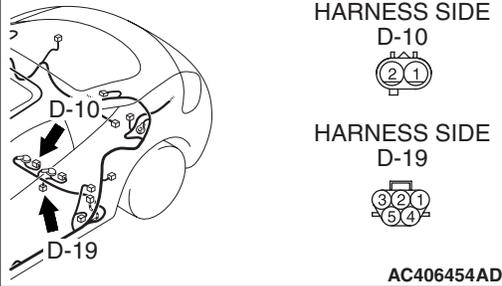


STEP 8. Check the wiring harness between fuel pump module connector D-19 (terminal 1) and ground.

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.

CONNECTORS: D-10, D-19**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).**

(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.

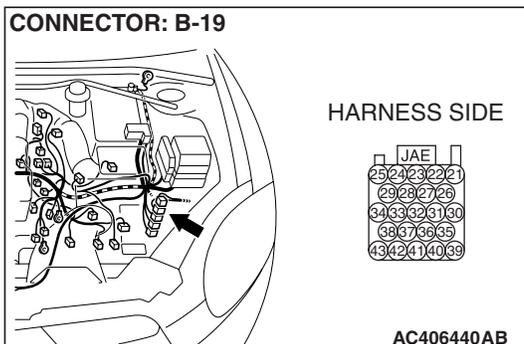
(2) Measure the resistance between fuel level sensor (sub) connector D-10 terminal 1 and fuel pump module connector D-19 terminal 2.

- 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.



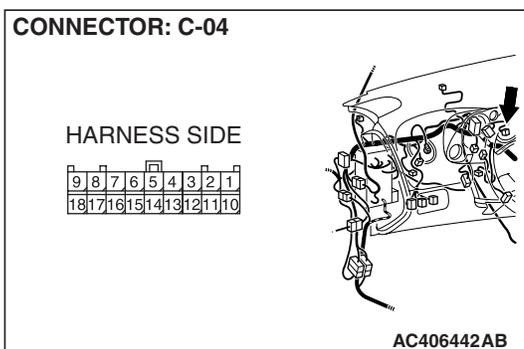
STEP 10. Check combination meter connector C-04 and ECM <M/T> or PCM <A/T> connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

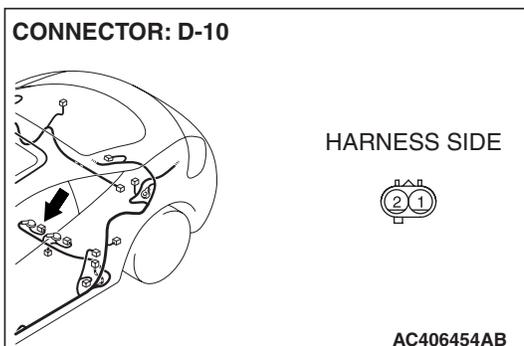
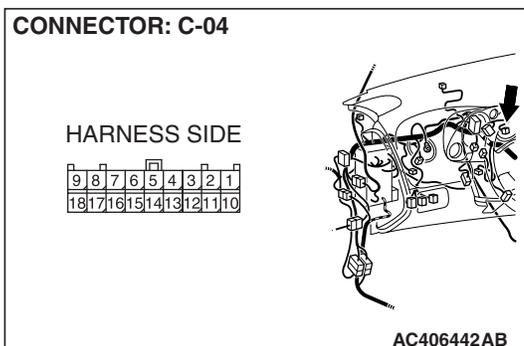
YES : Go to Step 11.

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.

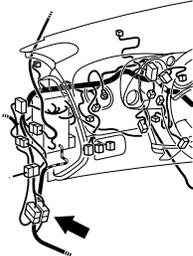


STEP 11. Check the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2).



CONNECTOR: C-23

1	2	X	3	4	5	6	7	X	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	



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.

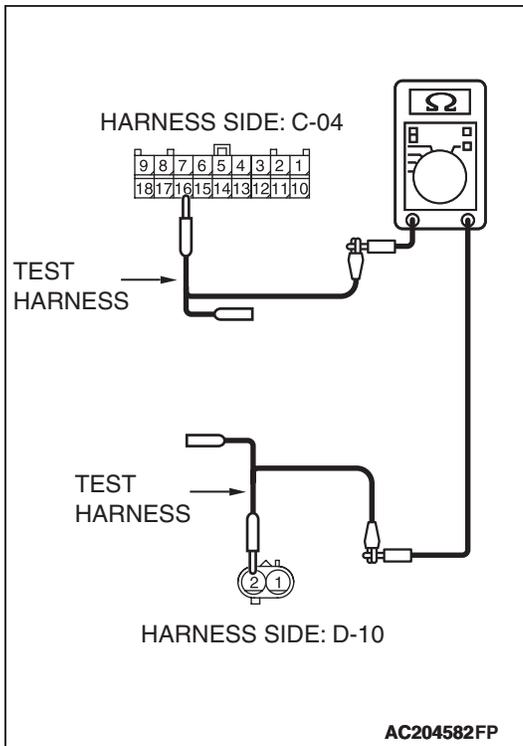
- (1) Disconnect combination meter connector C-04 and fuel level sensor (sub) connector D-10, and measure the resistance at the wiring harness side.

- (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?

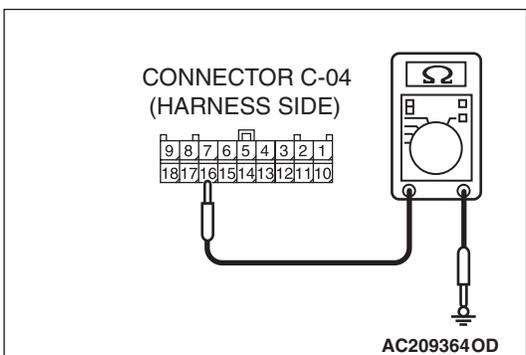
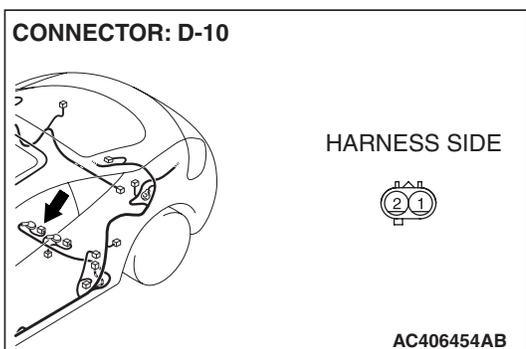
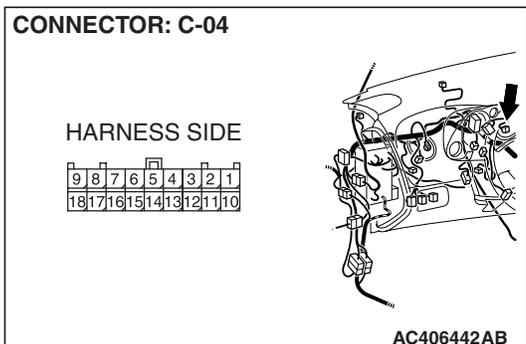
YES : Go to Step 12.

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 wiring harness between combination meter and the fuel level sensor (sub) for short to ground. Measure the resistance at combination meter connector C-04.

- (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.

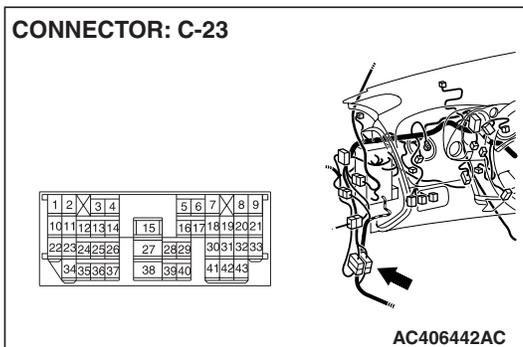
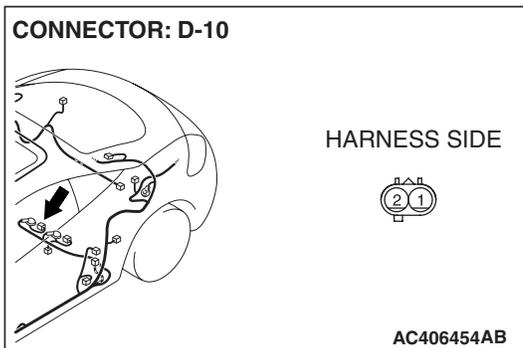
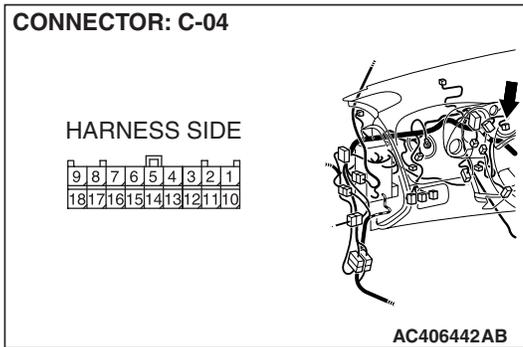
- The resistance should be 1 k Ω or more.

Q: Is the measured resistance 1 k Ω or more?

YES : Go to Step 14.

NO : Go to Step 13.

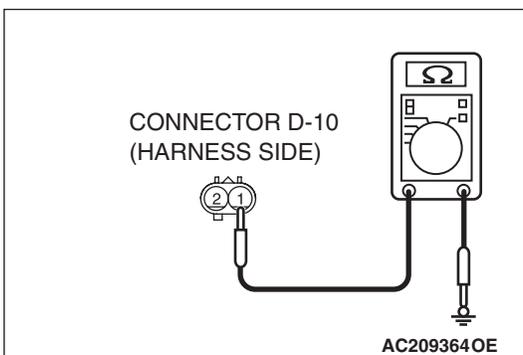
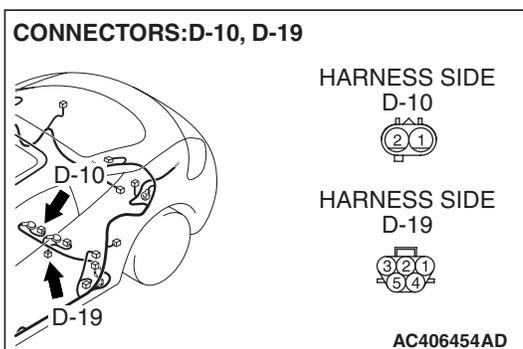
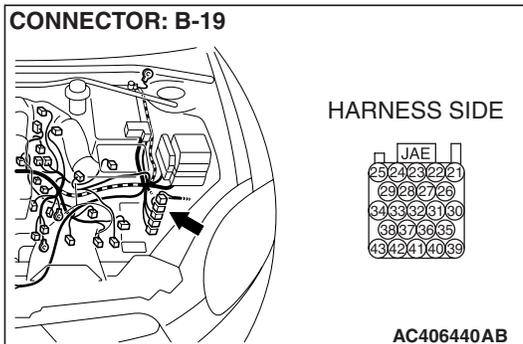
STEP 13. Check the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2).



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.

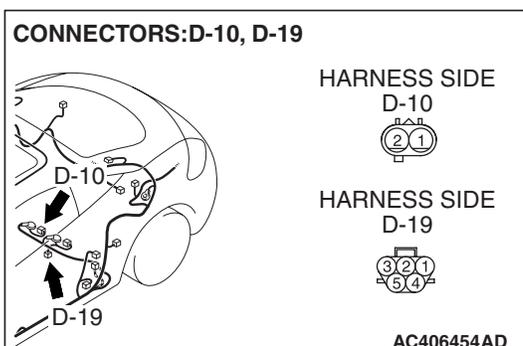
- (1) Disconnect fuel level sensor (sub) connector D-10, fuel pump module connector D-19 and ECM <M/T> or PCM <A/T> connector B-19, and measure the resistance available at the harness side of the fuel level sensor (sub) connector D-10.

- (2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 1 k Ω or more.

Q: Is the measured resistance 1 k Ω or more?

YES : Go to Step 17.

NO : Go to Step 15.



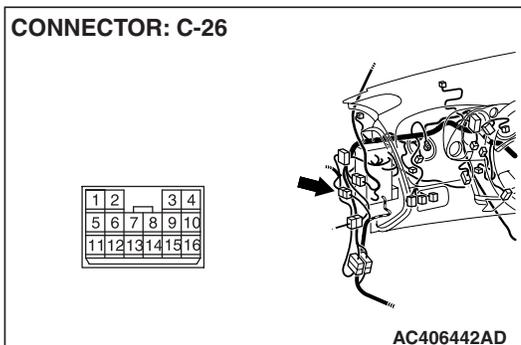
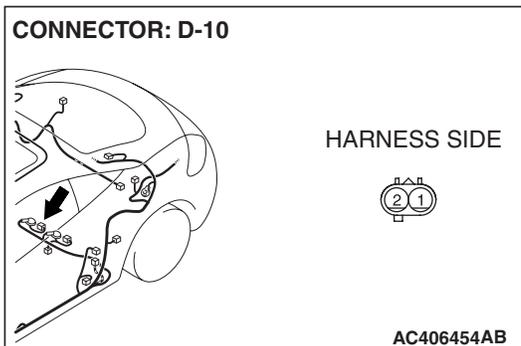
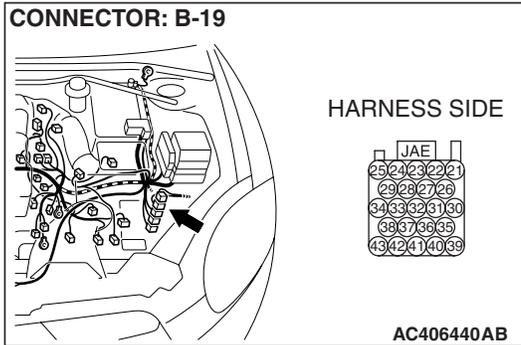
STEP 15. Check the wiring harness between fuel level sensor (sub) connector D-10 (terminal 1) and fuel pump module connector D-19 (terminal 2).

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).



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

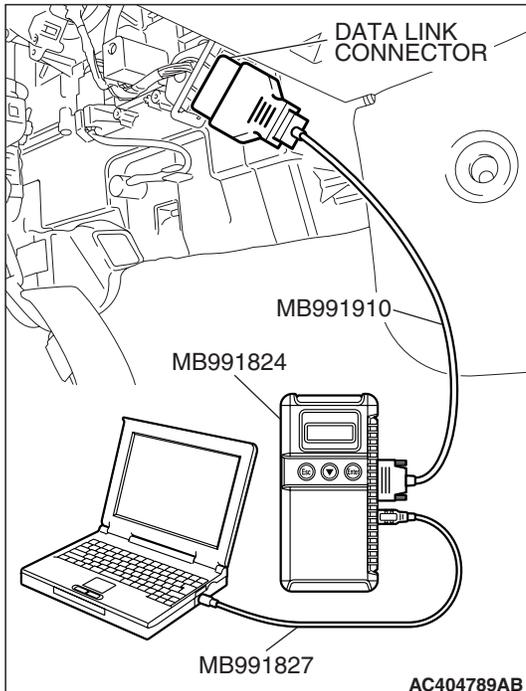
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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.42-93.



STEP 18. Recheck for diagnostic trouble code.

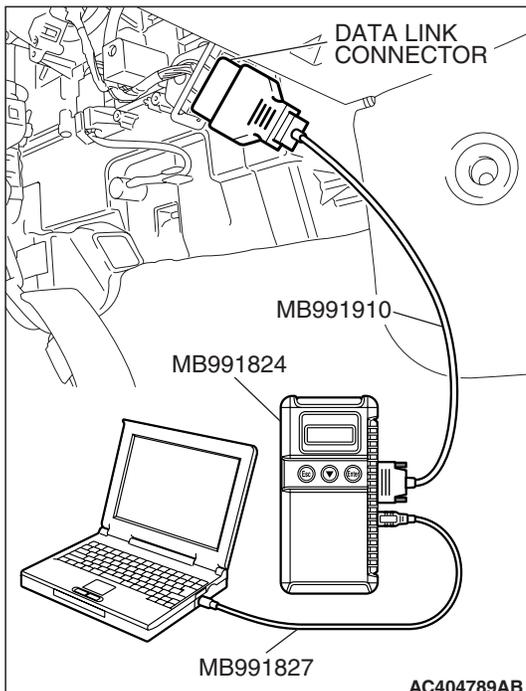
Recheck if the diagnostic trouble code is set.

- (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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

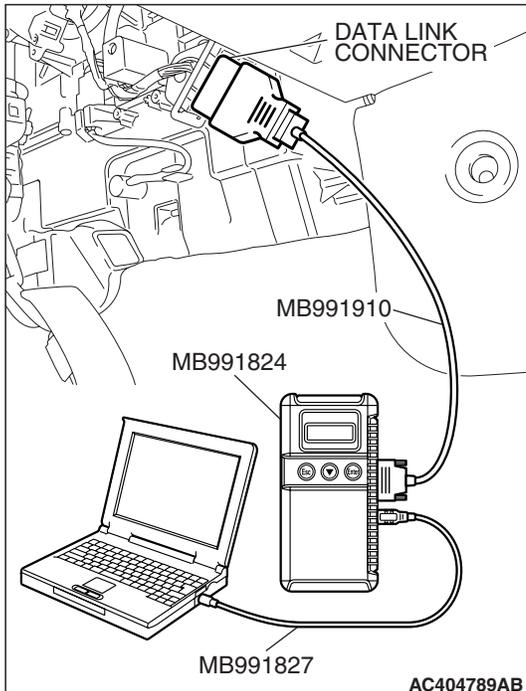
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-139](#)).



STEP 2. Recheck for diagnostic trouble code.

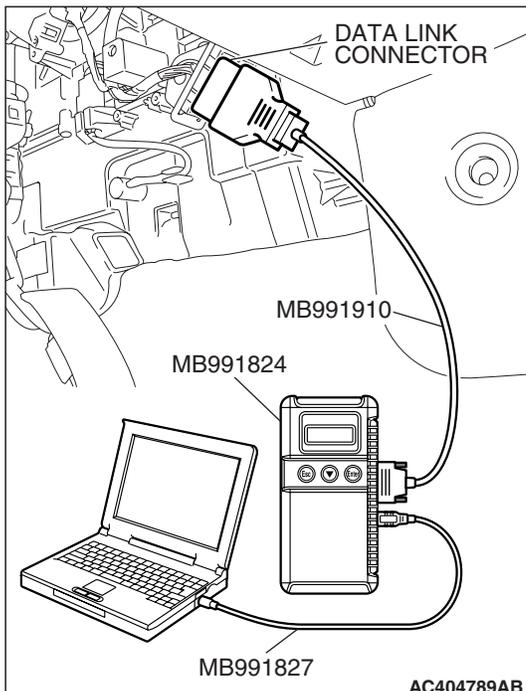
Recheck if the diagnostic trouble code is set.

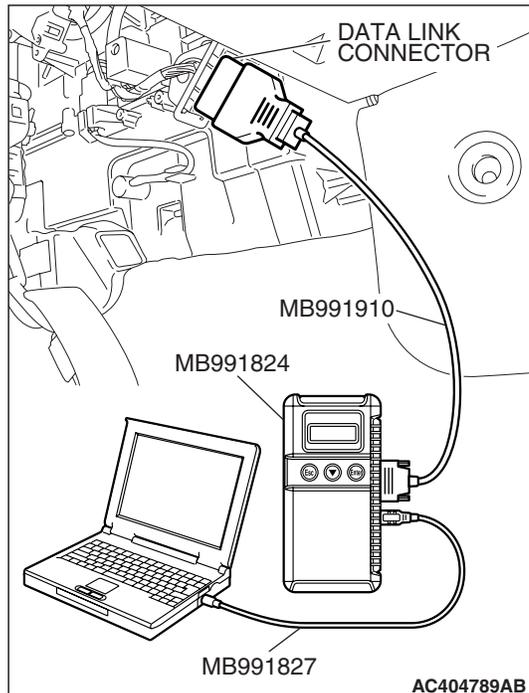
- (1) Turn the ignition switch "ON" position.
- (2) Erase the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Turn the ignition switch to "ON" position.
- (5) Check if the diagnostic trouble code is set.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

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.

CIRCUIT OPERATION

Refer to P.54A-70.

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 MUT-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-6).

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

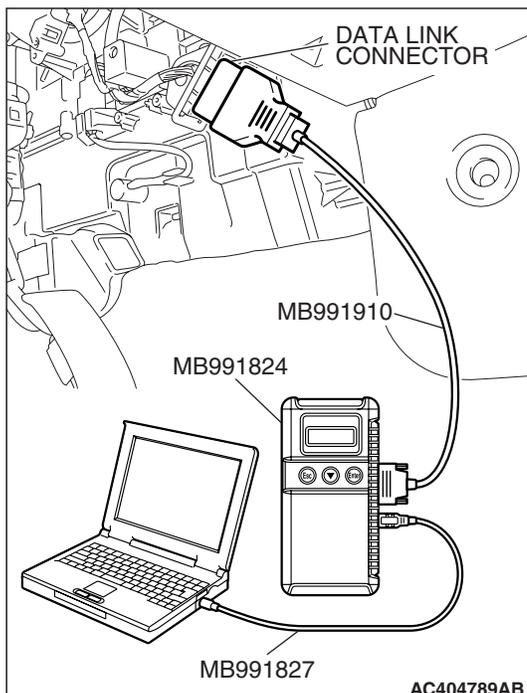
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

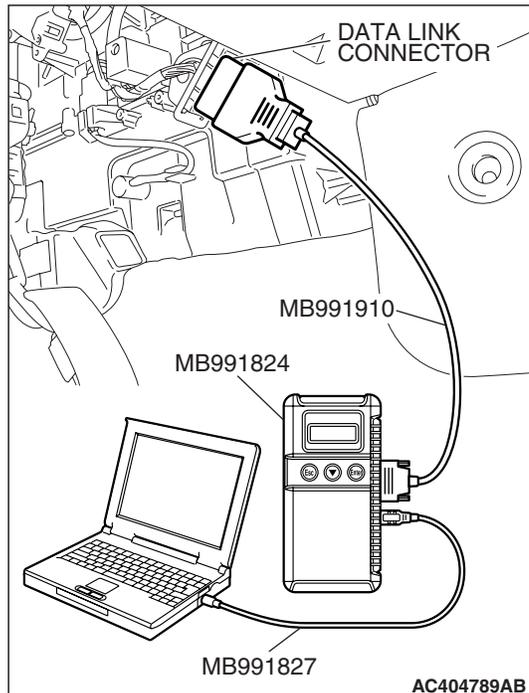
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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-14).





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

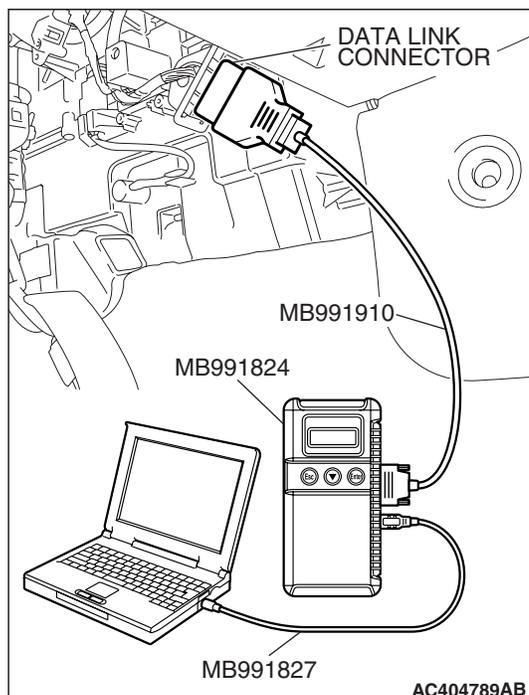
Check if an MFI system diagnostic trouble code is set.

- (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](#) <2.4L 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, 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) <vehicles with TCL>

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.

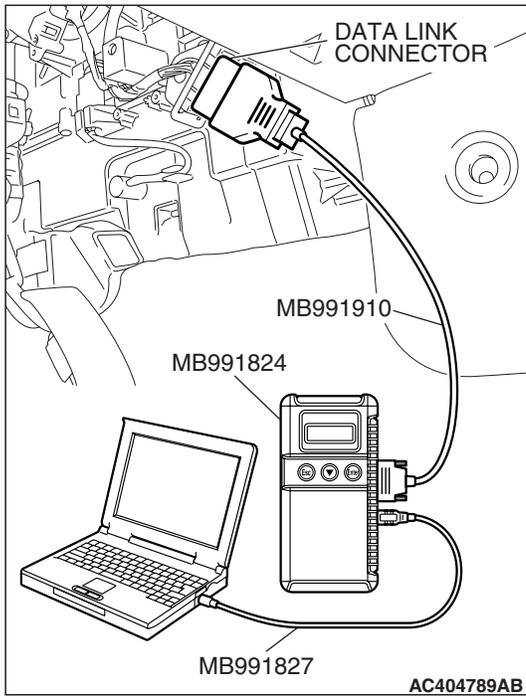
When the ECM <M/T> or PCM <A/T> is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13, and then check that the diagnostic trouble code is not reset.

- (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.

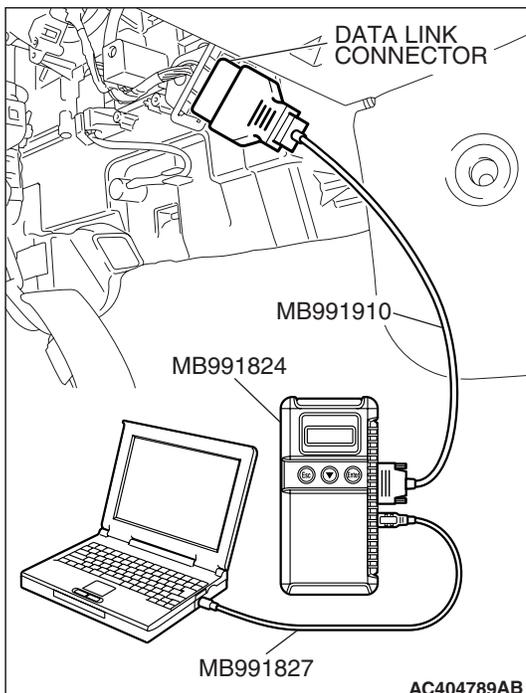
Replace the combination meter, and then check that the diagnostic trouble code is not reset.

- (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.

CIRCUIT OPERATION

Refer to [P.54A-70](#).

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 MUT-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-6](#)).

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

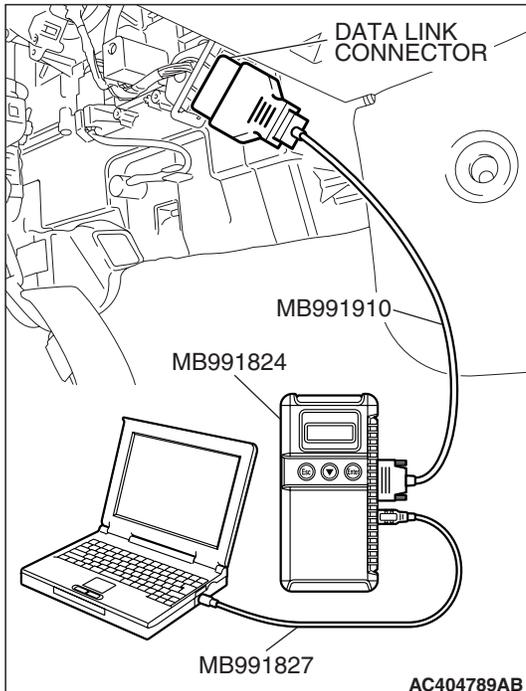
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (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-14](#)).



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

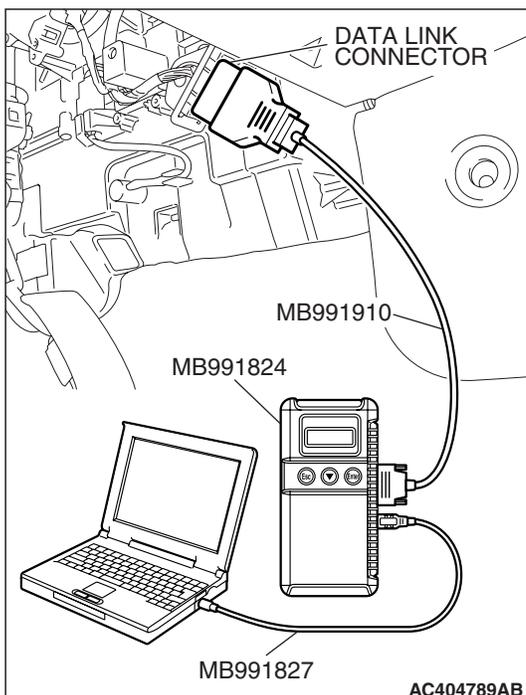
Check if an A/T system diagnostic trouble code is set.

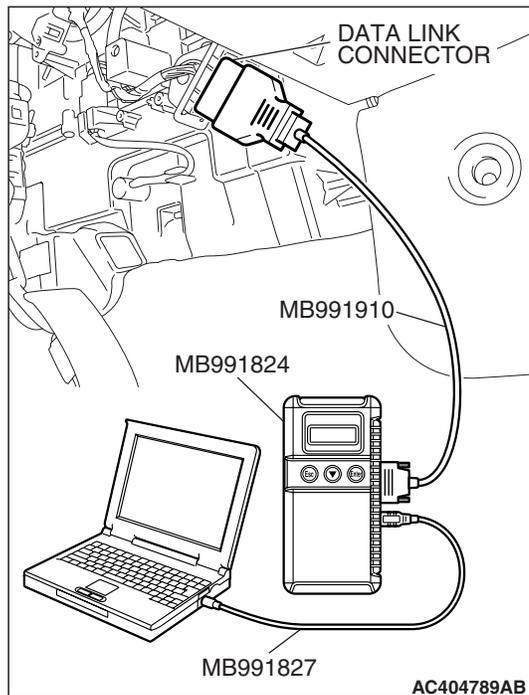
- (1) Turn the ignition switch "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

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-64](#).

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) <vehicles with TCL>
 - 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 5.
NO : Go to Step 4.

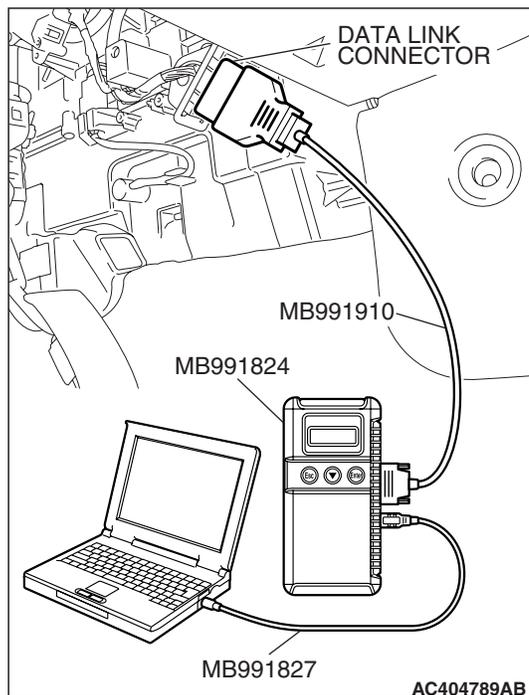
STEP 4. Recheck for diagnostic trouble code.

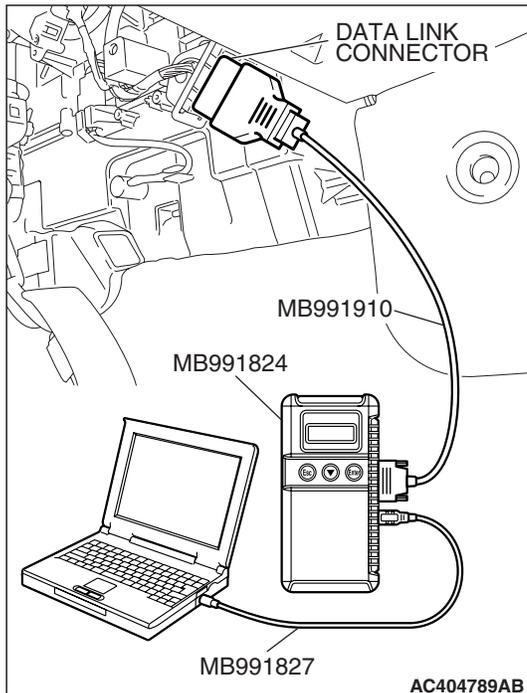
When the PCM is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-13](#), and then check that the diagnostic trouble code is not reset.

- (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: ABS-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.

CIRCUIT OPERATION

Refer to [P.54A-70](#).

DTC SET CONDITION

The combination meter communicates with the ABS-ECU through CAN bus lines. If it cannot receive all the necessary signals from the ABS-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 ABS-ECU and the combination meter, the power supply system to the ABS-ECU, the ABS-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 ABS-ECU and the combination meter, and the power supply system to the ABS-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 MUT-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-6).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

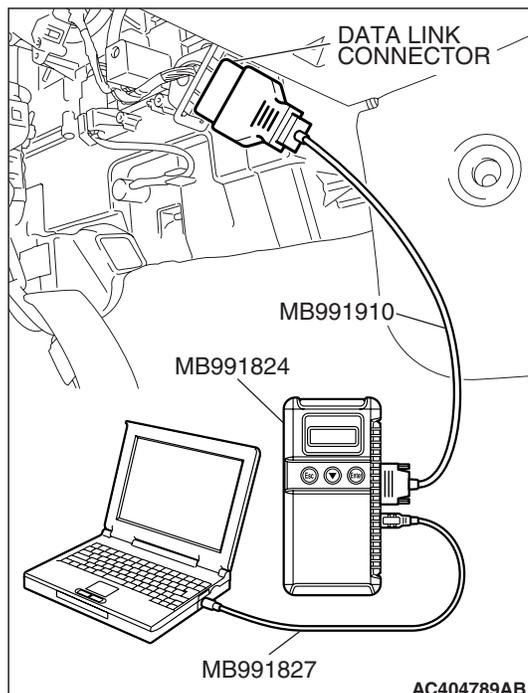
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-14).



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

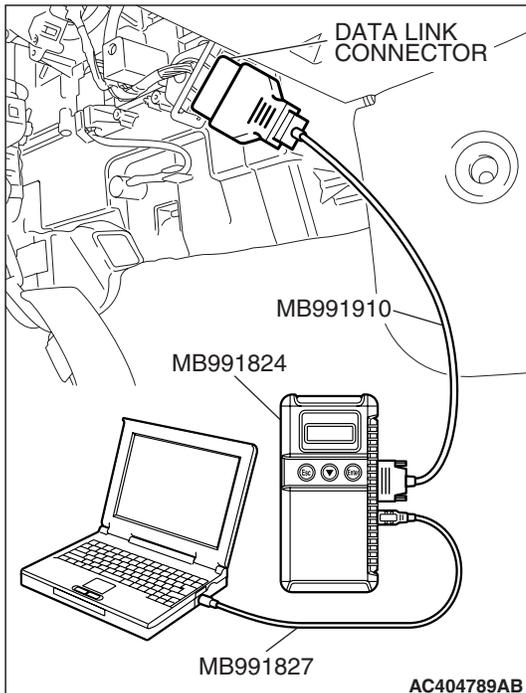
Check that the ABS-ECU sets a diagnostic trouble code.

- (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 35B, Diagnosis –Diagnostic Trouble Code Chart [P.35B-10](#).

NO : Go to Step 3.



STEP 3. Recheck for diagnostic trouble code.

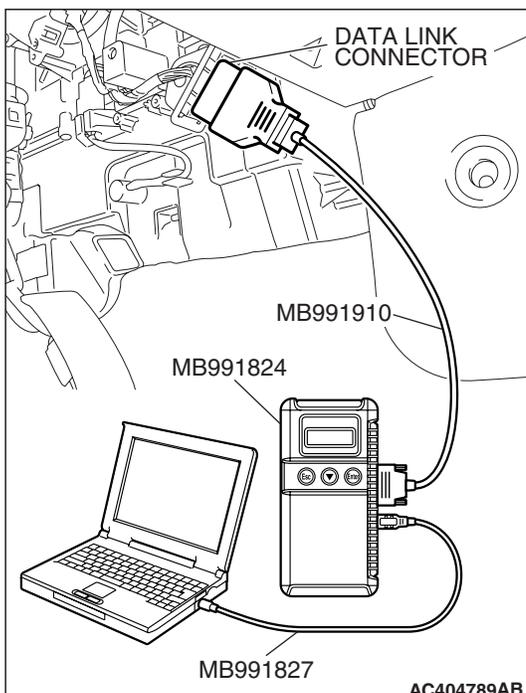
Recheck if the diagnostic trouble code is set.

- (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 MUT-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-6).

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

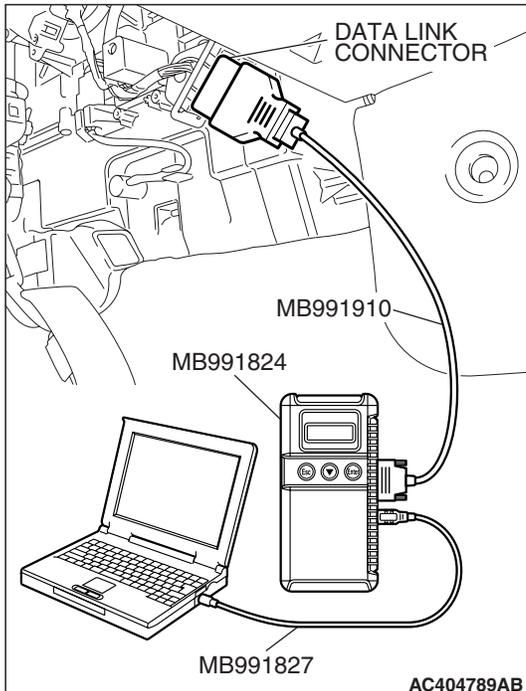
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-14](#)).



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

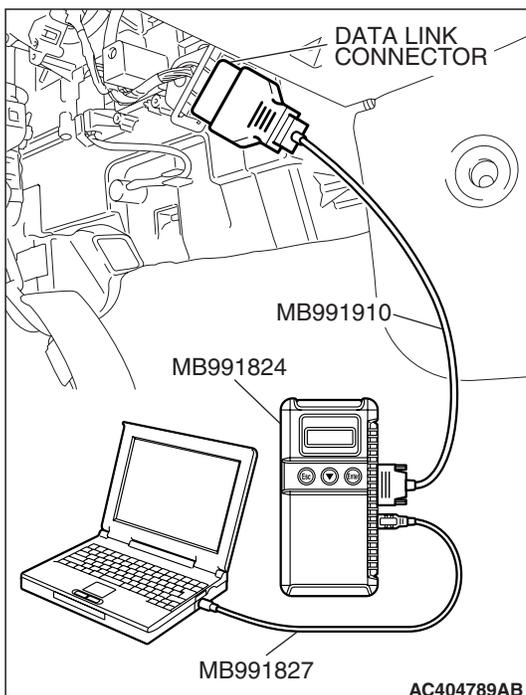
Check that the ETACS-ECU sets a diagnostic trouble code.

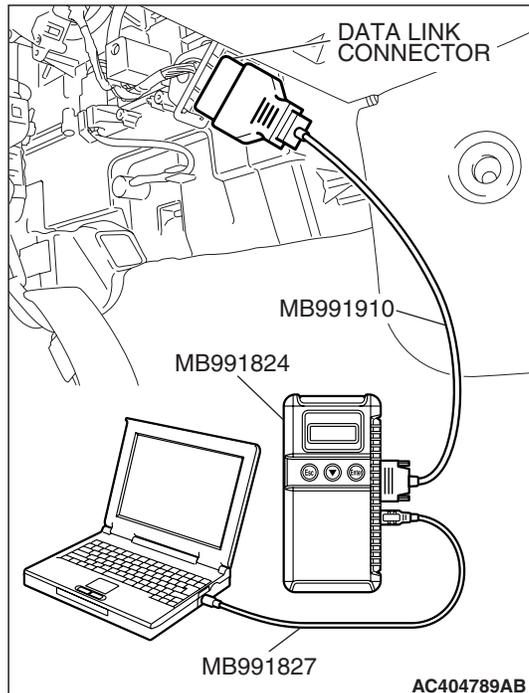
- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the SWS system by referring to [P.54B-29](#).

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.

CIRCUIT OPERATION

Refer to [P.54A-70](#).

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 MUT-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-6](#)).

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

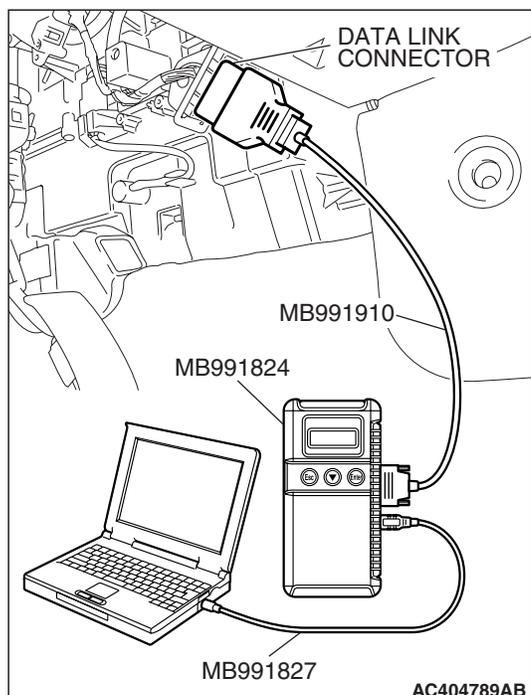
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

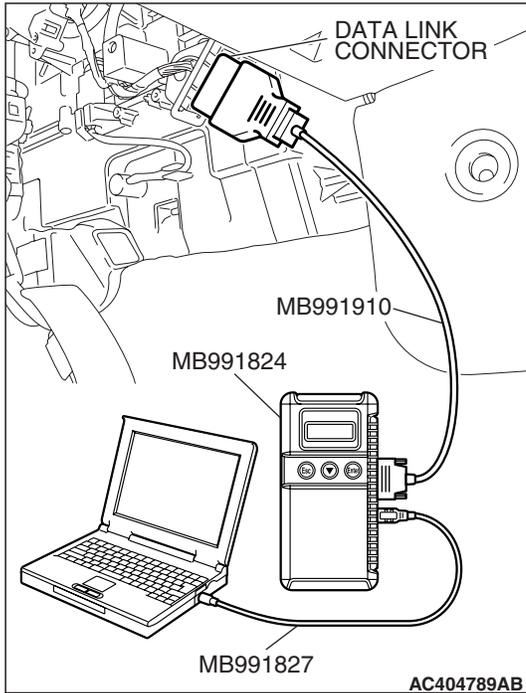
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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-14).





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

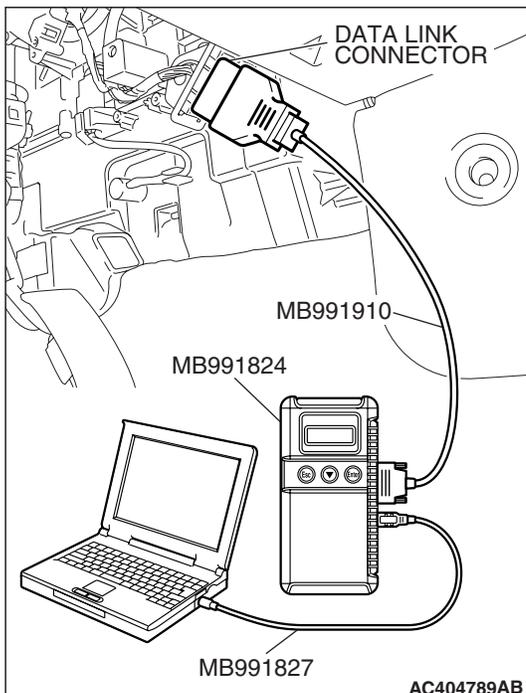
Check that the SRS-ECU sets a diagnostic trouble code.

- (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-32](#).

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.
- The engine control system- related DTC may be set when DTC U1120 is set. (For details refer to GROUP 00, Intersystem Affiliated DTC Reference Table P.00-17.) Diagnose the engine control system first when the engine control system- related DTC is set.

CIRCUIT OPERATION

Refer to P.54A-70.

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

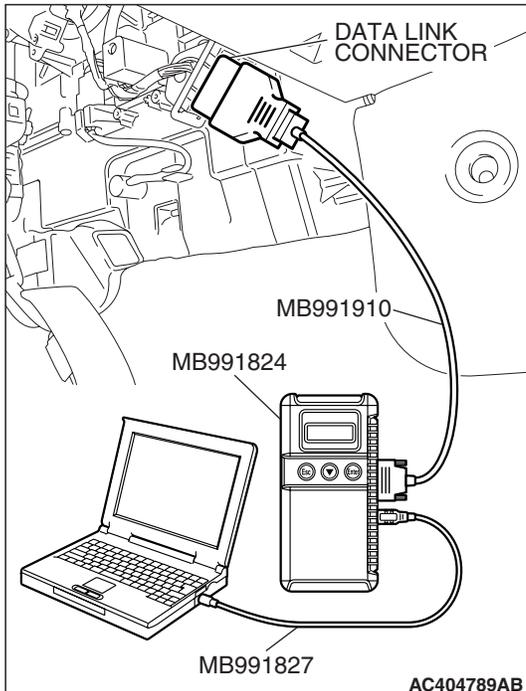
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-14](#)).

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

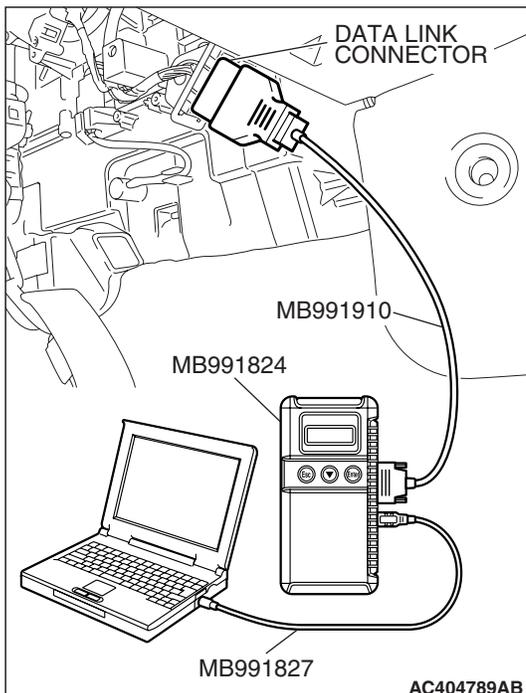
Check if an MFI system diagnostic trouble code is set.

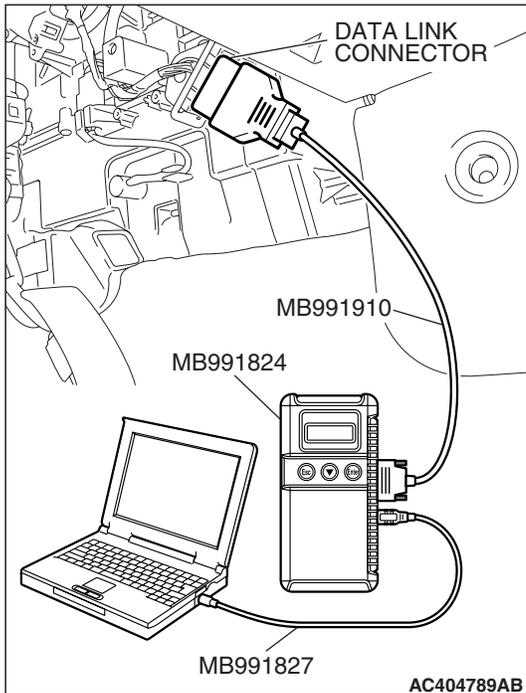
- (1) Turn the ignition switch to "ON" position.
- (2) Read the diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

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

NO : Go to Step 3.





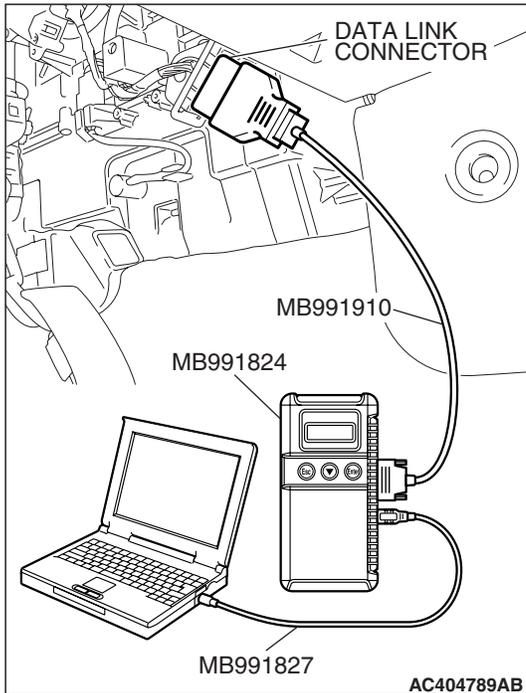
STEP 3. Using scan tool MB991958, read the for any diagnostic trouble code.

- (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.

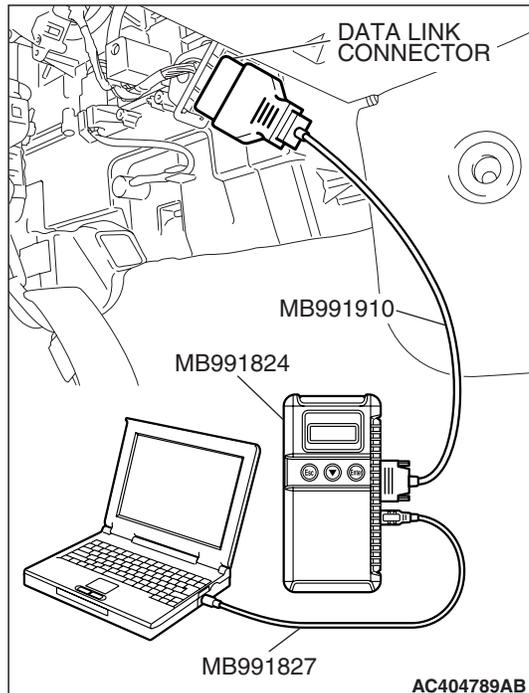
When the ECM <M/T> or PCM <A/T> is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13, and then check that the diagnostic trouble code is not reset.

- (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.

CIRCUIT OPERATION

Refer to [P.54A-70](#).

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

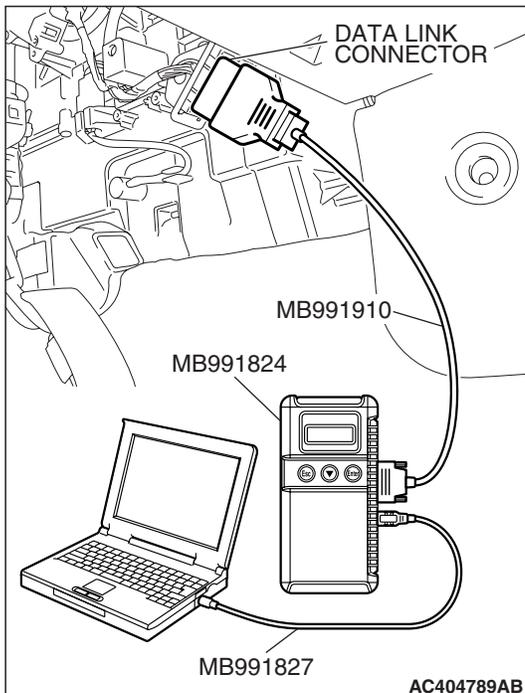
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

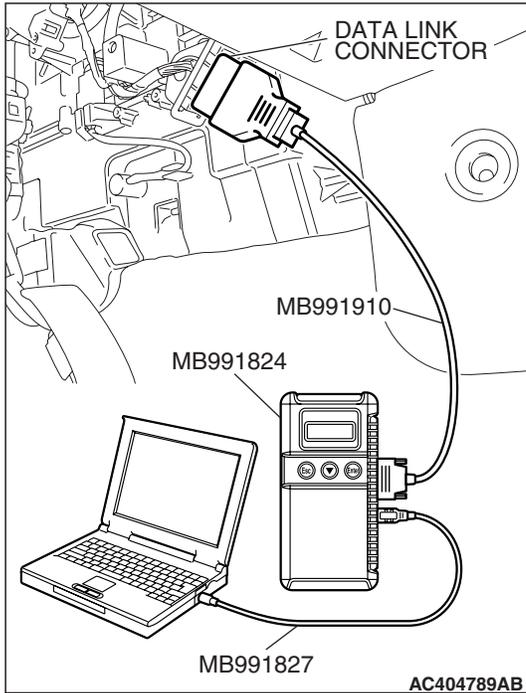
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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-14).





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

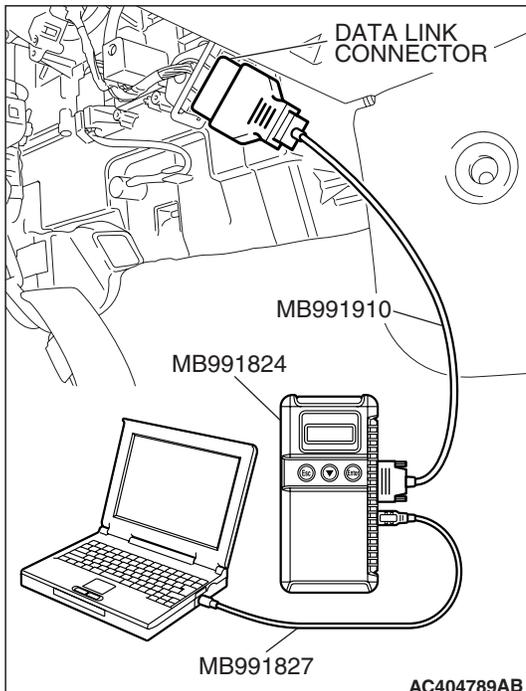
Check that the ETACS-ECU sets a diagnostic trouble code.

- (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-29](#).

NO : Go to Step 3.



STEP 3. echeck 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-13](#), 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.

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-94
Power supply circuit.	2	P.54A-96
Odometer and trip meter are not displayed.	3	
All the needle meters do not 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	
The fuel gauge needle moves excessively.	7	P.54A-101
Tachometer does not work (other meters work).	8	P.54A-104
Fuel gauge does not work (other meters work).	9	P.54A-107
Engine coolant temperature gauge does not work (other meters work).	10	P.54A-116
The fuel warning light does not illuminate or go out.	11	P.54A-118

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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

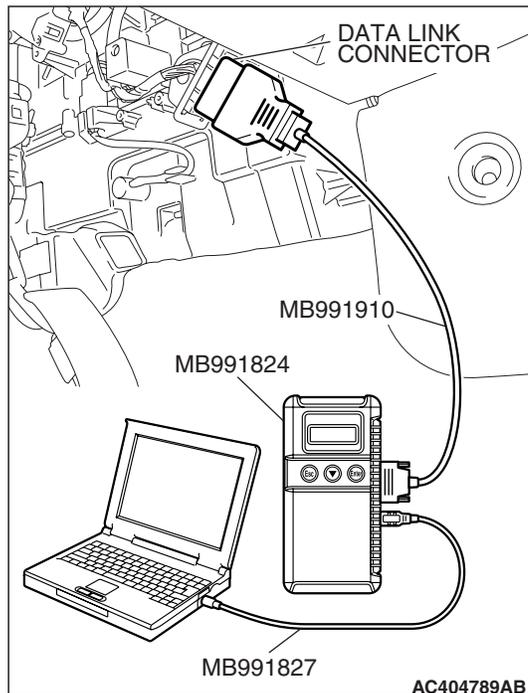
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

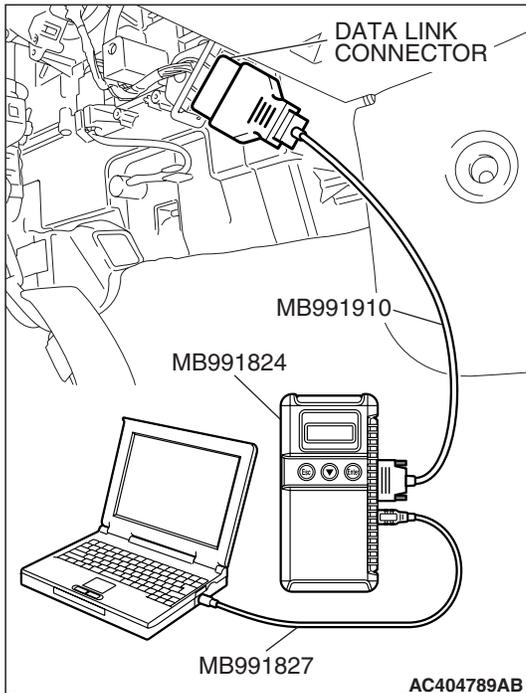
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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-14).





STEP 2. Check that the ECM <M/T> or PCM <A/T> communicates with the scan tool.

- (1) Turn the ignition switch to "ON" position.
- (2) Check if scan tool MB991958 can communicate with the ECM <M/T> or PCM <A/T>.
- (3) 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-96](#).

NO : Replace the combination meter.

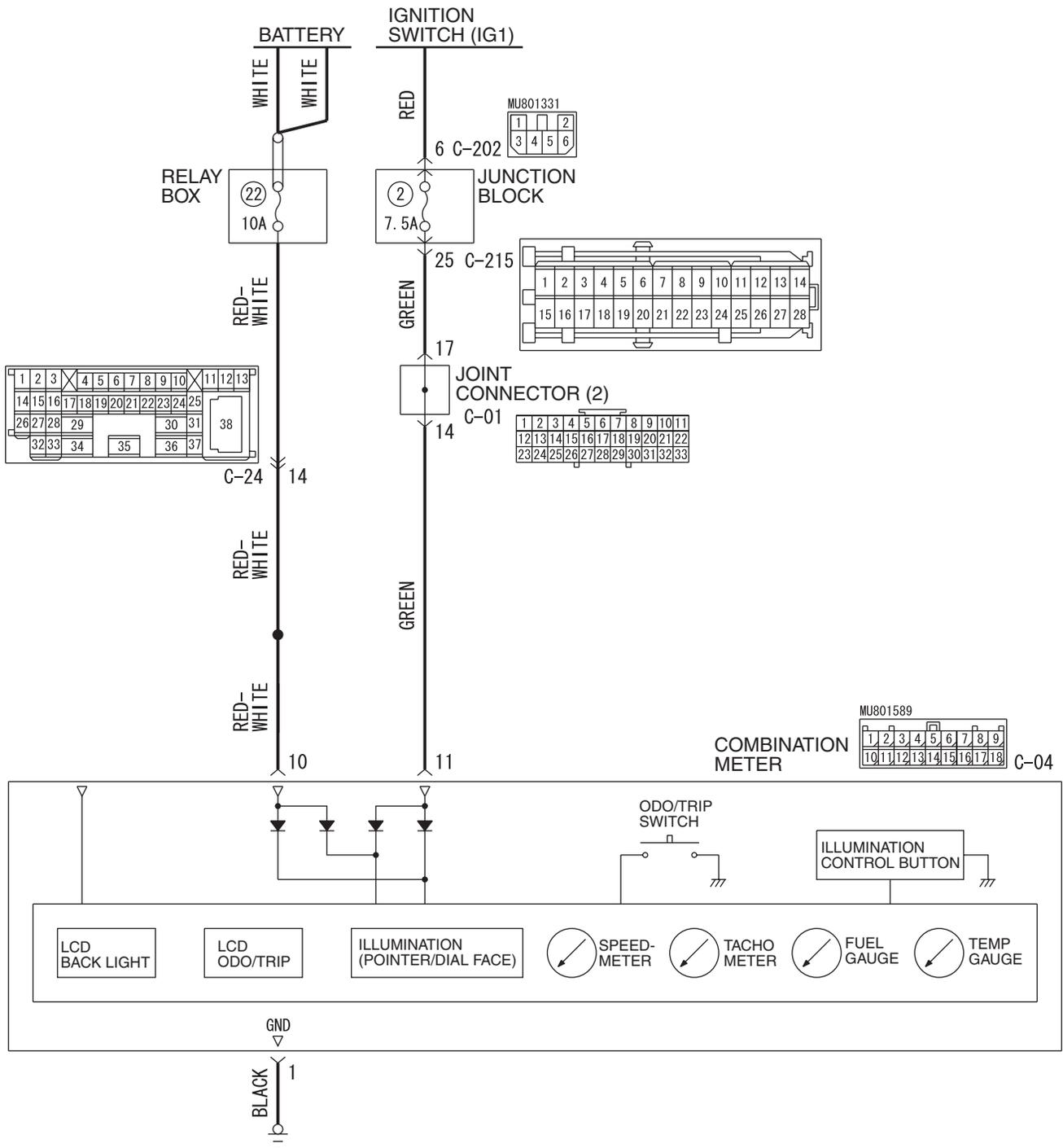
INSPECTION PROCEDURE 2: Power supply circuit.

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

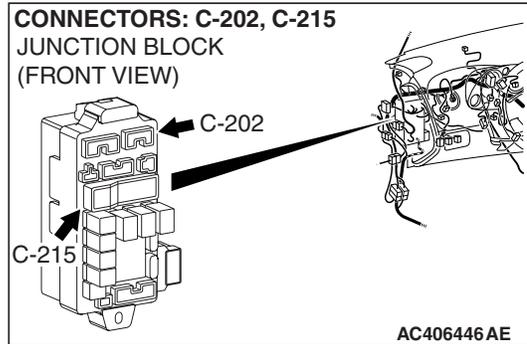
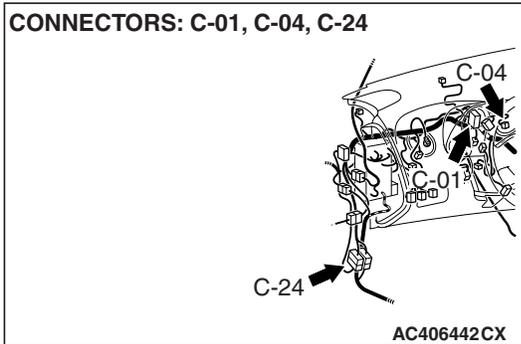
INSPECTION PROCEDURE 4: All the needle meters do not work.

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



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 all meter needles don't move, 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

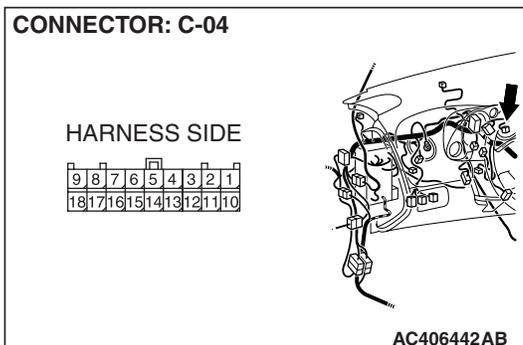
STEP 1. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

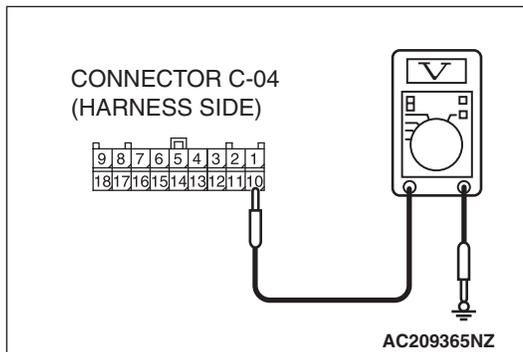
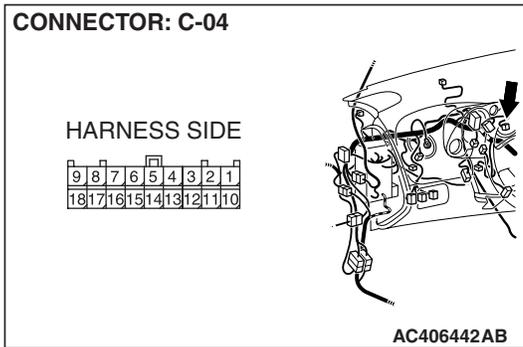
NO : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The combination meter works normally.

CONNECTOR: C-04



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) Turn the ignition switch to "ON" position.

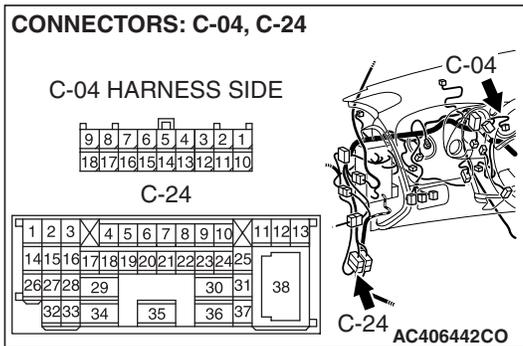


- (3) Measure the voltage between terminal 10 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

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

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

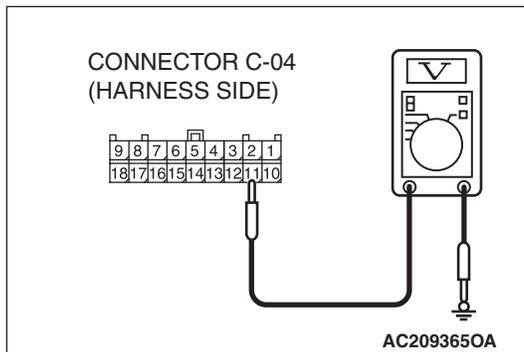
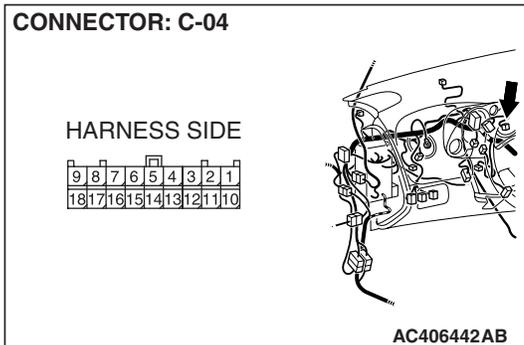
STEP 3. Check the wiring harness between combination meter connector C-04 (terminal 10) and the battery.



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. 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.



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

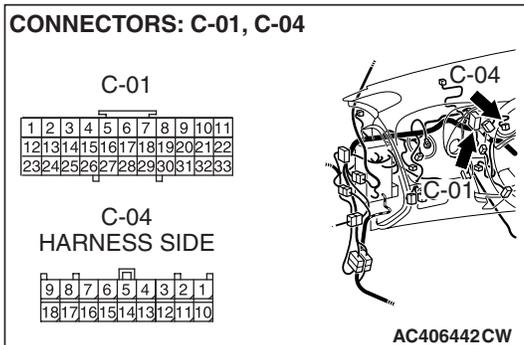
- (1) Disconnect combination meter connector C-04, and measure at the wiring harness side.
- (2) Turn the ignition switch to "ON" position.

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

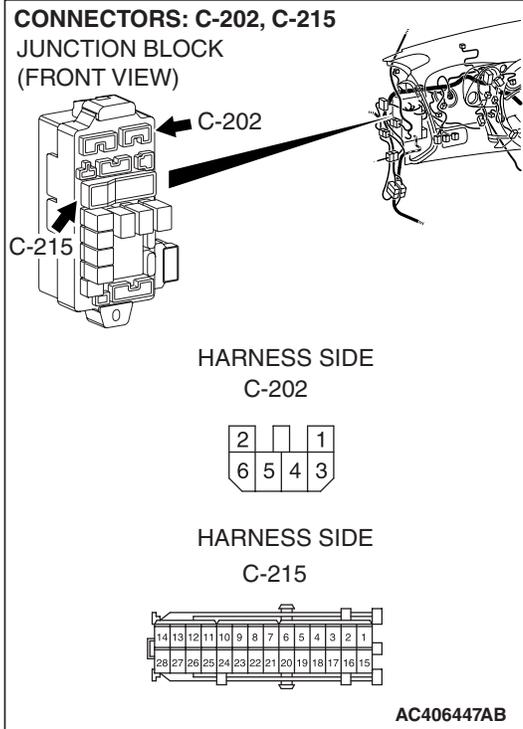
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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).

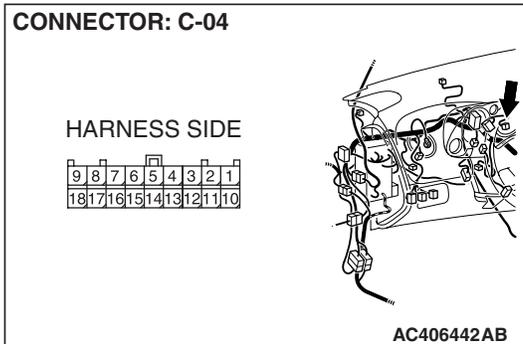


NOTE: Also check joint connector (2) C-01, junction block connector C-202 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If inspecting joint connector (2) C-01 or junction block connector C-202 or C-215 is damaged, repair or replace. Refer to GROUP 00E,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

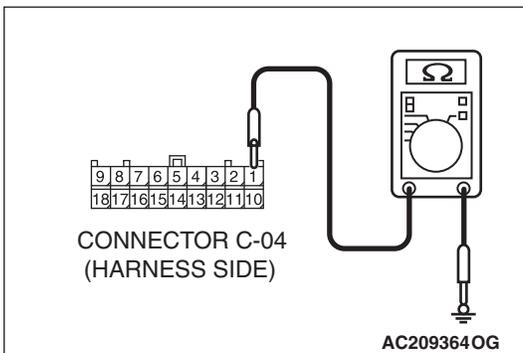
YES : Retest the system.

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



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.



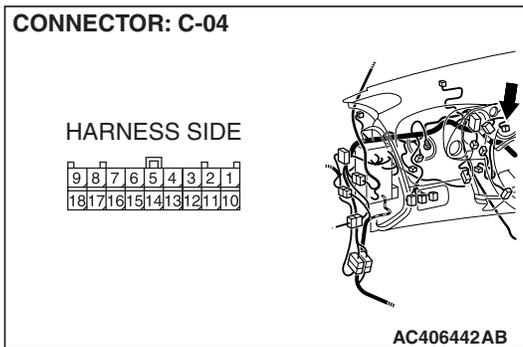
(2) Measure the resistance value between terminal 1 and ground.

- 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.



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

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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

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

⚠ CAUTION

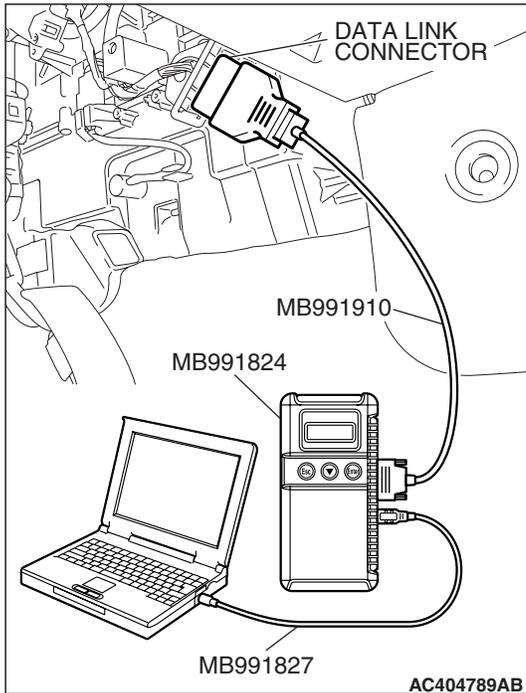
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-14](#)).



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

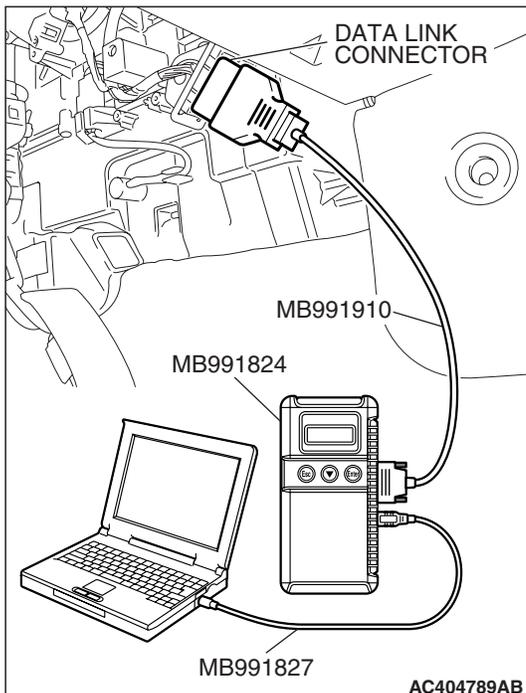
Check if an MFI system diagnostic trouble code is set.

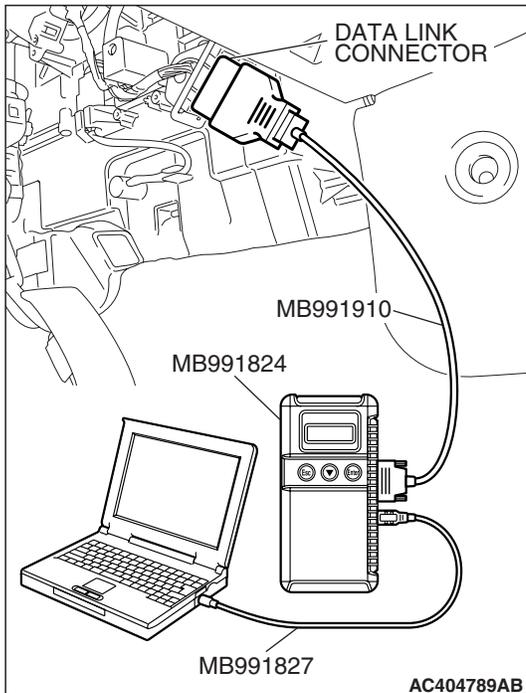
- (1) Turn the ignition switch to "ON" position.
- (2) Diagnose the CAN bus line.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

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.





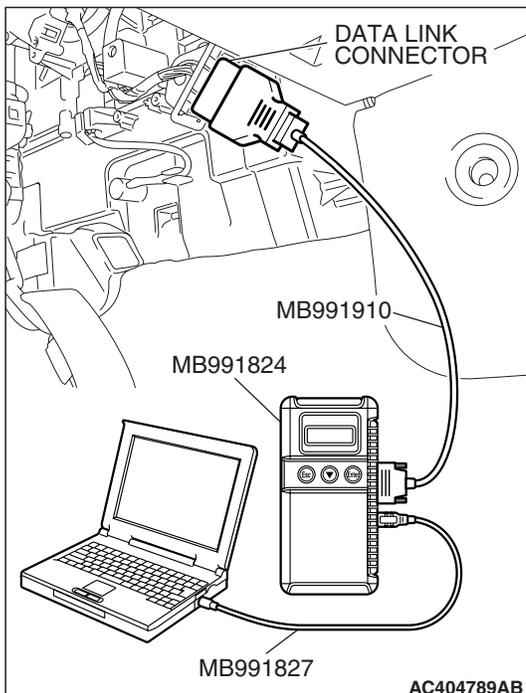
STEP 3. Using scan tool MB991958, check data list.

- (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 MUT-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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

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

⚠ CAUTION

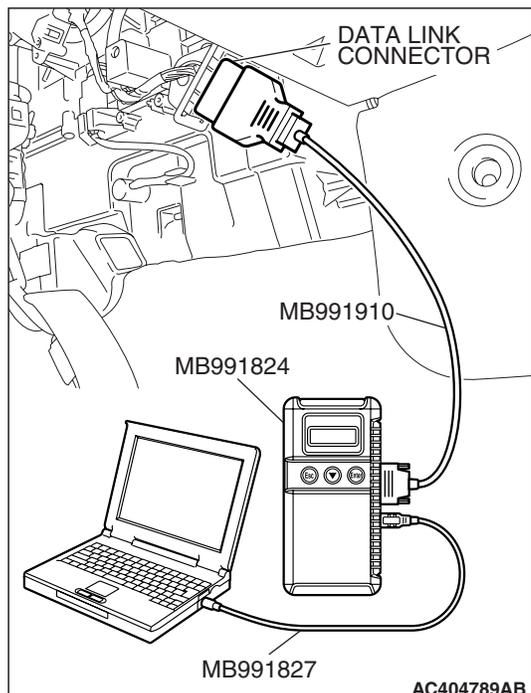
To prevent damage to scan tool (MB991958), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (MB991958).

- (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-14).



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

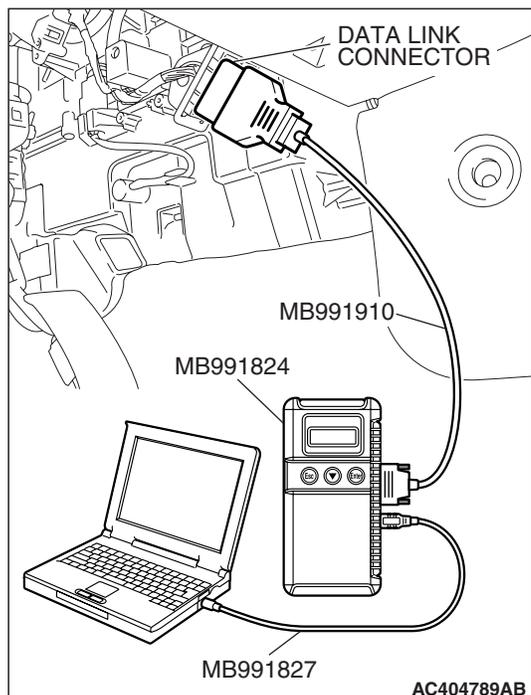
Check if the MFI system diagnostic trouble code is set.

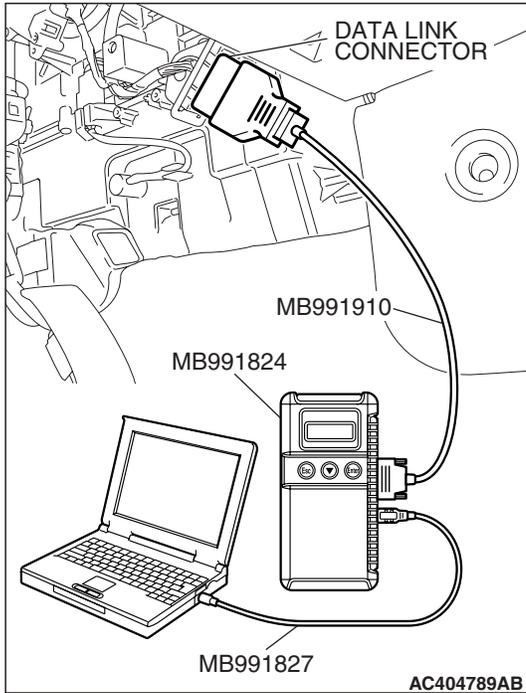
- (1) Turn the ignition switch to "ON" position.
- (2) Diagnose the CAN bus line.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

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

NO : Go to Step 3.



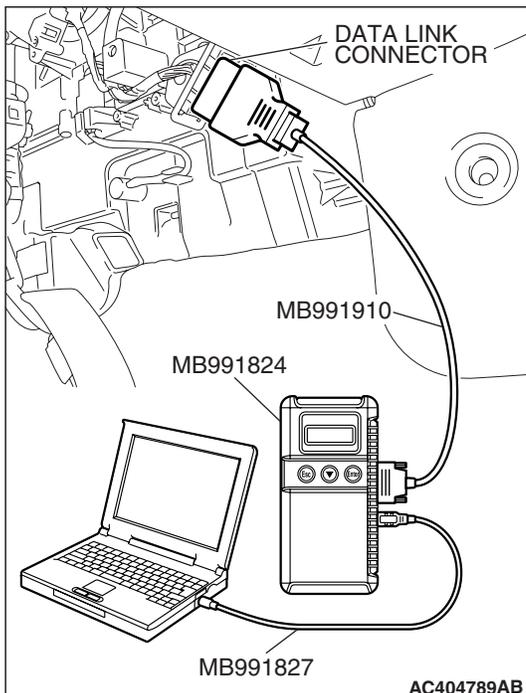
**STEP 3. Using scan tool MB991958, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Set scan tool MB991958 to the data reading mode.
 - Item 05: Tachometer
 - Tachometer displayed value and MUT-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.

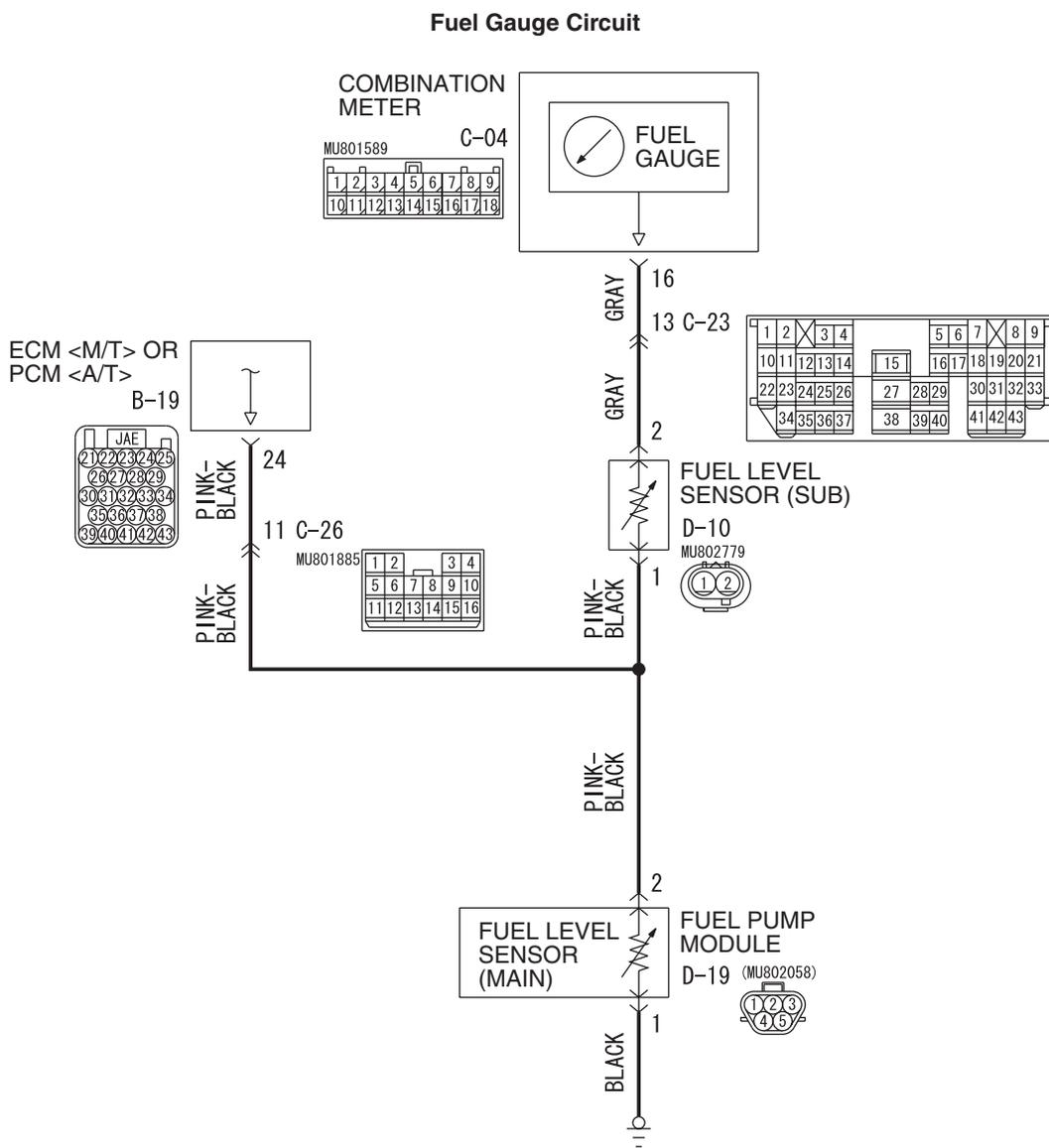
Check that the tachometer works normally.

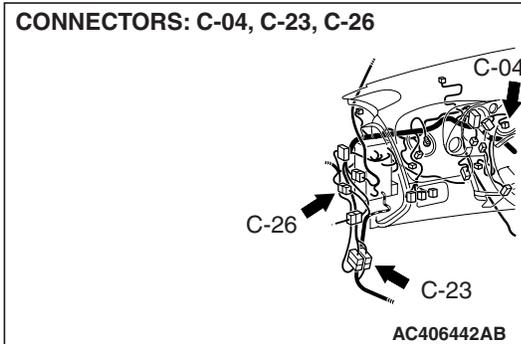
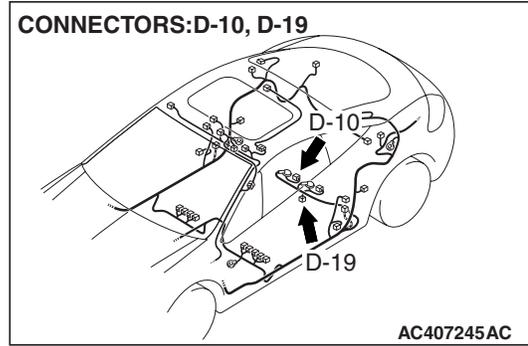
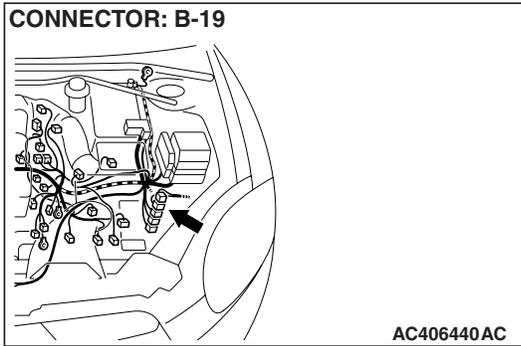
Q: Is the check result satisfactory?

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).





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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool MB991958, check data list.

⚠ 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) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.

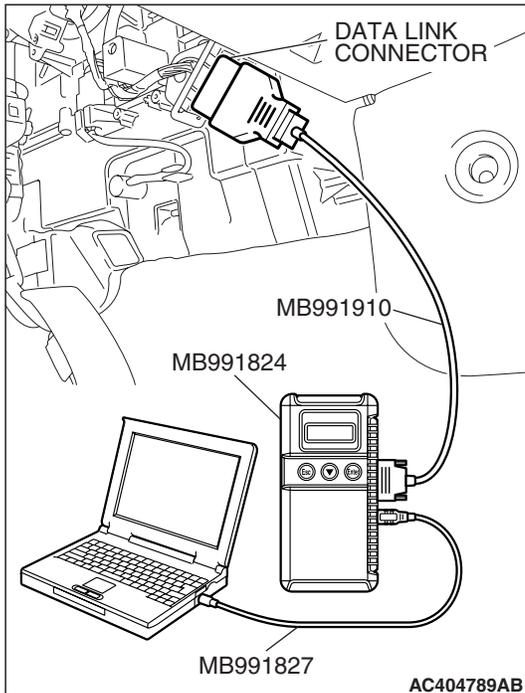
- Item 06: fuel gauge (Input).
 - Fuel gauge unit resistance value and MUT-III displayed value should agree with each other.
- Item 07: fuel gauge (Target).
 - Fuel gauge and MUT-III displayed values should agree with each other.

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

Q: Is the check result normal?

YES : Go to Step 2.

NO : Go to Step 3.



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.

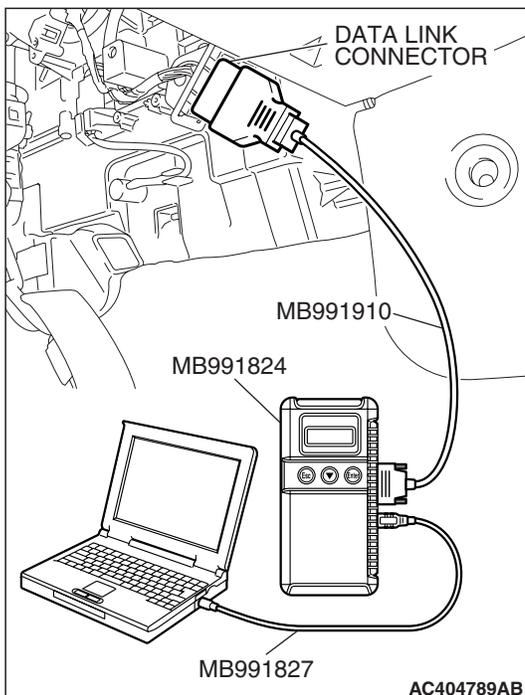
- Item 11: fuel gauge (Target): 0%
 - Fuel gauge shows 0 %
- Item 8D: fuel gauge (Target): 50%
 - Fuel gauge shows 50 %
- Item 8E: fuel gauge (Target): 100%
 - Fuel gauge shows 100 %

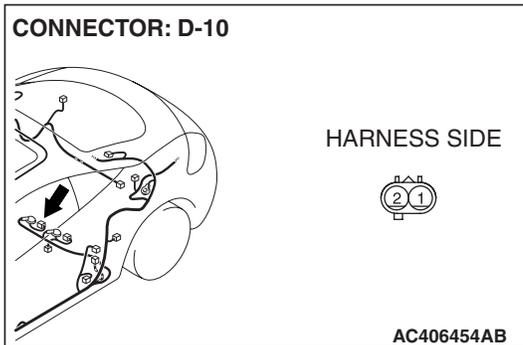
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

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.





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.

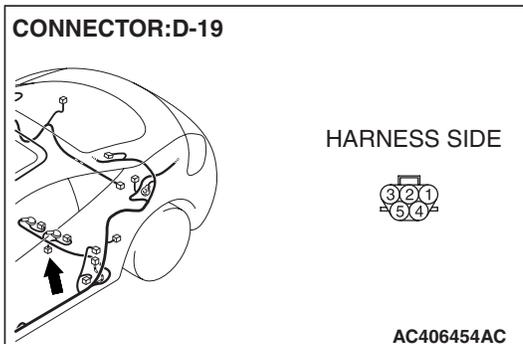
STEP 4. Check the fuel level sensor (sub).

Check to see if the fuel level sensor (sub) is normal. Refer to [P.54A-129](#).

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-9](#)).



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.

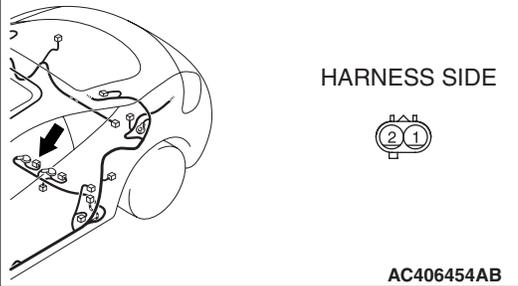
Check to see if the fuel pump module is normal. Refer to [P.54A-129](#).

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-9](#)). The fuel gauge should now operate normally.

CONNECTOR: D-10



STEP 7. Check the ground circuit to the fuel level sensor (sub). Measure the resistance at fuel level sensor (sub) connector D-10.

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

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

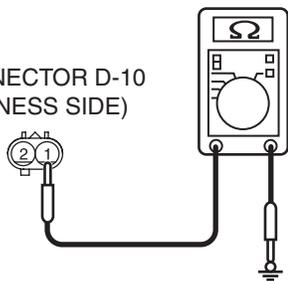
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 12.

CONNECTOR D-10
(HARNESS SIDE)



STEP 8. Check ECM <M/T> or PCM <A/T> connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

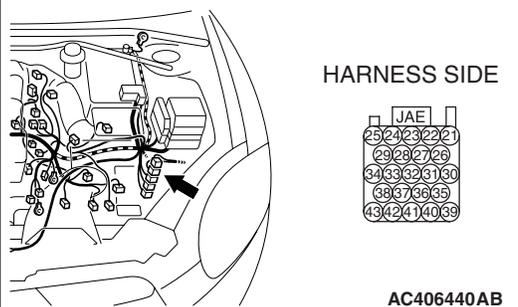
Q: Is ECM <M/T> or PCM <A/T> connector B-19 in good condition?

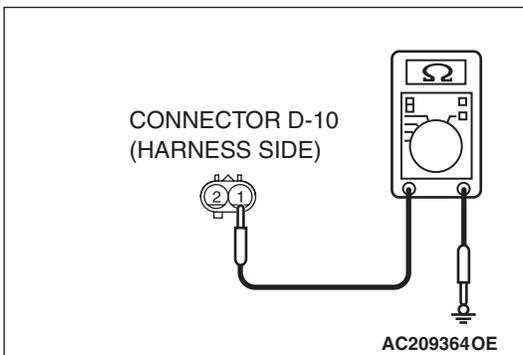
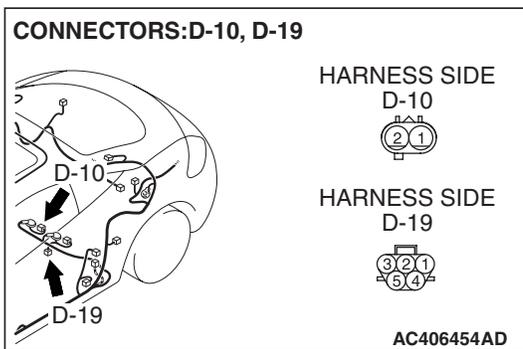
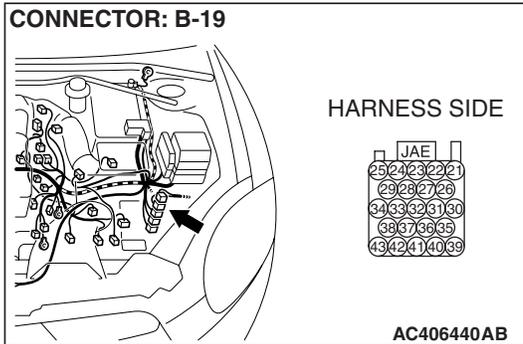
YES : Go to Step 9.

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

[P.00E-2](#). Verify that the combination meter works normally.

CONNECTOR: B-19





STEP 9. 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.

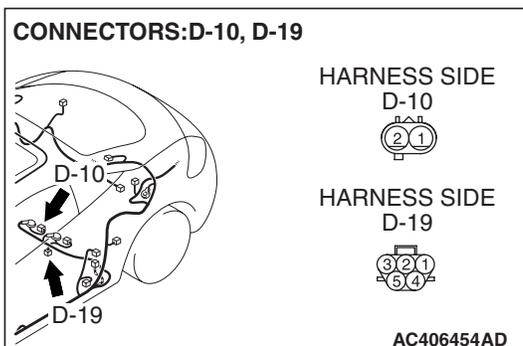
- (1) Disconnect ECM <M/T> or PCM <A/T> connector B-19, fuel level sensor (sub) connector D-10 and fuel pump module connector D-19, and measure the resistance available at the harness side of the fuel level sensor (sub) connector D-10.

- (2) Measure the resistance between fuel level sensor (sub) connector D-10 terminal 1 and ground.
 - The resistance should be 1 kΩ or more.

Q: Is the measured resistance 1 kΩ or more?

YES : 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 54A, Encrypted Code Registration Criteria Table [P.54A-13](#).

NO : Go to Step 10.



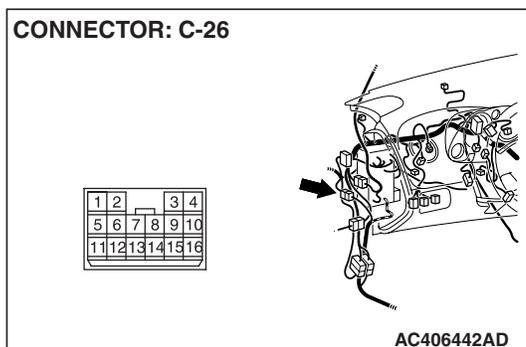
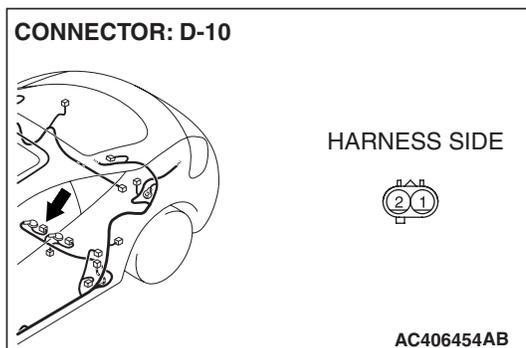
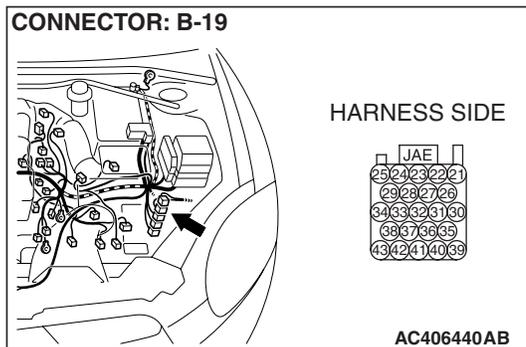
STEP 10. Check the wiring harness between fuel level sensor (sub) connector D-10 (terminal 1) and fuel pump module connector D-19 (terminal 2).

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 11.

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

STEP 11. 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).

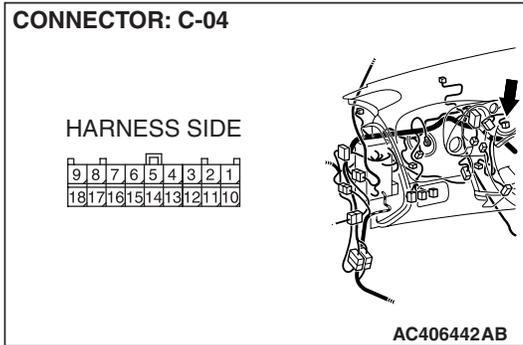


NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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 : 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.

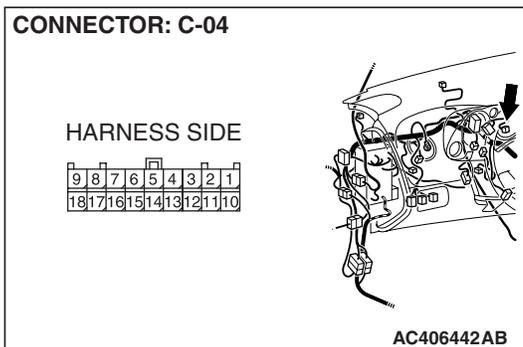


STEP 12. Check combination meter connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

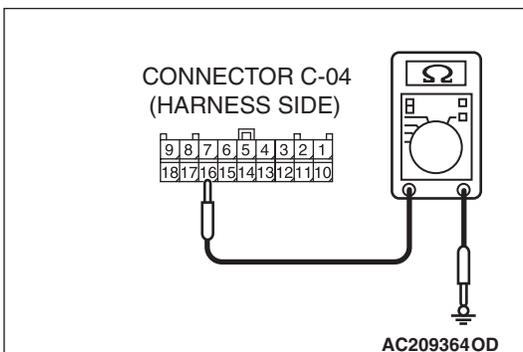
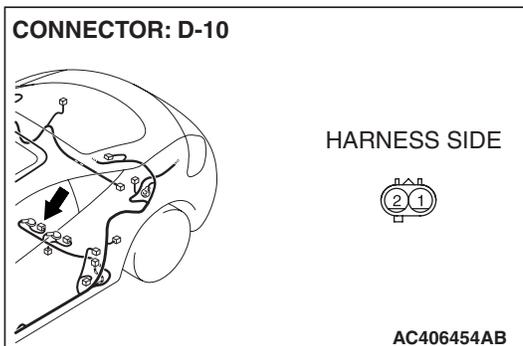
YES : Go to Step 13.

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 13. Check the wiring harness between combination meter and the fuel level sensor (sub) for short to ground. Measure the resistance at combination meter connector C-04.

(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 between combination meter connector C-04 terminal 16 and ground.

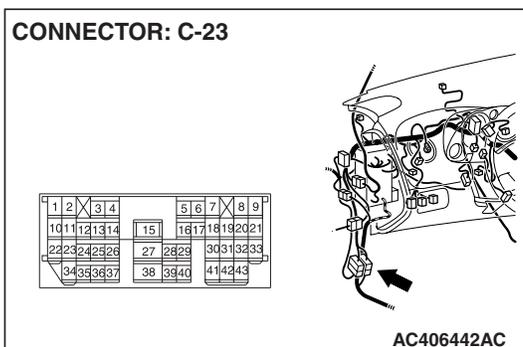
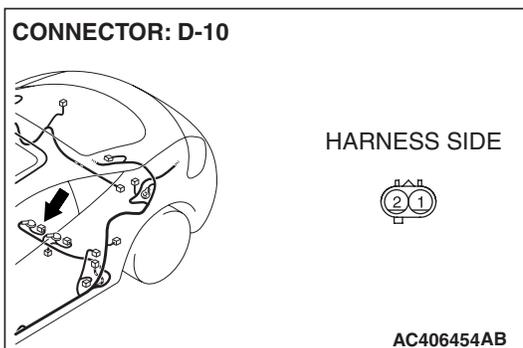
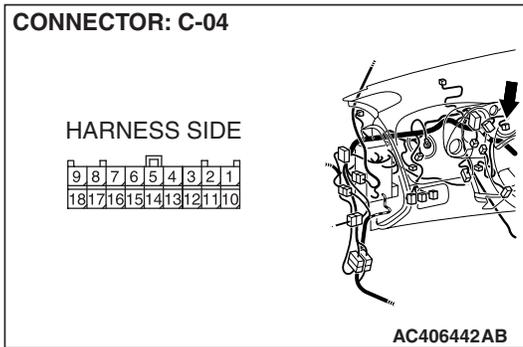
- The resistance should be 1 k Ω or more.

Q: Is the measured resistance 1 k Ω or more?

YES : Go to Step 15.

NO : Go to Step 14.

STEP 14. Check the wiring harness between combination meter connector C-04 (terminal 16) and fuel level sensor (sub) connector D-10 (terminal 2).



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 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 may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that combination meter works normally.

STEP 15. Retest the system.

Check to see that the fuel gauge operates normally.

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 :** 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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991824, diagnose the CAN bus line.**⚠ CAUTION**

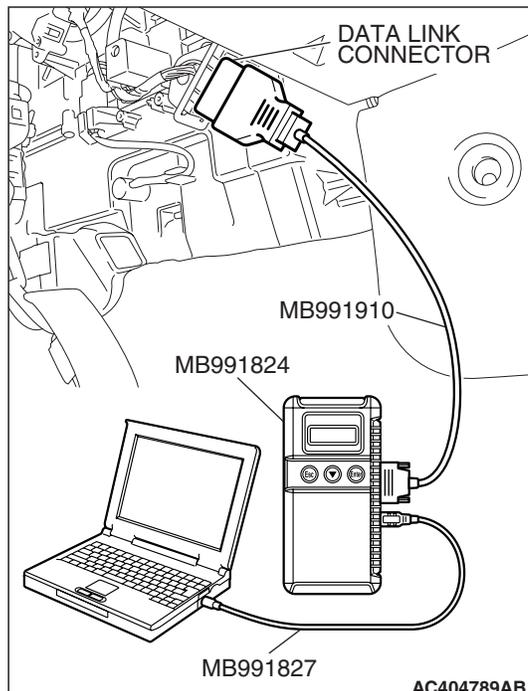
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

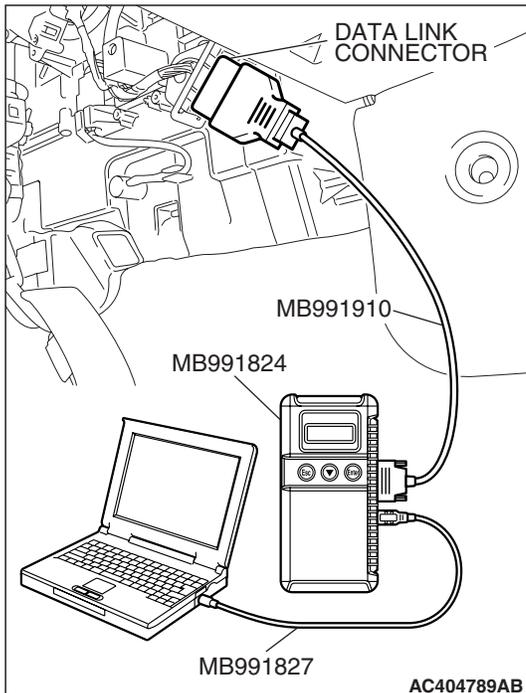
- (1) Turn the ignition switch to "ON" position.
- (2) Diagnose the CAN bus line.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

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-14](#)).





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

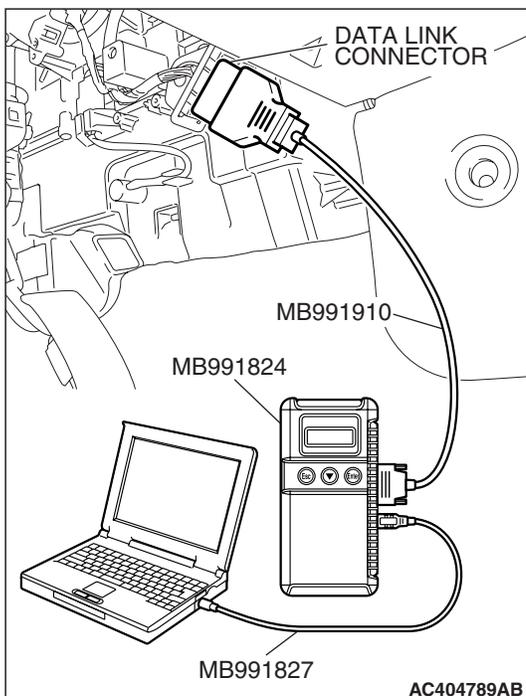
Check if an MFI system diagnostic trouble code is set.

- (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](#) <2.4L ENGINE> or GROUP 13B, MFI Diagnosis –Diagnostic Trouble Code Chart [P.13B-43](#) <3.8L ENGINE>.

NO : Go to Step 3.



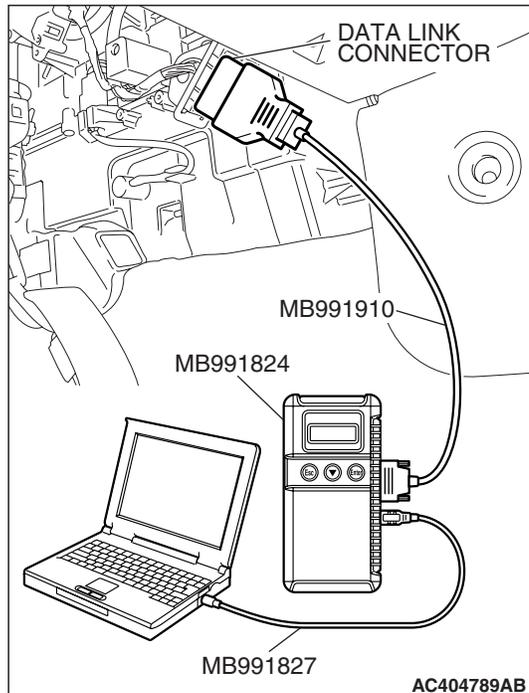
STEP 3. Using scan tool MB991958, check data list.

- (1) Turn the ignition switch to "ON" position.
- (2) Set scan tool MB991958 to the data reading mode.
 - Item 08: Engine coolant temperature
 - Engine coolant temperature and MUT-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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

Using scan tool MB991958, check actuator test.

⚠ CAUTION

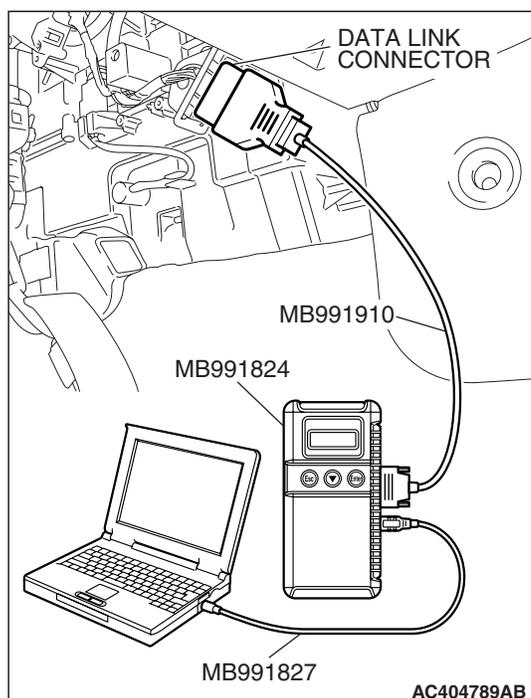
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (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-107](#)).

NO : Replace the combination meter.



DATA LIST REFERENCE TABLE

M1543007300701

The following items of the ECU input data can be read using scan tool MUT-III.

ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
05	Tachometer	Start the engine.	Tachometer displayed value and MUT-III displayed value agree with each other.
06	Fuel gauge(Input)	Ignition switch: ON	Fuel gauge unit resistance value and MUT-III displayed value agree with each other.
07	Fuel gauge(Target)	Ignition switch: ON	Fuel gauge and MUT-III displayed values agree with each other.
08	Engine coolant temperature	Ignition switch: ON	Engine coolant temperature and MUT-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"> • Ignition switch: ON • Parking brake: At release 	OFF
		<ul style="list-style-type: none"> • Ignition switch: ON • Parking brake: OPERATION 	ON
15	Charging indicator light	–	OFF
16	Check engine indicator light	–	OFF
19	Front fog lamp indicator light	Front fog light: OFF	OFF
		Front fog light: ON	ON
20	Fuel warning light	–	OFF
21	Oil pressure indicator light	–	OFF
23	Driver's seat belt indicator light	<ul style="list-style-type: none"> • Ignition switch: ON • Driver's seat belt: fastened 	OFF
		<ul style="list-style-type: none"> • Ignition switch: ON • Driver's seat belt: Not fastened 	ON
24	SRS indicator light	–	OFF

ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
26	Turn signal indicator(Left)	Turn-signal light: OFF or only right side light illuminates	OFF
		Turn-signal light: Left side light illuminates	ON
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	Shift indicator:1	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode)	ON
33	Shift indicator:2	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode)	ON
34	Shift indicator:3	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode)	ON
35	Shift indicator:4	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode)	ON
36	Shift indicator:5	Perform a test run of the vehicle. (Auto mode)	OFF
		Perform a test run of the vehicle. (Manual mode)	ON
39	Shift indicator:N	Shift position: Other than N position	OFF
		Shift position: N position	ON
40	Shift indicator:P	Shift position: Other than P position	OFF
		Shift position: P position	ON
41	Shift indicator:R	Shift position: Other than R position	OFF
		Shift position: R position	ON
42	Odometer	Ignition switch: ON	Odometer displayed value and MUT-III displayed value agree with each other.
43	Tripmeter A	Ignition switch: ON	Tripmeter A displayed value and MUT-III displayed value agree with each other.
44	Tripmeter B	Ignition switch: ON	Tripmeter B displayed value and MUT-III displayed value agree with each other.

ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
45	Power supply voltage	Ignition switch: ON	Battery voltage
46	Speedometer(Target)	Ignition switch: ON	Speedometer and MUT-III displayed values agree with each other.
47	Shift indicator:D	Shift position: Other than D position	OFF
		Shift position: D position	ON
50	Coolant Temp.confirmation flag	Ignition switch: ON	ON
52	Cruise control indicator	–	OFF
53	Immobilizer indicator	–	OFF
54	Speedometer(Input)	Ignition switch: ON	Speedometer and MUT-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	TCL indicator	–	OFF
60	TCL OFF indicator	–	ON

ACTUATOR TEST REFERENCE TABLE

M1543007400247

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)
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 %

ITEM NO.	CHECK ITEM	TEST CONTENT	CHECK CONDITION	NORMAL CONDITION
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, the TCL 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, the TCL 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.

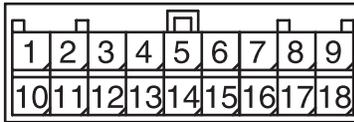
COMBINATION METER TERMINAL CHECK

M1543026700021

Measure the voltage between terminals using a volt-meter.

COMBINATION METER CONNECTOR
COMPONENT SIDE

C-04



AC406357AB

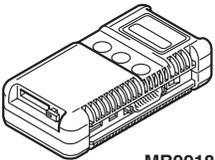
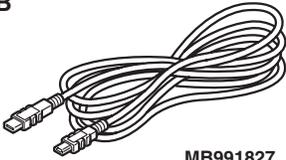
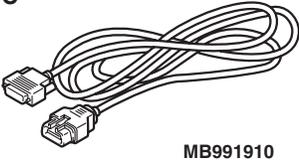
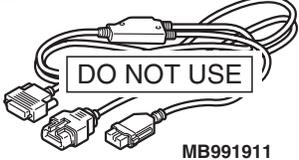
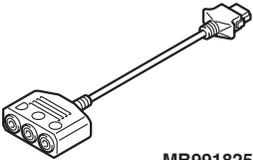
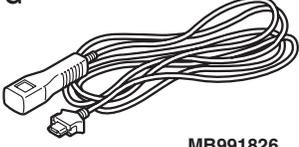
⚠ CAUTION

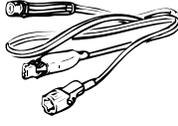
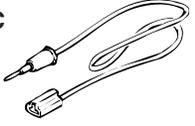
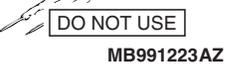
Never take a measurement at terminals 3 and 4. If you do this, the CAN bus lines will be impaired.

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	0 V
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"> Ignition switch: ON or parking brake switch: ON Ignition switch: ON or brake fluid level switch: ON 	-
10	Battery power supply	Always	Battery positive voltage
11	Ignition switch (IG1) power supply	Ignition switch: ON	Battery positive voltage
13	Illumination (ground)	Always	0 V
15	Generator	-	-
16	Fuel gauge	Always	-
17	Spare 2	-	-
18	Illumination (power supply)	Lighting switch: ON	Battery positive voltage

SPECIAL TOOLS

TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
<p>A</p>  <p>MB991824</p> <p>B</p>  <p>MB991827</p> <p>C</p>  <p>MB991910</p> <p>D</p>  <p>MB991911</p> <p>E</p>  <p>MB991914</p> <p>F</p>  <p>MB991825</p> <p>G</p>  <p>MB991826 MB991958</p>	<p>MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826</p> <p>MUT-III Sub Assembly A: Vehicle communication interface (V.C.I.) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 MUT-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<ul style="list-style-type: none"> • Reading diagnostic trouble code • Estimated vehicle speed sent <p>CAUTION For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly.</p>

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
<p>A</p>  <p>B</p>  <p>C</p>  <p>D</p> 	<p>MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222</p> <p>Harness set A: Test harness B: LED harness C: LED harness adapter 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 B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection</p>
 <p>MB992006</p>	<p>MB992006 Extra fine probe</p>	<p>General service tool</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

ON-VEHICLE SERVICE

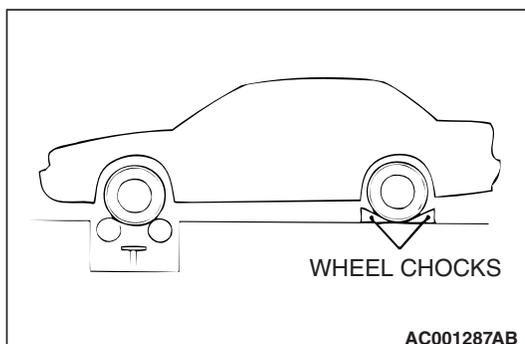
SPEEDOMETER CHECK

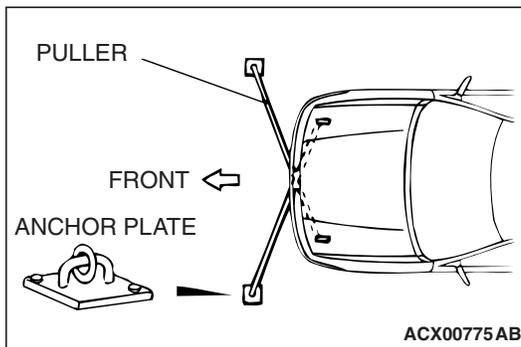
M1543000900757

1. Adjust the pressure of tires to the specified level (Refer to GROUP 31, On-vehicle Service P.31-7).
2. Turn off the TCL switch.

CAUTION

- Since the diagnosis code may be stored in the ABS-ECU or the ABS/TCL-ECU when checking the speedometer with speedometer tester, erase the diagnosis code.
 - Do not accelerate or decelerate suddenly during servicing work.
3. Set the vehicle onto a speedometer tester and use wheel chocks to hold the rear wheels.





4. 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.
5. 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.
6. 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 – 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)

7. 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-101](#).)

TACHOMETER CHECK

M1543001000683

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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.

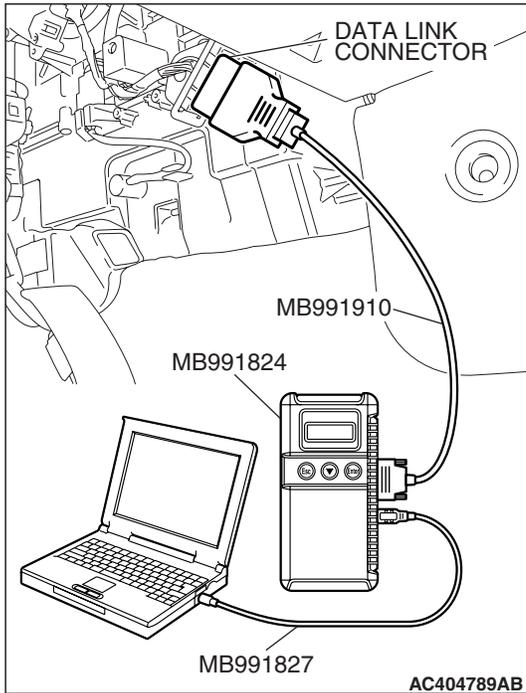
Item 22: CKP SENSOR

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:

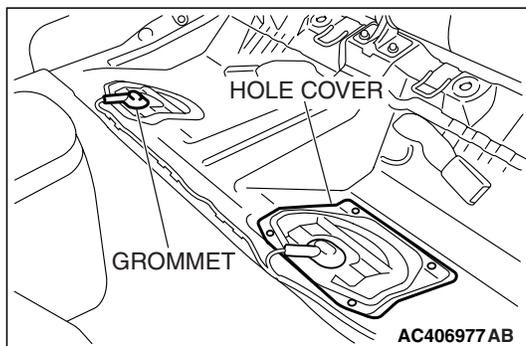
ENGINE SPEED (r/min)	INDICATION ALLOWANCE OF TACHOMETER (r/min)
1,000	900 – 1,100
2,000	1,900 – 2,100
3,000	2,900 – 3,100
4,000	3,900 – 4,100
5,000	4,900 – 5,100
6,000	5,900 – 6,100



FUEL LEVEL SENSOR CHECK

M1543001300093

1. Remove the rear seat cushion assembly. (Refer to GROUP 52A, Rear Seat Assembly P.52A-49.)
2. Remove hole cover, grommet and remove the fuel pump module and fuel level sensor (sub).



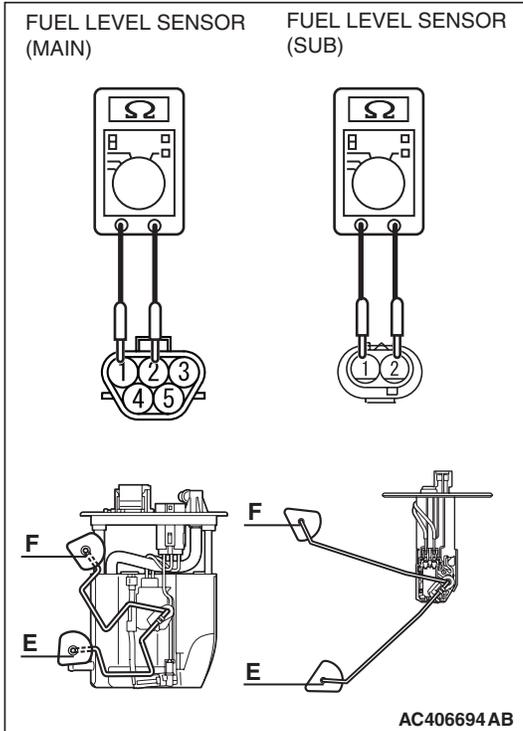
FUEL LEVEL SENSOR RESISTANCE

1. 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 Ω	Point "F" (highest)	6.5	6.5 ± 1.0
	Point "E" (lowest)	45.1	74.9 ± 1.0

2. Check that resistance value changes smoothly when the float moves slowly between points.
3. 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).



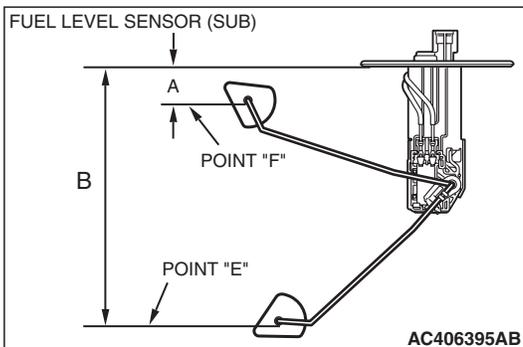
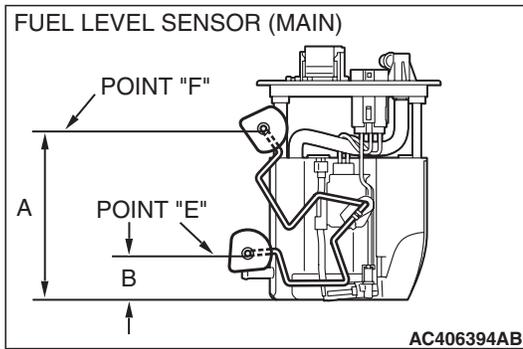
FUEL LEVEL SENSOR FLOAT HEIGHT

1. Move the float and measure height A at point "F" (highest) and B at point "E" (lowest).

Standard value:

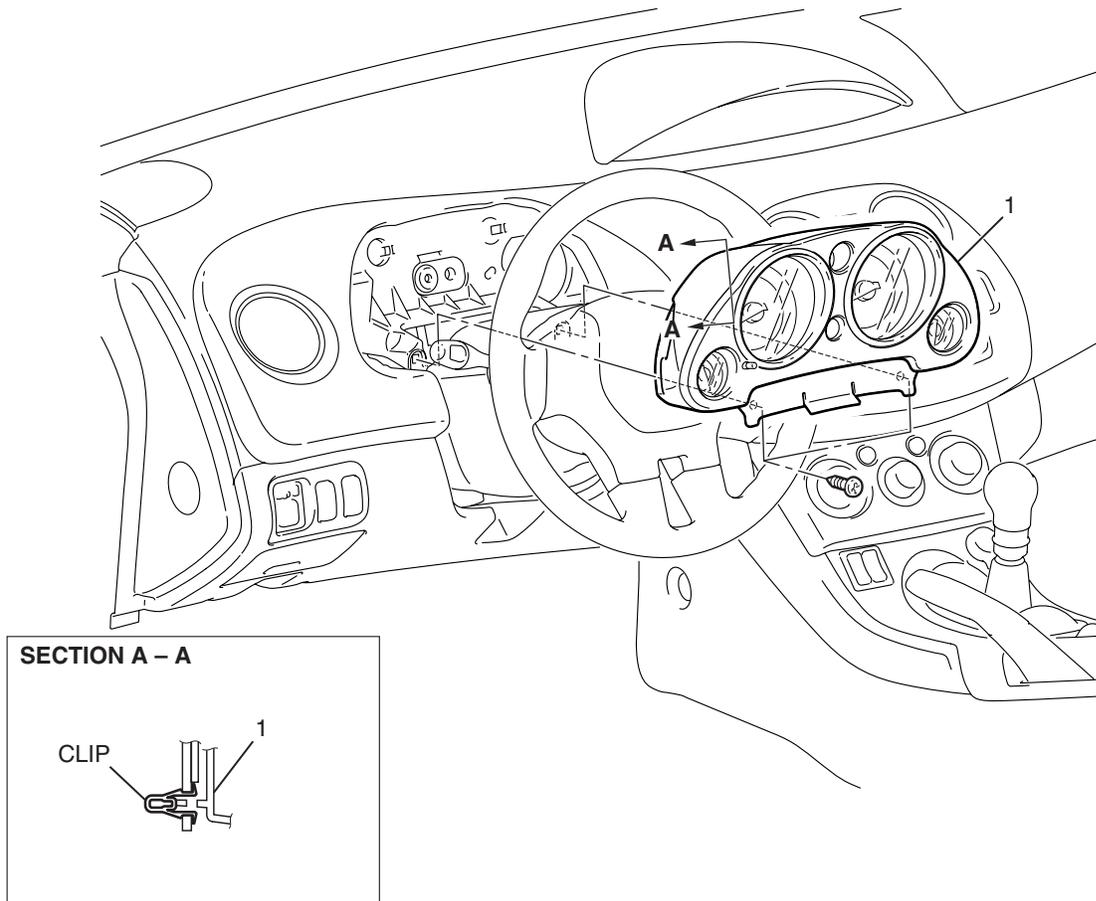
ITEM		FUEL LEVEL SENSOR (main)	FUEL LEVEL SENSOR (sub)
Height mm (in)	A at point "F"	131.5 (5.1)	24.9 ± 3.0 (0.9 ± 0.1)
	B at point "E"	34.5 (1.3)	172.7 ± 3.0 (6.7 ± 0.1)

2. If any check is not correct, replace the fuel pump module or fuel level sensor (sub).



**COMBINATION METER ASSEMBLY
REMOVAL AND INSTALLATION**

M1543021300095



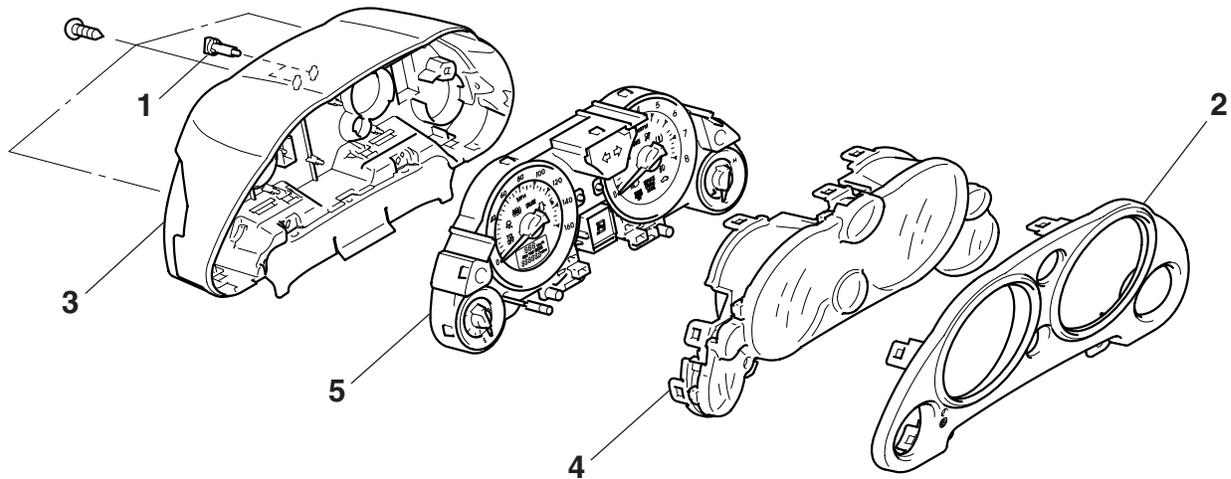
AC406540AB

**COMBINATION METER ASSEMBLY
REMOVAL STEPS**

- STEERING COLUMN UPPER COVER
(REFER TO GROUP 52A,
INSTRUMENT PANEL REMOVAL AND
INSTRATION [P.52A-21.](#))
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

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-57](#).

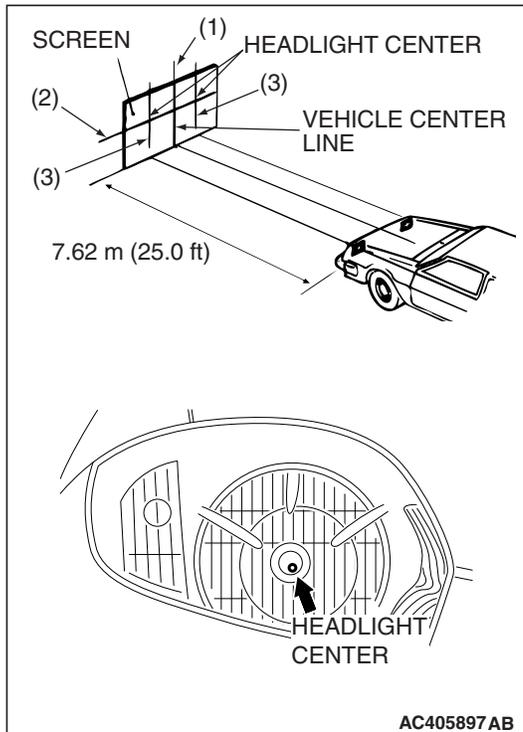
ON-VEHICLE SERVICE

HEADLIGHT AIMING

M1542000900828

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 70 kg (150 pounds) placed in driver's position.
6. Thoroughly clean headlight lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 m (25.0 ft) away from the bulb center-marks on the headlight lens.
8. Rock vehicle sideways to allow vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to hood or bumper.

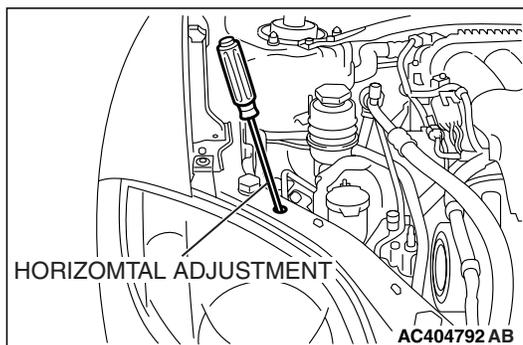
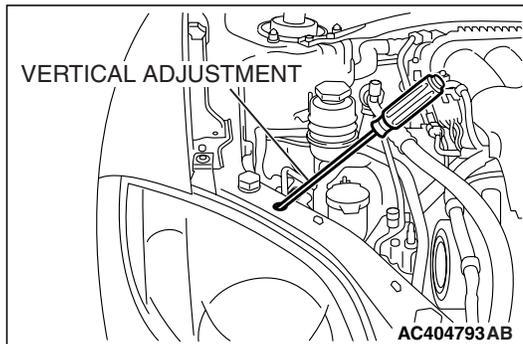


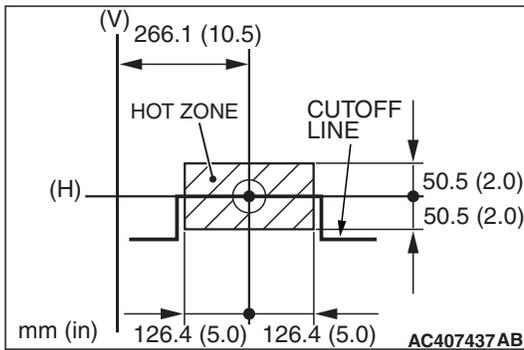
10. Set the distance between the screen and the bulb center marks of the headlight as shown in the illustration.
11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
 - (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
 - (2) Measure the distance from the center-marks on the headlight lens to the floor [reference value: 646 mm (254 inches) <vehicles with 17-inch wheel> or 654 mm (257 inches) <vehicles with 18-inch wheel>]. 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

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

1. The low beam headlight will project on the screen upper edge of the beam (cut-off).
2. Turn the adjusting screws to achieve the specified low-beam cut-off location on the aiming screen.





Standard value:

- (Vertical direction) Horizontal line (H) ± 50.5 mm (± 2.0 inches) (0.38 degrees angle)
- (Horizontal direction): ± 126.4 mm (± 5.0 inches) (± 0.95 degrees angle) from the axis, which is 266.1 mm (10.5 inches) (2 degrees angle) rightward from the vertical line (V)

CAUTION

Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.

NOTE: High-beam pattern should be correct when the low-beams are adjusted properly.

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.

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

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

BULB REPLACEMENT

M1542001301220

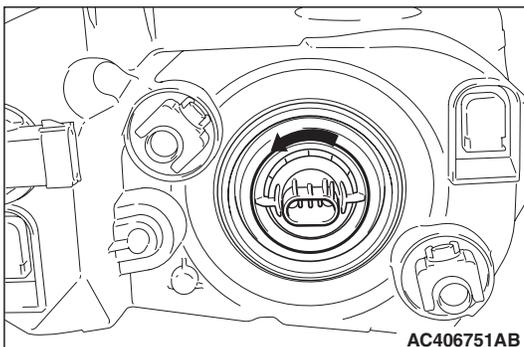
HEADLIGHT BULB

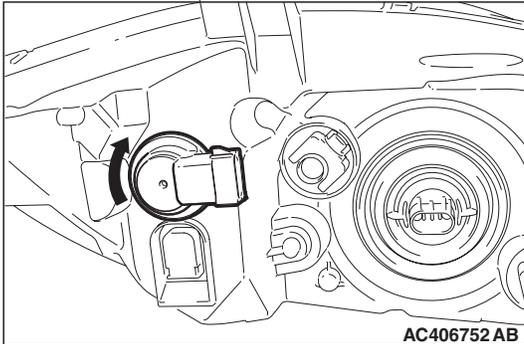
1. Disconnect the headlight connector.
2. Remove the headlight bulb by turning it counterclockwise as shown.

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.

3. Install the headlight bulb to the headlight by pushing it in and twisting it clockwise.



**FRONT SIDE-MARKER, FRONT TURN-SIGNAL
LIGHT AND PARKING LIGHT BULB**

1. Disconnect the front side-marker, front turn-signal light and parking light connector.
2. Remove the socket with the bulb by turning it counterclockwise as shown.

⚠ 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.

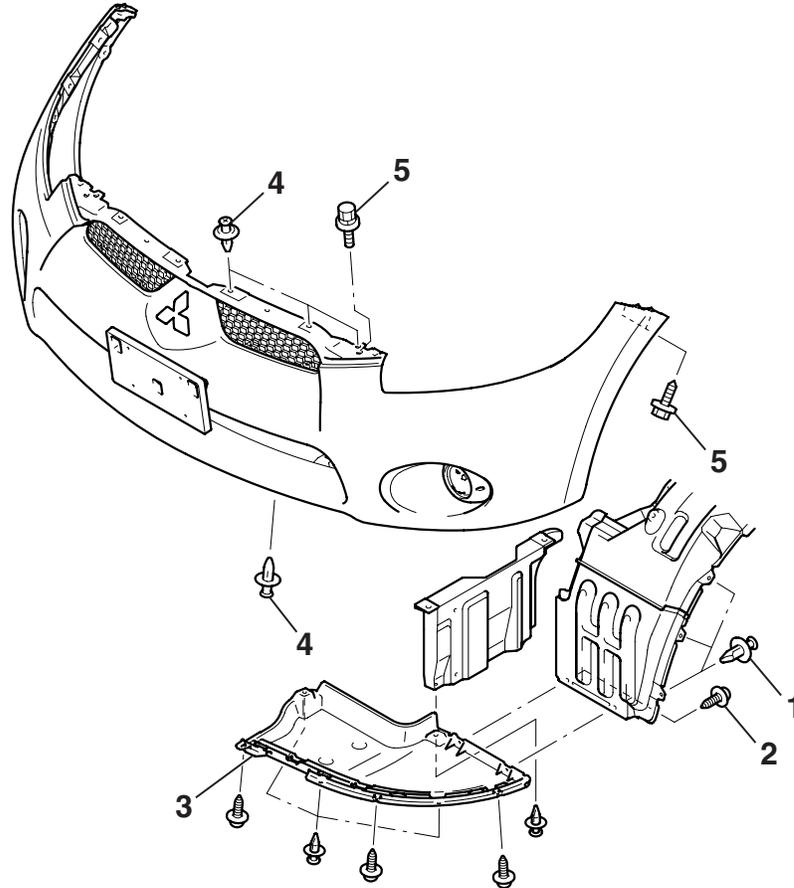
3. Pull out the bulb from the socket, and then replace the bulb.
4. Install the socket to the headlight by pushing it in and twisting it clockwise.

HEADLIGHT AND FRONT COMBINATION LIGHT REMOVAL AND INSTALLATION

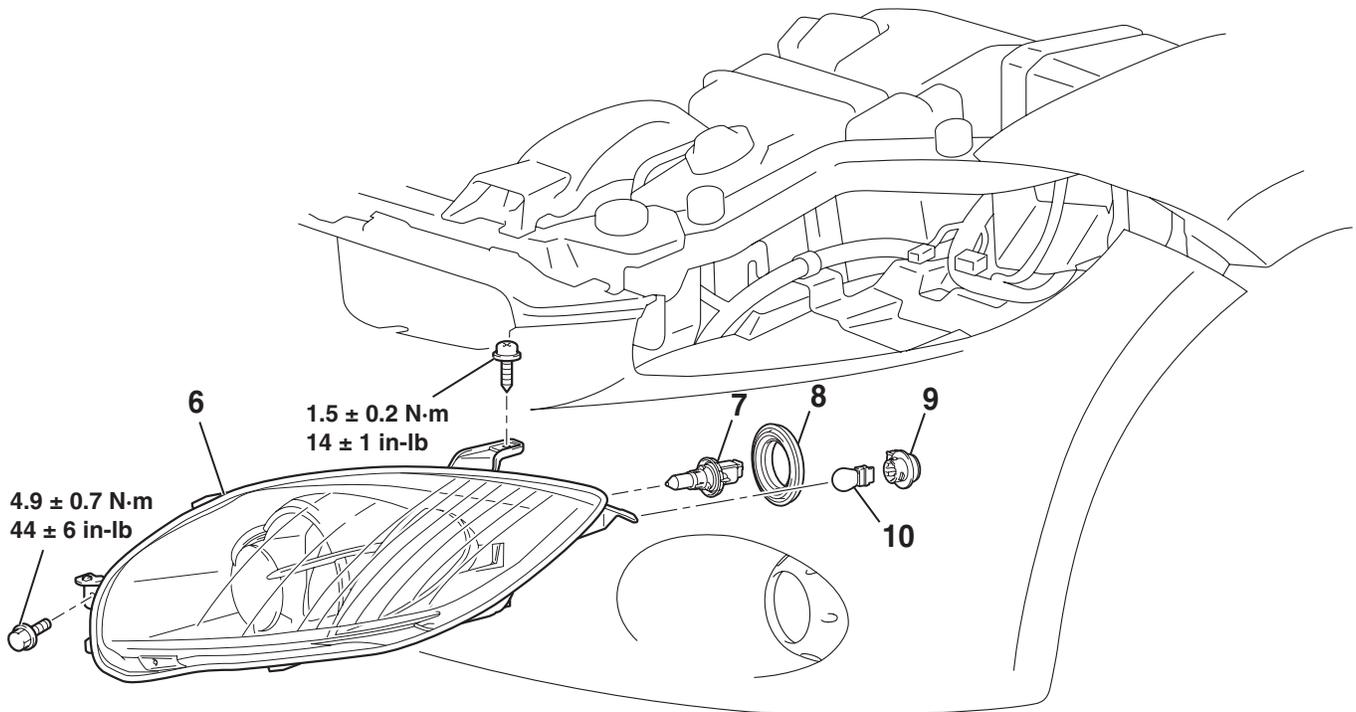
M1542002700541

Post-installation operation

Headlight aiming adjustment (Refer to [P.54A-133](#)).



AC406398AB



AC405519AB

HEADLIGHT ASSEMBLY REMOVAL STEPS

1. SPLASH SHIELD MOUNTING CLIPS (RELEVANT SIDE)
2. SPLASH SHIELD MOUNTING SCREWS (RELEVANT SIDE)
3. UNDER COVER (RELEVANT SIDE)
4. FRONT BUMPER MOUNTING CLIPS (RELEVANT SIDE)
5. FRONT BUMPER MOUNTING BOLTS (RELEVANT SIDE)
6. HEADLIGHT ASSEMBLY

HEADLIGHT BULB REMOVAL

7. HEADLIGHT BULB
 8. BOOT
- FRONT SIDE-MARKER, FRONT TURN-SIGNAL AND PARKING LIGHT BULB REMOVAL STEPS**
9. SOCKET
 10. FRONT SIDE-MARKER, FRONT TURN-SIGNAL AND PARKING LIGHT BULB

※<A>

REMOVAL SERVICE POINT**<<A>> HEADLIGHT ASSEMBLY REMOVAL**

Remove the headlight assembly with the applicable side of the front bumper slid downward slightly.

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-57.

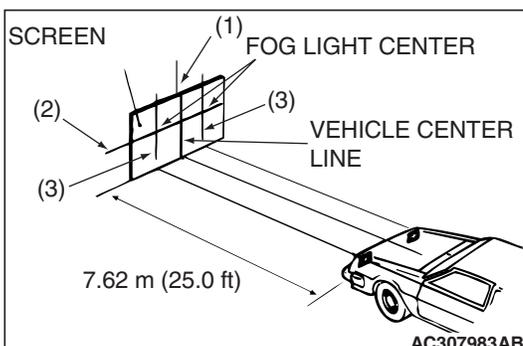
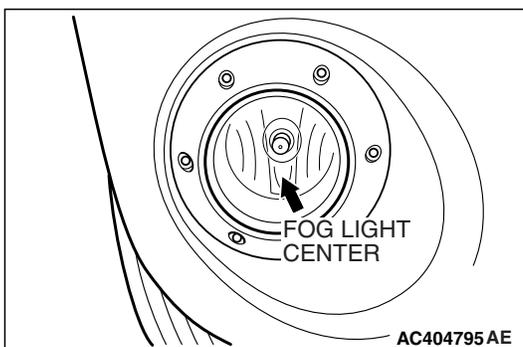
ON-VEHICLE SERVICE

FOG LIGHT AIMING

M1542001100706

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 70 kg (150 pounds) placed in driver's position.
6. Thoroughly clean the front fog light lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62 meters (25.0 ft) away from the bulb center-marks on the fog light lens.
8. Rock the vehicle sideways to allow the vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to the hood or bumper.
10. Measure the center of the front fog lights as shown in the illustration.



11. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
 - (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
 - (2) Measure the distance from the center of the front fog light lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.

- Measure the distance from the center line of the vehicle to the center of each front fog light. Transfer the measurement to the screen. Vertical tape or mark on the screen is for reference to the center line of each front fog light.

FOG LIGHT ADJUSTMENT

- 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) <vehicles with 17-inch wheel> or the horizontal line 186.2 mm (7.33 inches) (1.40 degrees angle) below the horizontal line (H) <vehicles with 18-inch wheel>

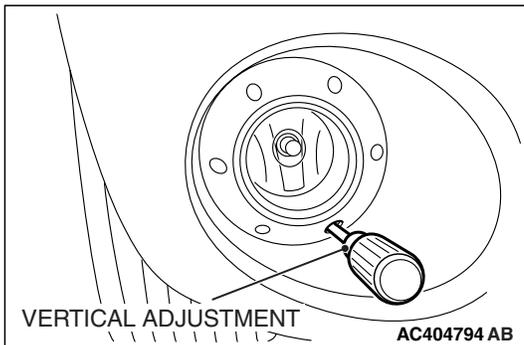
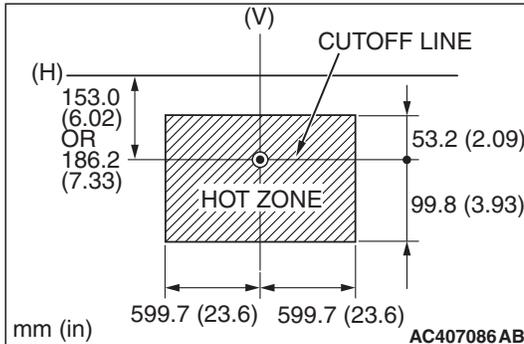
Limit:

(Vertical direction): Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line

(Horizontal direction): Vertical line (V) ± 599.7 mm (± 23.6 inches) (± 4.5 degrees angle)

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

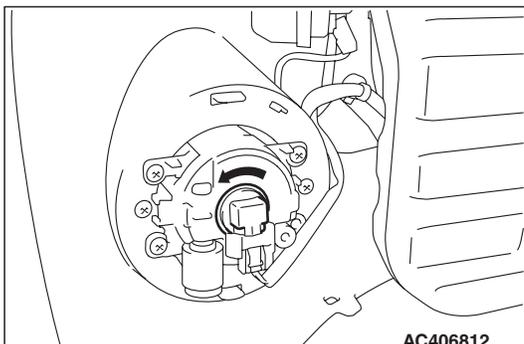
NOTE: The horizontal direction is non-adjustable. If deviation of the light beam axis exceeds the standard value, check that the mounting location or some other points are not faulty.



BULB REPLACEMENT

M1542001301156

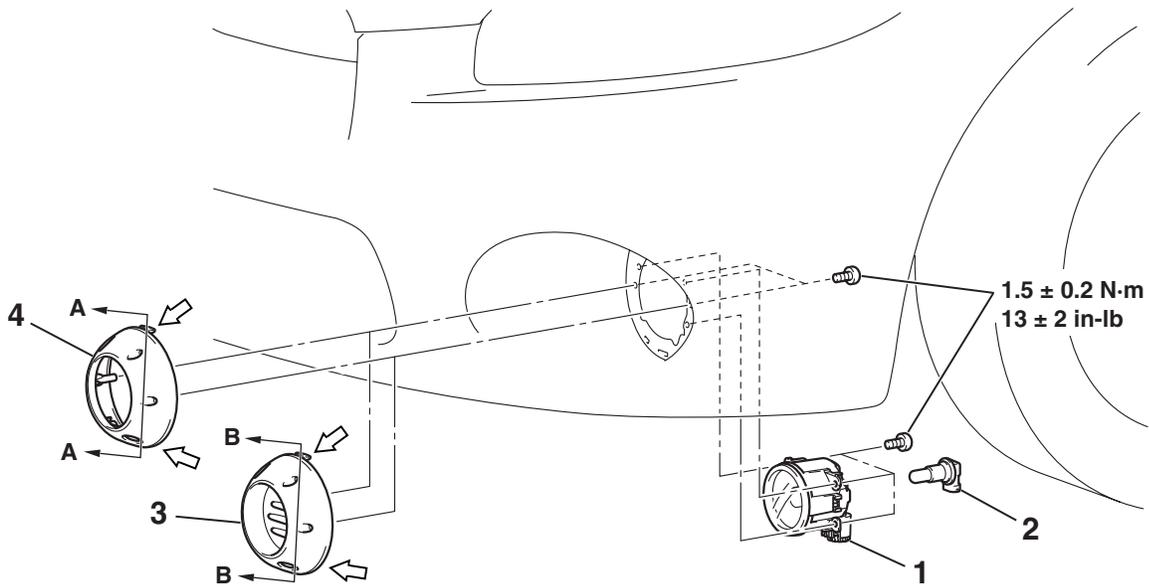
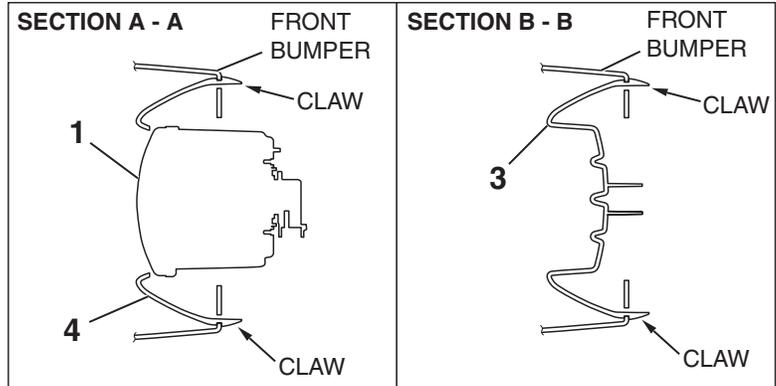
- Remove the under cover mounting clips, then remove the under cover.
- Remove the socket and bulb assembly by twisting it counterclockwise.
- Remove the front fog light bulb from the connector.
- Replace the bulb, and then install the socket and bulb assembly by twisting it clockwise.



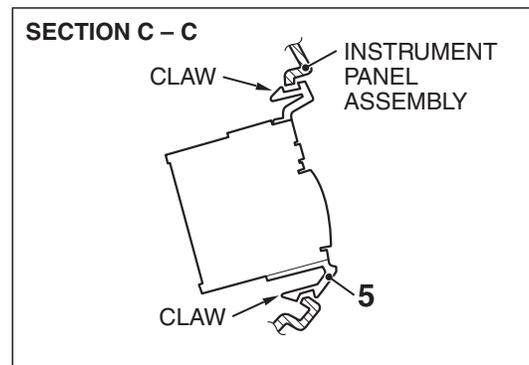
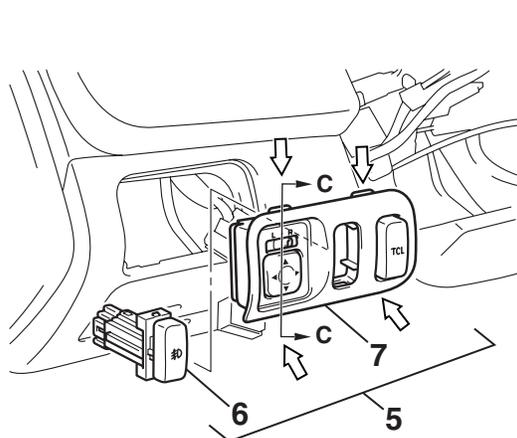
**FRONT FOG LIGHT
REMOVAL AND INSTALLATION**

M1542013600087

Post-installation operation
Front fog light aiming (Refer to P.54A-139).



AC405785AC



NOTE
← : CLAW POSITION

AC406121 AC

TSB Revision

FRONT FOG LIGHT REMOVAL STEPS

- FRONT BUMPER UNDER COVER (REFER TO GROUP 51, FRONT BUMPER ASSEMBLY AND RADUATOR GRILLE P.51-2.)
- 1. FRONT FOG LIGHT ASSEMBLY
- 2. BLUB

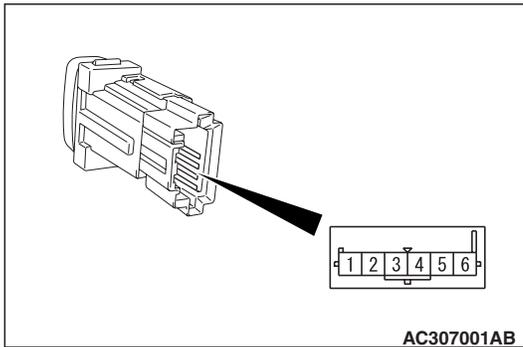
FRONT FOG LIGHT REMOVAL STEPS (Continued)

- 3. FRONT FOG LIGHT BEZEL
- 4. FRONT FOG LIGHT COVER
- FRONT FOG LIGHT SWITCH REMOVAL STEPS**
- 5. SWITCH PANEL ASSEMBLY
- 6. FRONT FOG LIGHT SWITCH
- 7. SWITCH PANEL

INSPECTION

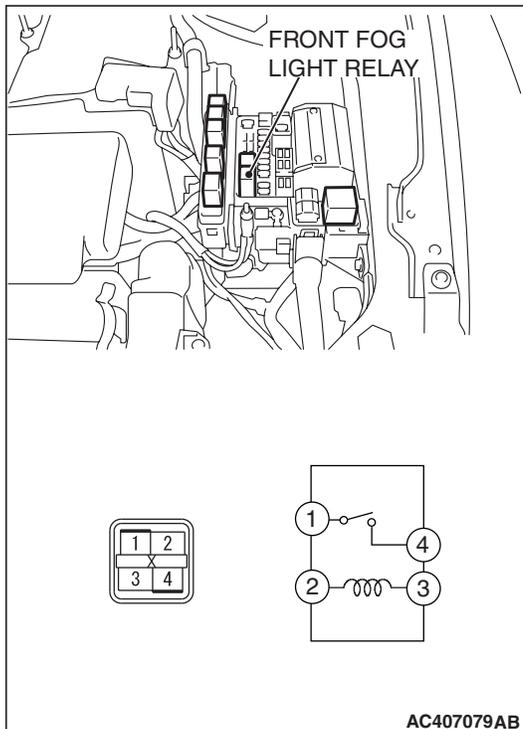
M1543019503411

FRONT FOG LIGHT SWITCH CONTINUITY CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	1-2	Less than 2 ohms
Released	1-2	Open circuit

FRONT FOG LIGHT RELAY CHECK

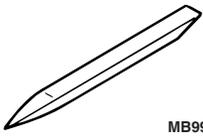


BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not supplied	1-4	Open circuit
<ul style="list-style-type: none"> • Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal 	1-4	Less than 2 ohms

REAR COMBINATION LIGHT

SPECIAL TOOL

M1542000601961

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
	MB990784 Ornament remover	General service tool	Removal of rear combination light

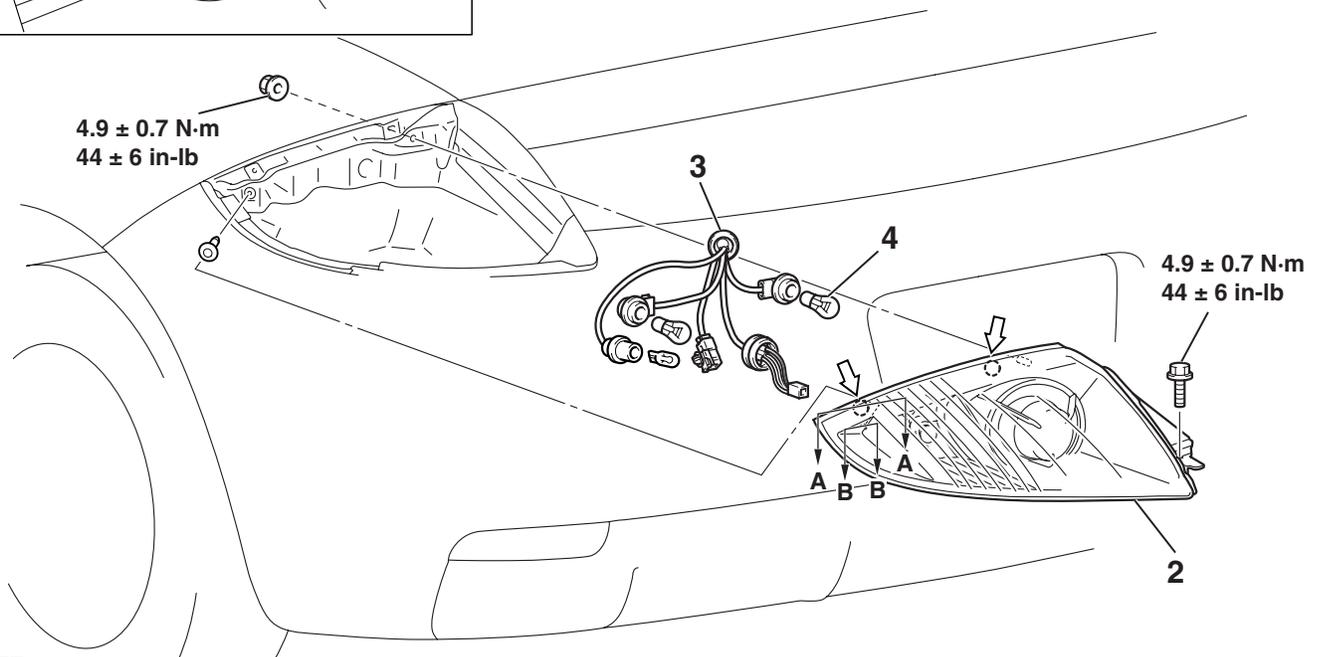
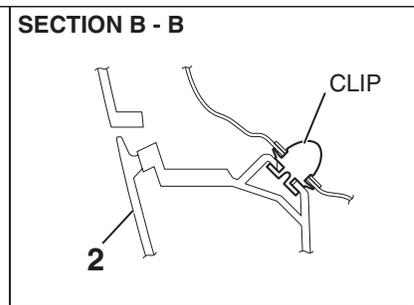
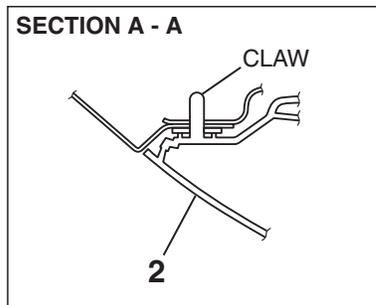
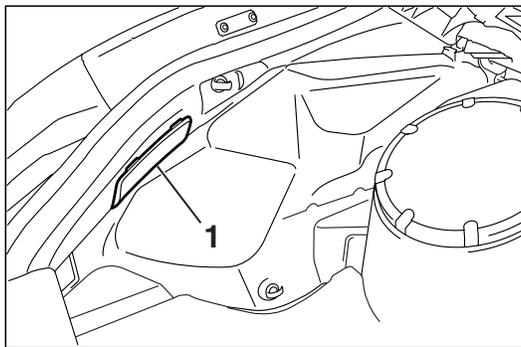
DIAGNOSIS

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-57.

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:

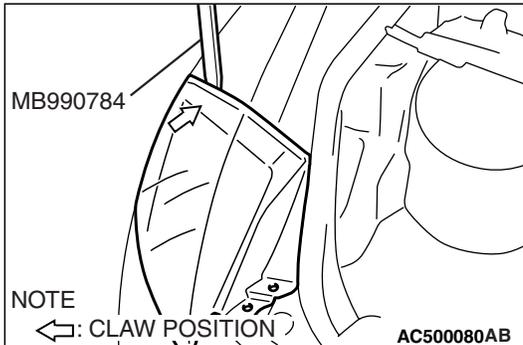
MB990784: Ornament Remover

<<A>>

REMOVAL SERVICE POINTS

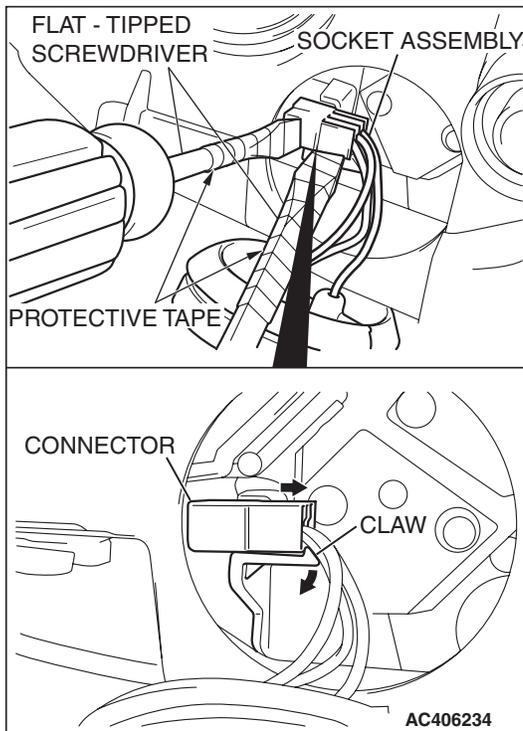
<<A>> REAR COMBINATION LIGHT REMOVAL

Before removing the rear combination light, disengage the claw shown in the illustration using special tool MB990784.



<> SOCKET ASSEMBLY REMOVAL

Remove the socket assembly connector using a flat-tipped screwdriver as shown.



DOME LIGHT

DIAGNOSIS

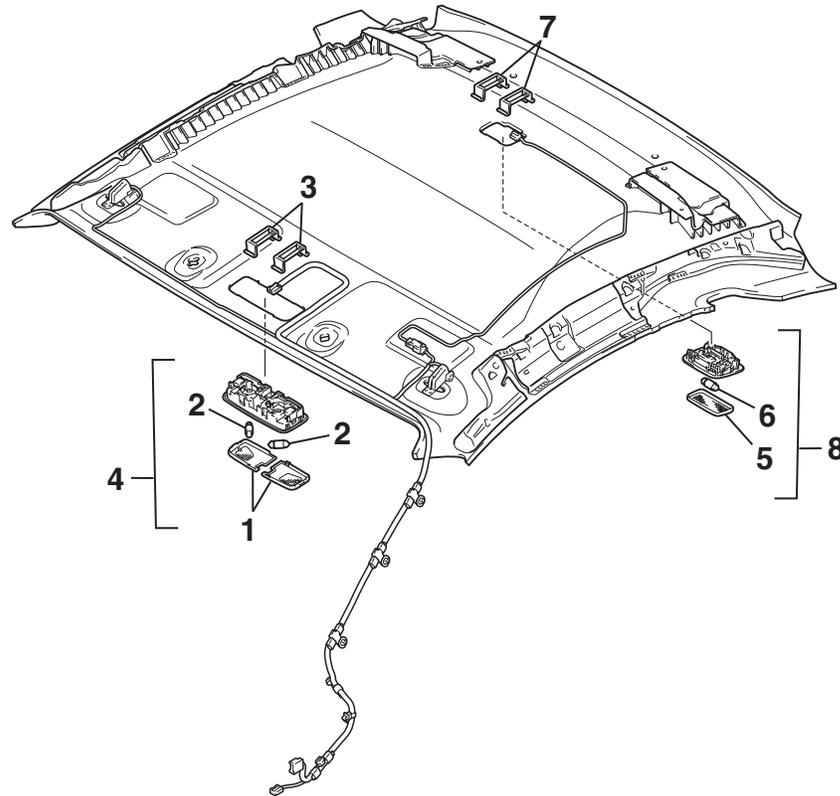
The dome light is controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-57](#).

M1542000701968

DOME LIGHT

REMOVAL AND INSTALLATION

M1542006300062



AC406660AB

FRONT DOME LIGHT BULB REMOVAL STEPS

1. FRONT DOME LIGHT LENS
2. BULB

FRONT DOME LIGHT ASSEMBLY REMOVAL STEPS

- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37](#).)
3. FRONT DOME LIGHT BRACKET
 4. FRONT DOME LIGHT ASSEMBLY

REAR DOME LIGHT BULB REMOVAL STEPS

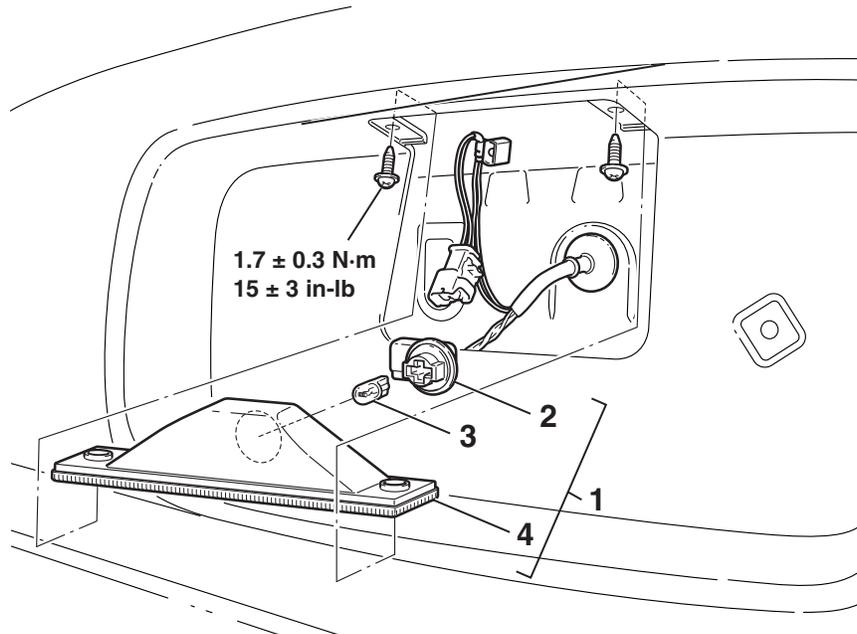
5. REAR DOME LIGHT LENS
6. BULB

REAR DOME LIGHT ASSEMBLY REMOVAL STEPS

- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37](#).)
7. REAR DOME LIGHT BRACKET
 8. REAR DOME LIGHT ASSEMBLY

LICENSE PLATE LIGHT**REMOVAL AND INSTALLATION**

M1542004200393



AC406227AB

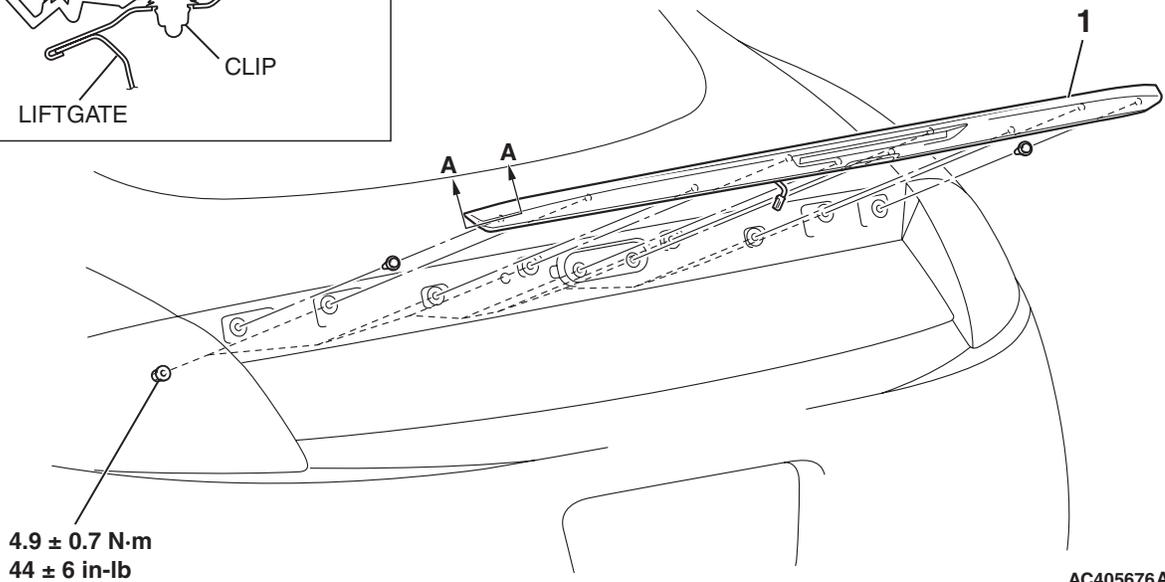
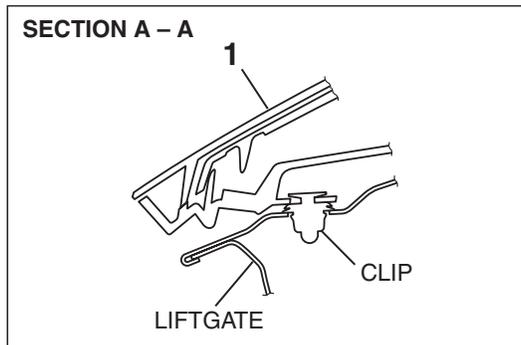
REMOVAL STEPS

1. LICENSE PLATE LIGHT ASSEMBLY
2. SOCKET
3. BULB
4. LICENSE PLATE LIGHT

HIGH-MOUNTED STOPLIGHT

REMOVAL AND INSTALLATION

M1542005100678



AC405676AG

HIGH-MOUNTED STOPLIGHT REMOVAL STEP

- LIFTGATE LOWER TRIM (REFER TO GROUP 52A, TRIM [P.52A-31.](#))
1. HIGH-MOUNTED STOPLIGHT

HAZARD WARNING LIGHT SWITCH

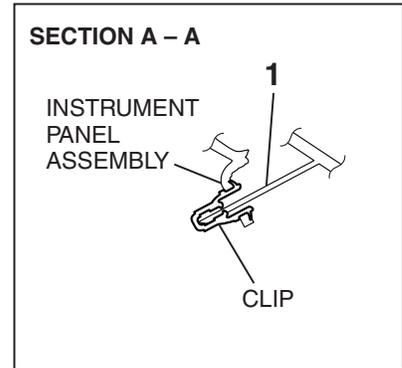
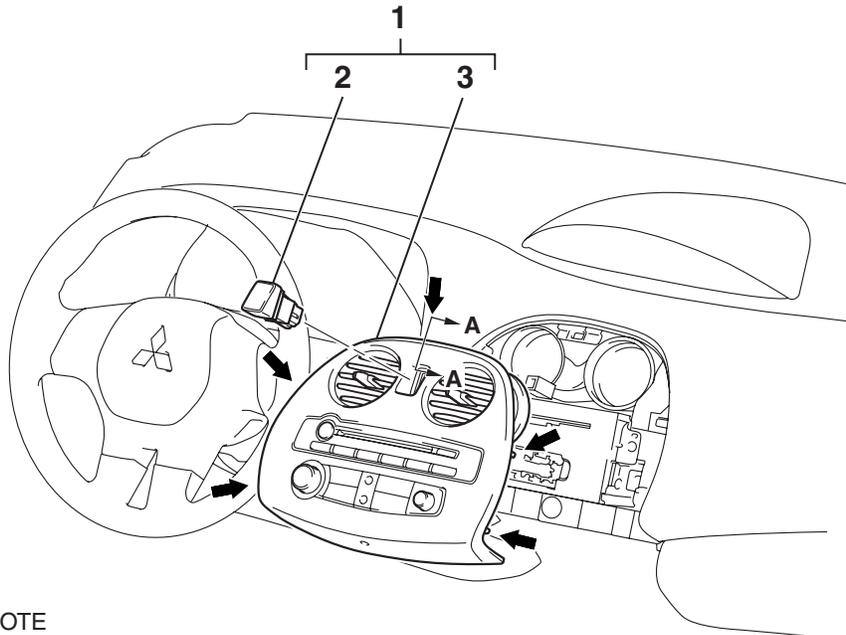
HAZARD WARNING LIGHT DIAGNOSIS

M1542000701979

The hazard warning lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis [P.54B-57.](#)

**HAZARD WARNING LIGHT SWITCH
REMOVAL AND INSTALLATION**

M1542006600706



NOTE
← : CLIP POSITION

AC406126AB

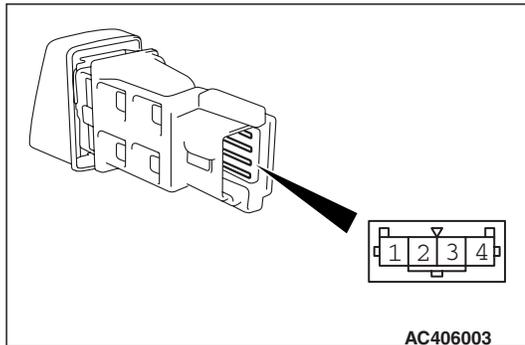
**HAZARD WARNING LIGHT SWITCH
REMOVAL STEPS**

1. CENTER PANEL ASSEMBLY
2. HAZARD WARNING LIGHT SWITCH
3. CENTER PANEL

INSPECTION

M1543019503433

**HAZARD WARNING LIGHT SWITCH CONTINUITY
CHECK**



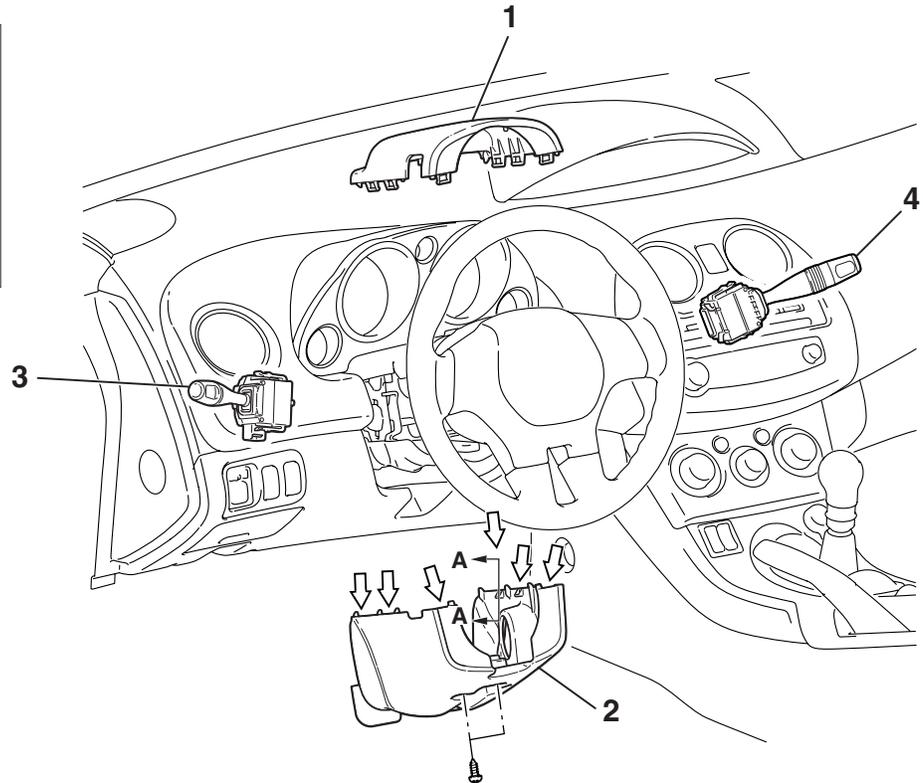
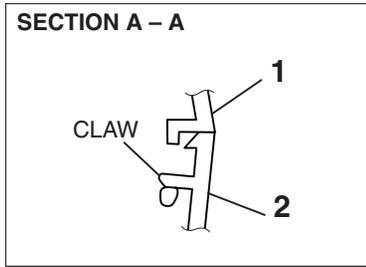
AC406003

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	1 - 2	Less than 2 ohms
Released	1 - 2	Open circuit

COLUMN SWITCH

REMOVAL AND INSTALLATION

M1543009100662



NOTE

← : CLAW POSITION

AC406539AB

REMOVAL STEPS

1. STEERING COLUMN UPPER COVER
2. STEERING COLUMN LOWER COVER

REMOVAL STEPS (Continued)

3. TURN-SIGNAL LIGHT AND LIGHTING SWITCH
4. WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH

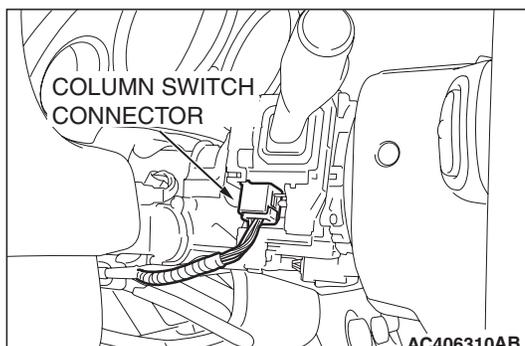
<<A>>

- COLUMN SWITCH CONNECTOR

REMOVAL SERVICE POINT

<<A>> COLUMN SWITCH CONNECTOR REMOVAL

Disconnect column switch connector C-309 shown in the illustration.



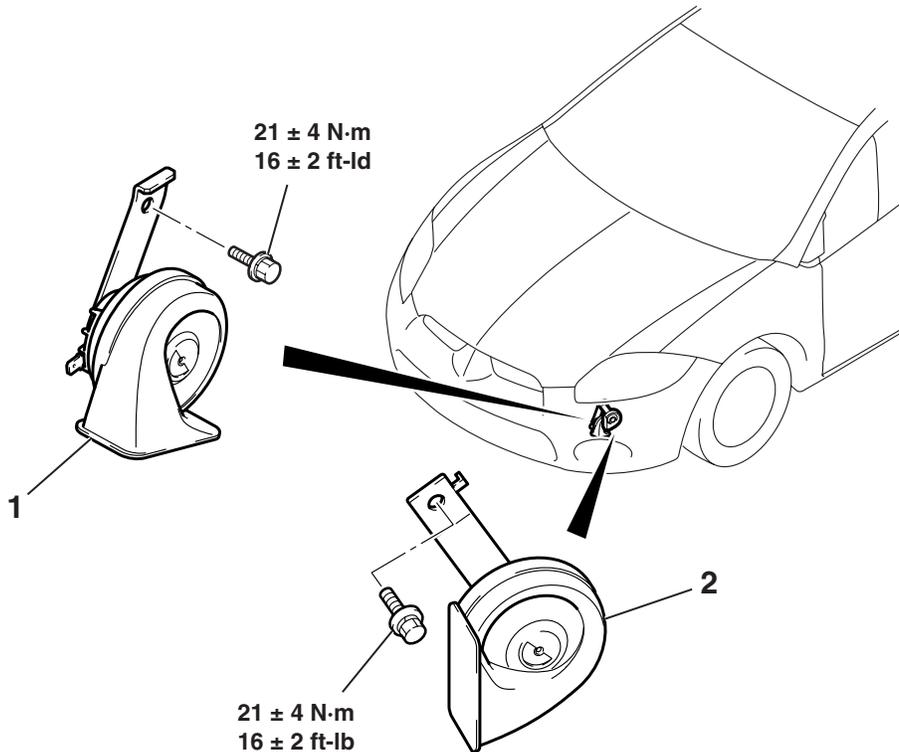
HORN**DIAGNOSIS <VEHICLE WITH KEYLESS ENTRY SYSTEM>**

M1543000701392

The keyless entry system horn answerback are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-57.

HORN**REMOVAL AND INSTALLATION**

M1543007900521



AC405618AC

REMOVAL STEPS

- FRONT BUMPER ASSEMBLY (REFER TO GROUP 51, FRONT BUMPER ASSEMBLY AND RADIATOR GRILLE P.51-2.)

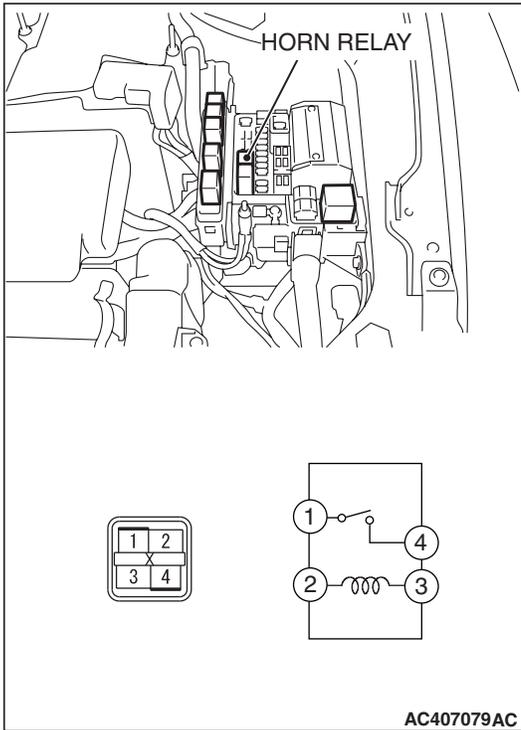
REMOVAL STEPS (Continued)

1. HORN (LOW)
2. HORN (HIGH)

INSPECTION

M1543019503444

HORN RELAY CONTINUITY CHECK

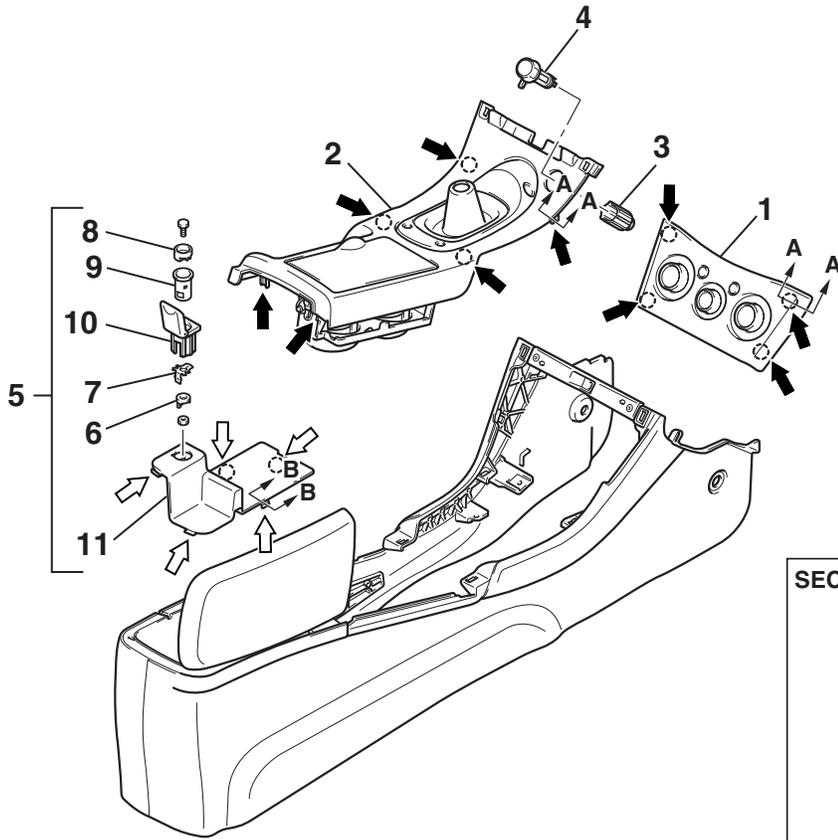


BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1-4	Open circuit
<ul style="list-style-type: none"> • Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal 	1-4	Less than 2 ohms

ACCESSORY SOCKET

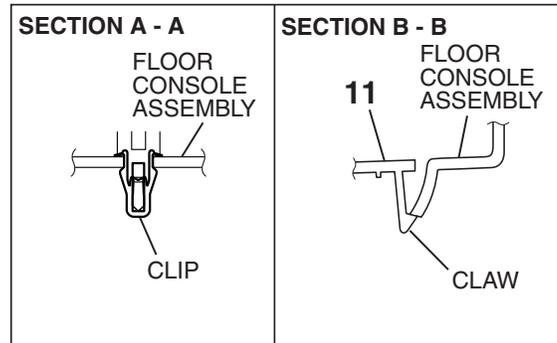
REMOVAL AND INSTALLATION

M1543008900427



NOTE

- ◄ : CLIP POSITION
- ◁ : CLAW POSITION



AC406161AB

REMOVAL STEPS

- INSTRUMENT CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT CENTER PANEL ASSEMBLY P.52A-21.)
- 1. HEATER CONTROL PANEL
- 2. FLOOR CONSOLE CENTER PANEL ASSEMBLY <<A>>
- 3. ACCESSORY SOCKET (ACC) COVER <<A>>
- 4. ACCESSORY SOCKET (ACC) <<A>>
- 5. FLOOR CONSOLE PLATE BOX ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE ASSEMBLY P.52A-28.)

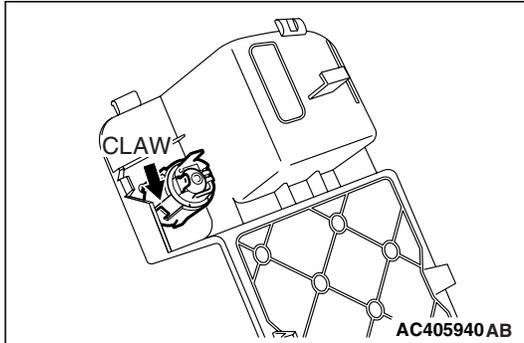
REMOVAL STEPS (Continued)

- 6. ACCESSORY SOCKET (BATTERY) TERMINAL
- 7. ACCESSORY SOCKET (BATTERY) TERMINAL
- 8. ACCESSORY SOCKET (BATTERY) CASE A
- 9. ACCESSORY SOCKET (BATTERY) CASE B
- 10. ACCESSORY SOCKET (BATTERY) COVER
- 11. FLOOR CONSOLE PLATE BOX

REMOVAL SERVICE POINT

<<A>> ACCESSORY SOCKET (BATTERY) CASE
B/ ACCESSORY SOCKET (BATTERY) COVER/
FLOOR CONSOLE PLATE BOX REMOVAL

Disengage the claw shown in the illustration and remove the accessory socket (BATTERY) case B and accessory socket (BATTERY) cover.



RADIO WITH CD PLAYER**GENERAL DESCRIPTION**

M1544000100130

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

<PREMIUM AUDIO SYSTEM>

- Rockford Fosgate audio system.
- 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
- MAX output: 650W
- Steering wheel with remote control radio switches

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.

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"> • Contamination, scratch, or deformation • Formation of moisture or grease 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.
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

M1544004900592

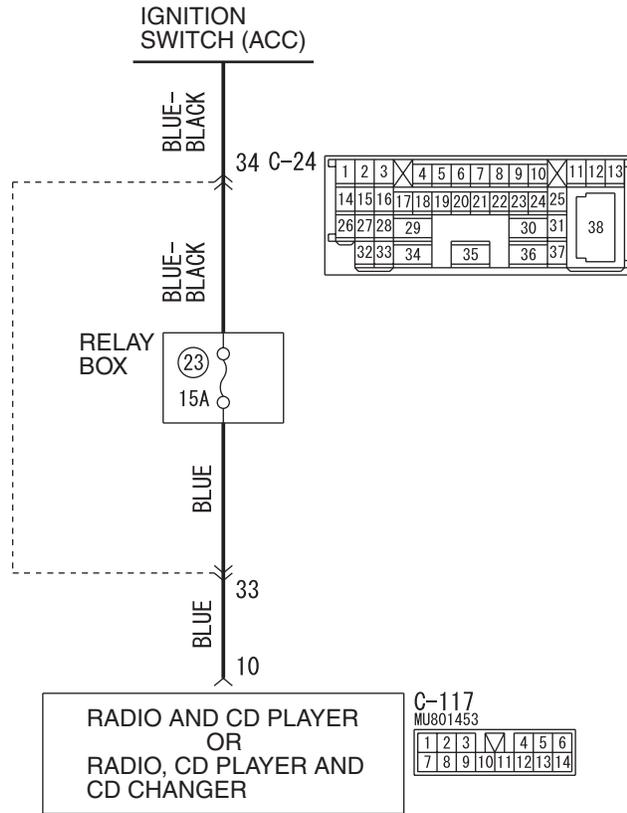
SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
When power switch is turned "ON," no power is available.		1	P.54A-158
Remote controlled radio switch	When remote controlled radio power switch is turned "ON," no power is available. But radio and CD player with CD changer power switch is available. <Vehicles with audio amplifier>	2	P.54A-163
	The system does not recognize the remote controlled radio switch (RH) only. <Vehicles with audio amplifier>	3	P.54A-171
	The system does not recognize the remote controlled radio switch (LH) only. <Vehicles with audio amplifier>	4	P.54A-172
No sound. <Vehicles with audio amplifier>		5	P.54A-174
No sound from one speaker. <Vehicles without audio amplifier>		6	P.54A-179
No sound from door speaker or woofer. <Vehicles with audio amplifier>		7	P.54A-190
No sound from tweeter or quarter speaker. <Vehicles with audio amplifier>		8	P.54A-198
Noise	Noise is present while moving (AM).	9	P.54A-205
	Noise is present while moving (FM).	10	P.54A-206
	Sound mixed with noise, only at night (AM).	11	P.54A-207
	Noise is overpowering both AM and FM.	12	P.54A-207
	Excessive noise on AM and FM.	13	P.54A-208
	Noise is detected with engine running.	14	P.54A-209
	Noise appears during vibration or shocks.	15	P.54A-211
	Noise is present while moving (FM).	16	P.54A-213
	Constant noise.	17	P.54A-213

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
Radio	No reception (AM).	18	P.54A-214
	Poor reception.	19	P.54A-214
	Distortion on AM and/or FM.	20	P.54A-215
	Distortion on FM only.	21	P.54A-216
	Auto select function inoperative, too few automatic stations are selected.	22	P.54A-216
	Preset stations are erased.	23	P.54A-217
CD player, CD auto changer	CD can not be inserted.	24	P.54A-220
	No sound (CD only).	25	P.54A-220
	CD sound skips.	26	P.54A-221
	Sound quality is poor.	27	P.54A-221
	CD cannot be ejected.	28	P.54A-222

SYMPTOM PROCEDURES

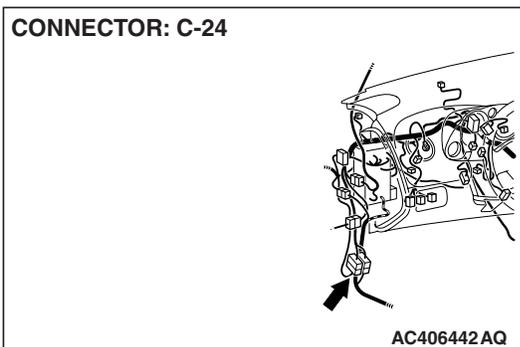
INSPECTION PROCEDURE 1: When power switch is turned "ON," no power is available.

Radio and CD Player or Radio, CD Player and CD Changer Power Supply Circuit

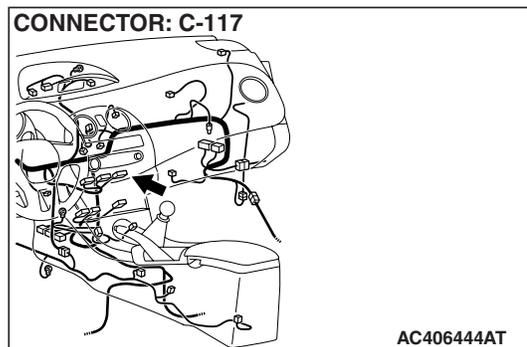


W6P54M036A

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.

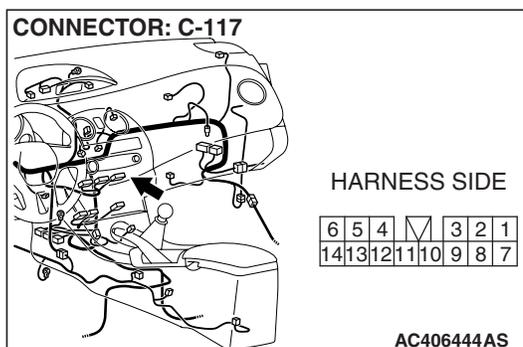
NO : Go to Step 5.

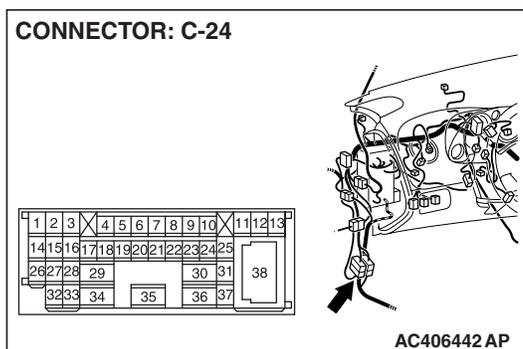
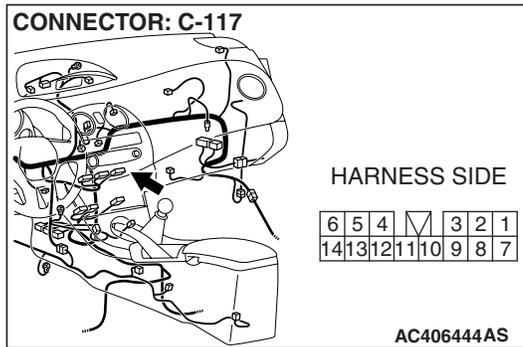
STEP 2. Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#). If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.





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).

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. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

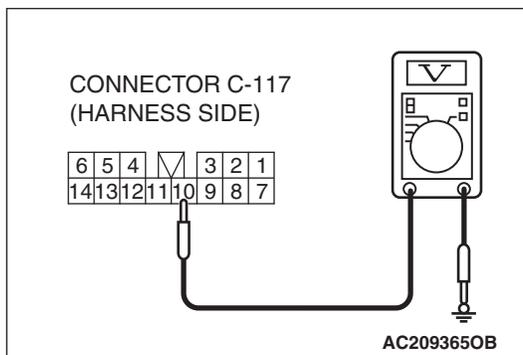
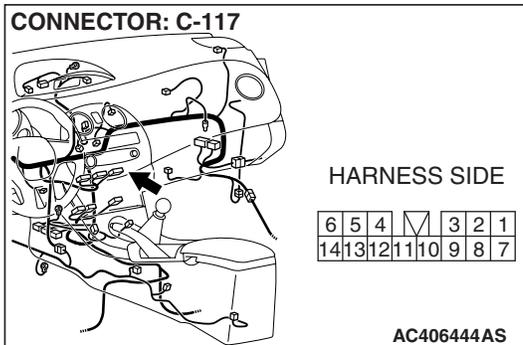
STEP 4. Check the installation condition of the radio and CD player or radio and CD player with CD changer.

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. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

NO : Install the radio and CD player or radio and CD player with CD changer properly. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.



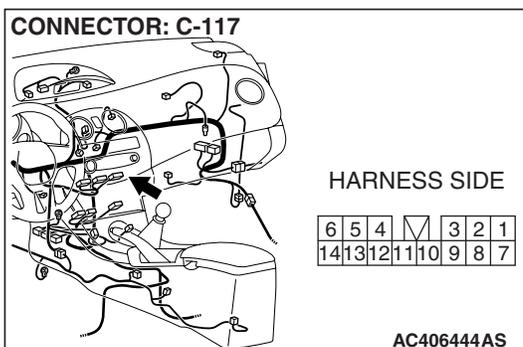
STEP 5. Measure at radio and CD player or radio and CD player with CD changer connector C-117 in order to check the battery circuit of power supply system to the radio and CD player or radio and CD player with CD changer (ignition switch ACC).

- (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.

- (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.

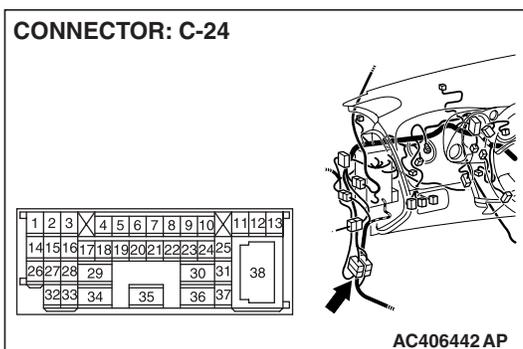
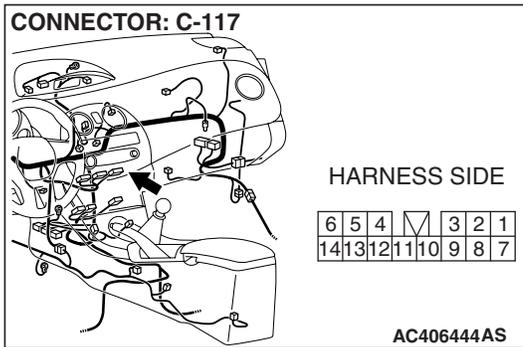


STEP 6. Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#). If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

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 : There is no action to be taken.

NO : Repair the wiring harness. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

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.

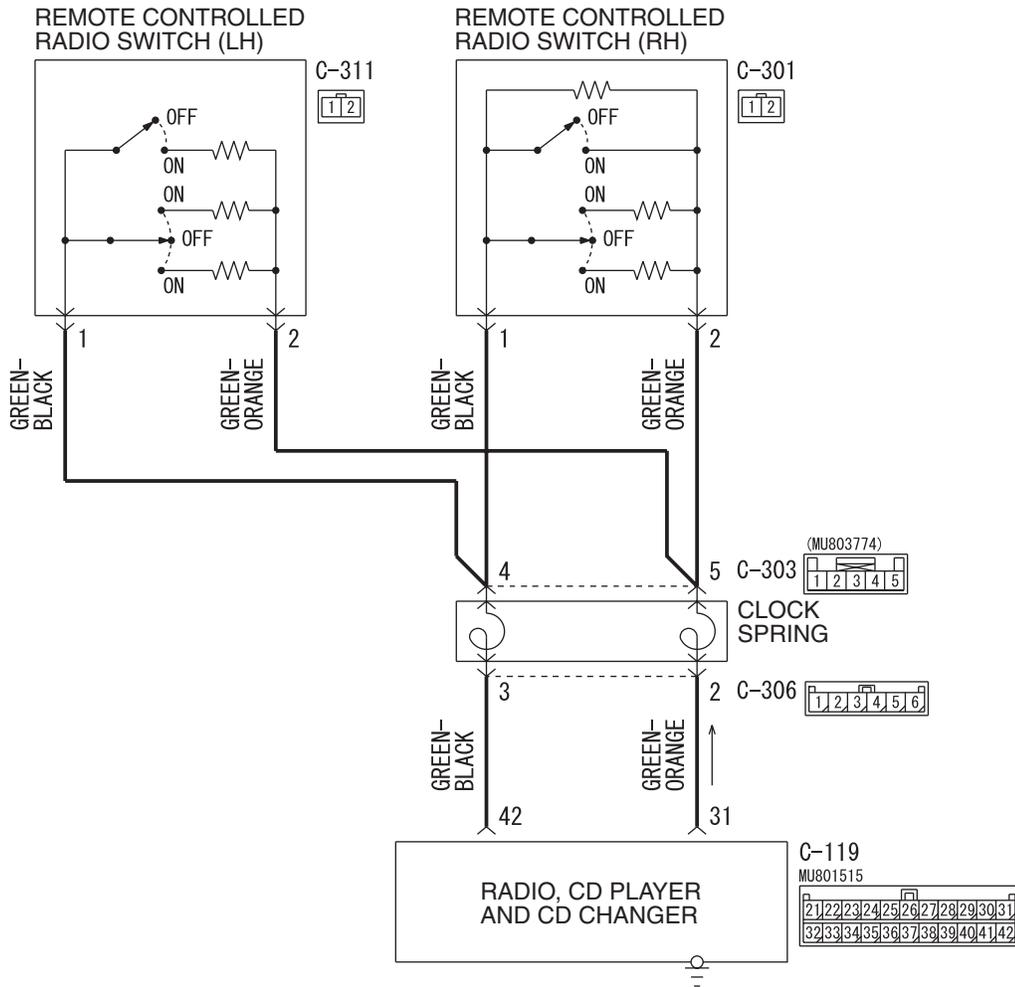
Q: Are the radio and CD player or radio and CD player with CD changer installed correctly?

YES : Replace the radio and CD player or radio and CD player with CD changer. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

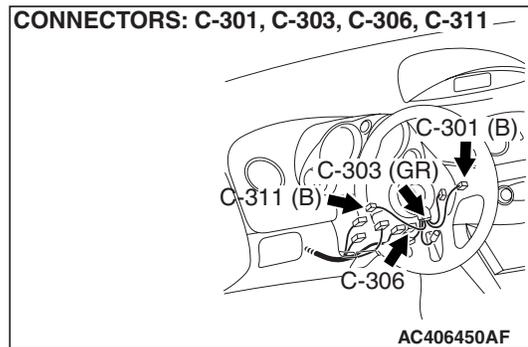
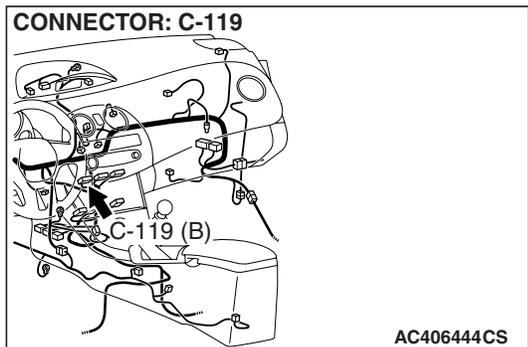
NO : Install the radio and CD player or radio and CD player with CD changer properly. If the power switch is turned on, the radio and CD player or radio and CD player with CD changer should operate normally.

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

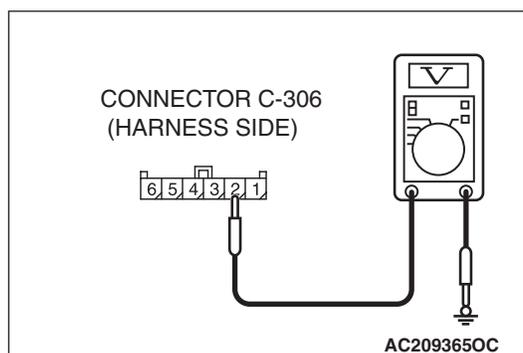
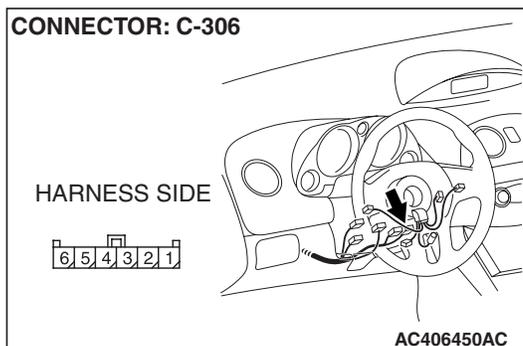
- Malfunction of the remote controlled radio switch (RH)
- Malfunction of the radio and CD player with CD changer
- Malfunction of the clock spring
- Damaged wiring harness or connectors

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.



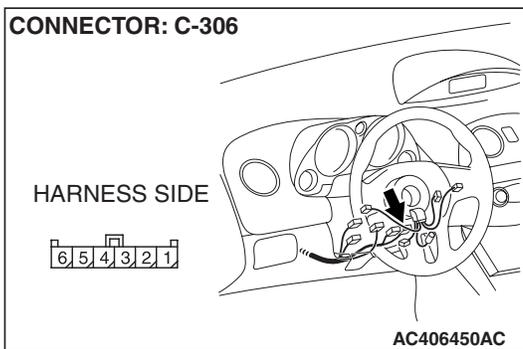
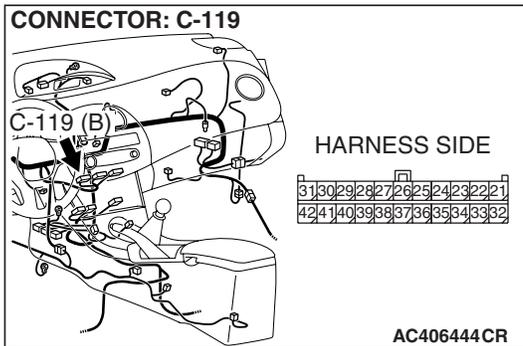
- (3) Measure the voltage between clock spring connector C-306 (radio and CD player with CD changer side) terminal 2 and ground.

- 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.

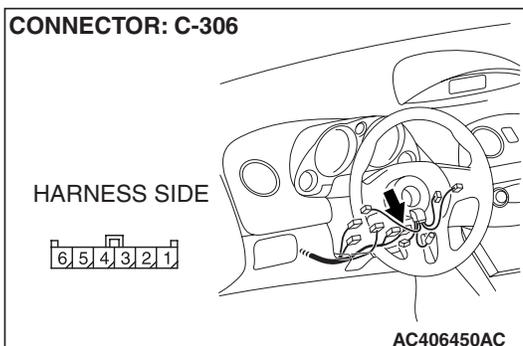
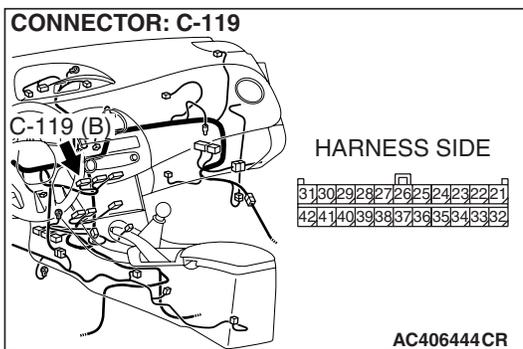


STEP 2. Check radio and CD player with CD changer connector C-119 and clock spring connector C-306 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

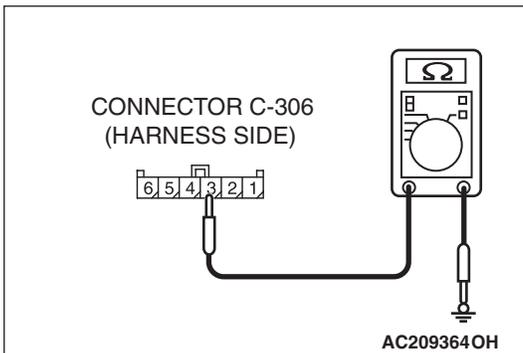
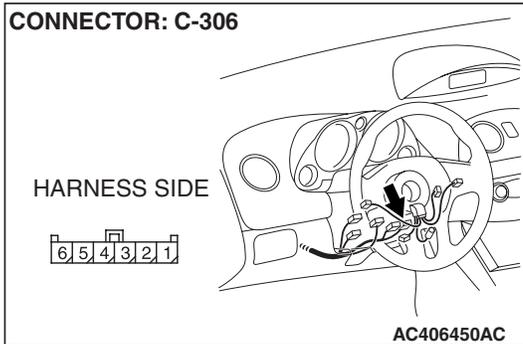


STEP 3. Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 31) and clock spring connector C-306 (terminal 2).

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.



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.

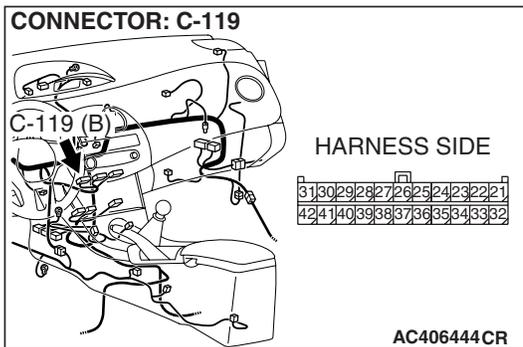
(2) Measure resistance between terminal 3 and ground.

- 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.

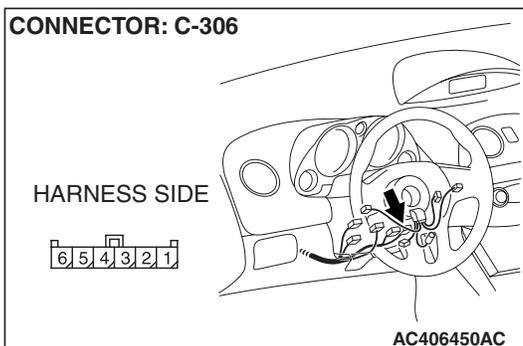


STEP 5. Check radio and CD player with CD changer connector C-119 and clock spring connector C-306 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

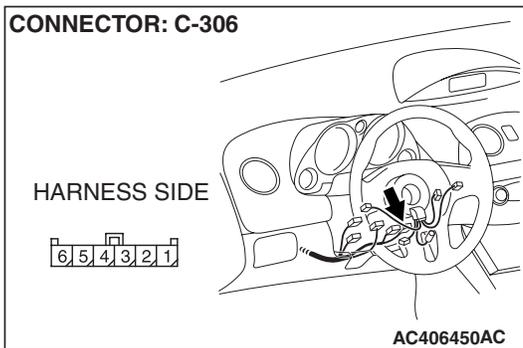
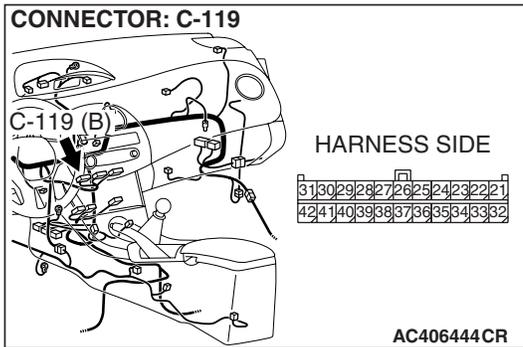


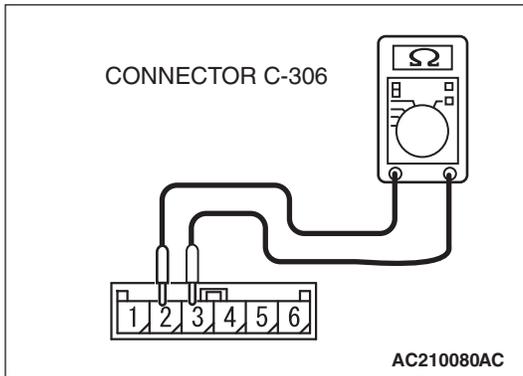
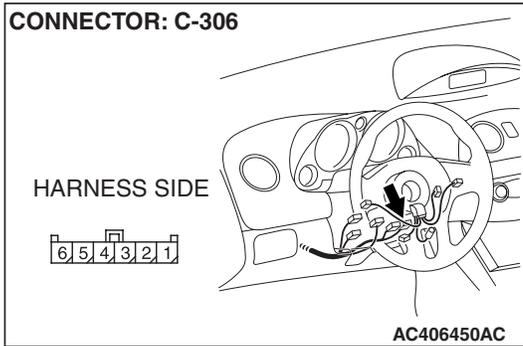
STEP 6. Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 42) and clock spring connector C-306 (terminal 3).

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.





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 kΩ
Upper	Approximately 5.3 kΩ
Center	Less than 2 ohms
Lower	Approximately 9.2 kΩ

NOTE: When checking the right remote controlled radio switch, do not operate the left remote controlled radio switch.

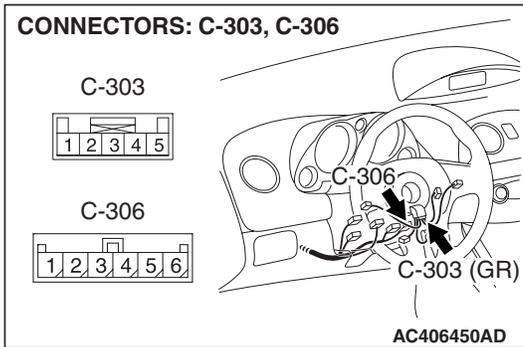
Q: Is the resistance between terminals 2 and 3 normal?

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](#).

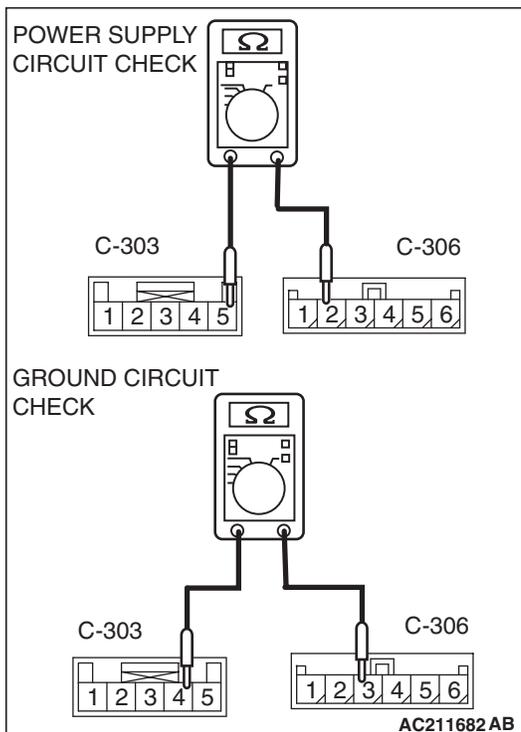
NO : Go to Step 8.

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-408).



- (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)	Less than 2 ohms
Ground circuit	C-303 (terminal 4) – C-306 (terminal 3)	less than 2 ohms

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 9.

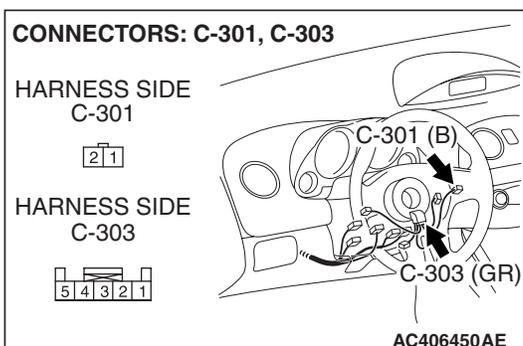
NO : Replace the clock spring.

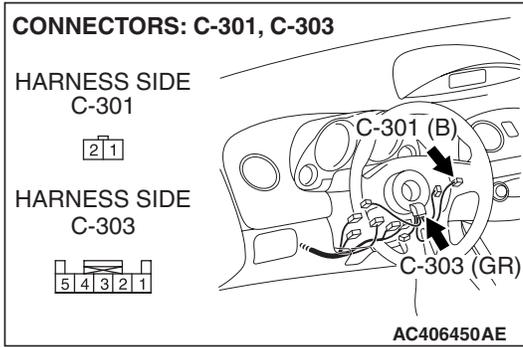
STEP 9. Check the clock spring connector C-303 and remote controlled radio switch (RH) connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



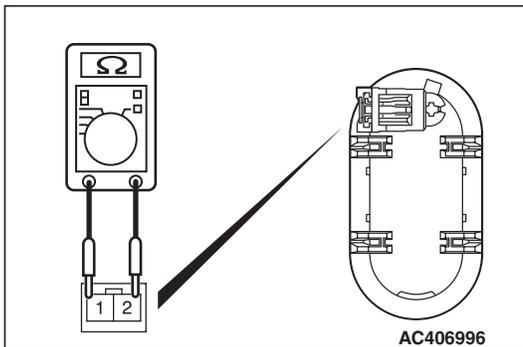


STEP 10. Check the wiring harness between clock spring connector C-303 (terminals 4 and 5) and remote controlled radio switch (RH) connector C-301 (terminals 1 and 2).

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-408).
- (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	Less than 2 ohms
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-163](#).

TECHNICAL DESCRIPTION (COMMENT)

Refer to Inspection Procedure 2 [P.54A-163](#).

TROUBLESHOOTING HINTS

Refer to Inspection Procedure 2 [P.54A-163](#).

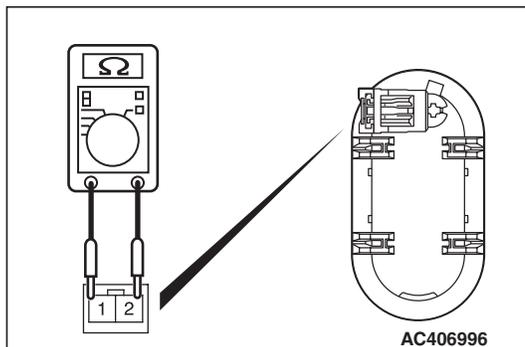
DIAGNOSIS

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-408](#)).
- (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	Less than 2 ohms
Lower	Approximately 9.2 kΩ

Q: Are the resistance at the right remote controlled radio switch normal?

YES : Go to Step 2.

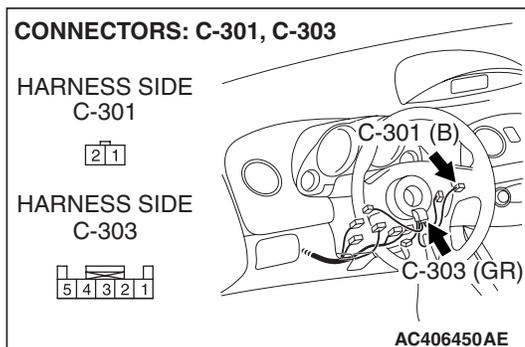
NO : Replace the remote controlled radio switch (RH).

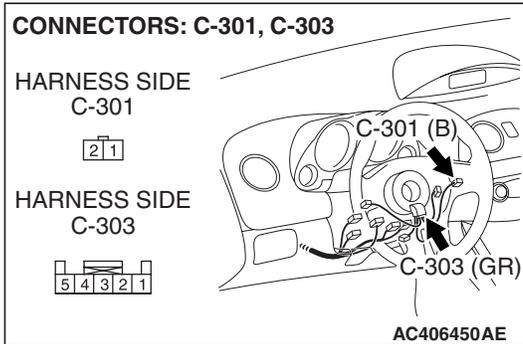
STEP 2. Check the remote controlled radio switch (RH) connector C-301 and clock spring connector C-303 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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-163](#).

TECHNICAL DESCRIPTION (COMMENT)

Refer to Inspection Procedure 2 [P.54A-163](#).

TROUBLESHOOTING HINTS

Refer to Inspection Procedure 2 [P.54A-163](#).

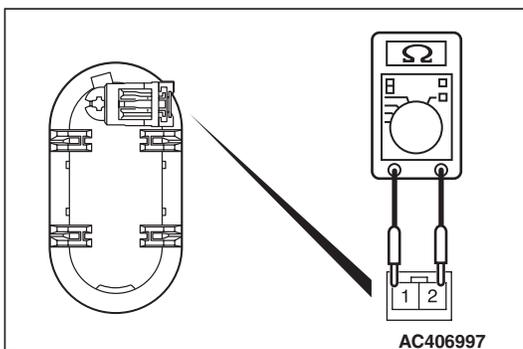
DIAGNOSIS

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-408](#)).
- (2) Measure the resistance by operating the remote controlled radio switch (LH) in each position.

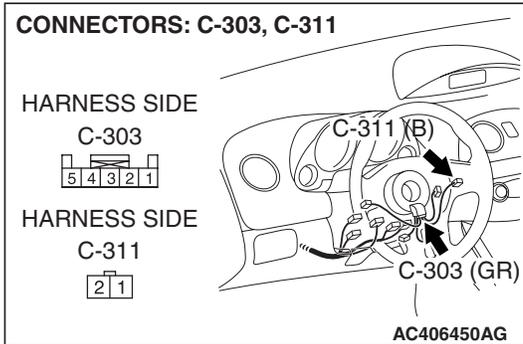


SWITCH POSITION	MEASUREMENT VALUE
Not pushed	Approximately 24 kΩ
Upper	Approximately 1.1 kΩ
Center	Approximately 460 Ω
Lower	Approximately 2.9 kΩ

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).

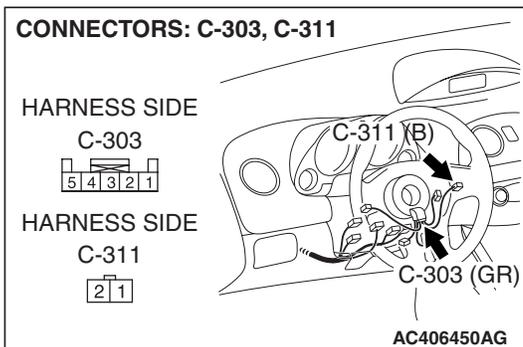


STEP 2. Check the radio switch (LH) connector C-311 and clock spring connector C-303 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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).

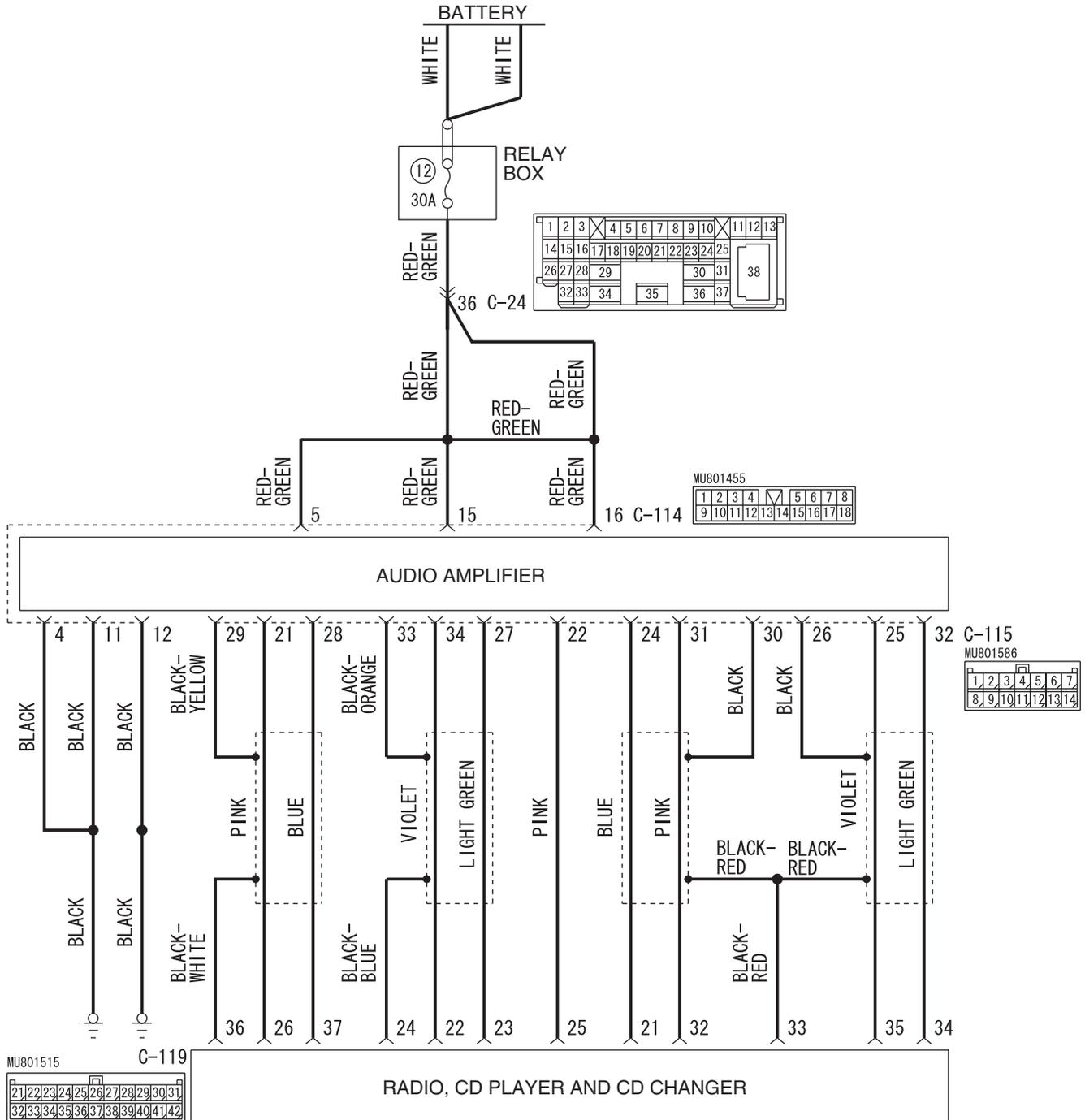
Q: Are the wiring harness between remote controlled radio switch connector C-311 (terminals 1 and 2) and clock spring connector C-303 (terminals 4 and 5) in good condition?

YES : No action to be taken.

NO : Repair the wiring harness. The remote controlled radio switch (LH) should work normally.

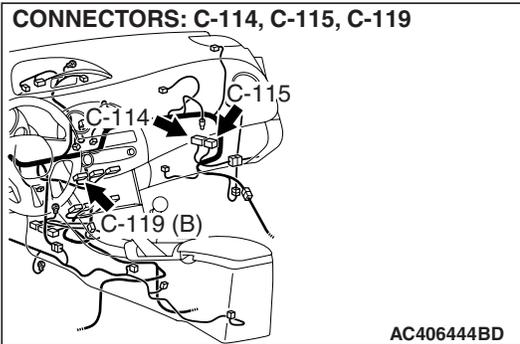
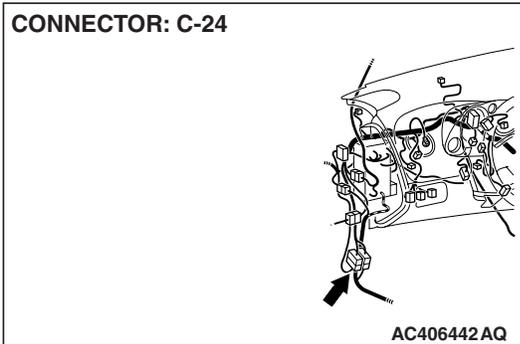
INSPECTION PROCEDURE 5: No Sound. <Vehicles with audio amplifier>

Audio Amplifier Power Supply Circuit



W6P54M038A

CONNECTOR: C-24



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

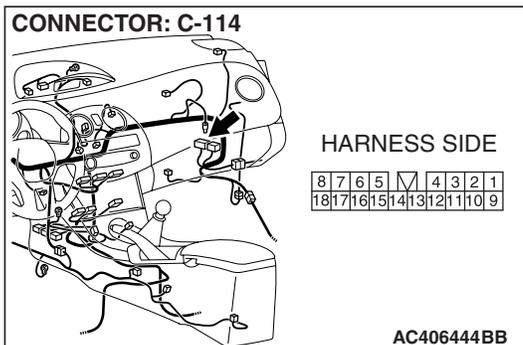
STEP 1. Check audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

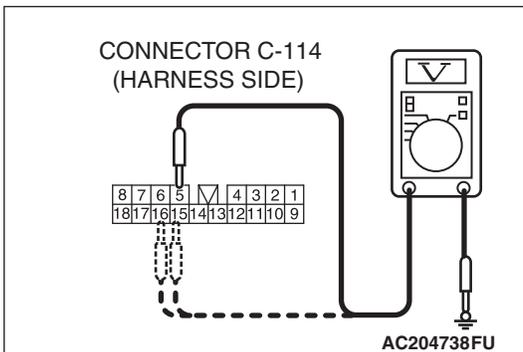
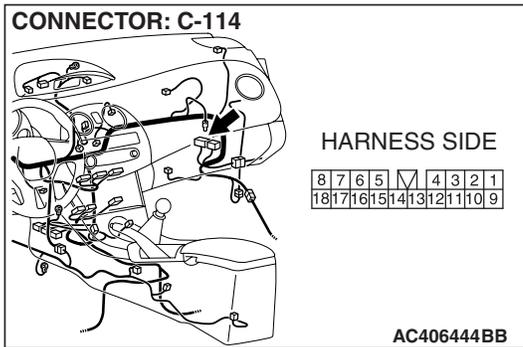
Q: Is audio amplifier connector C-114 in good condition?

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.

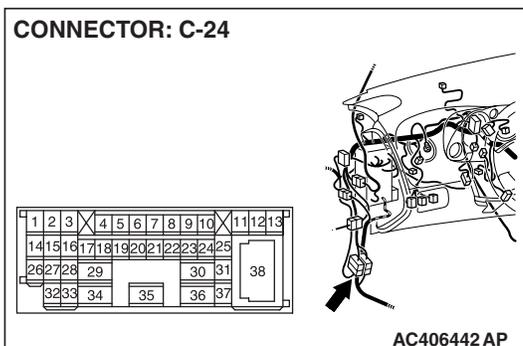
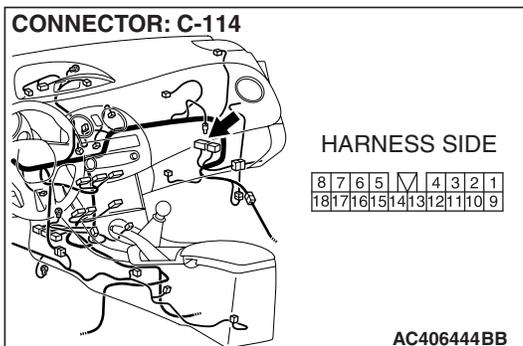
- (2) Measure the voltage between terminal 5 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).
- (3) Measure the voltage between terminal 15 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).
- (4) Measure the voltage 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.

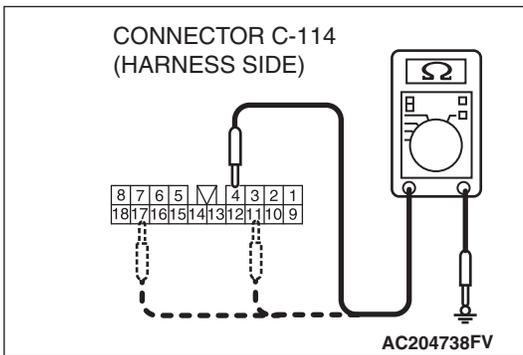
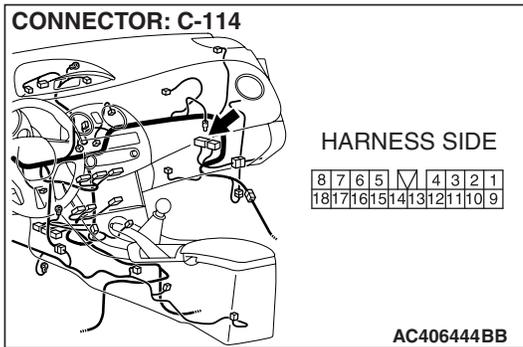


NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.

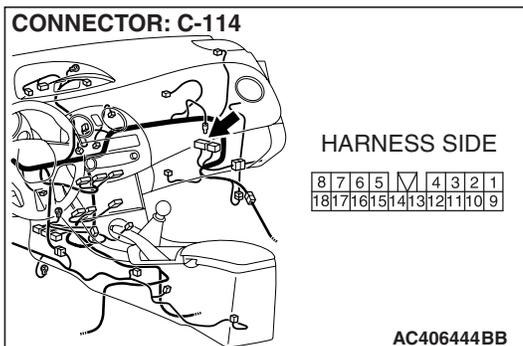
(1) Disconnect audio amplifier connector C-114, and measure at the wiring harness side.

- (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 17 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.

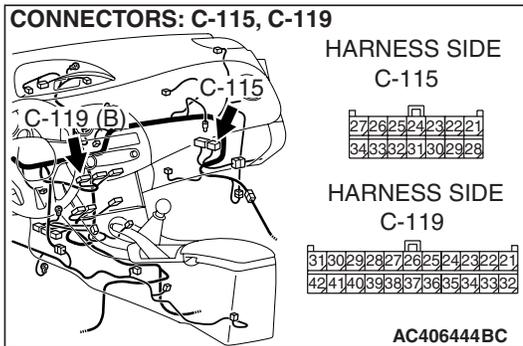


STEP 5. Check the wiring harness between audio amplifier connector C-114 (terminal 4, 11 and 17) and ground.

Q: Is the wiring harness between audio amplifier connector C-114 (terminal 4, 11 and 17) and ground in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. The speakers should sound.

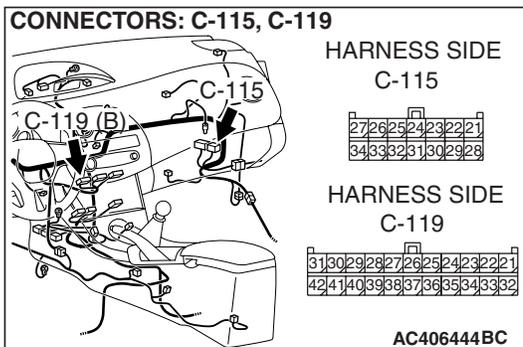


STEP 6. Check radio and CD player with CD changer connector C-119 and audio amplifier connector C-115 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 CD player and CD changer connector C-119 (terminals 21, 22, 23, 24, 25, 26, 32, 33, 34, 35, 36 and 37) and audio amplifier connector C-115 (terminals 24, 34, 27, 33, 22, 21, 31, 26, 30, 32, 25, 29, and 28).

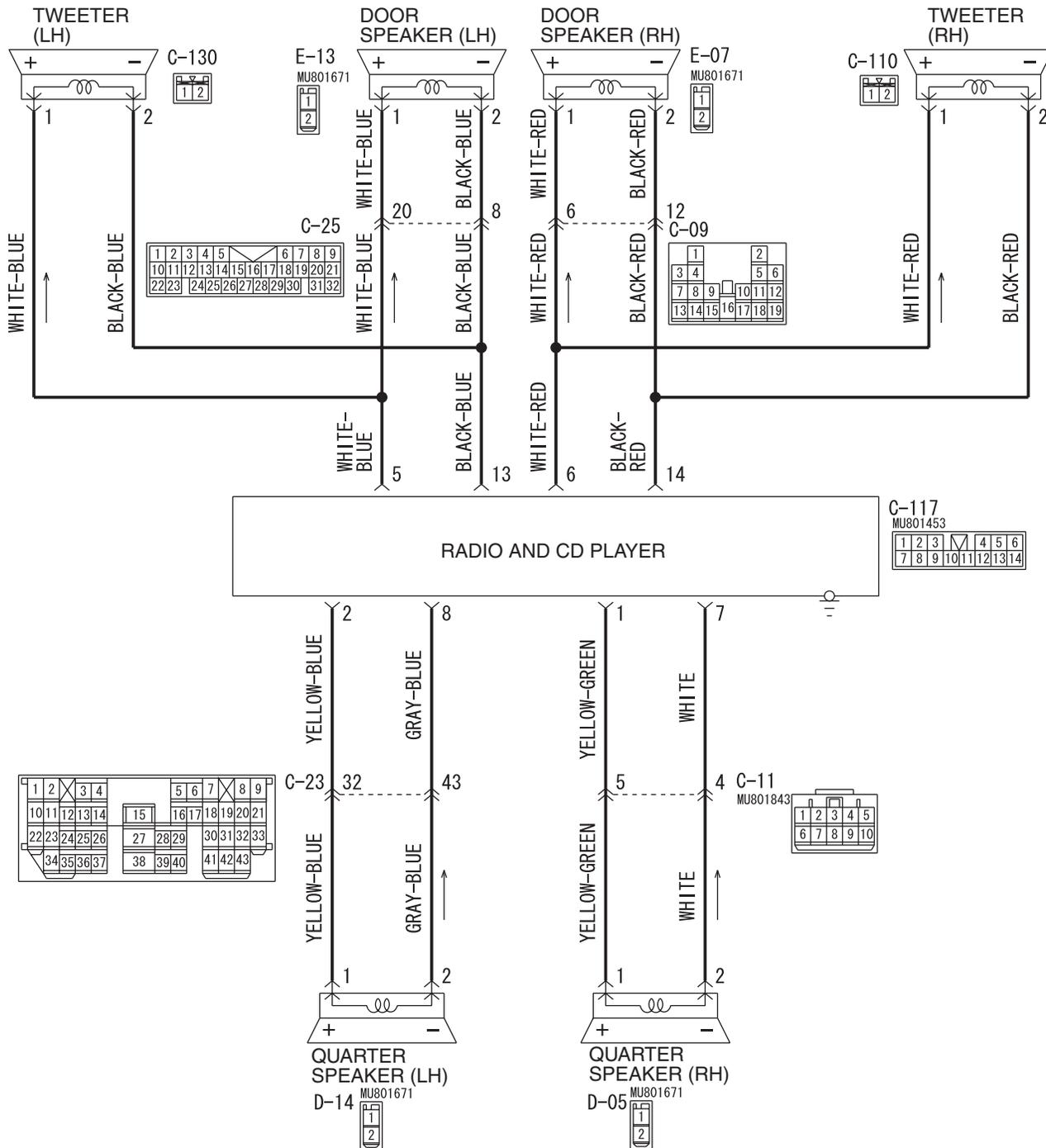
Q: Do the speakers sound normally?

YES : The procedure is complete.

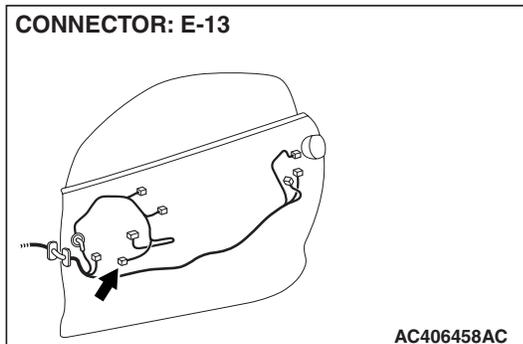
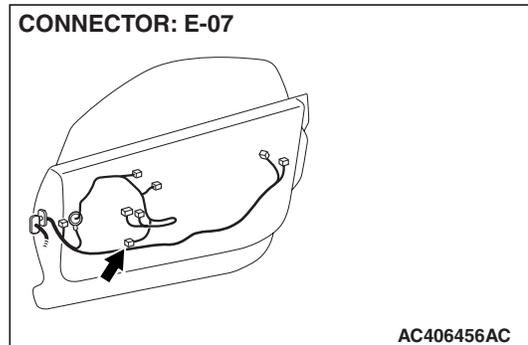
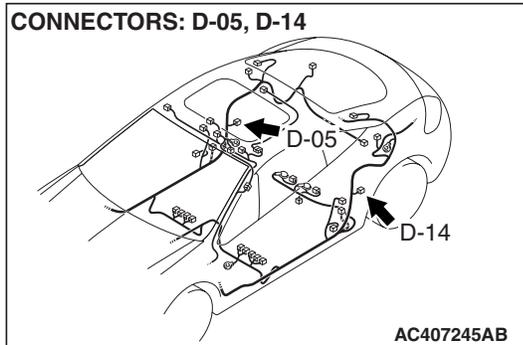
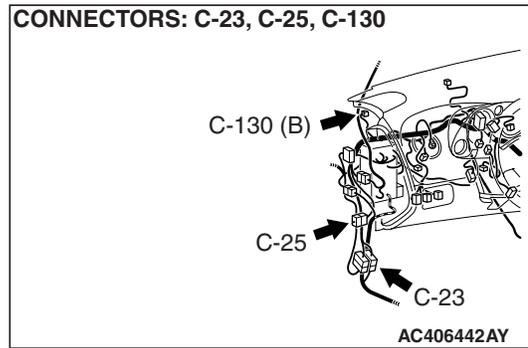
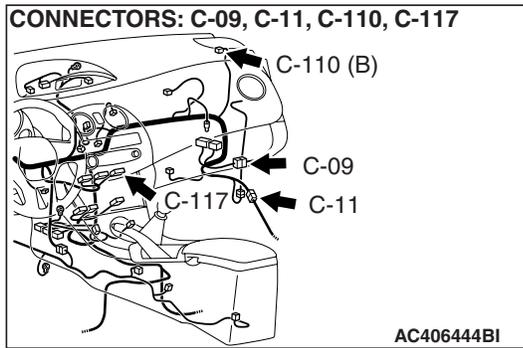
NO : Replace the audio amplifier.

INSPECTION PROCEDURE 6: No sound from one speaker. <Vehicles without audio amplifier>

Speaker System Circuit



W6P54M039A



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 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).

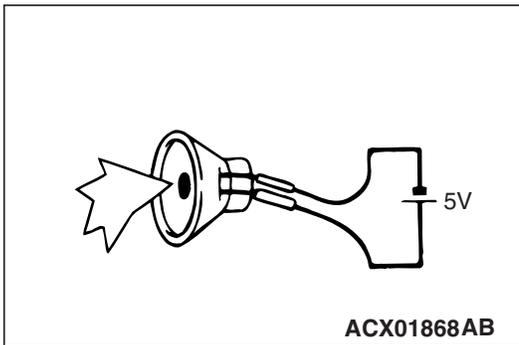
(1) Remove the tweeter (LH). Refer to [P.54A-227](#).

(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.

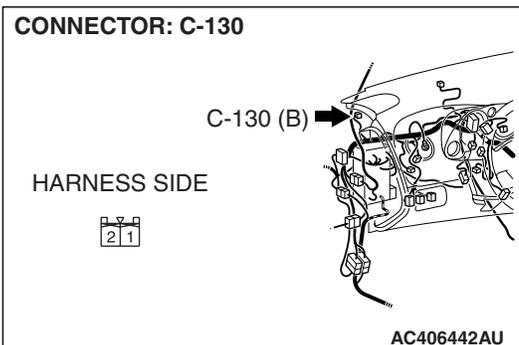
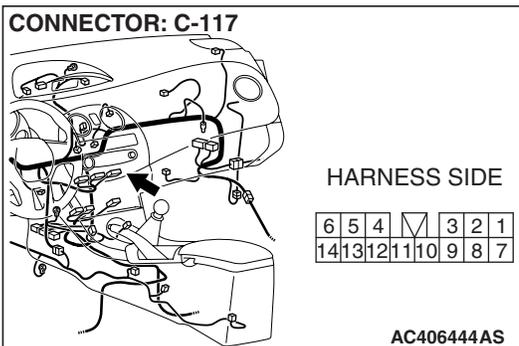


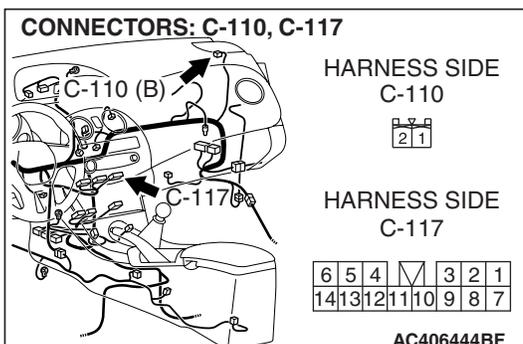
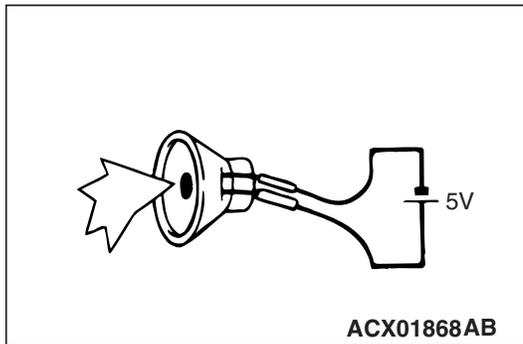
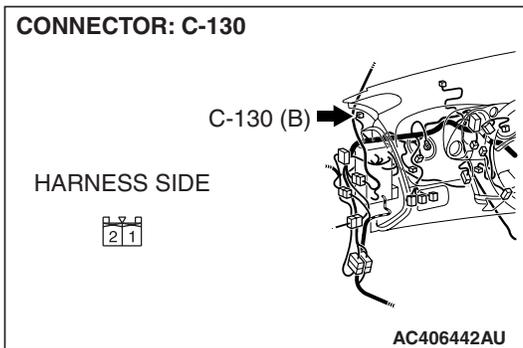
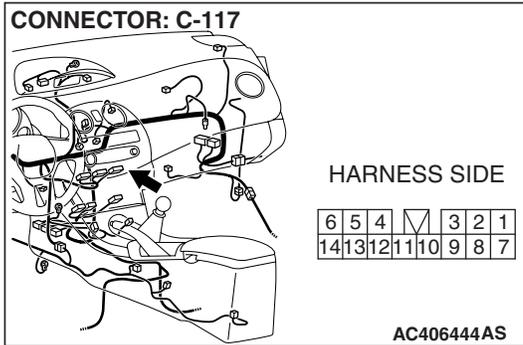
STEP 3. Check tweeter (LH) connector C-130 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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-227](#).

(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.

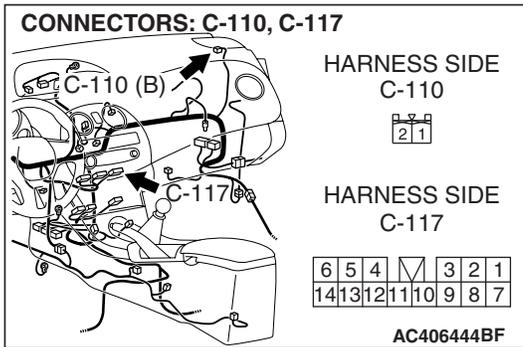
NO : Replace the tweeter (RH). The tweeter (RH) should sound.

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.

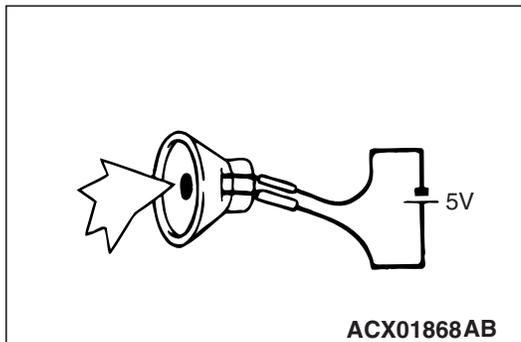


STEP 7. Check the wiring harness between tweeter (RH) connector C-110 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 6 and 14).

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-227](#).

(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.

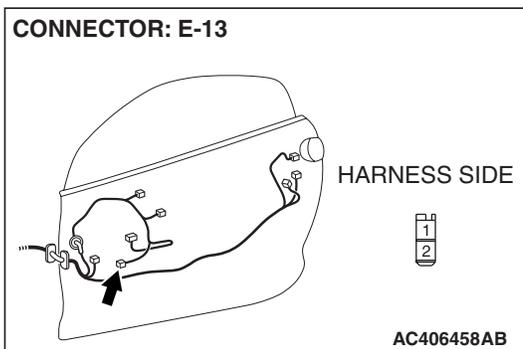
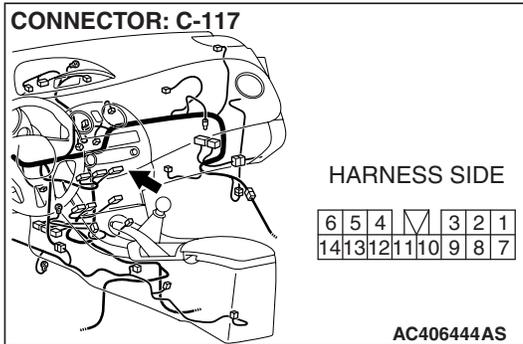
NO : Replace the door speaker (LH). The door speaker (LH) should sound.

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.

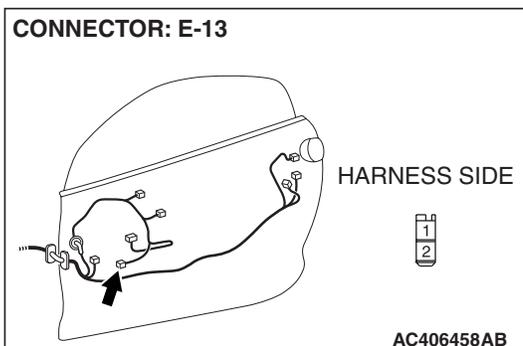
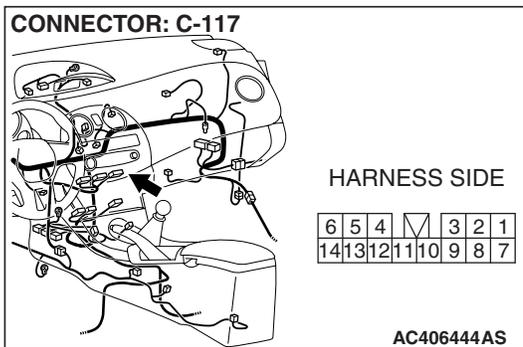
Q: Are harness connectors E-13 and C-117 in good condition?

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.

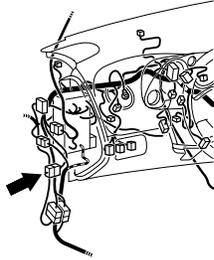


STEP 10. Check the wiring harness between door speaker (LH) connector E-13 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 5 and 13).



CONNECTOR: C-25

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	



AC406442AV

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.

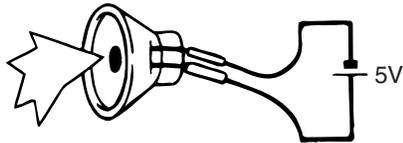
STEP 11. Check the door speaker (RH).

- (1) Remove the door speaker (RH). Refer to P.54A-227.
- (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.



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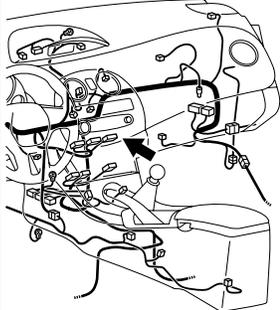
STEP 12. Check door speaker (RH) connector E-07 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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: C-117

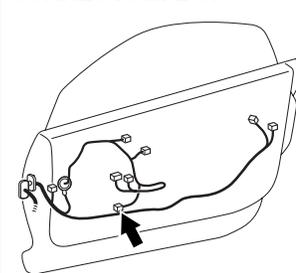


HARNESS SIDE

6	5	4	3	2	1		
14	13	12	11	10	9	8	7

AC406444AS

CONNECTOR: E-07

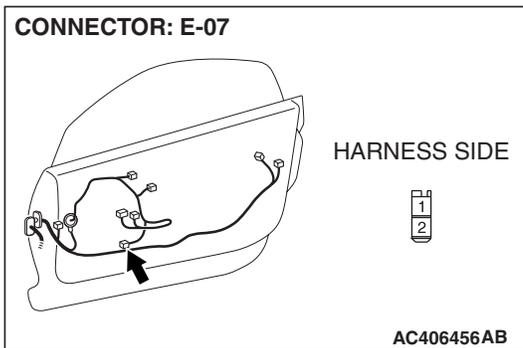
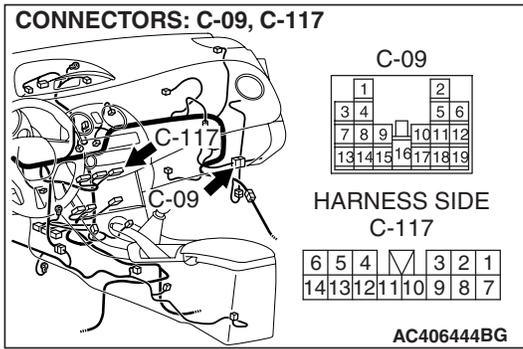


HARNESS SIDE

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).



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.

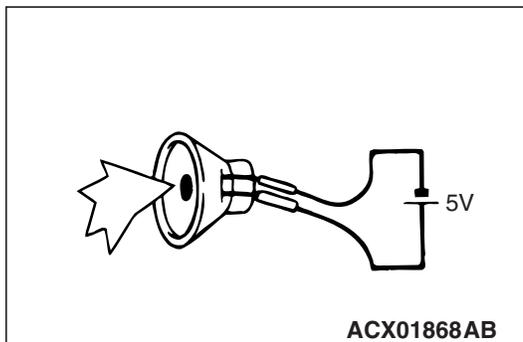
STEP 14. Check the quarter speaker (LH).

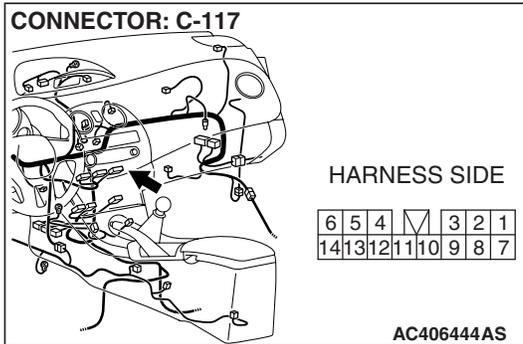
- (1) Remove the quarter speaker (LH). Refer to P.54A-227.
- (2) Check that the quarter speaker (LH) generates noise when a five-volt voltage is applied on the quarter speaker (LH) terminal.

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.



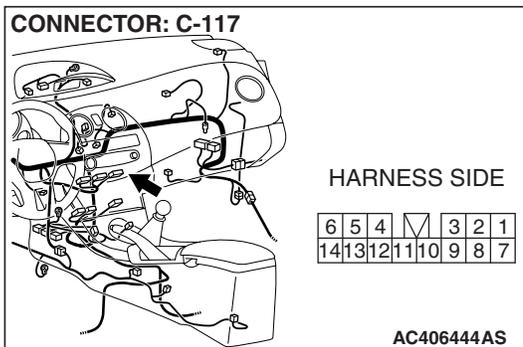
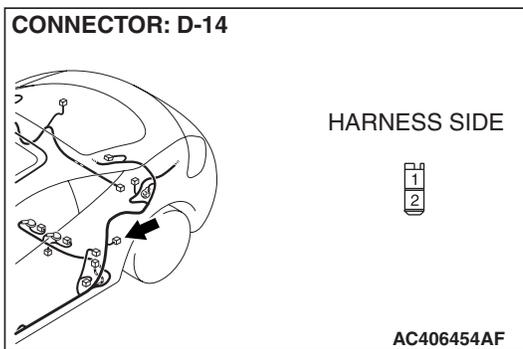


STEP 15. Check quarter speaker (LH) connector D-14 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

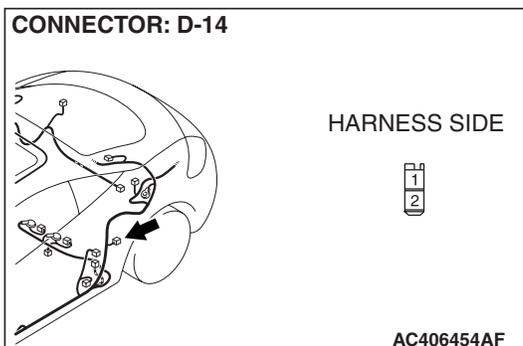
Q: Are harness connectors D-14 and C-117 in good condition?

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.

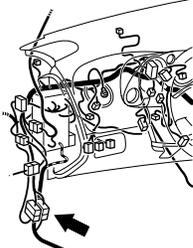


STEP 16. Check the wiring harness between quarter speaker (LH) connector D-14 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 2 and 8).



CONNECTOR: C-23

1	2	X	3	4	5	6	7	X	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	



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 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.

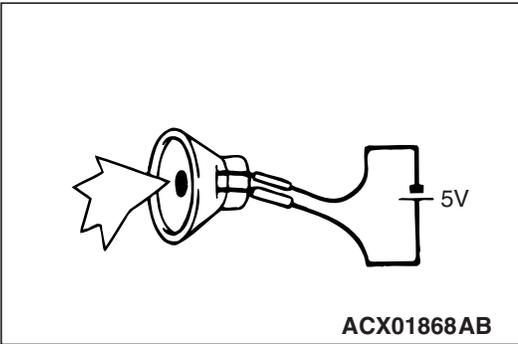
STEP 17. Check the quarter speaker (RH).

- (1) Remove the quarter speaker (RH). Refer to P.54A-227.
- (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.



ACX01868AB

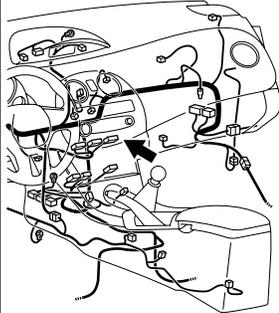
STEP 18. Check quarter speaker (RH) connector D-05 and radio and CD player connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

CONNECTOR: C-117



HARNESS SIDE

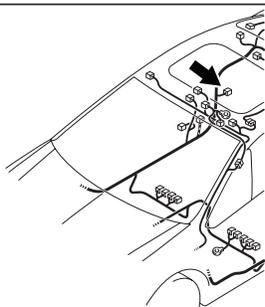
6	5	4	X	3	2	1	
14	13	12	11	10	9	8	7

AC406444AS

CONNECTOR: D-05

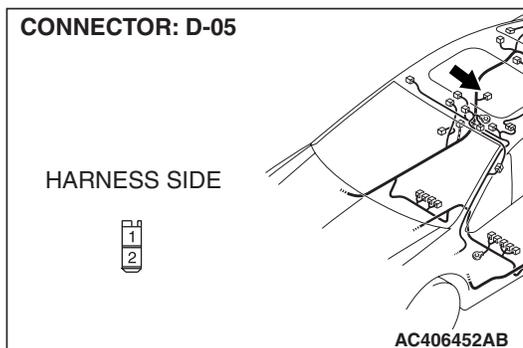
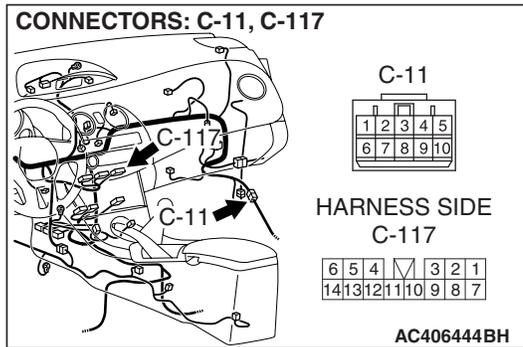
HARNESS SIDE

1
2



AC406452AB

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.

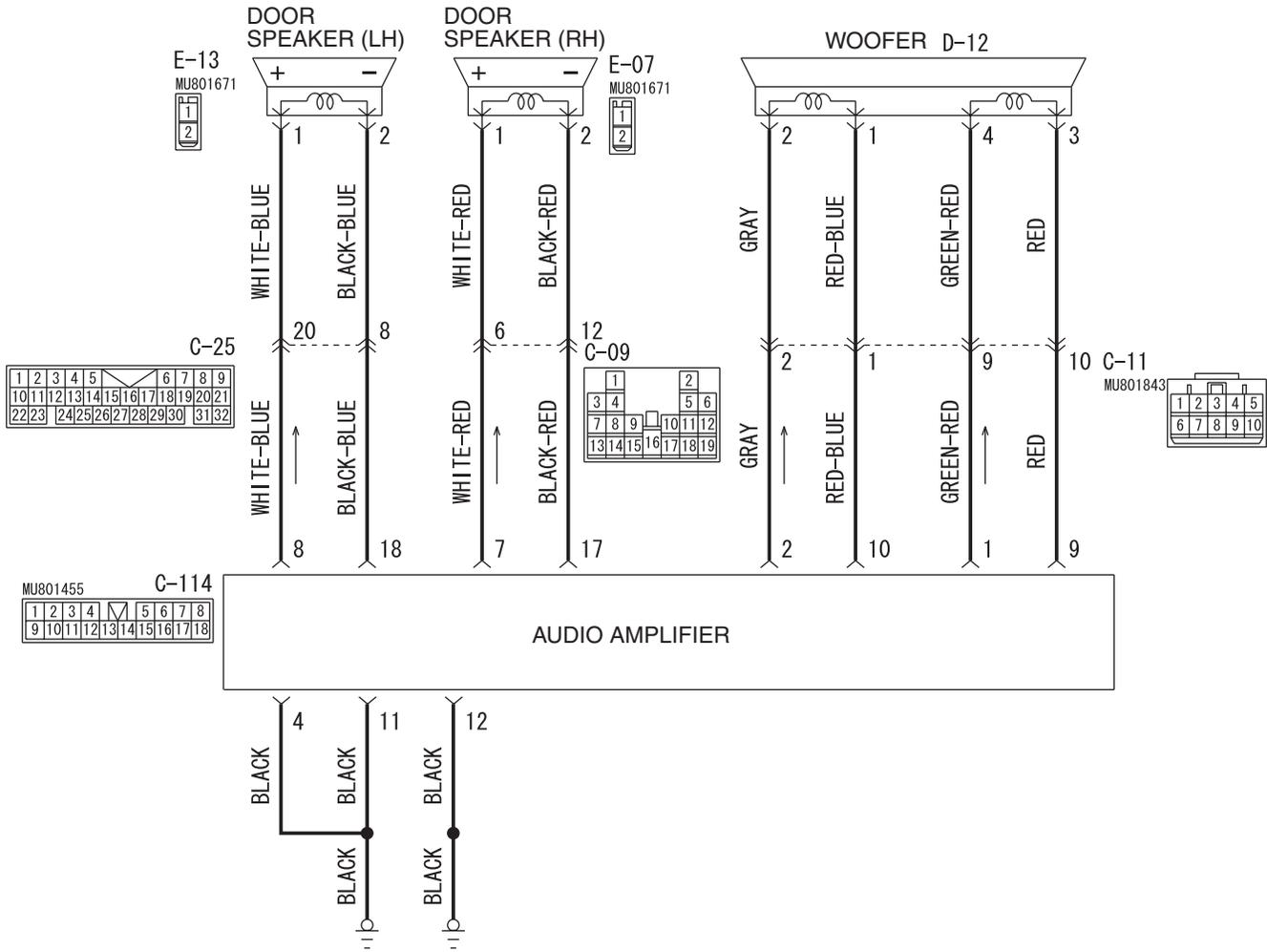
Q: Is the wiring harness between rear speaker (RH) connector D-05 (terminals 1 and 2) and radio and CD player connector C-117 (terminals 1 and 7) in good condition?

YES : Replace the radio and CD player. The quarter speaker (RH) should sound.

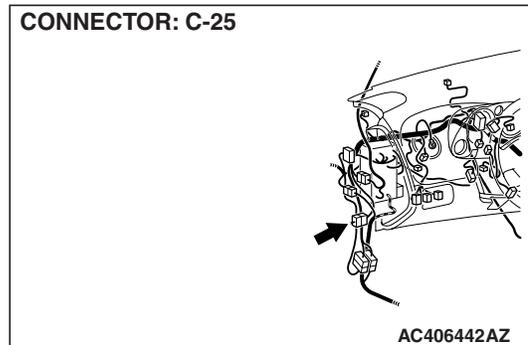
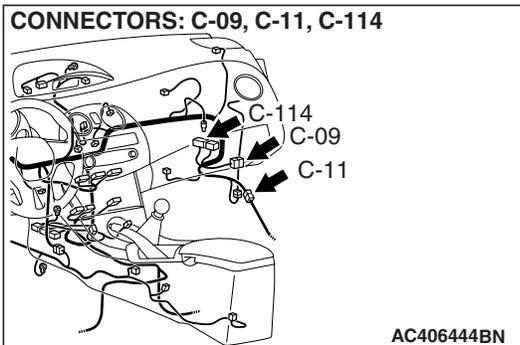
NO : Repair the wiring harness. The quarter speaker (RH) should sound.

INSPECTION PROCEDURE 7: No sound from door speaker or woofer. <Vehicles with audio amplifier>

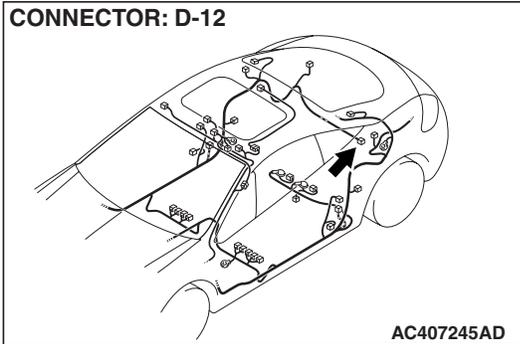
Speaker System Circuit (Door Speaker and Woofer)



W6P54M041A

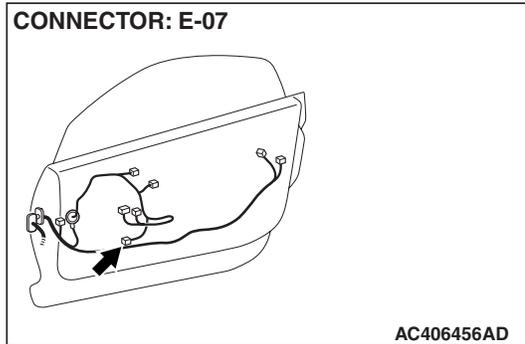


CONNECTOR: D-12



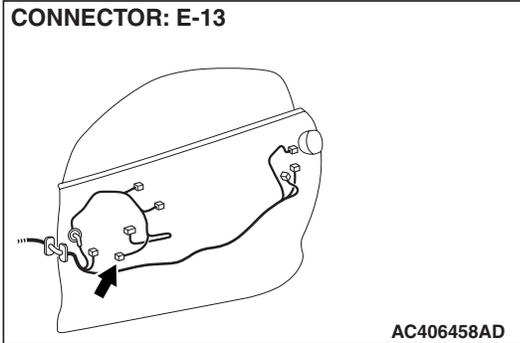
AC407245AD

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.

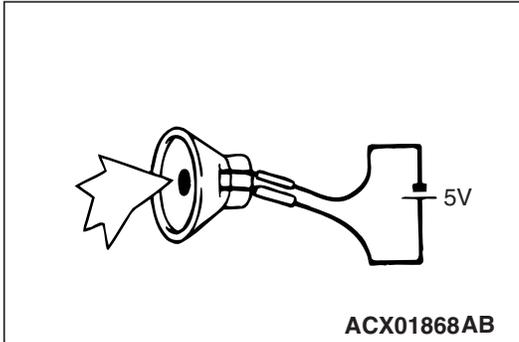
Determine which speaker does not sound.

Q: Which speaker does not sound?

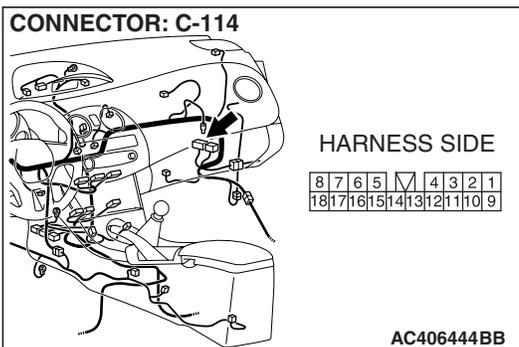
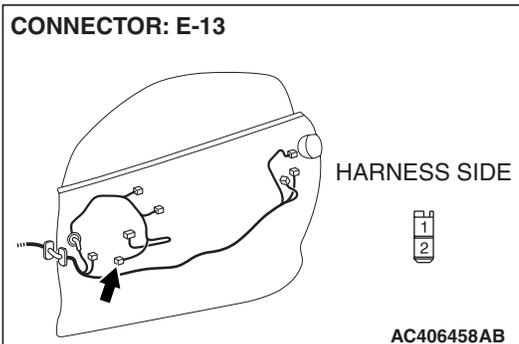
Door speaker (LH) : Go to Step 2.

Door speaker (RH) : Go to Step 5.

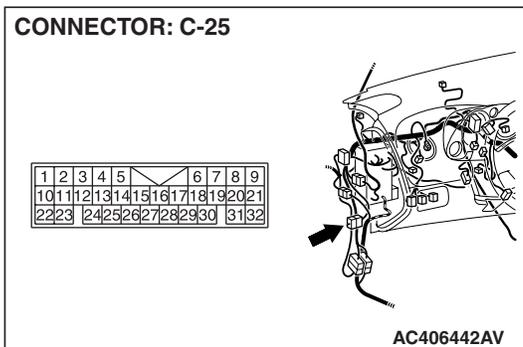
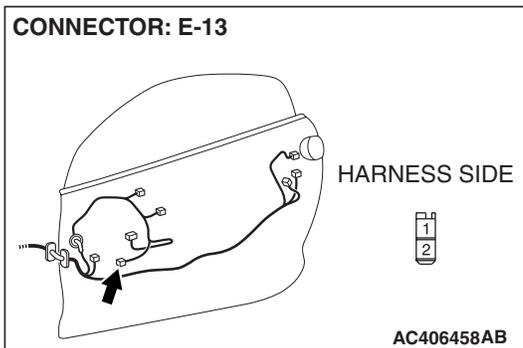
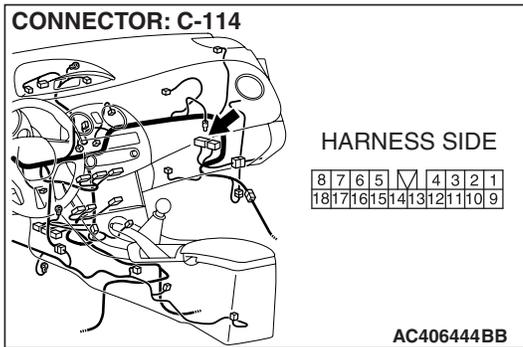
Woofer : Go to Step 8.

**STEP 2. Check the door speaker (LH).**

- (1) Remove the door speaker (LH). Refer to [P.54A-227](#).
- (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.

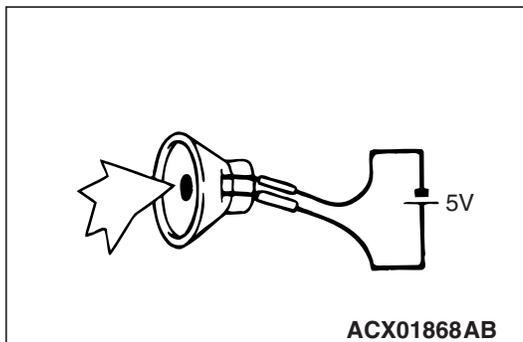
STEP 5. Check the door speaker (RH).

- (1) Remove the door speaker (RH). Refer to P.54A-227.
- (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.

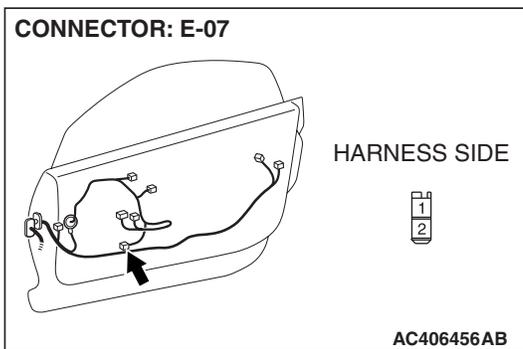
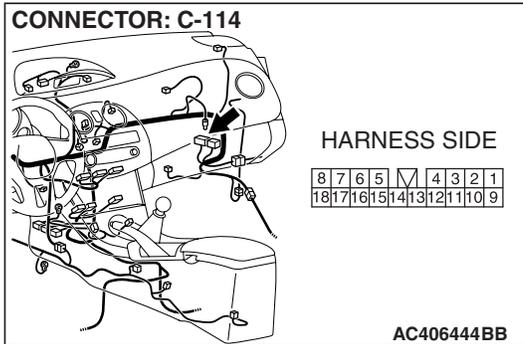


STEP 6. Check door speaker (RH) connector E-07 and audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

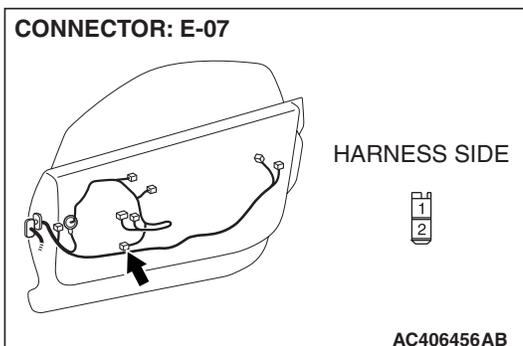
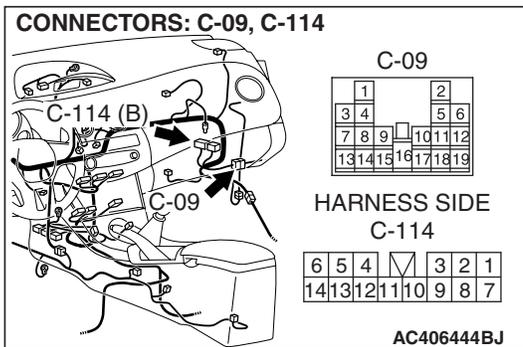
Q: Are harness connectors E-07 and C-114 in good condition?

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?

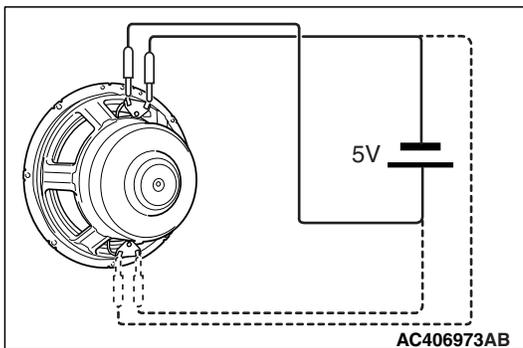
- YES :** Replace the audio amplifier. The door speaker (RH) should sound.
NO : Repair the wiring harness. The door speaker (RH) should sound.

STEP 8. Check the woofer.

- (1) Remove the woofer. Refer to P.54A-227.
- (2) Check that the woofer generates noise when a five-volt voltage is applied on the woofer terminal.

Q: Is the woofer generating noise?

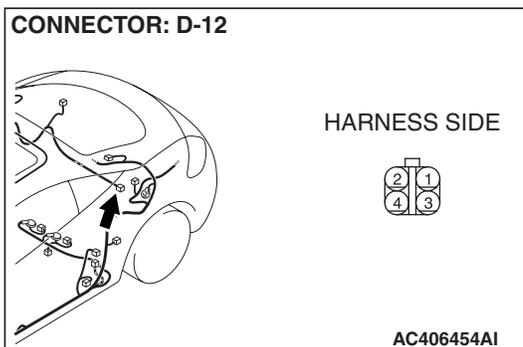
- YES :** Go to Step 9.
NO : Replace the woofer. The woofer should sound.



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?

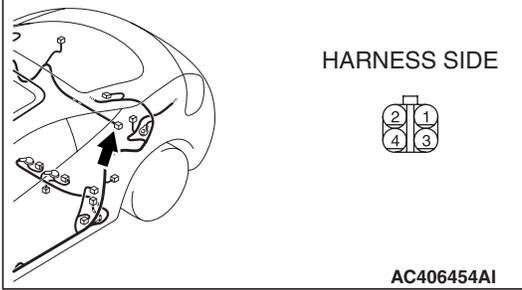
- YES :** Go to Step 10.
NO : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The woofer should sound.



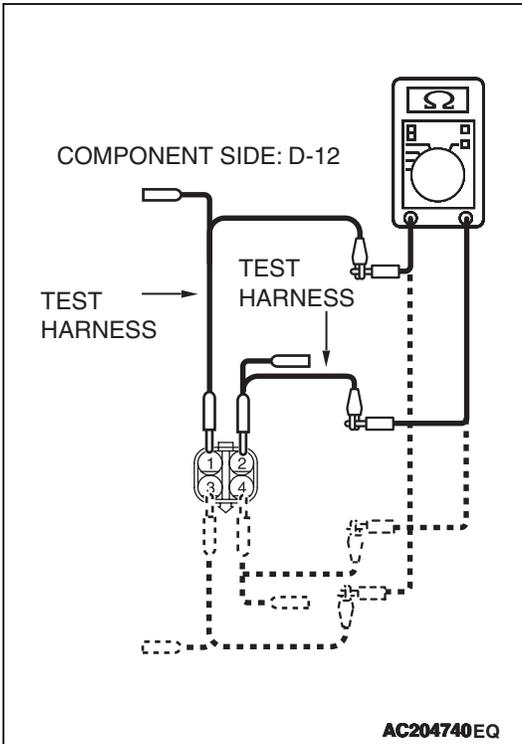
STEP 10. Check the sub harness between the woofer and the woofer connector. Measure the resistance at woofer connector D-12.

NOTE: Check the sub harness with the woofer connected to the sub harness.

CONNECTOR: D-12



(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.

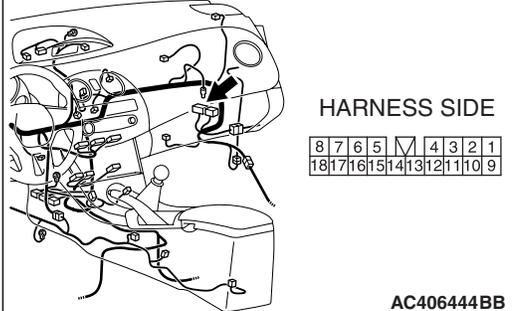
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 11.

NO : Repair the sub harness. The woofer should sound.

CONNECTOR: C-114



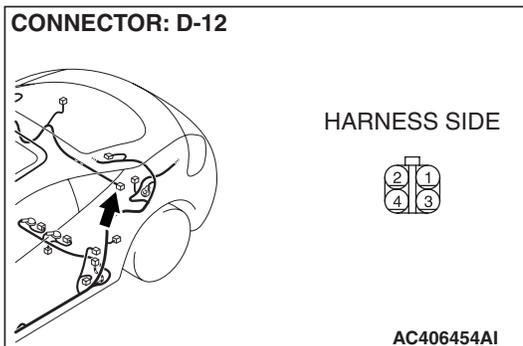
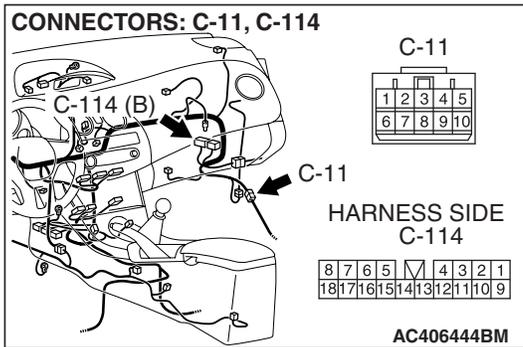
STEP 11. Check audio amplifier connector C-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#).

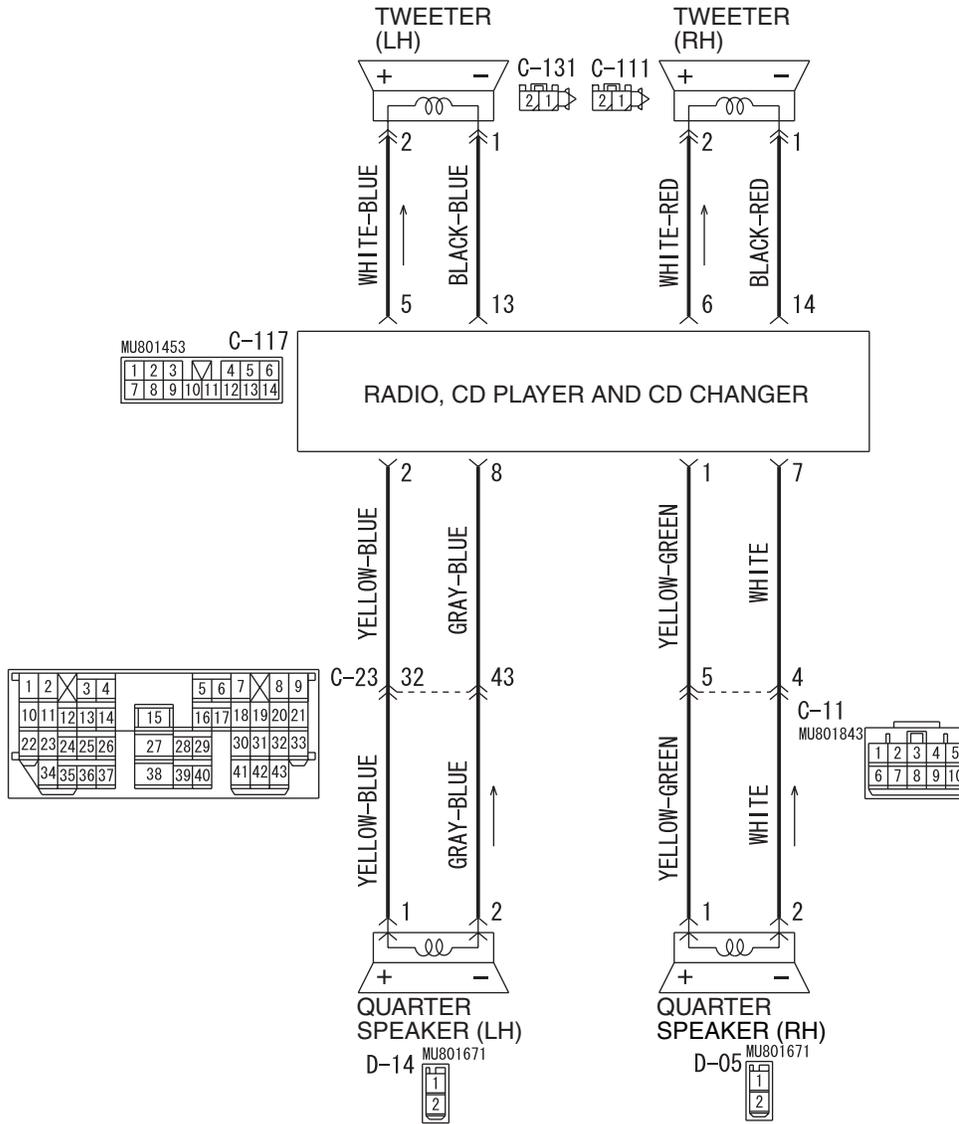
Q: Is the wiring harness between woofer connector D-12 (terminals 1, 2, 3 and 4) and audio amplifier connector C-114 (terminals 10, 2, 9 and 1) in good condition?

YES : Replace the audio amplifier. The woofer should sound.

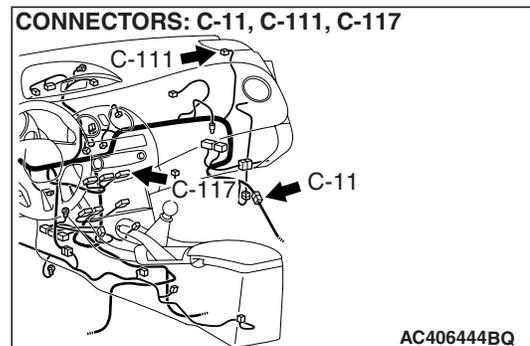
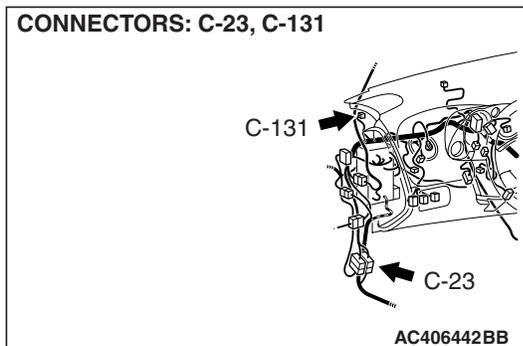
NO : Repair the wiring harness. The woofer should sound.

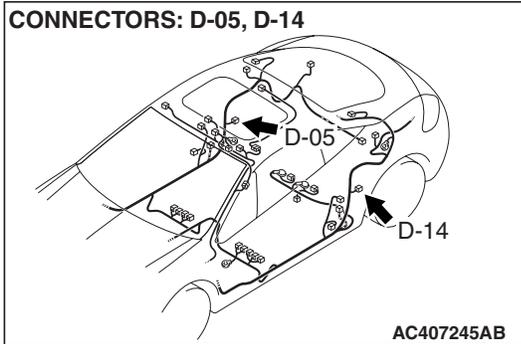
INSPECTION PROCEDURE 8: No sound from tweeter or quarter speaker. <Vehicles with audio amplifier>

Speaker System Circuit (Tweeter and Quarter Speaker)



W6P54M040A





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).

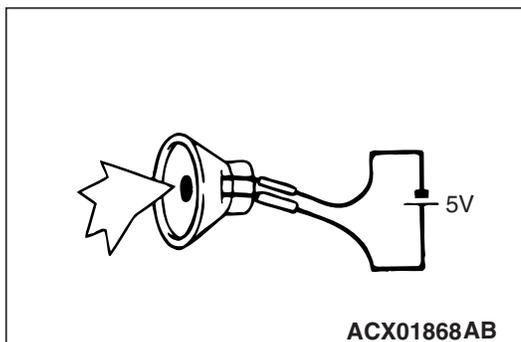
(1) Remove the tweeter (LH). Refer to [P.54A-227](#).

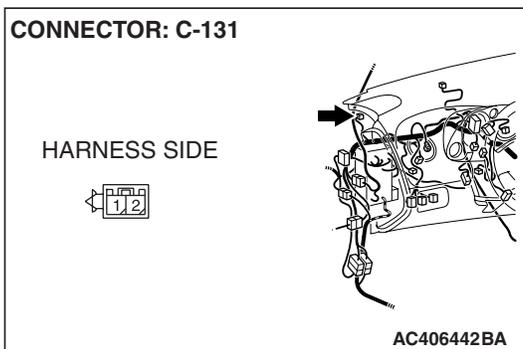
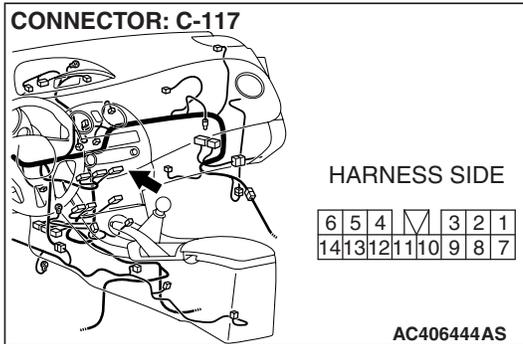
(2) Check that the tweeter (LH) generates noise when a five-volt voltage is applied on the tweeter (LH) terminal.

Q: Is the tweeter (LH) generating noise?

YES : Go to Step 3.

NO : Replace the tweeter (LH). The tweeter (LH) should sound.



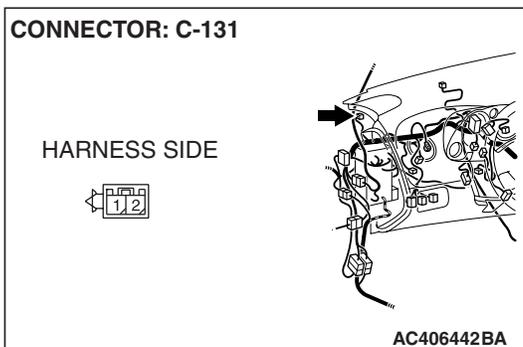
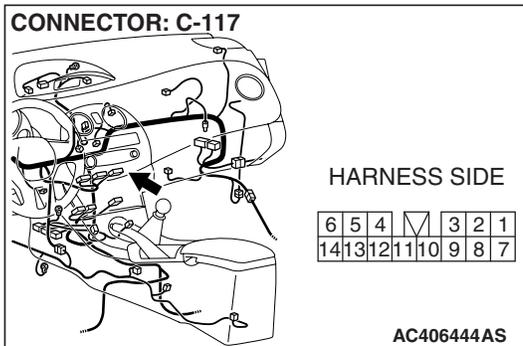


STEP 3. Check tweeter (LH) connector C-131 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

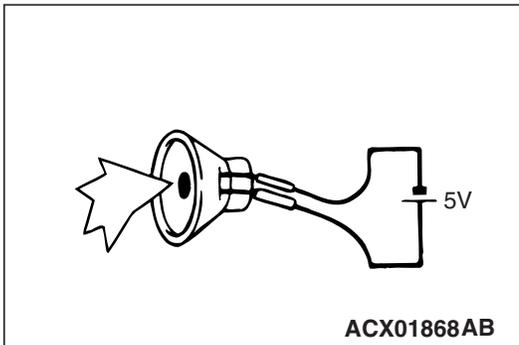


STEP 4. Check the wiring harness between tweeter (LH) connector C-131 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 13 and 5).

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.



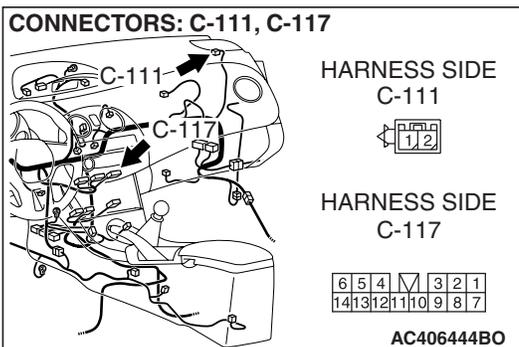
STEP 5. Check the tweeter (RH).

- (1) Remove the tweeter (RH). Refer to [P.54A-227](#).
- (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.

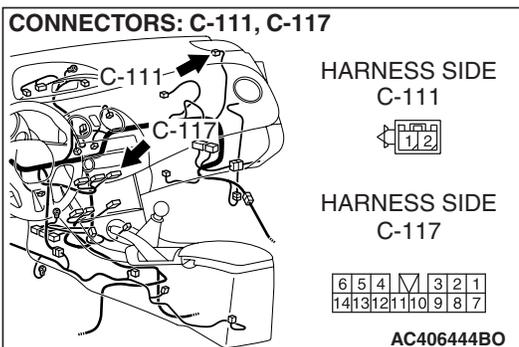


STEP 6. Check tweeter (RH) connector C-111 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

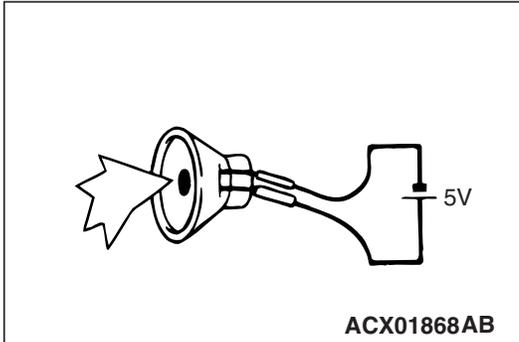


STEP 7. Check the wiring harness between tweeter (RH) connector C-111 (terminals 1 and 2) and radio and CD player with CD changer connector C-117 (terminals 14 and 6).

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.



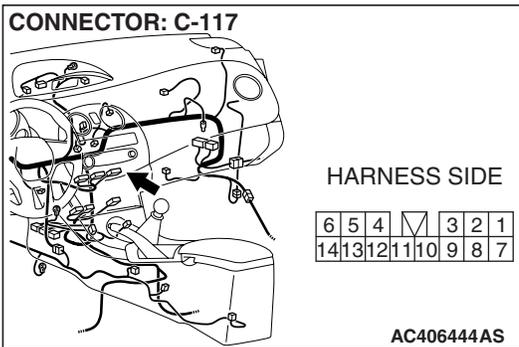
STEP 8. Check the quarter speaker (LH).

- (1) Remove the quarter speaker (LH). Refer to [P.54A-227](#).
- (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.

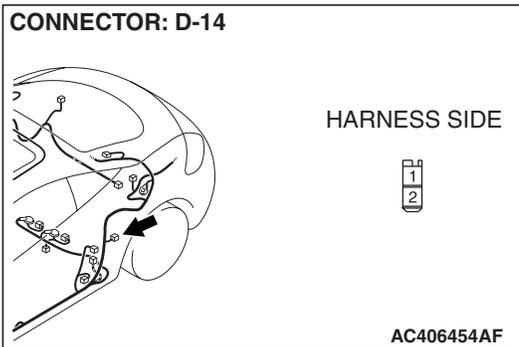


STEP 9. Check quarter speaker (LH) connector D-14 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

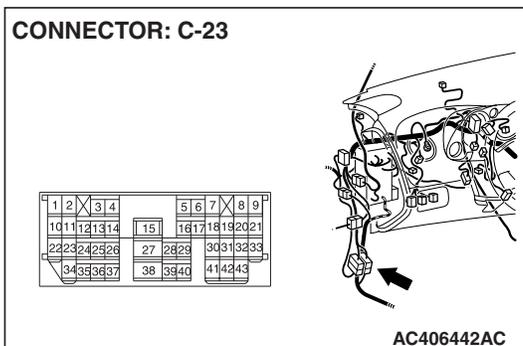
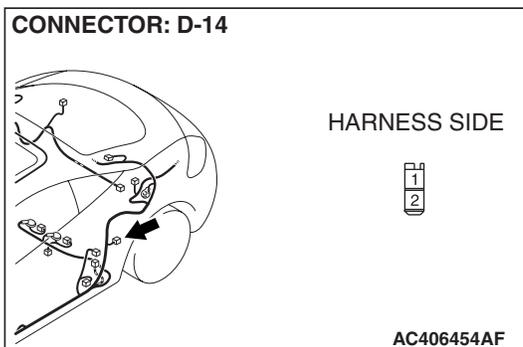
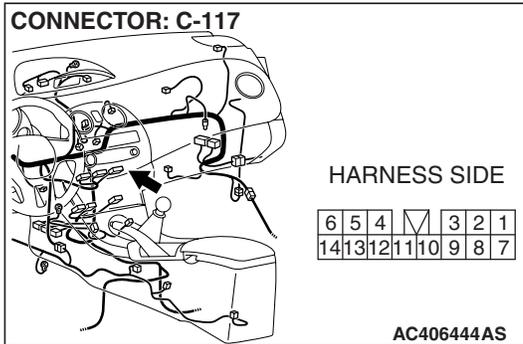
Q: Are harness connectors D-14 and C-117 in good condition?

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.



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.

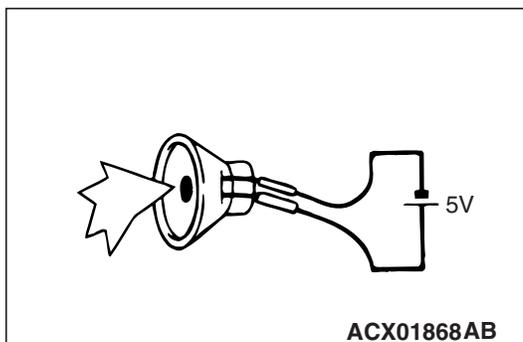
STEP 11. Check the quarter speaker (RH).

- (1) Remove the quarter speaker (RH). Refer to P.54A-227.
- (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.

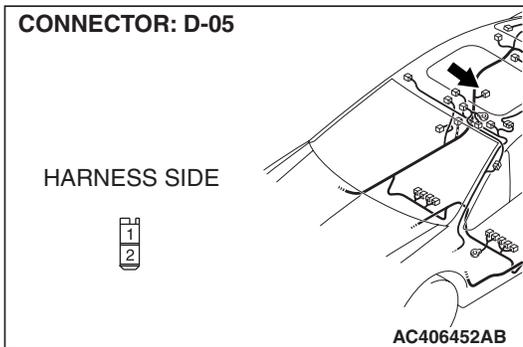
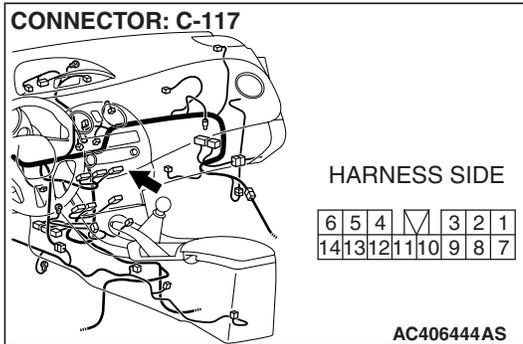


STEP 12. Check quarter speaker (RH) connector D-05 and radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

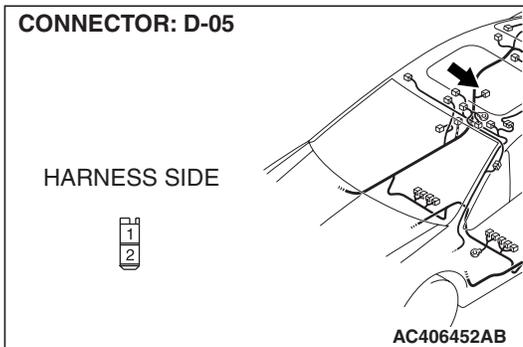
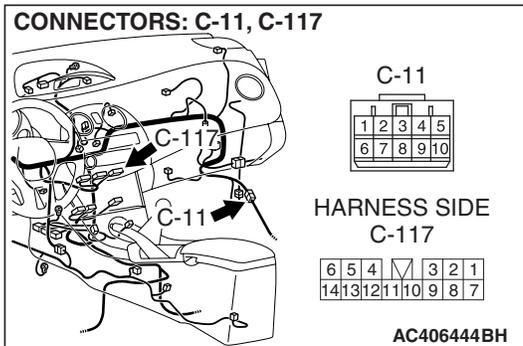
Q: Are harness connectors D-05 and C-117 in good condition?

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: 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.

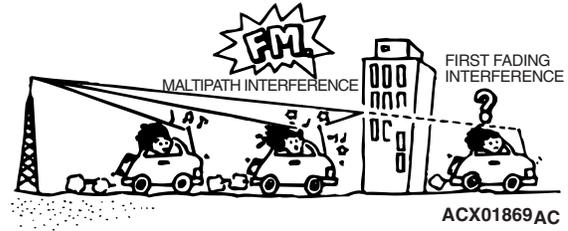
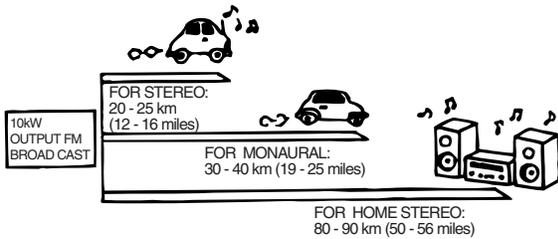
NO : Go to Step 4.

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 10: 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 become 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.

5. Change to a different station with a stronger signal to boost resistance to interference.
6. Suppress high tones to reduce noise.
7. Does vehicle have an antenna which extends? If not eliminate this step.

If there is noise, the following causes can be considered.

8. If due to vehicle noise: It may not be possible to prevent noise if the signal is weak.
9. 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 11: 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.

DIAGNOSIS

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 12: 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 13 [P.54A-209](#)).

STEP 2. Check if the noise disappears when tuned to a different station.

Tune to a station with a stronger signal.

- Q: Is there more noise than on radio in other vehicles?**

YES : Consult the radio manufacturer's service center.
NO : Check that there is no noise.

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 any from the radio (if the harness is not in the proper position)?**

YES : Consult the radio manufacturer's service center.
NO : If there is more noise than other radios, consult the radio manufacturer's service center.

STEP 2. Verify that the following actions disappear the noise.

- (1) Tune to a station with a stronger wave.
- (2) Adjust the sound quality to suppress high tones.

- Q: Is the noise eliminated?**

YES : Consult the radio manufacturer's service center.
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 : Consult the radio manufacturer's service center.

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-206.) <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. Check the noise is eliminated. If the noise is not eliminated, consult the radio manufacturer's service center.

INSPECTION PROCEDURE 13: 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.
- Lighting 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 14: Noise: Noise is detected with engine running.

DIAGNOSIS

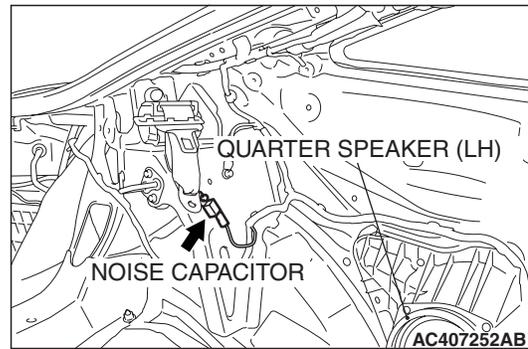
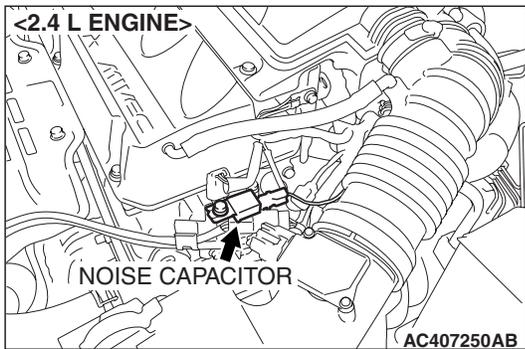
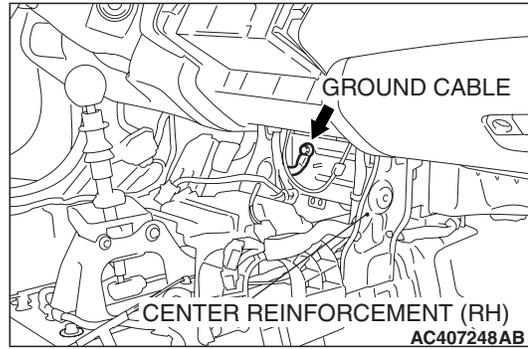
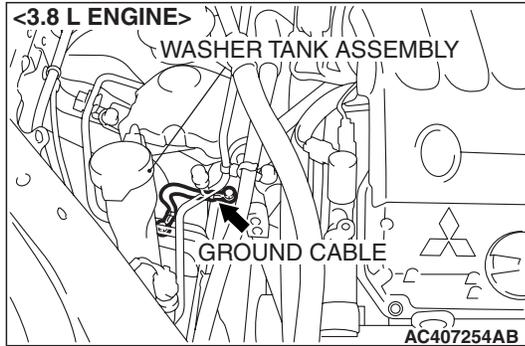
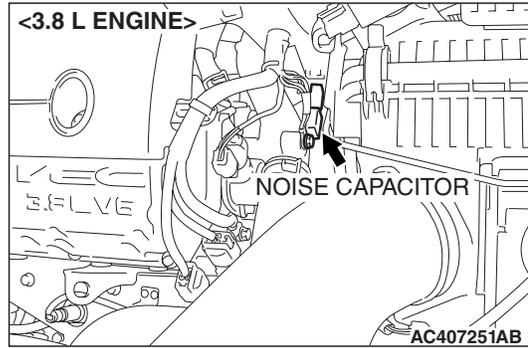
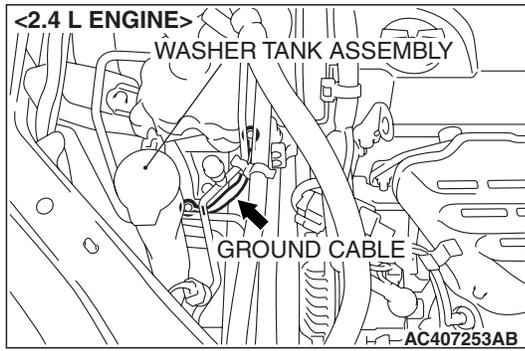
⚠ CAUTION

- **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"> • Increasing the engine speed causes the generator whine to speed up and the volume to decrease. • Disappears when the ignition switch is turned to "ACC", and engine is off. 	<ul style="list-style-type: none"> • Electrical interference from the spark plugs. • Engine noise. 	<ul style="list-style-type: none"> • Check or replace the ground cable. • Check or replace spark plug wires. • Check or replace the noise capacitor.
Other electrical components	—	<ul style="list-style-type: none"> • Noise may intensify due to aging electrical components. 	<ul style="list-style-type: none"> • Repair or replace the electrical components.
Static electricity (cracking, crinkling)	Noise disappears when the vehicle is completely stopped.	<ul style="list-style-type: none"> • Noise occurs when parts or wiring move and contact vehicle body. 	<ul style="list-style-type: none"> • Return parts or wiring to their proper position.
Static electricity (cracking, crinkling)	<ul style="list-style-type: none"> • Various noises are produced depending on the body part of the vehicle. 	<ul style="list-style-type: none"> • This may be due to the recent removal of the front hood, bumpers, exhaust pipe and muffler, suspension, etc. 	<ul style="list-style-type: none"> • Properly ground parts. • Properly ground all body parts.



INSPECTION PROCEDURE 15: 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.

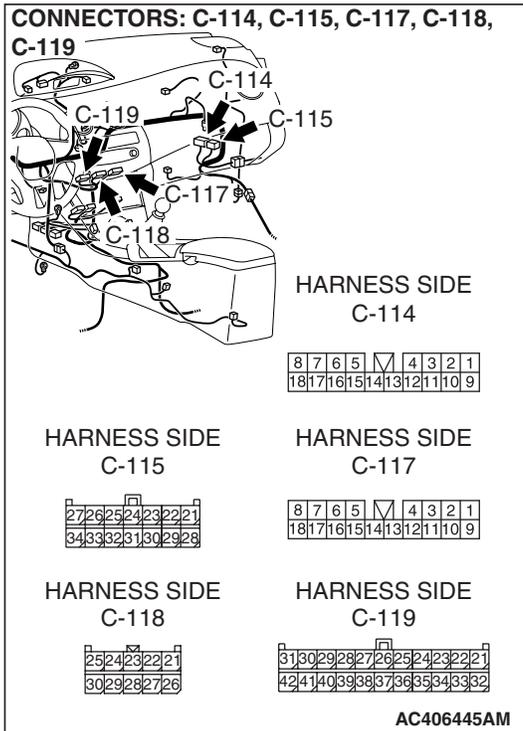
NO : Ensure that the antenna base and the radio and CD player or radio and CD player with CD changer are installed securely. Check that there is no noise.

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 : 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. Check that there is no noise.

NO : Either repair or replace the antenna assembly. Check that there is no noise.

INSPECTION PROCEDURE 16: 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. Check that there is no noise.

NO : Either repair or replace the antenna assembly. Check that there is no noise.

INSPECTION PROCEDURE 17: 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 8 to 15, 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 18: 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 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 5.

NO : Thoroughly connect the antenna plug and the radio and CD player or radio and CD player with CD changer. The radio should sound normally.

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. The radio should sound normally.

NO : Either repair or replace the antenna assembly. The radio should sound normally.

INSPECTION PROCEDURE 19: 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 : Check that a poor reception is resolved.

NO : Go to Step 3.

STEP 3. Tune the radio, and then check it.

Q: Did the sensitivity improve after tuning?

YES : Check that a poor reception is resolved.

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 : Check that a poor reception is resolved.
NO : Go to Step 5.

STEP 5. 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 : Thoroughly connect the antenna plug and the radio and CD player or radio and CD player with CD changer. Check that a poor reception is resolved.

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. Check that a poor reception is resolved.

INSPECTION PROCEDURE 20: Radio: Distortion on AM and/or FM.

DIAGNOSIS

STEP 1. Check the level of distortion.

Q: How much distortion is there?

Occasional 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. The speaker should now be free of distortion.

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. The speaker should now be free of distortion.

NO : Go to Step 5.

STEP 5. Check for distortion with the speaker installed.

Q: Does a distortion occur?

YES : Install the speaker securely. The speaker should now be free of distortion.

NO : Repair or replace the radio and CD player or radio and CD player with CD changer. The speaker should now be free of distortion.

INSPECTION PROCEDURE 21: 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. Check that the distortion is resolved.

INSPECTION PROCEDURE 22: Radio: Auto select function inoperative, too few automatic stations are selected.

DIAGNOSIS

STEP 1. Check the number of radio stations.**Q: Are there sufficient numbers of radio stations within the area?****YES :** Go to Step 2.**NO :** Go to Step 3.

STEP 2. Check the distance from the transmission antenna.**Q: Is there a transmission antenna within a range of 2 miles?****YES :** Go to Step 4.**NO :** Go to Step 3.

STEP 3. 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 4.

STEP 4. 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 5.**NO :** Go to Step 6.

STEP 5. 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 6.

STEP 6. Check the connection of the antenna feeder cable and radio and CD player or radio and CD player with CD changer.

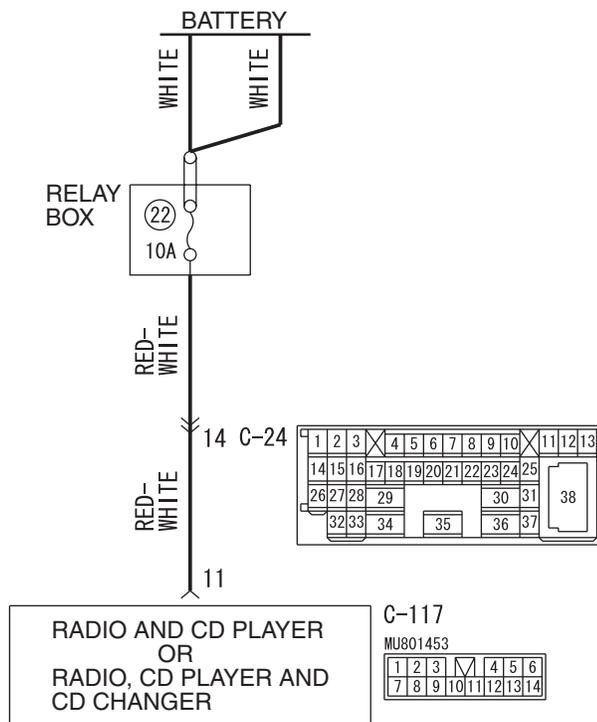
Q: Is the antenna feeder cable securely connected to the radio and CD player or radio and CD player with CD changer?

YES : Replace the radio and CD player or radio and CD player with CD changer. The auto-select function should operate normally.

NO : Connect the antenna feeder cable and the radio and CD player or radio and CD player with CD changer. The auto-select function should operate normally.

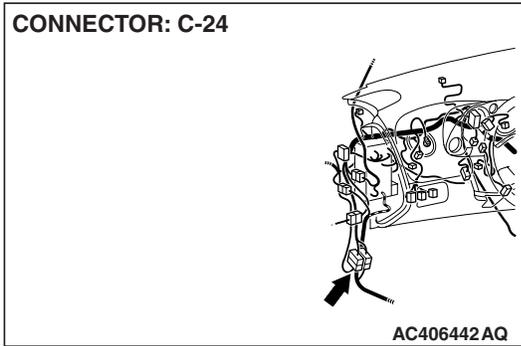
INSPECTION PROCEDURE 23: Radio: Preset stations are erased.

Memory Backup Power Circuit

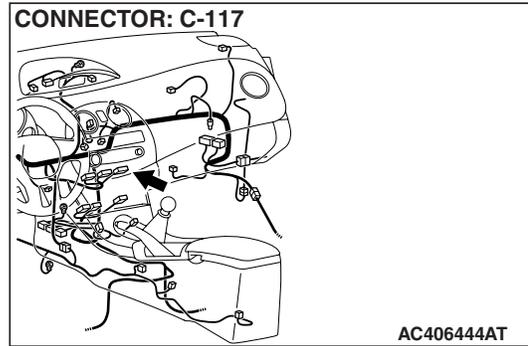


W6P54M042A

CONNECTOR: C-24



CONNECTOR: C-117



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.

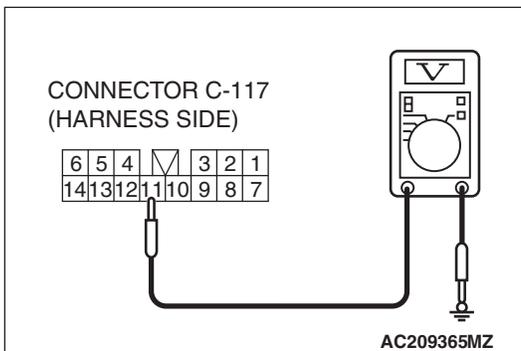
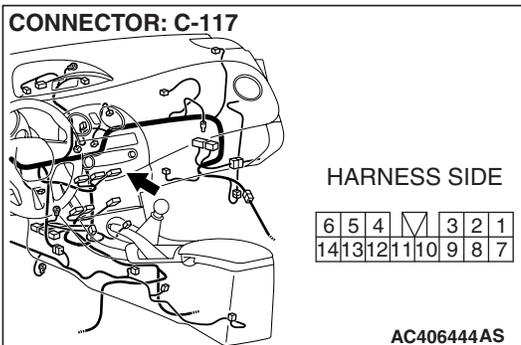
DIAGNOSIS

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.



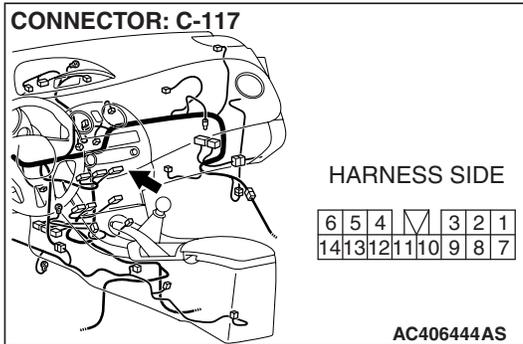
(2) Measure the voltage between terminal number 11 and ground.

- 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. Check that a memory is retained.

NO : Go to Step 2.

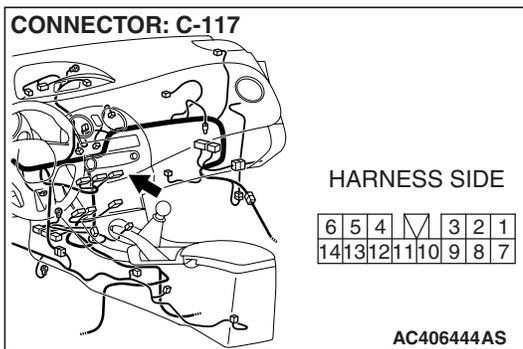


STEP 2. Check radio and CD player or radio and CD player with CD changer connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

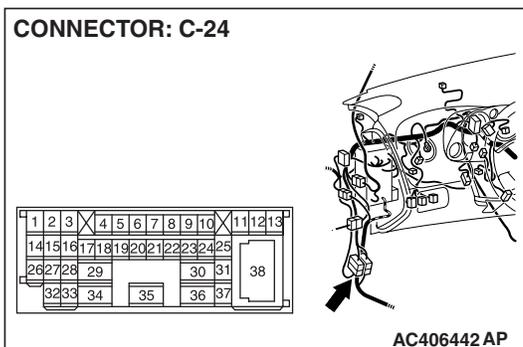
Q: Is radio and CD player or radio and CD player with CD changer connector C-117 in good condition?

YES : Go to Step 3.

NO : Repair or replace the component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that a memory is retained.



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. Check that a memory is retained.

NO : Repair the wiring harness. Check that a memory is retained.

INSPECTION PROCEDURE 24: 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 27 [P.54A-222](#)). 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 27 [P.54A-222](#).**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 (low grade type)] or 'ERROR 01' [vehicles with multi-center display (middle grade type)] 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 (low grade type)] or 'ERROR 01' [vehicles with multi-center display (middle grade type)] 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. Check that a known good CD can be inserted.**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. Check that a CD can be inserted.**NO :** Replace the CD player. Check that a CD can be inserted.**INSPECTION PROCEDURE 25: 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. The CD player should sound normally.**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. The CD player should sound normally.**NO :** Check the memory backup power supply circuit. Refer to Inspection Procedure 1 [P.54A-158](#).

INSPECTION PROCEDURE 26: 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. Clean the CD surface if it is dirty. Check that the CD sound skip is resolved.
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. Check that the CD sound skip is resolved.
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. Check that a CD sound skip is resolved.
NO : Replace the radio and CD player or radio and CD player with CD changer according to the instructions of the service shop. Check that a CD sound skip is resolved.

INSPECTION PROCEDURE 27: 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. The sound quality should return to normal.
NO : Replace the audio. The sound quality should return to normal.

INSPECTION PROCEDURE 28: 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?

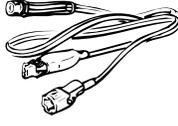
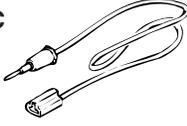
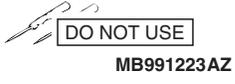
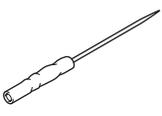
YES : Either replace the radio and CD player or radio, CD player and CD changer. Check that a CD can be ejected normally.

NO : Check the memory backup power supply circuit. Refer to Inspection Procedure 1

[P.54A-158.](#)

SPECIAL TOOL

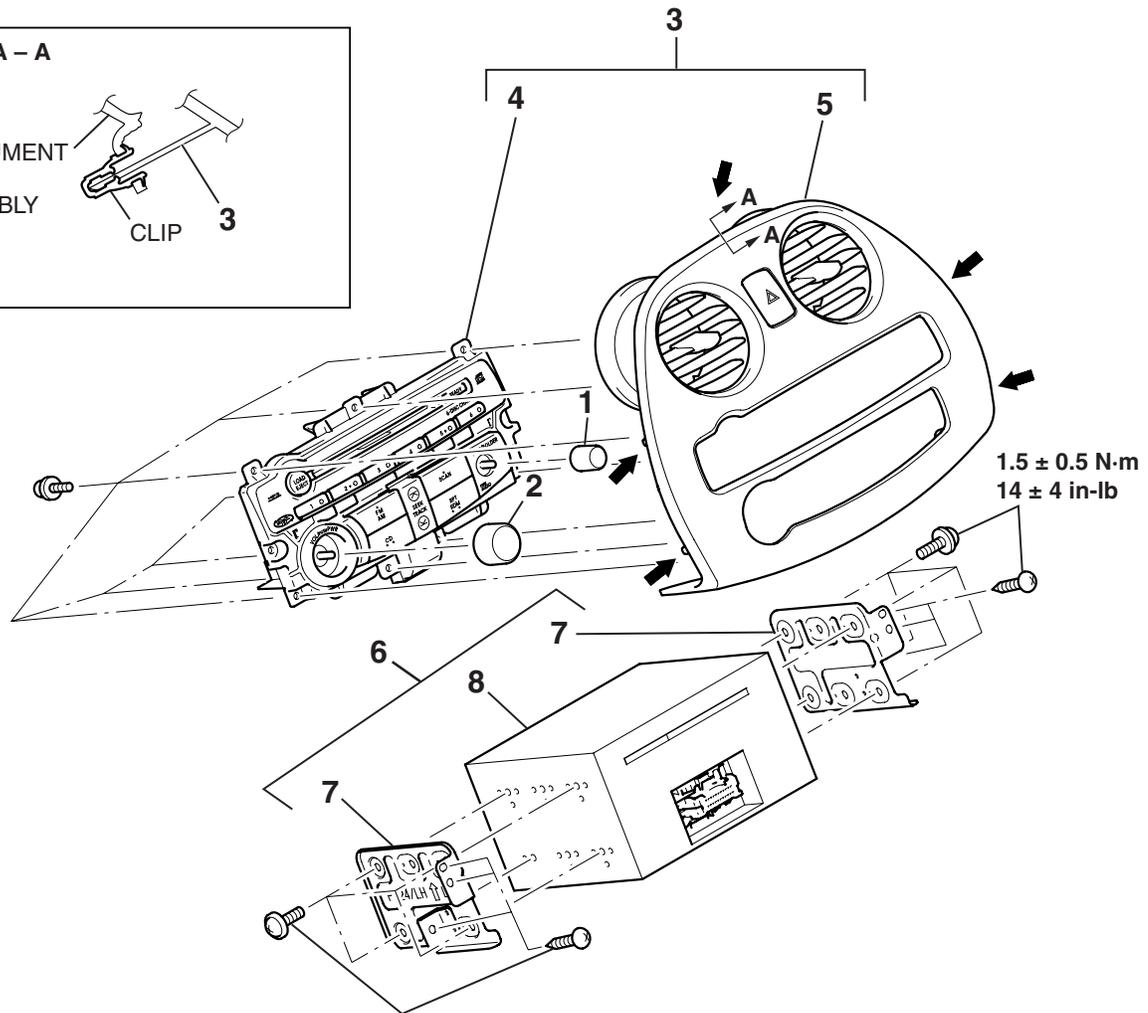
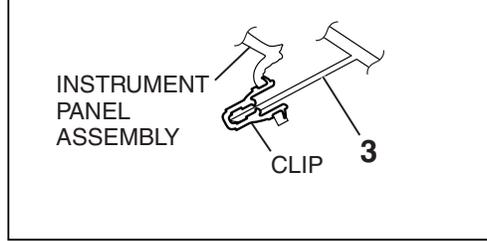
M1544000600447

TOOL	TOOL NUMBER AND NAME	SUPER SESSION	APPLICATION
<p>A</p>  <p>B</p>  <p>C</p>  <p>D</p> 	<p>MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222</p> <p>Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe</p>	<p>General service tool (jumper)</p>	<p>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>
 <p>MB992006</p>	<p>MB992006 Extra fine probe</p>	<p>—</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

**RADIO WITH CD PLAYER
REMOVAL AND INSTALLATION**

M1544010900030

SECTION A - A



NOTE

- ➡ : CLIP POSITION
- ↔ : CLAW POSITION

**1.5 ± 0.5 N·m
14 ± 4 in-lb**

AC406122AB

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)

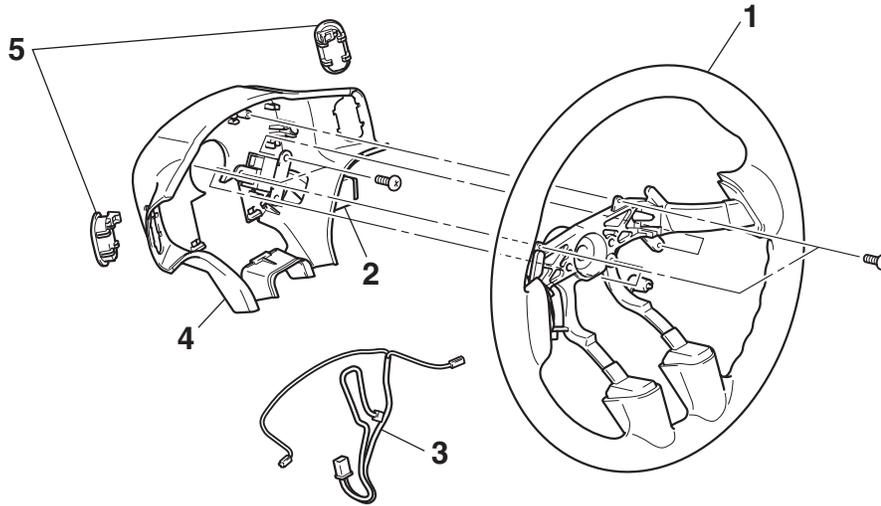
6. RADIO, CD PLAYER ASSEMBLY OR RADIO, CD PLAYER AND CD CHANGER ASSEMBLY
7. AUDIO EQUIP BRACKET
8. RADIO, CD PLAYER OR RADIO, CD PLAYER AND CD CHANGER

**REMOTE CONTROLLED RADIO SWITCH <VEHICLES WITH AUDIO AMPLIFIRE>
REMOVAL AND INSTALLATION**

M1544010100175

⚠ WARNING

- Before removing the air bag module, refer to **GROUP 52B, Service Precautions P.52B-26 and Air Bag Module and Clock Spring P.52B-408.**
- 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-408.)
- STEERING WHEEL ASSEMBLY (REFER TO GROUP 37, STEERING WHEEL P.37-27.)

<<A>>

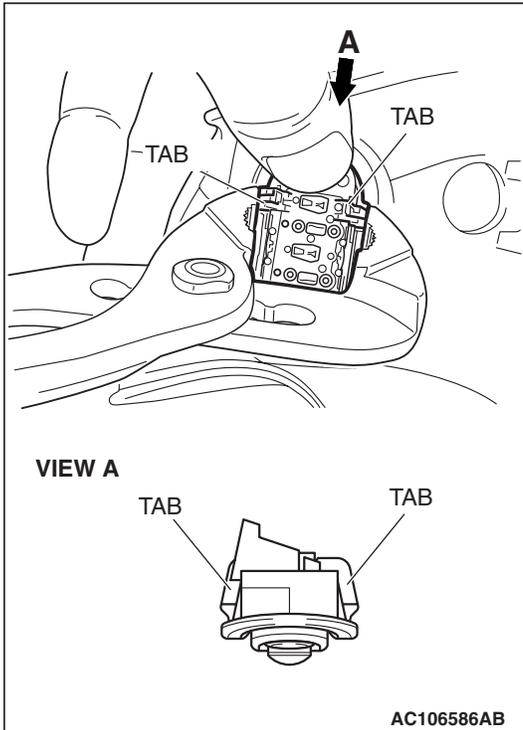
REMOVAL STEP (Continued)

1. STEERING WHEEL
2. AUTO-CRUISE CONTROL SWITCH
- >>A<< 3. HARNESS ASSEMBLY
4. LOWER COVER
5. REMOTE CONTROLLED RADIO SWITCH

REMOVAL SERVICE POINT

**<<A>> REMOTE CONTROLLED RADIO SWITCH
REMOVAL**

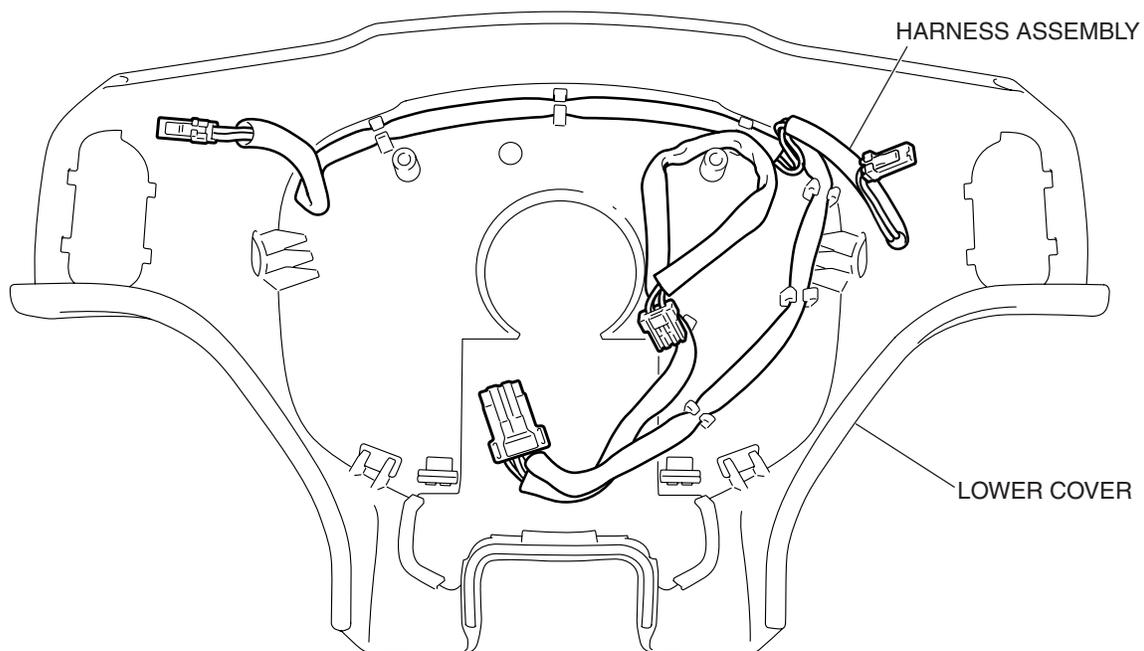
Use a tool to hold the tabs on the remote controlled radio switch, and push out the switch with your finger.



INSTALLATION SERVICE POINT

>>A<< HARNESS ASSEMBLY INSTALLATION

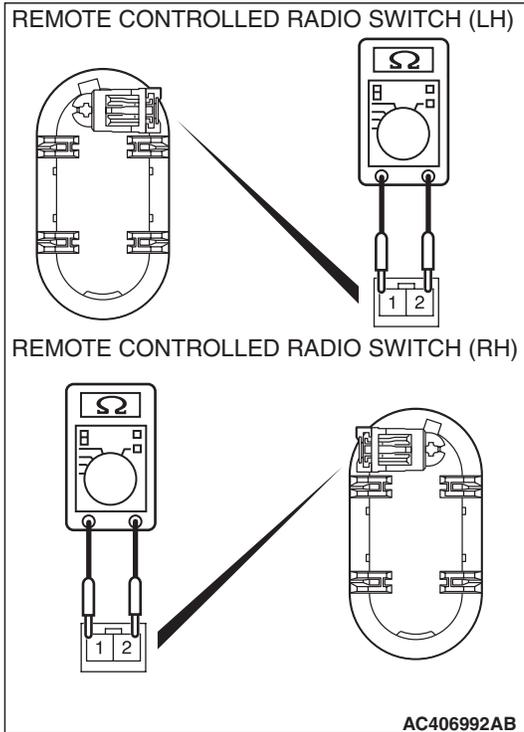
Attach the harness assembly to the position shown in the illustration.



INSPECTION

**REMOTE CONTROLLED RADIO SWITCH
CONTINUITY CHECK**

Use an ohmmeter to measure the resistance value between the terminals.



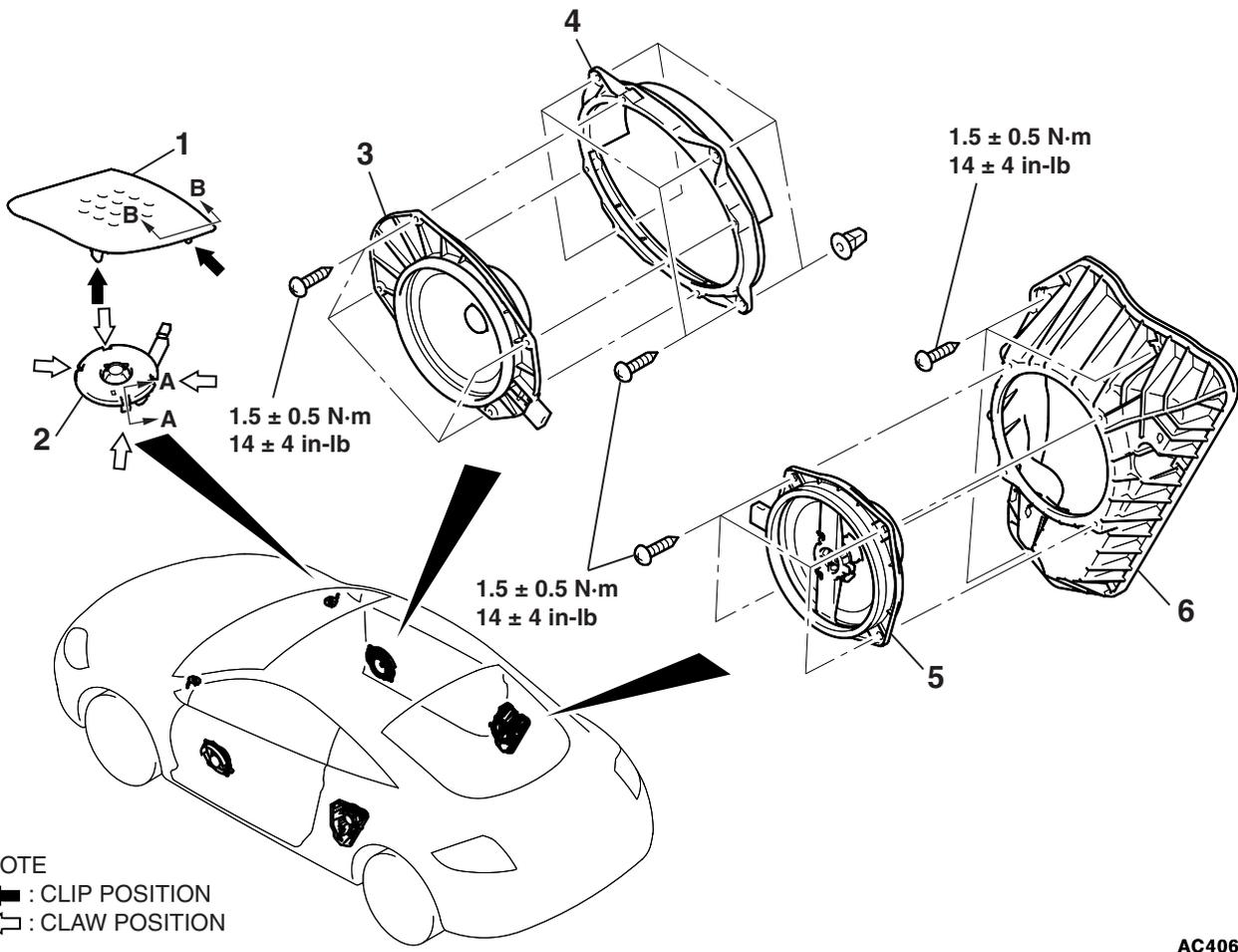
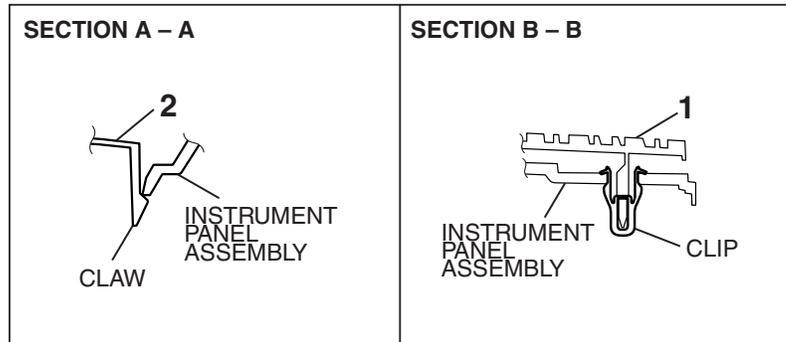
SWITCH POSITION	MEASUREMENT VALUE (RH)	MEASUREMENT VALUE (LH)
Not pushed	Approximately 24.0 kΩ	Approximately 24 kΩ
Upper	Approximately 5.3 kΩ	Approximately 1.1 kΩ
Center	Less than 2 ohms	Approximately 460 kΩ
Lower	Approximately 9.2 kΩ	Approximately 2.9 kΩ

SPEAKER

REMOVAL AND INSTALLATION

M1544002600711

<TWEETER/DOOR SPEAKER/QUARTER SPEAKER>



AC406111AB

TWEETER REMOVAL STEPS

- FRONT PILLAR TRIM (REFER TO GROUP 52A, TRIMS P.52A-31.)
- 1. TWEETER GARNISH
- 2. TWEETER

DOOR SPEAKER REMOVAL STEPS

- FRONT DOOR TRIM (REFER TO GROUP 52A, TRIMS P.52A-31.)

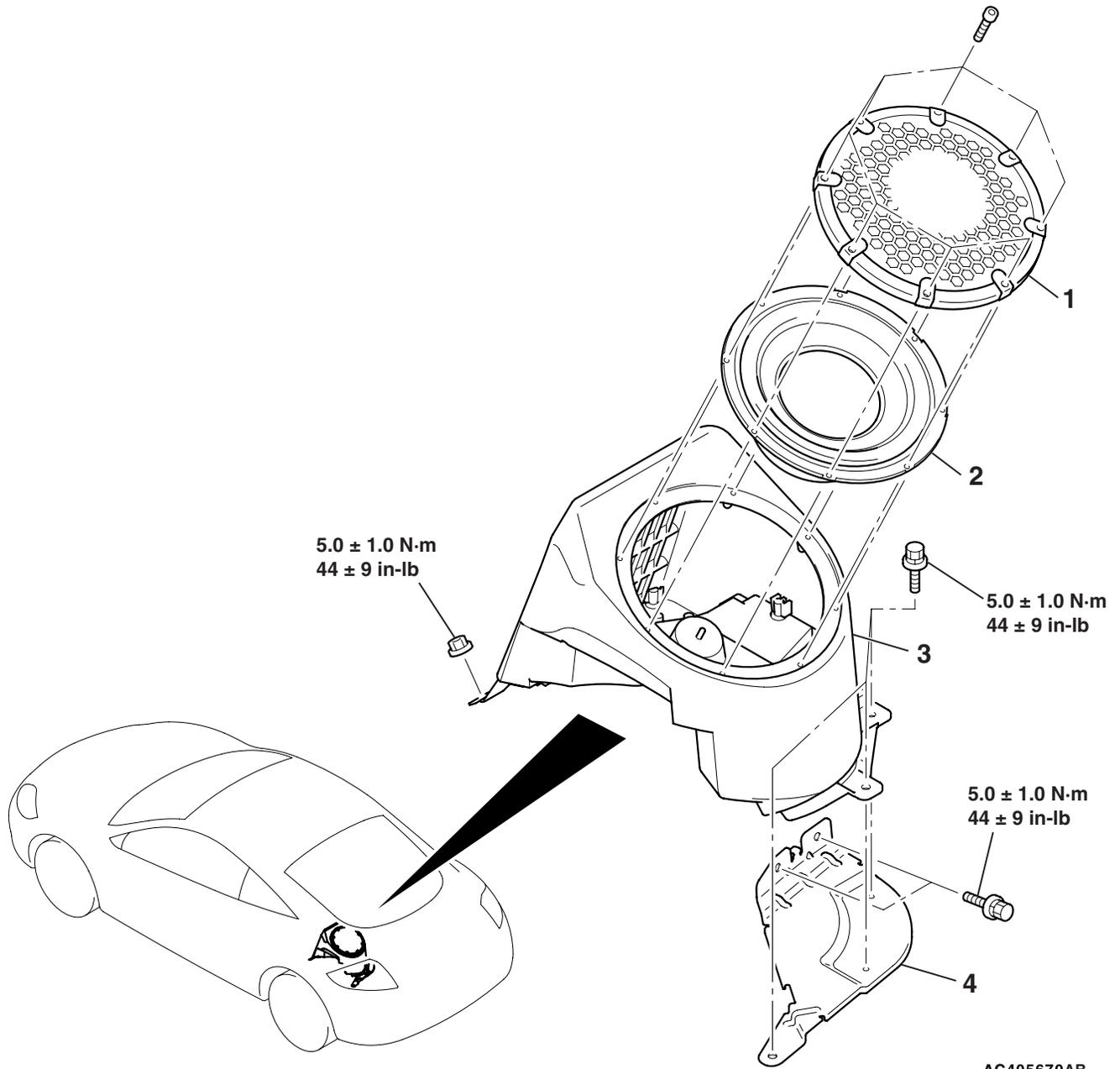
DOOR SPEAKER REMOVAL STEPS

- DOOR SPEAKER
- DOOR SPEAKER BRACKET

QUARTER SPEAKER REMOVAL STEPS

- QUARTER LOWER TRIM (REFER TO GROUP 52A, TRIMS P.52A-31.)
- 5. QUARTER SPEAKER
- 6. QUARTER SPEAKER BRACKET

< REAR SPEAKER (WOOFER)>



AC405670AB

WOOFER REMOVAL STEPS

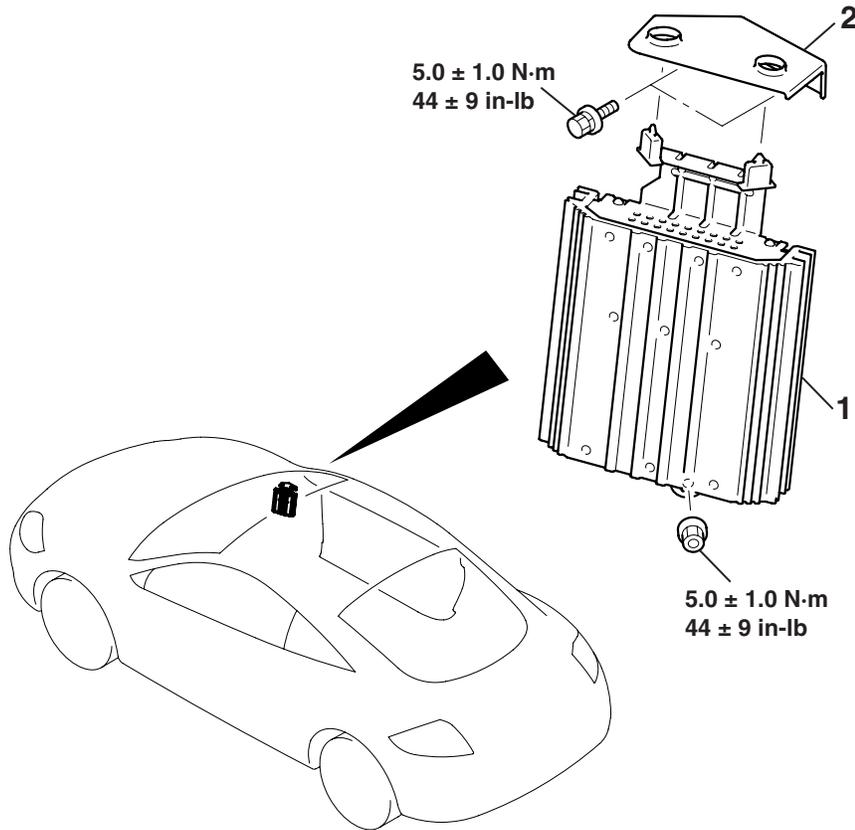
- LUGGAGE ROOM CARPET
- 1. WOOFER GARNISH

WOOFER REMOVAL STEPS

2. WOOFER
3. WOOFER COVER
4. WOOFER BRACKET

**AMPLIFIER
REMOVAL AND INSTALLATION**

M1544004100347



AC405671 AB

REMOVAL STEPS

- GLOVEBOX ASSEMBLY, INSTRUMENT PANEL PARCEL BOX (REFER TO GROUP 52A, INSTRUMENT PANEL ASSEMBLY [P.52A-21.](#))
- FRONT SCUFF PLATE (RH), COWL SIDE TRIM (RH) (REFER TO GROUP 52A, TRIMS [P.52A-31.](#))

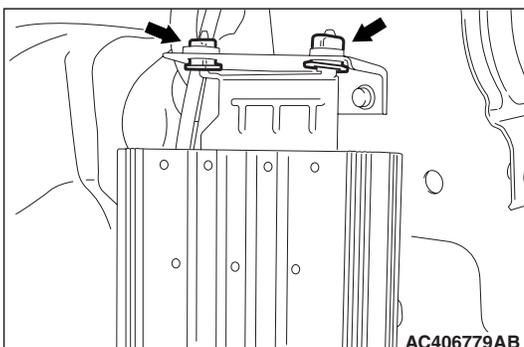
REMOVAL STEPS (Continued)

- ≧A< 1. AUDIO AMPLIFIER
2. AMPLIFIER BOX BRACKET

INSTALLATION SERVICE POINTS

>>A<< AUDIO AMPLIFIER INSTALLATION

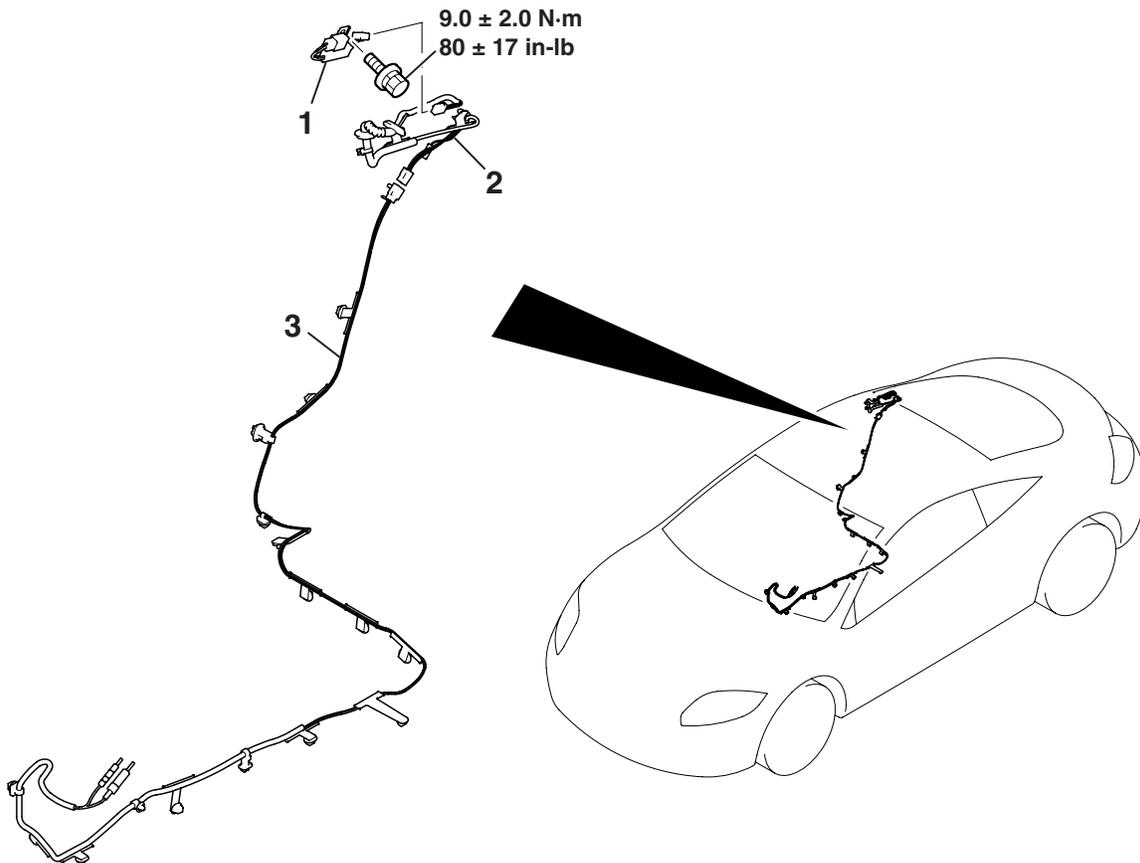
Install while aligning with the amplifier mounting hole.



ANTENNA

REMOVAL AND INSTALLATION

M1544002900756



AC405668AB

REMOVAL STEPS

- HEADLINING ASSEMBLY (REFER TO GROUP 52A, HEADLINING ASSEMBLY [P.52A-37.](#))
1. RADIO AMPLIFIER
 2. ANTENNA FEEDER CABLE (LIFTGATE SIDE)

REMOVAL STEPS (Continued)

- 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-223.](#))
3. ANTENNA FEEDER CABLE

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

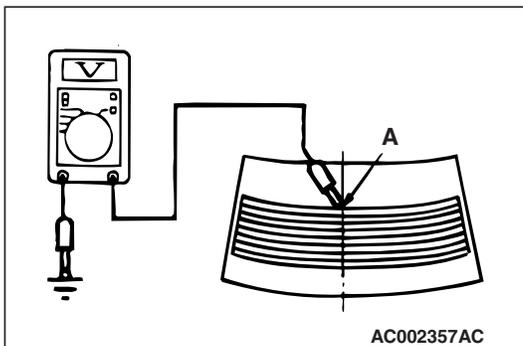
The defogger is controlled by the A/C-ECU. For troubleshooting, refer to GROUP 55A, Manual A/C Diagnosis –Symptom Chart [P.55A-98](#) .

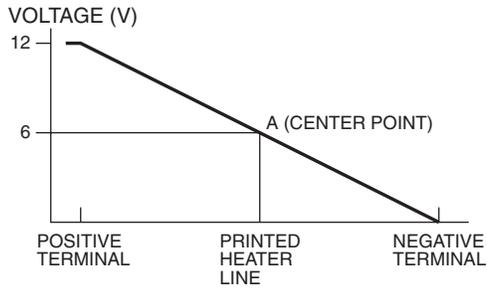
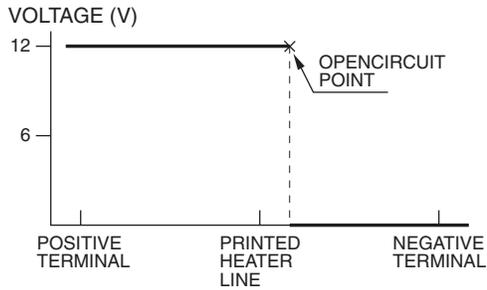
ON-VEHICLE SERVICE

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

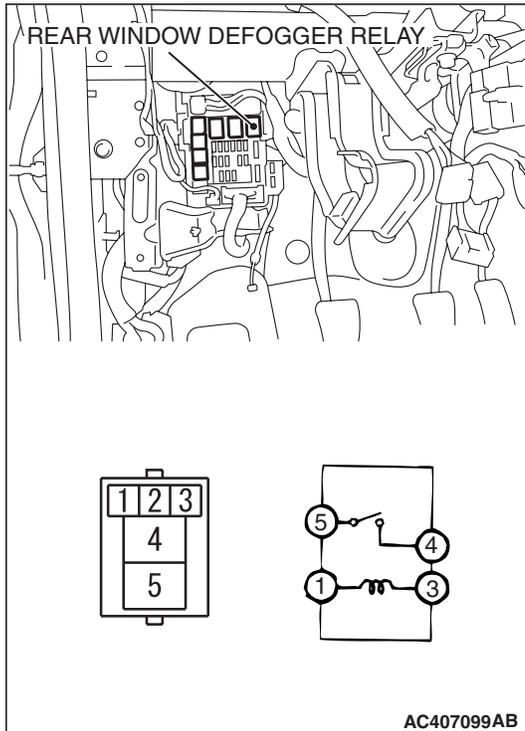
Refer to GROUP 55A, Heater Control Assembly
(Incorporated in A/C-ECU) .P.55A-193

M1543006200422

INSPECTION

DEFOGGER RELAY CONTINUITY CHECK

M1543019503455



BATTERY VOLTAGE	CONNECT TESTER BETWEEN:	SPECIFIED CONDITION
Not applied	4-5	Open Circuit
<ul style="list-style-type: none"> • Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal 	4-5	Less than 2 ohms

MULTI-CENTER DISPLAY

GENERAL DESCRIPTION

M1543000100621

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>

- If the wiring harness connectors are engaged correctly, check the wiring harness. If the wiring harness is in good condition, replace relevant components.

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 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.

DIAGNOSIS

M1543007201730

SYMPTOM CHART

CAUTION

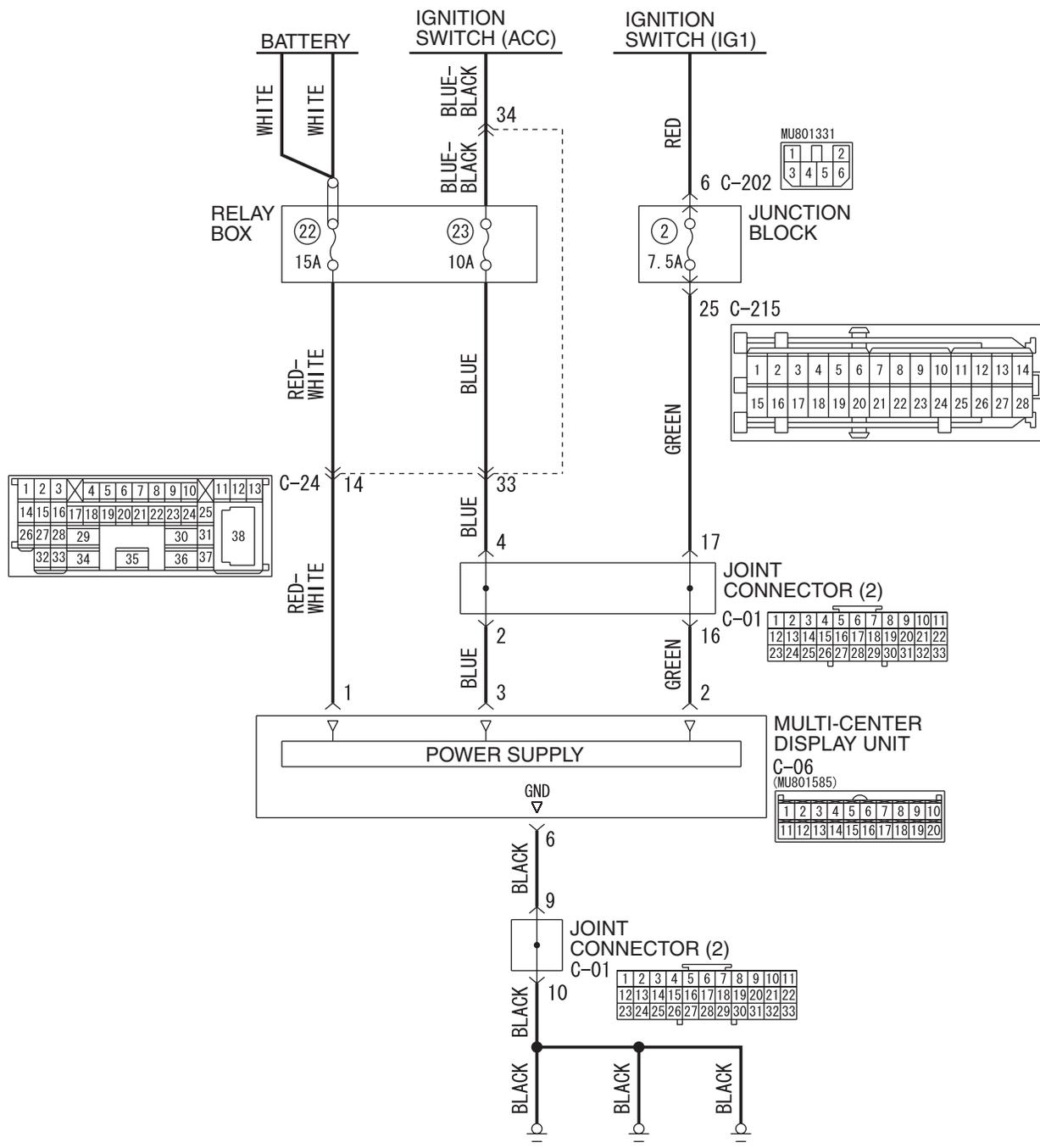
During diagnosis, a DTC associated with other system may be set when the ignition switch is turned "ON" position with connector(s) disconnected. On completion, confirm all systems for DTC(s). If DTC(s) are set, erase them all.

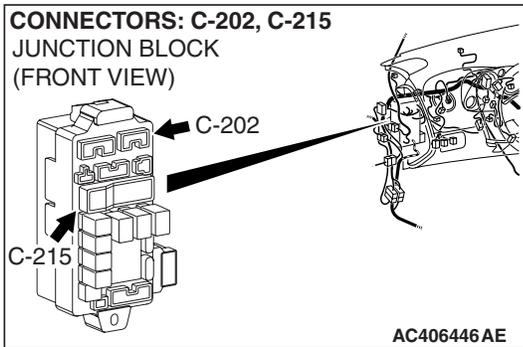
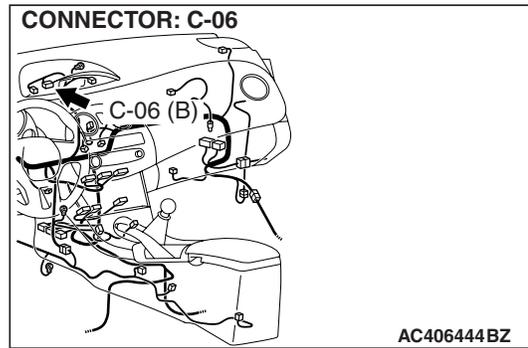
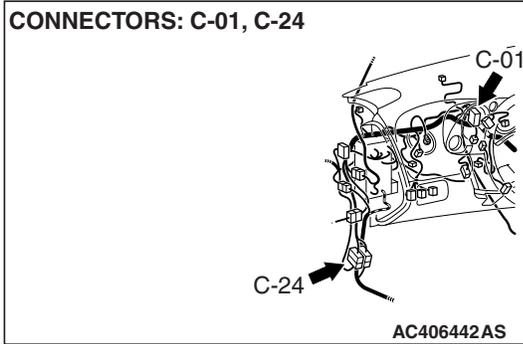
SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
The multi-center display does not show any information.	1	P.54A-235
"." (Ambient air temperature sensor error) is displayed on the ambient air temperature display. <Vehicles with TYPE 1>	2	P.54A-242
The ambient air temperature display does not change normally. <Vehicles with TYPE 1>	3	P.54A-245
On the audio screen, "E" cannot proceed to next screen.	4	P.54A-250
The compass cannot be calibrated manually, or goes out of calibration easily. <Vehicles with TYPE 1>	5	P.54A-254

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The multi-center display does not Show any Information.

Multi-center Display Power Supply and Ground Circuit





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:

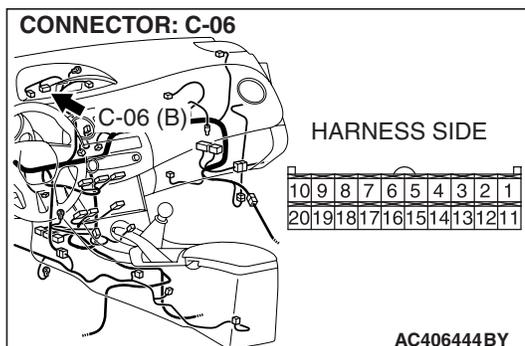
- MB991223: Harness Set
- MB992006: Extra Fine Probe

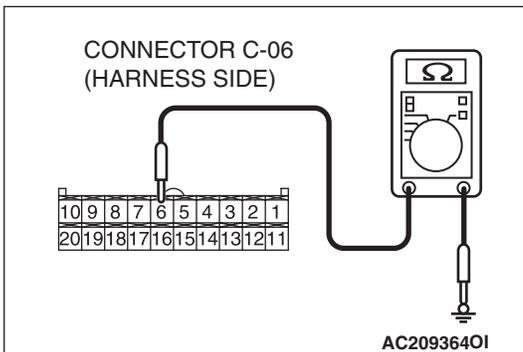
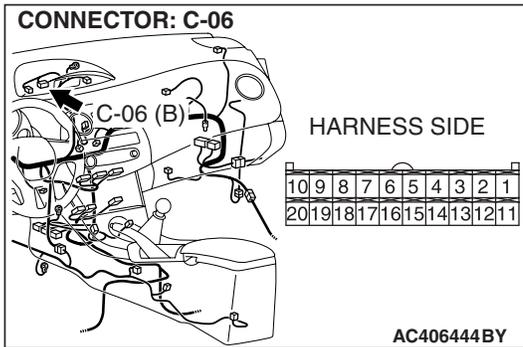
STEP 1. Check the multi-center display unit connector C-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#).





STEP 2. Check the multi-center display unit ground circuit. Measure the resistance at the multi-center display unit connector C-06.

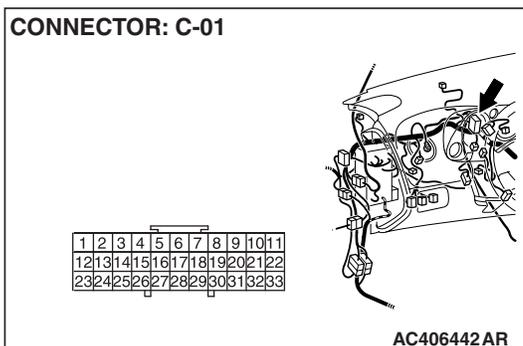
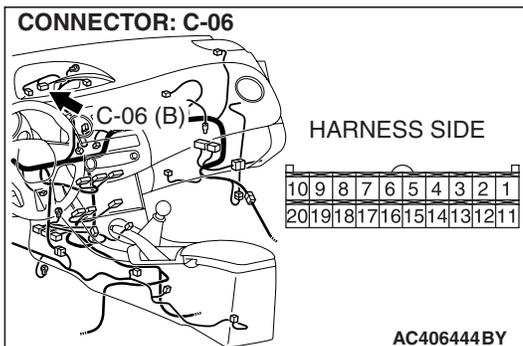
(1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.

(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.



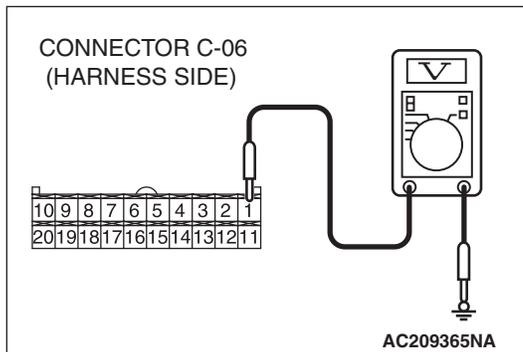
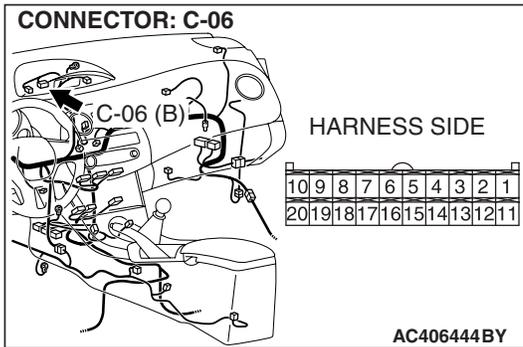
STEP 3. Check the wiring harness between multi-center display unit connector C-06 (terminal 6) and ground.

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.

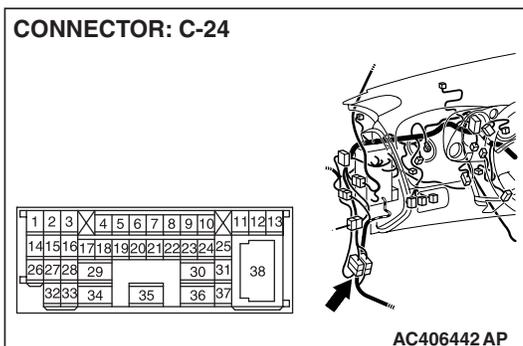
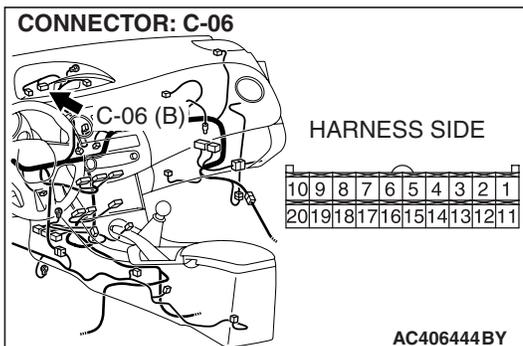
(1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.

(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.

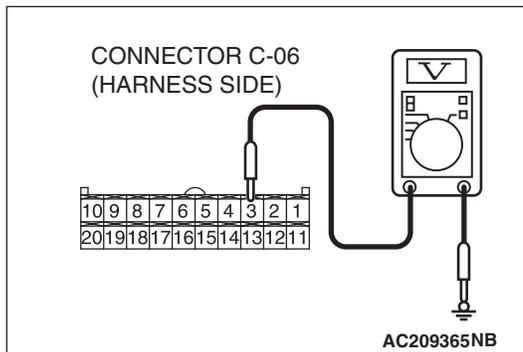
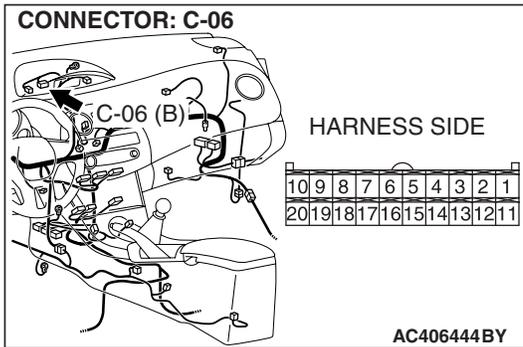


STEP 5. Check the wiring harness between multi-center display unit connector C-06 (terminal 1) and battery.

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.



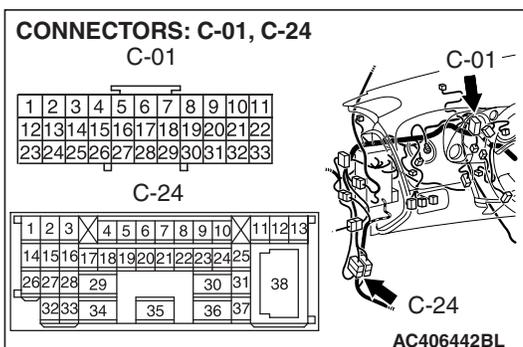
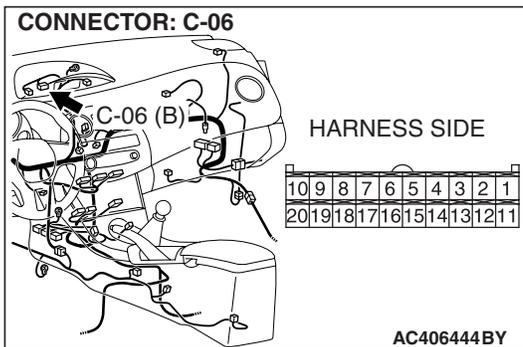
STEP 6. Check the multi-center display unit power supply circuit [ignition switch (ACC)]. Measure the voltage at the multi-center display unit connector C-06.

- (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.

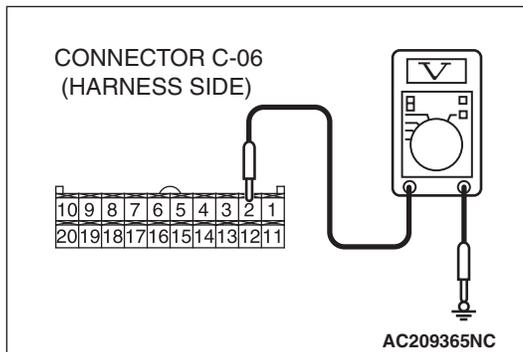
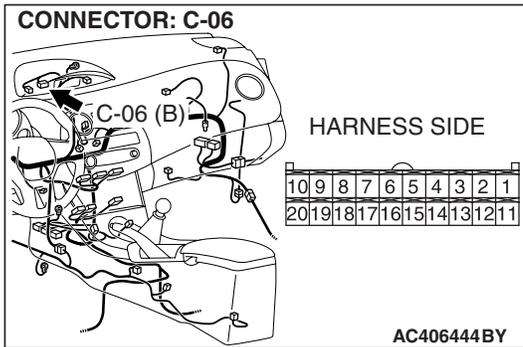


STEP 7. Check the wiring harness between multi-center display unit connector C-06 (terminal 3) and ignition switch (ACC).

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 :** There is no action to be taken.
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.

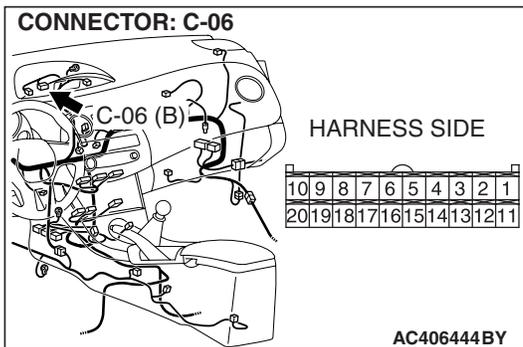
- (1) Disconnect the multi-center display unit connector C-06 and measure at the harness side.
- (2) Turn the ignition switch to "ON" position.

- (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.

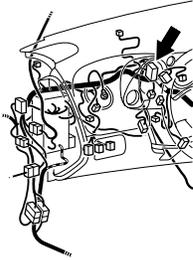
NO : Go to Step 9.



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



AC406442AR

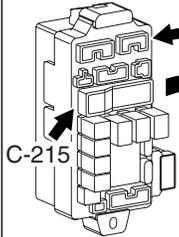
NOTE: Also check joint connector (2) C-01, junction block connectors C-202 and C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector (2) C-01 or junction block connectors C-202 or C-215 is damaged, repair or replace the wiring harness. Refer to 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 : The procedure is complete.

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		

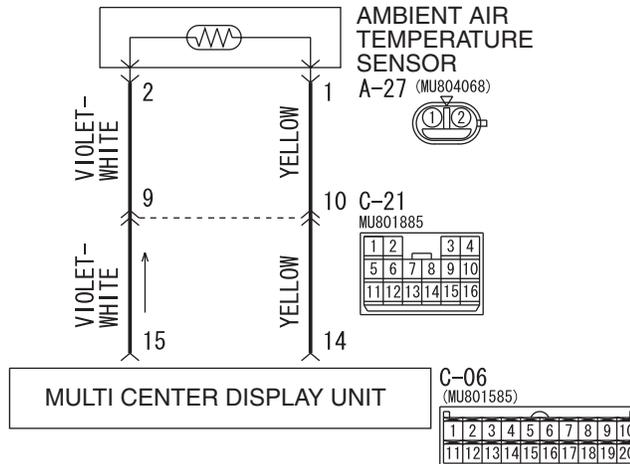
HARNESS SIDE
C-215

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

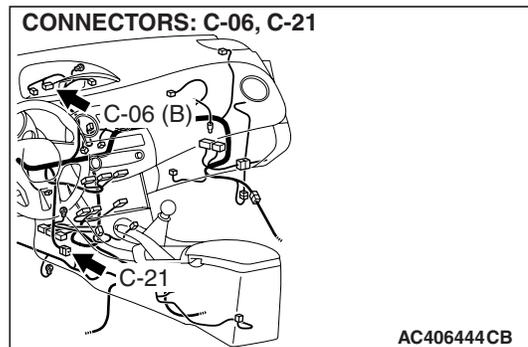
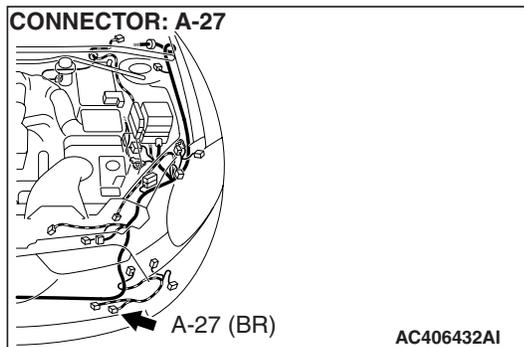
AC406447AB

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



W6P54M063A



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.

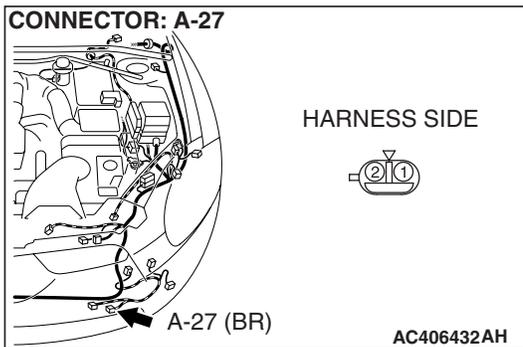
TROUBLESHOOTING HINTS

- Malfunction of the ambient air temperature sensor.
- Damaged wiring harness and connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

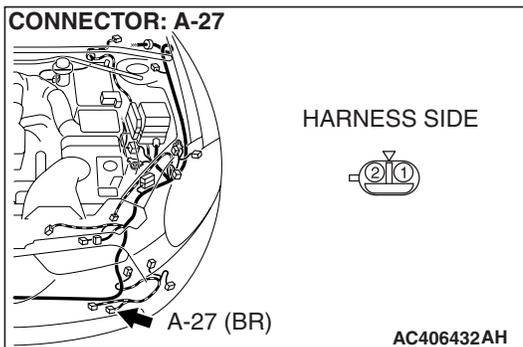


STEP 1. Check the ambient air temperature sensor connector A-27 for damage.

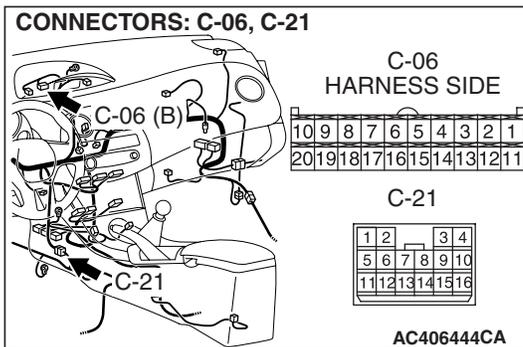
Q: Is the ambient air temperature sensor connector A-27 in good condition?

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).

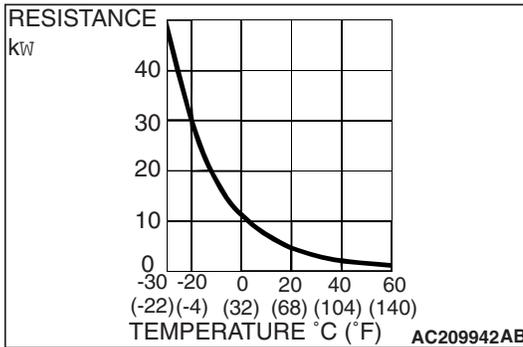
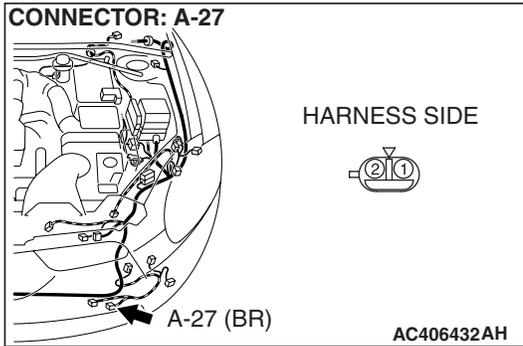


NOTE: After checking intermediate connector C-21, check the wires. If intermediate connector C-21 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

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.

**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-261](#)).

- (3) Measure the resistance between the ambient air temperature sensor connector terminals at two or more temperature condition.

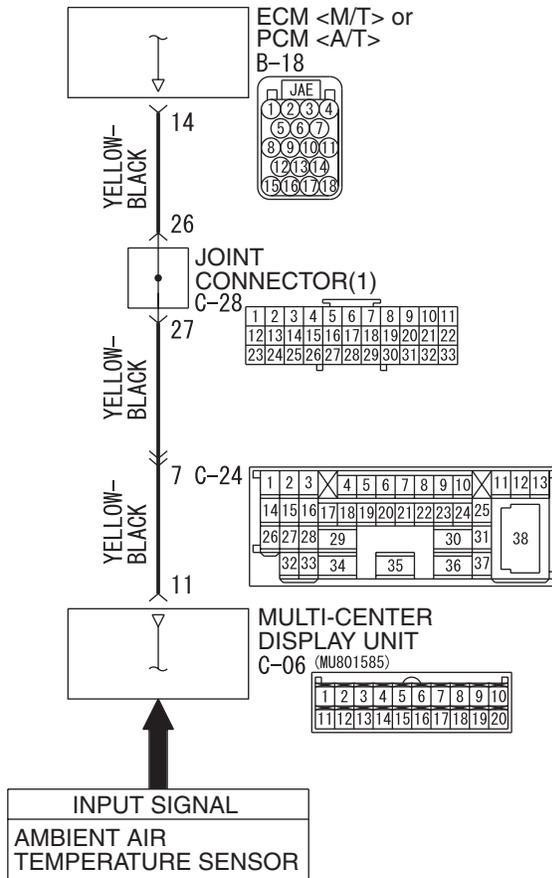
Q: Does the resistance value exist within the characteristic graph?

YES : There is no action to be taken.

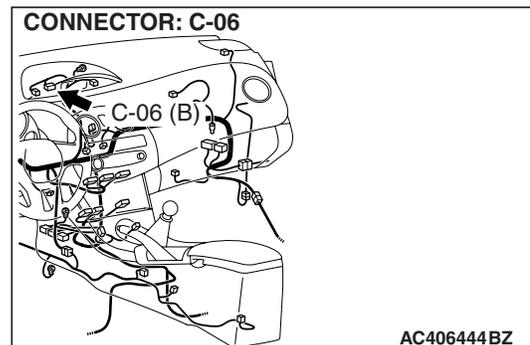
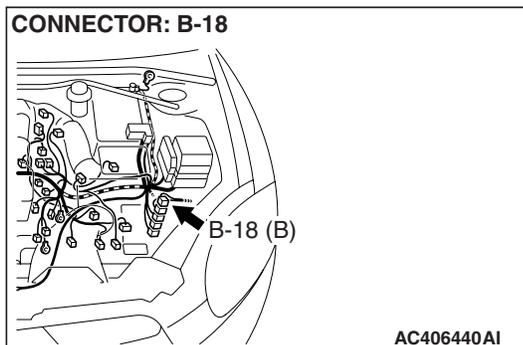
NO : Replace the ambient air temperature sensor.

INSPECTION PROCEDURE 3: The ambient air temperature display does not change normally.
<Vehicles with TYPE 1>

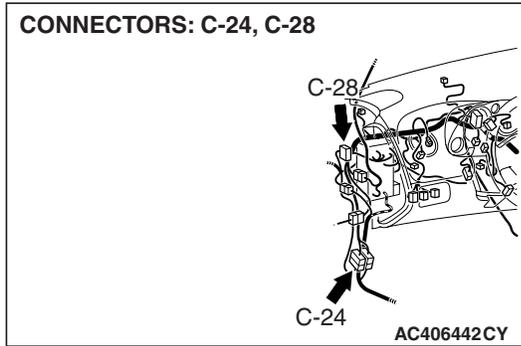
Ambient Air Temperature Sensor Circuit



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 (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-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-242](#).

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

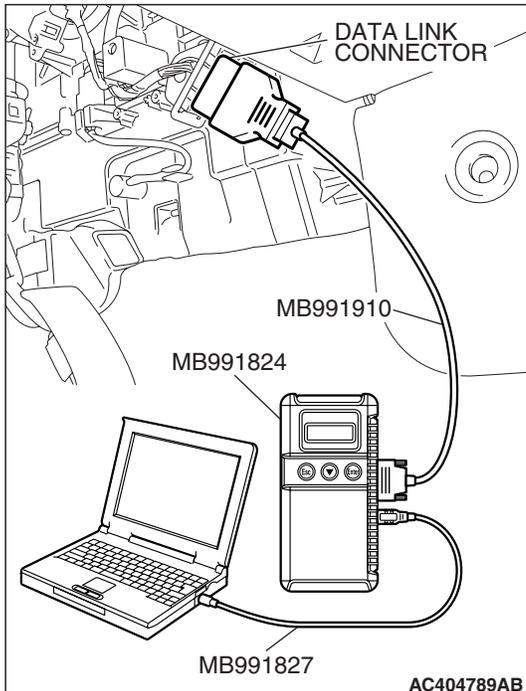
To prevent damage to scan tool MB991958, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool.

- (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.

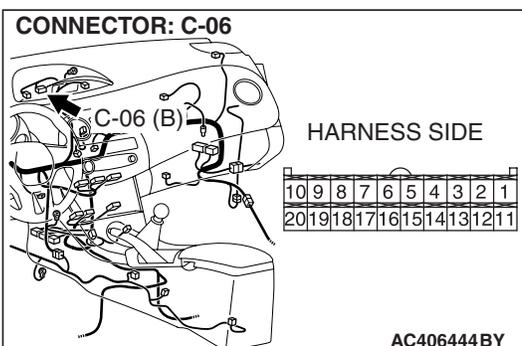
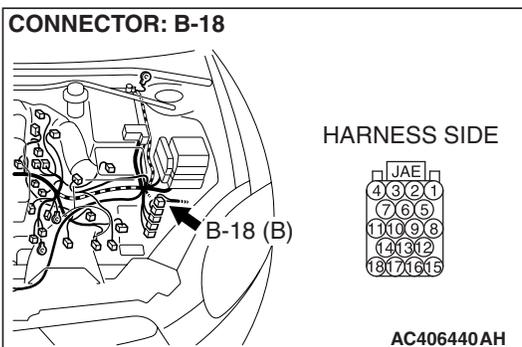


STEP 4. Check multi-center display unit connector C-06 and ECM <M/T> or PCM <A/T> connector B-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

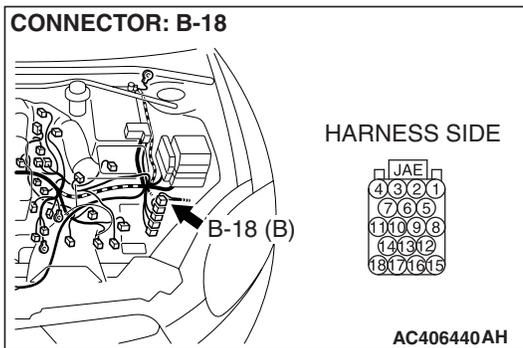
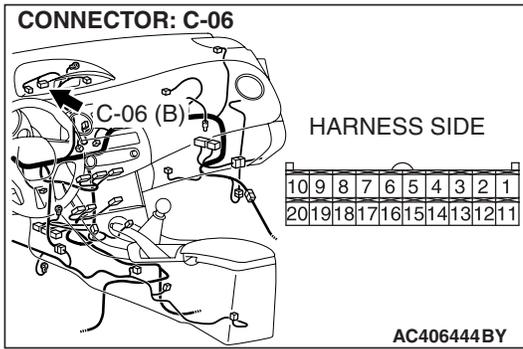
Q: Are multi-center display unit connector C-06 and ECM <M/T> or PCM <A/T> connector B-18 in good condition?

YES : Go to Step 5.

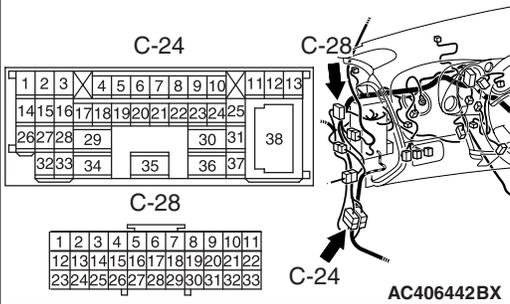
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the ambient air temperature display works normally.



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).



CONNECTORS: C-24, C-28



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.

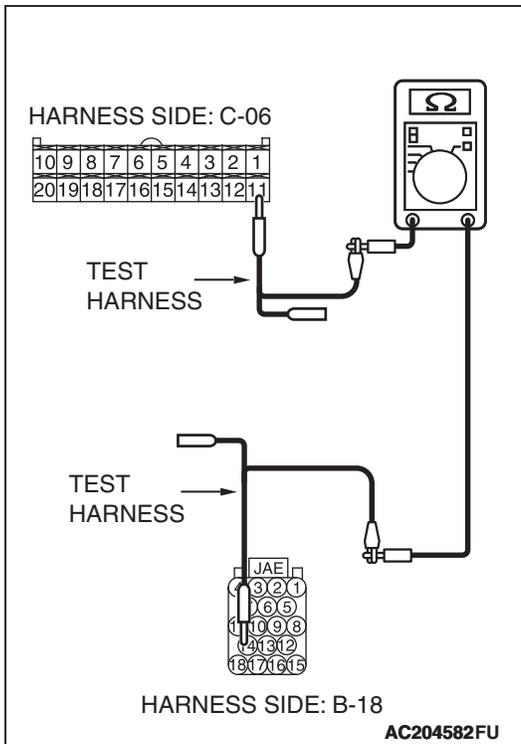
- (2) Measure the resistance between multi-center display unit connector C-06 terminal 11 and ECM <M/T> or PCM <A/T> connector B-18 terminal 14.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

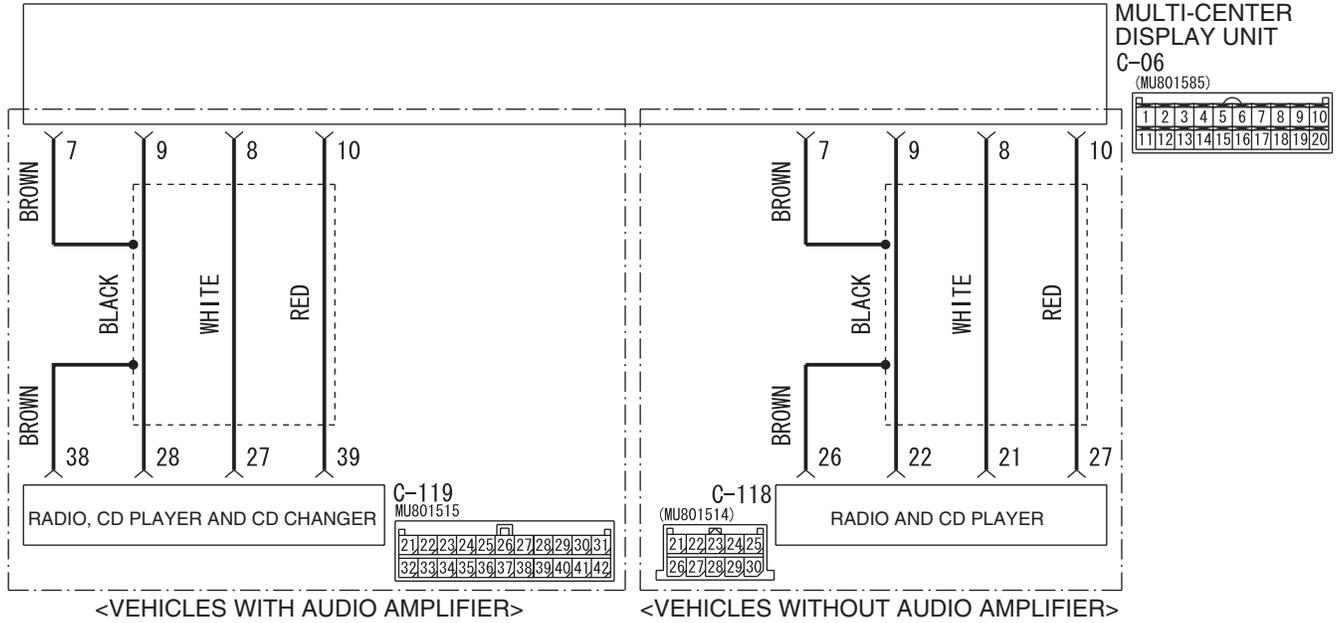
YES : Replace the multi-center display unit.

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.



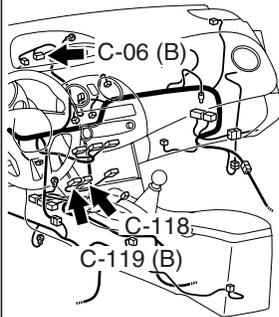
INSPECTION PROCEDURE 4: On the Audio Screen, "E" cannot Proceed to Next Screen.

M-BUS Line Circuit



W6P54M064A

**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:

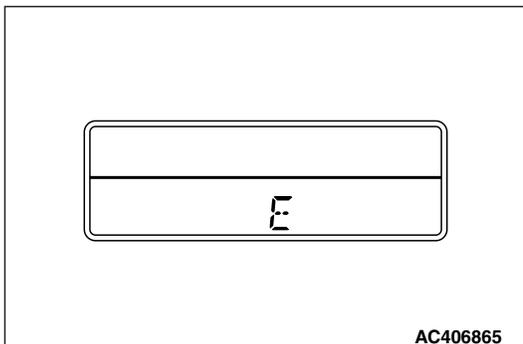
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check of the display.

Q: Is "E" displayed?

YES : Go to Step 2.

NO : Go to Step 4.

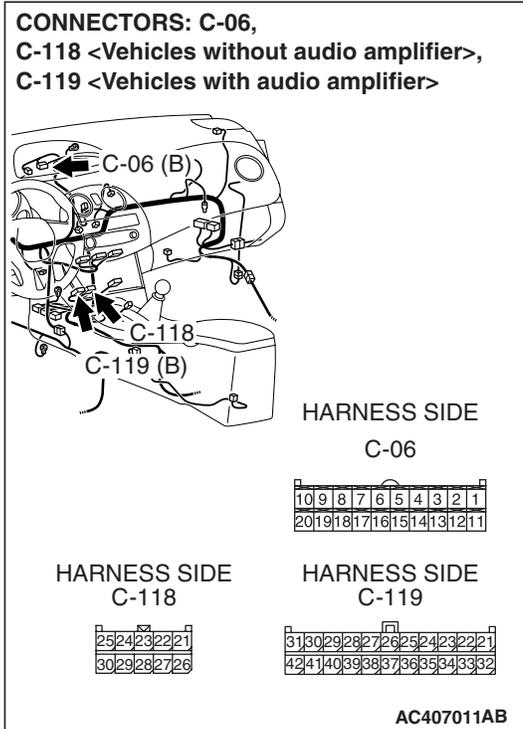


STEP 2. Check radio and CD player with CD changer connector C-119 <Vehicles with audio amplifier> or radio and CD player connector C-118 <Vehicles without audio amplifier> and multi-center display unit connector C-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

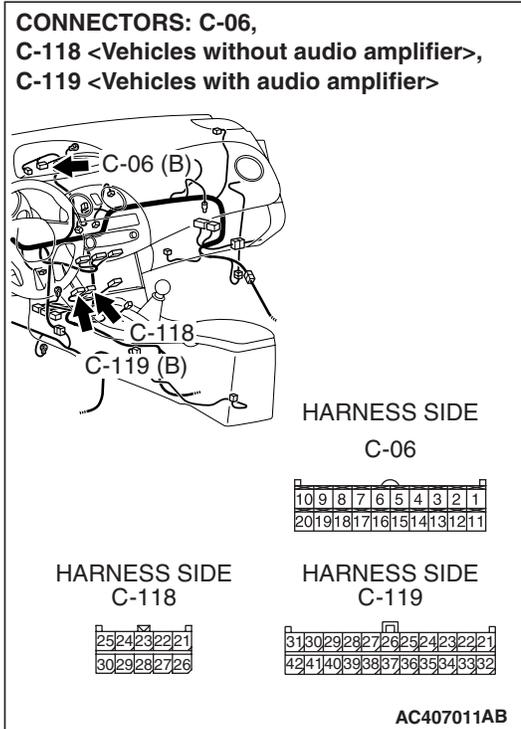


STEP 3. Check the wiring harness between radio and CD player with CD changer connector C-119 (terminal 27, 28, 38 and 39) <Vehicles with audio amplifier> or radio and CD player connector C-118 (terminal 21, 22, 26 and 27) <Vehicles without audio amplifier> and multi-center display unit connector C-06 (terminal 7, 8, 9 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 7, 8, 9 and 10) in good condition?

YES : Go to Step 4.

NO : Repair the wiring harness and then go to step 1.



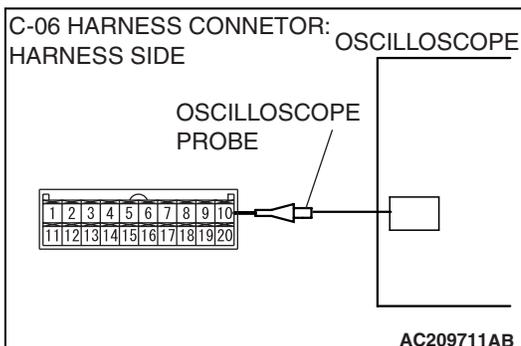
STEP 4. Using the oscilloscope, check the M-BUS line.

- (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.

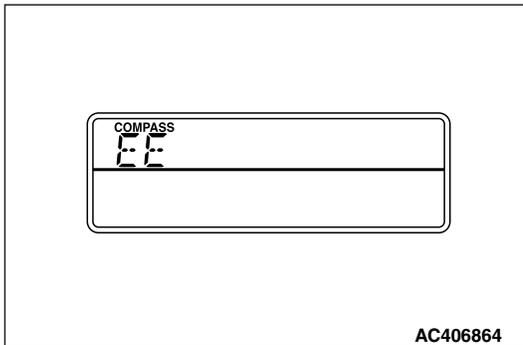
TROUBLESHOOTING HINTS

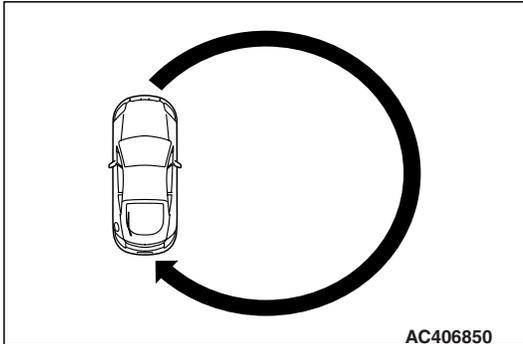
- The compass sensor in the multi-center display unit is defective
- Magnetization of vehicle body
- Calibration in magnetized environment (such as factory or a high voltage conductor)

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-258](#)).

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-260](#).

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.

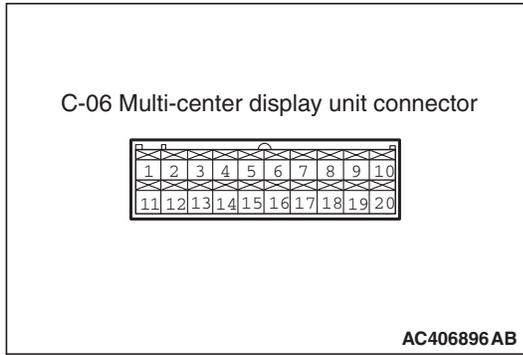
Q: Is the check result satisfactory?

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

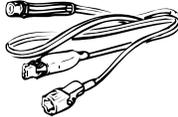
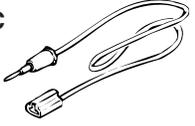


TERMINAL NO.	INPUT/ OUTPUT	SIGNAL SYMBOL	TERMINAL VOLTAGE (V)	HARNESS DISCREPANCY		FAILURE SYMPTOM DUE TO HARNESS DISCREPANCY
1	Input	Battery (Battery power supply)	Battery positive voltage	Open circuit	–	Screen is not displayed. All operations are not possible.
				–	Short circuit	Fuse is blown.
2	Input	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	0	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	-

TERMINAL NO.	INPUT/ OUTPUT	SIGNAL SYMBOL	TERMINAL VOLTAGE (V)	HARNESS DISCREPANCY		FAILURE SYMPTOM DUE TO HARNESS DISCREPANCY
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	SUPERSESSION	APPLICATION
<p>A</p>  <p>B</p>  <p>C</p>  <p>D</p> 	<p>MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222</p> <p>Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe</p>	<p>General service tool (jumper)</p>	<p>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>
 <p>MB992006</p>	<p>MB992006 Extra fine probe</p>	<p>General service tool</p>	<p>Making voltage and resistance measurement during troubleshooting</p>

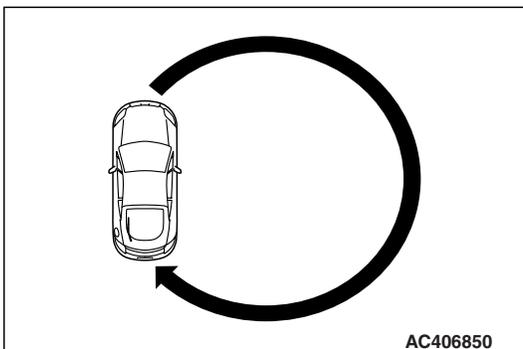
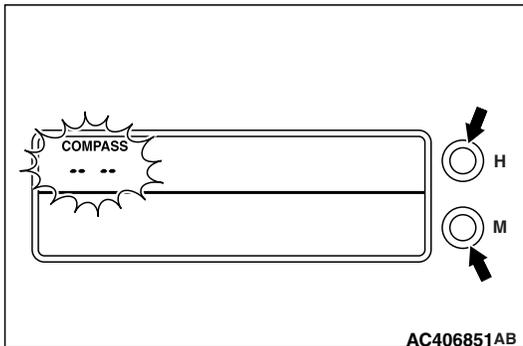
**ON-VEHICLE SERVICE <VEHICLES WITH
TYPE 1>****COMPASS CALIBRATION**

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. Engine started.
2. Display the compass on the multi-center display.
3. Press and hold the "H" switch and "M" switch until "-- --" appears in the display.
4. Release the switch to enter the calibration mode.

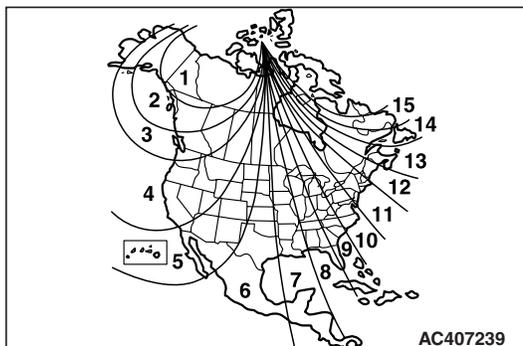


5. Drive very slowly in a circle until "-- --" disappears.

DEFLECTION ANGLE COMPENSATION**COMPASS CALIBRATION**

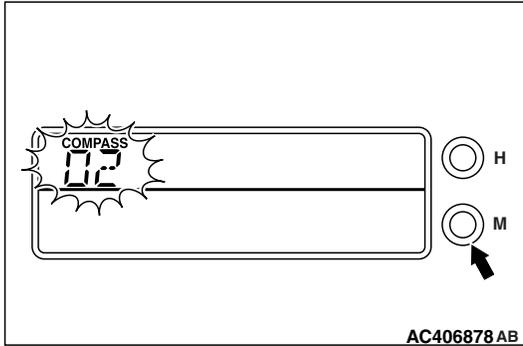
Under certain circumstances, as during a long distance cross country trip, it will be necessary to adjust for compass variance. Compass variance is the difference between earth's magnetic north and true geographic north.

If not adjusted to account for compass variance, compass could give false readings.

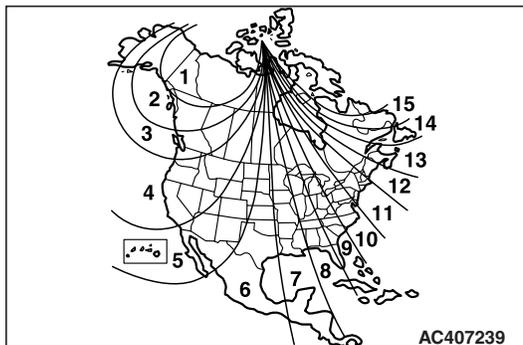


ADJUST FOR COMPASS VARIANCE

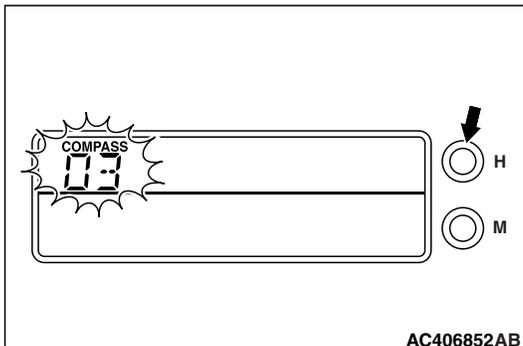
1. With the compass displayed, keep pressing "M" switch for two second or more.
The current zone number will appear upon release.



2. Find current location and variance zone number on the zone map.



3. Press the "H" switch repeatedly until the correct zone number is displayed.

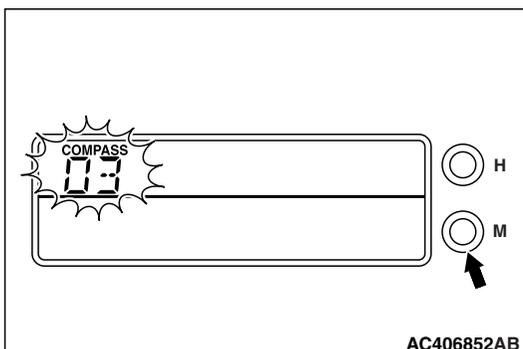


4. Pressing the "M" switch will exit zone entry mode.
This area code number should remain in the battery off.
If the compass deviates from the correct indication soon after repeated adjustment, have the compass checked at refer to [P.54A-254](#).

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

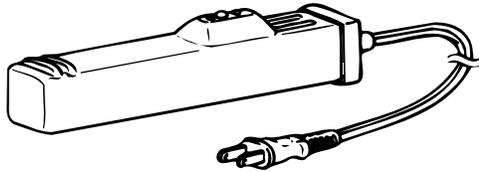


NOTE: The compass returns to the correct compass direction vehicle moves to an area where the geomagnetism is stabilized.

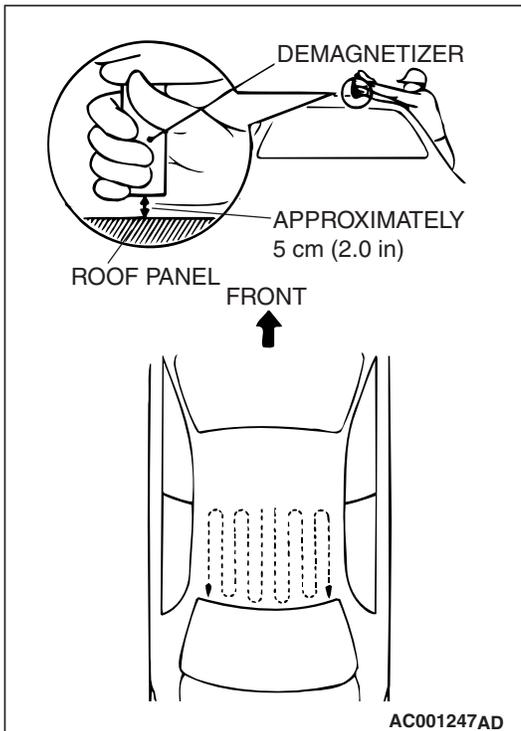
VEHICLE MAGNETIC COMPENSATION DEMAGNETIZATION AND CORRECTION METHOD

M1543009700200

COMMERCIAL DEMAGNETIZER



AC001246AB



AC001247AD

1. Demagnetize the body using a commercial demagnetizer.

2. 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.

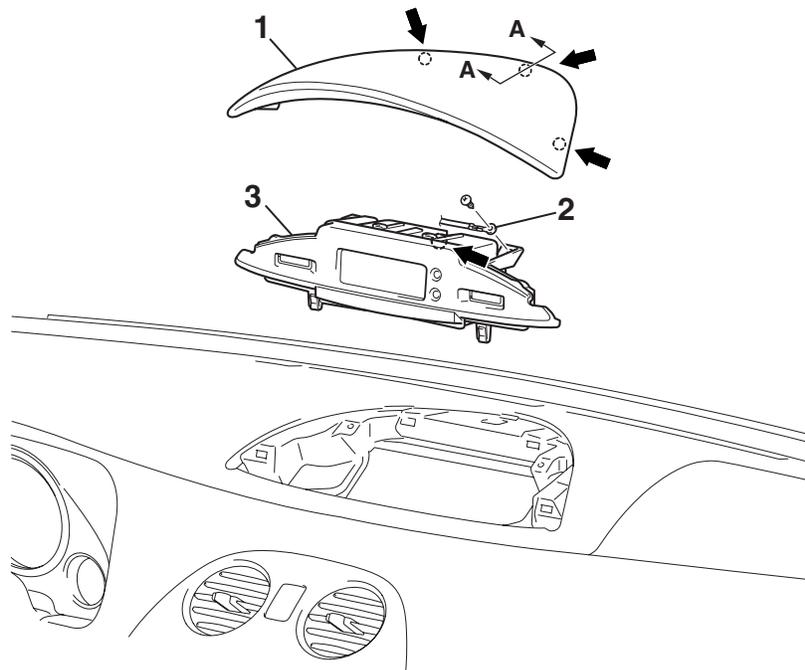
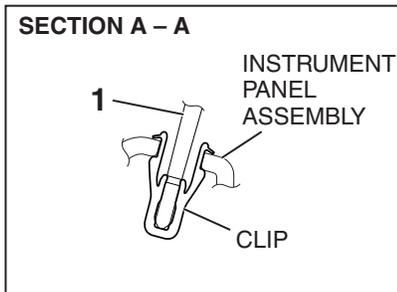
3. Slowly draw the demagnetizer apart from the body. Turn off the switch of demagnetizer when it is apart from the body more than 5 cm (2.0 inches).

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.

**MULTI-CENTER DISPLAY
REMOVAL AND INSTALLATION**

M1543013600198



NOTE

← : CLIP POSITION

AC406140AB

REMOVAL STEPS

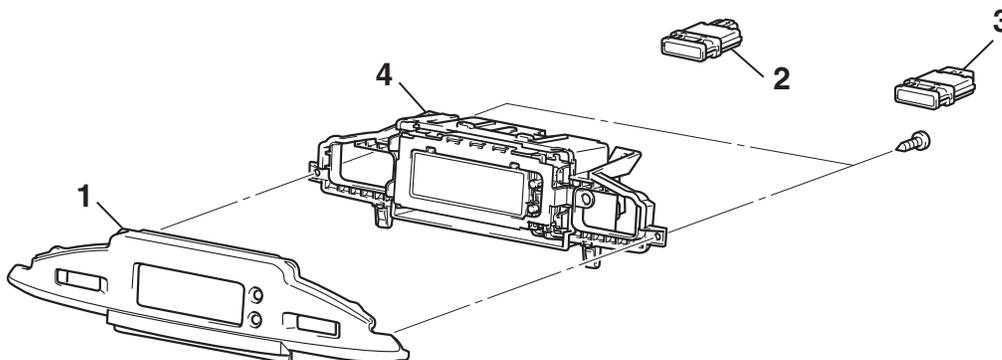
1. INSTRUMENT PANEL CENTER COVER

REMOVAL STEPS (Continued)

2. GROUNDING
3. MULTI-CENTER DISPLAY ASSEMBLY

DISASSEMBLY AND ASSEMBLY

M1546503100011



AC405977 AB

DISASSEMBLY STEPS

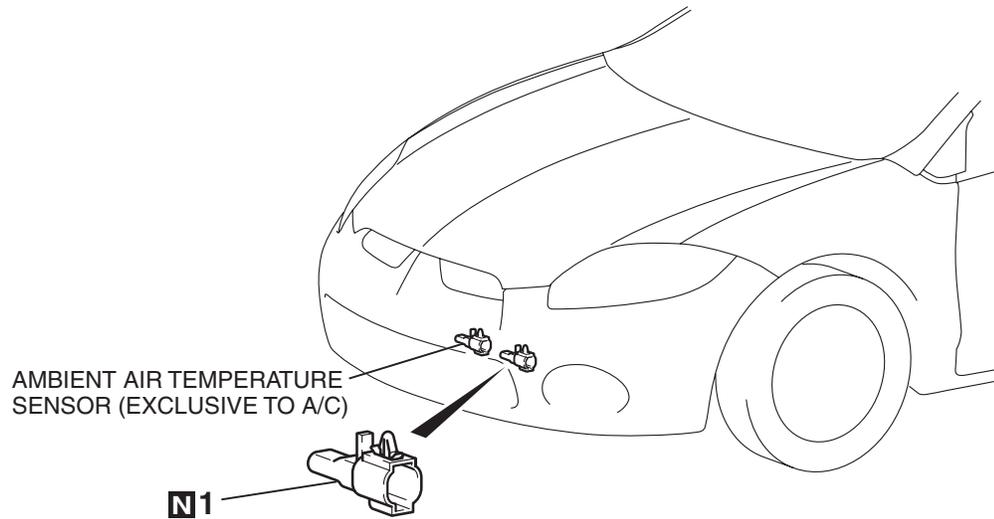
1. MULTI-CENTER DISPLAY COVER
2. AIR BAG INDICATOR

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

M1543019503466

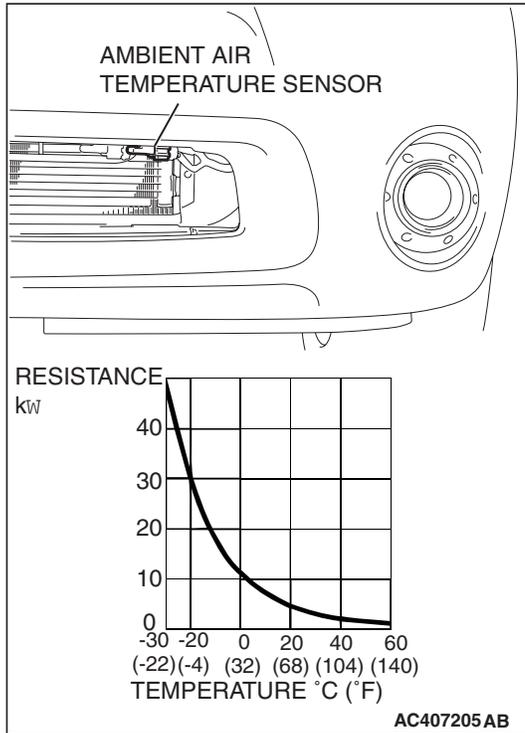
**AMBIENT AIR TEMPERATURE SENSOR
(EXCLUSIVE TO MULTI-CENTER DISPLAY)
CHECK**

⚠ CAUTION

The ambient air temperature sensor should be checked without removing it. If the sensor is removed, it is no longer serviceable.

Measure the resistance between the sensor terminals under at least two temperatures. The resistance values should meet the values shown.

NOTE: The temperature should be within the shown range.



PANIC ALARM

REMOVAL AND INSTALLATION

M1547002600022

Panic alarm system component parts

- Headlight assembly (refer to [P.54A-137](#)).

- Horn (refer to [P.54A-150](#)).

SPECIFICATIONS**FASTENER TIGHTENING SPECIFICATIONS**

M1541001600087

ITEM	SPECIFICATION
Amplifier box bracket mounting bolts	5.0 ± 1.0 N· m (44 ± 9 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	1.5 ± 0.2 N· m (13 ± 2 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 nuts	4.9 ± 0.7 N· m (44 ± 6 in-lb)
Horn mounting bolts	21 ± 4 N· m (16 ± 2 ft-lb)
License plate light assembly mounting screws	1.7 ± 0.3 N· m (15 ± 3 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)
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)
Woofers cover mounting bolts and nut	5.0 ± 1.0 N· m (44 ± 9 in-lb)
Woofers bracket mounting bolts	5.0 ± 1.0 N· m (44 ± 9 in-lb)

SERVICE SPECIFICATIONS

M1541000300395

<BATTERY>

ITEM	STANDARD VALUE
Specific gravity of battery electrolyte [at 20° C (68° F)]	1.220 – 1.290

<COMBINATION METER>

ITEM	STANDARD VALUE	
Speedometer indication error 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)
Speedometer indication error mph (km/h) <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)

ITEM		STANDARD VALUE	
Tachometer indication error 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)

<HEADLIGHT>

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

<FRONT FOG LIGHT>

ITEM		STANDARD VALUE	LIMIT
Front fog light aiming (cutoff line direction) [at 7.62 m (25.0 ft)]	<Vehicles with 17-inch wheel>	The horizontal line 153.0 mm (6.02 inches) (1.15 degrees angle) below the horizontal line (H)	–
	<Vehicles with 18-inch wheel>	The horizontal line 186.2 mm (7.33 inches) (1.40 degrees angle) below the horizontal line (H)	–
Front fog light aiming (vertical direction) [at 7.62 m (25.0 ft)]		–	Area from 53.2 mm (2.09 inches) (0.4 degrees angle) above the cutoff line to 99.8 mm (3.93 inches) (0.75 degrees angle) below the cutoff line
Front fog light aiming (horizontal direction) [at 7.62 m (25.0 ft)]		–	Vertical line (V) ± 599.7 mm (± 23.6 inches) (± 4.5 degrees angle).