GROUP 54A

CHASSIS ELECTRICAL

CONTENTS

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 (*).

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BATTERY

ON-VEHICLE SERVICE

BATTERY CHECK

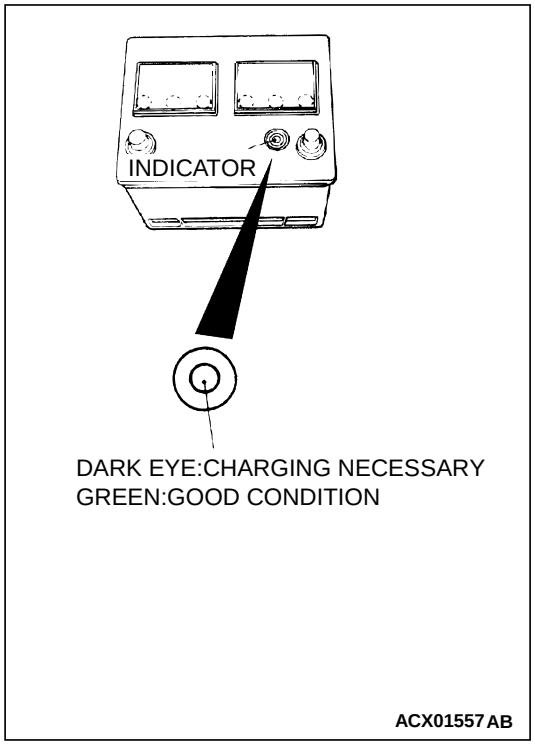
M1541001000256

⚠ ***WARNING***

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

BATTERY VISUAL INSPECTION (1)

The battery contains a visual test indicator which gives a green signal when an adequate charge level exists, and a dark signal when charging is required.



BATTERY VISUAL INSPECTION (2)

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

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

⚠ ***WARNING***

Care should be taken in the event 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 the battery carrier for damage caused by loss of acid from 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 the order of mention.
10. Tighten the clamp nut securely.

BATTERY CHARGING

M1541001100242

⚠ ***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

If the test indicator is dark, the battery should be charged as outlined below. When the dot appears or when maximum charge shown below is reached, charging should be stopped.

Charge Rate Chart

BATTERY	BCI Group size 86
Slow charging	5 amps 15 hours
	10 amps 7.5 hours
Fast charging	20 amps 3.75 hours
	30 amps 2.5 hours

BATTERY TEST

M1541001200249

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

STEP 5. Charge battery.

Q: Charging the battery?
YES : Charge the battery at 5 amps for 15 hours. Then re-test, go to Step 4.
NO : Go to Step 6.

STEP 6. Check the load test.
(1) Connect a load tester to the battery.
(2) Load the battery at the recommended discharge rate (See LOAD TEST RATE CHART) for 15 seconds.
(3) Read voltage after 15 seconds, then remove load.
(4) Compare the measured value with the minimum voltage. (See LOAD TEST CHART.)

Q: Is the voltage higher than minimum voltage?
NO : Replace the battery. Then go to Step 4.
YES : The battery is normal.

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

LOAD TEST RATE CHART

LOAD TEST	252 amps
Cranking ratio (0°F)	525 amps
Reserve capacity	90 minutes
Application	BCI Group size 86

BATTERY

REMOVAL AND INSTALLATION

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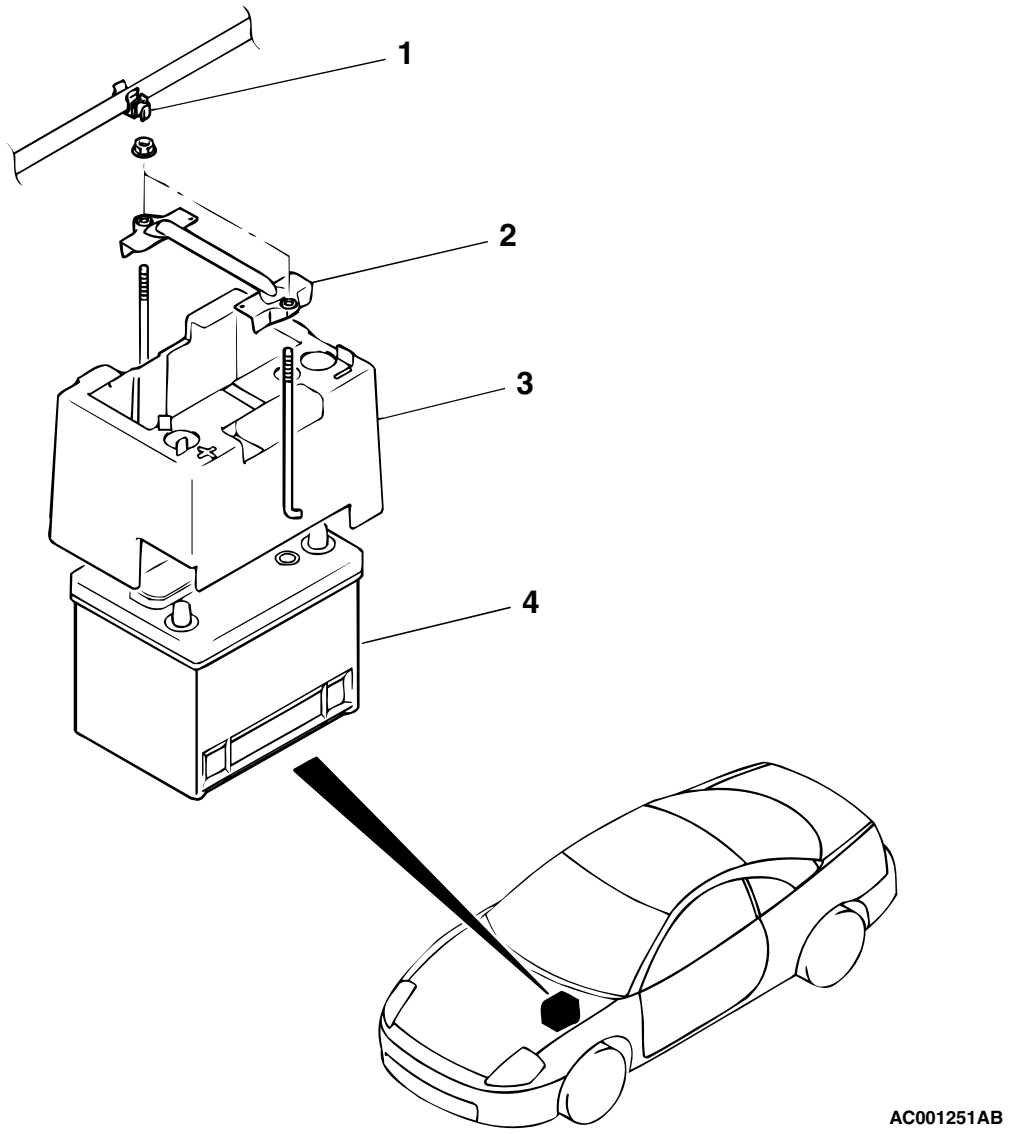

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REMOVAL STEPS
1. ACCELERATOR CABLE CLAMP
2. BATTERY HOLDER

REMOVAL STEPS (Continued)
3. BATTERY COVER
4. BATTERY

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IGNITION SWITCH

GENERAL DESCRIPTION

M1543009900710

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.

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

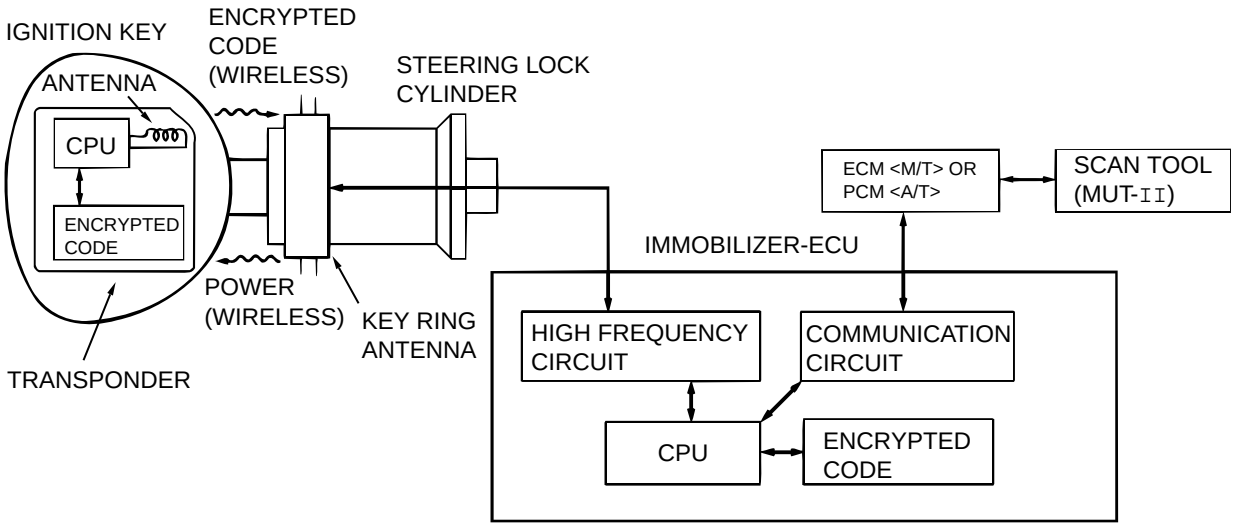
IMMOBILIZER SYSTEM

The immobilizer system consists of the ignition key, the key ring antenna, the immobilizer-ECU, and the ECM <M/T> or PCM <A/T>. The ignition key has a built-in transponder. The key ring antenna is installed on the steering lock key cylinder. Only the registered ignition key permits the engine to start, therefore, the engine can never be started by means of a forged key or by connecting the ignition wiring directly. The system is significantly safe and reliable against theft. In addition, the driver has only to turn the ignition switch to the "ON" position to activate the immobilizer system. If the requirements for starting the engine are not satisfied, the engine will be immobilized. If a registered ignition key is lost, all your ignition keys need to be registered again using scan tool MB991502 (MUT-II) to ensure security (refer to P.54A-28.). An additional ignition key can be registered as follows (only if no ignition keys are lost):

- Using scan tool MB991502 (MUT-II) (Refer to P.54A-28.)
- Registering new ignition keys by operating ignition keys that already have been registered (Refer to P.54A-28.)

CONSTRUCTION DIAGRAM

1. When the ignition switch is turned to "ON" position, the ECM <M/T> or PCM <A/T> sends a requirement for the encrypted code to the immobilizer-ECU (at this time, the engine is remobilized).
2. When the immobilizer-ECU receives the requirement from the ECM <M/T> or PCM <A/T>, the immobilizer-ECU supplies power to the transponder inside the ignition key via the antenna. The energized transponder sends the encrypted code back to the immobilizer-ECU via the antenna.
3. The immobilizer-ECU judges the encrypted code with its code logic in itself. If they are identical, the immobilizer-ECU sends the encrypted code to the ECM <M/T> or PCM <A/T>.
4. If the ECM < M/T> or PCM < A/T> can not receive the encrypted code, the engine will be immobilized.



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DISPOSITION WHEN REPLACING IMMOBILIZER SYSTEM RELATED PARTS

The replacing immobilizer system related parts is as follows. When the ignition key is re-registered with the MUT-II, the originally registered ignition key registration information will be lost.

ITEMS	ECM <M/T> OR PCM <A/T>	IMMOBILIZER-ECU	IGNITION KEY
When replacing ECM <M/T> or PCM <A/T>	-	Replacement not required	Replacement not required. Re-registration are required.
When rewriting ECM <M/T> or PCM <A/T>	-	Replacement not required	Replacement not required. Re-registration not required.
When replacing immobilizer-ECU	Replacement not required	-	Replacement not required. Re-registration are required.
When adding ignition keys newly (if no registered ignition keys are lost)	Replacement not required	Replacement not required	Register only additional ignition keys to be registered.
When adding ignition key newly (if a registered ignition key is lost)	Replacement not required	Replacement not required	Register ignition key to be added and re-register all other ignition keys.
When ignition key is lost	Replacement not required	Replacement not required	Re-register all other ignition keys except the lost one.

EQUIPMENT DIAGNOSIS

IGNITION SWITCH DIAGNOSIS

M1543000700515

The Ignition key reminder torn alarms are controlled by the Simplified Wiring System (SWS). For trouble-shooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

INTRODUCTION TO IMMOBILIZER SYSTEM DIAGNOSIS

M1543009900721

⚠ CAUTION

- **The encrypted code should always be re-registered when replacing the immobilizer-ECU.**
- **If the immobilizer-ECU has been replaced with a new part, the password (vehicle secret code) which has been stored in the immobilizer-ECU for each vehicle will be replaced by a new password (secret code) specified by the customer.**

The immobilizer system consists of the 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. In addition, if the immobilizer system has immobilized the engine, MFI system DTC P1610 will be output. In this case, observe the immobilizer system troubleshooting. Then, if a malfunction is resolved, the MFI system DTC P1610 should not reset.

IMMOBILIZER SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1543006900391

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find an immobilizer system fault.

1. Gather information about the problem from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any immobilizer system DTC.

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.00-6.
5. If you can verify the condition but there are no immobilizer system DTCs, or the system cannot communicate with scan tool MB991502, refer to Symptom Chart P.54A-15 and find the fault.
6. If there is an immobilizer system DTC, record the number of the DTC, then erase the DTC from the memory using scan tool MB991502.
7. Recreate the immobilizer system DTC set conditions to see if the same immobilizer system DTC will set again.
   - If the same immobilize system DTC sets again, perform the diagnostic procedures for the DTC. Refer to Diagnostic Trouble Code Chart.
   - If you cannot get the same immobilizer system DTC to set again, the malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunctions P.00-6.

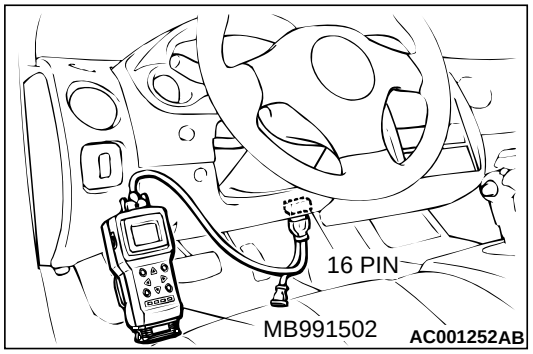
IMMOBILIZER SYSTEM TROUBLE CODE DIAGNOSIS

M1543007000227

Retrieving and Erasing Immobilizer System Diagnostic Trouble Codes

Required Special Tool:
MB991502: Scan Tool (MUT-II)

⚠ CAUTION
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



1. Connect scan tool MB991502 to data link connector (16 pin).
2. Turn the ignition switch to the "ON" position.
3. Use scan tool MB991502 to check or erase immobilizer system diagnostic trouble codes.
4. Turn the ignition switch to the "LOCK" (OFF) position.
5. Disconnect scan tool MB991502.

DIAGNOSTIC TROUBLE CODE CHART

M1543007100235

Follow the inspection chart that is appropriate for the diagnostic trouble code.

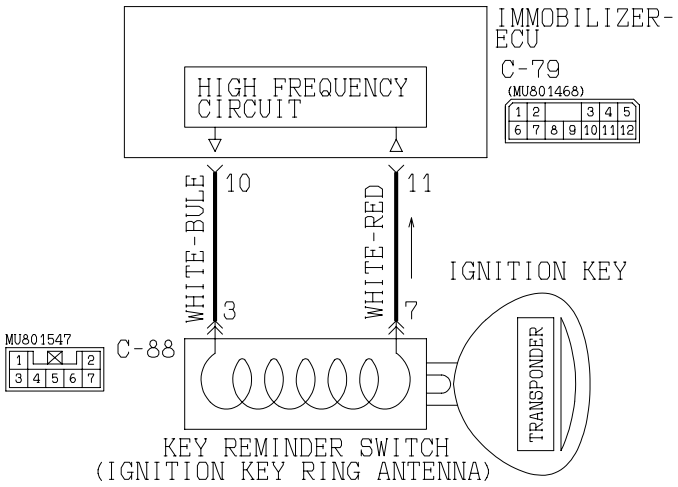
DIAGNOSTIC TROUBLE CODE NO.	DESCRIPTION	REFERENCE PAGE
11	Transponder communication system or radio interference of encrypted code	P.54A-12
12	Encrypted codes are not the same or are not registered	P.54A-15

NOTE: Diagnostic trouble code is not recorded.

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC 11:Transponder Communication System or Radio Interference of Encrypted Code

Ignition Key Ring Antenna Circuit



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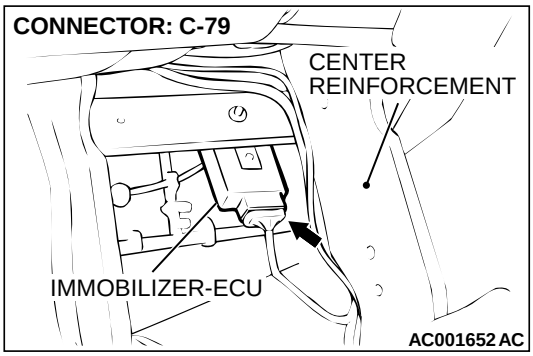

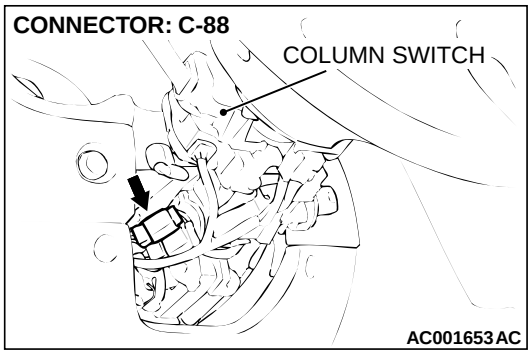

CIRCUIT OPERATION

The ignition key is powered by the ignition key ring antenna, and sends an encrypted code. The ignition key ring antenna receives the encrypted code, and determines whether the ignition key is a registered key or not.

DTC SET CONDITION

- If the engine is started while several ignition keys are in the vicinity, interference between the different keys may occur, which will cause this code to be generated.
- The encrypted code of the transponder is not sent to the immobilizer-ECU immediately after the ignition switch is turned to "ON" position.

NOTE: DTC 11 is always output together with MFI system DTC P1610.

TROUBLESHOOTING HINTS

- Radio interference of encrypted code
- Malfunction of transponder
- Malfunction of ignition key ring antenna
- Malfunction of immobilizer-ECU
- Damaged wiring harness of connectors

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DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool

STEP 1. Check there is another key near the ignition key.

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

YES : Move the other key well away from key being used. Confirm that diagnostic trouble code 11 is not output.

NO : Go to Step 2.

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

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

YES : Replace the ignition key that does not work. Then register the password (secret code) and encrypted code P.54A-28. Confirm that diagnostic trouble code 11 is not output.

NO : Go to Step 3.

STEP 3. Check which DTC is output, DTC11 or DTC12.

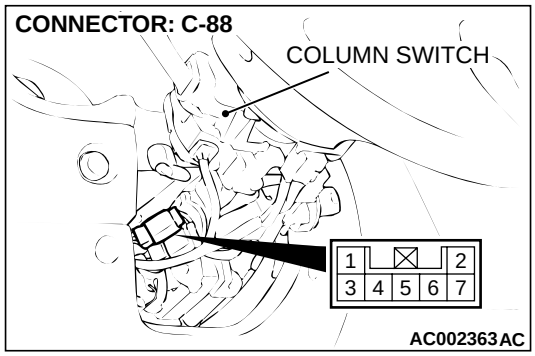
Q: Which DTC is output, DTC 11 or 12?

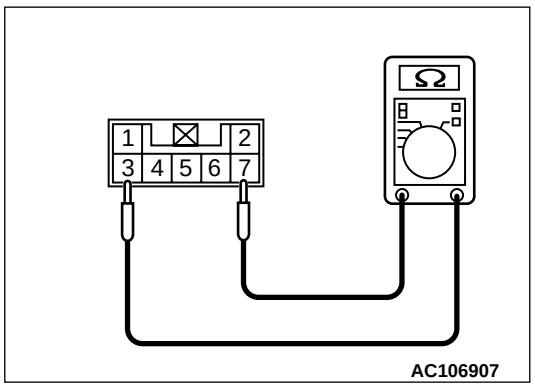
DTC12 is output : Refer to DTC 12 P.54A-15.

DTC11 is output : Go to Step 4.

STEP 4. Check the ignition key ring antenna by backprobing.

(1) Disconnect column switch connector C-88, and measure at the wiring device side.





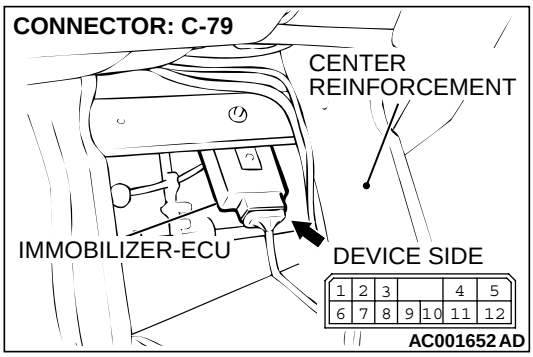
(2) Measure the resistance value between terminal number 3 and terminal number 7 by backprobing.

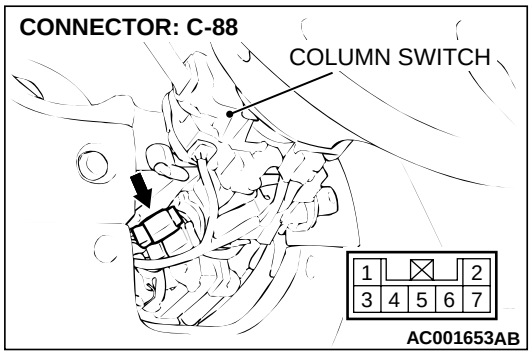
- The measured value should be 2 ohm or less.

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

YES : Go to Step 5.

NO : Replace the ignition key ring antenna. Confirm that diagnostic trouble code 11 is not output.



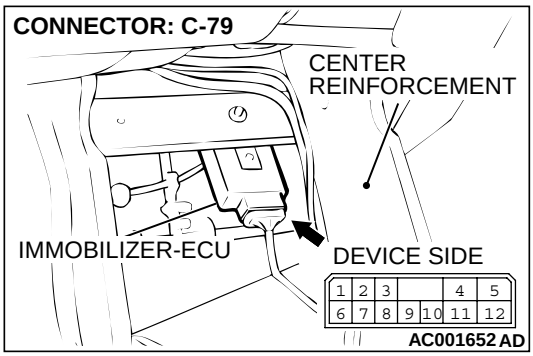


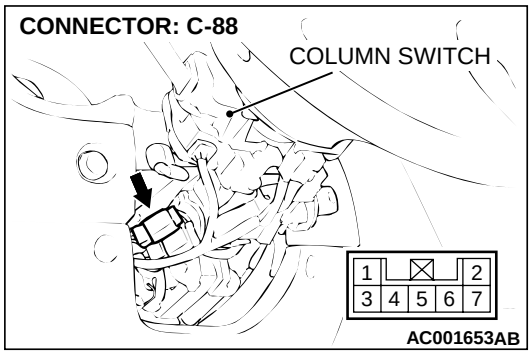
STEP 5. Check immobilizer-ECU connector C-79 and ignition key ring antenna connector C-88 for damage.

Q: Are immobilizer-ECU connector C-79 and ignition key ring antenna connector C-88 in good condition?

YES : Go to Step 6.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Confirm that diagnostic trouble code 11 is not output.





STEP 6. Check the wiring harness between immobilizer-ECU connector C-79 (terminal 10 and 11) and ignition key ring antenna connector C-88 (terminal 3 and 7).

Q: Are the wiring harness between immobilizer-ECU connector C-79 (terminal 10 and 11) and ignition key ring antenna connector C-88 (terminal 3 and 7) in good condition?

YES : Replace the immobilizer-ECU. Then register the password (secret code) and encrypted code (Refer to P.54A-28.) Confirm that diagnostic trouble code 11 is not output.

NO : Repair the wiring harness. Confirm that diagnostic trouble code 11 is not output.

DTC12: Encrypted Codes are not the Same or not Registered

DTC SET CONDITION

The encrypted code which is sent from the transponder is not the same as the encrypted code which is registered in the immobilizer-ECU.

NOTE: DTC 12 is always output together with MFI system DTC P1610.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

STEP 1. Check that the encrypted code was registered.

Q: Was the encrypted code registered?

YES : Replace the immobilizer and then re-register the encrypted code (Refer to P.54A-28.)

NO : Register the encrypted code (Refer to P.54A-28.)

TROUBLE SYMPTOM CHART

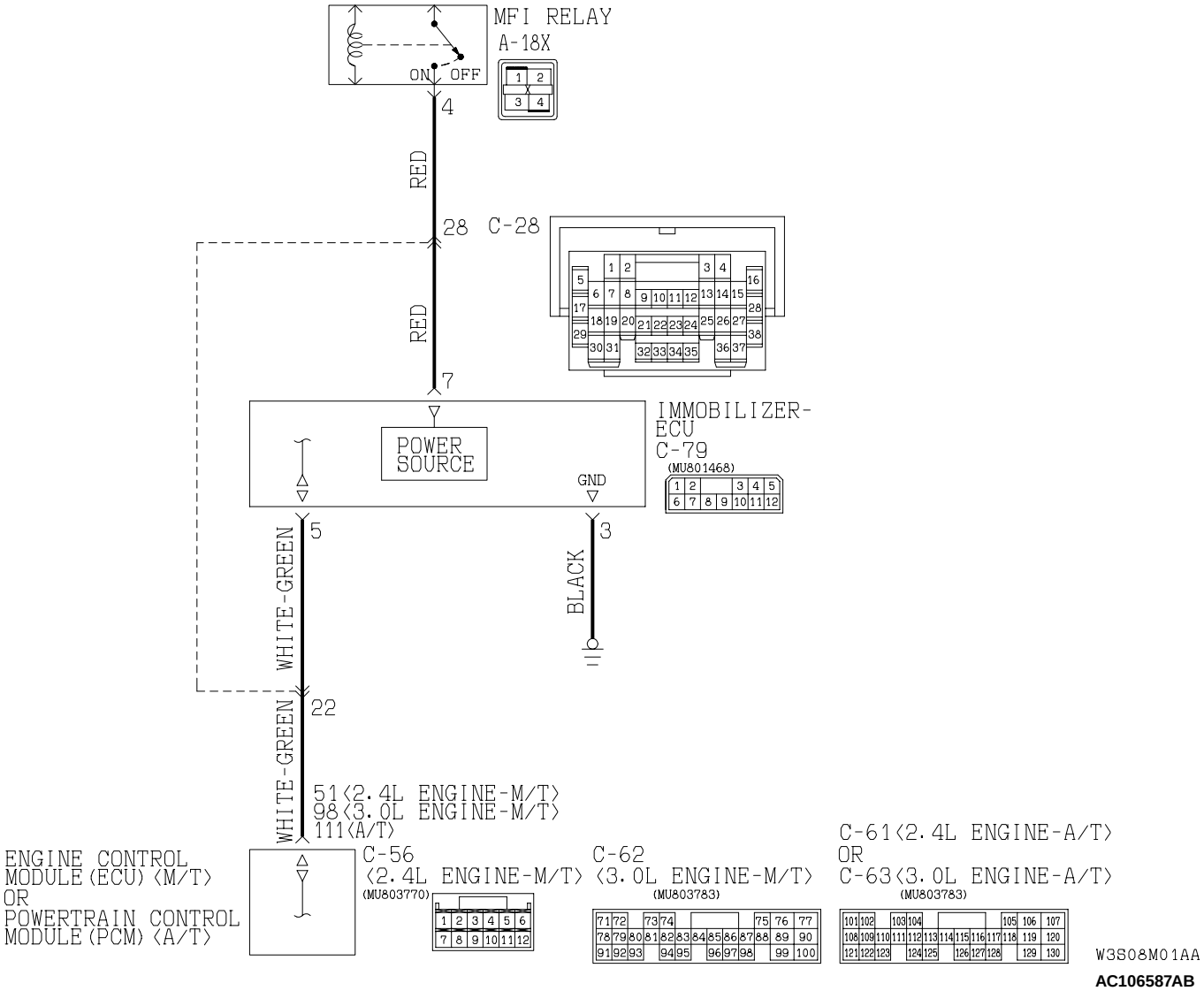
M1543007200544

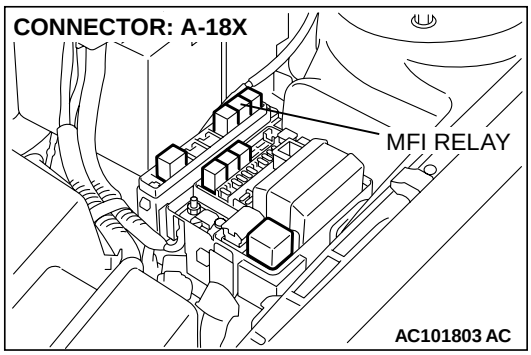
SYMPTOMS	INSPECTION PROCEDURE NO.	REFERENCE PAGE
Communication with scan tool is impossible	1	P.54A-16
Registering the ignition key is impossible	2	P.54A-22
Engine does not start (Cranking but no initial combustion)	3	P.54A-23
The "SECURITY" Indicator Light does not Illuminate.	4	P.54A-24

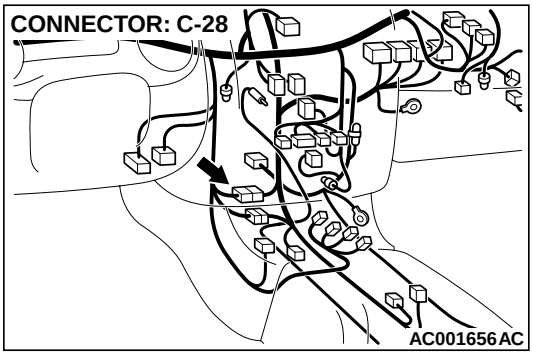
SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Communication with Scan Tool MB991502 is Impossible.

Immobilizer-ECU Power Supply, Ground and ECM <M/T> or PCM <A/T> Communication Line Circuit







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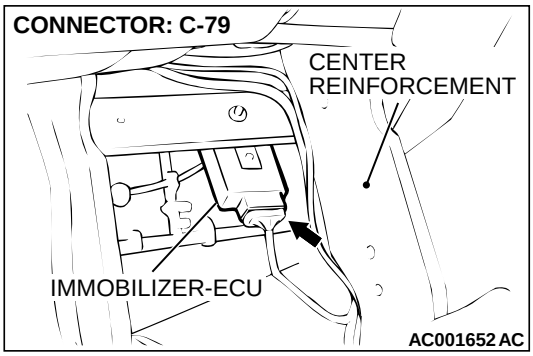
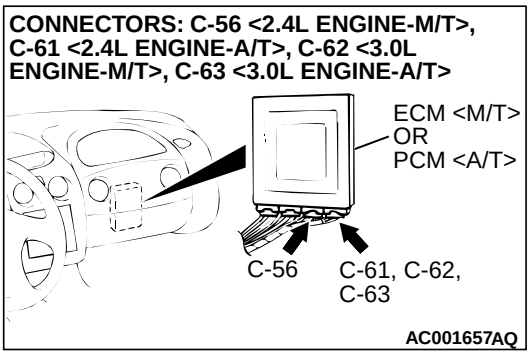




Communication with scan tool MB991502 is impossible

Immobilizer-ECU is energized when the ignition switch is turned "ON," and the MFI relay is turned on. The ECM <M/T> or PCM <A/T> transmits a signal from scan tool MB991502 to the immobilizer-ECU as it is. In the same way, a signal from the immobilizer-ECU is also transmitted to scan tool MB991502 as it is.

TECHNICAL DESCRIPTION (COMMENT)

- This malfunction may be caused by a defective immobilizer-ECU, ECM <M/T> or PCM <A/T>, or a defect in the communication line between the immobilizer-ECU and ECM <M/T> or PCM <A/T>. If this malfunction appears when the MFI system and scan tool MB991502 can communicate each other, MFI system DTC P1610 will reset.
- If the MFI system is normal, the MFI relay can be determined as normal. In addition, if the MFI system and scan tool MB991502 can communicate each other, the circuits between the data link connector and the ECM <M/T> or PCM <A/T> can determined as normal.

  NOTE: If this malfunction appears, MFI system DTC P1610 will be output.

TROUBLESHOOTING HINTS

- Malfunction of immobilizer-ECU
- Malfunction of ECM <M/T> or PCM <A/T>
- Damaged wiring harness or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

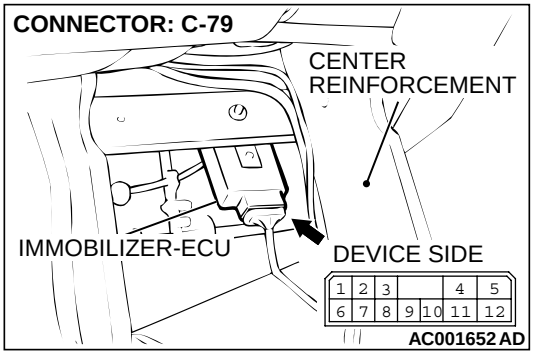
STEP 1. Check scan tool MB991502 communicates with the MFI system and MFI system DTC output other than P1610.

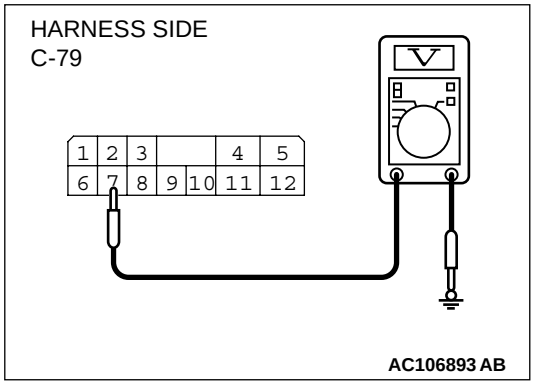
Q: Can scan tool MB991502 communicate with the MFI system? Does MFI system DTC other than P1610 reset?

YES : Go to Step 2.
NO : Refer to GROUP 13A, Diagnosis P.13A-22.

STEP 2. Check the immobilizer-ECU power supply circuit by backprobing.

(1) Do not disconnect immobilizer-ECU connector C-79.
(2) Turn the ignition switch to the "ON" position.





(3) Measure the voltage between terminal 7 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

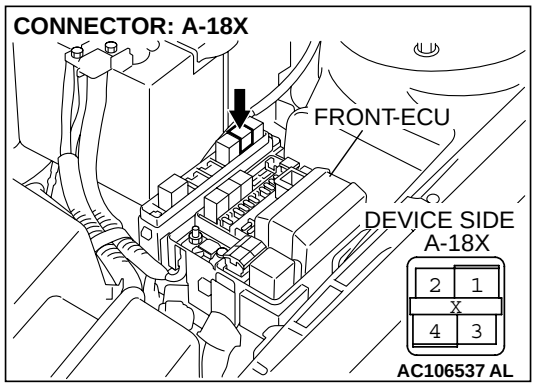
Q: Does the measured voltage correspond with this range?

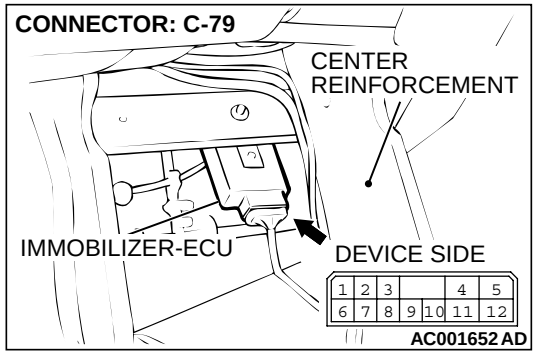
YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Check immobilizer-ECU connector C-79 and MFI relay connector A-18X for damage.

Q: Are immobilizer-ECU connector C-79 and MFI relay connector A-18X damaged?

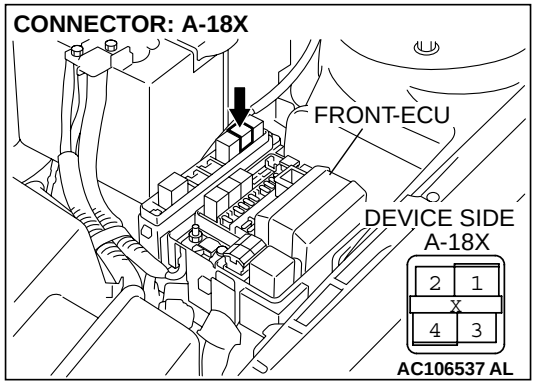
YES : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Confirm that scan tool MB991502 communicates normally.
NO : Go to Step 4.

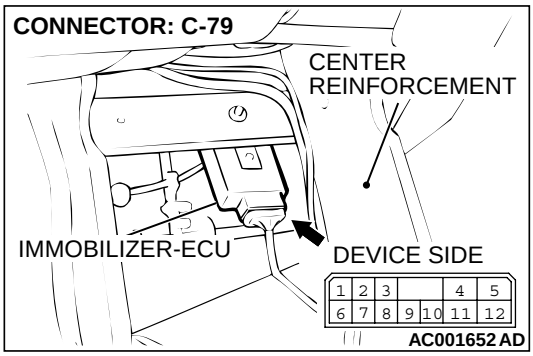


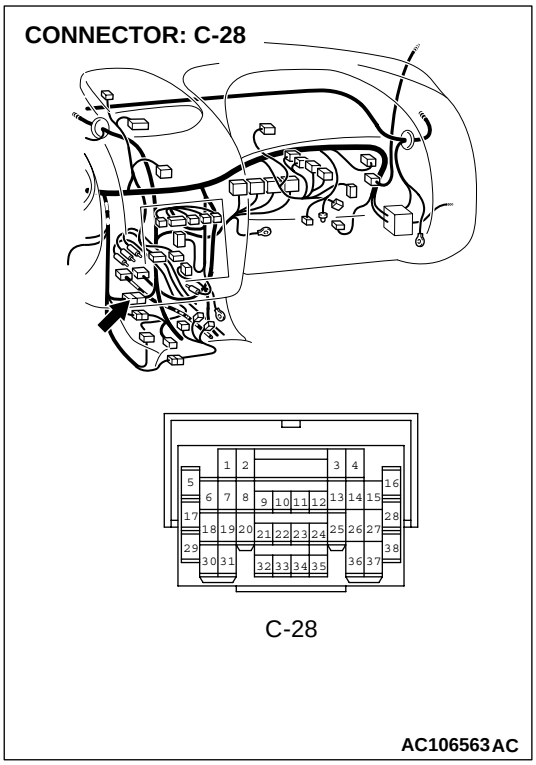


STEP 4. Check the wiring harness between immobilizer-ECU connector C-79 (terminal 7) and MFI relay connector A-18X (terminal 4).

NOTE: After checking intermediate connector C-28,check the wires. If intermediate connector C-28 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





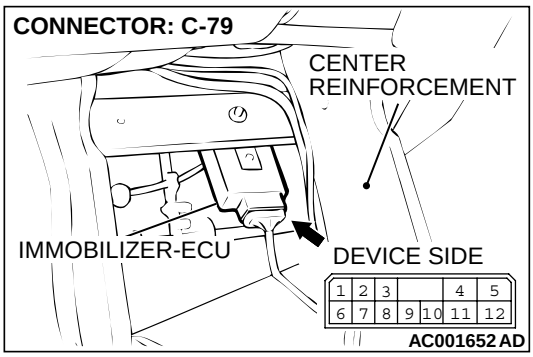


Q: Are the wiring harness between immobilizer-ECU connector C-79 (terminal 7)and MFI relay connector A-18X (terminal 4)damaged?

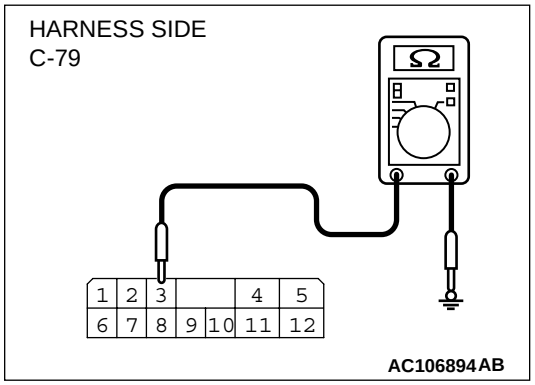
YES : Replace the wiring harness. Confirm that scan tool MB991502 communicates normally.

NO : There is no action to be taken.

STEP 5. Check the immobilizer-ECU ground circuit by backprobing.



(1) Do not disconnect immobilizer-ECU connector C-79.

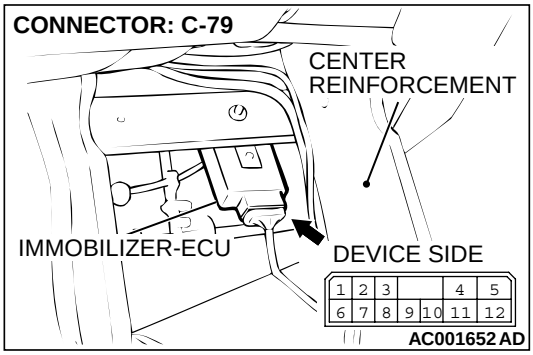


(2) Measure the resistance between terminal 3 and ground by backprobing.
- The measured value should be 2 ohm or less.

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

YES : Go to Step 6.
NO : Go to Step 8.

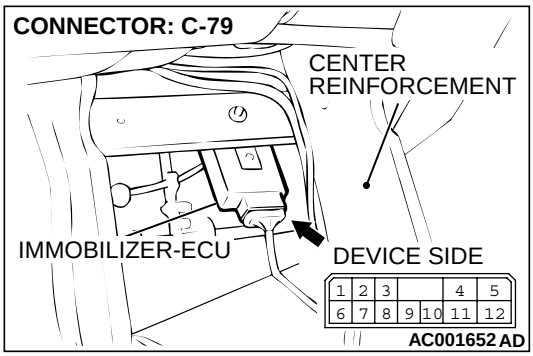
STEP 6. Check immobilizer-ECU connector C-79 for damage.



Q: Is immobilizer-ECU connector C-79 in good condition?

YES : Go to Step 7.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Confirm that scan tool MB991502 communicates normally.

STEP 7. Check the wiring harness between immobilizer-ECU connector C-79 (terminal 3) and ground.



Q: Is the wiring harness between immobilizer-ECU connector C-79 (terminal 3) and ground damaged?

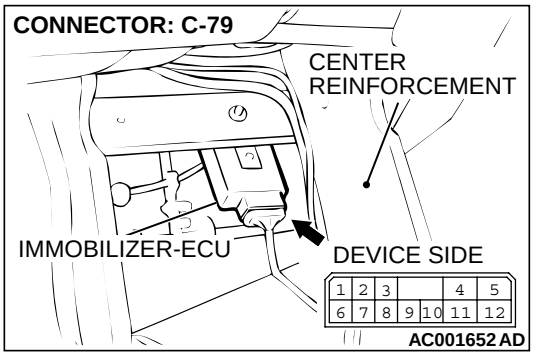
YES : Repair the wiring harness. Confirm that scan tool MB991502 communicates normally.
NO : There is no action to be taken.

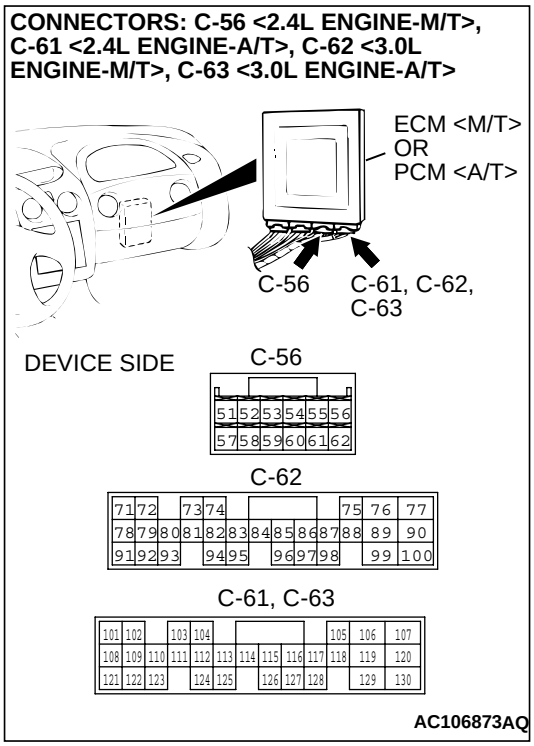
STEP 8. Check the wiring harness between immobilizer-ECU connector C-79 (terminal 5) and ECM connector C-56 (terminal 51) <2.4L M/T>, C-62 (terminal 98) <3.0L M/T> or PCM connector C-61 (terminal 111) <2.4L A/T>, C-63 (terminal 111) <3.0L A/T>.

Q: Are the wiring harness between immobilizer-ECU connector C-79 and ECM connector C-56 (terminal 51) <2.4L M/T>, C-62 (terminal 98) <3.0L M/T> or PCM connector C-61 (terminal 111) <2.4L A/T>, C-63 (terminal 111) <3.0L A/T> damaged?

YES : Repair the wiring harness. Confirm that scan tool MB991502 communicates normally.

NO : Go to Step 9.





STEP 9. Replace the immobilizer-ECU.

Q: Did the communication with MUT-II become possible after replacing the immobilizer-ECU?

YES : Register the password (secret code) and encrypted code (Refer to P.54A-28.). Confirm that scan tool MB991502 communicates normally.

NO : Go to Step 10.

STEP 10. Recheck for malfunction

Q: Is a malfunction eliminated?

YES : Go to Step 11.

NO : Replace the immobilizer-ECU.

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STEP 11. Replace the ECM <M/T> or PCM <A/T>.

Q: Did the communication with MUT-II become possible after replacing the Engine control module <M/T> or the power train control module <A/T>?

YES : Register the password (secret code) and encrypted code (Refer to P.54A-28.). Confirm that scan tool MB991502 communicates normally.

NO : Go to Step 12.

STEP 12. Recheck for malfunction

Q: Is a malfunction eliminated?

YES : This diagnosis is complete. (If no malfunction are not 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.00-6.)

NO : Replace the ECM <M/T> or PCM <A/T>.

INSSPECTION PROCEDURE 2: Registering the Ignition Key is Impossible.

TECHNICAL DESCRIPTION (COMMENT)

The transponder built-in ignition key or the immobilizer-ECU is suspected to be defective.

TROUBLESHOOTING HINTS

- Malfunction of ignition key
- Malfunction of immobilizer-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool

STEP 1. Check the DTC 11.

Q: Does DTC11 reset?

YES : Refer to P.54A-12.

NO : Replace the ignition key that cannot be registered. Then re-register the encrypted code P.54A-28. Check that the ignition key can be registered. Then Go to Step 2.

STEP 2. Recheck for malfunction

Q: Is a malfunction eliminated?

YES : This diagnosis is complete. (If no malfunction are not found in all steps, an intermittent malfunction is suspected. Refer to INTRODUCTION, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

NO : Replace the immobilizer-ECU.

INSPECTION PROCEDURE 3: Engine does not Start (Cranking but no Initial Combustion).

TECHNICAL DESCRIPTION (COMMENT)

If the fuel injectors are not operating, there might be a problem with the MFI system in addition to a malfunction of the immobilizer system. It is normal for this to occur if an attempt is made to start the engine using a key that has not been properly registered.

TROUBLESHOOTING HINTS

- Malfunction of MFI system
- Malfunction of immobilizer-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool

STEP 1. Check the battery positive voltage.

Measure the battery positive voltage during cranking.

Q: Is the voltage 8 volts or more?

YES : Go to Step 2.

NO : Check the battery. Refer to P.54A-5. The engine should start.

STEP 2. Check the immobilizer system DTC and MFI system DTC.

Q: Which DTC resets, the immobilizer system DTC or the MFI system DTC?

Immobilizer system DTC : Refer to P.54A-11.

MFI system DTC : Refer to GROUP 13A – Diagnosis <2.4L> P.13A-22 or GROUP 13B – Diagnosis <3.0L> P.13B-22.

No DTC : Go to Step 3.

STEP 3. Check the starting system.

Q: Does the engine start?

YES : Go to Step 4.

NO : Refer to GROUP 13A – Diagnosis – Symptom Chart <2.4L> P.13A-25 or GROUP 13B – Diagnosis – Symptom Chart <3.0L> P.13B-26. If a malfunction is not resolved, replace the immobilizer-ECU. Then register the password (secret code) and encrypted code. (Refer to P.54A-28.) The engine should start.

STEP 4. Recheck for malfunction.

Q: Is a malfunction eliminated?

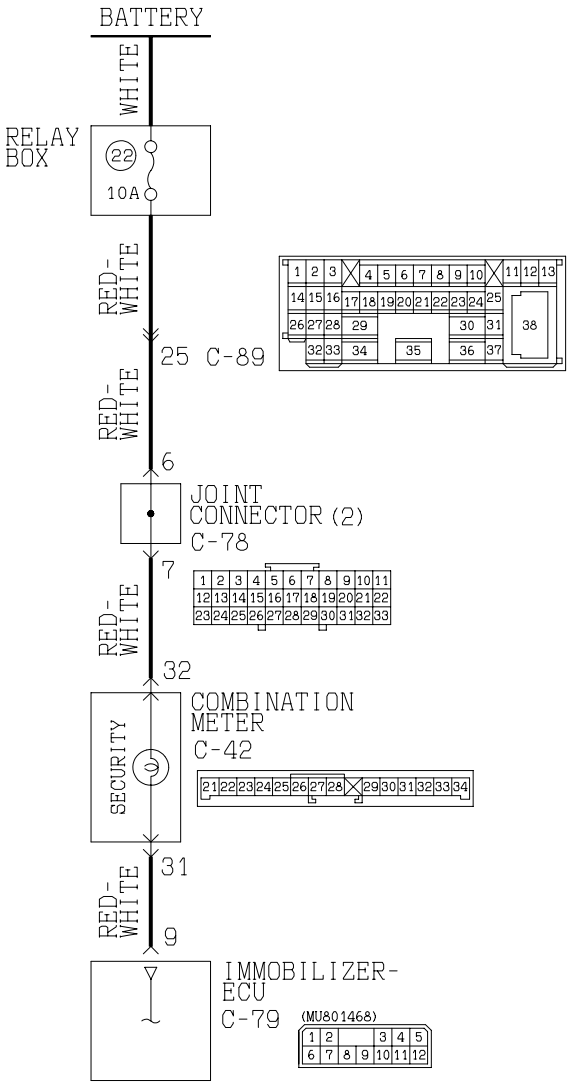
YES : This diagnosis is complete. (If no malfunction are not found in all steps, an intermittent malfunction is suspected. Refer to INTRODUCTION, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

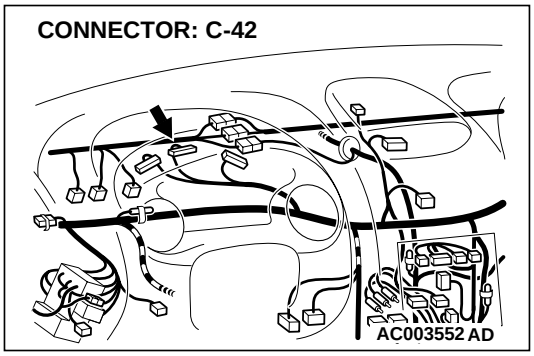
NO : Replace the immobilizer-ECU.

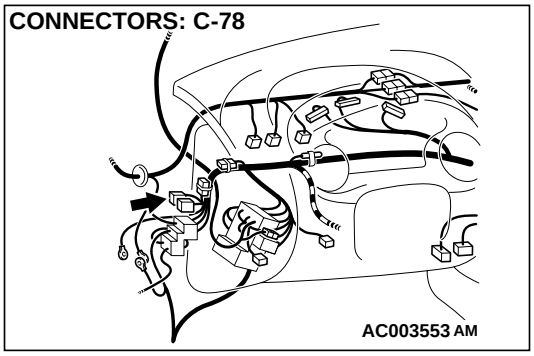
TSB Revision

INSPECTION PROCEDURE 4: The "SECURITY" Indicator Light does not Illuminate.

The Security Indicator Circuit







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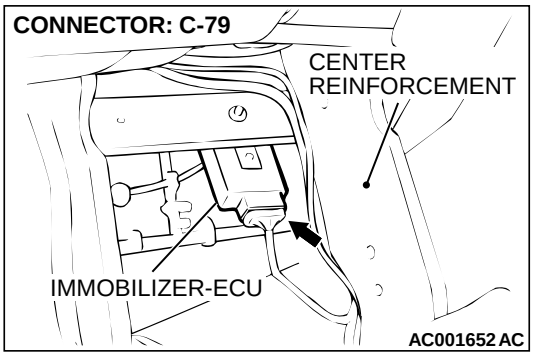
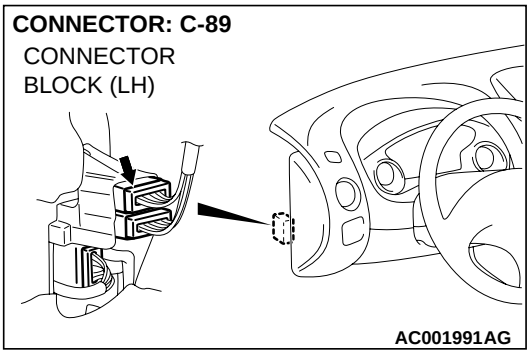




CIRCUIT OPERATION

If the requirements for starting the engine are not satisfied, the immobilizer-ECU flashes the "SECURITY" indicator for 30 seconds.

TECHNICAL DESCRIPTION (COMMENT)

There may be burned out bulb of the "SECURITY" indicator light or a malfunction of the combination meter (printed-circuit board) or immobilizer-ECU.

NOTE: The "SECURITY" indicator light is shared by the "SECURITY" system. If a problem can not be resolved, observe the "SECURITY" system troubleshooting P.54A-269.

TROUBLESHOOTING HINTS

- Burned out bulb of "SECURITY" indicator light
- Malfunction of combination meter (printed-circuit board)
- Malfunction of immobilizer-ECU
- Damaged wiring harness or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

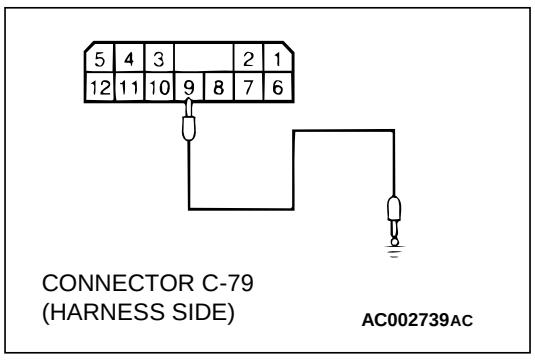
STEP 1. Check the "SECURITY" indicator light circuit of immobilizer-ECU connector C-79.

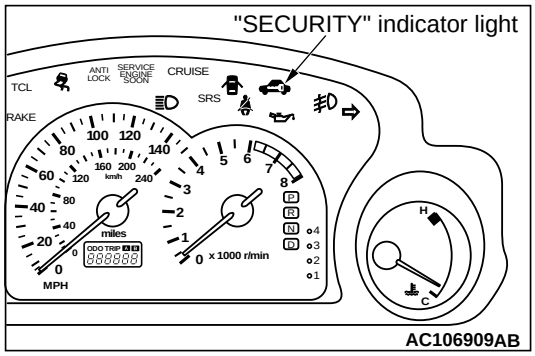
(1) Disconnect the immobilizer-ECU connector C-79 and measure at the harness side.
(2) Connect terminal 9 to the ground.
(3) Ignition switch "ON" position.

Q: Is the only "SECURITY" indicator light illuminate? (other indicator lights are good condition)

YES : Replace the immobilizer-ECU. Then register the password (secret code) and encrypted code P.54A-28

NO : Go to Step 2.



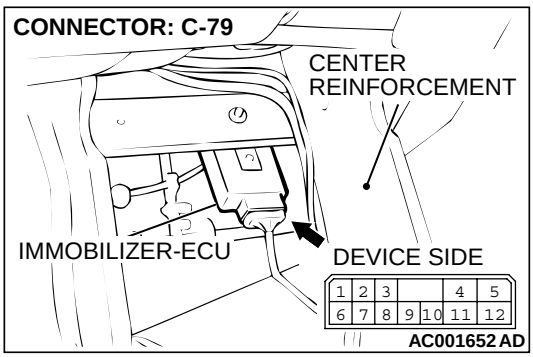


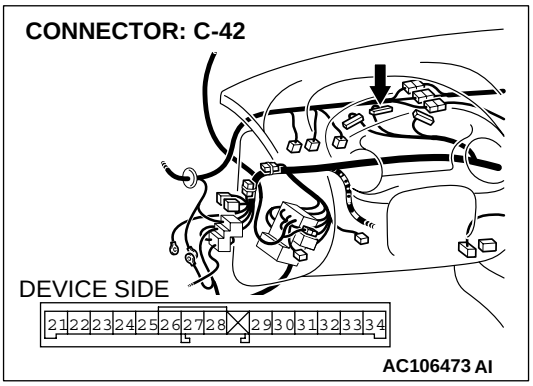
STEP 2. Check the "SECURITY" indicator light

(1) Remove the combination meter and remove the "SECURITY" indicator light bulb.
(2) Check the bulb.

Q: Is the "SECURITY" indicator light damaged?

YES : Replace it.
NO : Go to Step 3.

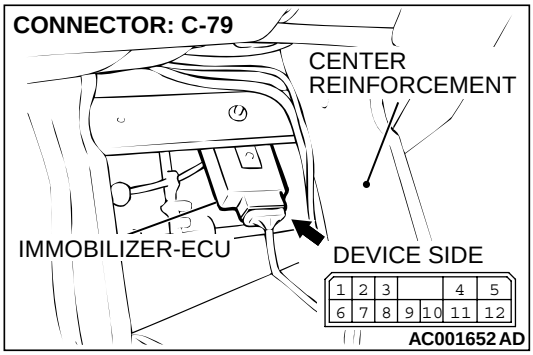


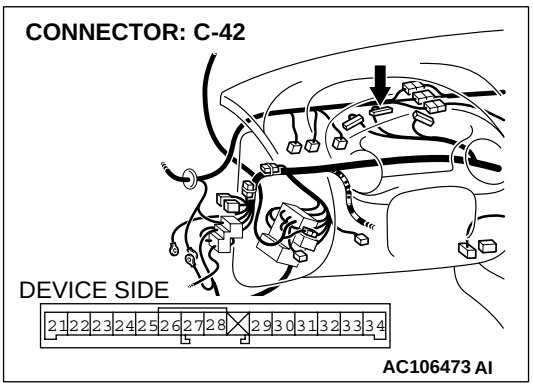


STEP 3. Check the immobilizer-ECU connector C-79 and combination meter connector C-42 for damage.

Q: Are the immobilizer-ECU connector C-79 and combination meter connector C-42 damaged?

YES : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Confirm that scan tool MB991502 communicates normally.
NO : Go to Step 4.





STEP 4. Check the wiring harness between immobilizer-ECU connector C-79 (terminal 9) and combination meter connector C-42 (terminal 31).

Q: Are immobilizer-ECU connector C-79 (terminal 9) and combination meter connector C-42 (terminal 31) damaged?

YES : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

NO : Repair the combination meter (printed-circuit board) P.54A-107. Then Go to Step 5.

STEP 5. Recheck for malfunction.

Q: Is a malfunction eliminated?

YES : This diagnosis is complete. (If no malfunctions are not found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00,How to Use Troubleshooting/Inspection Service Point P.00-6.)

NO : Go to step 1.

DATA LIST REFERENCE TABLE

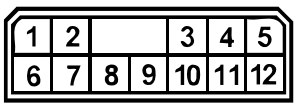
M1543007300206

MUT-II SCAN TOOL DISPLAY	ITEM NO.	INSPECTION ITEM	INSPECTION REQUIREMENT	NORMAL CONDITION
KEY REGISTERED	01	Key has been registered	–	Number of registered ignition keys

CHECK AT IMMOBILIZER-ECU

M1543007600315

TERMINAL VOLTAGE CHECK

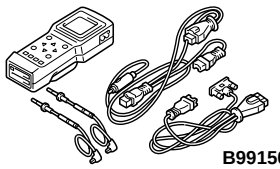
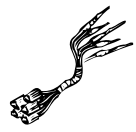
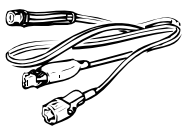
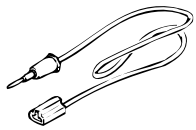


ACX01564 AB

TERMINAL NO.	SIGNAL	CHECKING REQUIREMENT	TERMINAL VOLTAGE
3	Immobilizer-ECU ground	Always	0V
5	ECM <M/T> or PCM <A/T>	–	–
7	Immobilizer-ECU power supply	Ignition switch: "LOCK" (OFF)	0V
		Ignition switch: "ON"	Battery positive voltage
9	"SECURITY" indicator control	"SECURITY" indicator light is not illuminated	Battery positive voltage
		"SECURITY" indicator light is illuminated	2 volts or less
10	Ignition key ring antenna	–	–
11	Ignition key ring antenna	–	–

SPECIAL TOOLS

M1543000600626

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 B991502	MB991502 Scan tool (MUT-II)	MB991496-OD	• Immobilizer system check • Encrypted code registration
A  B  C  D  MB991223AC	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	MB991223	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

ON-VEHICLE SERVICE

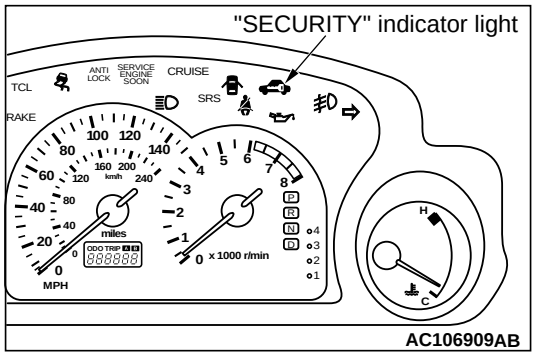
IMMOBILIZER ENCRYPTED CODE REGISTRATION

M1543008100283

ENCRYPTED CODE REGISTRATION METHOD

Required Special Tool:
MB991502: Scan Tool (MUT-II)

TSB Revision



⚠ CAUTION

Because registering the encrypted codes is done after all previously-registered codes have been erased, you should keep all of the ignition keys that have already been registered accessible.

If the ignition key, Immobilizer-ECU, ECM <M/T> or PCM <A/T> is replaced or an ignition key is added, encrypted codes of all the ignition keys must be registered. (A maximum of eight different ignition key can be registered.) Moreover, when the immobilizer-ECU has been replaced, you will need to use scan tool MB991502 to register the immobilizer-ECU and input the vehicle secret code and to register the password (secret code) that the owner specifies into the immobilizer-ECU.

If an attempt is made to start the engine with an unregistered ignition key, cranking occurs, but fuel supply is cut off to disable the engine. In approx. 10 seconds, the theft-alarm indicator will blink for approx. 30 seconds.

NOTE: ECM <M/T> or PCM <A/T> has an encrypted code for immobilizer-ECU, and the encrypted code is registered in the immobilizer-ECU and ignition key.

POINTS TO NOTE DURING OPERATION

If none of the functions can be used, check the diagnostic trouble codes, and after carrying out any necessary repairs, repeat the operation.

If an incorrect password is input five times in a row, the immobilizer-ECU judges that an unauthorized operation is being attempted. Start-prevention mode will be set, and engine operation will stop and all special functions will be disabled. If the ignition switch is turned to "ON" position and left in that position for approximately 20 minutes, "Unauthorized operation, start-prevention mode" will be cancelled.

KEY ID REGISTER

All ignition keys can be registered with scan tool MB991502. Additional ignition keys can be registered with or without scan tool MB991502.

If an ignition key is registered using scan tool MB991502, no registered ignition keys must be lost.

Registration with scan tool MB991502

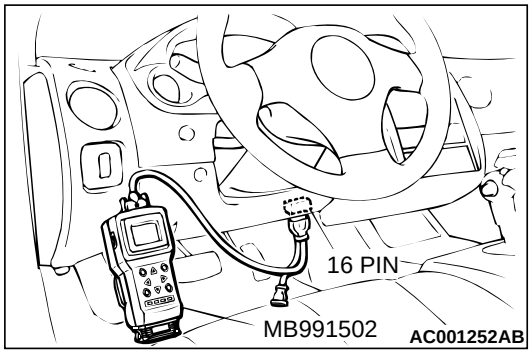
⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

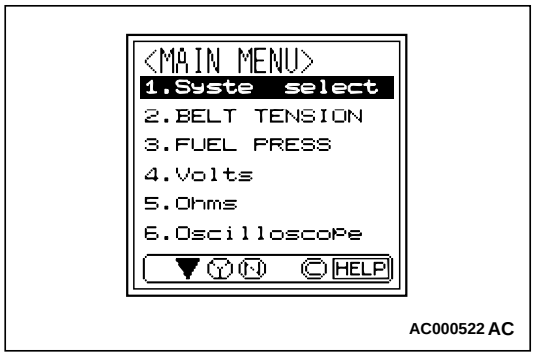
NOTE: Using the key ID register function will cause all key IDs that have been previously registered in the immobilizer-ECU to be erased. All keys need to be registered. Those which have been registered before should be on hand before using this function.

NOTE: If registering more than one key, do not disconnect scan tool MB991502 halfway through the registration process.

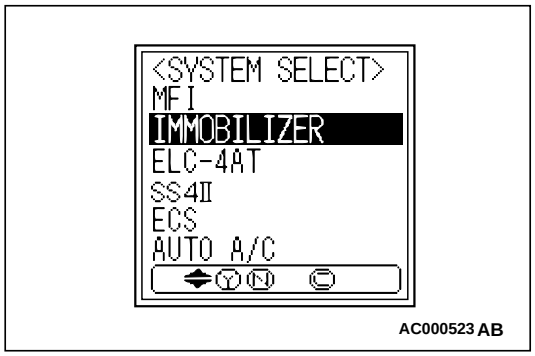
NOTE: After registering key IDs, check that the engine can be started using all of the keys that have been registered. If the engine will not start, refer to Immobilizer System Diagnosis *P.54A-11**.*



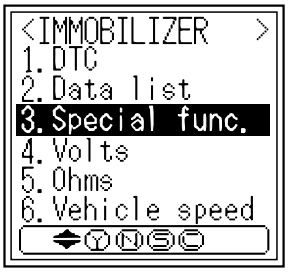
1. Connect scan tool MB991502 to data link connector (16 pin).
2. Turn the ignition switch to "ON" position.



3. At "System Select," press "YES."



4. Select "Immobilizer," press "YES".



AC000530 AB

5. Select "Special Func," press "YES".

AC000518 AB

6. Select "key ID registr," press "YES". If DTC 11 exists," Can't execute" will be displayed. Check for DTC 11 (Refer to P.54A-11.)

AC101475

ACX01626AB

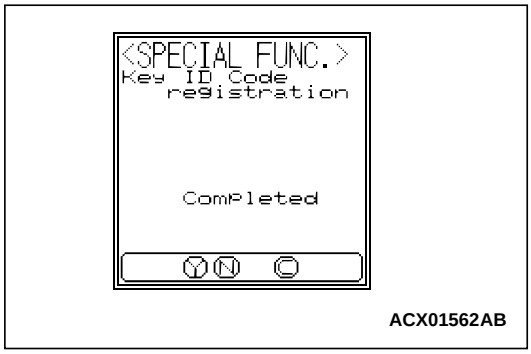
7. Input the password. Use the "UP" and "DOWN" keys to change the current password digit to a value between 0 and 9. Use the "LEFT" and "RIGHT" keys to move to a different password digit. Press the "YES" key to accept the password.

   NOTE: Four separate digits must be input to make up the password.

If an incorrect password is input five times in a row, this screen is displayed and the Immobilizer-ECU switches to unauthorized operation, start-prevention mode.

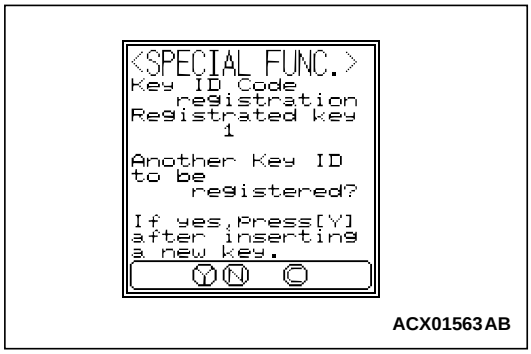
ACX01561AC

8. Press the "YES" key to start key ID registration.



ACX01562AB

9. This will be displayed when the key ID registration is successful. If an error occurs during key ID registration, the message "Can't execute" will be displayed. If the key has already been registered, "Key ID has been registered" will be displayed.



ACX01563AB

10. The number of keys currently registered will be displayed. To register an additional key, replace the ignition key with the next key to be registered within five seconds and then press the "YES" key. Key ID registration screen will be displayed, then register another key.

    NOTE: A maximum of eight different keys can be registered.

    If key ID registration is complete, press the "NO" key.
11. This completes the registration operation. Turn the ignition switch to the "LOCK" (OFF) position and leave it off for approximately ten seconds.
12. Check that the engine can be started with each of the ignition keys.
13. Check that the immobilizer system DTC and MFI system DTC did not set.
14. Turn the ignition switch to the "LOCK" (OFF) position.
15. Disconnect scan tool MB991502.

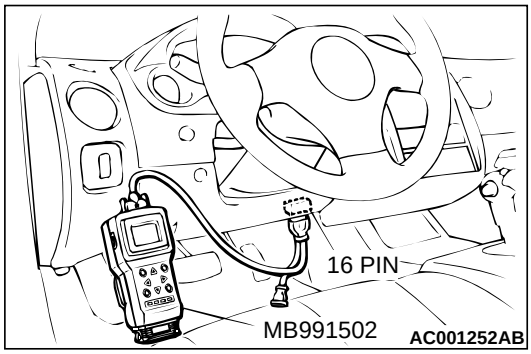
Registration of additional keys with the scan tool

An additional key is registered with the MUT-II while keeping all existing key data.

⚠ CAUTION

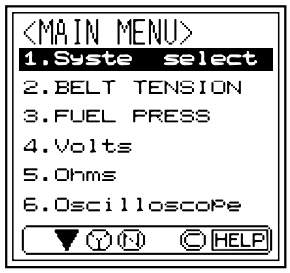
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

NOTE: To register additional keys with the MUT-II, no registered keys must be lost.



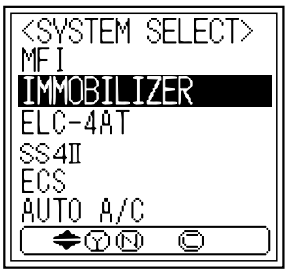
AC001252AB

1. Connect scan tool MB991502 to data link connector (16 pin).
2. Turn the ignition switch to the "ON" position.



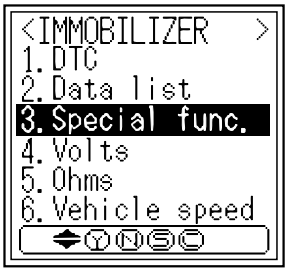
AC000522 AC

3. At "System Select," press "YES"



AC000523 AB

4. Select "Immobilizer," press "YES".



AC000530 AB

5. Select "Special Func," press "YES".

AC000518 AB

6. Select "Add key ID reg," press "YES".
If DTC 11 exists," Can't execute" will be displayed. Check for DTC 11 (Refer to P.54A-11.)

AC101478

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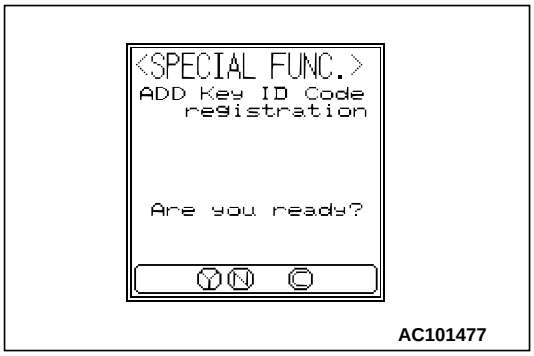
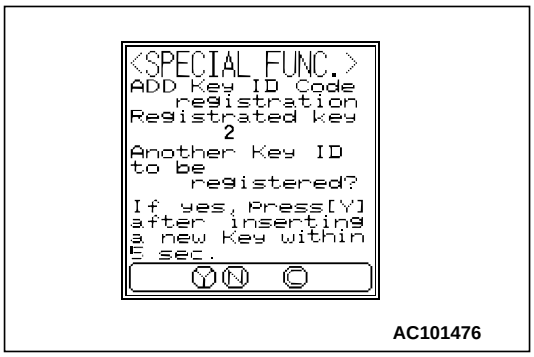


AC101477

7. Press the "YES" key to start key ID registration.
8. This will be displayed when the add key ID registration is successful. If an error occurs during key ID registration, the message "Can't execute" will be displayed. If the key has already been registered, "Key ID has been registration" will be displayed.



AC101476

9. The number of keys currently registered will be displayed. To register an additional key, replace the ignition key with the next key to be registered within five seconds and then press the "YES" key. Key ID registration screen will be displayed, then register another key.

   NOTE: A maximum of eight different keys can be registered.

If key ID registration is complete, press the "NO" key.

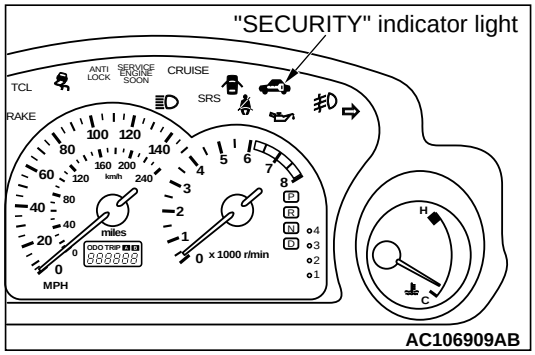
10. This completes the registration operation. Turn the ignition switch to the "LOCK" (OFF) position and leave it off for approximately ten seconds.
11. Check that the engine can be started with each of the ignition keys.
12. Check that the immobilizer system DTC and MFI system DTC did not set.
13. Turn the ignition switch to the "LOCK" (OFF) position.
14. Disconnect scan tool MB991502.

Registration of additional keys without using the scan tool

Operate two registered ignition keys by the following procedure, call additional registration mode for the immobilizer-ECU, then register an additional ignition key by operating it. Additional ignition keys can be registered without using the MUT-II by operating two ignition keys that already have been registered to the vehicle and operating an additional key to be registered. (A maximum of eight ignition keys can be registered.)

1. The ignition switch is "ON" by using he first key (KEY A) which has already been registered to the vehicle.
2. If the first key (KEY A) is correct, the immobilizer-ECU begins the condition ow warning the second key (KEY B) which has already been registered to the vehicle. The ignition switch has been on the "ON" position for longer than 5 seconds so that enters the condition of waiting the second key (KEY B).
3. After the ignition switch is "LOCK" (OFF), it is "ON" by the second key (EY B) which has already been registered to the vehicle.

   The second key (KEY B) must be turned on within 7 seconds of removing the first key.



4. If the second key (KEY B) is correct, the immobilizer-ECU enters the addition entry mode.
   And the "SECURITY" indicator light blinks approx. twice a second.
5. After the "SECURITY" indicator light blinks, the ignition switch is "OFF" (LOCK). And it is "ON" by using the new transponder key. The time which the key can be registered is limited than 30 seconds after the indicator blinks.
6. The time which the key can be registered is limited less than 30 seconds after the "SECURITY" indicator blinks.
7. The immobilizer-ECU controls as follows by the new key condition.

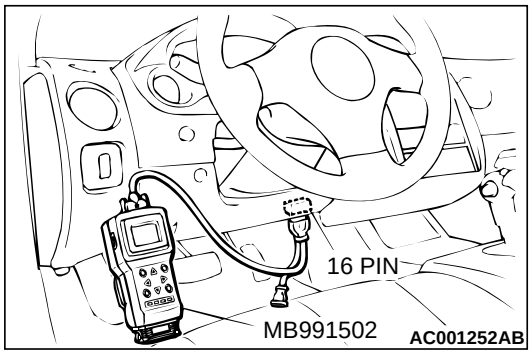
THE NEW KEY CONDITION	ADDITION ENTY	ADDITION MODE	THEFT ALARM INDICATOR	
			ACTION	TIMING
Not registered key	OK	Continuation	Turn on for 3 seconds	After the addition entry mode is finished
Registered key	NO	Continuation	Turn on for 3 seconds	After the registered key is judged
Read error	NO	Continuation	Blink of three times	After read error judged

8. To continue to register another key, set the ignition switch to "LOCK" (OFF) position, and turn the ignition key to be registered "ON" within seven seconds. (the maximum of 8 keys can be registered to each vehicle. If the 9th key registers, the registration will be refused.)
9. The additional registration mode is terminated when any of the following conditions is met:
   - The ignition key is "ON" position keeps more than 30 seconds. (the time-out of addition entry mode)
   - The engine control relay is off after key is turned to the "LOCK" (OFF) position.
   - Start the communication with scan tool
10. The addition registered key can start engine, after the key turned off and the engine control relay is off.

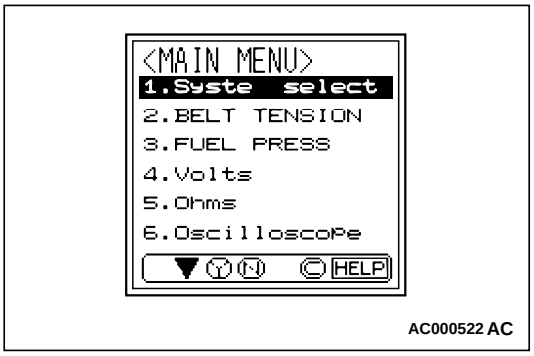
TRANSPONDER LOCK CHECK

M1543024100012

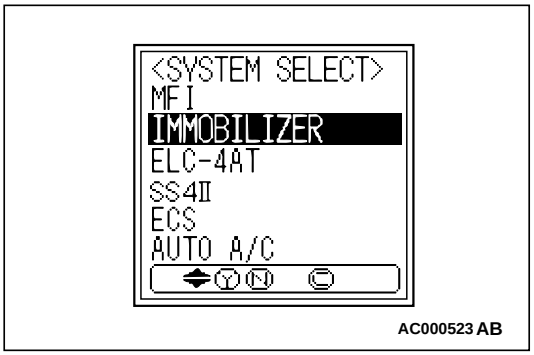
Follow the procedure below to judge if the ignition key can be overwritten (i.e. the ignition key is correct) or not.



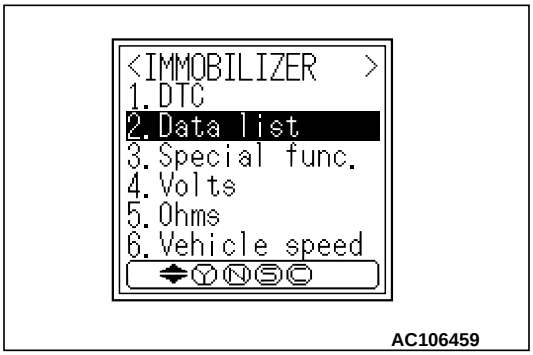
1. Connect scan tool MB991502 to data link connector (16 pin).
2. Turn the ignition switch to "ON" position.



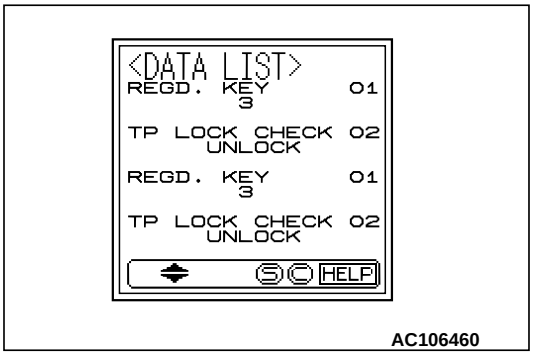
3. At "System Select," press "YES."



4. Select "Immobilizer," press "YES".



5. Select "Date list" press "YES".



6. Confirm "TP LOCK CHECK."

TP LOCK CHECK	IGNITION KEY:	JUDGMENT OF IGNITION KEY
UNLOCK	Can be overwritten	Correct
LOCK	Can not be overwritten	Incorrect

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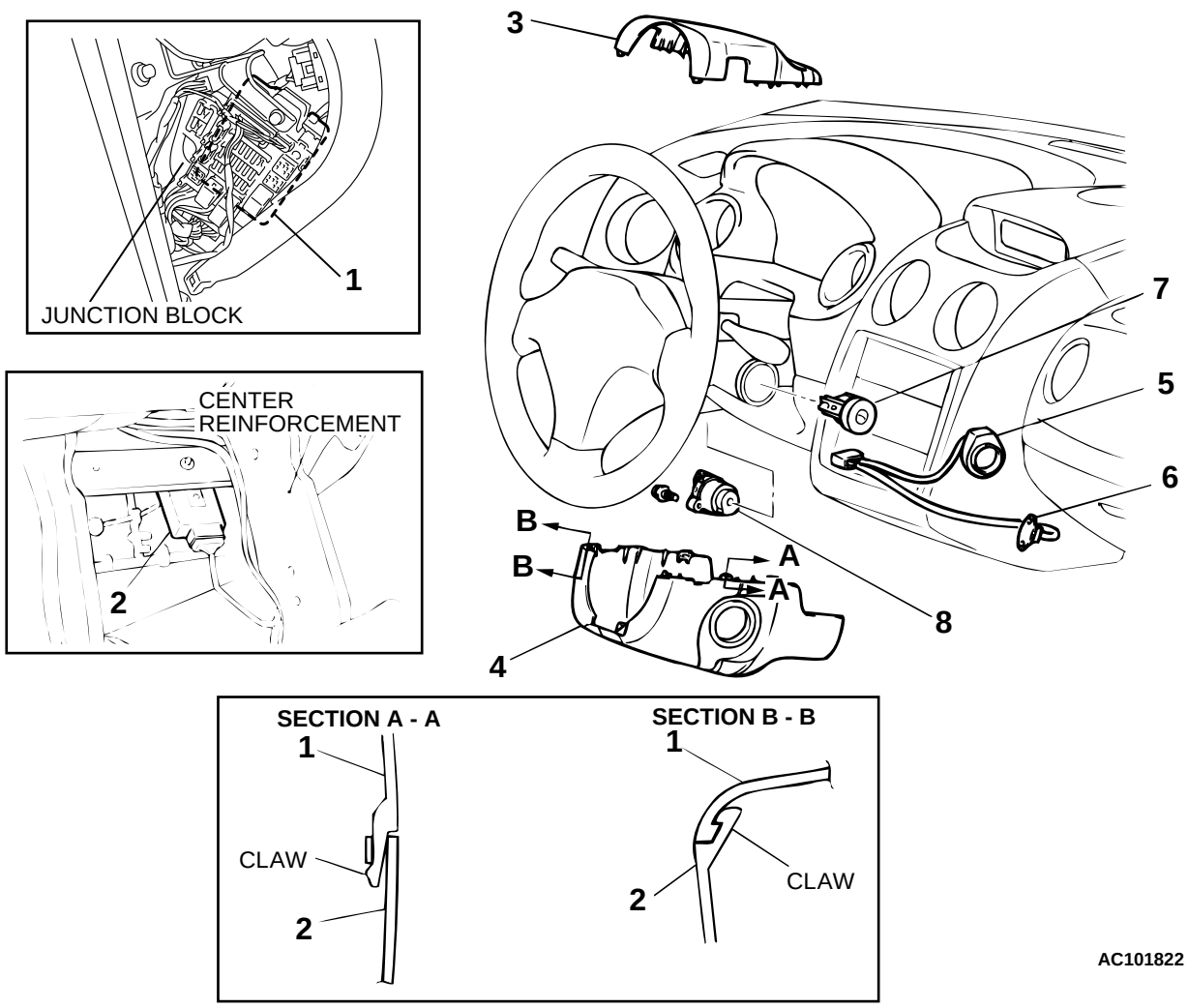
IGNITION SWITCH

REMOVAL AND INSTALLATION

M1543002100241



1. ETACS-ECU

IMMOBILIZER-ECU REMOVAL STEPS

- FRONT FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)

>>A<< 2. IMMOBILIZER-ECU

<<A>>

IGNITION SWITCH REMOVAL STEPS

3. COLUMN COVER UPPER
4. COLUMN COVER LOWER
5. KEY RING ANTENNA
6. KEY REMINDER SWITCH
7. STEERING LOCK CYLINDER
8. IGNITION SWITCH

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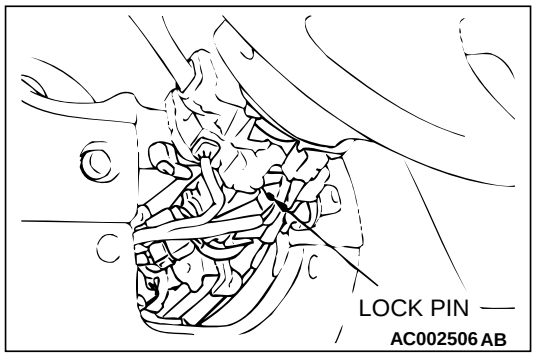
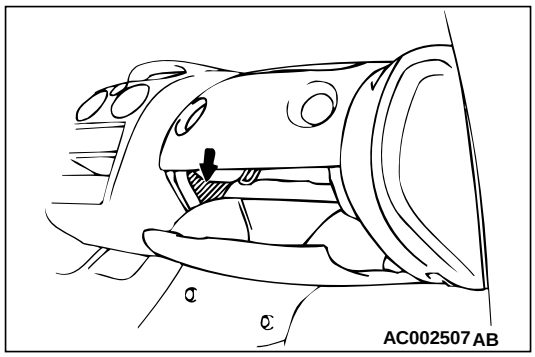
REMOVAL SERVICE POINT



<<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.

INSTALLATION SERVICE POINT



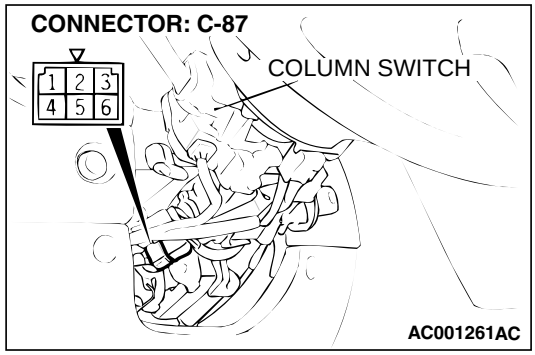
>>A<< IMMOBILIZER-ECU INSTALLATION

If the immobilizer-ECU is replaced, peel off the immobilizer serial number sticker from shown position. Then attach a new immobilizer-ECU identification sticker in the same location.

INSPECTION

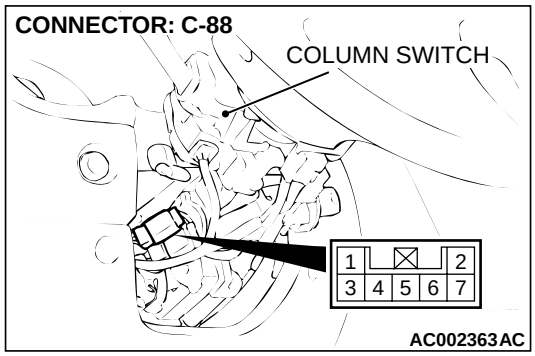
M1544009700054

IGNITION SWITCH CONTINUITY CHECK



Disconnect ignition switch connector C-87 without removing the ignition switch and steering lock cylinder. Then check the continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
"LOCK" (OFF)	1 – 2 – 3 – 4– 5 – 6	Open circuit
"ACC"	1 – 6	Less than 2 ohm
"ON"	1 – 2 – 4 – 6	Less than 2 ohm
"START"	1 – 2 – 3 – 5	Less than 2 ohm



KEY REMINDER SWITCH AND IGNITION KEY RING ANTENNA CONTINUITY CHECK

1. Ignition key reminder switch continuity check.
   Disconnect key reminder switch connector C-88 without removing the ignition switch and steering lock cylinder. Then check the continuity.

STATUS OF IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Removed	4 – 6	Less than 2 ohm
Inserted	4 – 6	Open circuit

2. Ignition key ring antenna check.
   Check the continuity between terminal 3 and terminal 7.
   Standard value: 2 ohm or less

COMBINATION METERS ASSEMBLY AND VEHICLE SPEED SENSOR

INTRODUCTION TO COMBINATION METER DIAGNOSIS

M1543009900732

All vehicles are equipped with an electrical speedometer and tachometer. If the speedometer or tachometer does not function, there may be trouble in the electrical system.

EQUIPMENT DIAGNOSIS

TROUBLESHOOTING STRATEGY

M1543006900409

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a combination meter 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 the malfunction is eliminated.

SYMPTOM CHART

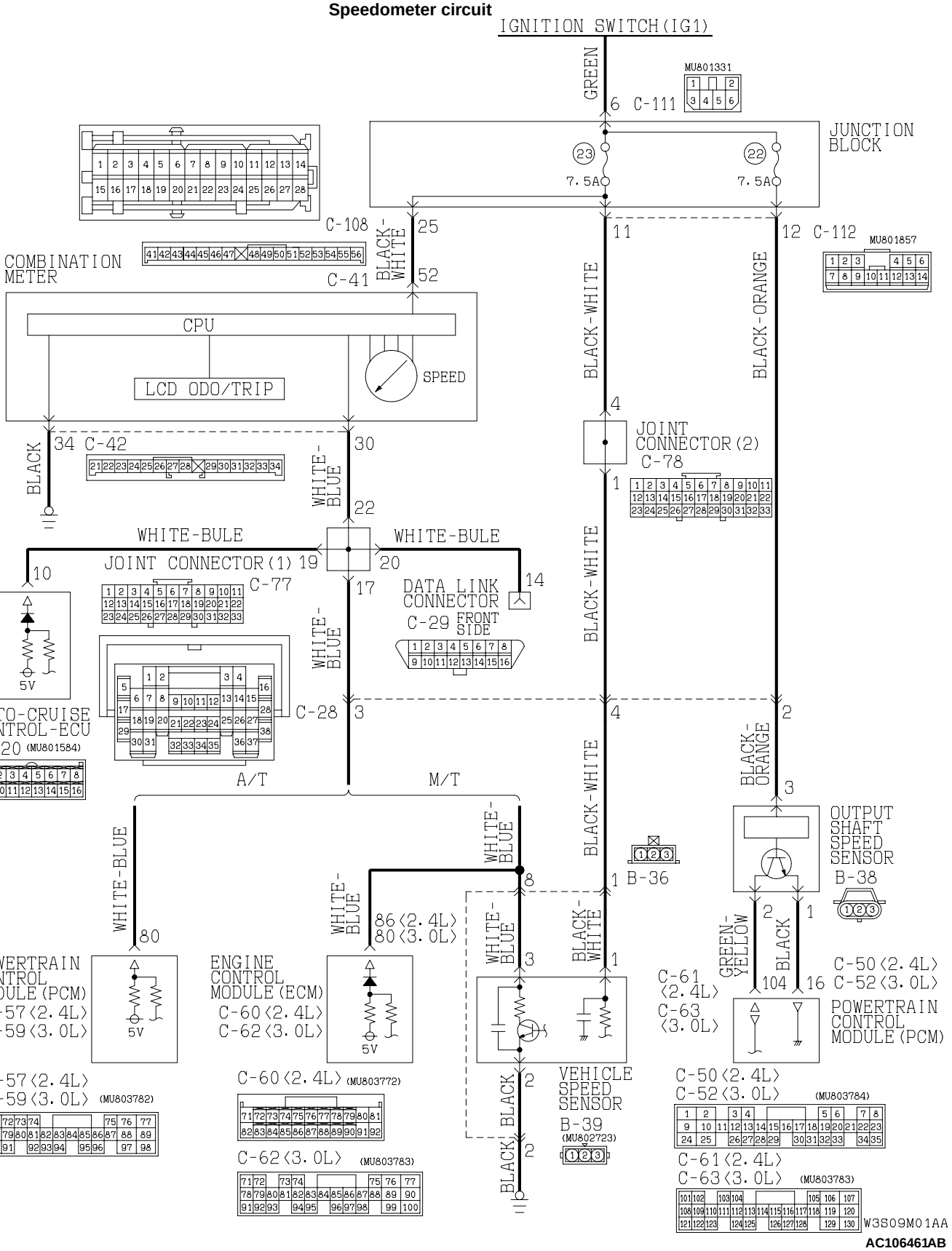
M1543007200555

SYMPTOMS	INSPECTION PROCEDURE	REFERENCE PAGE
Speedometer does not work.	1	P.54A-40
Tachometer does not work.	2	P.54A-74
Fuel gauge does not work.	3	P.54A-88
Engine coolant temperature gauge does not work.	4	P.54A-96

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Speedometer does not Work.

Speedometer circuit



AC106461AB

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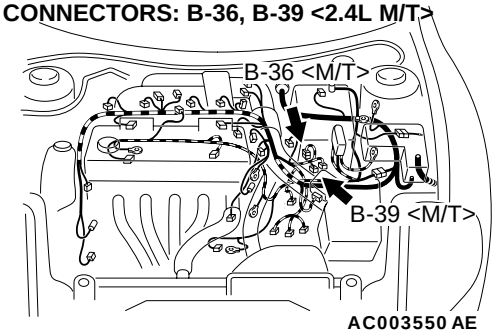
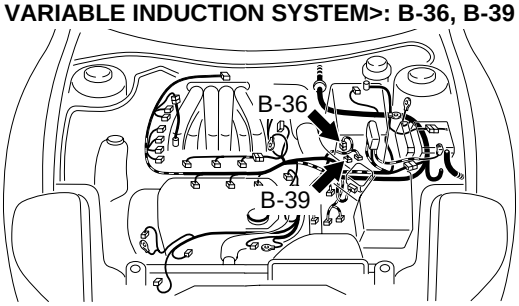
CONNECTORS: B-36, B-39 <2.4L M/T>



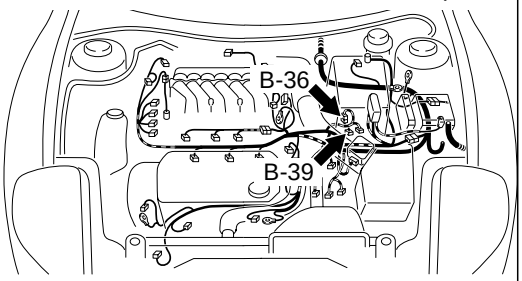
AC003550 AE

CONNECTORS <3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-36, B-39



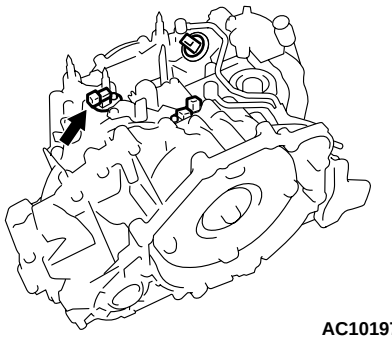
AC106469 AI

CONNECTORS <3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39



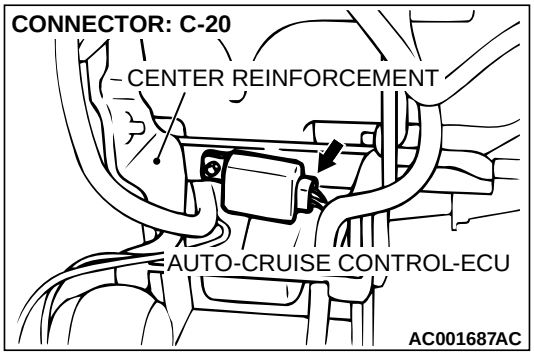
AC106471AI

CONNECTOR: B-38



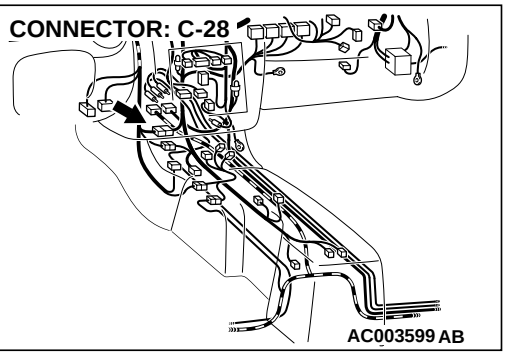
AC101972AC

CONNECTOR: C-20



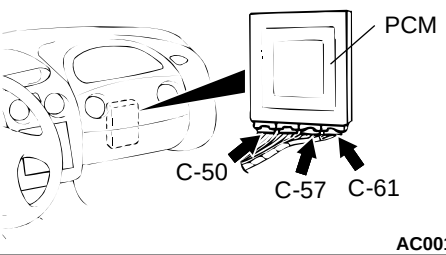
AC001687AC

CONNECTOR: C-28



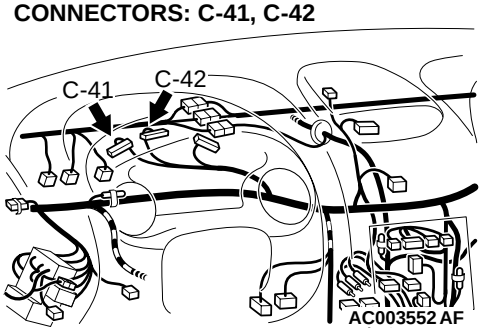
AC003599 AB

CONNECTORS: C-50, C-57, C-61 <2.4L-A/T>

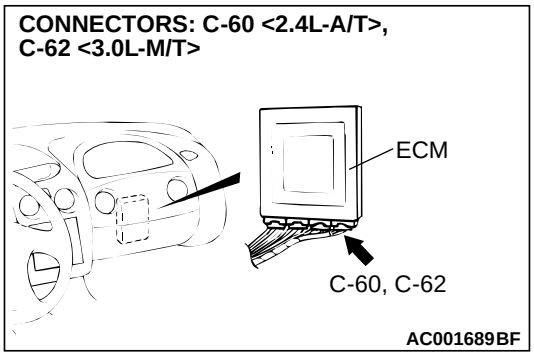


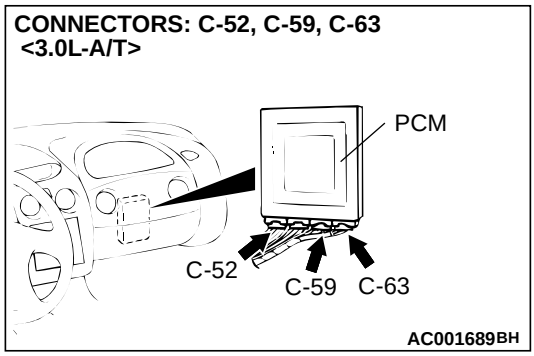
AC001689BG

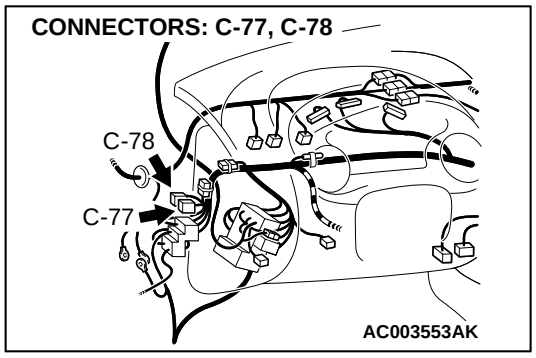
CONNECTORS: C-41, C-42

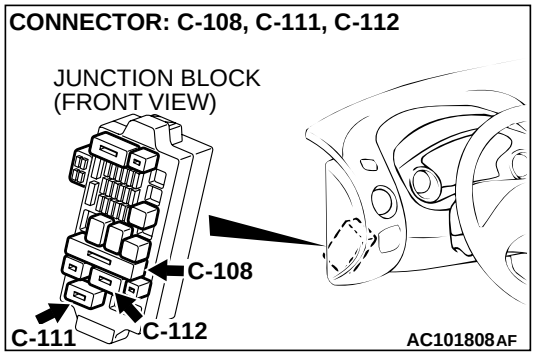


AC003552 AF









CIRCUIT OPERATION

- The ignition switch (IG1) circuit is the power source for the speedometer and vehicle speed sensor <M/T> or output shaft speed sensor <A/T>.
- The vehicle speed sensor <M/T> or output shaft speed sensor <A/T> are installed on the transaxle. Four pulses are generated with one turn of the vehicle speed sensor shaft. In case of M/T, these pulse signals are sent into the speedometer. and in case of A/T, these pulse signals are sent into the PCM and sent into the speedometer. The speedometer calculates the pulse signals, and operates the indicator. At the same time, the travel distance is calculated.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a faulty vehicle speed sensor circuit system or a faulty speedometer. Vehicle speed sensor is also used by the engine control module (ECM) <M/T> or powertrain control module (PCM) <A/T>, auto-cruise control-ECU.

TROUBLESHOOTING HINTS

- Malfunction of the vehicle speed sensor <M/T> or output shaft speed sensor <A/T>
- Malfunction of the combination meter (printed-circuit board or speedometer and tachometer)
- Malfunction of the ECM <M/T> or PCM <A/T>
- Malfunction of the auto-cruise control-ECU
- Damaged wiring harness or connectors

DIAGNOSIS

Required Special Tools:

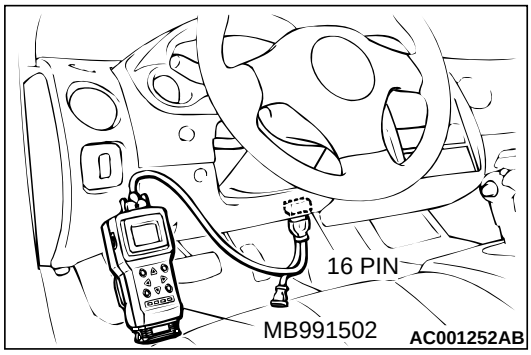
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

TSB Revision

STEP 1. Check the speedometer.

⚠ CAUTION

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

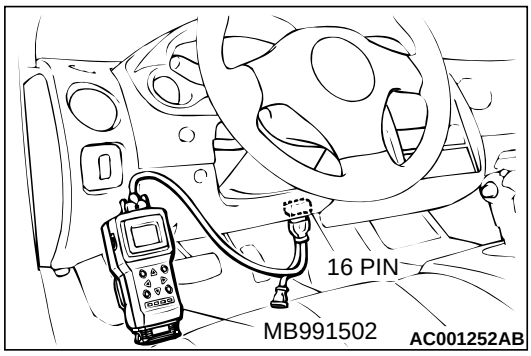


1. Connect scan tool MB991502 to the data link connector.
2. Use scan tool MB991502 to enter a simulated vehicle speed.

Q: Dose the speedometer correspond with the simulated vehicle speed?

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

STEP 2. Check the vehicle speed sensor.



(1) Turn the ignition switch to "ON" position.
(2) Read the MFI system diagnostic trouble code.

Q: Is MFI system DTC P0500 set?

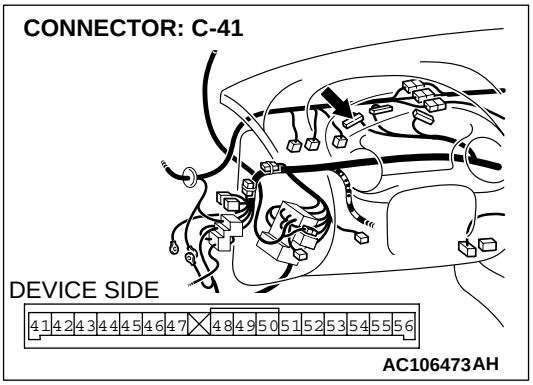
YES :
- For M/T, Go to Step 13.
- For A/T, Go to Step22.

NO : Go to Step 3.

STEP 3. Check the odometer and trip odometer operation.

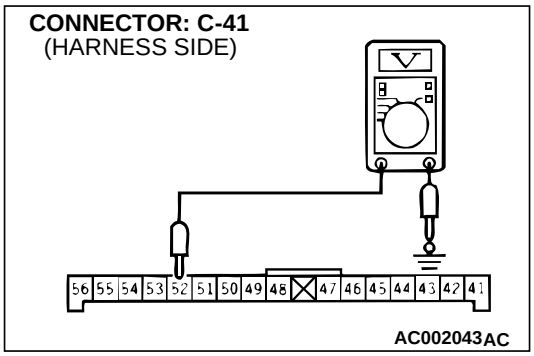
Q: Do the odometer and trip odometer work correctly?

YES : Go to Step 10.
NO : Go to Step 4.



STEP 4. Check the combination meter power supply circuit at the combination meter connector C-41.

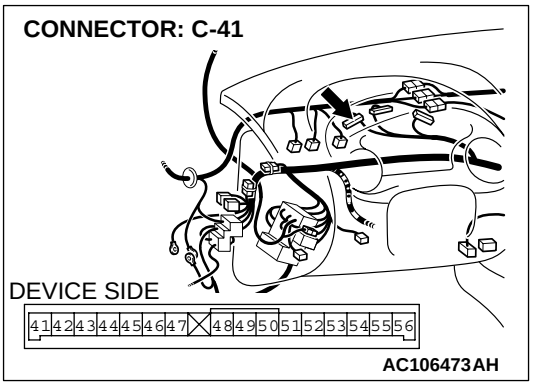
(1) Disconnect the combination meter connector C-41.
(2) Turn the ignition switch to "ON" position.



(3) Measure the voltage between terminal 52 and ground.
- The measured value should be 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 7.
NO : Go to Step 5.



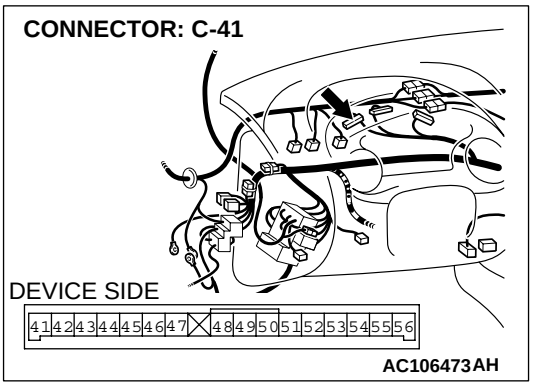
STEP 5. Check the combination meter connector C-41 for damage.

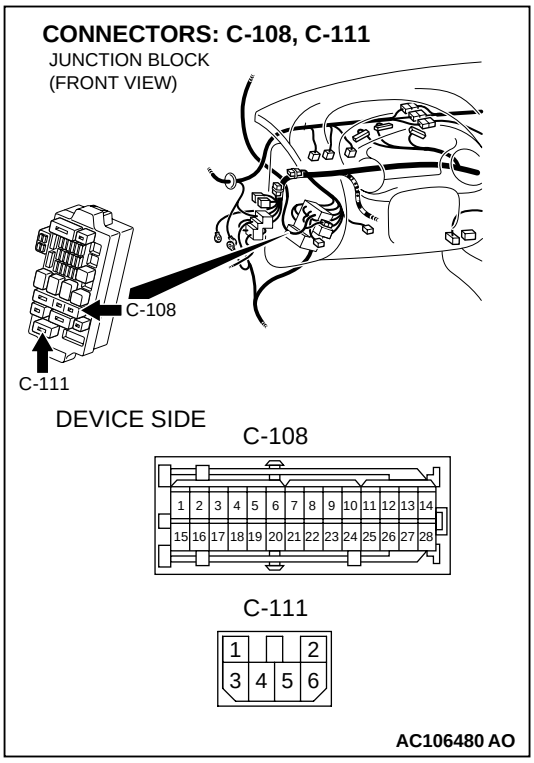
Q: Is combination meter connector C-41 in good condition?

YES : Go to Step 6.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

STEP 6. Check the wiring harness between combination meter connector C-41 (terminal 52) and ignition switch (IG1).

NOTE: After checking junction block connectors C-111 and C-108, check the wires. If junction block connectors C-111 and C-108 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





Q: Is the wiring harness between combination meter connector C-41 (terminal 52) and ignition switch (IG1) in good condition?

YES : There is no action to be taken.

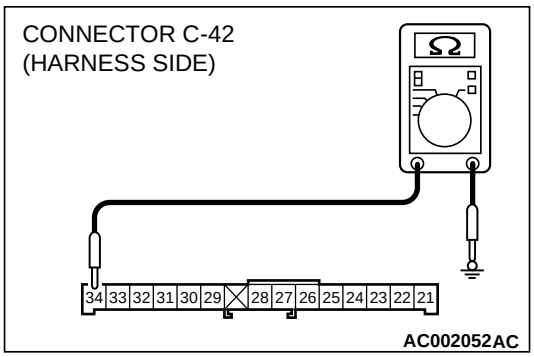
NO : Repair the wiring harness. The speedometer should work normally.

STEP 7. Check the combination meter (speedometer) ground circuit at the combination meter connector C-42.

(1) Disconnect the combination meter connector C-42.

(2) Measure the resistance between terminal 34 and ground.

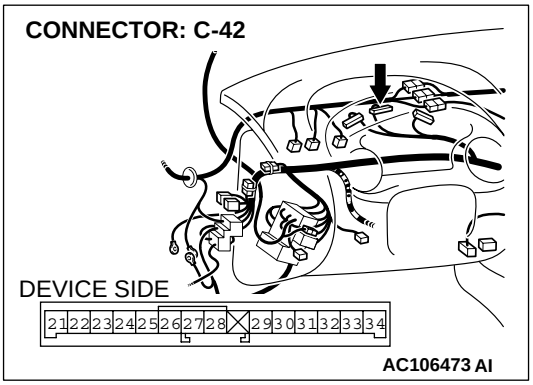
- The measured value should be 2 ohm or less.



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

YES : Repair or replace the combination meter (printed-circuit board or speedometer and tachometer). The speedometer should work normally.

NO : Go to Step 8.

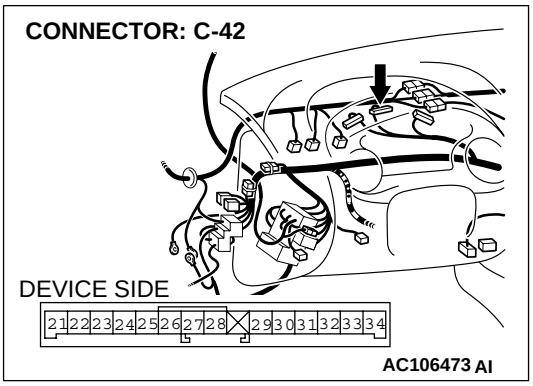


STEP 8. Check the combination meter connector C-42 for damage.

Q: Is combination meter connector C-42 in good condition?

YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.



STEP 9. Check the wiring harness between combination meter connector C-42 (terminal 34) and ground.

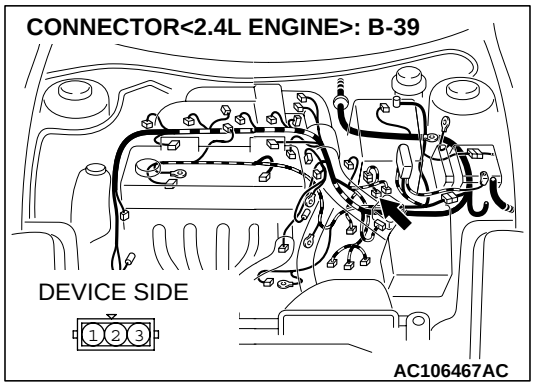
Q: Is the wiring harness between combination meter connector C-42 (terminal 34) and ground in good condition?

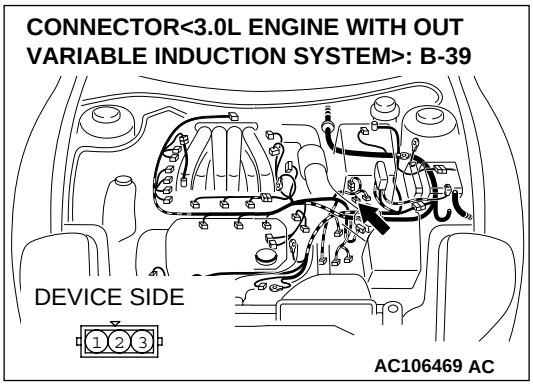
YES : There is no action to be taken.

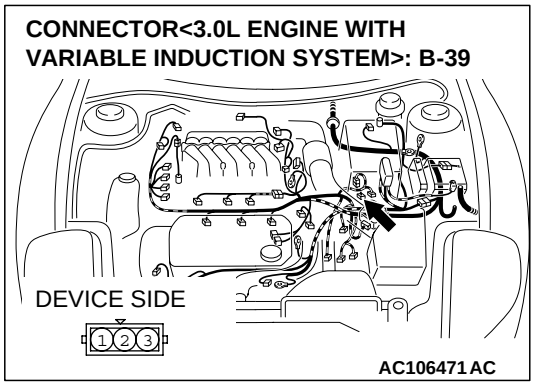
NO : Repair the wiring harness. The speedometer should work normally.

STEP 10. Check the combination meter vehicle speed sensor input signal circuit at the combination meter connector C-42.

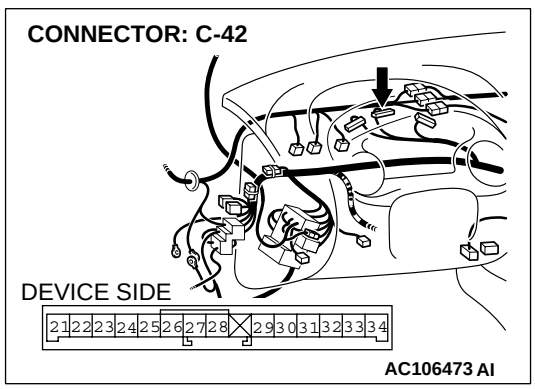
(1) Disconnect the vehicle speed sensor connector B-39 <MT>.

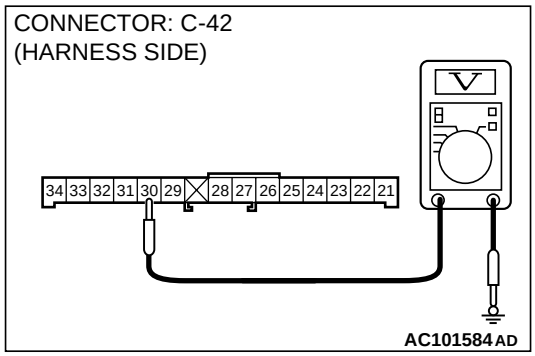






(2) Disconnect the combination meter connector C-42.
(3) Turn the ignition switch to "ON" position.





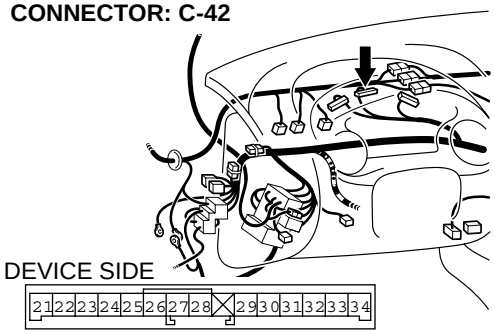
(4) Measure the voltage between terminal 30 and ground.
- The measured value should be between approximately 7 and 8 volts

Q: Does the measured voltage correspond with this range?

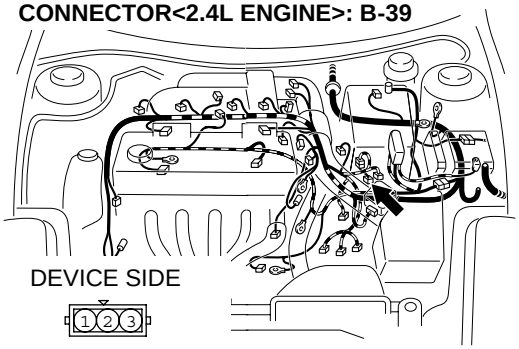
YES : Repair or replace the combination meter (printed-circuit board or speedometer and tachometer). The speedometer should work normally.

NO : Go to Step 11.

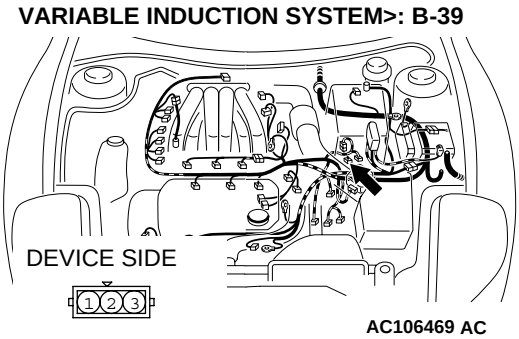
CONNECTOR: C-42



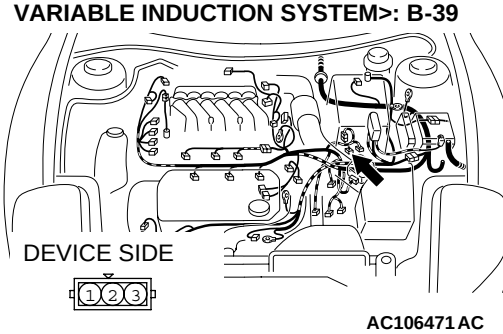
CONNECTOR<2.4L ENGINE>: B-39



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39



CONNECTOR<3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-39



STEP 11. Check the combination meter connector C-42 and vehicle speed sensor connector B-39 (terminal 3) <M/T> for damage.

Q: Are combination meter connector C-42 and vehicle speed sensor connector B-39 (terminal 3) <M/T> in good condition?

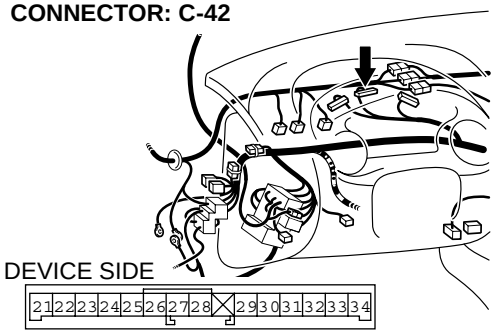
YES :
- For M/T go to Step 12.
- For A/T go to Step 22.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

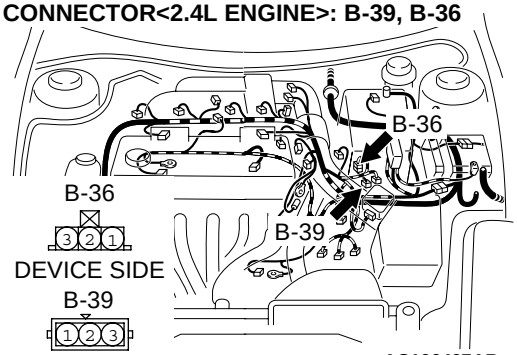
STEP 12. Check the wiring harness between combination meter connector C-42 (terminal 30) and vehicle speed sensor connector B-39 (terminal 3) <M/T>.

NOTE: After checking intermediate connector B-36 <M/T>, C-28, and joint connector C-77, check the wires. If intermediate connector C-28 and joint connector C-77 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

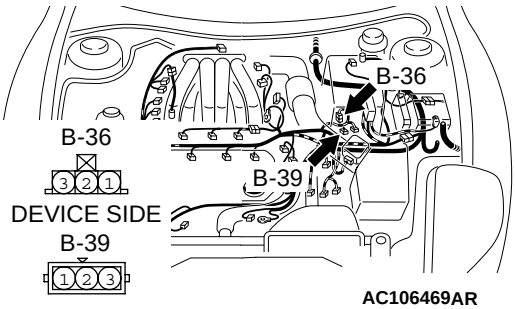
CONNECTOR: C-42



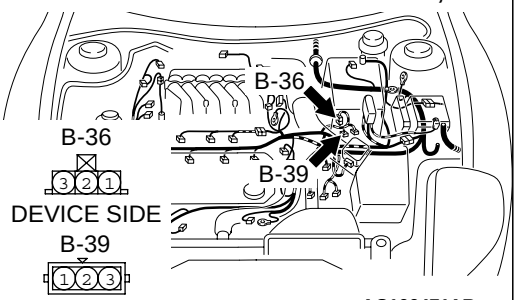
CONNECTOR<2.4L ENGINE>: B-39, B-36

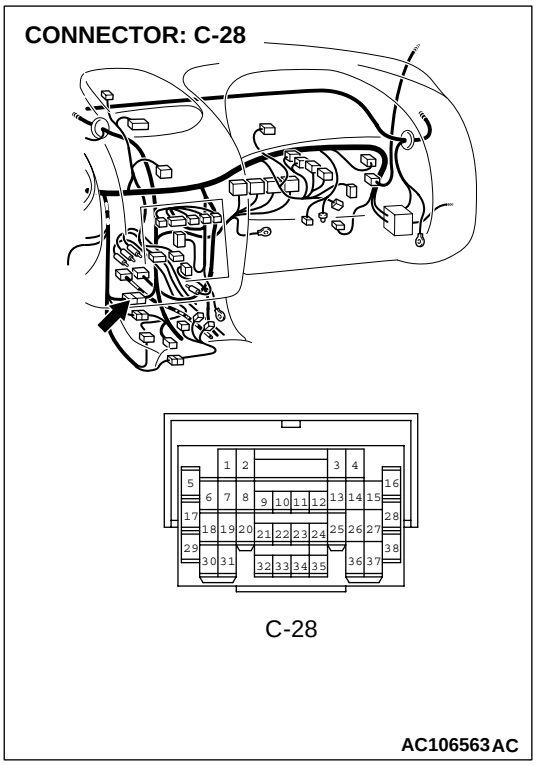


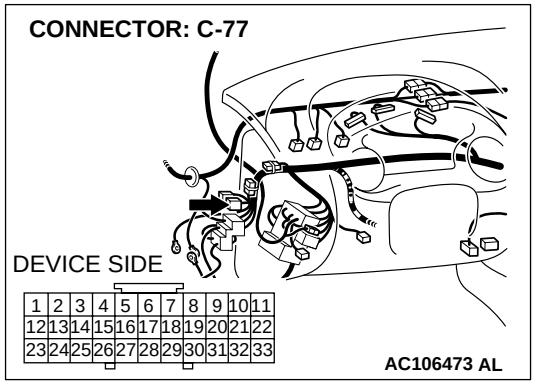
CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39, B-36



CONNECTORS <3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39







Q: Are the wiring harness between combination meter connector C-42 (terminal 30) and vehicle speed sensor connector B-39 (terminal 3) <M/T> in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. The speedometer should work normally.

STEP 13. Check the vehicle speed sensor power supply circuit at the vehicle speed meter connector B-39 <M/T>.

(1) Disconnect the vehicle speed sensor connector B-39 <M/T>.

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

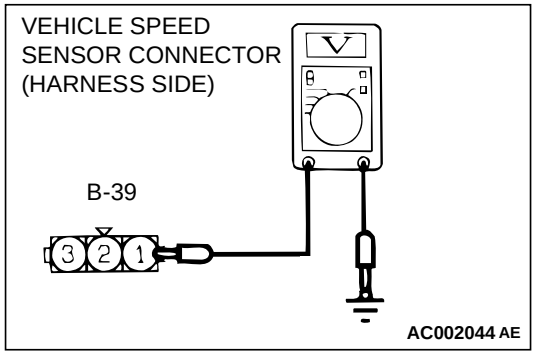
(3) Measure the voltage between terminal 1 and ground.

- The measured value should be 12 volts (battery positive voltage).

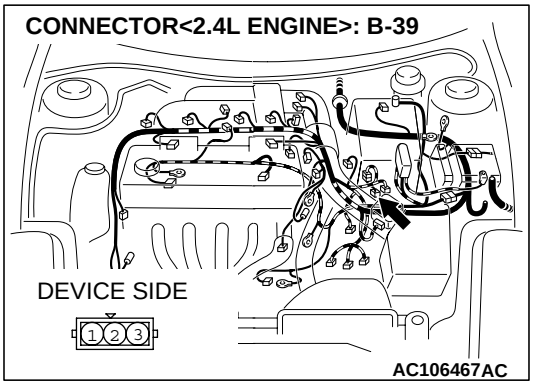
Q: Does the measured voltage correspond with this range?

YES : Go to Step 16.

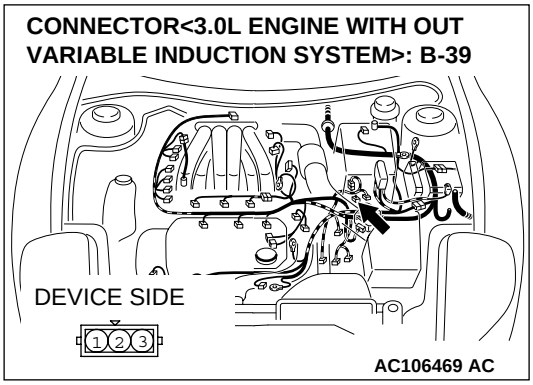
NO : Go to Step 14.



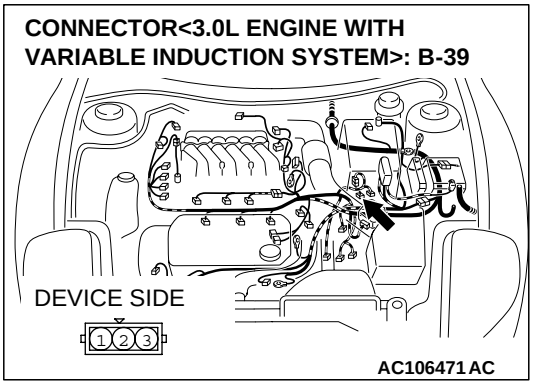
CONNECTOR<2.4L ENGINE>: B-39



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39



CONNECTOR<3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-39



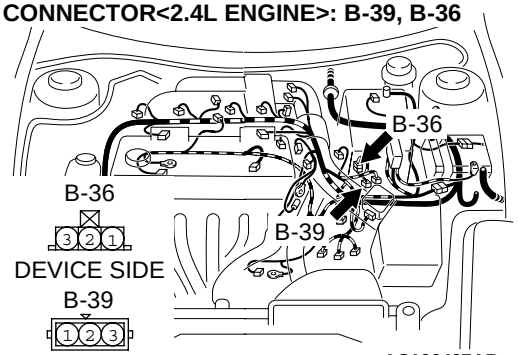
STEP 14. Check the vehicle speed sensor connector B-39 <M/T> damage.

Q: Is vehicle speed sensor connector B-39 <M/T> in good condition?

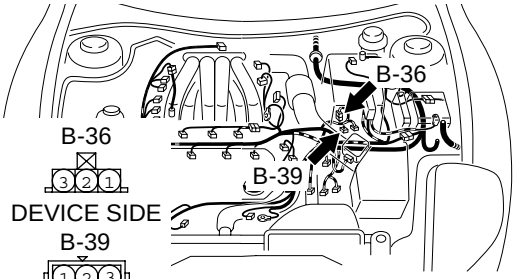
YES : Go to Step 15.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

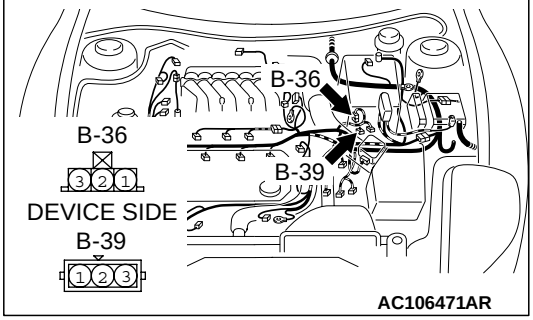
CONNECTOR<2.4L ENGINE>: B-39, B-36



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39, B-36

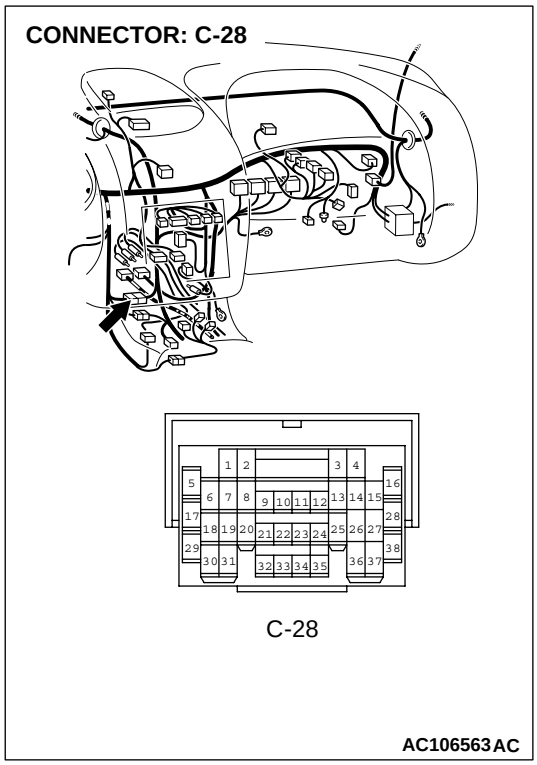


CONNECTORS <3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39



STEP 15. Check the wiring harness between vehicle speed sensor connector B-39 (terminal 1) <M/T> and ignition switch (IG1).

NOTE: After checking junction block connectors C-111 and C-112, joint connector C-78 and intermediate connector B-36 <M/T>, C-28, check the wires. If junction block connectors C-111 and C-112, joint connector C-78 and intermediate connector B-36 <M/T>, C-28 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



Q: Are the wiring harness between vehicle speed sensor connector C-39 (terminal 1) <M/T> and ignition switch (IG1) in good condition?

YES : There is no action to be taken.

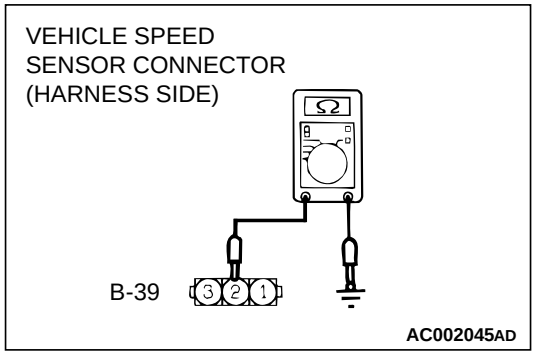
NO : Repair the wiring harness. The speedometer should work normally.

STEP 16. Check the vehicle speed sensor ground circuit at the vehicle speed sensor connector B-39 <M/T>.

(1) Disconnect the vehicle speed sensor connector B-39 <M/T>.

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

- The measured value should be 2 ohm or less.

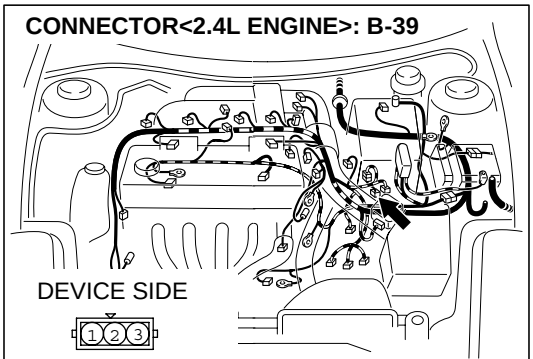


Q: Does measured resistance value correspond with this range?

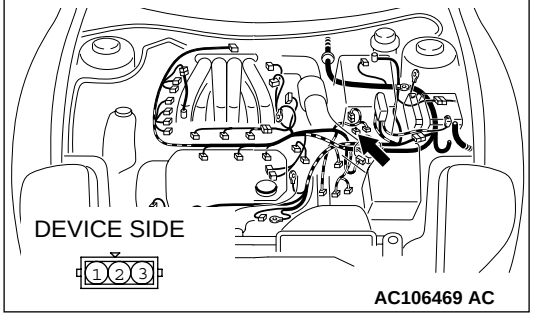
YES : Go to Step 19.

NO : Go to Step 17.

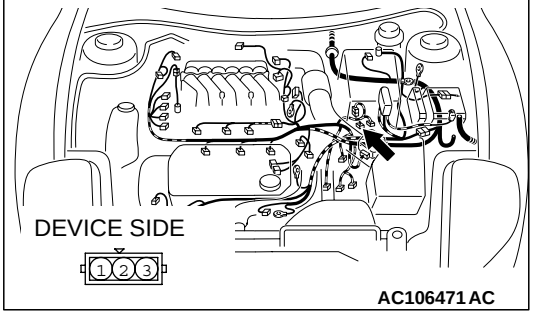
CONNECTOR<2.4L ENGINE>: B-39



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39



CONNECTOR<3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-39



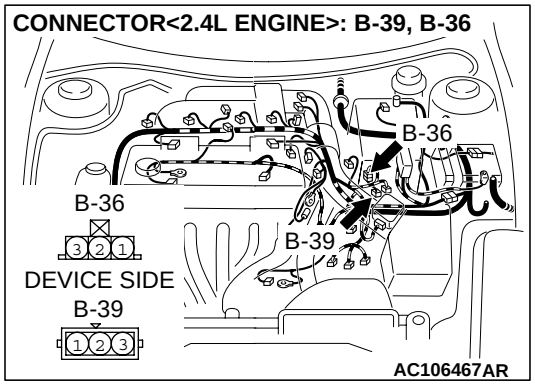
STEP 17. Check the vehicle speed sensor connector B-39 <M/T> for damage.

Q: Is vehicle speed connector B-39 <M/T> in good condition?

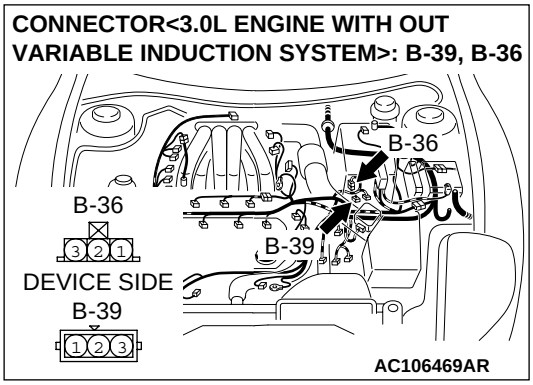
YES : Go to Step 18.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

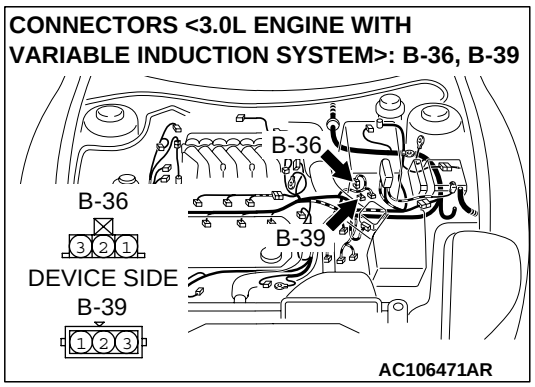
CONNECTOR<2.4L ENGINE>: B-39, B-36



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-39, B-36



CONNECTORS <3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39



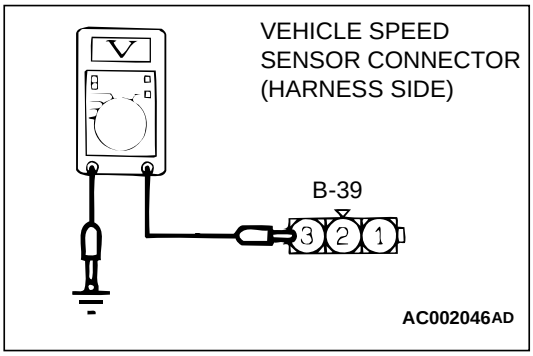
STEP 18. Check the wiring harness between vehicle speed sensor connector B-39 (terminal 2) <M/T> and ground.

NOTE: After checking intermediate connector B-36 <M/T>, check the wires. If intermediate connector B-36 <M/T> is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between vehicle speed sensor connector B-39 (terminal 2) <M/T> and ground in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. The speedometer should work normally.



STEP 19. Check the vehicle speed sensor signal circuit at the vehicle speed sensor connector B-39.

(1) Remove the battery and the battery case.
(2) Disconnect the vehicle speed sensor connector B-39.
(3) Withdraw the wiring harness side of the vehicle speed sensor connector B-39.
(4) Install the battery and the battery case.
(5) Turn the ignition switch to "ON"
(6) Measure the voltage between terminal 3 and ground.
- The measured value should be 9 volts or more.

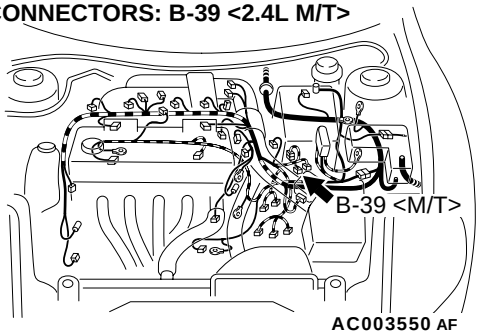
Q: Does the measured voltage correspond with this range?

YES : Replace the vehicle speed sensor. The speedometer should work normally.

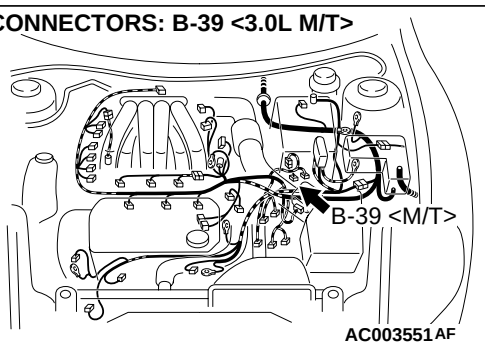
NO : Go to Step 20.

STEP 20. Check the vehicle speed sensor connector B-39 <M/T>, auto-cruise control-ECU connector C-20, ECM <M/T> connector C-60 <2.4L-M/T>, C-62 <3.0L-M/T> and combination meter connector C-42.

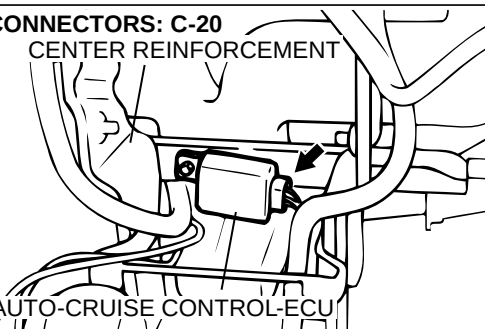
CONNECTORS: B-39 <2.4L M/T>



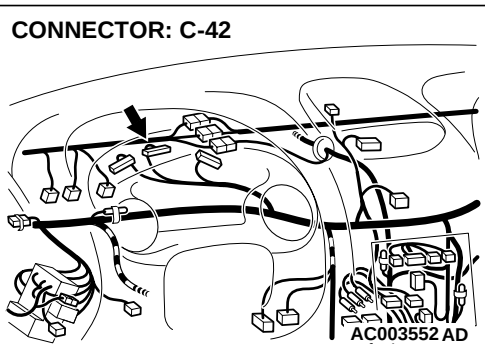
CONNECTORS: B-39 <3.0L M/T>

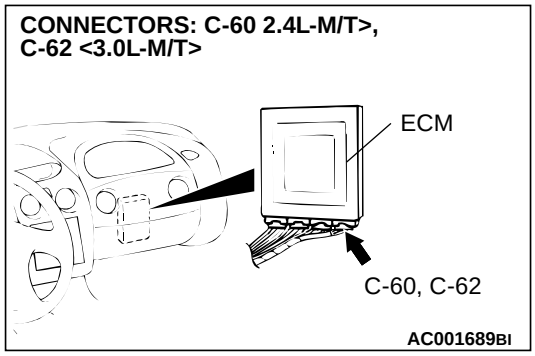


CONNECTORS: C-20



CONNECTOR: C-42





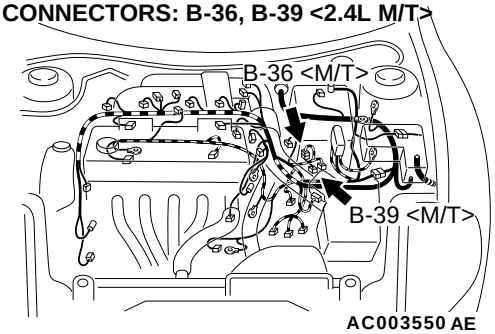
Q: Are vehicle speed sensor connector B-39, auto-cruise control-ECU connector C-20 ECM <M/T> connector C-60 <2.4L-M/T>, C-62 <3.0L-M/T> and combination meter connector C-42 in good condition?

YES : Go to Step 21.

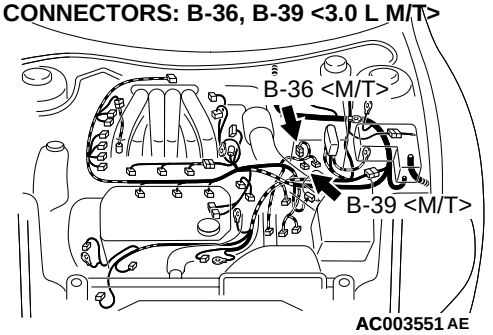
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

STEP 21. Check the wiring harness from vehicle speed sensor connector B-39 (terminal 3) <M/T> to auto-cruise control-ECU connector C-20 (terminal 10), ECM <M/T> connector C-60 (terminal 86) <2.4L-M/T>, C-62 (terminal 80) <3.0L-M/T> and combination meter connector C-42 (terminal 30).

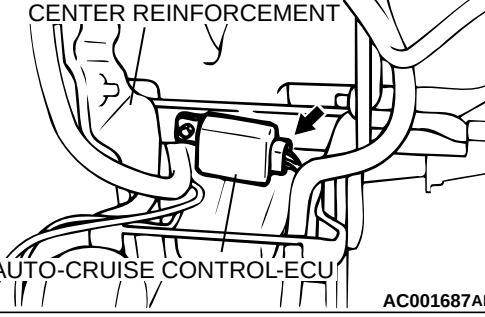
CONNECTORS: B-36, B-39 <2.4L M/T>



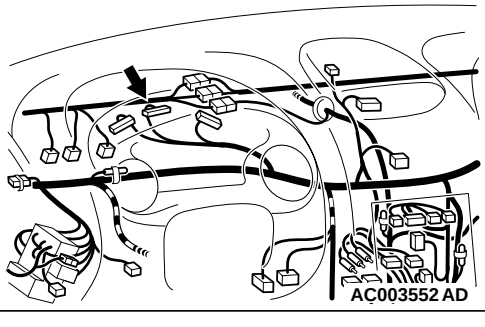
CONNECTORS: B-36, B-39 <3.0 L M/T>

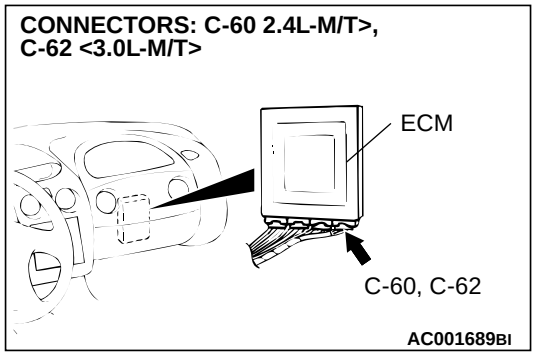


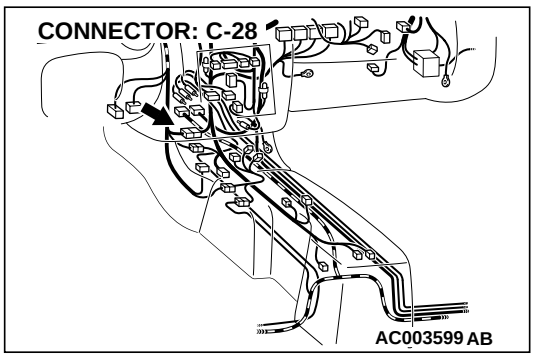
CONNECTORS: C-20

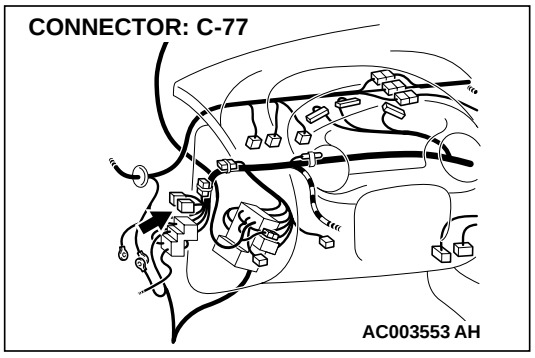


CONNECTOR: C-42









NOTE: After checking joint connector C-77 and intermediate connector C-28,check the wires. If joint connector C-77 and intermediate connector C-28 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness from vehicle speed sensor connector B-39 (terminal 3) to auto-cruise control-ECU connector C-20 (terminal 10), ECM <M/T> connector C-60 (terminal 86) <2.4L-M/T>, C-62 (terminal 80) <3.0L-M/T> and combination meter connector C-42 (terminal 30) in good condition?

YES : Go to Step 43.

NO : Repair the wiring harness. The speedometer should work normally.

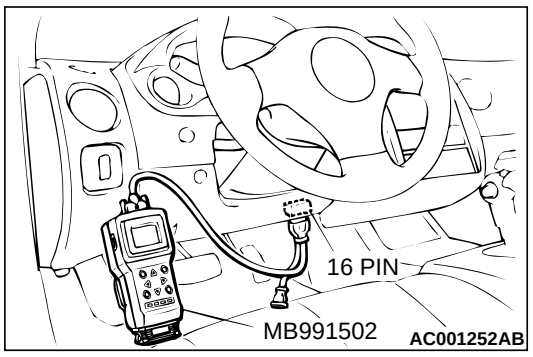
STEP 22. Using scan tool MB991502, read the A/T diagnostic trouble code.

⚠ CAUTION

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

(1) Read the A/T diagnostic trouble code.

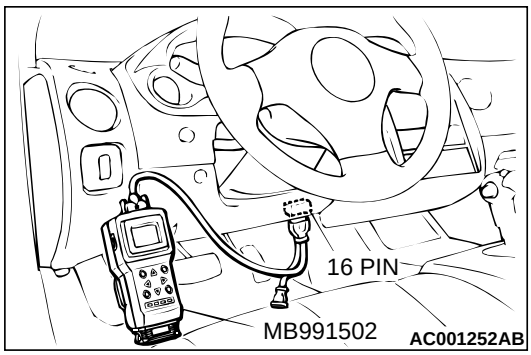
(2) Turn the ignition switch to "LOCK" (OFF) position.



Q: Is A/T diagnostic trouble code number "23" output?

YES : Go to Step 29.

NO : Go to Step 23.



STEP 23. Using scan tool MB991502, check data list item 29: Vehicle Speed Signal.

(1) Start the engine.
(2) Set scan tool MB991502 to data reading mode for item 29: Vehicle Speed Signal.
- Check that the speedometer and scan tool display speed match when driving at a vehicle speed of 40 km/h (25 mph).

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

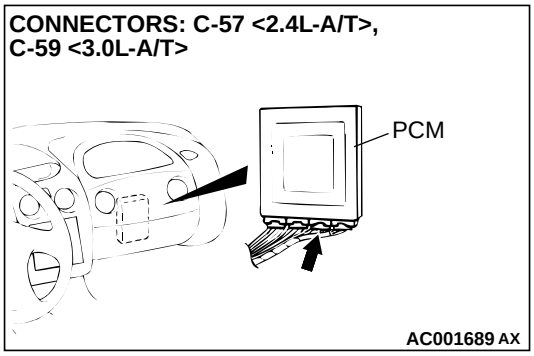
Q: Is the sensor operating properly?

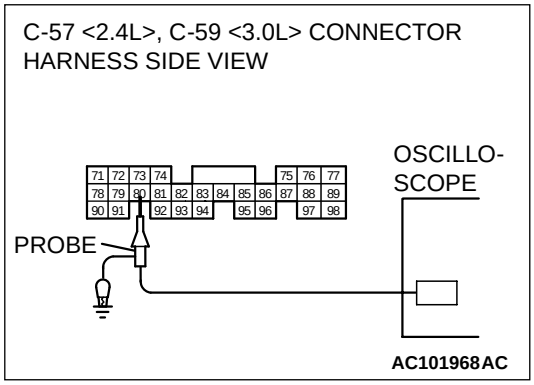
YES : This malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.

NO : Go to Step 24.

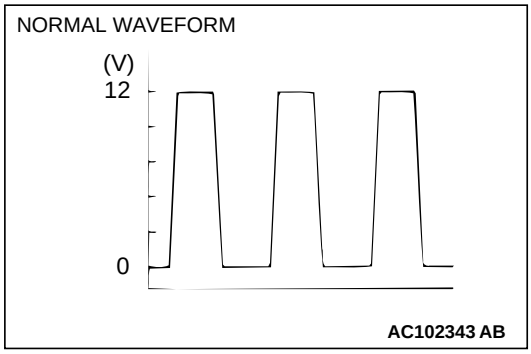
STEP 24. Using the oscilloscope, check the waveform at PCM connector C-57 <2.4L> or C-59 <3.0L>.

(1) Do not disconnect connector C-57 <2.4L> or C-59 <3.0L>.





(2) Connect an oscilloscope probe to PCM connector C-57 <2.4L> or C-59 <3.0L> terminal 80 by backprobing.
(3) Start the engine.



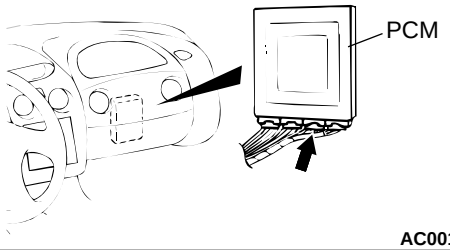
(4) Check the waveform.
- The waveform should show a pattern similar to the illustration when running the vehicle.

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

Q: Is the waveform normal?

YES : Go to Step 25.
NO : Go to Step 26.

CONNECTORS: C-57 <2.4L-A/T>, C-59 <3.0L-A/T>



AC001689 AX

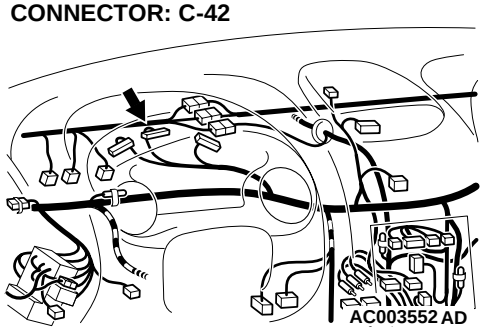
STEP 25. Check connector C-57 <2.4L> or C-59 <3.0L> at PCM for damage.

Q: Is the connector in good condition?

YES : Go to Step 28.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

CONNECTOR: C-42



AC003552 AD

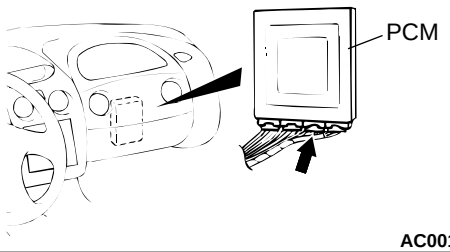
STEP 26. Check the combination meter connector C-42 and PCM connector C-57 <2.4L> or C-59 <3.0L> for damage.

Q: Are the connectors in good condition?

YES : Go to Step 27.

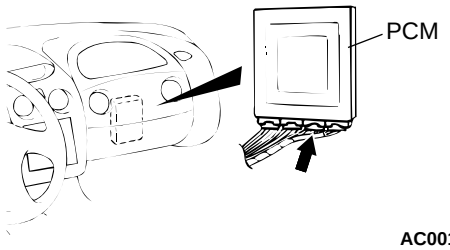
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

CONNECTORS: C-57 <2.4L-A/T>, C-59 <3.0L-A/T>



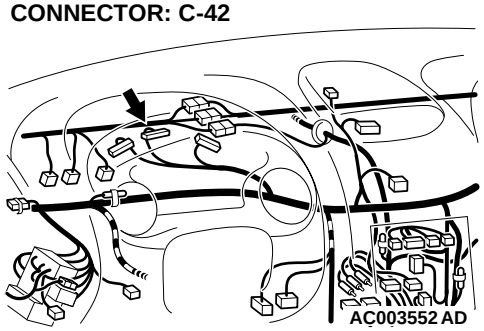
AC001689 AX

CONNECTORS: C-57 <2.4L-A/T>, C-59 <3.0L-A/T>



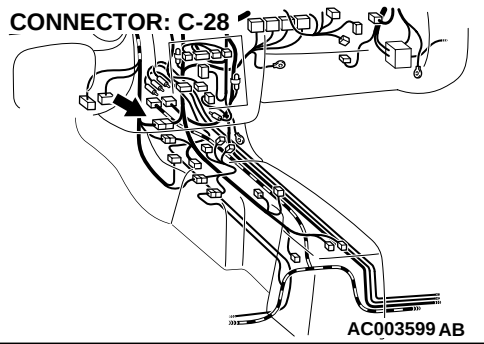
AC001689 AX

CONNECTOR: C-42



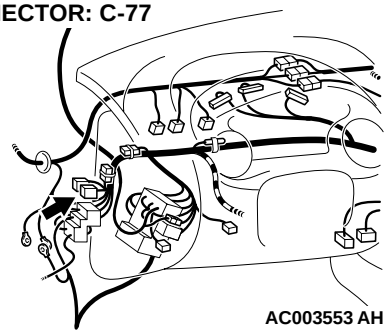
AC003552 AD

CONNECTOR: C-28



AC003599 AB

CONNECTOR: C-77



AC003553 AH

STEP 27. Check wiring harness between combination meter connector C-42 (terminal 30) and PCM connector C-57 (terminal 80) <2.4L> or C-59 (terminal 80) <3.0L>.

NOTE: After checking, joint connector C-77 and intermediate connector C-28, check the wires. If joint connector C-77 and intermediate connector C-28 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

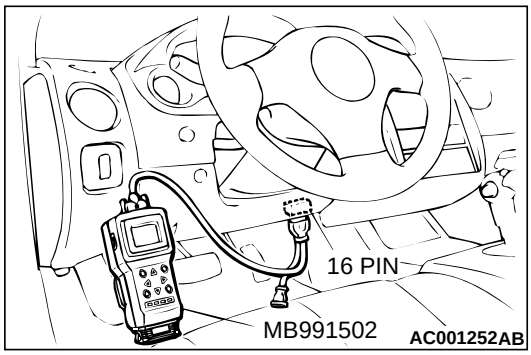
Q: Are the wiring harness from combination meter connector C-42 (terminal 30) and PCM connector C-57 (terminal 80) <2.4L> or C-59 (terminal 80) <3.0L> in good condition?

YES : Go to Step 28.
NO : Repair the wiring harness.

STEP 28. Using scan tool MB991502, check data list item 29: Vehicle Speed Signal.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991502 to data reading mode for item 29, Vehicle Speed Signal.
- Check that the speedometer and scan tool display speed match when driving at a vehicle speed of 40 km/h (25 mph).

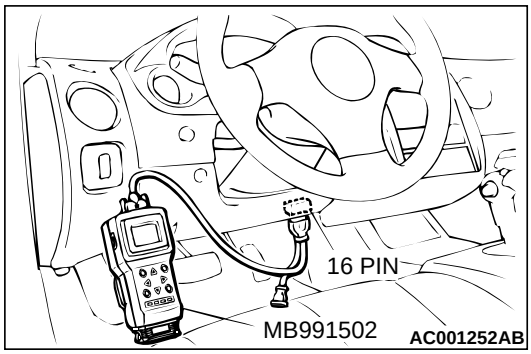
(4) Turn the ignition switch to "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : This malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.

NO : Replace the PCM.

STEP 29. Using scan tool MB991502, check data list item 23: Output Shaft Speed Sensor.



(1) Set scan tool MB991502 to data reading mode for item 23: Output Shaft Speed Sensor.
- When driving at constant speed of 50km/h (31mph), the display should be "1,600 – 1,900 r/min." <2.4L Engine>, "1,300 – 1,600 r/min." <3.0L Engine> (Gear range: 3rd gear)

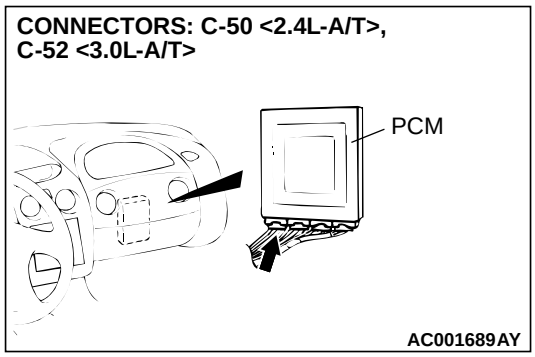
(2) Turn the ignition switch to "LOCK" (OFF) position.

Q: Is the sensor operating properly?

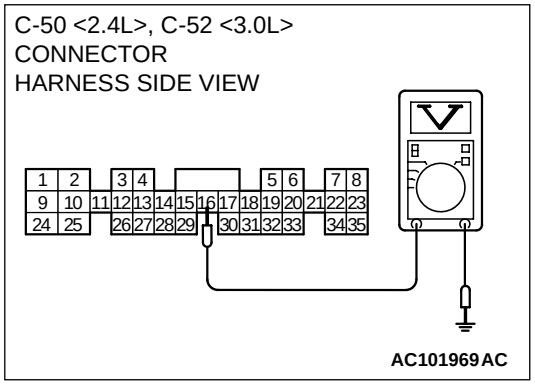
YES : This malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.

NO : Go to Step 30.

STEP 30. Check the ground voltage at PCM connector C-50 <2.4L> or C-52 <3.0L> by backprobing.



(1) Do not disconnect connector C-50 <2.4L> or C-52 <3.0L>.
(2) Turn the ignition switch to the "ON" position.



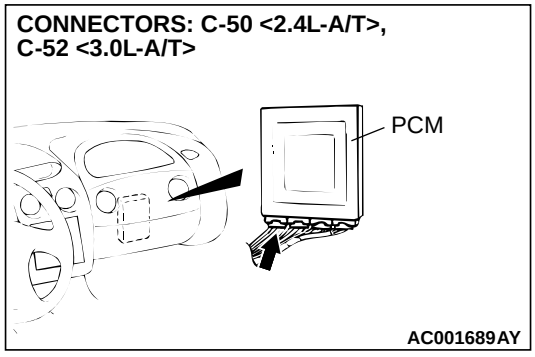
(3) Measure the voltage between terminal 16 and ground by backprobing.
- The measured value should be 0.5 volt or less.

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

Q: Does the measured voltage correspond with this range?

YES : Go to Step 32.
NO : Go to Step 31.

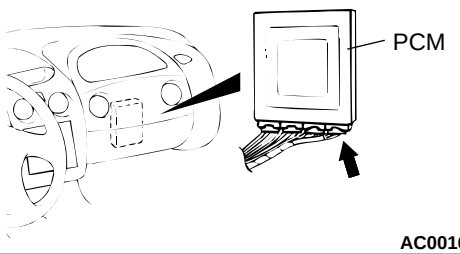
STEP 31. Check connector C-50 <2.4L> or C-52 <3.0L> at PCM for damage.



Q: Is the connector in good condition?

YES : Go to Step 32.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

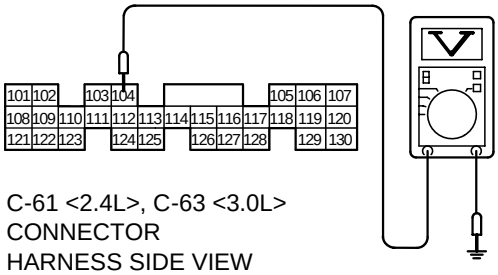
CONNECTORS: C-61 <2.4L-A/T>, C-63 <3.0L-A/T>



AC001689AZ

STEP 32. Check the sensor output voltage at PCM connector C-61 <2.4L> or C-63 <3.0L> by backprobing.

(1) Do not disconnect connector C-61 <2.4L> or C-63 3.0L>.
(2) Disconnect connector B-38 at the output shaft speed sensor.
(3) Turn the ignition switch to "ON" position.



C-61 <2.4L>, C-63 <3.0L> CONNECTOR HARNESS SIDE VIEW

AC101970AC

(4) Measure the voltage between terminal 104 and ground by backprobing.
- The measured value should be between 4.9 and 5.1 volts.

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

Q: Does the measured voltage correspond with this range?

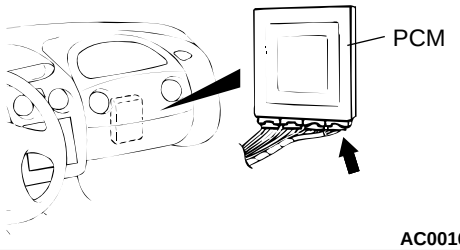
YES : Go to Step 35.
NO : Go to Step 33.

STEP 33. Check connectors C-61 <2.4L> or C-63 <3.0L> at PCM and B-38 at output shaft speed sensor for damage.

Q: Are the connectors in good condition?

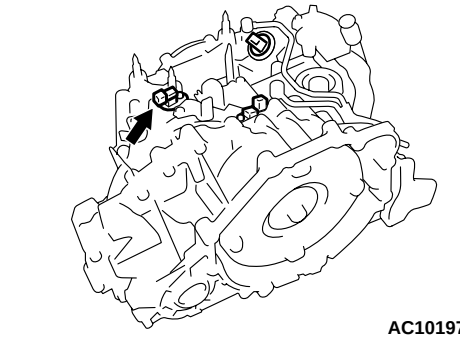
YES : Go to Step 34.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

CONNECTORS: C-61 <2.4L-A/T>, C-63 <3.0L-A/T>



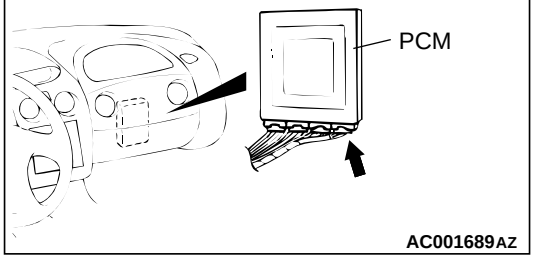
AC001689AZ

CONNECTOR: B-38



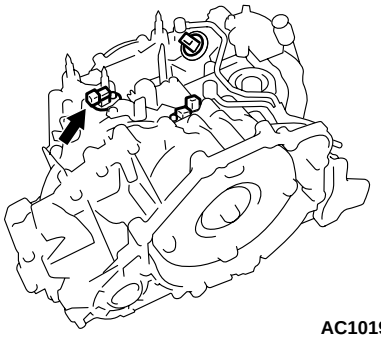
AC101972AC

CONNECTORS: C-61 <2.4L-A/T>, C-63 <3.0L-A/T>



AC001689AZ

CONNECTOR: B-38



AC101972AC

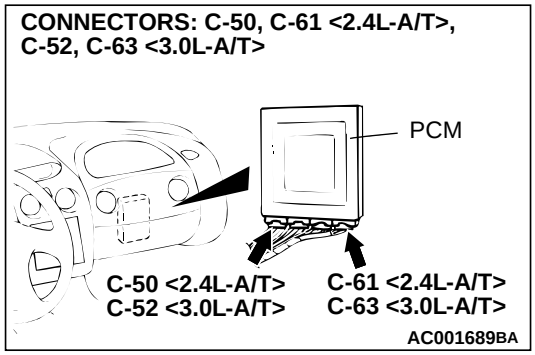
STEP 34. Check harness for short circuit to ground between PCM connector C-61 <2.4L> or C-63 <3.0L> (terminal 104) and output shaft speed sensor connector B-38 (terminal 2).

Q: Are the wiring harness from PCM connector C-61 <2.4L> or C-63 <3.0L> (terminal 104) and output shaft speed sensor connector B-38 (terminal 2) in good condition?

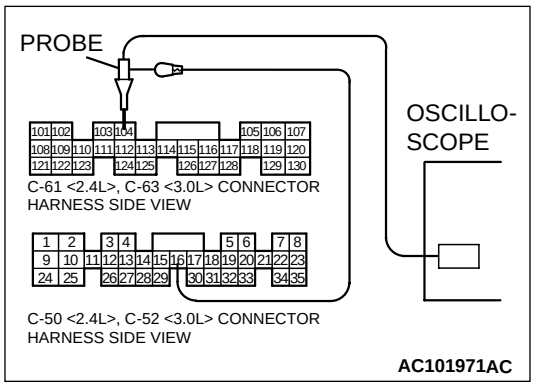
YES : Go to Step 35.

NO : Repair the wiring harness.

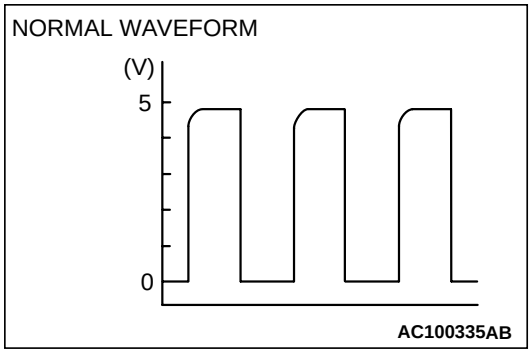
STEP 35. Using the oscilloscope, check the waveform at PCM connectors C-50, C-61 <2.4L> or C-52, C-63 <3.0L> by backprobing.



(1) Do not disconnect connectors C-50, C-61 <2.4L> or C-52, C-63 <3.0L>.



(2) Connect an oscilloscope probe to PCM connector C-50 <2.4L> or C-52 <3.0L> terminal 16 and to PCM connector C-61 <2.4L> or C-63 <3.0L> terminal 104 by backprobing.
(3) Start the engine and run at constant speed of 50km/h (31mph). (Gear range: 3rd gear)



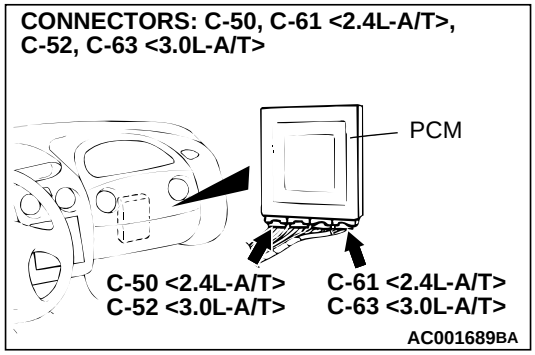
(4) Check the waveform.
- The waveform should show a pattern similar to the illustration. The maximum value should be 4.8 volts and more and the minimum value 0.8 volts and less. The output waveform should not contain the noise.

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

Q: Does the measured voltage correspond with this range?

YES : Go to Step 36.
NO : Go to Step 37.

STEP 36. Check connectors C-50, C-61 <2.4L> or C-52, C-63 <3.0L> at PCM for damage.



Q: Are the connectors in good condition?

YES : Go to Step 24.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

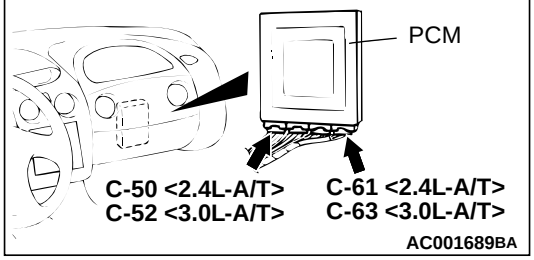
STEP 37. Check connectors C-50, C-61 <2.4L> or C-52, C-63 <3.0L> at PCM and B-38 at output shaft speed sensor for damage.

Q: Are the connectors in good condition?

YES : Go to Step 38.

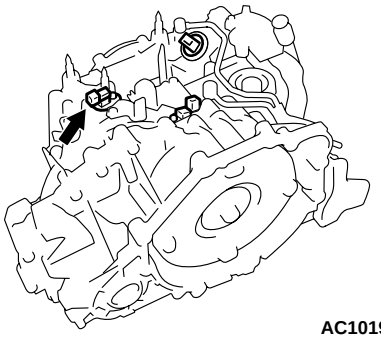
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

CONNECTORS: C-50, C-61 <2.4L-A/T>, C-52, C-63 <3.0L-A/T>



AC001689BA

CONNECTOR: B-38

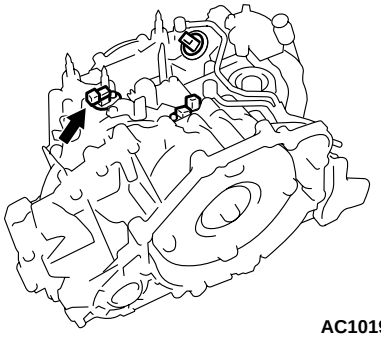


AC101972AC

STEP 38. Check the continuity at output shaft speed sensor connector B-38.

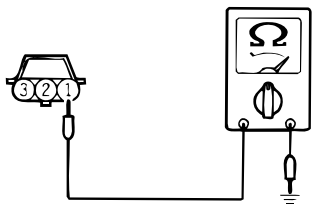
(1) Disconnect connector B-38 and measure at the harness side.

CONNECTOR: B-38



AC101972AC

HARNESS
CONNECTOR: B-38



AC101973AC

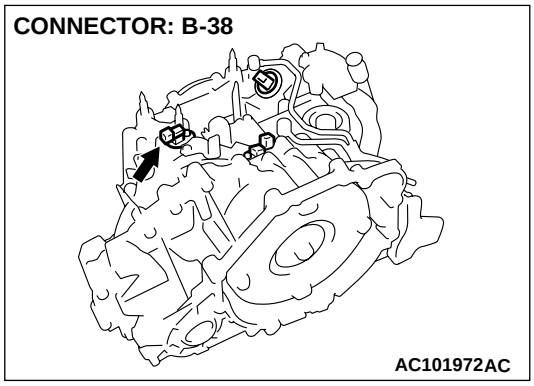
(2) Check for the continuity between terminal 1 and ground.
- The measured value should be 2 ohm or less.

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

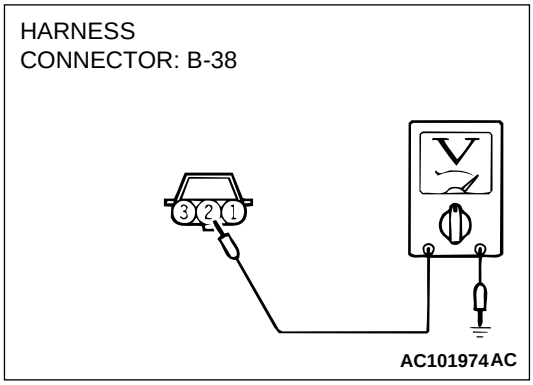
YES : Go to Step 39.

NO : Go to Step 41.

STEP 39. Check the sensor output voltage at output shaft speed sensor connector B-38.



(1) Disconnect connector B-38 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 between 4.9 and 5.1 volts.

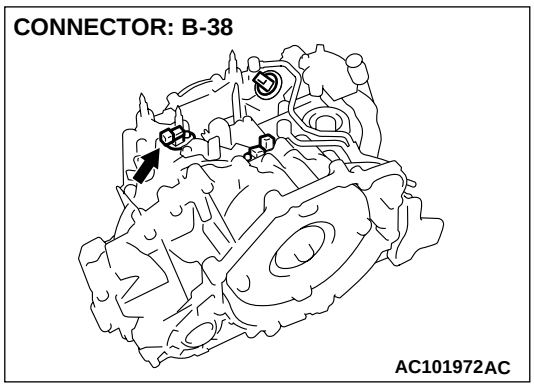
(4) Turn the ignition switch to "LOCK" (OFF) position.

Q: Does the measured voltage correspond with this range?

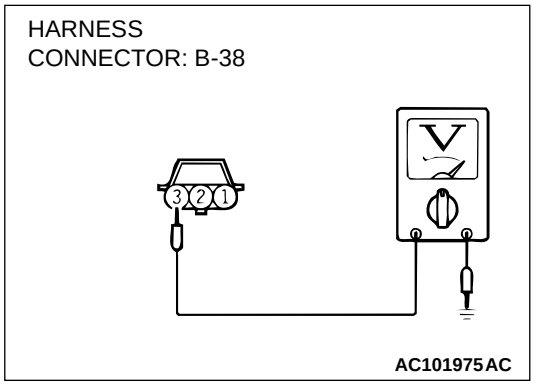
YES : Go to Step 40.

NO : Repair it because of harness open circuit between output shaft speed sensor connector B-38 terminal 2 and PCM connector C-61 <2.4L-A/T>, C-63 <3.0L-A/T> terminal 104.

STEP 40. Check the power supply voltage at output shaft speed sensor connector B-38.



(1) Disconnect connector B-38 and measure at the harness side.
(2) Turn the ignition switch to "ON" position.



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

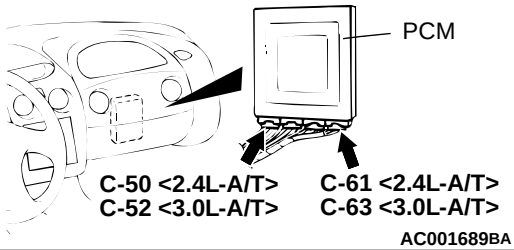
(4) Turn the ignition switch to "LOCK" (OFF) position.

Q: Does the measured voltage correspond with this range?

YES : Go to Step 43.

NO : Go to Step 41.

CONNECTORS: C-50, C-61 <2.4L-A/T>, C-52, C-63 <3.0L-A/T>



AC001689BA

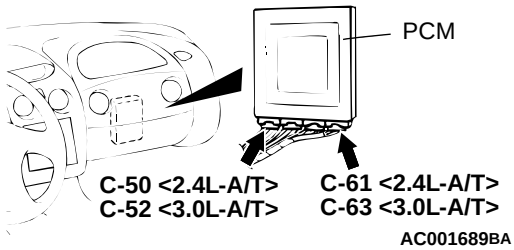
STEP 41. Check connectors C-50, C-61 <2.4L> or C-52, C-63 <3.0L> at PCM for damage.

Q: Are the connectors in good condition?

YES : Go to Step 42.

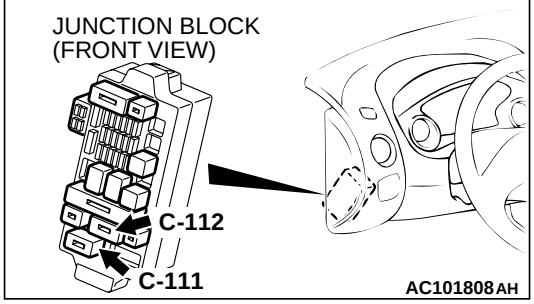
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.

CONNECTORS: C-50, C-61 <2.4L-A/T>, C-52, C-63 <3.0L-A/T>



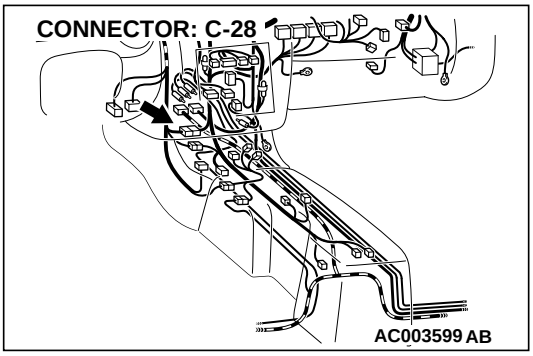
AC001689BA

CONNECTOR: C-111, C-112



AC101808AH

CONNECTOR: C-28



AC003599AB

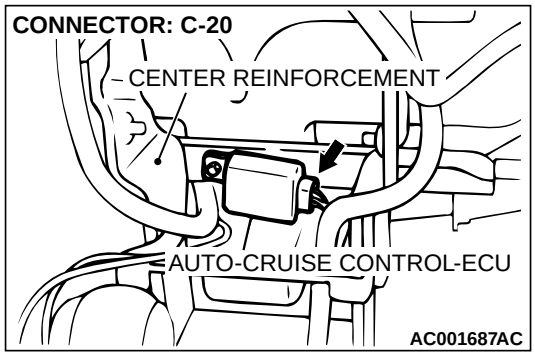
STEP 42. Check wiring harness between PCM connectors C-50 (terminal 16), C-61 (terminal 104) <2.4L> or C-52 (terminal 16), C-63 (terminal 104) <3.0L> and junction block connector C-111 (terminal 6).

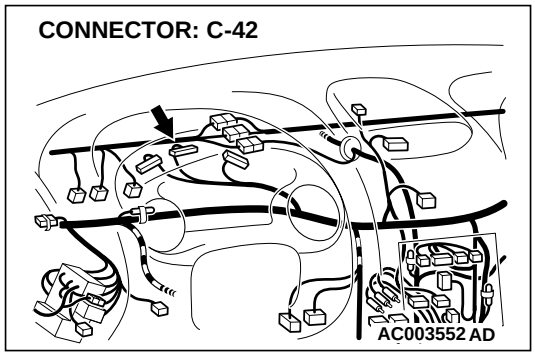
NOTE: After checking, intermediate connector C-28 and junction block C-111, C-112, check the wires. If intermediate connector C-28 and junction block C-111, C-112 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are wiring harness between the PCM connectors C-50 (terminal 16), C-61 (terminal 104) <2.4L> or C-52 (terminal 16), C-63 (terminal 104) <3.0L> and junction block connector C-111 (terminal 6) in good condition?

YES : Go to Step 43.

NO : Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speedometer should work normally.





STEP 43. Check each equipment.

Disconnect auto-cruise control-ECU connector C-20 and combination meter connector C-42 in that order one by one. Then check that MFI system DTC P0500 does not reset under any conditions.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Read the MFI system diagnostic trouble code.

Q: Does MFI system DTC P0500 reset when one of auto-cruise control-ECU or combination meter, ECM <M/T> or PCM <A/T> is disconnected?

YES : Go to Step 44.
NO : Replace the auto-cruise control-ECU, combination meter or ECM <M/T> or PCM <A/T> where applicable. The speedometer should work normally.

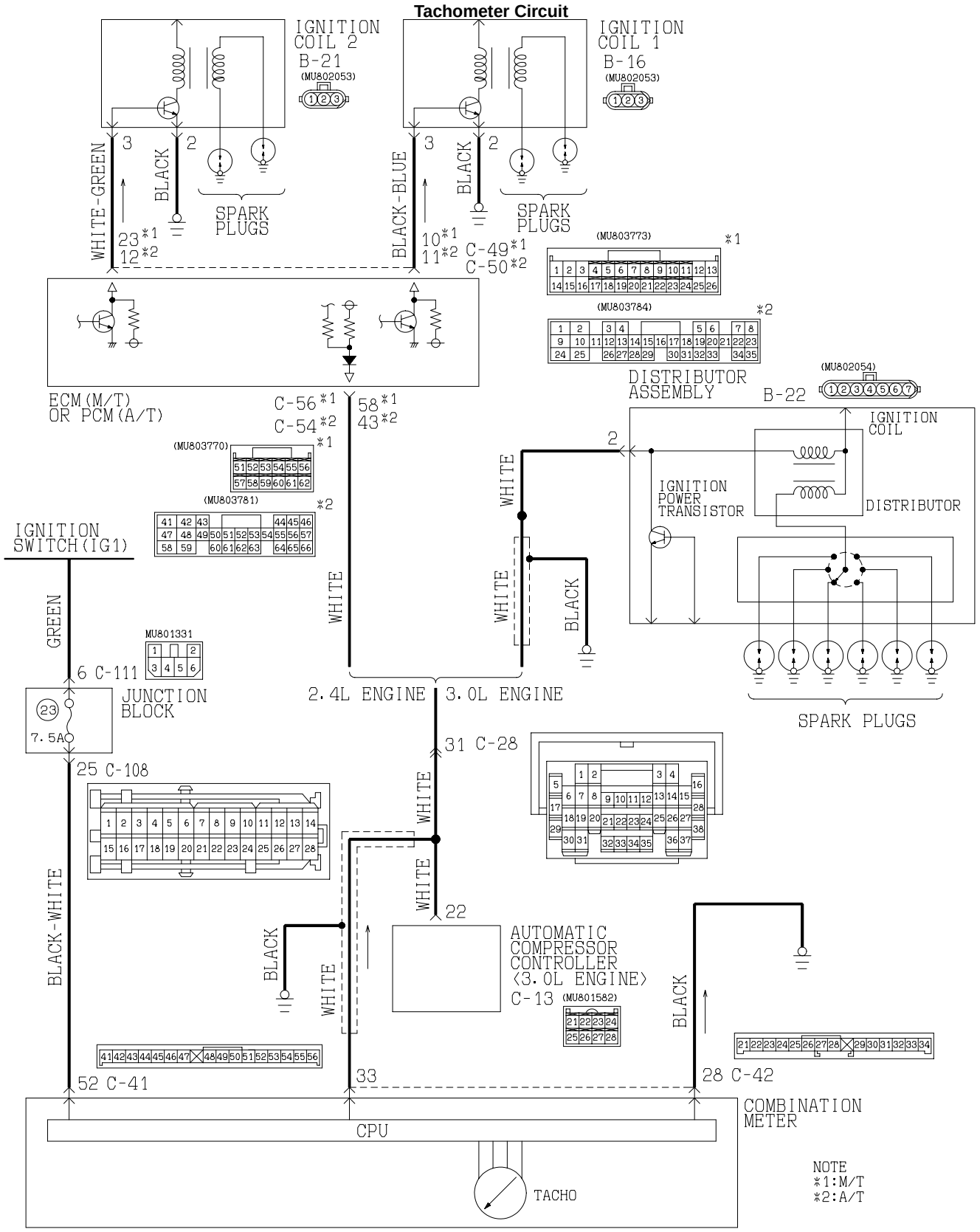
STEP 44. Recheck for malfunction.

Q: Is a malfunction eliminated?

YES : This diagnosis is complete. (If no malfunctions are not 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.00-6.)
NO : Replace the speedometer

INSPECTION PROCEDURE 2: Tachometer does not Work.

Tachometer Circuit



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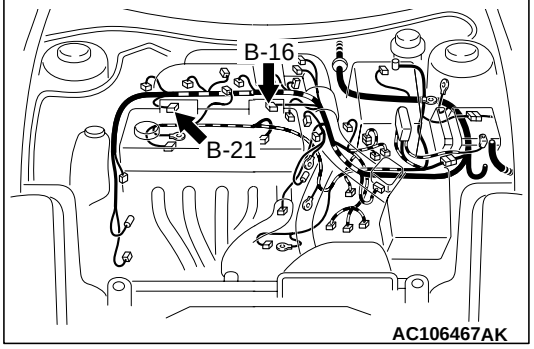
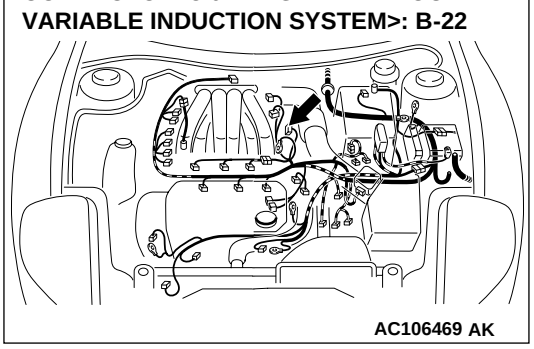
TSB Revision

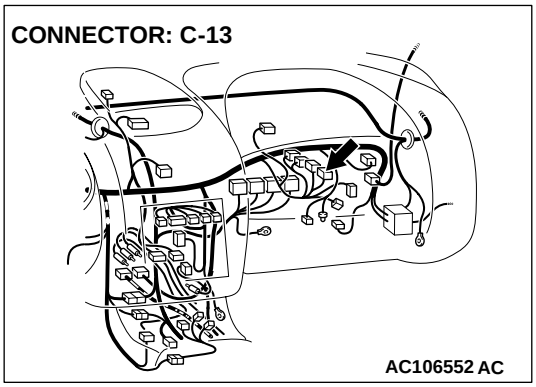
CONNECTORS<2.4L ENGINE>: B-16, B-21



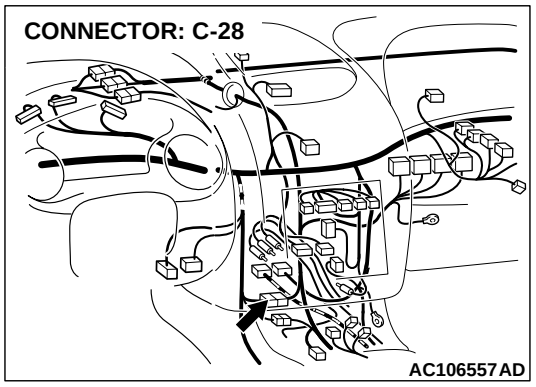
CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-22



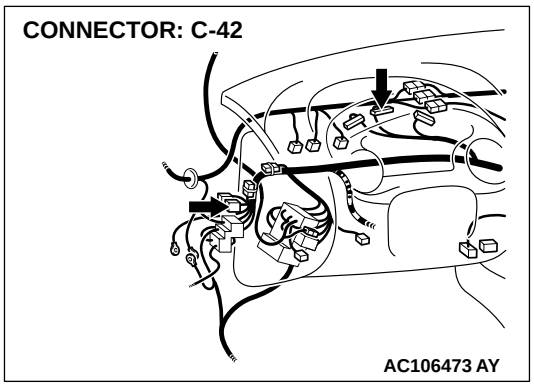
CONNECTOR: C-13



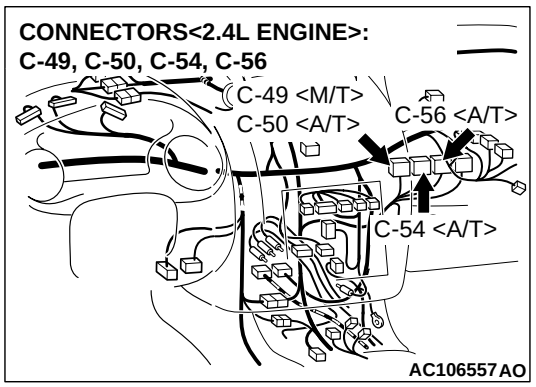
CONNECTOR: C-28



CONNECTOR: C-42



CONNECTORS<2.4L ENGINE>: C-49, C-50, C-54, C-56



CIRCUIT OPERATION

- The tachometer power is supplied from the ignition switch (IG) circuit.
- For vehicles with 2.4L engine, the tachometer detects the ignition signal by the engine control module via the ignition coils.
- For vehicles with 3.0L engine, the tachometer detects the ignition signal control via the distributor assembly.

TECHNICAL DESCRIPTION (COMMENT)

The ignition signal may not be sent from the engine, or there may be a malfunction in the power supply or ground circuit.

TROUBLESHOOTING HINTS

- Malfunction of the combination meter (printed circuit board or speedometer and tachometer)
- Damaged wiring harness or connectors
- Malfunction of the ECM <M/T> or PCM <A/T>

DIAGNOSIS

Required Special Tools:

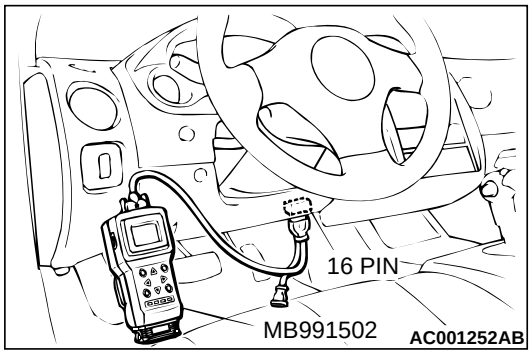
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

TSB Revision

STEP 1. Check the MFI system.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool.



(1) Connect scan tool MB991502 to the data link connector.
(2) Turn the ignition switch to "ON" position.
(3) Read the MFI system diagnostic trouble code.

Q: Is MFI system DTC P0300 output?

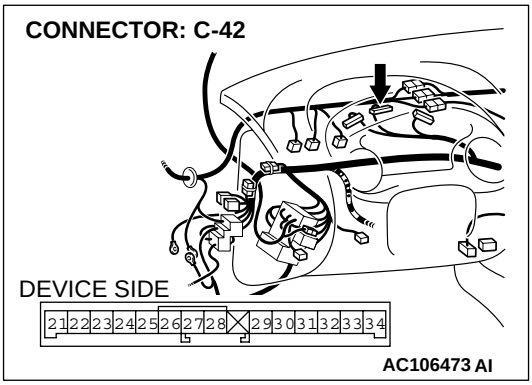
YES : Check the MFI system, Go to Step 9.
NO : Go to Step 2.

STEP 2. Check the speedometer operation.

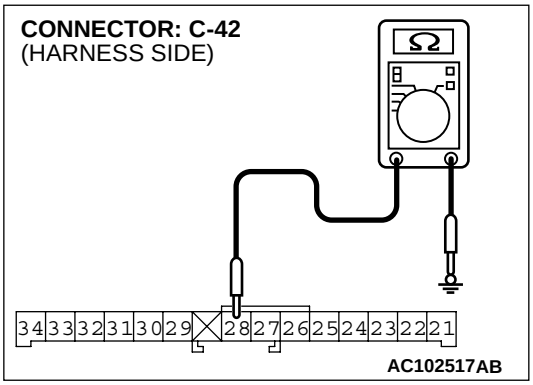
Q: Does the speedometer work normally?

YES : Refer to Inspection Procedure 1 P.54A-40.
NO : Go to Step 3.

STEP 3. Check the combination meter (tachometer) ground circuit at the combination meter connector C-42.



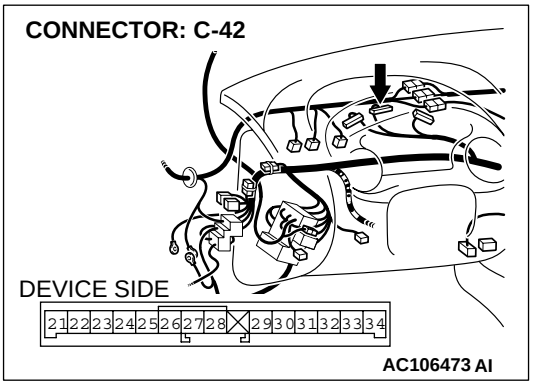
(1) Disconnect the combination meter connector C-42.



(2) Measure the resistance between terminal 28 and ground.
- The measured value should be 2 ohm or less.

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

YES : Go to Step 6.
NO : Go to Step 4.

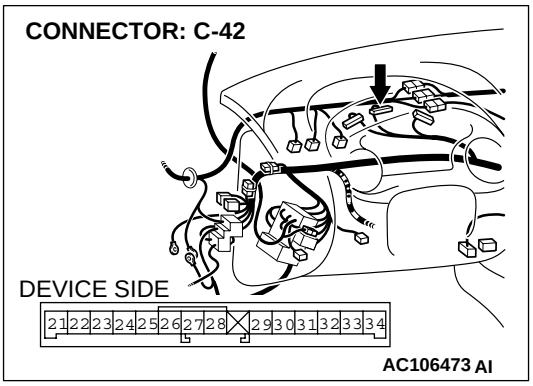


STEP 4. Check the combination meter connector C-42 for damage.

Q: Is combination meter connector C-42 in good condition?

YES : Go to Step 5.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tachometer should work normally.

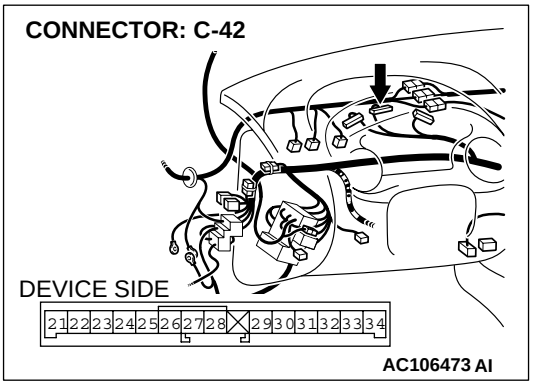


STEP 5. Check the wiring harness between combination meter connector C-42 (terminal 28) and ground.

Q: Is the wiring harness between combination meter connector C-42 (terminal 28) and ground in good condition?

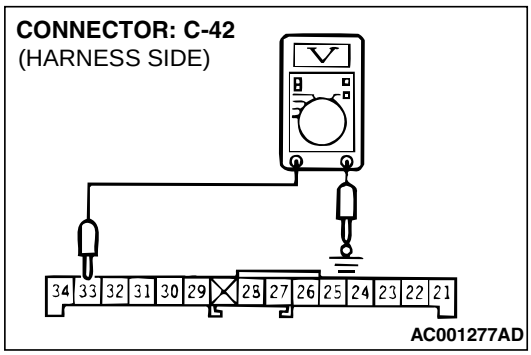
YES : There is no action to be taken.

NO : Repair or replace the connector. The tachometer should work normally.



STEP 6. Check the ignition signal input circuit at the combination meter connector C-42.

(1) Disconnect the combination meter connector C-42.
(2) Start the engine and run at idle.



(3) Measure the voltage between terminal 33 and ground.
- The measured value should be between approximately 10 and 12 volts.

(4) Check that the voltage drops below the standard value.

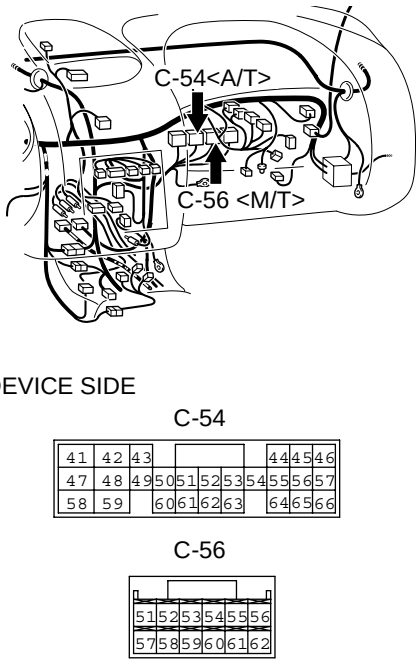
Q: Does the measured voltage correspond with this range?

YES : Repair or replace the combination meter (printed-circuit board or speedometer and tachometer).

NO : Go to Step 7.

STEP 7. Check the ECM connector C-56 <2.4L M/T> or PCM connector C-54 <2.4L A/T>, distributor assembly connector B-22 <3.0L engine>, automatic compressor controller connector C-13 <3.0L engine> and combination meter connector C-42 for damage.

CONNECTORS <2.4L ENGINE>: C-54, C-56



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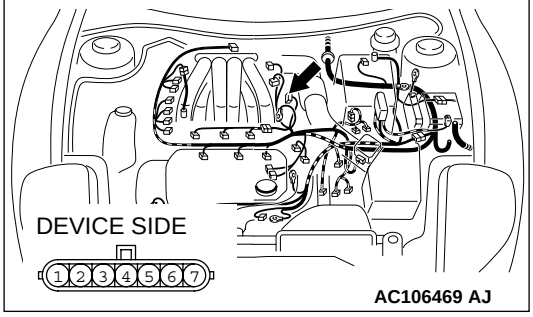
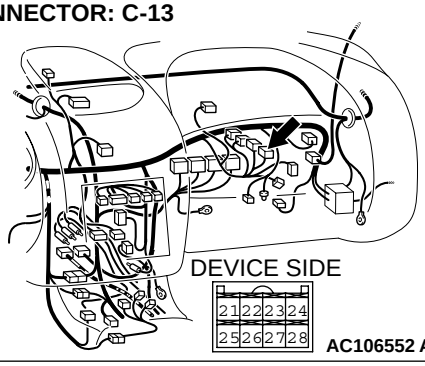
CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-22

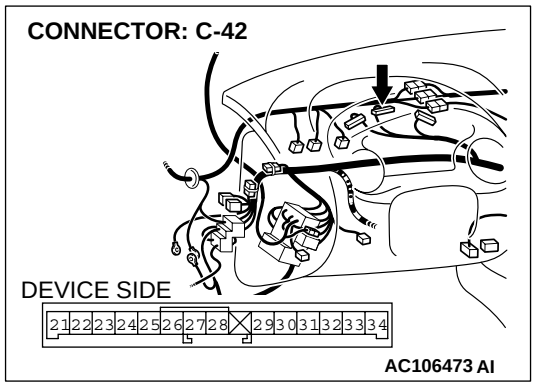


AC106469 AJ

CONNECTOR: C-13



AC106552 AB



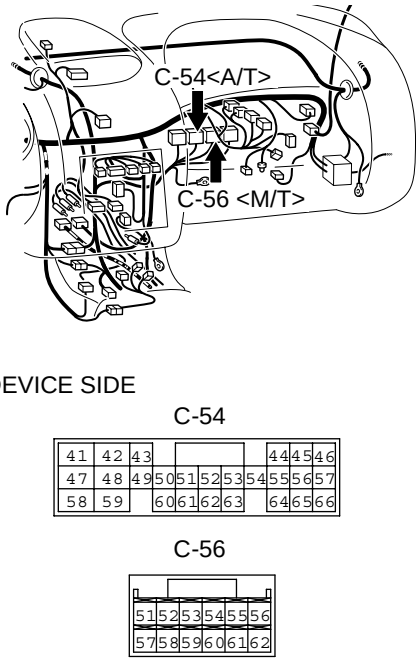
Q: Are ECM connector C-56 <2.4L M/T> or PCM connector C-54 <2.4L A/T>, distributor assembly connector B-22 <3.0L engine>, automatic compressor controller connector C-13 <3.0L engine> and combination meter connector C-42 in good condition?

YES : Go to Step 8.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tachometer should work normally.

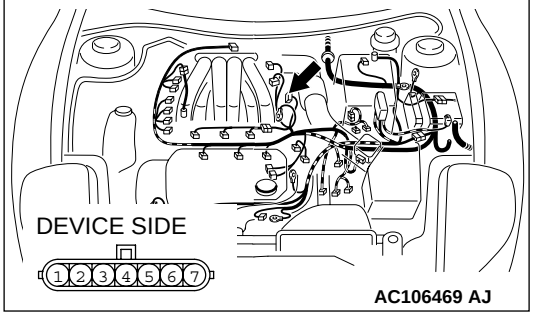
STEP 8. Check the wiring harness from combination meter connector C-42 (terminal 33) to ECM connector C-56 (terminal 58) <2.4L M/T> or PCM connector C-54 (terminal 43) <2.4L A/T>, distributor assembly connector B-22 (terminal 2) <3.0L engine> and automatic compressor controller connector C-13 (terminal 22) <3.0L engine>.

CONNECTORS <2.4L ENGINE>: C-54, C-56



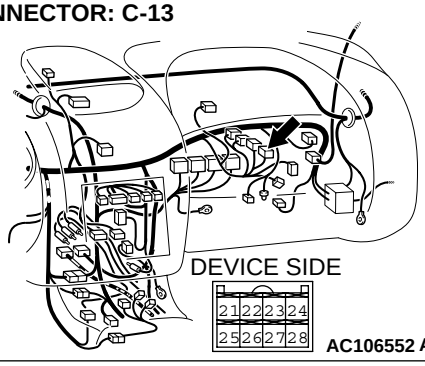
AC106563 AO

CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-22

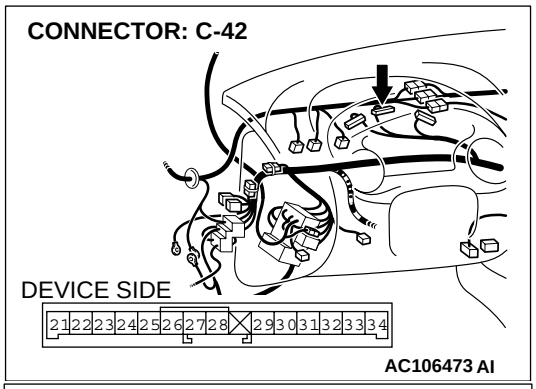


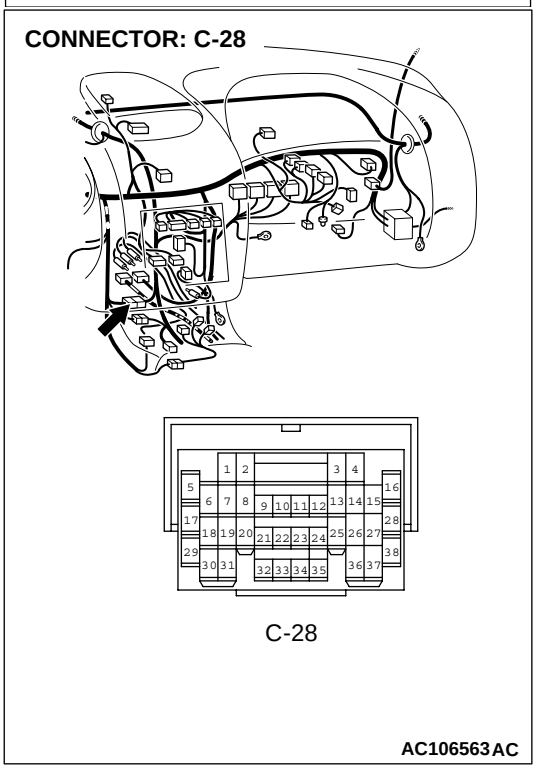
AC106469 AJ

CONNECTOR: C-13



AC106552 AB



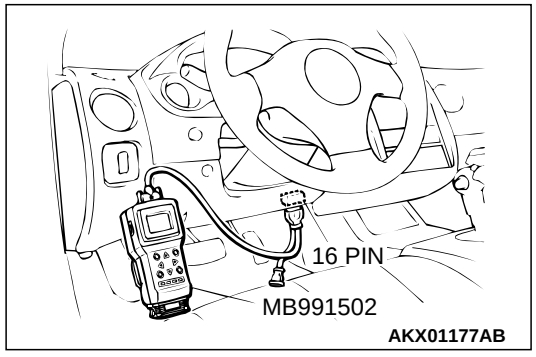


NOTE: After checking intermediate connector C-28, check the wires. If intermediate connector C-28 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness from combination meter connector C-42 (terminal 33) to ECM connector C-56 (terminal 58) <2.4L M/T> or PCM connector C-54 (terminal 43) <2.4L A/T>, distributor assembly connector B-22 (terminal 2) <3.0L engine> and automatic compressor controller connector C-13 (terminal 22) <3.0L engine> in good condition?

YES : There is no action to be taken.

NO : Repair or replace the connector. The tachometer should work normally.



STEP 9. Using scan tool MB991502, check data list item 22: Crankshaft Position Sensor.

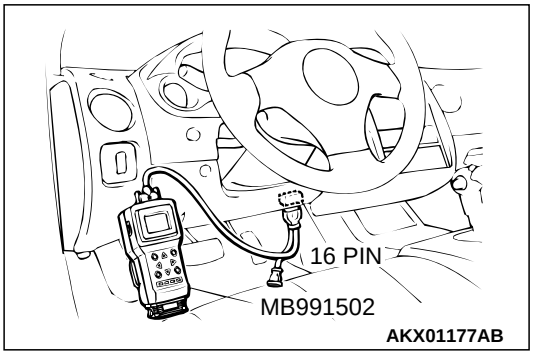
(1) Start the engine and run at idle.
(2) Set scan tool MB991502 to the data reading mode for item 22, Crankshaft Position Sensor.
(3) Check the waveform of the crankshaft position sensor while keeping the engine speed constant.
- The pulse width should be constant.

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

Q: Is the sensor operating properly?

YES : Go to Step 10.

NO : Refer to GROUP 13A <2.4L>, MFI – MFI Diagnosis P.13A-236 or GROUP 13B <3.0L>, MFI – MFI Diagnosis P.13B-315.



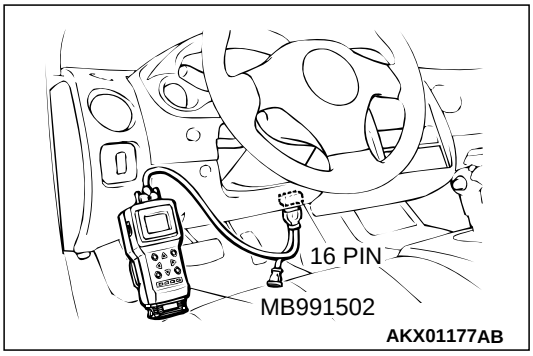
STEP 10. Using scan tool MB991502, check data list item 81: Long - Term Fuel Compensation (trim).

(1) Start the engine and run at idle.
(2) Set scan tool MB991502 to the data reading mode for item 81, Long – Term Fuel Compensation (trim).
- The fuel trim should be between –12.5 and +12.5 when the load is 2,500 r/min (during closed loop) after the engine is warmed.

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

Q: Is the specification normal?

YES : Go to Step 11.
NO : Refer to GROUP 13A <2.4L>, MFI – MFI Diagnosis P.13A-188 or GROUP 13B <3.0L>, MFI – MFI Diagnosis P.13B-245.



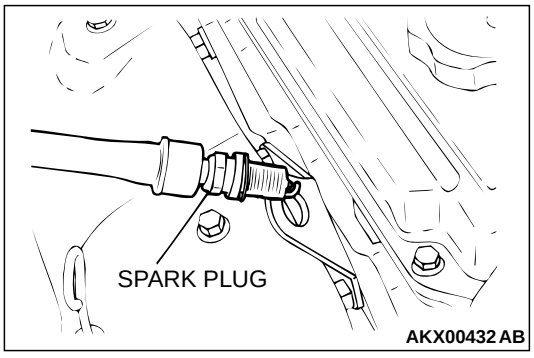
STEP 11. Using scan tool MB991502, check data list item 82: Short - Term Fuel Compensation (trim).

(1) Start the engine and run at idle.
(2) Set scan tool MB991502 to the data reading mode for item 82, Short – Term Fuel Compensation (trim).
- The fuel trim should be between –25 and +16.8 when the load is 2,500 r/min (during closed loop) after the engine is warmed.

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

Q: Is the specification normal?

YES : Go to Step 12.
NO : Refer to GROUP 13A <2.4L>, MFI – MFI Diagnosis P.13A-188 or GROUP 13B <3.0L>, MFI – MFI Diagnosis P.13B-245.

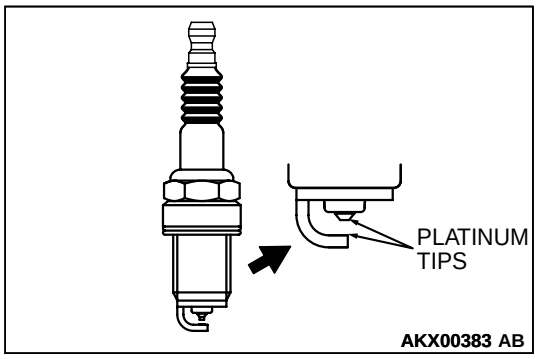


STEP 12. Check the ignition coil spark

(1) Check each ignition coil spark.
(2) Remove the intake manifold.
(3) Remove the spark plug and connect to the spark plug cable.
(4) Ground the spark plug side electrode securely.
- When the engine is cranked, the spark plug should spark.

Q: Did it spark?

YES : Go to Step 15.
NO : Go to Step 13.



STEP 13. Check the spark plugs.

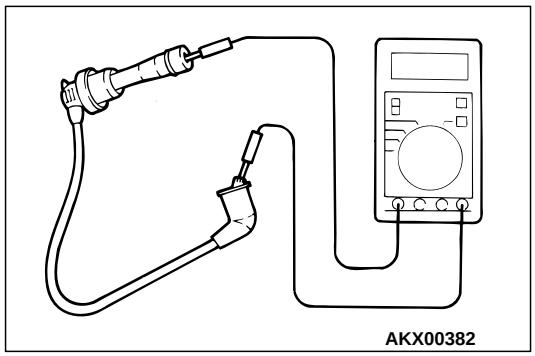
⚠ CAUTION
Do not attempt to adjust the gap of the platinum plug. Cleaning of the platinum plug may result in damage to the platinum tips. Therefore, if carbon deposits must be removed, use a plug cleaner and complete cleaning within 20 seconds to protect the electrode. Do not use a wire brush.

(1) Check the plug gap and replace if the limit is exceeded.

Standard value: 1.0 – 1.1 mm (0.039 – 0.043 inch)
Limit: 1.3 mm (0.051 inch)

Q: Is the plug gap at the standard value?

YES : Go to Step 14.
NO : Replace the faulty spark plug. Then go to Step 1.



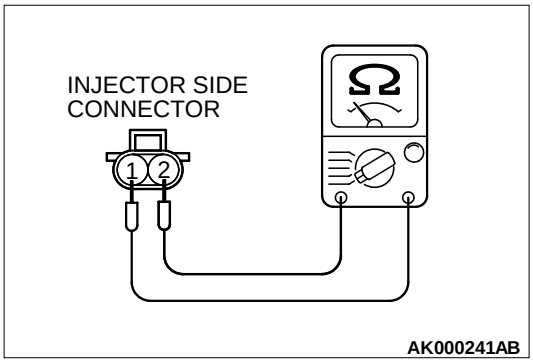
STEP 14. Check the spark plug cable.

(1) Check the cap and coating for cracks.
(2) Measure the resistance.

Limit: maximum 22 kΩ

Q: Is the resistance normal?

YES : Refer to GROUP 13A <2.4L>, MFI – MFI Diagnosis P.13A-535 or GROUP 13B <3.0L>, MFI – MFI Diagnosis P.13B-633.
NO : Replace the faulty spark plug cable. Then go to Step 1.



STEP 15. Check the injector.

(1) Disconnect the injector connector.
(2) Measure the resistance between each injector side connector terminal 1 and 2.
- The measured value should be between approximately 13 and 16 ohm [at20°C (68°F)].

Q: Does the measured voltage correspond with this range?

YES : Go to Step 16.
NO : Replace the faulty injector. Then go to Step 1.

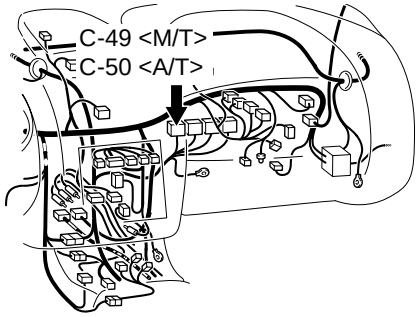
STEP 16. Check connector at injector for damage.

Q: Is the connector in good condition?

YES :
- Go to Step 17 <2.4L engine>.
- Go to Step 20 <3.0L engine>.

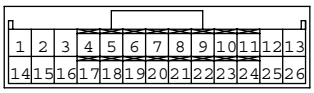
NO : Repair or replace the faulty injector. Refer to GROUP 00E, Harness Connector Inspection (P.00E-2). Then go to Step 1.

CONNECTORS <2.4L ENGINE>: C-49, C-50

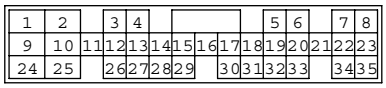


DEVICE SIDE

C-49



C-50



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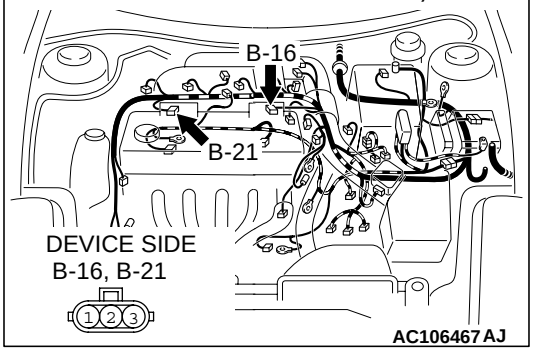
CONNECTORS<2.4L ENGINE>: B-16, B-21



AC106467 AJ

STEP 17. Check connector C-49 at ECM <M/T> or connector C-50 at PCM <A/T> and ignition coil connector B-16 and B-21 for damage <2.4L engine>.

Q: Is the connector in good condition?

YES : Go to Step 18.

NO : Refer to GROUP 13A <2.4L>, MFI – MFI Diagnosis P.13A-22.

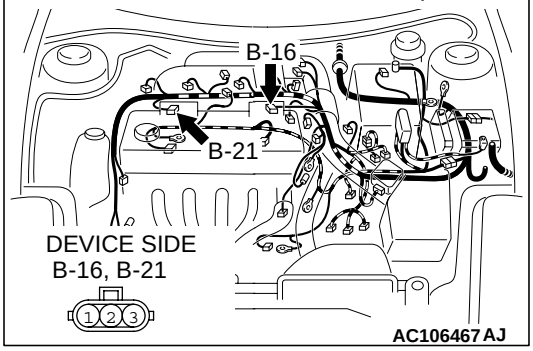
STEP 18. Check for harness damage between ignition coil B-16 (terminal 3), B-21 (terminal 3) and ECM connector C-49 (terminal 10 and 23) <M/T> or PCM connector C-50 (terminal 11 or 12) <A/T>.

Q: Is the wiring harness in good condition?

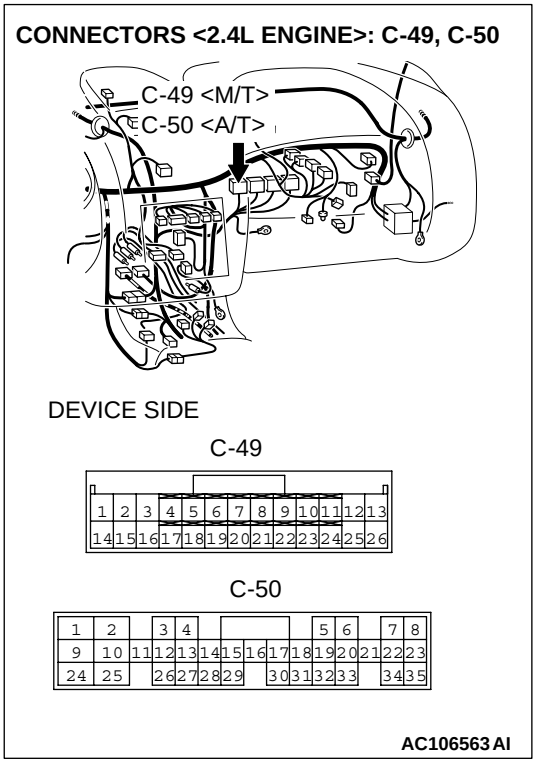
YES : Go to Step 19.

NO : Repair or replace the connector. Then go to Step 1.

CONNECTORS<2.4L ENGINE>: B-16, B-21



CONNECTORS <2.4L ENGINE>: C-49, C-50



STEP 19. Check the following items.

Check the following items, and repair or replace the defective component.

a. Check for skipped timing belt teeth.
b. Check compression.
c. EGR valve failed.

Q: Are there any abnormalities?

YES : Go to Step 20.

NO : Repair or replace the connector. Then go to Step 1.

STEP 20. Replace the injector.

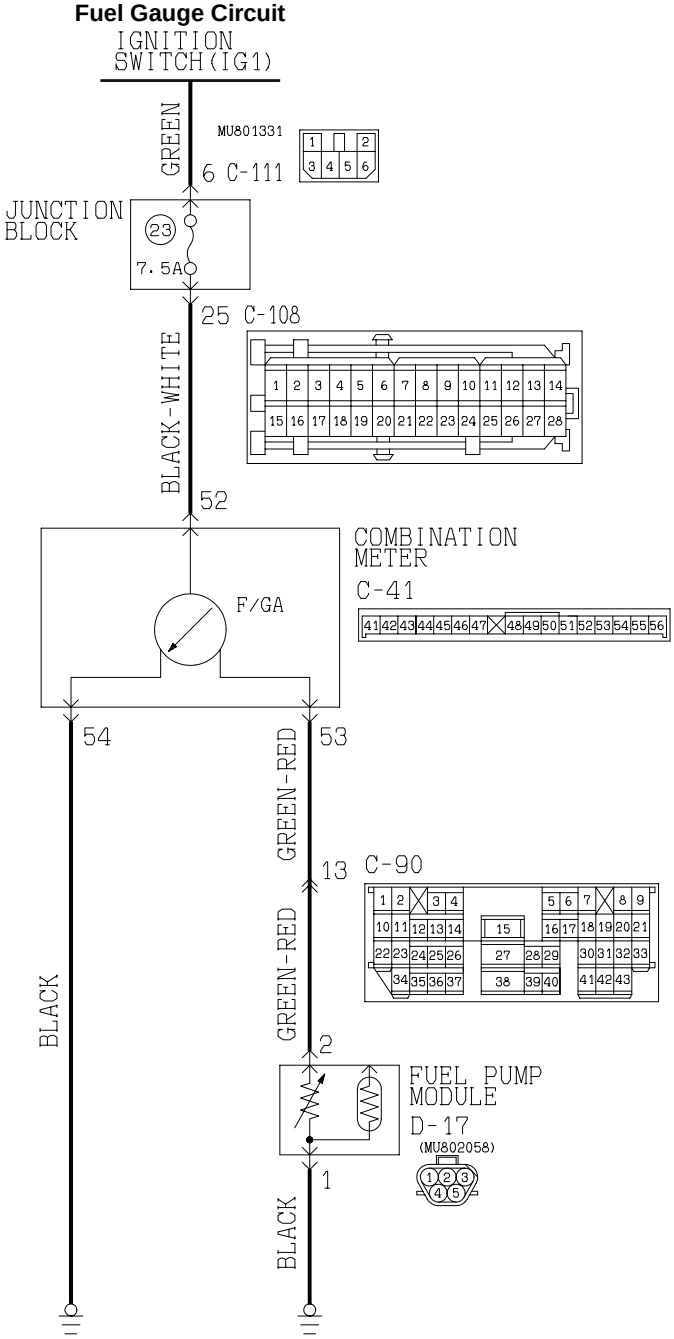
(1) Replace the injector.
(2) Carry out a test drive with the drive cycle pattern.
(3) Check the diagnostic trouble code (DTC).

Q: Is the DTC P0300 set?

YES : Replace the ECM or PCM. Then go to Step 1.
NO : The inspection is complete.

INSPECTION PROCEDURE 3: Fuel Gauge does not Work.

Fuel Gauge Circuit



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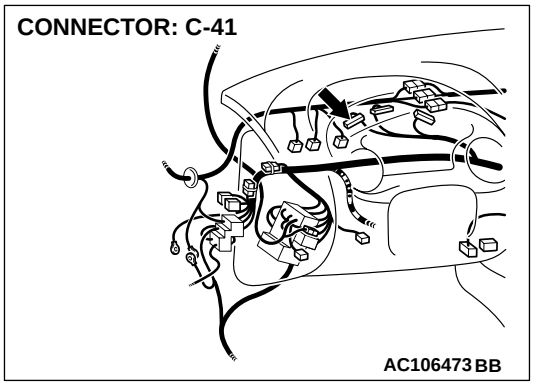
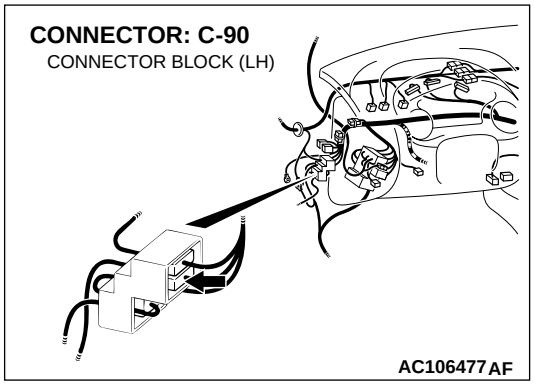
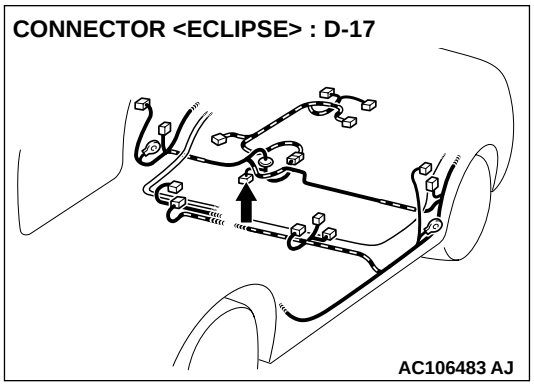
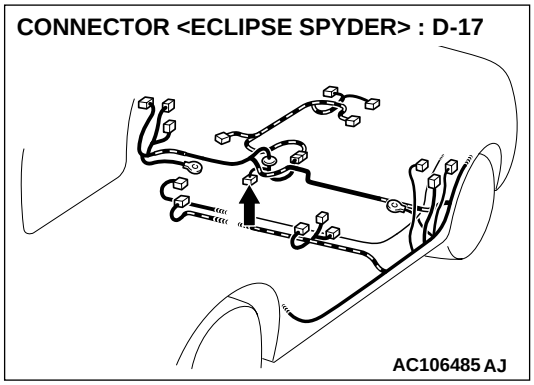








CIRCUIT OPERATION

- The ignition switch (IG1) circuit is the power source for the fuel gauge.
- The resistance value fluctuates causing the circuit current to fluctuate when the fuel gauge unit the float moves up and down.
- The fuel gauge moves the needle by the circuit current.

TECHNICAL DESCRIPTION (COMMENT)

If the ignition switch (IG1) circuit is open, the gauge needle will not move at all. If the ground circuit is open, the gauge needle will move up to its extreme position.

TROUBLESHOOTING HINTS

- Malfunction of the fuel pump module (fuel gauge unit)
- Malfunction of the combination meter (printed-circuit board or fuel gauge assembly)

DIAGNOSIS

Required Special Tool:
MB991223: Harness Set

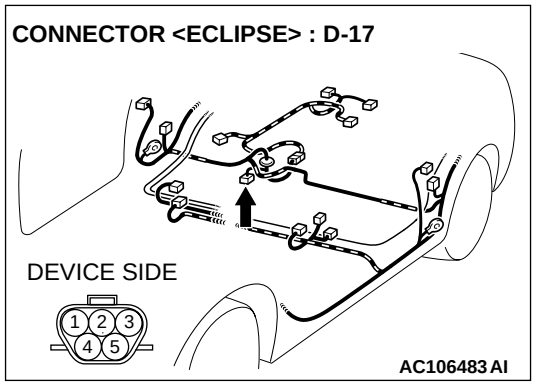
STEP 1. Check the speedometer operation.

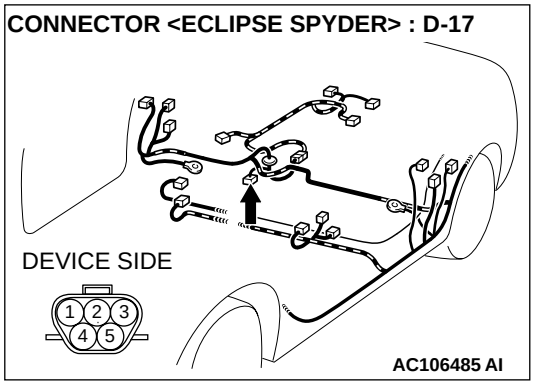
Q: Does the speedometer work normally?

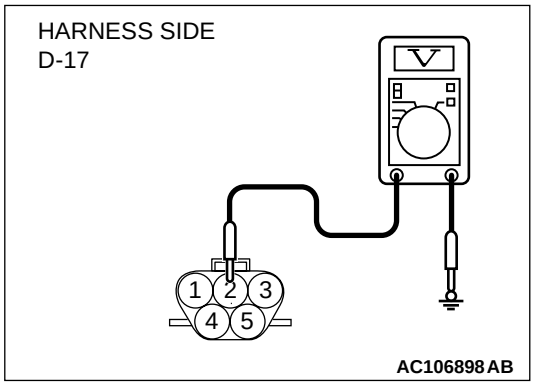
YES : Go to Step 2.
NO : Refer to Inspection Procedure 1 P.54A-74.

STEP 2. Check the fuel pump module signal circuit at the fuel pump module connector D-17 by back probing.

(1) Do not disconnect the fuel pump module connector D-17.
(2) Turn the ignition switch to "ON" position.



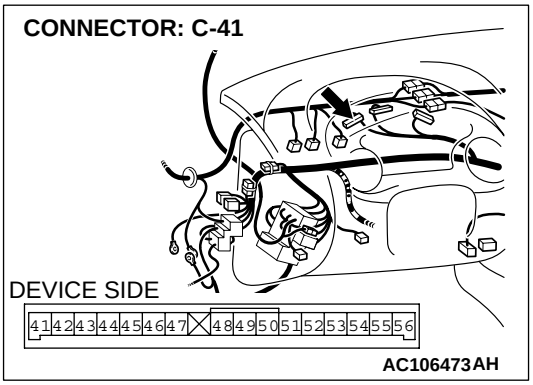


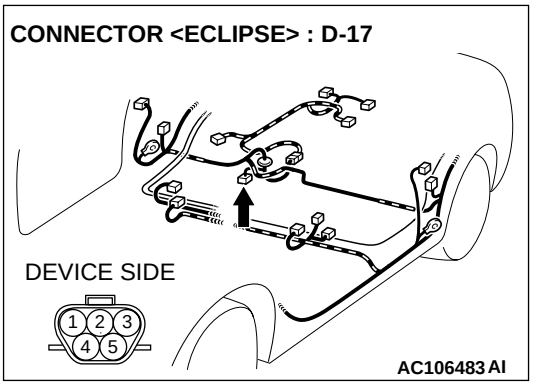


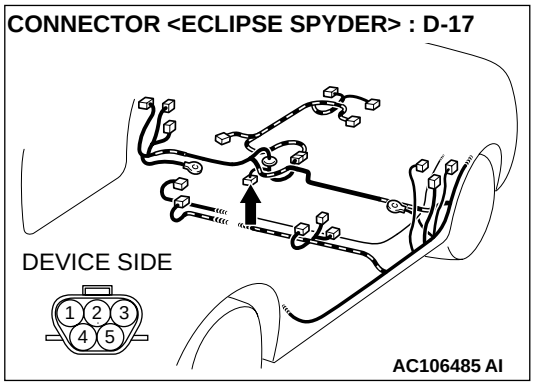
(3) Measure the voltage between terminal 2 and ground by back probing.
- The measured value should be approximately 5 volts or more.

Q: Does the measured voltage correspond with this range?

YES : Go to Step 5.
NO : Go to Step 3.







STEP 3. Check the fuel pump module connector D-17 and combination meter connector C-41 for damage.

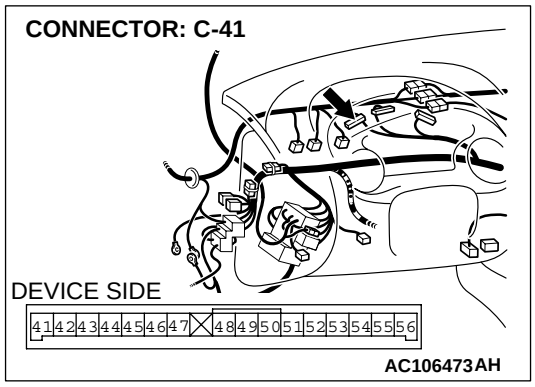
Q: Are fuel pump module connector D-17 and combination meter connector C-41 in good condition?

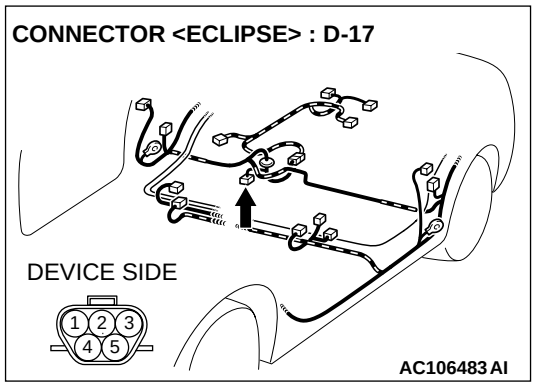
YES : Go to Step 4.

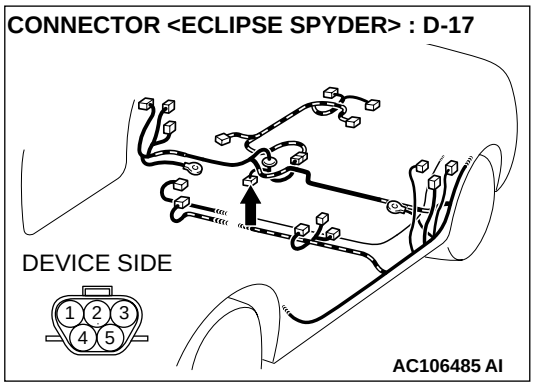
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The fuel gauge should work normally.

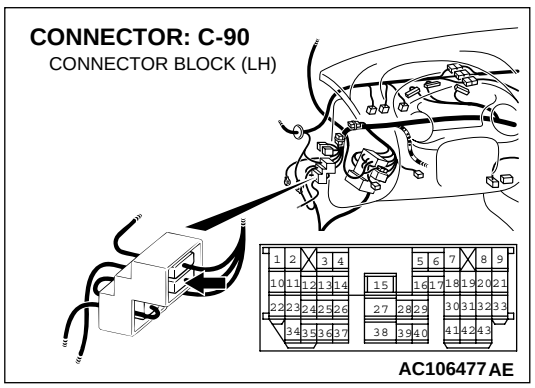
STEP 4. Check the wiring harness between fuel pump module connector D-17 (terminal 2) and combination meter connector C-41 (terminal 53).

NOTE: After checking intermediate connector C-90, check the wire. If intermediate connector C-90 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.









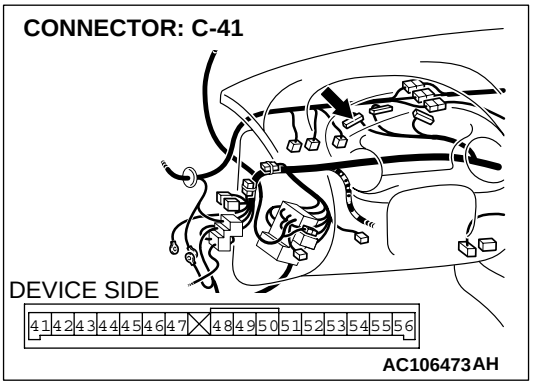
Q: Are the wiring harness between fuel pump module connector D-17 (terminal 2) and combination meter connector C-41 (terminal 53) in good condition?

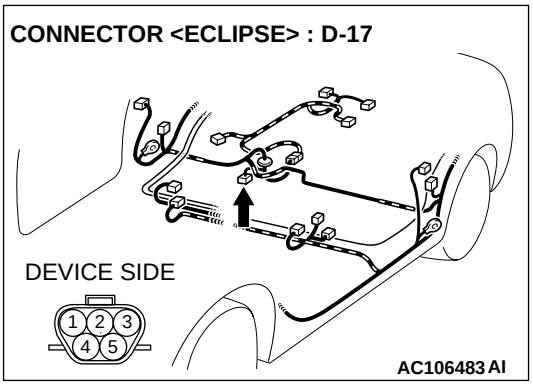
YES : Repair or replace the combination meter (printed-circuit board or fuel gauge assembly). The fuel gauge should work normally.

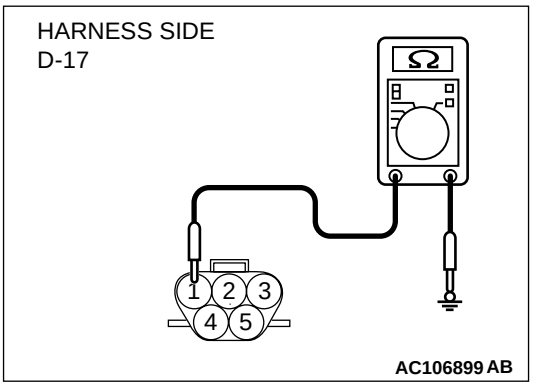
NO : Repair or replace the connector. The fuel gauge should work normally.

STEP 5. Check the fuel pump module ground circuit at the fuel pump module connector D-17 by back probing.

(1) Do not disconnect the fuel gauge unit connector D-17.



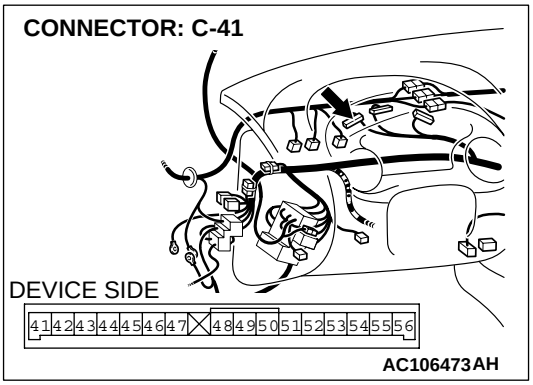




(2) Measure the resistance between terminal 1 and ground by back probing.
- The measured value should be 2 ohm or less.

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

YES : Go to Step 8.
NO : Go to Step 6.

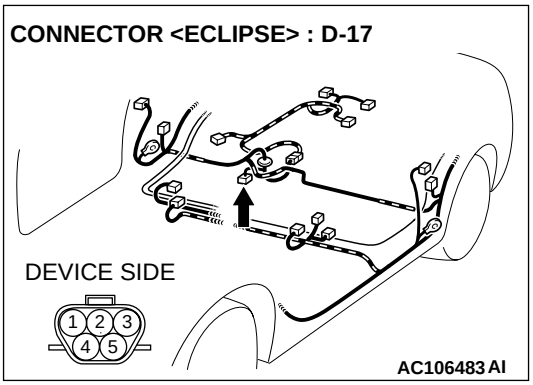


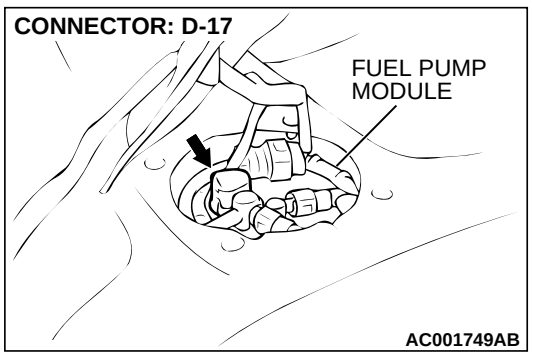
STEP 6. Check the fuel pump module connector D-17 for damage.

Q: Is fuel gauge unit connector D-17 in good condition?

YES : Go to Step 7.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The fuel gauge should work normally.



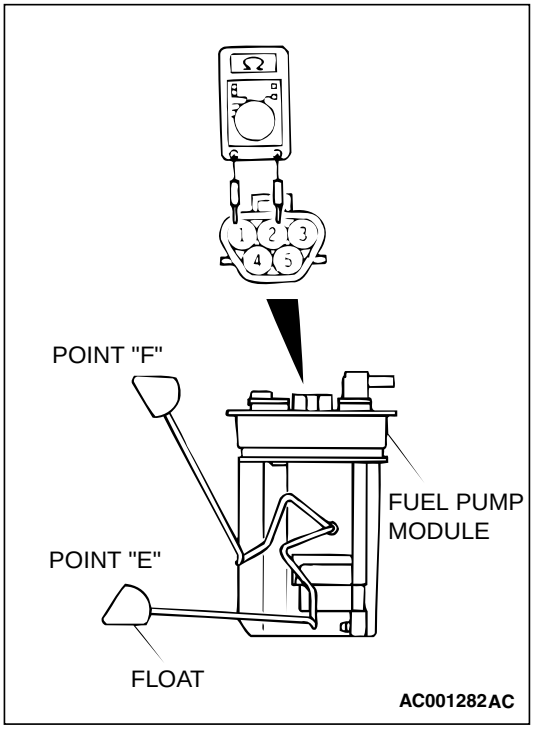


STEP 7. Check the wiring harness between fuel pump module connector D-17 (terminal 1) and ground.

Q: Is the wiring harness between fuel pump module connector D-17 (terminal 1)and ground in good condition?

YES : There is no action to be taken.

NO : Repair or replace the connector. The fuel gauge should work normally.



STEP 8. Check the fuel gauge unit.

(1) Remove the fuel pump module from the fuel tank. (Refer to GROUP 13C, Fuel Tank P.13C-11.

(2) Check resistance value between terminals 2 and 1 is at standard value when the fuel gauge unit float is at point "F" (highest) and point "E" (lowest).

(3) Check that the resistance value changes smoothly when the float moves slowly between point "F" (highest) and "E" (lowest).

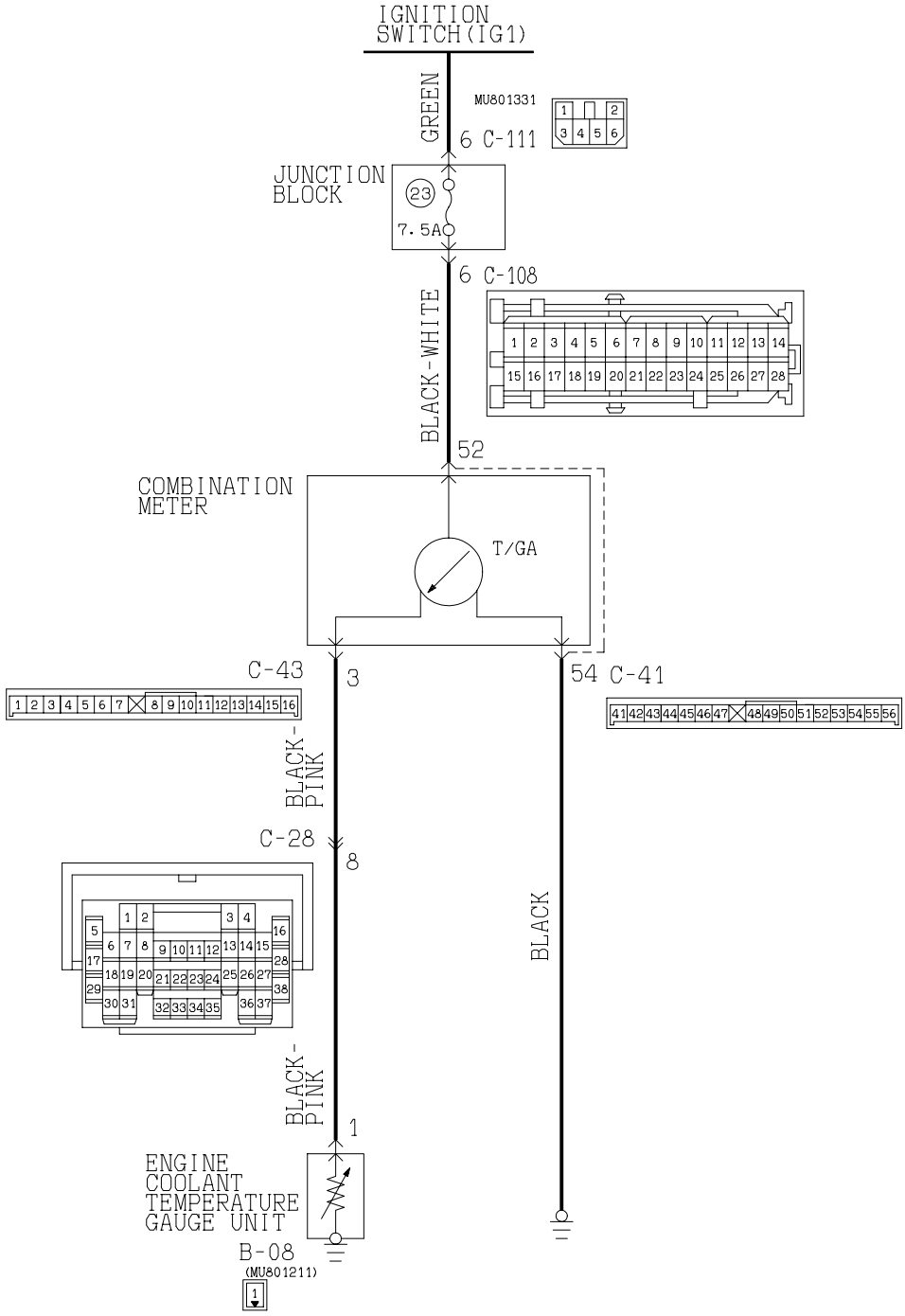
Q: Is the resistance 3 – 5 ohms (at point "F") and 110 – 112 ohms (at point "E")?

YES : Repair or replace the combination meter (printed-circuit board or fuel gauge assembly). The fuel gauge should work normally.

NO : Replace the fuel gauge unit. The fuel gauge should work normally.

INSPECTION PROCEDURE 4: Engine Coolant Temperature Gauge does not Work.

Engine Coolant Temperature Gauge Circuit



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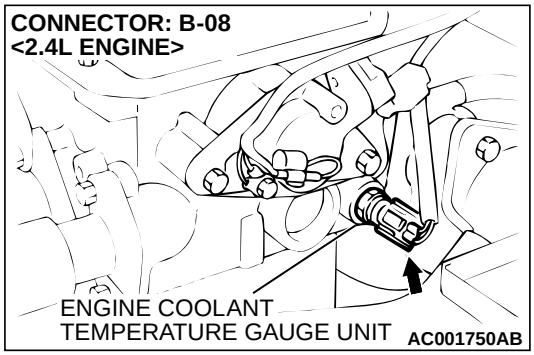
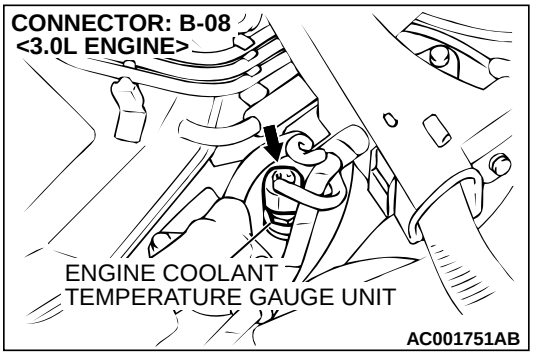
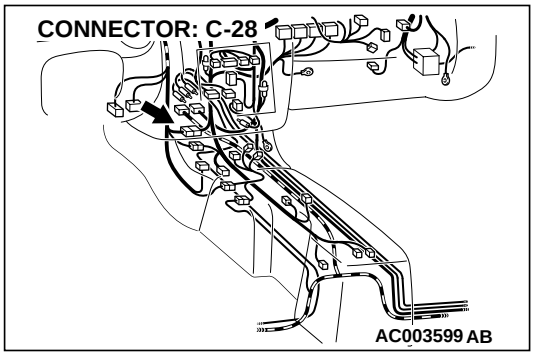
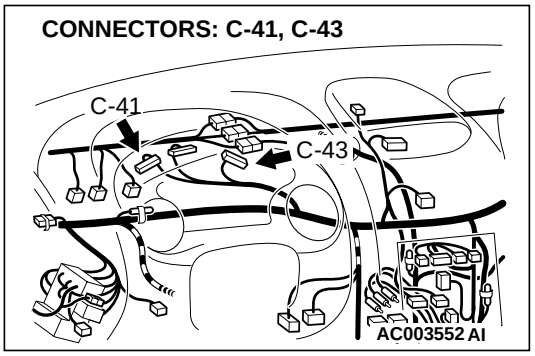
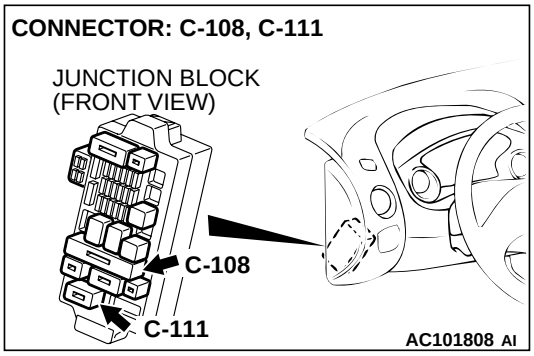
TSB Revision











CIRCUIT OPERATION

- The ignition switch (IG1) circuit is the power source for the engine coolant temperature gauge.
- Resistance value, which the engine coolant temperature gauge unit sends to the combination meter, is dependent on temperature of the engine coolant. This causes circuit current to fluctuate.
- The engine coolant temperature gauge moves the needle according to the circuit current.

TECHNICAL DESCRIPTION (COMMENT)

If the ignition switch (IG1) circuit is open, the gauge needle will not move at all. If the ground circuit is open, the gauge needle will move up to its extreme position.

TROUBLESHOOTING

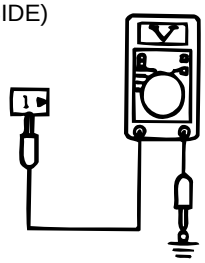
- Malfunction of the engine coolant temperature gauge unit
- Malfunction of the combination meter (printed-circuit board or engine coolant temperature gauge assembly)
- Damaged wiring harness or connectors

DIAGNOSIS

Required Special Tool:
MB991223: Harness Set

TSB Revision

CONNECTOR: B-08
(HARNESS SIDE)



ACX01788 AB

STEP 1. Check the speedometer operation.

Q: Does the speedometer work normally?

YES : Go to Step 2.
NO : Refer to Inspection Procedure 1 P.52A-8.

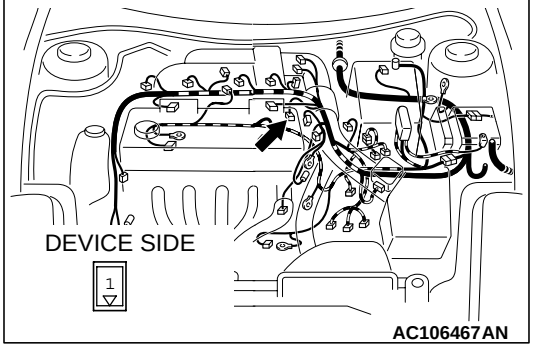
STEP 2. Check the engine coolant temperature sensor signal circuit at the engine coolant temperature sensor connector B-08 by back probing.

(1) Do not disconnect the engine coolant temperature sensor connector B-08.
(2) Turn the ignition switch to "ON" position.
(3) Measure the voltage between terminal 1 and ground by back probing.
- The measured value should be approximately 9 volts or more.

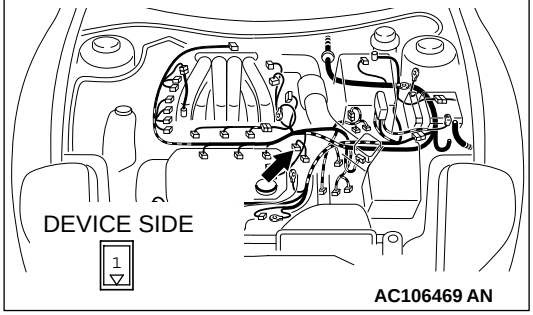
Q: Does the measured voltage correspond with this range?

YES : Go to Step 5.
NO : Go to Step 3.

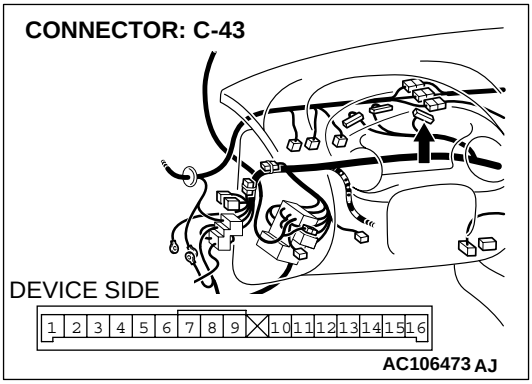
CONNECTOR<2.4L ENGINE>: B-08



CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-08



CONNECTOR: C-43



STEP 3. Check the engine coolant temperature sensor connector B-08 and combination meter connector C-43 for damage.

Q: Are engine coolant temperature sensor connector B-08 and combination meter connector C-43 in good condition?

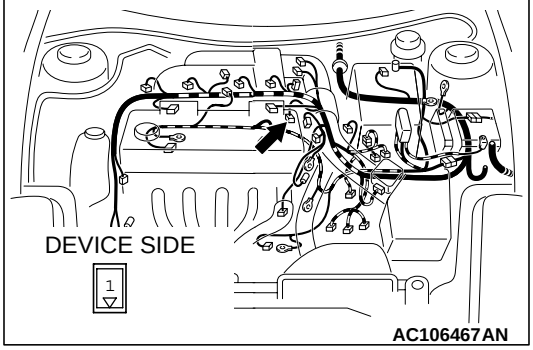
YES : Go to Step 4.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The engine coolant temperature gauge should work normally.

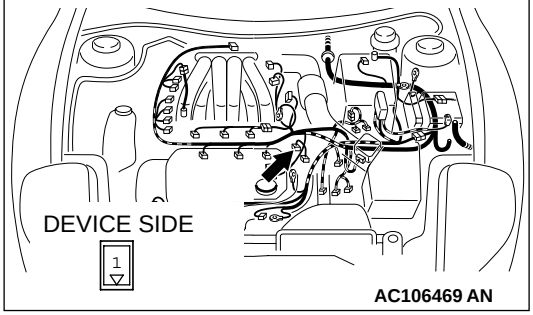
STEP 4. Check the wiring harness between engine coolant temperature sensor connector B-08 (terminal 1)and combination meter connector C-43 (terminal 3).

NOTE: After checking intermediate connector C-28, check the wire. If intermediate connector C-28 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

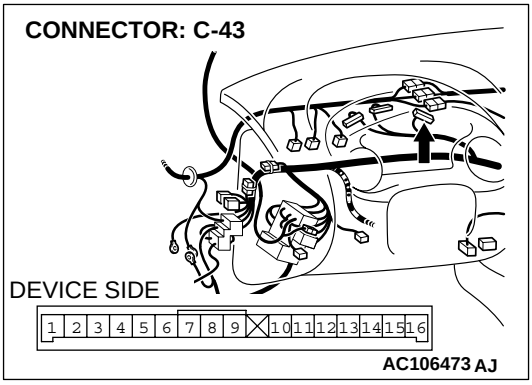
CONNECTOR<2.4L ENGINE>: B-08



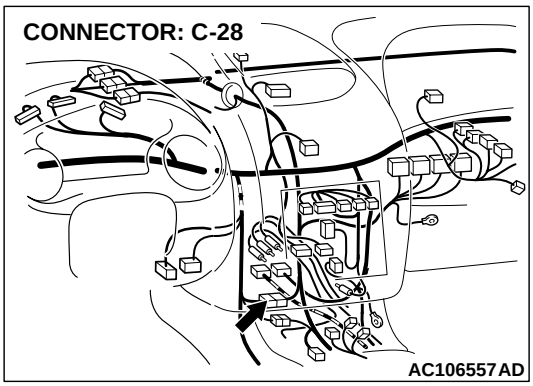
CONNECTOR<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-08



CONNECTOR: C-43



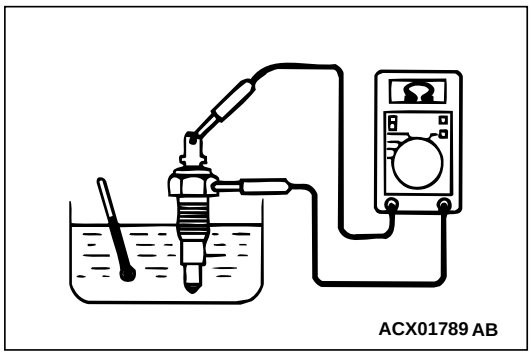
CONNECTOR: C-28



Q: Are the wiring harness between engine coolant temperature sensor connector B-08 (terminal 1) and combination meter connector C-43 (terminal 3)in good condition?

YES : Repair or replace the combination meter (printed-circuit board or engine coolant temperature gauge assembly). The engine coolant temperature gauge should work normally.

NO : Repair or replace the connector. The engine coolant temperature gauge should work normally.


ACX01789 AB

STEP 5. Check the engine coolant temperature gauge unit.

(1) Drain the engine coolant. (Refer to GROUP 00, Maintenance Service – Engine Coolant P.00-56.)
(2) Remove the engine coolant temperature gauge unit.
(3) Immerse the unit in 70°C (158° F) water to measure the resistance.

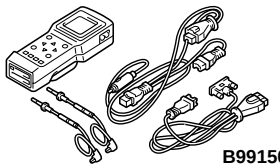
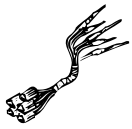
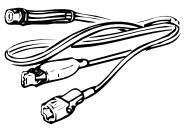
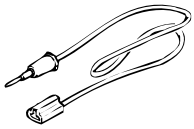
Q: Is the resistance 104 ± 13.5 ohms?

YES : Repair or replace the combination meter (printed-circuit board or engine coolant temperature gauge assembly). The engine coolant temperature gauge should work normally.

NO : Replace the engine coolant temperature gauge unit. The engine coolant temperature gauge should work normally.

SPECIAL TOOLS

M1543000600637

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 B991502	MB991502 Scan tool (MUT-II)	MB991496-OD	Reading MFI system diagnostic trouble code
A  B  C  D  MB991223AC	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	MB991223	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

ON-VEHICLE SERVICE

SPEEDOMETER CHECK

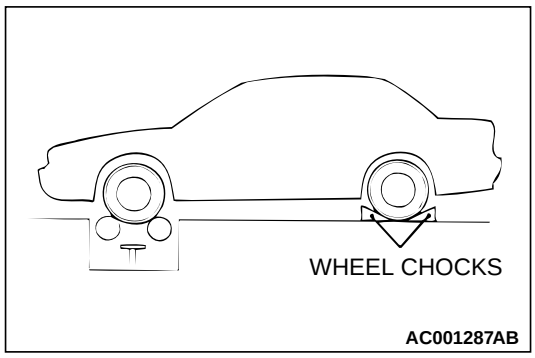
M1543000900218

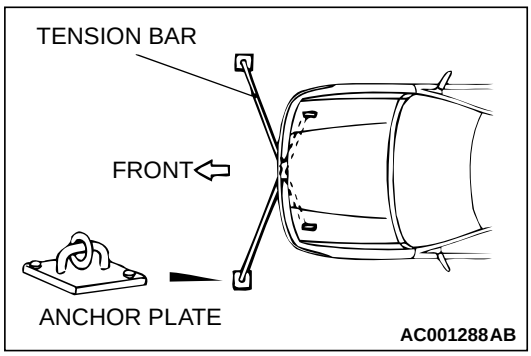
Adjust the pressure of tires to the specified level. (Refer to GROUP 31, On-vehicle Service P.31-7.)

⚠ CAUTION

Do not operate the clutch suddenly. Do not increase/decrease speed rapidly while testing.

1. Set the vehicle onto a speedometer tester and use wheel chocks to hold the rear wheels.





2. 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.
3. 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.
4. Check if the speedometer indicator range is within the standard values.

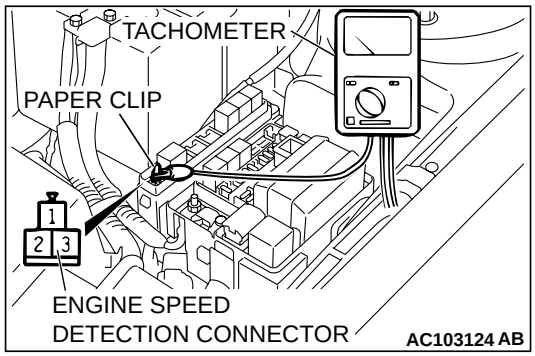
   Standard value:

STANDARD INDICATION km/h (mph)	ALLOWANCE RANGE km/h (mph)
32 (20)	31–35 (19–22)
64 (40)	61–71 (38–44)
97 (60)	92–106 (57–66)
129 (80)	122–142 (76–88)
161 (100)	151–177 (94–110)

5. If not to the standard value, inspect for proper tire size. If not correct, replace the tires with original size tires and retest. If correct, replace the speedometer. If still not to standard value, replace the vehicle speed sensor.

TACHOMETER CHECK

M1543001000218



1. Attach an external high quality tachometer to the engine speed detection connector on the harness side (such as with a paper clip).

   NOTE: For tachometer check, use an external high quality inductive tachometer.

2. Compare the readings of the vehicle tachometer and the external tachometer at every engine speed, and check if the variations are within the standard values.

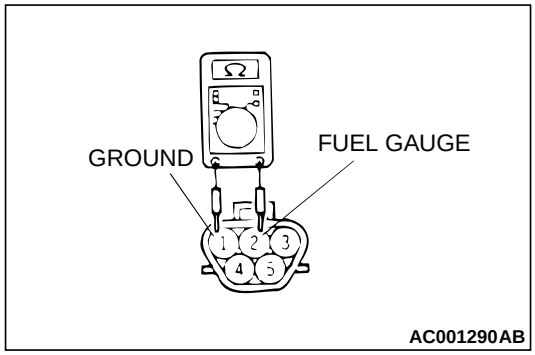
   Standard values:
   - **700 r/min: ±100 r/min**
   - **3,000 r/min: ±150 r/min**
   - **5,000 r/min: ±250 r/min**
   - **6,000 r/min: ±300 r/min**

FUEL GAUGE UNIT CHECK

M1543001200201

Remove the fuel pump module and the remove the fuel gauge unit. (Refer to GROUP 13C, Fuel Tank P.13C-11.)

FUEL GAUGE UNIT RESISTANCE

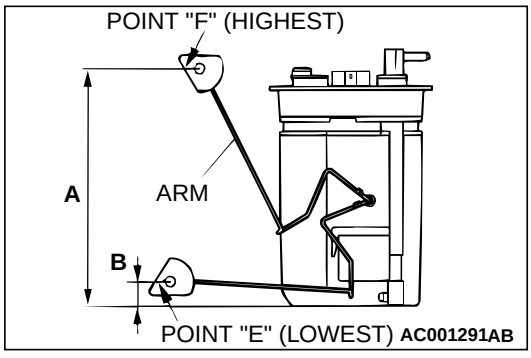


1. Check that resistance value between the fuel gauge terminal and ground terminal is at the standard value when the fuel gauge unit float is between point "F" (highest) and point "E" (lowest).

   Standard value:
   - **Point "F": 3 – 5 ohms**
   - **Point "E": 110 – 112 ohms**

2. Check that resistance value changes smoothly when the float moves slowly between point "F" (highest) and point "E" (lowest).
3. If all checks are correct, go to fuel gauge unit float height check. If any check is not correct, replace the fuel gauge unit.

FUEL GAUGE UNIT FLOAT HEIGHT

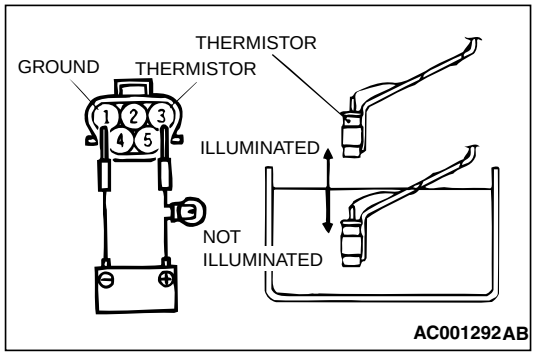


1. Move the float and measure height A at point "F" (highest) and B at point "E" (lowest) with the float arm touching stopper.

   Standard value:
   - **A: 180.3 mm (7.10 inches)**
   - **B: 18.8 mm (0.74 inch)**

2. Adjust the float arm to the standard value, then go to the thermistor check.

THERMISTOR



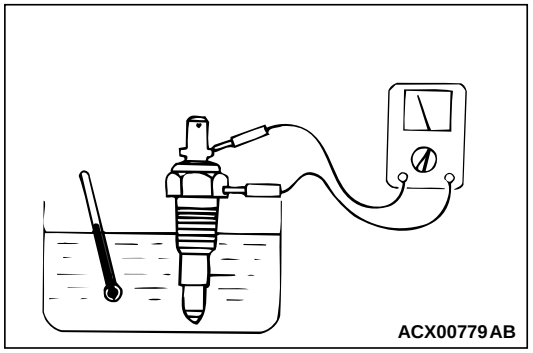
⚠ CAUTION

After finishing this test, wipe the unit dry and install it in the fuel tank.

1. Connect the fuel gauge unit (thermistor) to the battery via a test light (12V – 3.4W). Immerse in water.
2. Condition is good if the light goes off when the thermistor is immersed in water and comes on when it is taken out of water.
3. If all check result are correct, the fuel gauge unit is OK. If either check result is not correct, replace the fuel gauge unit.

ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

M1543001500202

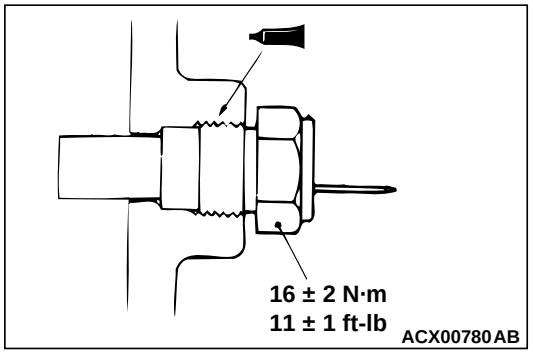


1. Drain the engine coolant. (Refer to GROUP 00, Maintenance Service – Engine Coolant P.00-56.)
2. Remove the engine coolant temperature gauge unit.
3. Immerse the unit in 70°C (158°F) water to measure the resistance.

Standard value: 104 ± 13.5 ohms

Reference value

Temperature	Resistance
50°C (122°F)	230 Ω
60°C (140°F)	155 Ω
80°C (176°F)	73 Ω

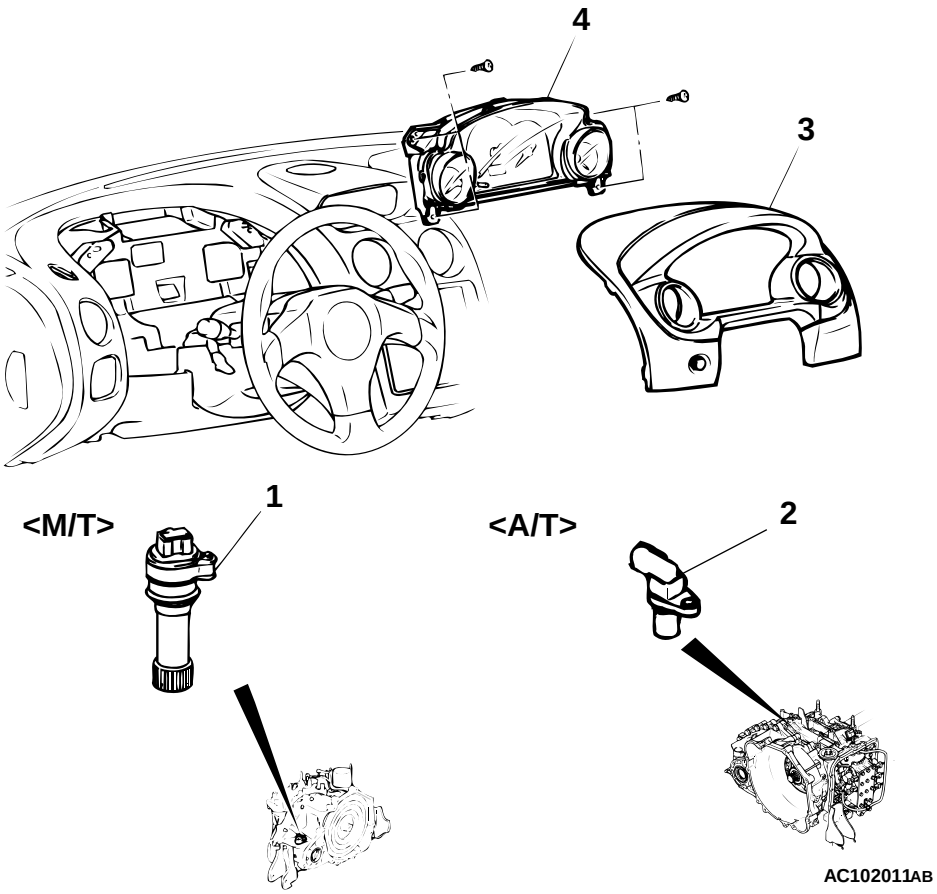


4. If within the standard value, the sensor is OK. Reinstall it, then check the engine coolant temperature gauge (Refer to P.54A-106). If not within the standard value, replace it.
5. After checking, apply the 3M™ AAD Part No. 8731 or equivalent around the threads of the engine coolant temperature gauge unit.
6. Add engine coolant. (Refer to GROUP 00, Maintenance Service – Engine Coolant P.00-56.)

COMBINATION METERS ASSEMBLY AND VEHICLE SPEED SENSOR

REMOVAL AND INSTALLATION

M1543002900247



AC102011AB

1. VEHICLE SPEED SENSOR <M/T>
2. OUTPUT SHAFT SPEED SENSOR <A/T>

COMBINATION METER REMOVAL STEPS

3. METER HOOD ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
4. COMBINATION METER

TSB Revision

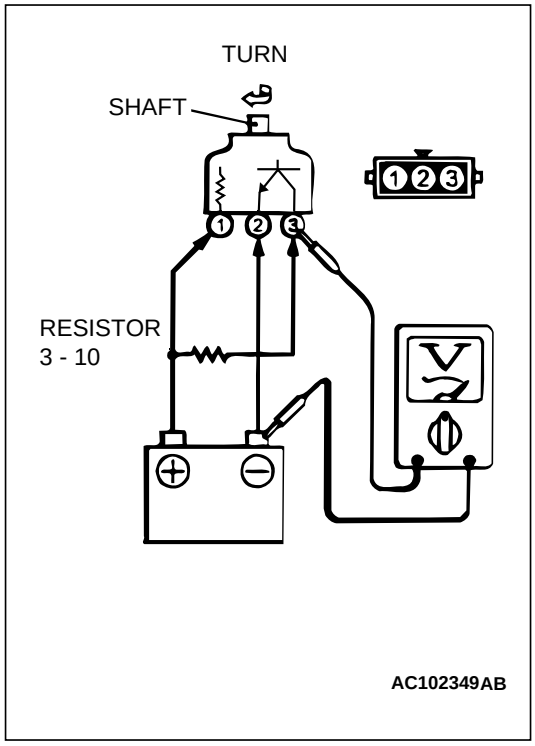
COMBINATION GAUGES ASSEMBLY INSPECTION

M1543003500048

INSPECTION

M1543019501170

VEHICLE SPEED SENSOR CHECK <M/T>

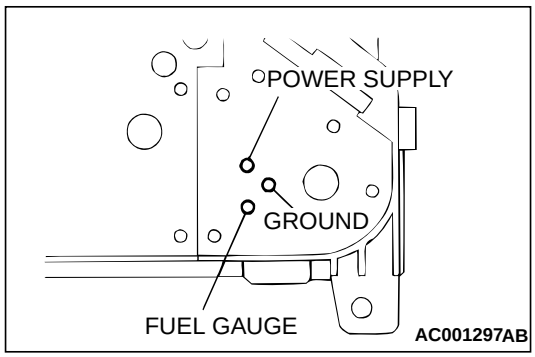


1. Remove the vehicle speed sensor and connect a 3 – 10 ohms resistor as shown in the illustration.
2. Turn the shaft of the vehicle speed sensor and check that there is voltage between terminals 2 – 3. (1 turn = 4 pulses)
3. If within the standard value, the vehicle speed sensor is OK.
   If not within the standard value, replace the vehicle speed sensor.

OUTPUT SHAFT SPEED SENSOR CHECK <A/T>

The output shaft speed sensor cannot be checked as an individual part after the sensor has been removed. Using scan tool MB991502, check whether diagnosis code 23 is set while the sensor is installed. If this code is set, refer to "Combination meter diagnosis – Symptom Procedure 1" P.54A-40.

FUEL GAUGE RESISTANCE CHECK



⚠ CAUTION

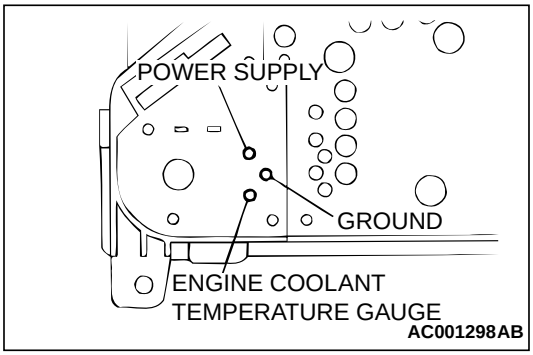
When inserting a testing probe into the power supply terminal, be careful not to touch the printed board.

1. Remove the power supply tightening screw.
2. Use an ohmmeter to measure the resistance value between the terminals.

   Standard value:
   - **Power supply – Ground: Approximately 233 ohms**
   - **Power supply – Fuel gauge: Approximately 108 ohms**
   - **Fuel gauge – Ground: Approximately 125 ohms**
3. If within the standard value, the fuel gauge is OK.
   If not within the standard value, replace the fuel gauge and engine coolant temperature gauge.

TSB Revision

ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE CHECK



⚠ CAUTION

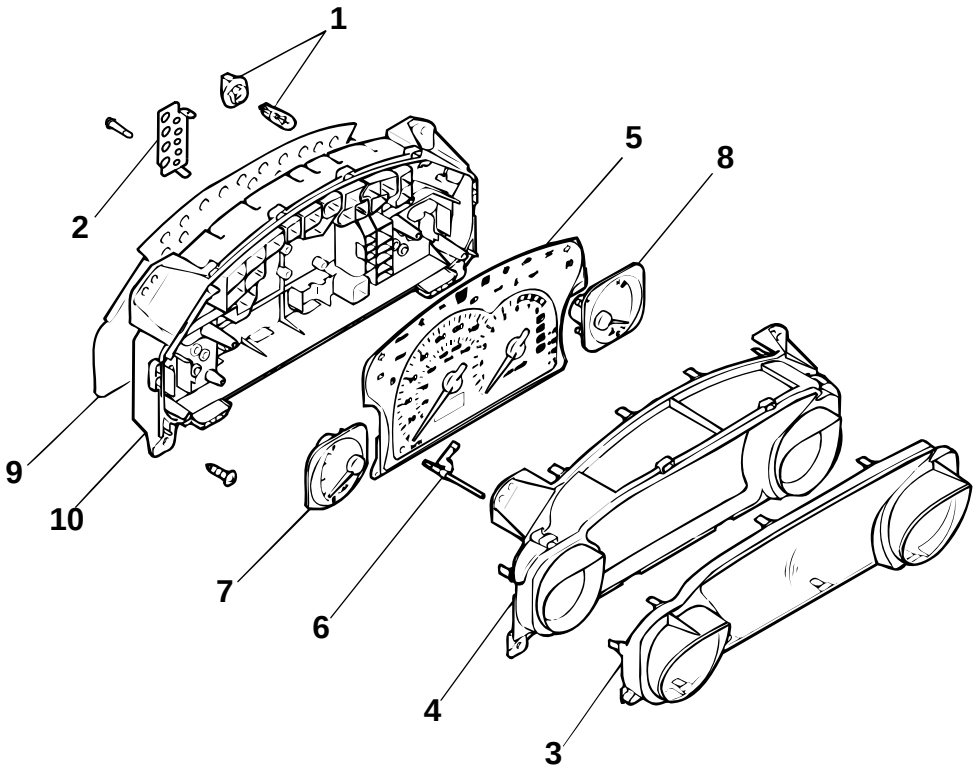
When inserting a testing probe into the power supply terminal, be careful not to touch the printed board.

1. Remove the power supply tightening screw.
2. Use an ohmmeter to measure resistance value between the terminals.

   Standard value:
   - **Power supply – Ground: Approximately 176 ohms**
   - **Power supply – Engine coolant temperature gauge: Approximately 54 ohms**
   - **Engine coolant temperature gauge – Ground: Approximately 230 ohms**
3. If within the standard value, the engine coolant temperature gauge is OK.
4. If not within the standard value, replace the fuel gauge and engine coolant temperature gauge.

DISASSEMBLY AND ASSEMBLY

M1543003100170



DISASSEMBLY STEPS
1. BULB AND SOCKET
2. BULB BRACKET
3. METER GLASS
4. METER PANEL
5. SPEEDOMETER AND TACHOMETER
6. TRIP COUNTER RESET KNOB

DISASSEMBLY STEPS (Continued)
7. FUEL GAUGE ASSEMBLY
8. ENGINE COOLANT TEMPERATURE GAUGE ASSEMBLY
9. PRINTED-CIRCUIT BOARD
10. METER CASE

TSB Revision

HEADLIGHT, FRONT SIDE MARKER LIGHT AND POSITION LIGHT ASSEMBLY

LIGHTING SYSTEM DIAGNOSIS

HEADLIGHT DIAGNOSIS

M1542010500359

The headlights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

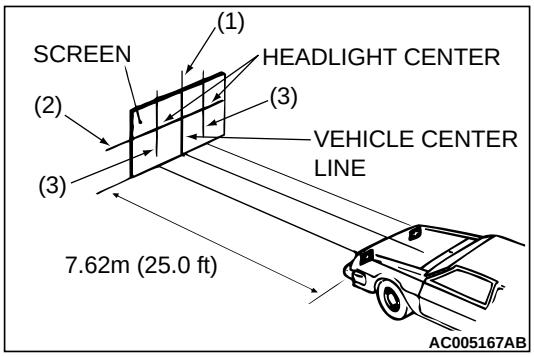
ON-VEHICLE SERVICE

HEADLIGHT AIMING

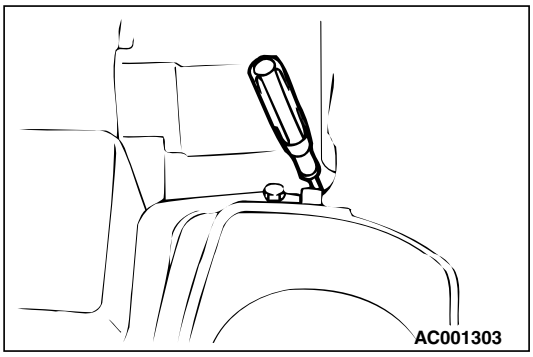
M1542000900248

PRE-AIMING INSTRUCTIONS

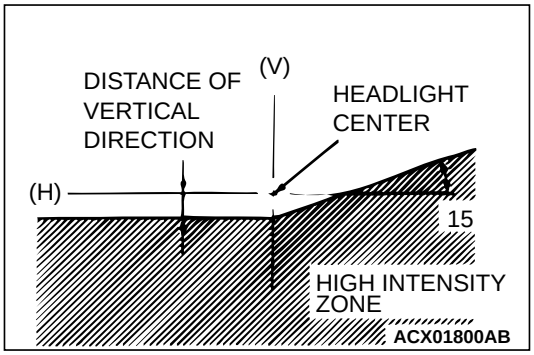
1. Inspect for badly rusted or faulty headlight assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in luggage room of vehicle to simulate weight of a full tank [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 7.62m (25.0 feet) 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. Four lines of adhesive tape (or equivalent markings) are required on screen or wall:
    (1) Position a vertical tape or mark so that it is aligned with the vehicle center line.
    (2) Measure the distance from the center-marks on the headlight lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
    (3) Measure the distance from the center line of the vehicle to the center of each headlight. Transfer the measurement to the screen. Vertical tape or mark on the screen with reference to the center line of each headlight bulb.



HEADLIGHT ADJUSTMENT



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) 53mm (2.1 inch) (0.4°) below horizontal (H)

Limit:
(Vertical direction) standard value ± 50mm (± 2.0 inches) (± 0.38°)

3. When adjusting headlight, disconnect the other headlight harness.

⚠ CAUTION

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

4. There is no horizontal aim adjustment. Horizontal aim is preset and does not require adjustment. High-beam pattern should be correct when the low-beams are adjusted properly.

LUMINOUS INTENSITY MEASUREMENT

M1542001000196

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 (60.0 feet) ahead of the vehicle}

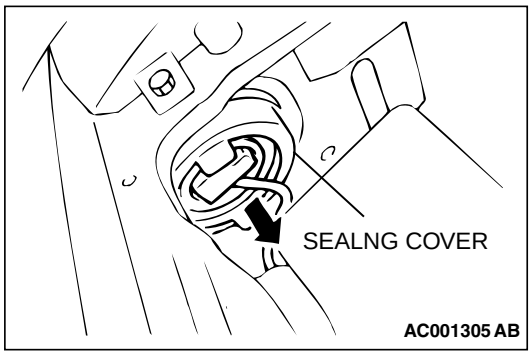
NOTE: When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery fully charged.
There may be special local regulations pertaining to headlight intensity. Be sure to make any adjustments necessary to satisfy such regulations.
If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

I =2Er:

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

BULB REPLACEMENT

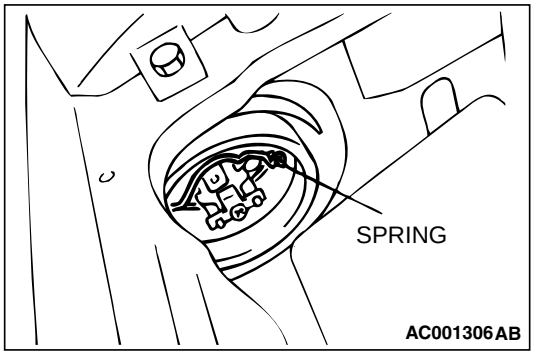
M1542001300249



1. Disconnect the connector.
2. Remove the sealing cover.

⚠ CAUTION

Do not touch the surface of the bulb with hands or dirty gloves as the bulb may pop after a short time. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.



3. Unhook the spring securing the bulb, and then remove the bulb.

⚠ CAUTION

Do not touch the surface of the bulb with hands or dirty gloves as the bulb may pop after a short time. If the surface does become dirty, clean it with alcohol, and let it dry thoroughly before installing.

4. Install the spring and sealing cover securely after the bulb replacement, or the lens will be out of focus, or water will get inside the light unit.

HEADLIGHT

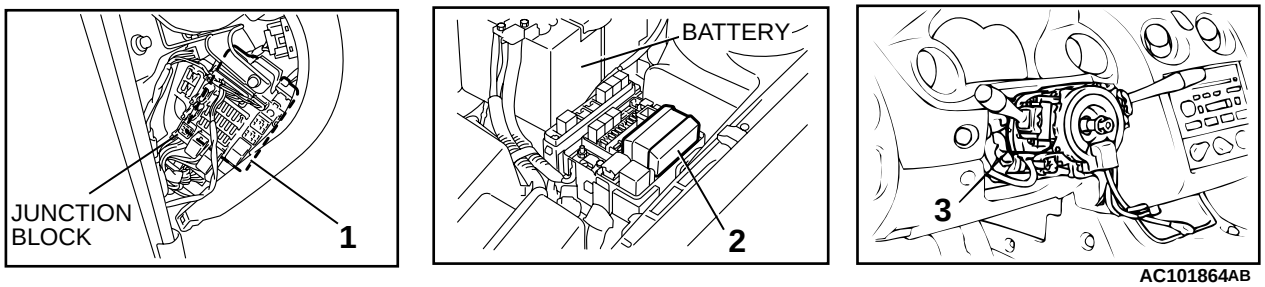
REMOVAL AND INSTALLATION

M1542002700154

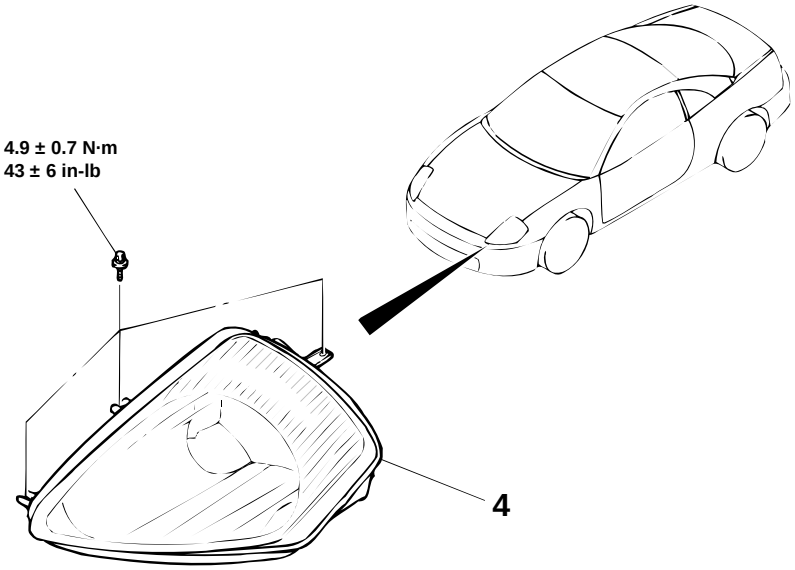
⚠ ***WARNING***

- ***Before removal of the air bag module, refer to GROUP 52B, SRS Service Precautions and Air Bag Module and Clock Spring P.52B-17.***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***

Post-installation operation
Headlight Aiming Adjustment (Refer to P.54A-108.)



AC101864AB



AC102540 AB

1. ETACS-ECU
2. FRONT-ECU
3. COLUMN SWITCH (REFER TO GROUP 37A, STEERING WHEEL AND SHAFT P.37A-21.)
4. HEADLIGHT ASSEMBLY

TSB Revision

FOG LIGHT

LIGHTING SYSTEM DIAGNOSIS

FOG LIGHT DIAGNOSIS

M1542010500360

The fog lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

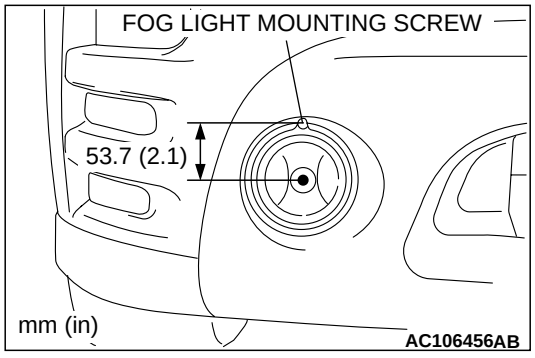
ON-VEHICLE SERVICE

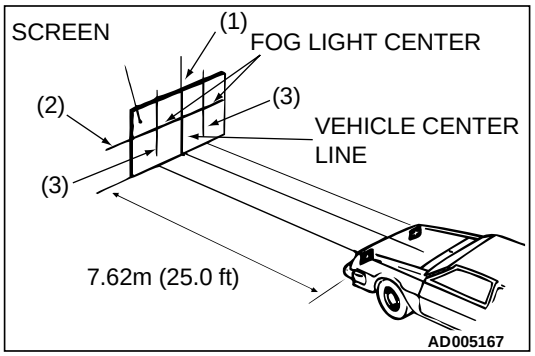
FOG LIGHT AIMING

M1542001100212

PRE-AIMING INSTRUCTIONS

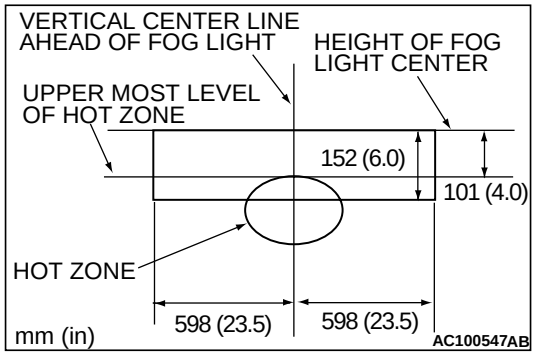
1. Inspect for badly rusted or faulty headlight assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tire inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in luggage room of vehicle to simulate weight of a full tank [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 fog light lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 7.62m (25.0 feet) away from the bulb center-marks on the fog light 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. Measure the center of the 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-marks on the fog light lens to the floor. Transfer the measurement to the screen. Horizontal tape or mark on the screen is for reference of vertical adjustment.
    (3) Measure the distance from the center line of the vehicle to the center of each fog light. Transfer the measurement to the screen. Vertical tape or mark on the screen with reference to the center line of each fog light bulb.

FOG LIGHT ADJUSTMENT

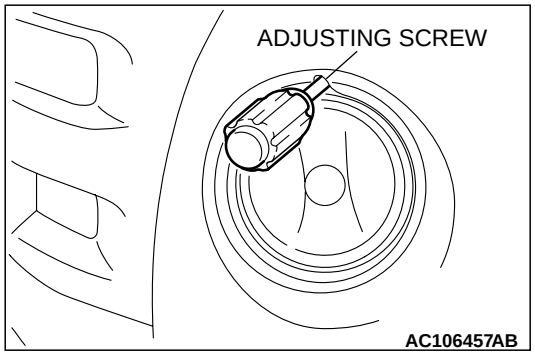


1. Check if the beam shining onto the screen is at the standard value.

   Standard value:
   (Vertical direction): Top of the hot zone should be 101 mm (4.0 inches) (0.76°) downward from the height of the fog light center.

   Limit:
   (Vertical direction): Top of the hot zone should be 152mm (15.24cm) (1.14°) in maximum downward from the height of the fog light center.

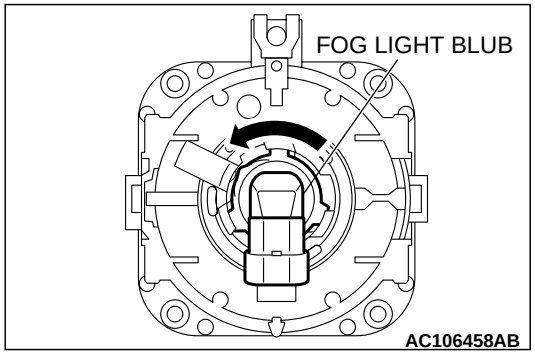
   NOTE: The horizontal direction is non-adjustable. If deviation of the light beam axis exceeds the standard value, check that the mounting location or some other points are not faulty.



REPLACEMENT OF REPLACEABLE BULB

M1542001300250

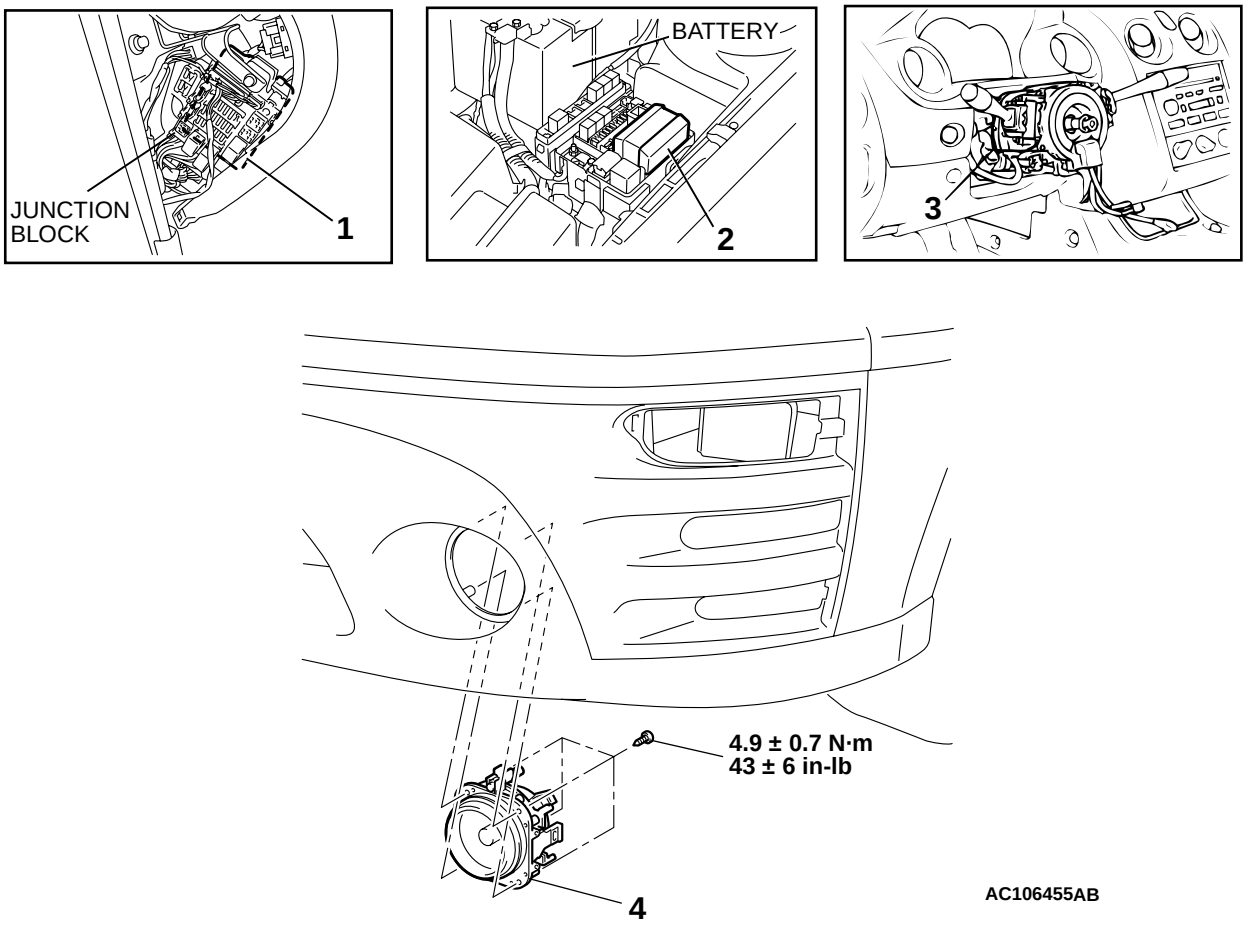
1. Disconnect the fog light connector behind the bumper.
2. Remove the bulb by turning the socket.



FOG LIGHT

REMOVAL AND INSTALLATION

M1542001500232



1. ETACS-ECU
2. FRONT-ECU
3. FOG LIGHT SWITCH

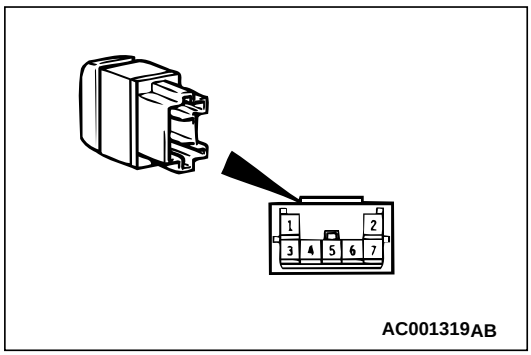
FOG LIGHT REMOVAL STEPS

4. FOG LIGHT

INSPECTION

M1542011200265

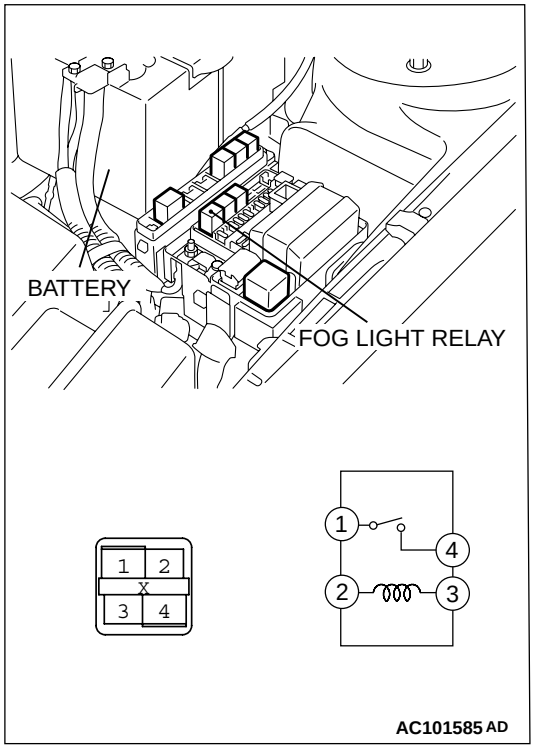
FOG LIGHT SWITCH CONTINUITY CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	6 – 7	Less than 2 ohm
Released	6 – 7	Open circuit

TSB Revision

FOG LIGHT RELAY CHECK



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not supplied	1 – 4	Open circuit
Connect terminal 2 to the positive battery terminal Connect terminal 3 to the negative battery terminal	1 – 4	Less than 2 ohm

FRONT COMBINATION LIGHT

LIGHTING SYSTEM DIAGNOSIS

FRONT COMBINATION LIGHT DIAGNOSIS

M1542000700631

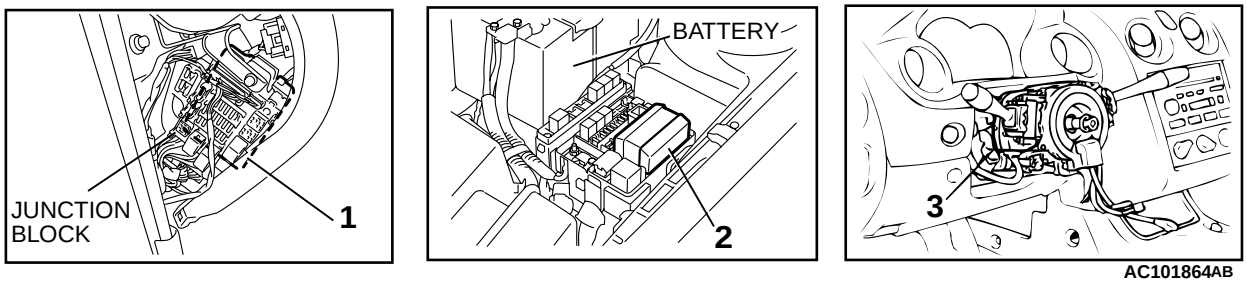
The taillights (position light) and turn-signal lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

REMOVAL AND INSTALLATION

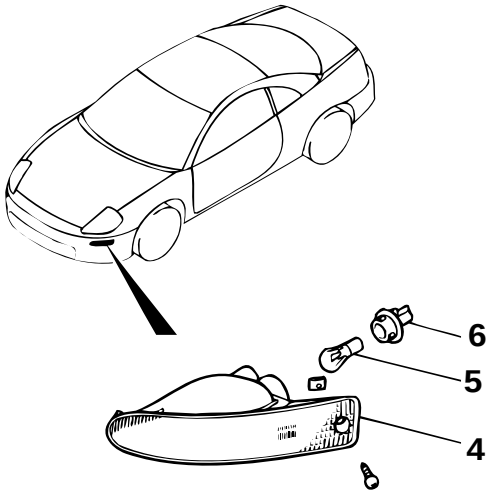
M1542009500054

⚠ ***WARNING***

- ***Before removal of the air bag module, refer to GROUP 52B, SRS Service Precautions and Air Bag Module and Clock Spring P.52B-17.***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***



AC101864AB



AC102544 AB

1. ETACS-ECU
2. FRONT-ECU
3. COLUMN SWITCH (REFER TO GROUP 37A, STEERING WHEEL AND SHAFT P.37A-21.)

FRONT COMBINATION LIGHT REMOVAL STEPS

4. FRONT COMBINATION LIGHT ASSEMBLY
5. SOCKET
6. BULB

REAR COMBINATION LIGHT

LIGHTING SYSTEM DIAGNOSIS

REAR COMBINATION LIGHT DIAGNOSIS

M1542000700642

The taillights and turn-signal lights are controlled by the Simplified Wiring System (SWS). For trouble-shooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

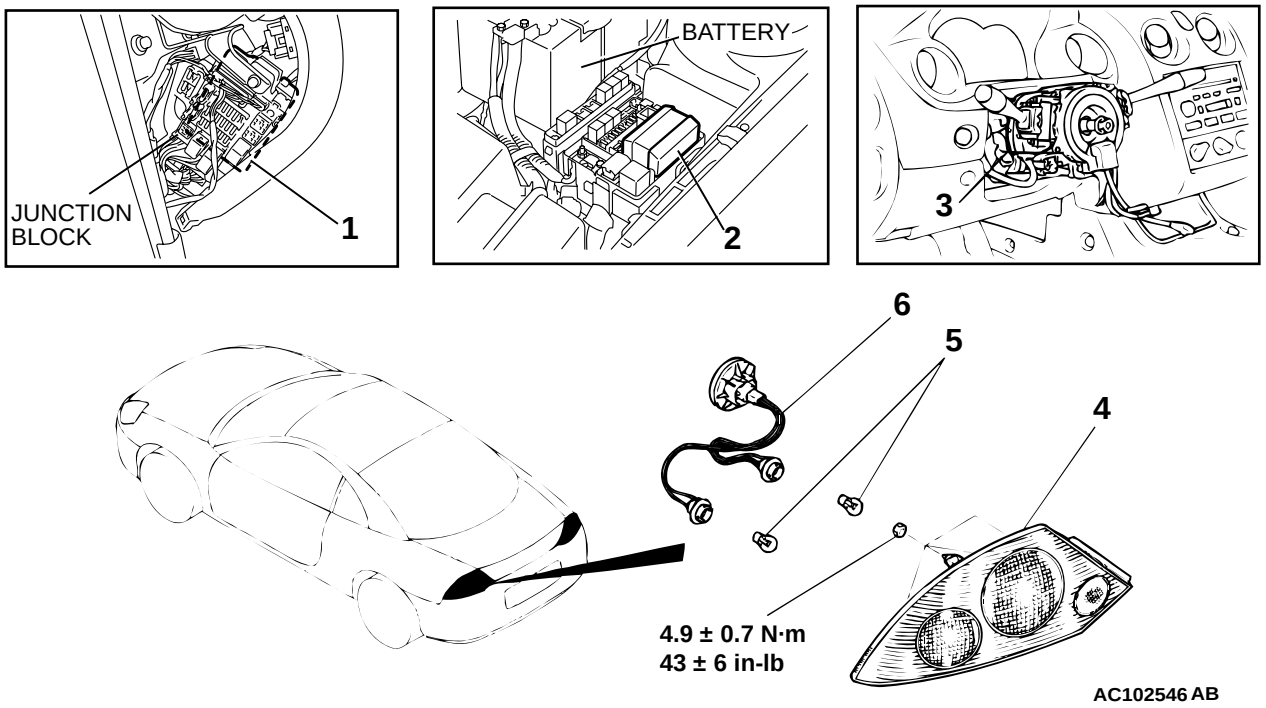
REAR COMBINATION LIGHT

REMOVAL AND INSTALLATION

M1542003900258

⚠ ***WARNING***

- ***Before removal of the air bag module, refer to GROUP 52B, SRS Service Precautions and Air Bag Module and Clock Spring P.52B-17.***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***



1. ETACS-ECU
2. FRONT-ECU
3. COLUMN SWITCH (REFER TO GROUP 37A, STEERING WHEEL AND SHAFT P.37A-21.)

REAR COMBINATION LIGHT REMOVAL STEPS

- LID FLOOR CARPET ASSEMBLY <ECLIPSE> (REFER TO GROUP 52A, TRIMS P.52A-9.)
- TRUNK ROOM TRIM <ECLIPSE SPYDER> (REFER TO GROUP 52A, TRIMS P.52A-9.)

4. REAR COMBINATION LIGHT
5. HARNESS ASSEMBLY
6. BULB

TSB Revision

BACKUP LIGHT

LIGHTING SYSTEM DIAGNOSIS

BACKUP LIGHT ASSEMBLY DIAGNOSIS

M1542000700653

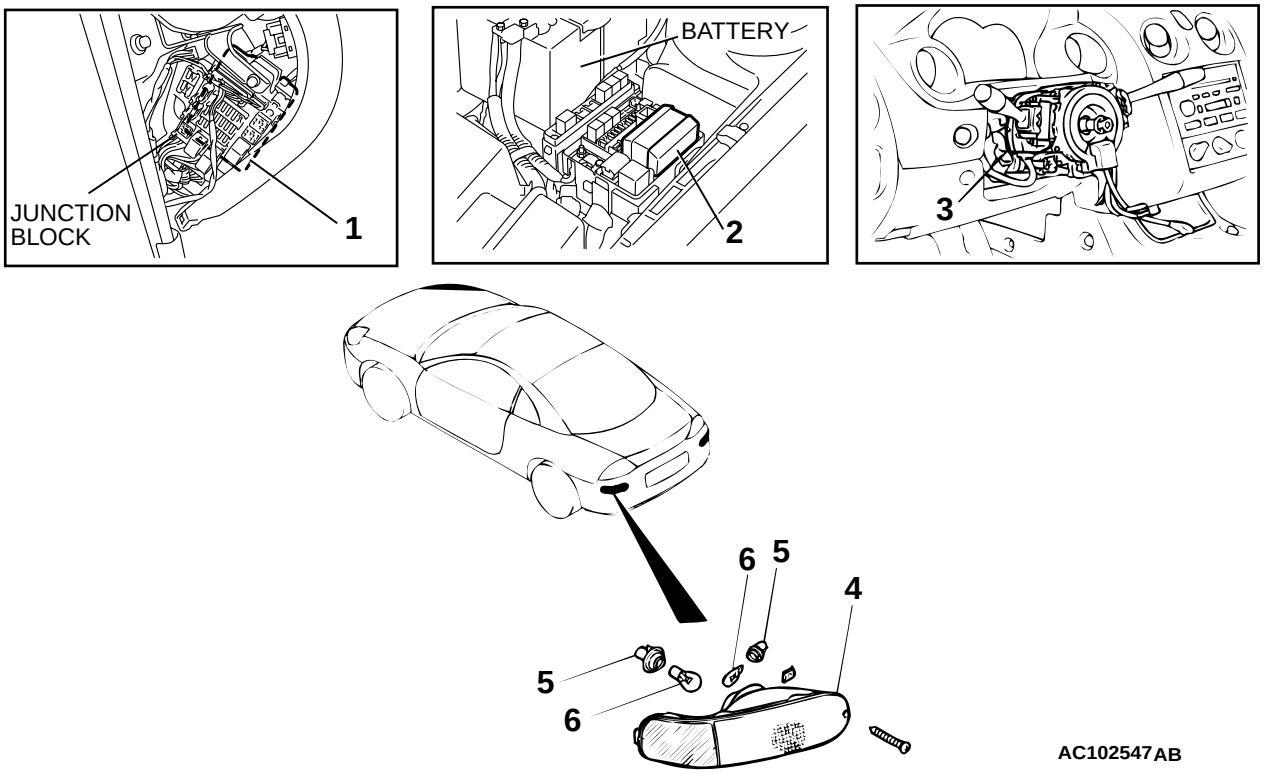
The taillights (position lights) are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

REMOVAL AND INSTALLATION

M1542005700090

⚠ ***WARNING***

- ***Before removal of the air bag module, refer to GROUP 52B, SRS Service Precautions and Air Bag Module and Clock Spring P.52B-17.***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***



1. ETACS-ECU
2. FRONT-ECU
3. COLUMN SWITCH (REFER TO GROUP 37A, STEERING WHEEL AND SHAFT P.37A-21.)

REMOVAL STEPS

4. BACKUP LIGHT ASSEMBLY
5. SOCKET
6. BULB

DOME LIGHT

LIGHTING SYSTEM DIAGNOSIS

DOME LIGHT DIAGNOSIS

M1542010500371

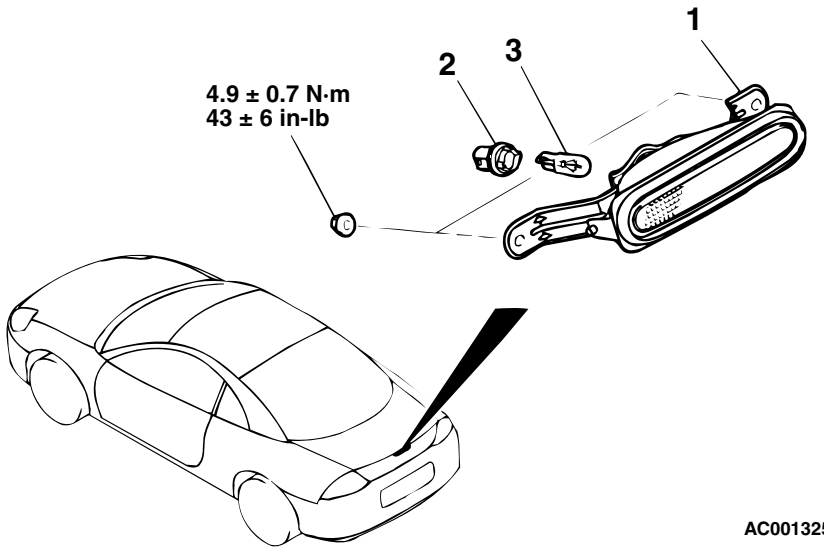
The dome light is controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

HIGH-MOUNTED STOPLIGHT

HIGH-MOUNTED STOPLIGHT REMOVAL AND INSTALLATION

REMOVAL AND INSTALLATION

M1542005100236



AC001325 AB

REMOVAL STEPS

- LIFTGATE TRIM (REFER TO GROUP 42, LIFTGATE – LIFTGATE TRIM P.42-72.
1. HIGH-MOUNTED STOPLIGHT

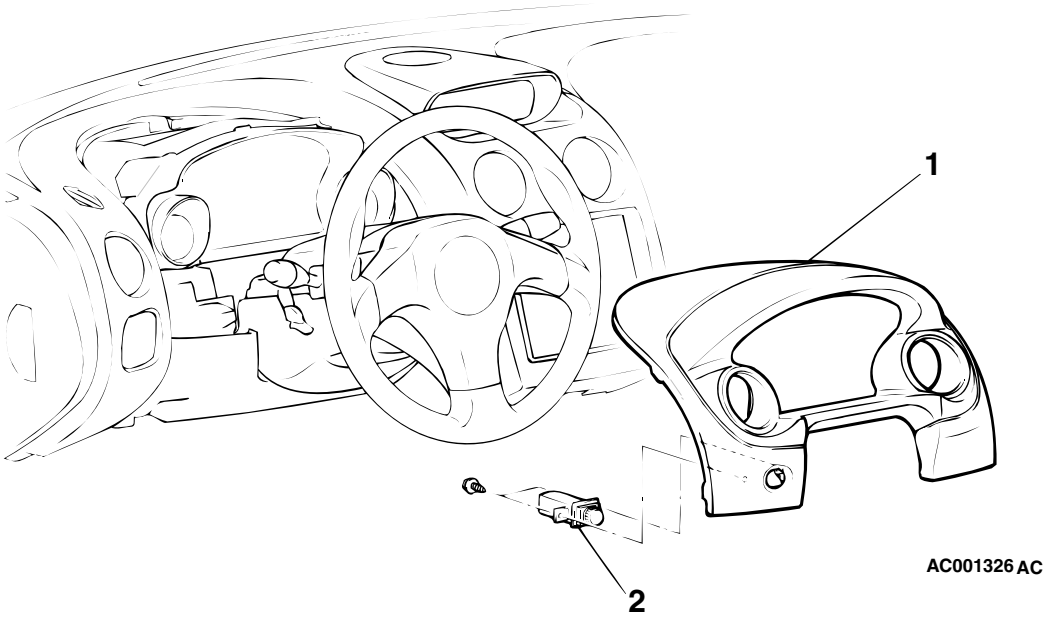
REMOVAL STEPS (Continued)

2. SOCKET SEMI ASSEMBLY
3. BULB

RHEOSTAT

REMOVAL AND INSTALLATION

M1542006000157



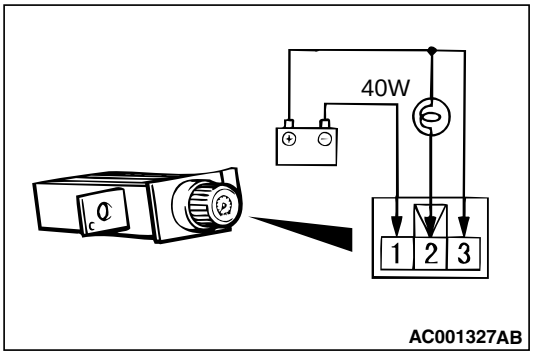
REMOVAL STEPS

1. METER HOOD ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
2. RHEOSTAT

INSPECTION

M1543019501181

REOSTAT RESISTANCE CHECK



1. Connect the battery and the test bulb (40 W) as shown in the illumination.
2. Operate the rheostat, and if brightness changes smoothly without switching off, rheostat function is normal.

TSB Revision

HAZARD WARNING LIGHT SWITCH

LIGHTING SYSTEM DIAGNOSIS

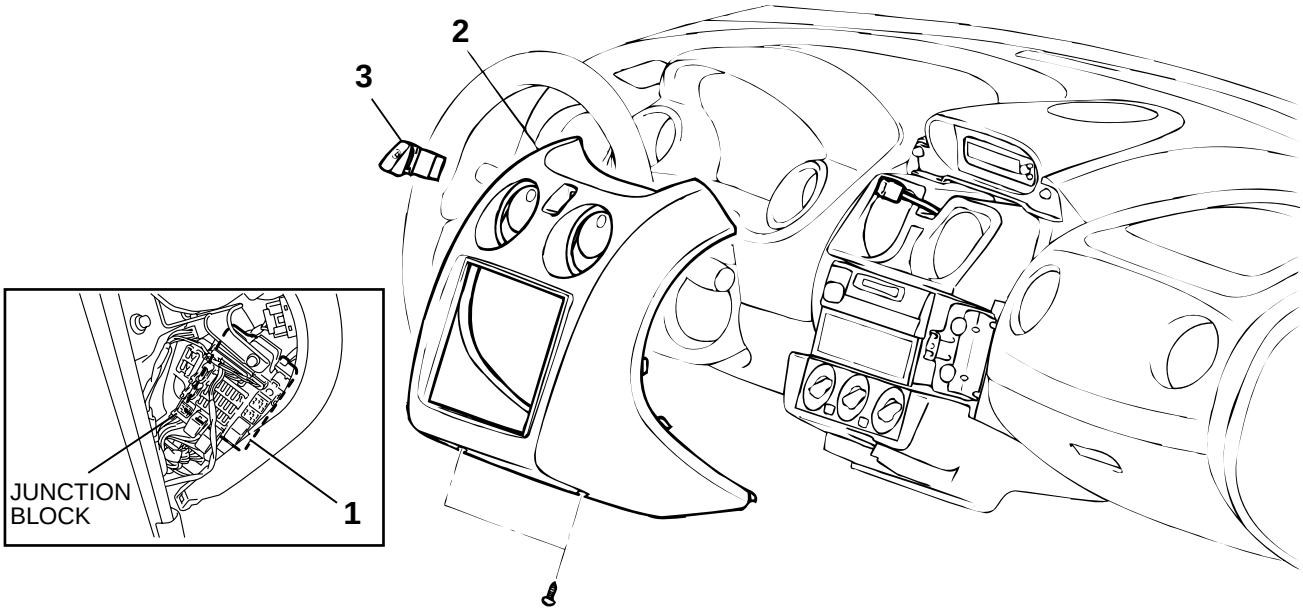
M1542000700664

The hazard warning lights are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

HAZARD WARNING LIGHT SWITCH

REMOVAL AND INSTALLATION

M1542006600267



AC102549 AB

1. ETACS-ECU

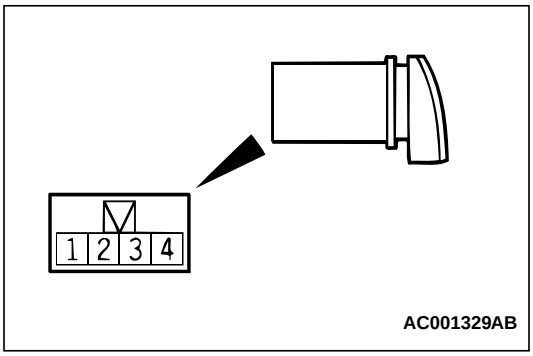
HAZARD WARNING LIGHT SWITCH REMOVAL STEPS

2. CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
3. HAZARD WARNING LIGHT SWITCH

INSPECTION

M1543019501192

HAZARD WARNING LIGHT SWITCH CONTINUITY CHECK



AC001329AB

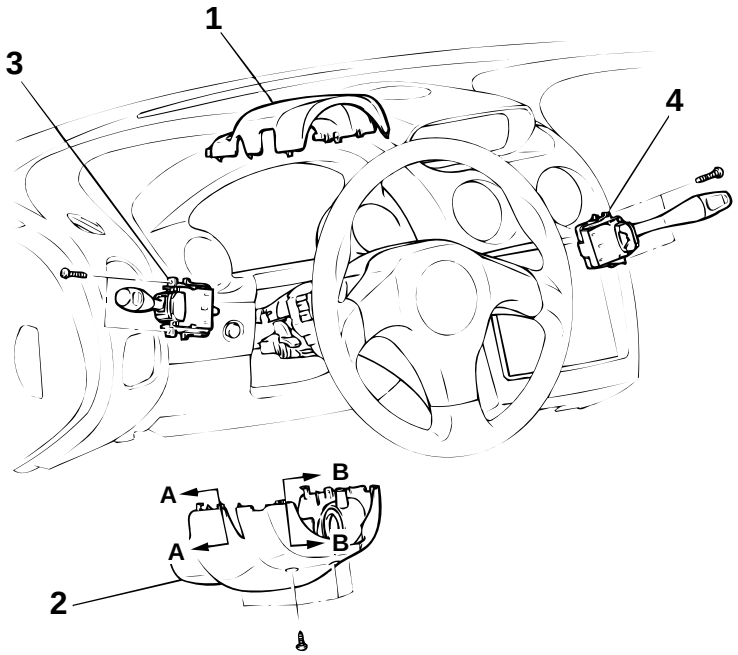
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Open circuit
Pressed	1 – 2	Less than 2 ohm

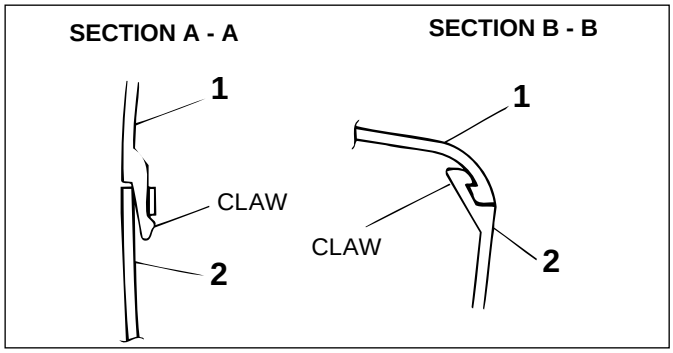
TSB Revision

COLUMN SWITCH

REMOVAL AND INSTALLATION

M1543009100231





AC001330AD

REMOVAL STEPS

1. COLUMN COVER UPPER
2. COLUMN COVER LOWER

REMOVAL STEPS (Continued)

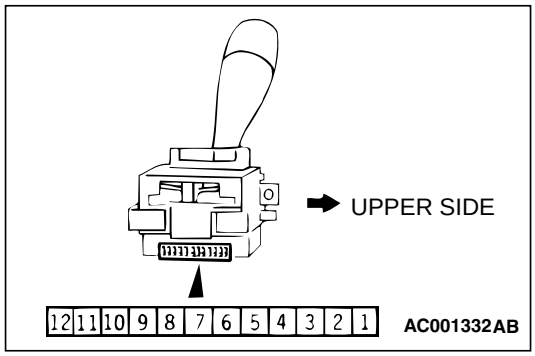
3. TURN-SIGNAL AND LIGHTING SWITCH
4. WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH

TSB Revision

INSPECTION

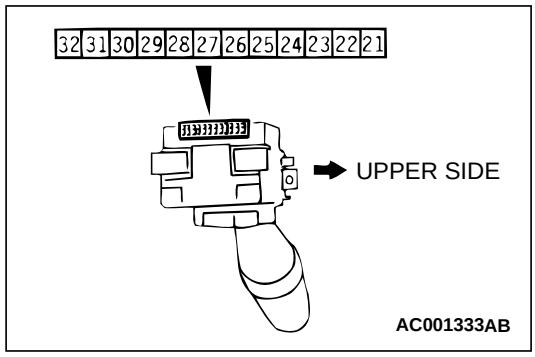
M1543019501200

TURN-SIGNAL AND LIGHTING SWITCH CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	5 – 7 – 9, 1 – 2 – 3 – 11 – 12	Open circuit
Taillight switch ON	5 – 9	Less than 2 ohm
Headlight switch ON	5 – 7 – 9	Less than 2 ohm
Passing switch ON	2 – 12	Less than 2 ohm
Dimmer switch ON	2 – 11 – 12	Less than 2 ohm
Turn-signal light switch (LH) ON	1 – 2	Less than 2 ohm
Turn-signal light switch (RH) ON	2 – 3	Less than 2 ohm

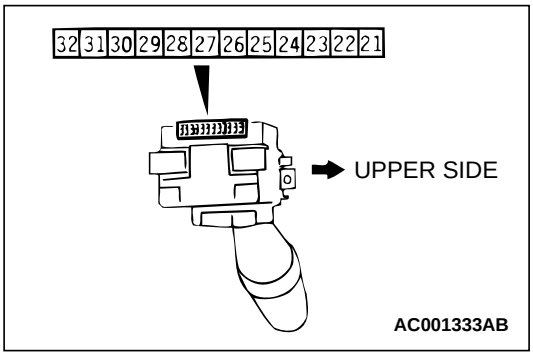
WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH CHECK <ECLIPSE>



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	21 – 22 – 23 – 30 – 31 – 32, 25 – 26 – 29	Open circuit
Windshield wiper mist switch ON	23 – 32	Less than 2 ohm
Windshield intermittent wiper switch ON	23 – 31	Less than 2 ohm
Windshield low-speed wiper switch ON	23 – 30	Less than 2 ohm
Windshield high-speed wiper switch ON	21 – 23	Less than 2 ohm
Windshield washer switch ON	22 – 23	Less than 2 ohm
Rear intermittent wiper switch ON	25 – 26	Less than 2 ohm
Rear washer switch ON	25 – 29	Less than 2 ohm

Measure the resistance value at terminal numbers 27 and 28. The resistance value should rise smoothly from approximately less than two ohm ("FAST" position) to approximately one kiloohm ("SLOW" position).

WINDSHIELD WIPER AND WINDSHIELD WASHER SWITCH CHECK <ECLIPSE SPYDER>



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	21 – 22 – 23 – 30 – 31 – 32	Open circuit
Windshield wiper mist switch ON	23 – 32	Less than 2 ohm
Windshield intermittent wiper switch ON	23 – 31	Less than 2 ohm
Windshield low-speed wiper switch ON	23 – 30	Less than 2 ohm
Windshield high-speed wiper switch ON	21 – 23	Less than 2 ohm
Windshield washer switch ON	22 – 23	Less than 2 ohm

Measure the resistance value at terminal numbers 27 and 28. The resistance value should rise smoothly from approximately less than two ohm ("FAST" position) to approximately one kiloohm ("SLOW" position).

HORN

EQUIPMENT DIAGNOSIS

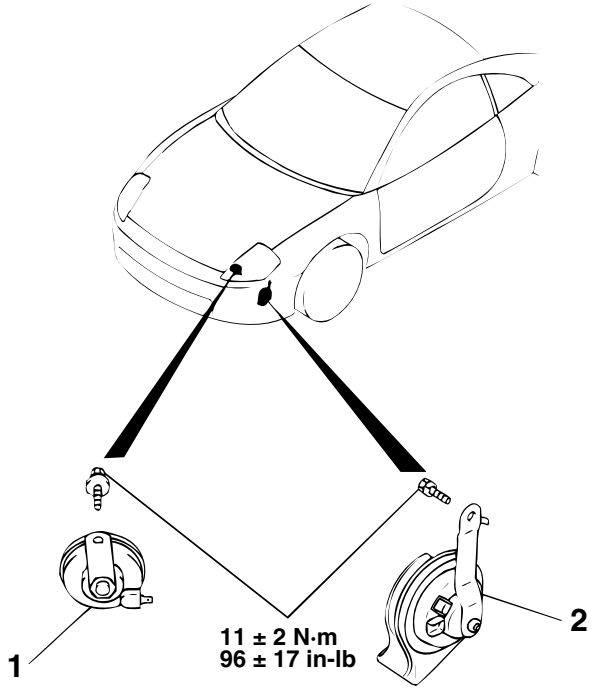
HORN DIAGNOSIS <VEHICLE WITH KEYLESS ENTRY SYSTEM OR THEFT ALARM SYSTEM>

M1543000700526

The keyless entry system horn answerback and "SECURITY" system are controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis P.54B-17.

REMOVAL AND INSTALLATION

M1543007900242



AC001334 AB

REMOVAL STEPS

- AIR CLEANER (REFER TO GROUP 15, AIR CLEANER P.15-6.)

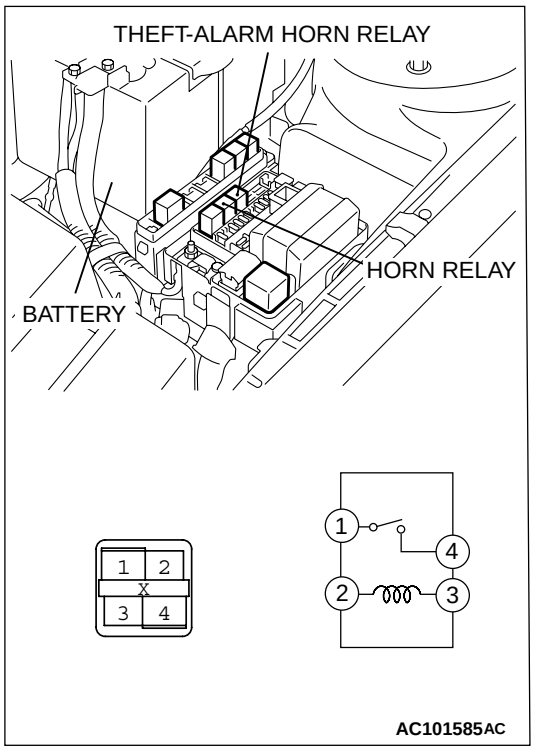
REMOVAL STEPS (Continued)

1. HORN (FOR KEYLESS ENTRY SYSTEM OR THEFT ALARM SYSTEM)
2. HORN (STANDARD TYPE)

INSPECTION

M1543019501211

HORN RELAY, THEFT-ALARM HORN RELAY CONTINUITY CHECK

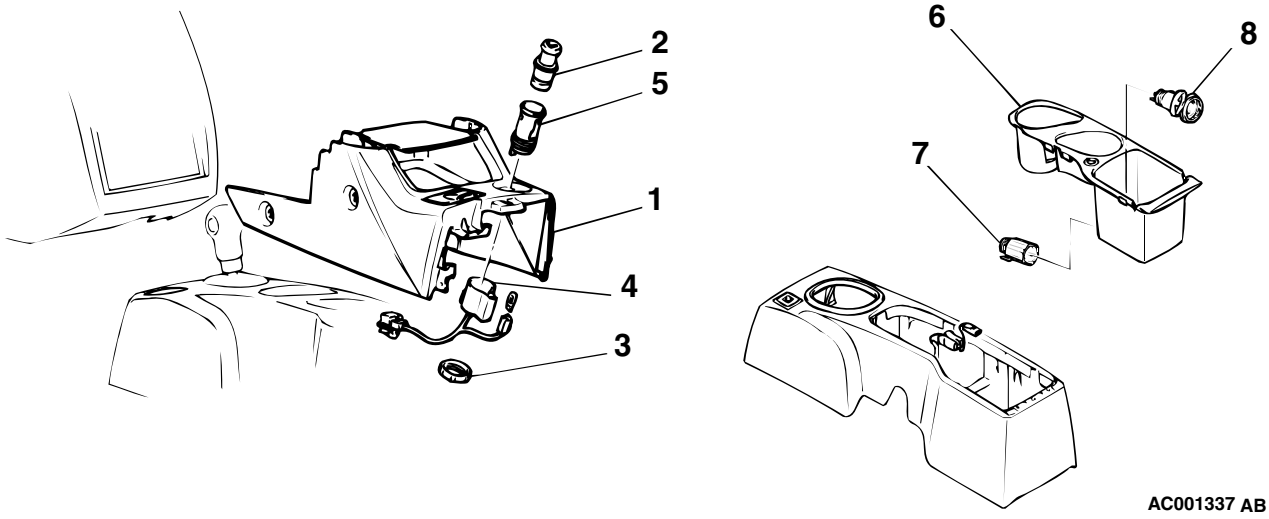


BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 4	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	1 – 4	Less than 2 ohm

CIGARETTE LIGHTER, ACCESSORY SOCKET

REMOVAL AND INSTALLATION

M1543013500124



TSB Revision

CIGARETTE LIGHTER REMOVAL STEPS

1. FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)
2. PLUG
3. NUT
4. CASE
5. SOCKET

ACCESSORY SOCKET REMOVAL STEPS

6. CONSOLE BOX ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)

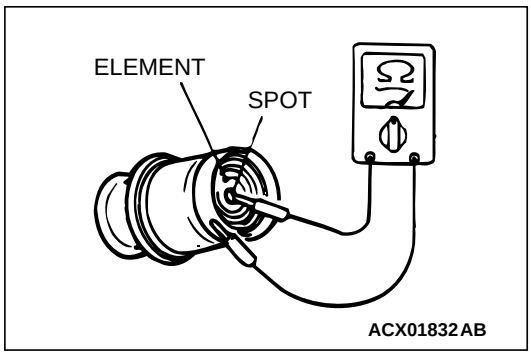
ACCESSORY SOCKET REMOVAL STEPS (Continued)

7. CASE
8. SOCKET

INSPECTION

M1543019501222

CIGARETTE LIGHTER CHECK



- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check that the element resistance value is 1.7 ohms.

RADIO AND TAPE PLAYER

RADIO WITH TAPE PLAYER AND CD PLAYER, SPEAKER AND ANTENNA DIAGNOSIS

INTRODUCTION TO AUDIO SYSTEM DIAGNOSIS

M1543009900743

The diagnosis for symptoms such as noise being emitted, no sound being played, or sound coming only out of one side while listening to the audio system or tape is provided.

TROUBLESHOOTING STRATEGY

M1544004800205

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find 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 malfunction is eliminated.

TROUBLE SYMPTOM CHART

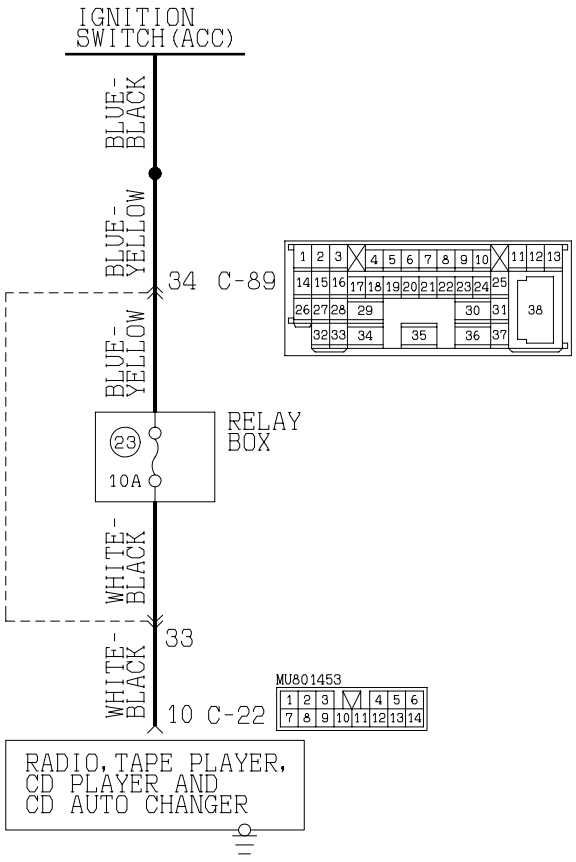
M1544004900213

SYMPTOMS		INSPECTION PROCEDURE	REFERENCE PAGE
When power switch is turned "ON," no power is available.		1	P.54A-129
No sound. <vehicles with amplifier>		2	P.54A-132
No sound from one speaker.		3	P.54A-139
Separate type CD player does not operate.		4	P.54A-174
The multi-center display dose not display the information concerning the audio system correctly.		5	P.54A-175
Noise	Noise appears at certain places when traveling (AM).	6	P.54A-185
	Noise appears at certain places when traveling (FM).	7	P.54A-186
	Mixed with noise, only at night (AM).	8	P.54A-186
	Broadcasts can be heard but both AM and FM have a lot of noise.	9	P.54A-187
	There is more noise on either AM or FM.	10	P.54A-188
	There is noise when starting the engine.	11	P.54A-190
	Some noise appears when there is vibration or shocks during traveling.	12	P.54A-191
	Noise sometimes appears on FM during traveling.	13	P.54A-192
	Ever-present noise.	14	P.54A-193
Radio	There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.	15	P.54A-193
	Poor reception.	16	P.54A-194
	Distortion on AM or on both AM and FM.	17	P.54A-195
	Distortion on FM only.	18	P.54A-195
	Using the auto select function, too few automatic stations are selected.	19	P.54A-196
	Preset stations are erased.	20	P.54A-197
CD player, CD auto changer	CD can not be inserted.	21	P.54A-199
	No sound (CD only).	22	P.54A-200
	CD sound skips.	23	P.54A-200
	Sound quality is poor.	24	P.54A-201
	CD cannot be ejected.	25	P.54A-201
Motor antenna	Motor Antenna Won't Extend or Retract	26	P.54A-202
	Motor Antenna Extends and Retracts but Does Not Receive Radio Signal	27	P.54A-211

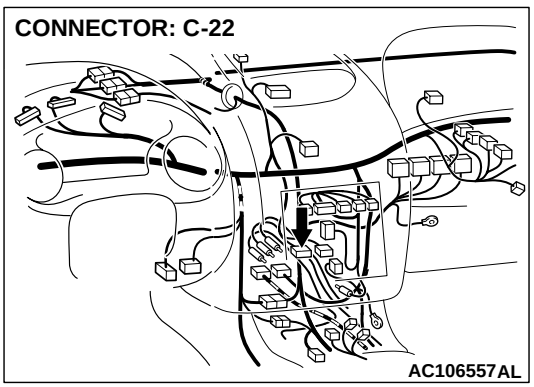
SYMPTOM PROCEDURES

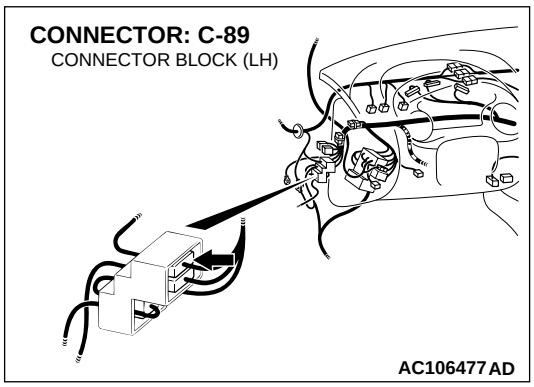
INSPECTION PROCEDURE 1: When Power Switch is Turned "ON," No Power is Available.

Radio with Tape and CD Player Power Supply Circuit



W3S08M05AA
AC106591AB





CIRCUIT OPERATION
Power is supplied to the radio and CD player when the ignition switch is at the "ACC" or "ON" position.

TECHNICAL DESCRIPTION (COMMENT)
The cause is probably a faulty radio and CD player power supply circuit system.

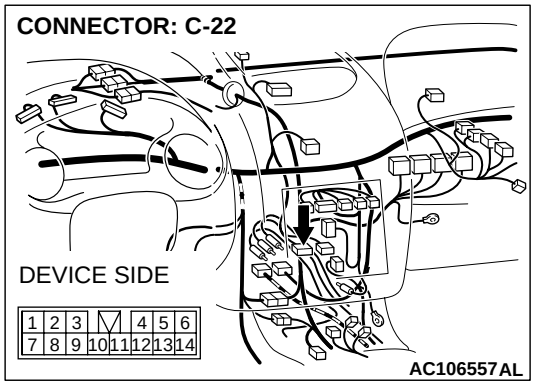
TROUBLESHOOTING HINTS
- Damaged wiring harness or connector.
- Malfunction of the radio and CD player.

TSB Revision

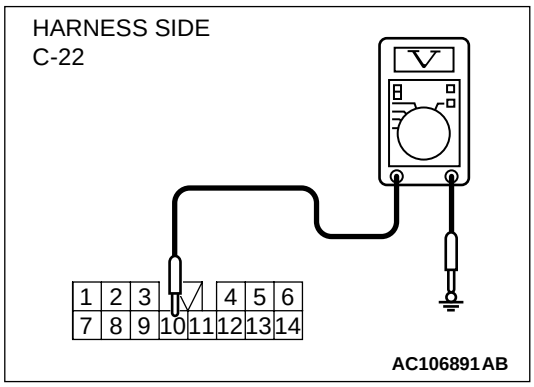
DIAGNOSIS

Required Special Tool:
- MB991223: Harness set

STEP 1. Check the radio and CD play power supply circuit by backprobing.



(1) Do not disconnect radio, tape player, CD player and CD auto changer connector C-22.
(2) Turn the ignition switch to "ACC" position.



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

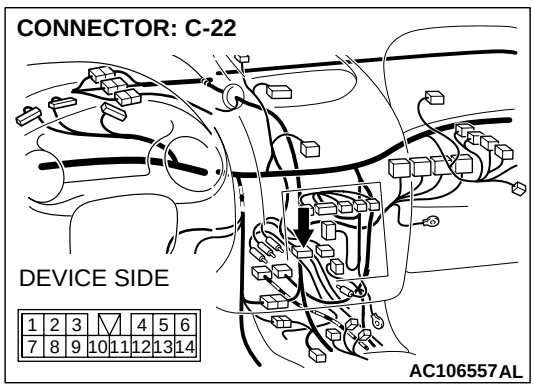
Q: Does the measured voltage correspond with this range?

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

STEP 2. Check radio, tape player, CD player and CD auto changer connector C-22 for damage.

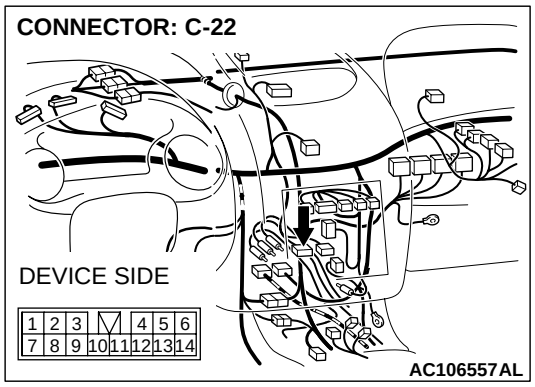
Q: Are radio, tape player, CD player and CD auto changer connector C-22 in good condition?

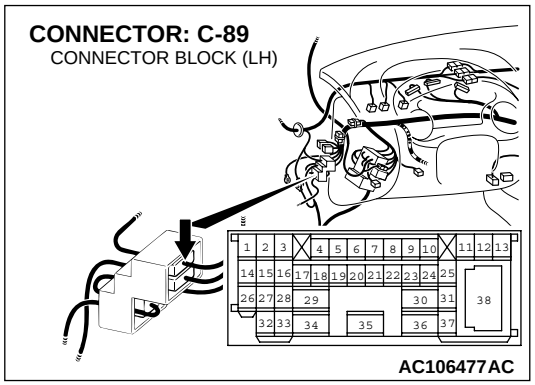
YES : Go to Step 3.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the power switch is turned on, the radio, tape player, CD player and CD auto changer should operate normally.



STEP 3. Check the wiring harness between radio, tape player, CD player and CD auto changer connector C-22 (terminal 10) and ignition switch (ACC).

NOTE: After inspecting intermediate connector C-89, inspect the wire. If intermediate connector C-89 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





Q: Are the wiring harness between radio, tape player, CD player and CD auto changer connector C-22 (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 should operate normally.

STEP 4. Are the radio, tape player, CD player and CD auto changer installed correctly?

NOTE: The radio, tape player, CD player and CD auto changer are grounded to the instrument panel center reinforcement directly.

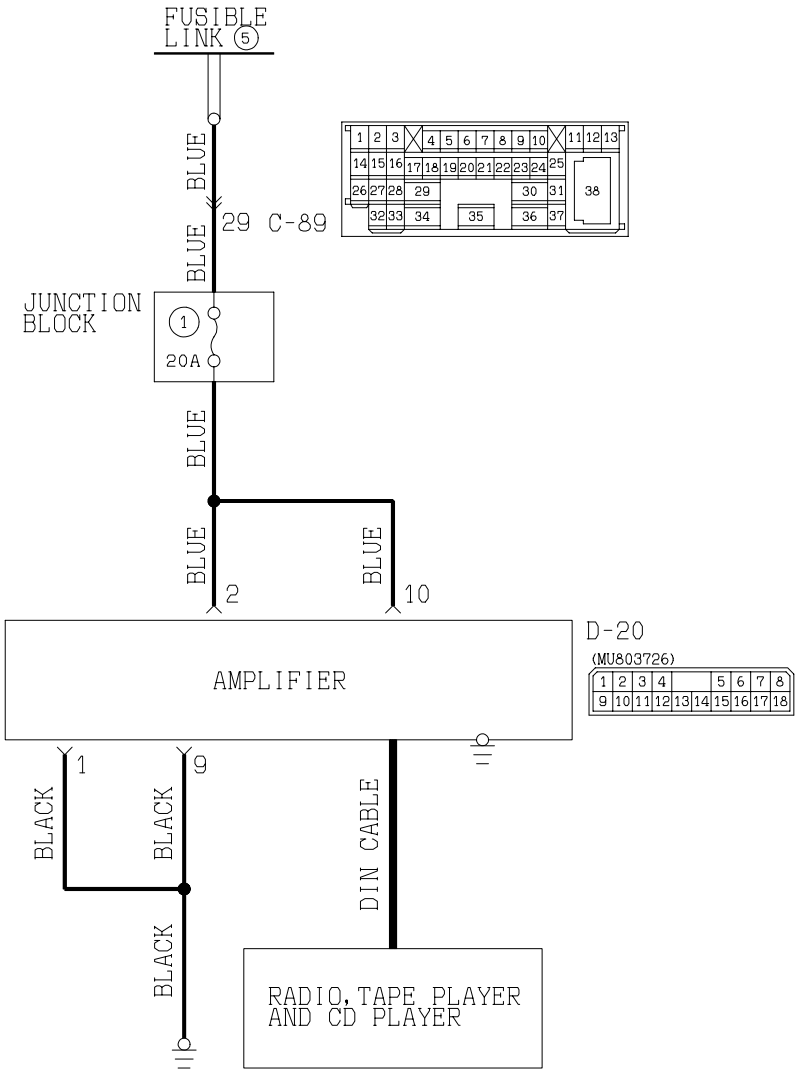
Q: Are the radio, tape player, CD player and CD auto changer installed correctly?

YES : Repair or replace the radio, tape player, CD player and CD auto changer. If the power switch is turned on, the radio, tape player, CD player and CD auto changer should operate normally.

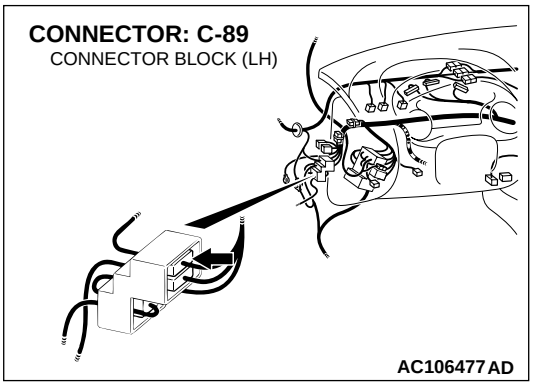
NO : Install properly. If the power switch is turned on, the radio, tape player, CD player and CD auto changer should operate normally.

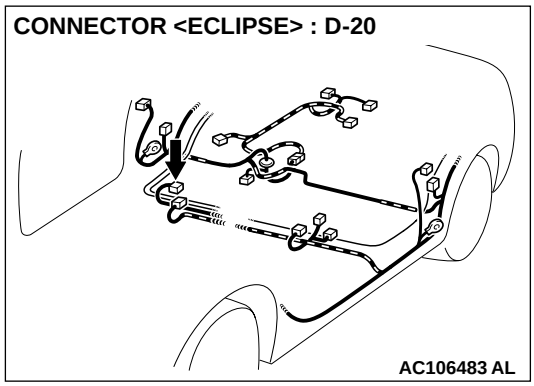
INSPECTION PROCEDURE 2: No Sound. <Vehicles with Amplifier>

Amplifier Power Supply Circuit

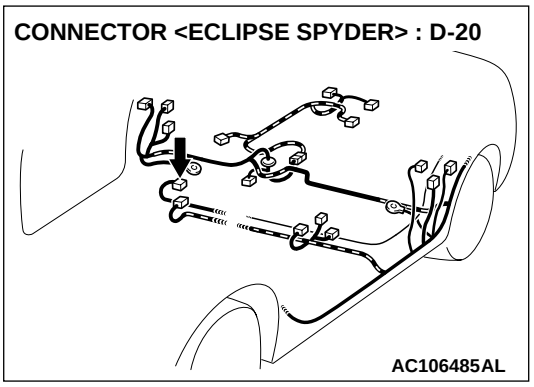


W3S08M06AA
AC106592AB





TSB Revision



CIRCUIT OPERATION

Power is supplied to the amplifier when the fusible link (4).

TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty amplifier power supply circuit system.

TROUBLESHOOTING HINTS

- Damaged wiring harness or connector.
- Damaged DIN cable.
- Malfunction of the amplifier.
- Malfunction of the radio and tape player.

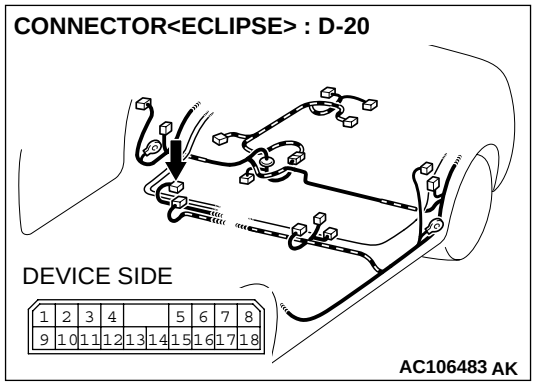
DIAGNOSIS

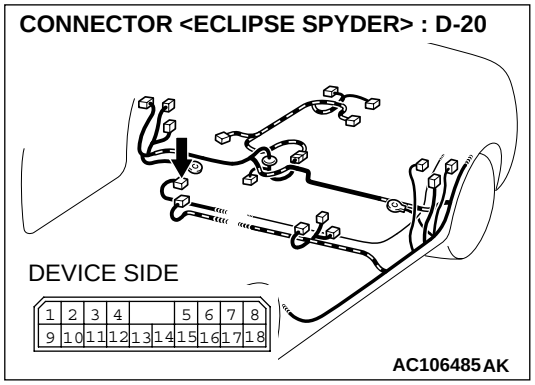
Required Special Tool:

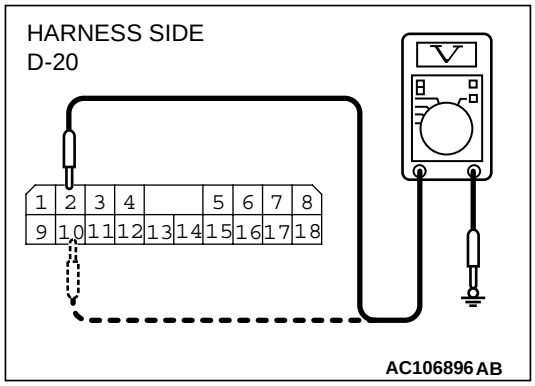
- MB991223: Harness set

STEP 1. Check the amplifier power supply circuit by backprobing.

(1) Do not disconnect amplifier connector D-20.





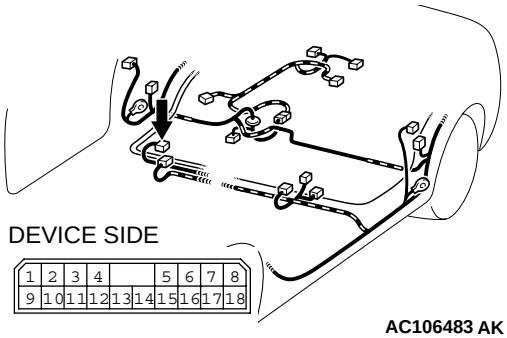


(2) Measure the voltages between terminal 2 and ground by backprobing.
(3) Measure the voltage between terminal 10 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

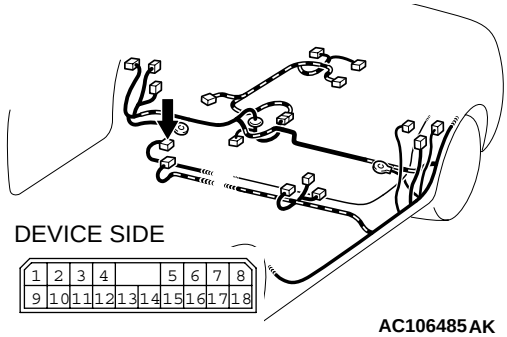
Q: Does the measured voltage correspond with this range?

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

CONNECTOR<ECLIPSE> : D-20



CONNECTOR <ECLIPSE SPYDER> : D-20



STEP 2. Check amplifier connector D-20 for damage.

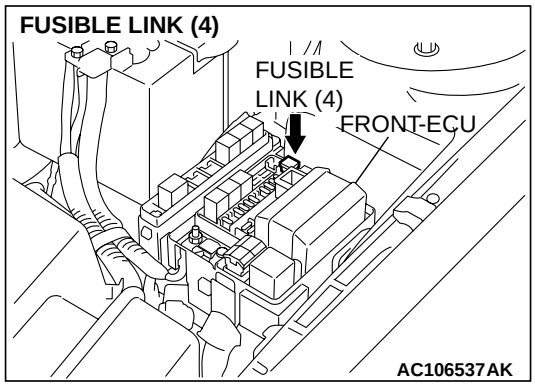
Q: Is amplifier connector D-20 in good condition?

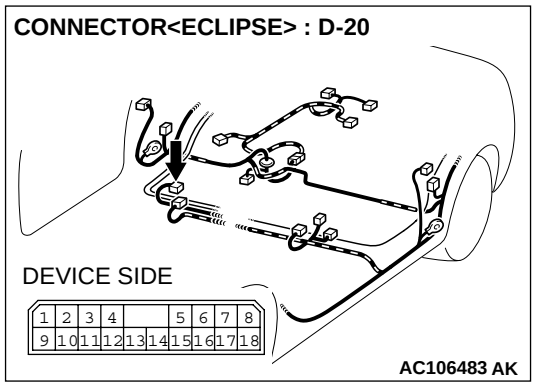
YES : Go to Step 3.

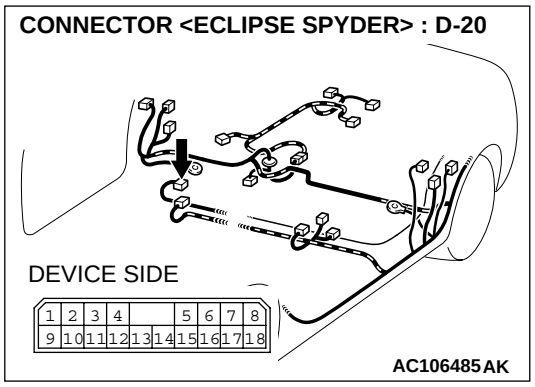
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speakers should sound.

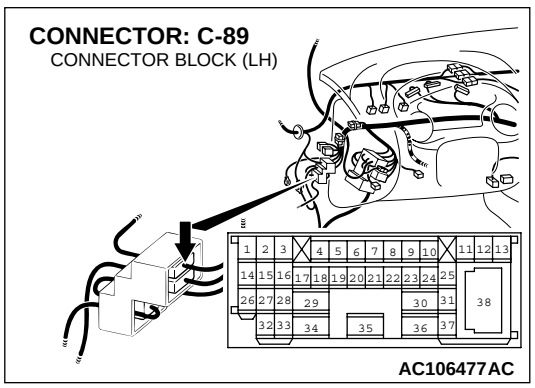
STEP 3. Check the wiring harness between amplifier connector D-20 (terminal 10 and 2)and fusible link (4).

NOTE: After inspecting intermediate connector C-89, inspect the wires. If intermediate connector C-89 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.









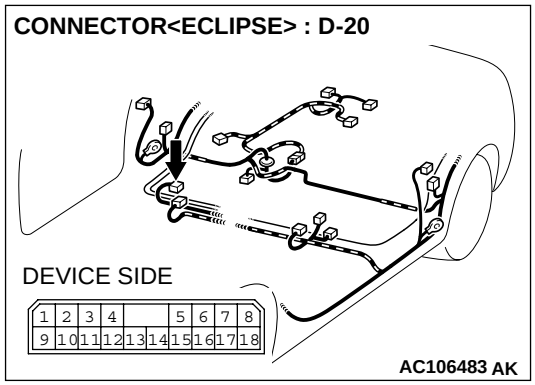
Q: Are the wiring harness between amplifier connector D-20 (terminal 10 and 2) and fusible link (4) in good condition?

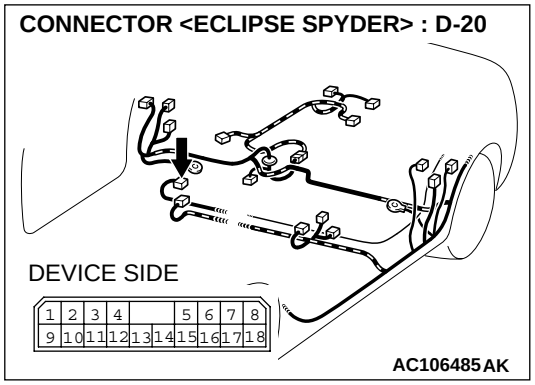
YES : There is no action to be taken.

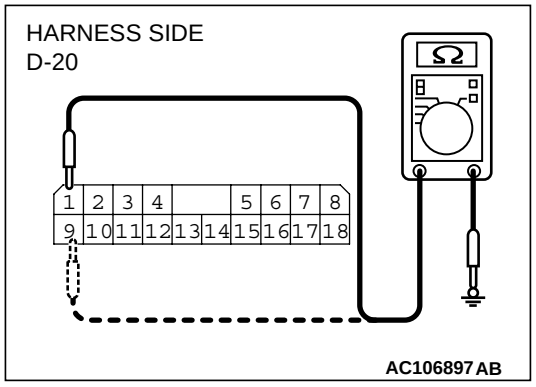
NO : Repair the wiring harness. The speakers should sound.

STEP 4. Check the amplifier power supply circuit by backprobing.

(1) Do not disconnect amplifier connector D-20.





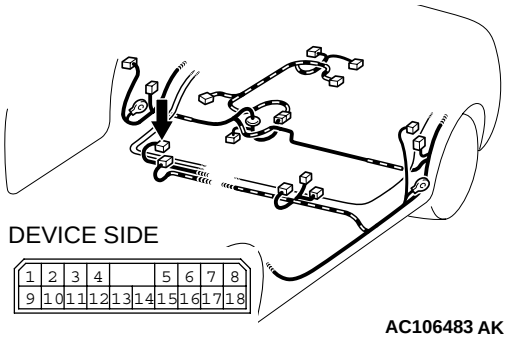


(2) Measure the resistance between terminal 1 and ground by backprobing.
(3) Measure the resistance between terminal 9 and ground by backprobing.
- The measured value should be 2 ohm or less.

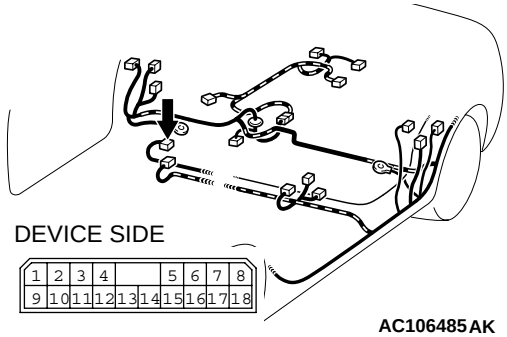
Q: Does the measured resistance value correspond with this range?

YES : Go to Step 7.
NO : Go to Step 5.

CONNECTOR<ECLIPSE> : D-20



CONNECTOR <ECLIPSE SPYDER> : D-20



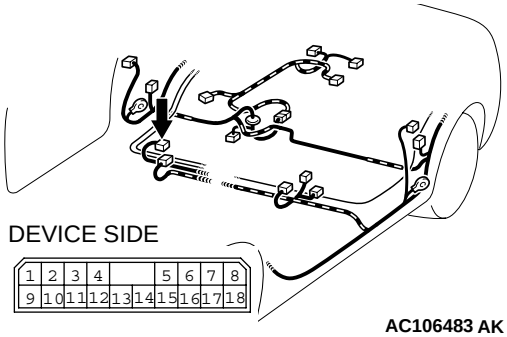
STEP 5. Check amplifier connector D-20 for damage.

Q: Is amplifier connector D-20 in good condition?

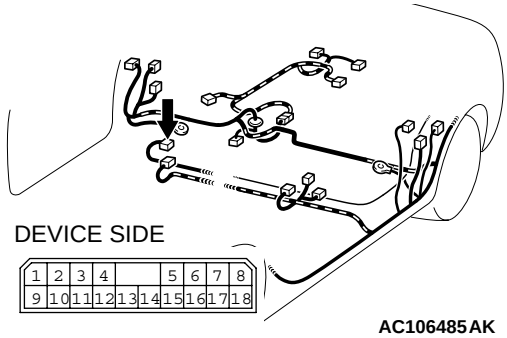
YES : Go to Step 6.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The speakers should sound.

CONNECTOR<ECLIPSE> : D-20



CONNECTOR <ECLIPSE SPYDER> : D-20



STEP 6. Check the wiring harness between amplifier connector D-20 (terminal 1 and 9) and ground.

Q: Are the wiring harness between amplifier connector D-20 (terminal 1 and 9) and ground in good condition?

YES : There is no action to be taken.

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

STEP 7. Check the DIN cable between amplifier and radio, tape player, CD player and CD auto changer.

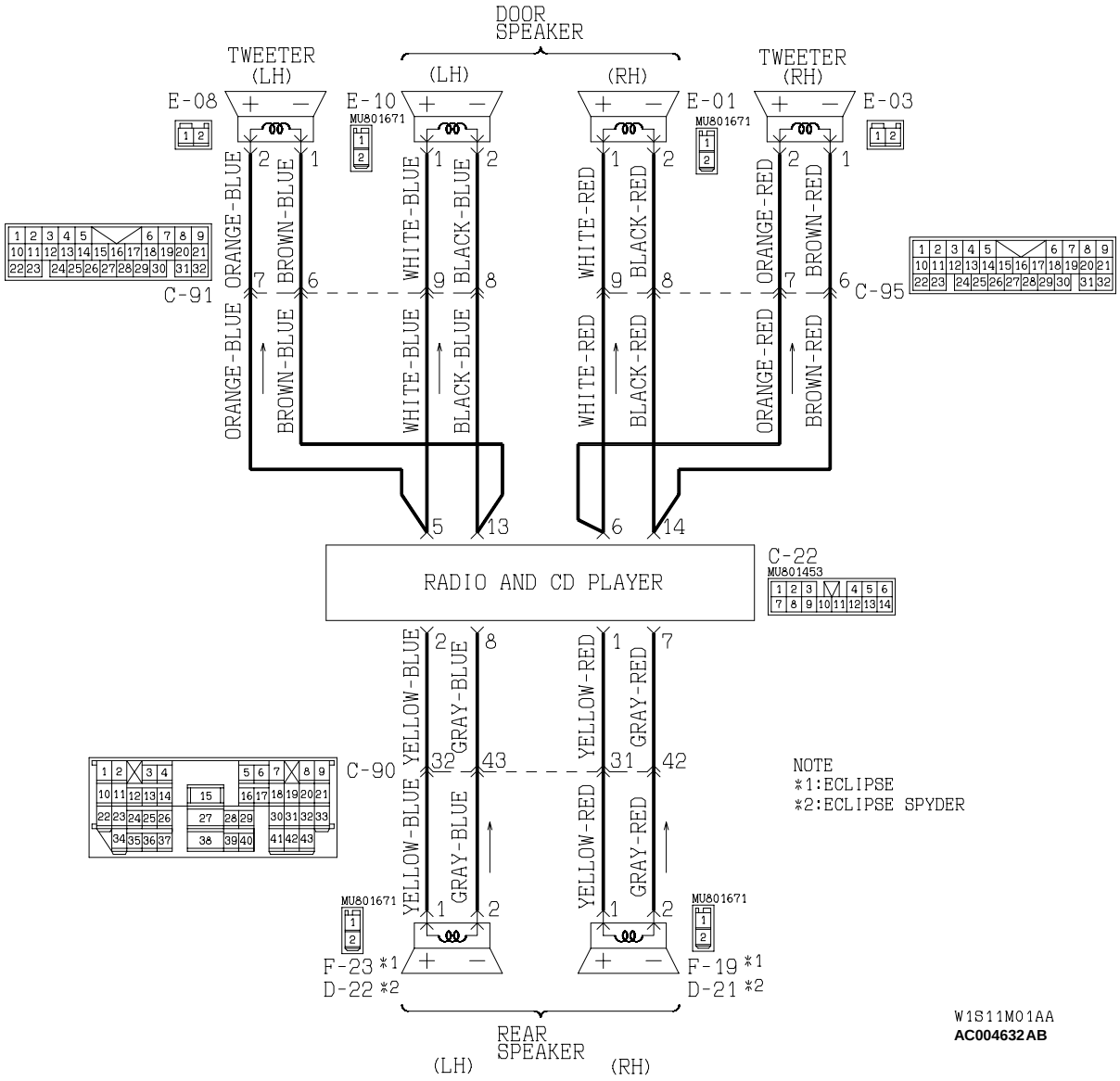
Q: Are the DIN cable in good condition?

YES : Repair or replace the amplifier or radio, tape player, CD player and CD auto changer. The speakers should sound.

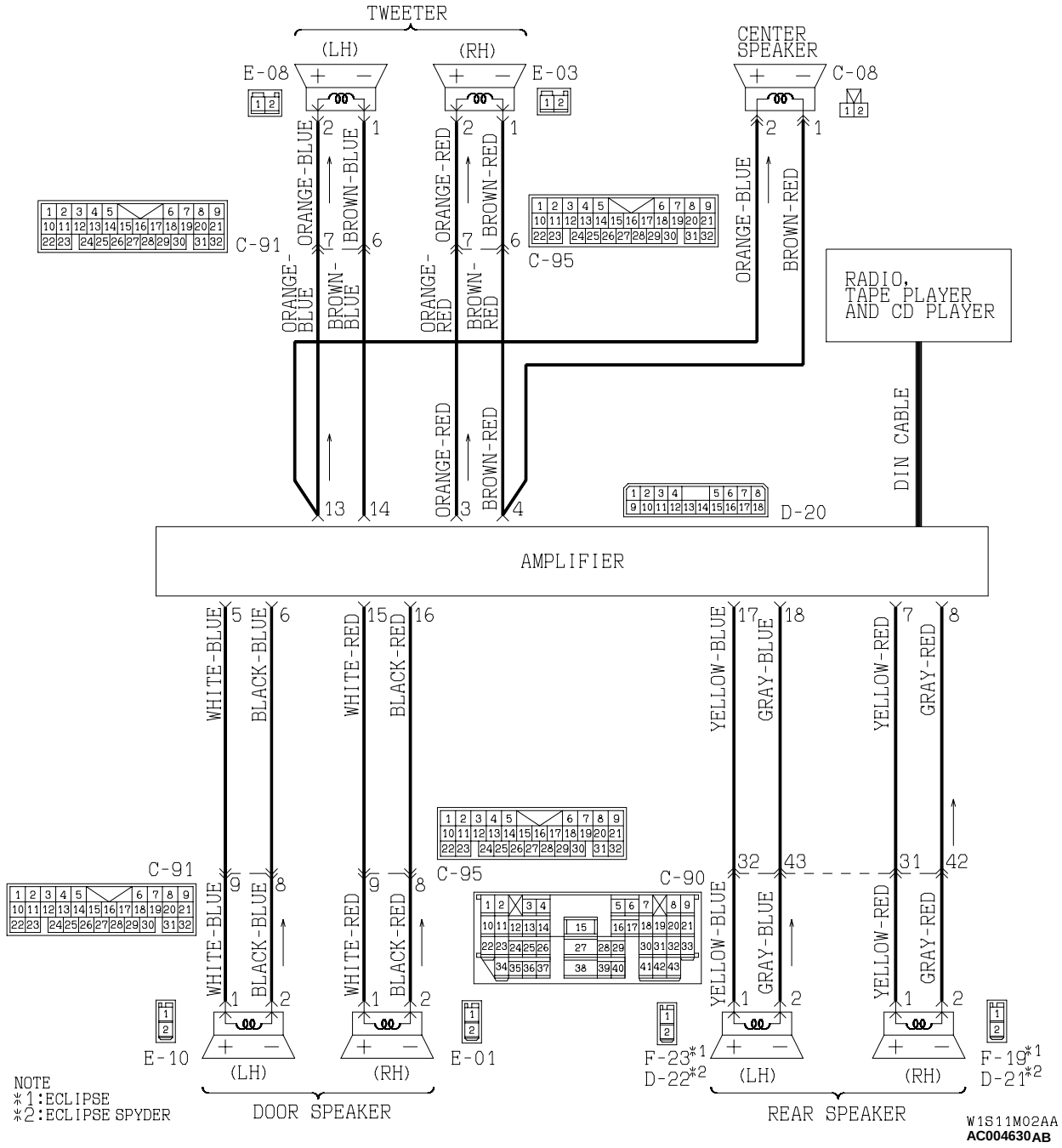
NO : Repair or replace the DIN cable. The speakers should sound.

INSPECTION PROCEDURE 3: No Sound from One Speaker.

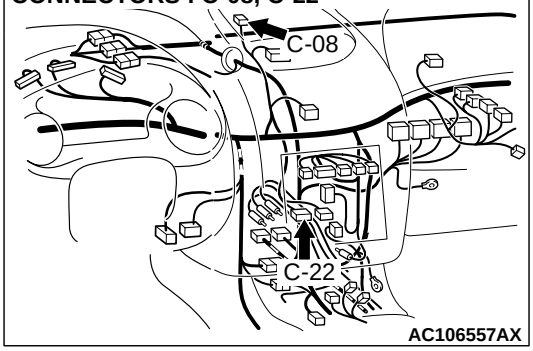
Speaker System Circuit <Vehicles Without Amplifier>



Speaker System Circuit <Vehicles With Amplifier>

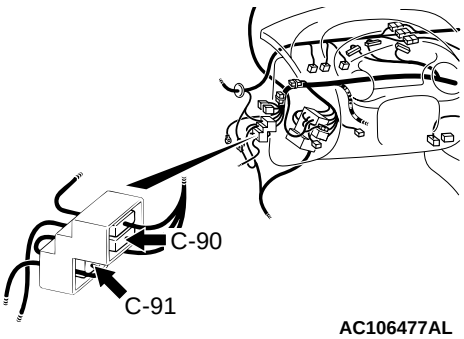


CONNECTORS : C-08, C-22



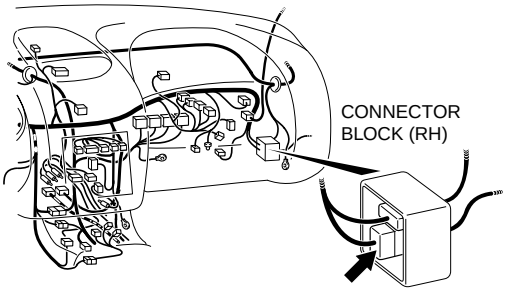
AC106557AX

CONNECTORS : C-90, C-91



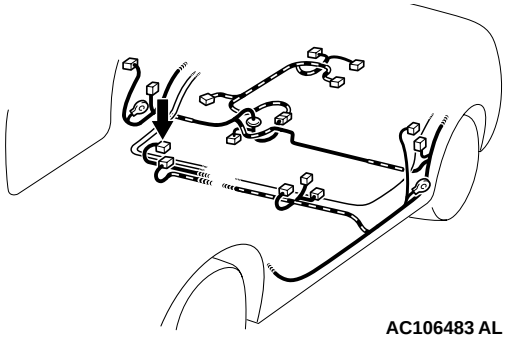
AC106477AL

CONNECTOR: C-95



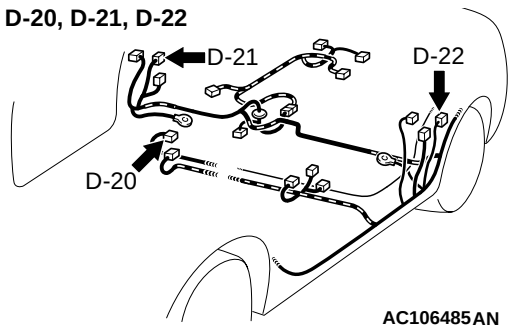
AC106553AE

CONNECTOR <ECLIPSE> : D-20



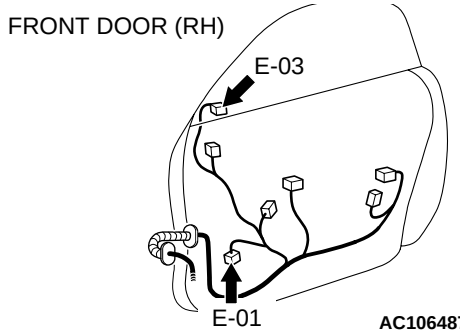
AC106483AL

CONNECTORS <ECLIPSE SPYDER> : D-20, D-21, D-22



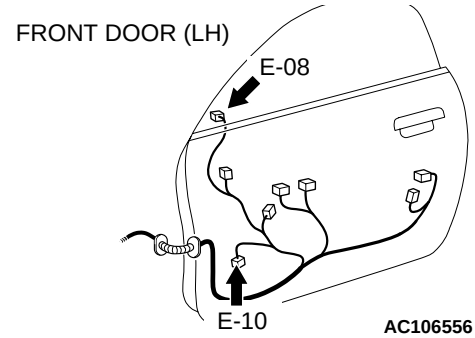
AC106485AN

CONNECTORS : E-01, E-03



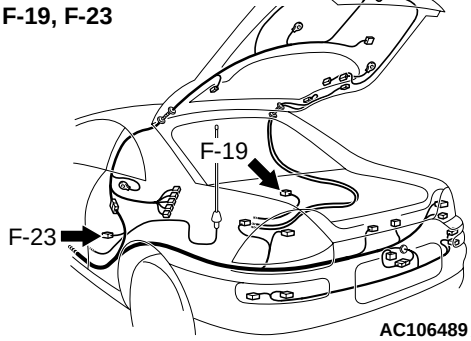
AC106487AK

CONNECTORS : E-08, E-10



AC106556AK

CONNECTORS <ECLIPSE>: F-19, F-23



AC106489AW

CIRCUIT OPERATION

- **<Vehicles without amplifier>**
- The sound is heard from the speaker according to audio signal output from the radio and CD player.
- **<Vehicles with amplifier>**
- The sound signals are sent from the radio, and CD player into the amplifier. After the signals are amplified and filtered, the sound signals are sent to the speaker.

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)
The cause is probably a faulty speaker circuit system.

TROUBLESHOOTING HINTS
- Malfunction of the speaker.
- Damaged wiring harness or connector.
- Malfunction of the radio and CD player.
- Malfunction of the amplifier <vehicles with amplifier>.
- Malfunction of the DIN cable <vehicles with amplifier>.

DIAGNOSIS

STEP 1A. Check which speaker has no sound on the vehicles without amplifier?
Use the speaker test to determine which speaker does not sound.

Q: Which speaker has no sound on the vehicles without amplifier?

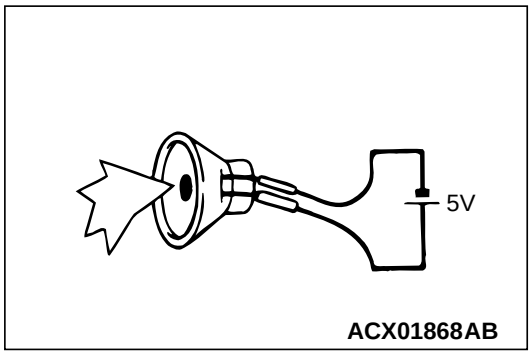
Front Door speaker (LH) : Go to Step 2.
Front Door speaker (RH) : Go to Step 5.
Rear speaker (LH) : Go to Step 8.
Rear speaker (RH) : Go to Step 11.
Tweeter (LH) : Go to Step 14.
Tweeter (RH) : Go to Step 17.

STEP 1B. Check which speaker has no sound on the vehicles with amplifier?
Use the speaker test to determine which speaker does not sound.

Q: Which speaker has no sound on the vehicles with amplifier?

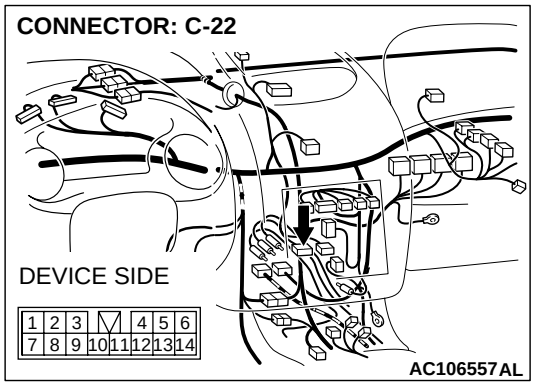
Front Door speaker (LH) : Go to Step 20.
Front Door speaker (RH) : Go to Step 24.
Rear speaker (LH) : Go to Step 28.
Rear speaker (RH) : Go to Step 32.
Woofer : Go to Step 36.
Tweeter (LH) : Go to Step 40.
Tweeter (RH) : Go to Step 44.

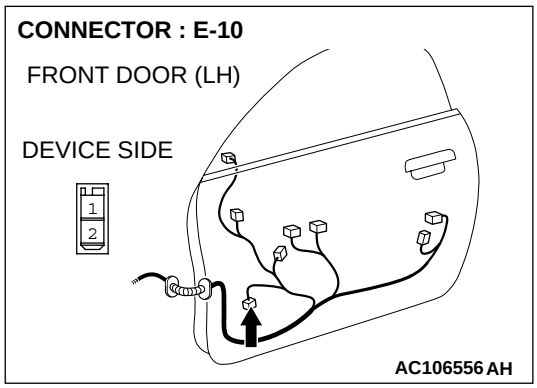
STEP 2. Check the Front door speaker (LH).
(1) Remove the front door speaker (LH).
(2) Check that the Front door speaker (LH) generates noise when a five-volt voltage is applied on the Front door speaker (LH) terminal.



Q: Is the front door speaker (LH) generating noise?

YES : Go to Step 3.
NO : Replace the front door speaker (LH). The front door speaker (LH) should sound.





STEP 3. Check front door speaker (LH) connector E-10 and radio and CD player connector C-22 for damage.

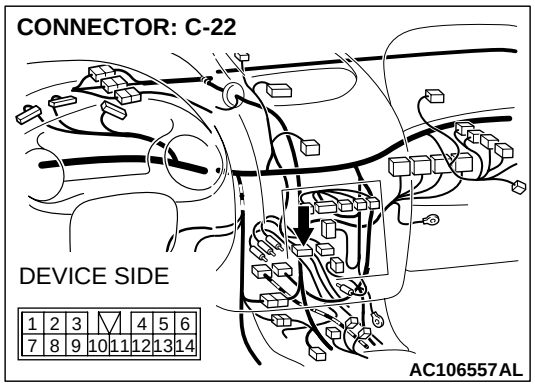
Q: Are harness connectors E-10 and C-22 in good condition?

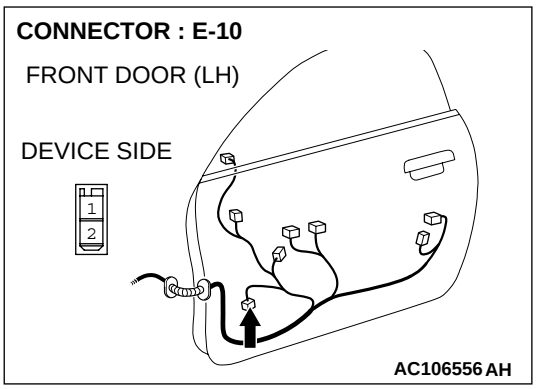
YES : Go to Step 4.

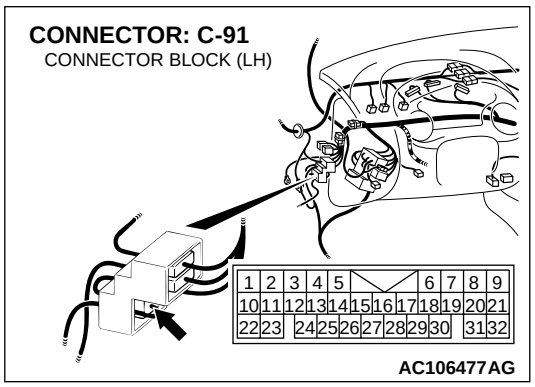
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The door speaker (LH) should sound.

STEP 4. Check the wiring harness between front door speaker (LH) connector E-10 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 5 and 13).

NOTE: After inspecting intermediate connector C-91, inspect the wire. If intermediate connector C-91 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.







Q: Are the wiring harness between front door speaker (LH) connector E-10 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 5 and 13) in good condition?

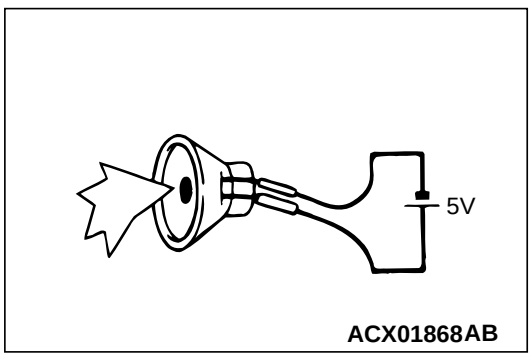
YES : Repair or replace the radio and CD player. The front door speaker (LH) should sound.

NO : Repair the wiring harness. The front door speaker (LH) should sound.

STEP 5. Check the front door speaker (RH).

(1) Remove the front door speaker (RH).

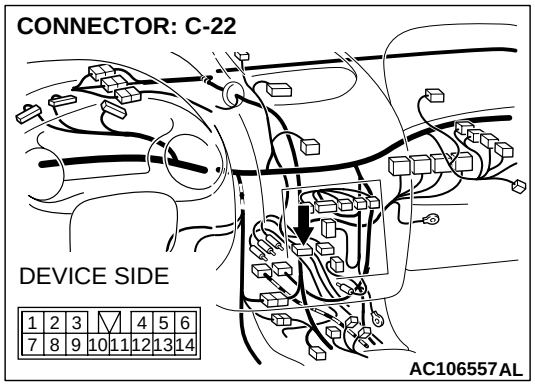
(2) Check that the front door speaker (RH) generates noise when a five-volt voltage is applied on the front door speaker (RH) terminal.

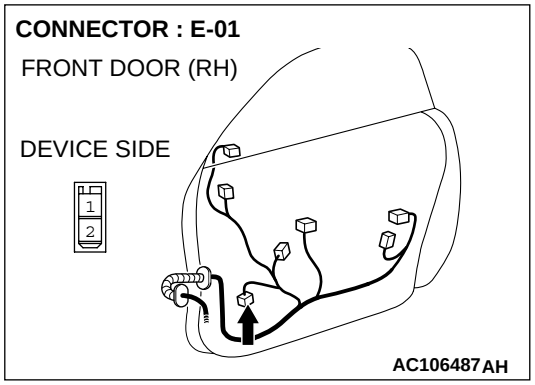


Q: Is the front door speaker (RH) generating noise?

YES : Go to Step 6.

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





STEP 6. Check front door speaker (RH) connector E-01 and radio and CD player connector C-22 for damage.

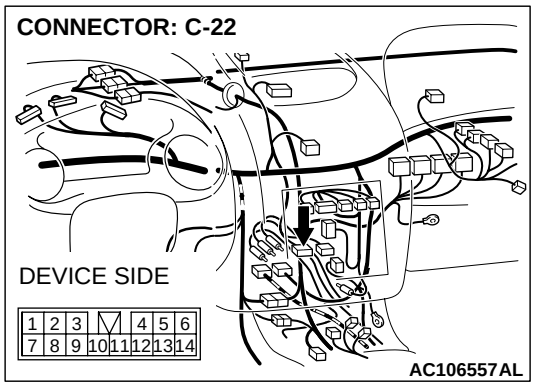
Q: Are harness connectors E-01and C-22 in good condition?

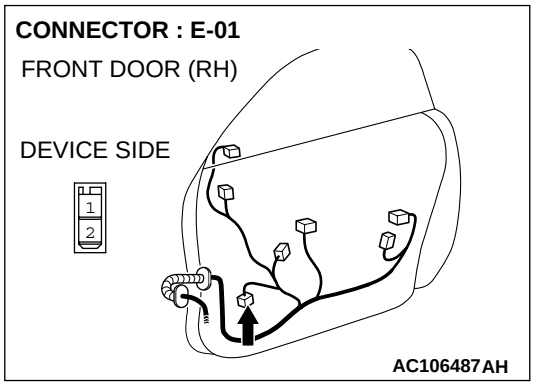
YES : Go to Step 7.

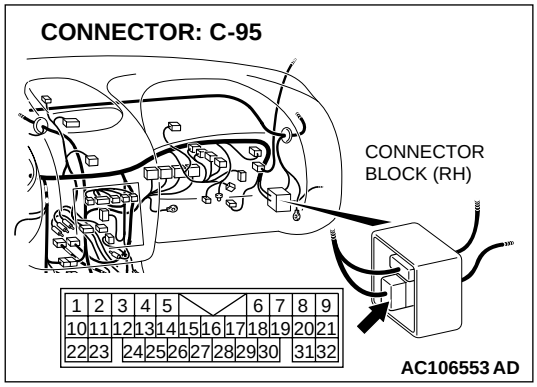
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front door speaker (RH) should sound.

STEP 7. Check the wiring harness between front door speaker (RH) connector E-01 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 6 and 14).

NOTE: After inspecting intermediate connector C-95, inspect the wire. If intermediate connector C-95 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.







Q: Are the wiring harness between front door speaker (RH) connector E-01 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 6 and 14) in good condition?

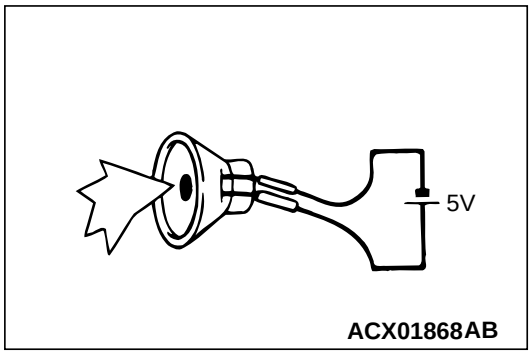
YES : Repair or replace the radio and CD player. The front door speaker (RH) should sound.

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

STEP 8. Check the rear speaker (LH).

(1) Remove the rear speaker (LH).

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



Q: Is the rear speaker (LH) generating noise?

YES : Go to Step 9.

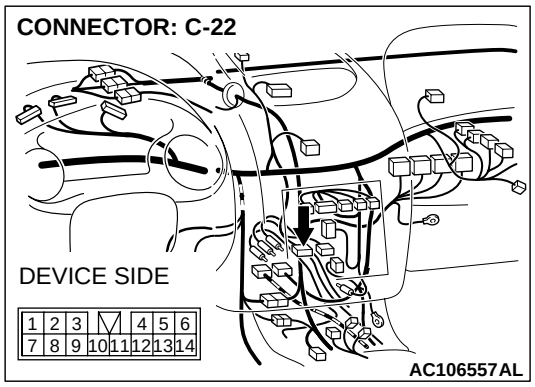
NO : Replace the rear speaker (LH). The rear speaker (LH) should sound.

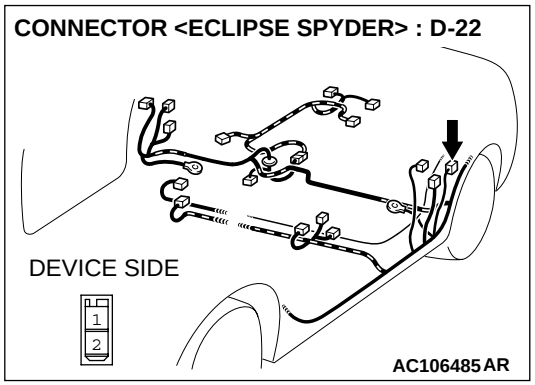
STEP 9. Check rear speaker (LH) connector F-23 <ECLIPSE> or D-22 <ECLIPSE SPYDER> and radio and CD player connector C-22 for damage.

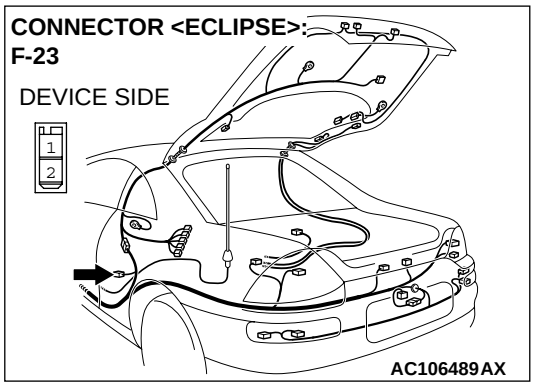
Q: Are harness connectors F-23 <ECLIPSE> or D-22 <ECLIPSE SPYDER> and C-22 in good condition?

YES : Go to Step 10.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear speaker (LH) should sound.

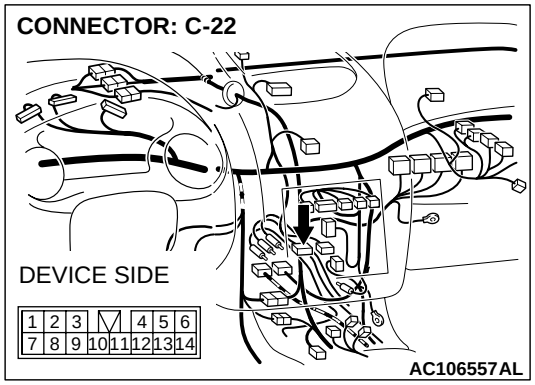


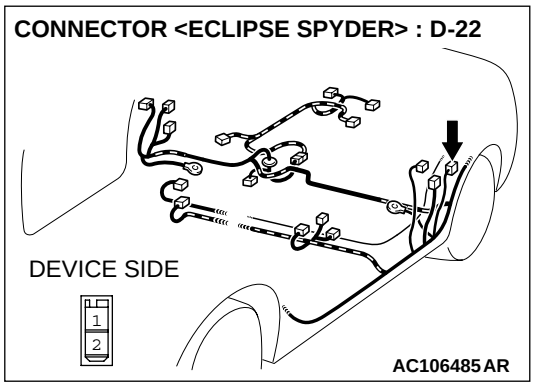


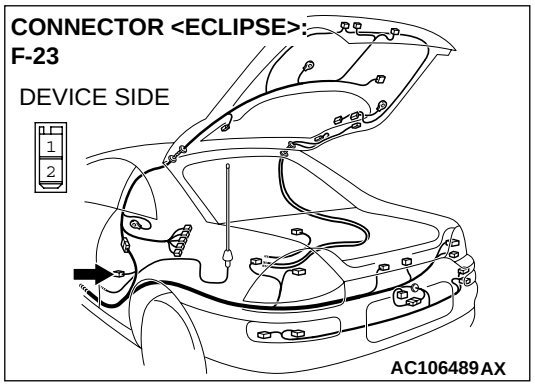


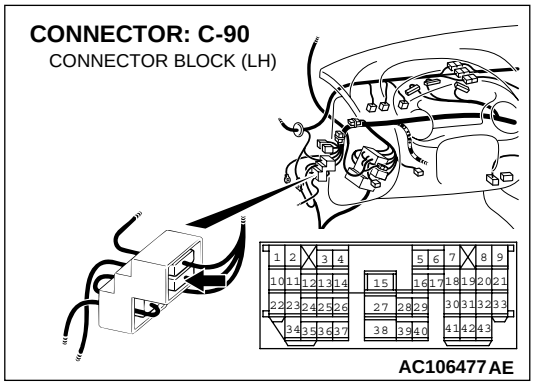
STEP 10. Check the wiring harness between rear speaker (LH) connector F-23 (terminal 1 and 2) <ECLIPSE> or D-22 (terminal 1 and 2) <ECLIPSE SPYDER> and radio and CD player connector C-22 (terminal 2 and 8).

NOTE: After inspecting intermediate connector C-90, inspect the wire. If intermediate connector C-90 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





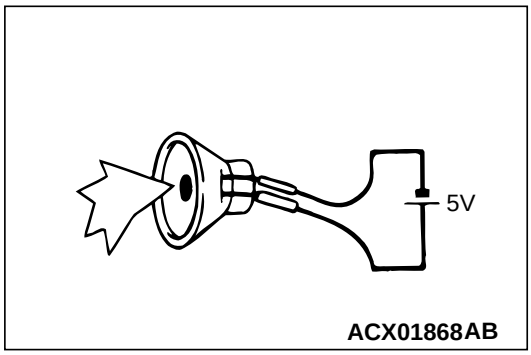




Q: Are the wiring harness between the rear speaker (LH) connector F-23 (terminal 1 and 2) <ECLIPSE> or D-22 (terminal 1 and 2) <ECLIPSE SPYDER> and radio and CD player connector C-22 (terminal 2 and 8) in good condition?

YES : Repair or replace the radio and CD player. The rear speaker (LH) should sound.

NO : Repair the wiring harness. The rear speaker (LH) should sound.

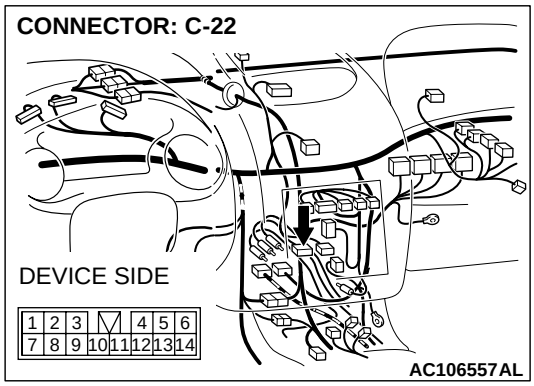


STEP 11. Check the rear speaker (RH).

(1) Remove the rear speaker (RH).
(2) Check that the rear speaker (RH) generates noise when a five-volt voltage is applied on the rear speaker (RH) terminal.

Q: Is the rear speaker (RH) generating noise?

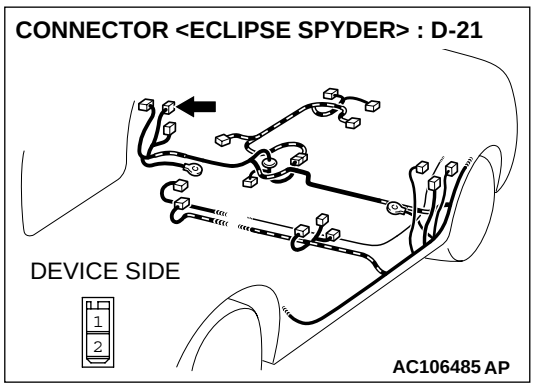
YES : Go to Step 12.
NO : Replace the rear speaker (RH). The rear speaker (RH) should sound.

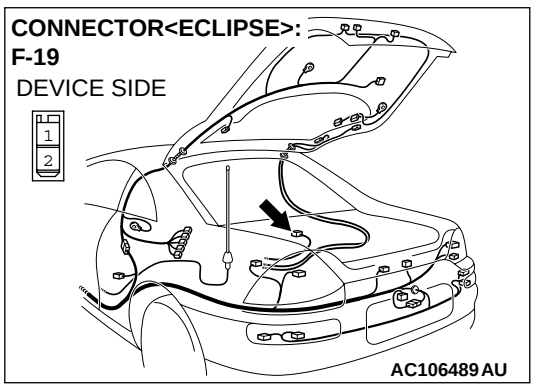


STEP 12. Check rear speaker (RH) connector F-19 <ECLIPSE> or D-21 <ECLIPSE SPYDER> and radio and CD player connector C-22 for damage.

Q: Are harness connectors F-19 <ECLIPSE> or D-21 <ECLIPSE SPYDER> and C-22 in good condition?

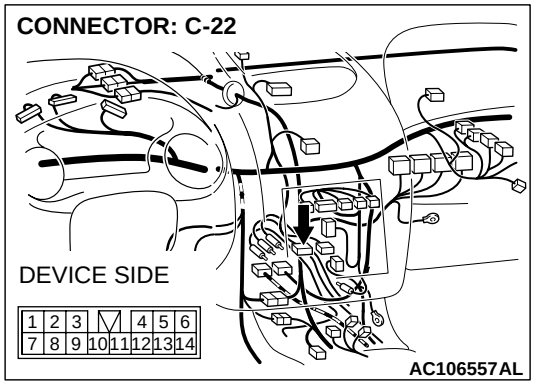
YES : Go to Step 13.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear speaker (RH) should sound.

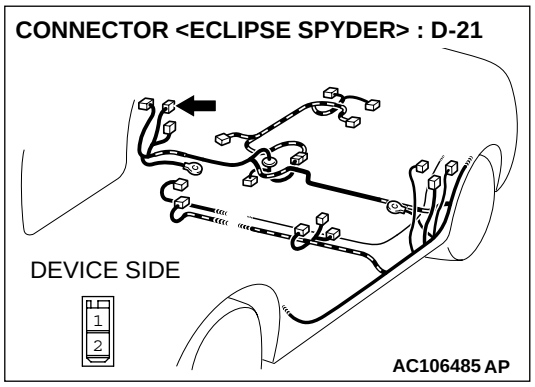


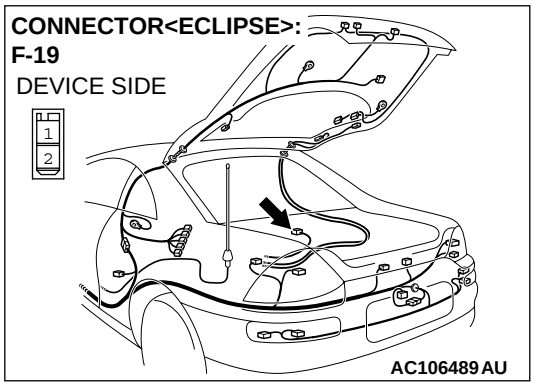


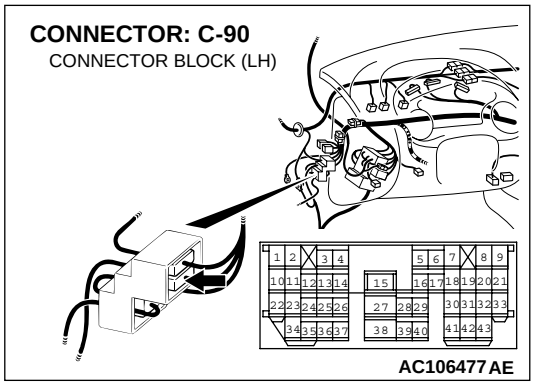
STEP 13. Check the wiring harness between rear speaker (RH) connector F-19 (terminal 1 and 2) <ECLIPSE> or D-21 (terminal 1 and 2) <ECLIPSE SPYDER> and radio and CD player connector C-22 (terminal 1 and 7).

NOTE: After inspecting intermediate connector C-90 inspect the wire. If intermediate connector C-90 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





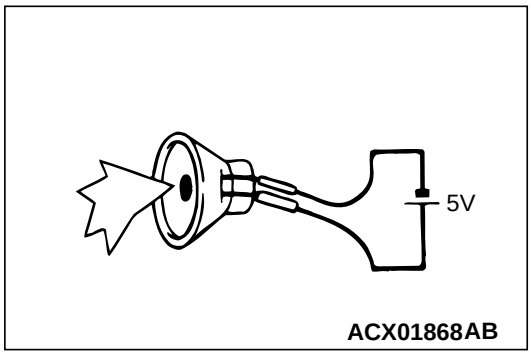




Q: Are the wiring harness between rear speaker (RH) connector F-19 (terminal 1 and 2) <ECLIPSE> or D-21 (terminal 1 and 2) <ECLIPSE SPYDER> and radio and CD player connector C-22 (terminal 1 and 7) in good condition?

YES : Repair or replace the radio and CD player. The rear speaker (RH) should sound.

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

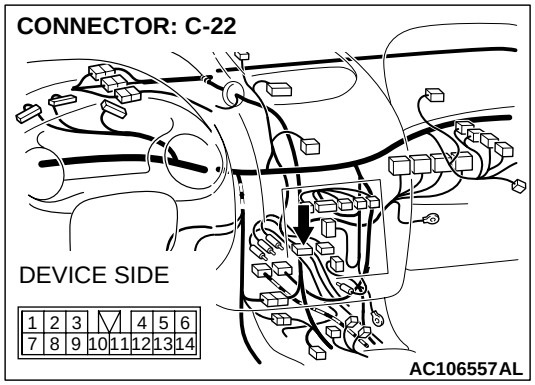


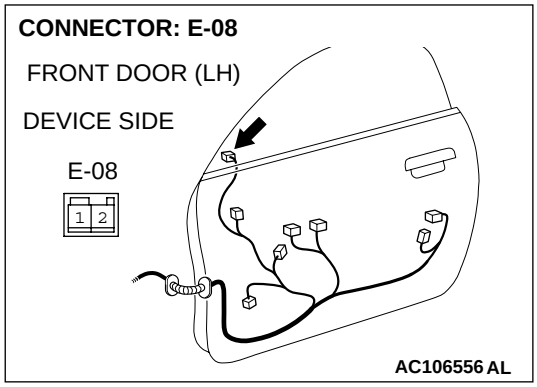
STEP 14. Check the tweeter (LH).

(1) Remove the tweeter (LH).
(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 15.
NO : Replace the tweeter (LH). The tweeter (LH) should sound.





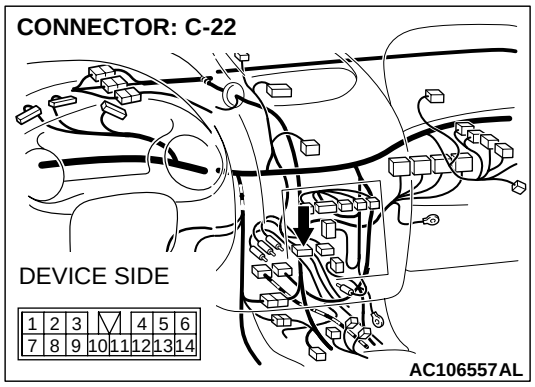
STEP 15. Check tweeter (LH) connector E-08 and radio and CD player connector C-22 for damage.

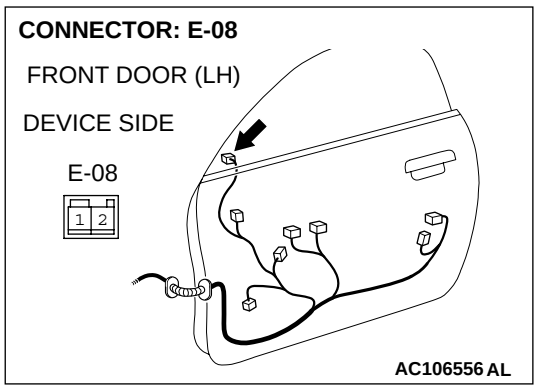
Q: Are harness connectors E-08 and C-22 in good condition?

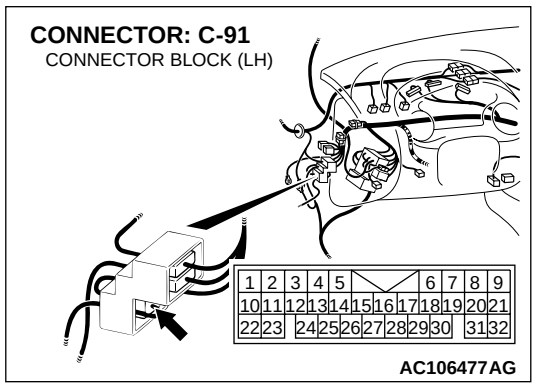
YES : Go to Step 16.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tweeter (LH) should sound.

STEP 16. Check the wiring harness between tweeter (LH) connector E-08 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 5 and 13).

NOTE: After inspecting intermediate connector C-91, inspect the wire. If intermediate connector C-91 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.







Q: Are the wiring harness between tweeter (LH) connector E-08 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 5 and 13) in good condition?

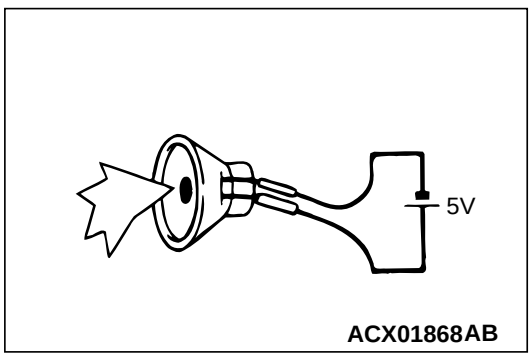
YES : Repair or replace the radio and CD player. The tweeter (LH) should sound.

NO : Repair the wiring harness. The tweeter (LH) should sound.

STEP 17. Check the tweeter (RH).

(1) Remove the tweeter (RH).

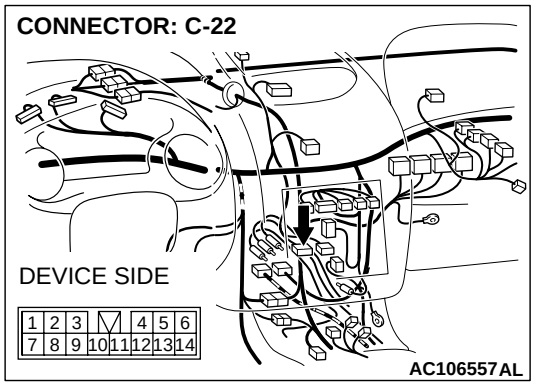
(2) Check that the tweeter (RH) generates noise when a five-volt voltage is applied on the speaker terminal.

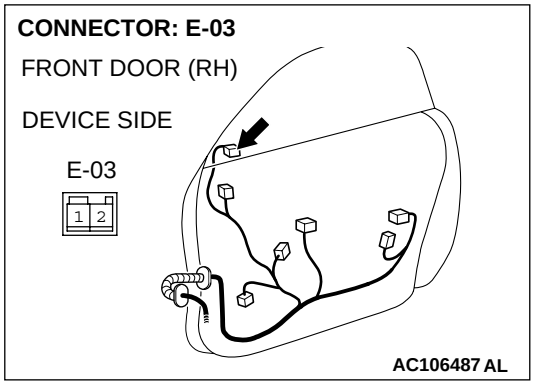


Q: Is the tweeter (RH) generating noise?

YES : Go to Step 18.

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





STEP 18. Check tweeter (RH) connector E-03 and radio and CD player connector C-22 for damage.

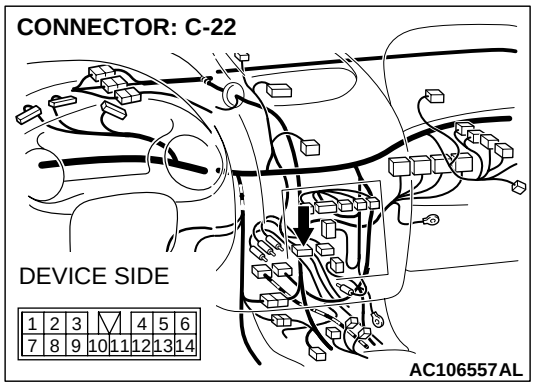
Q: Are harness connectors E-03 and C-22 in good condition?

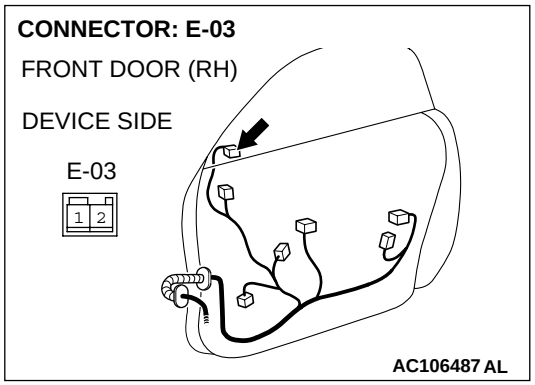
YES : Go to Step 19.

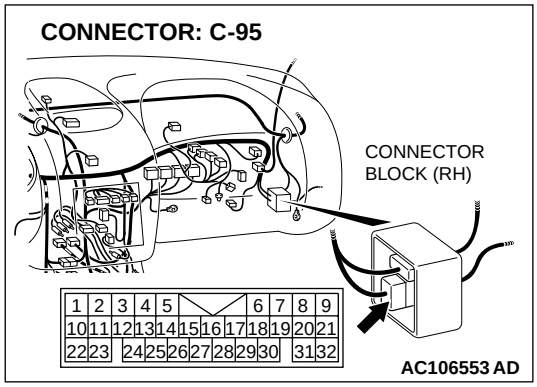
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tweeter (RH) should sound.

STEP 19. Check the wiring harness between tweeter (RH) connector E-03 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 6 and 14).

NOTE: After inspecting intermediate connector C-95, inspect the wire. If intermediate connector C-95 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.







Q: Are the wiring harness between tweeter (RH) connector E-03 (terminal 1 and 2) and radio and CD player connector C-22 (terminal 6 and 14) in good condition?

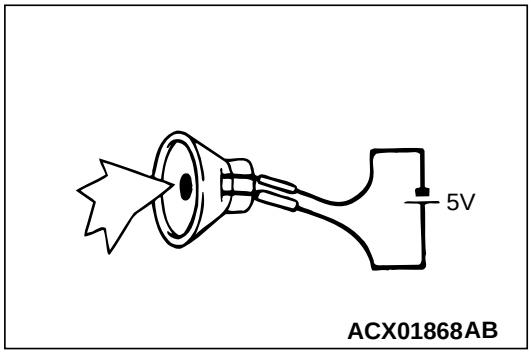
YES : Repair or replace the radio and CD player. The tweeter (RH) should sound.

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

STEP 20. Check the front door speaker (LH).

(1) Remove the front door speaker (LH).

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

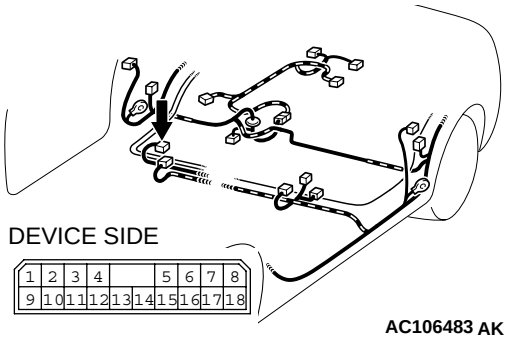


Q: Is the front door speaker (LH) generating noise?

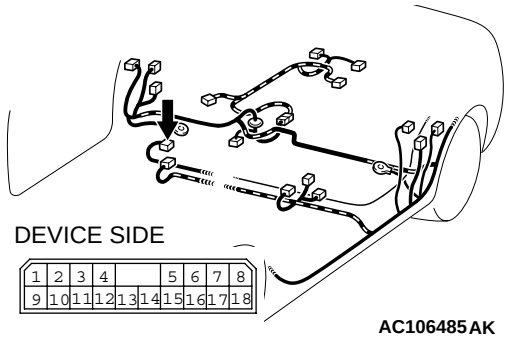
YES : Go to Step 21.

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

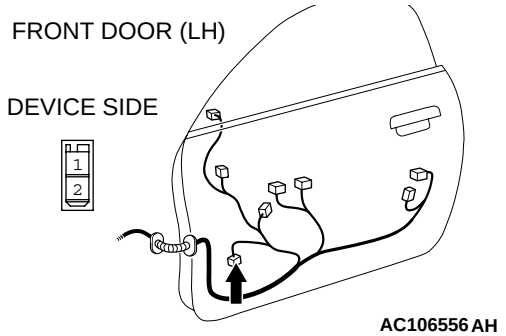
CONNECTOR<ECLIPSE> : D-20



CONNECTOR <ECLIPSE SPYDER> : D-20



CONNECTOR : E-10



STEP 21. Check front door speaker (LH) connector E-10 and radio and audio amplifier connector D-20 for damage.

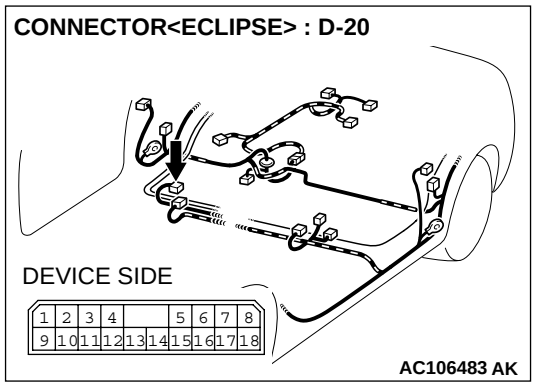
Q: Are harness connectors E-10 and D-20 in good condition?

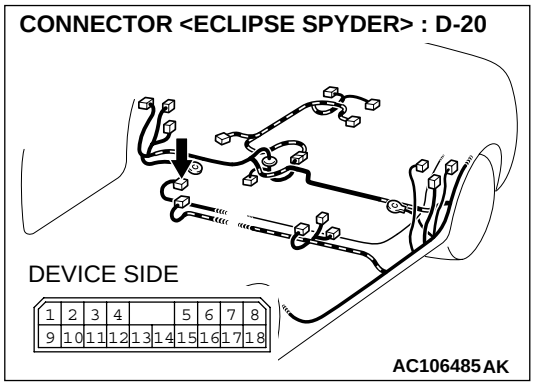
YES : Go to Step 22.

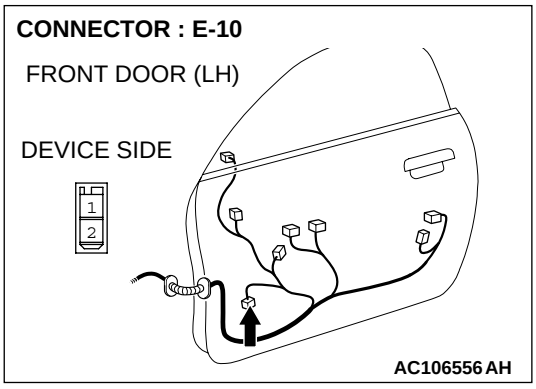
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The door speaker (LH) should sound.

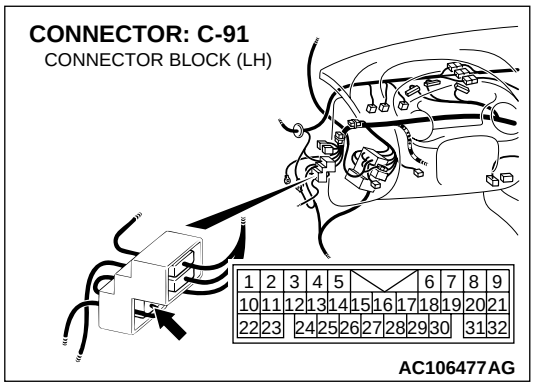
STEP 22. Check the wiring harness between front door speaker (LH) connector E-10 (terminal 1 and 2) and amplifier connector D-20 (terminal 5 and 6).

NOTE: After inspecting intermediate connectors C-91, inspect the wire. If intermediate connectors C-91 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.









Q: Are the wiring harness between door speaker (LH) connector E-10 (terminal 1 and 2) and amplifier connector D-20 (terminal 5 and 6) in good condition?

YES : Go to Step 23.

NO : Repair the wiring harness. The door speaker (LH) should sound.

STEP 23. Check the DIN cable between amplifier and radio and CD player.

Q: Is the DIN cable between amplifier and radio and CD player in good condition?

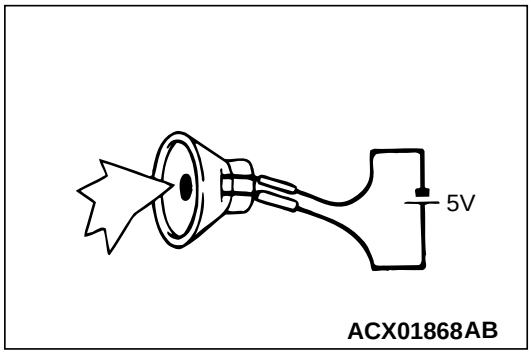
YES : Repair or replace the amplifier or radio and CD player. The front door speaker (LH) should sound.

NO : Repair or replace the DIN cable. The front door speaker (LH) should sound.

STEP 24. Check the front door speaker (RH).

(1) Remove the front door speaker (RH).

(2) Check that the front door speaker (RH) generates noise when a five-volt voltage is applied on the front door speaker (RH) terminal.

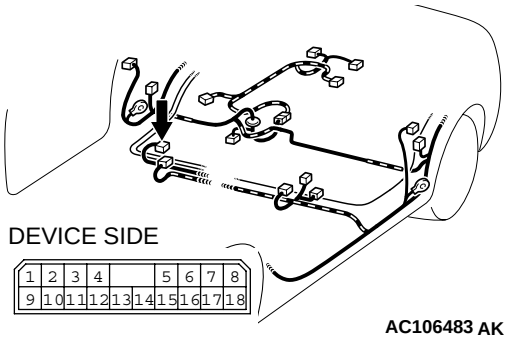


Q: Is the front door speaker (RH) generating noise?

YES : Go to Step 25.

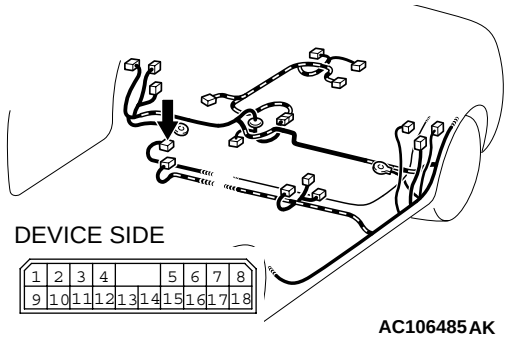
NO : Replace the front door speaker (RH). The front door speaker (RH) should sound.

CONNECTOR<ECLIPSE> : D-20



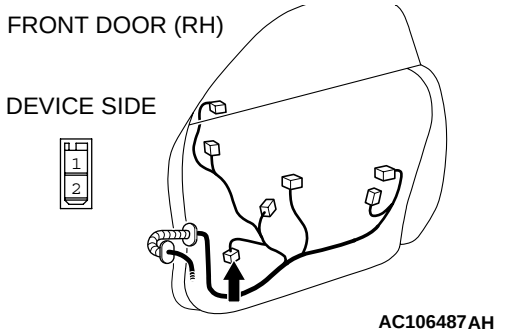
AC106483 AK

CONNECTOR <ECLIPSE SPYDER> : D-20



AC106485 AK

CONNECTOR : E-01



AC106487 AH

STEP 25. Check front door speaker (RH) connector E-01 and amplifier connector D-20 for damage.

Q: Are harness connectors D-20 and E-01 in good condition?

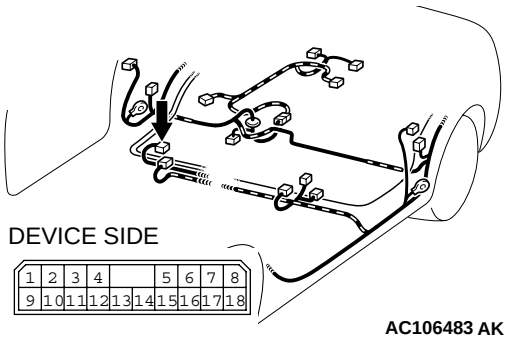
YES : Go to Step 26.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front door speaker (RH) should sound.

STEP 26. Check the wiring harness between front door speaker (RH) connector E-01 (terminal 1 and 2) and amplifier connector D-20 (terminal 15 and 16).

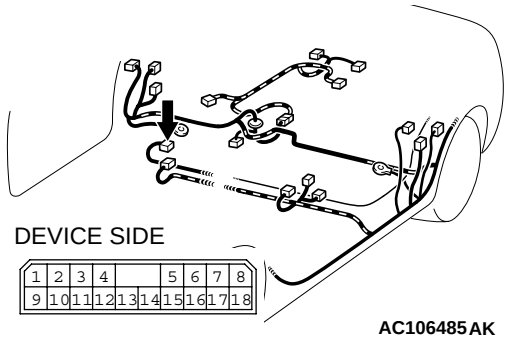
NOTE: After inspecting intermediate connectors C-95, inspect the wire. If intermediate connectors C-95 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR<ECLIPSE> : D-20



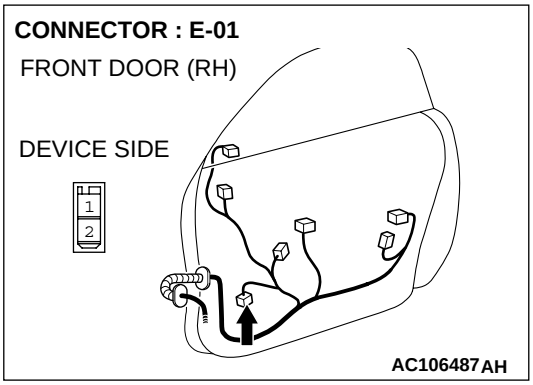
AC106483 AK

CONNECTOR <ECLIPSE SPYDER> : D-20



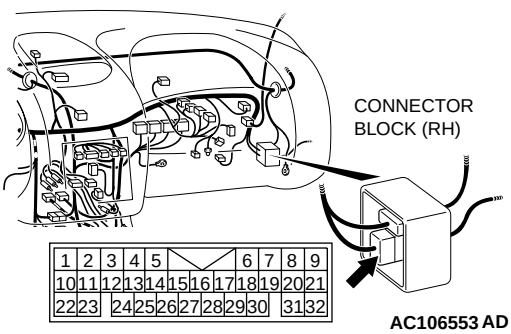
AC106485 AK

CONNECTOR : E-01



AC106487 AH

CONNECTOR: C-95



AC106553 AD

Q: Are the wiring harness between front door speaker (RH) connector E-01 (terminal 1 and 2) and amplifier connector D-20 (terminal 15 and 16) in good condition?

YES : Go to Step 27.

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

STEP 27. Check the DIN cable between amplifier and radio and CD player.

Q: Is the DIN cable in good condition?

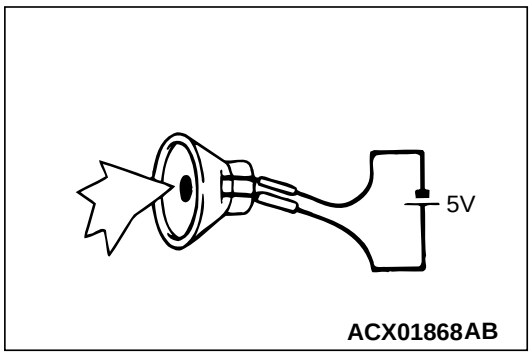
YES : Repair or replace the amplifier or radio and CD player. The front door speaker (RH) should sound.

NO : Repair or replace the DIN cable. The front door speaker (RH) should sound.

STEP 28. Check the rear speaker (LH).

(1) Remove the rear speaker (LH).

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

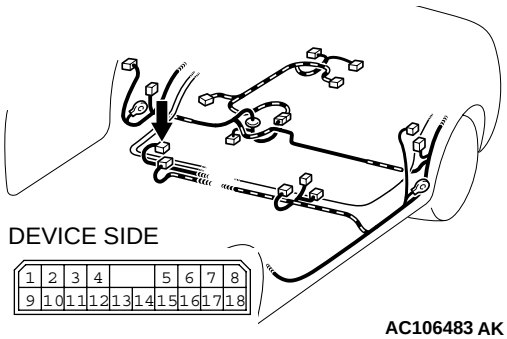


Q: Is the rear speaker (LH) generating noise?

YES : Go to Step 29.

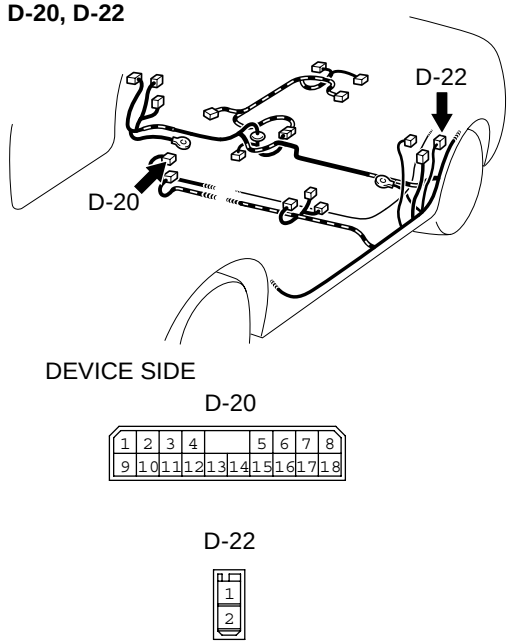
NO : Replace the rear speaker (LH). The rear speaker (LH) should sound.

CONNECTOR<ECLIPSE> : D-20



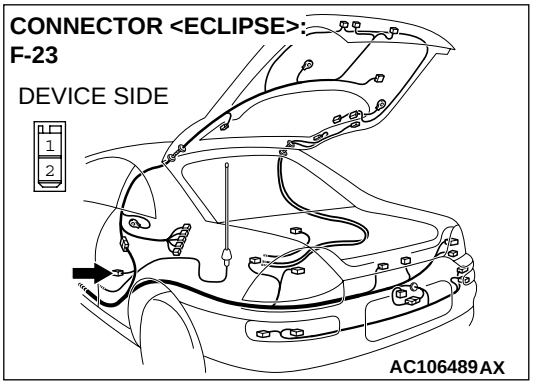
AC106483 AK

CONNECTORS <ECLIPSE SPYDER> : D-20, D-22



AC106486 AD

CONNECTOR <ECLIPSE>: F-23



AC106489 AX

STEP 29 Check rear speaker (LH) connector F-23 <ECLIPSE> or D-22 <ECLIPSE SPYDER> and amplifier connector D-20 for damage.

Q: Are harness connectors F-23 <ECLIPSE> or D-22 <ECLIPSE SPYDER> and D-20 in good condition?

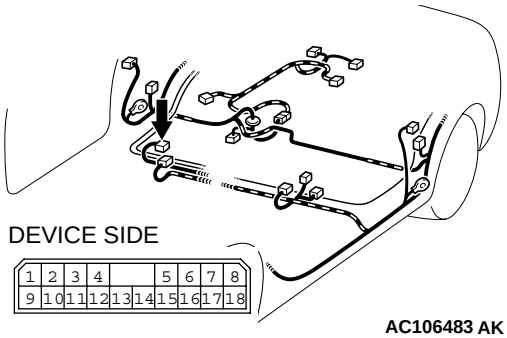
YES : Go to Step 30.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear speaker (LH) should sound.

STEP 30. Check the wiring harness between rear speaker (LH) connector F-23 (terminal 1 and 2) <ECLIPSE> or D-22 (terminal 1 and 2) <ECLIPSE SPYDER> and amplifier connector D-20 (terminal 17 and 18).

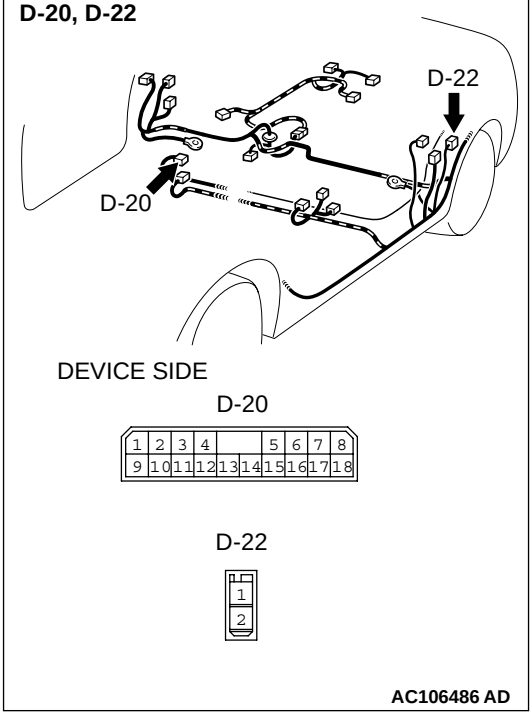
NOTE: After inspecting intermediate connectors C-90, inspect the wire. If intermediate connectors C-90 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR<ECLIPSE> : D-20



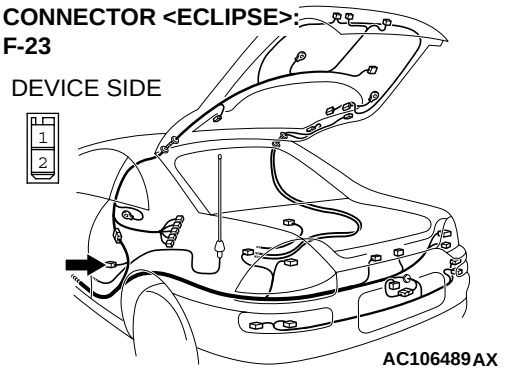
AC106483 AK

CONNECTORS <ECLIPSE SPYDER> : D-20, D-22

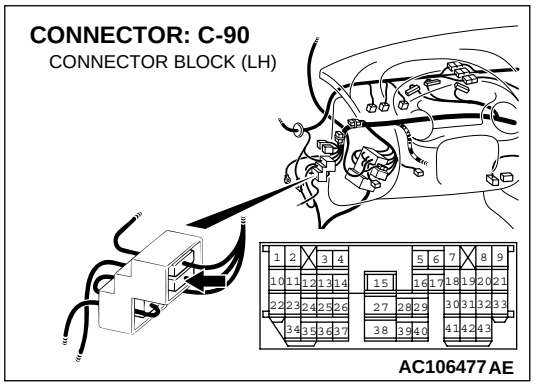


AC106486 AD

CONNECTOR <ECLIPSE>: F-23



AC106489 AX



Q: Are the wiring harness between rear door speaker (LH) connector F-23 (terminal 1 and 2) <ECLIPSE> or D-22 (terminal 1 and 2) <ECLIPSE SPYDER> and amplifier connector D-20 (terminal 17 and 18) in good condition?

YES : Go to Step 31.

NO : Repair the wiring harness. The rear speaker (LH) should sound.

STEP 31. Check the DIN cable between amplifier and radio and CD player.

Q: Is the DIN cable in good condition?

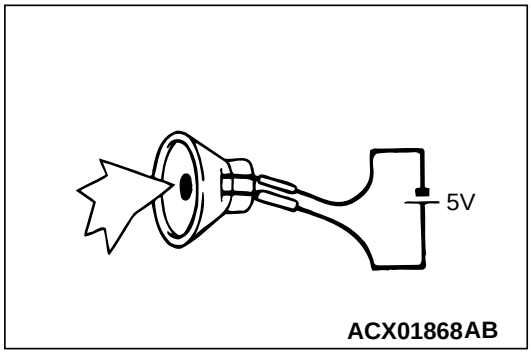
YES : Repair or replace the amplifier or radio and CD player. The rear speaker (LH) should sound.

NO : Repair or replace the DIN cable. The rear speaker (LH) should sound.

STEP 32. Check the rear speaker (RH).

(1) Remove the rear speaker (RH).

(2) Check that the rear speaker (RH) generates noise when a five-volt voltage is applied on the rear speaker (RH) terminal.

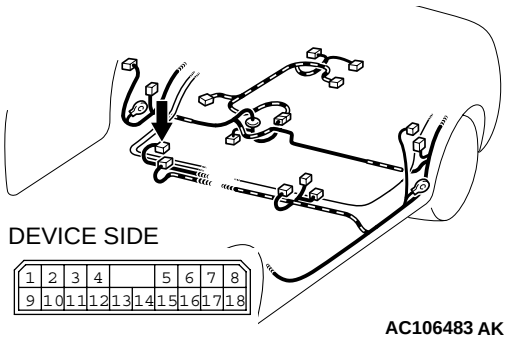


Q: Is the rear speaker (RH) generating noise?

YES : Go to Step 33.

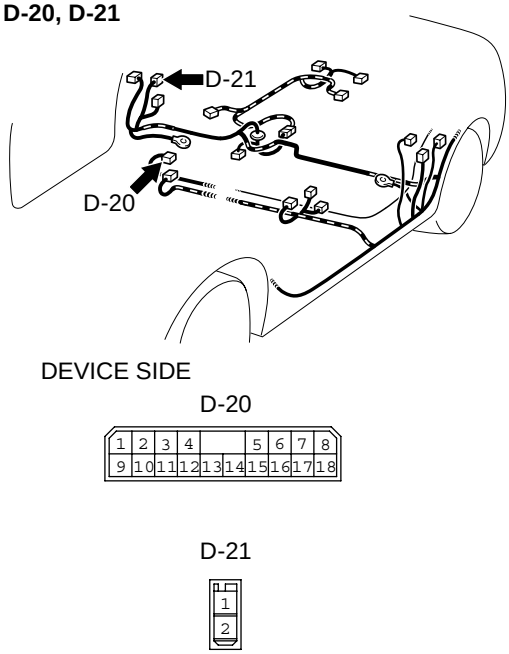
NO : Replace the rear speaker (RH). The rear speaker (RH) should sound.

CONNECTOR<ECLIPSE> : D-20



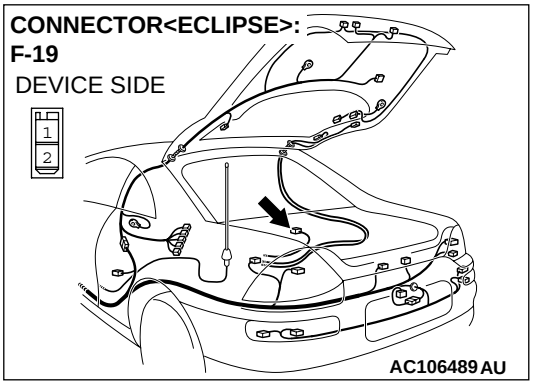
AC106483 AK

CONNECTORS <ECLIPSE SPYDER> : D-20, D-21



AC106486 AB

CONNECTOR<ECLIPSE>: F-19



AC106489 AU

STEP 33. Check rear speaker (RH) connector F-19 <ECLIPSE> or D-21 <ECLIPSE SPYDER> and amplifier connector D-20 for damage.

Q: Are harness connectors D-20 and F-19 <ECLIPSE> or D-21 <ECLIPSE SPYDER> in good condition?

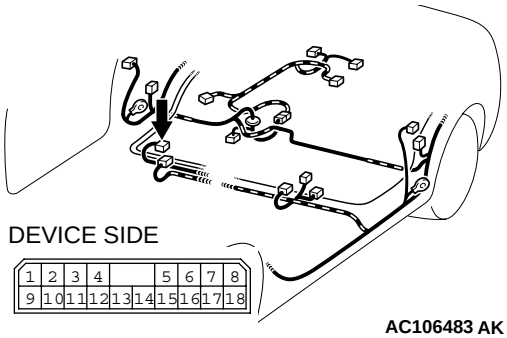
YES : Go to Step 34.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear speaker (RH) should sound.

STEP 34. Check the wiring harness between rear speaker (RH) connector F-19 (terminal 1 and 2) <ECLIPSE> or D-21 (terminal 1 and 2) <ECLIPSE SPYDER> and audio amplifier connector D-20 (terminal 7 and 8).

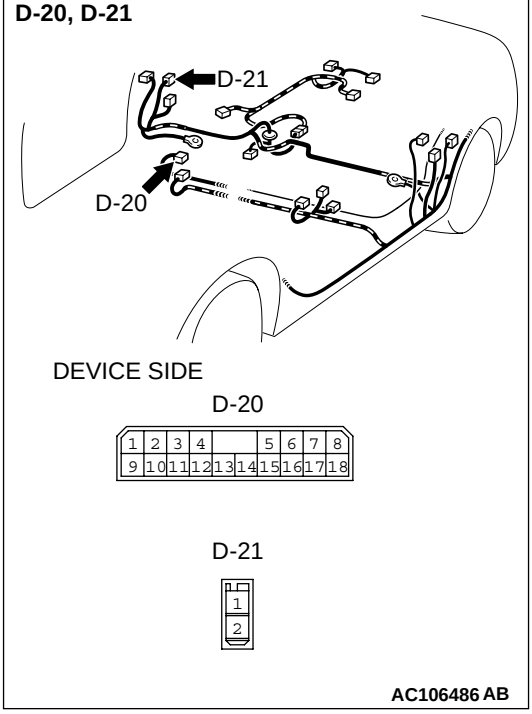
NOTE: After inspecting intermediate connectors C-90, inspect the wire. If intermediate connectors C-90 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR<ECLIPSE> : D-20



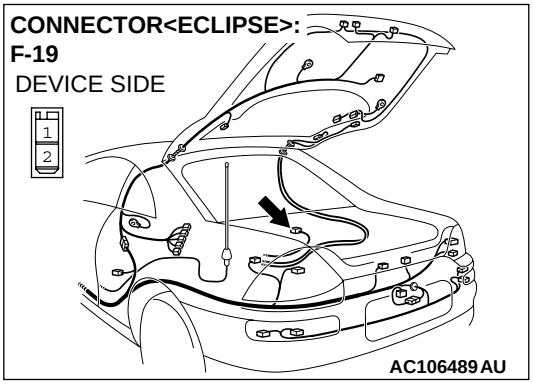
AC106483 AK

CONNECTORS <ECLIPSE SPYDER> : D-20, D-21



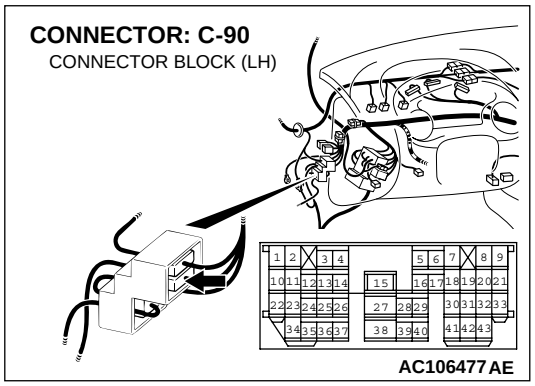
AC106486 AB

CONNECTOR<ECLIPSE>: F-19



AC106489 AU

TSB Revision



Q: Is the wiring harness between rear speaker (RH) connector F-19 (terminal 1 and 2) <ECLIPSE> or D-21 (terminal 1 and 2) <ECLIPSE SPYDER> and amplifier connector D-20 (terminal 7 and 8) in good condition?

YES : Go to Step 35.

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

STEP 35. Check the DIN cable between amplifier and radio and CD player.

Q: Is the DIN cable in good condition?

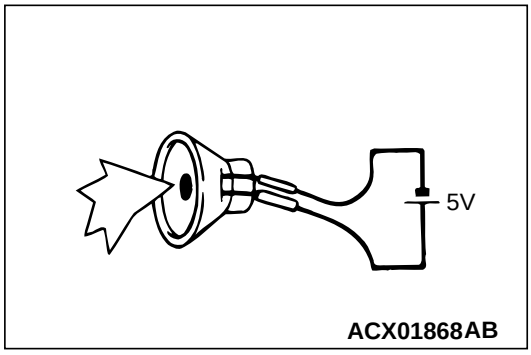
YES : Repair or replace the amplifier or radio and CD player. The rear door speaker (RH) should sound.

NO : Repair or replace the DIN cable. The rear door speaker (RH) should sound.

STEP 36. Check the woofer.

(1) Remove the woofer.

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

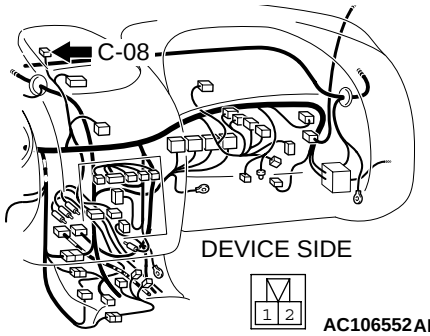


Q: Is the woofer generating noise?

YES : Go to Step 37.

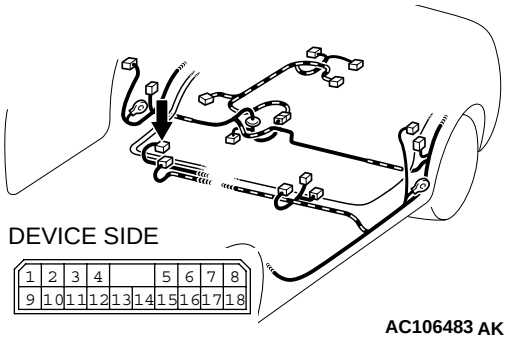
NO : Replace the woofer. The woofer should sound.

CONNECTOR : C-08



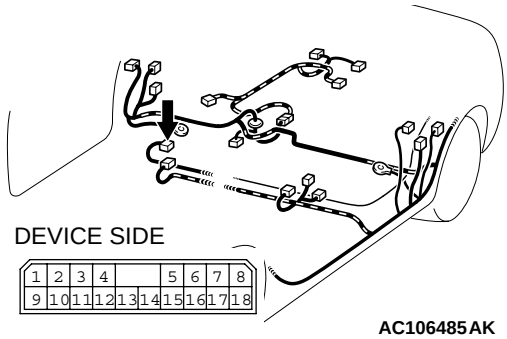
AC106552AI

CONNECTOR<ECLIPSE> : D-20



AC106483AK

CONNECTOR <ECLIPSE SPYDER> : D-20



AC106485AK

STEP 37. Check woofer connector C-08 and amplifier connector D-20 for damage.

Q: Are harness connectors C-08 and D-20 in good condition?

YES : Go to Step 38.

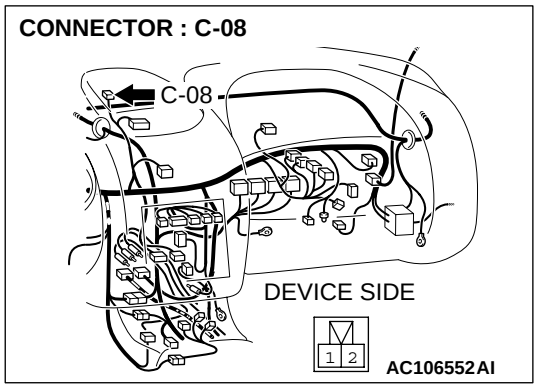
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The woofer should sound.

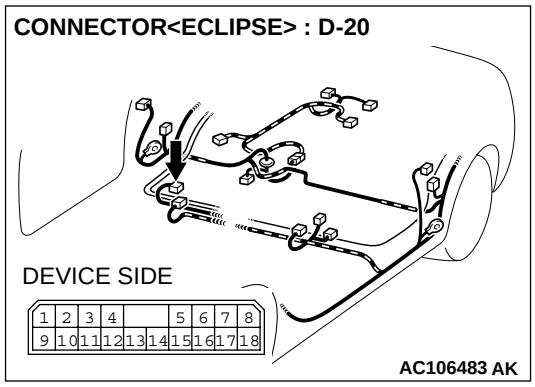
STEP 38. Check the wiring harness between woofer connector C-08 (terminal 1 and 2) and amplifier connector D-20 (terminal 4 and 13).

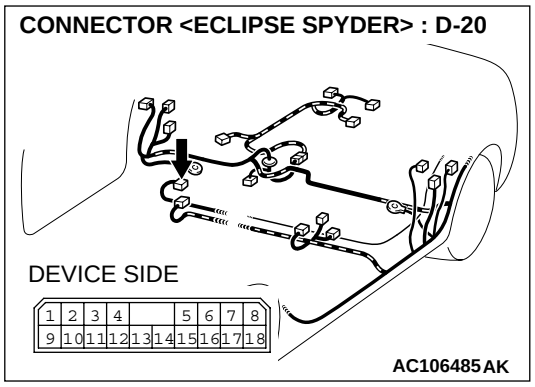
Q: Are the wiring harness between woofer connector C-08 (terminal 1 and 2) and amplifier connector D-20 (terminal 4 and 13) in good condition?

YES : Go to Step 39.

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





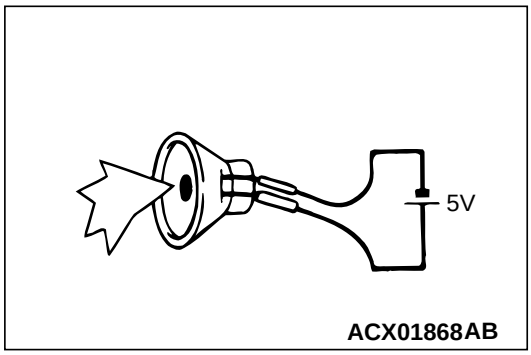


STEP 39. Check the DIN cable between amplifier and radio, tape player and CD auto changer.

Q: Is the DIN cable in good condition?

YES : Repair or replace the amplifier or radio and CD player. The woofer should sound.

NO : Repair or replace the DIN cable. The woofer should sound.

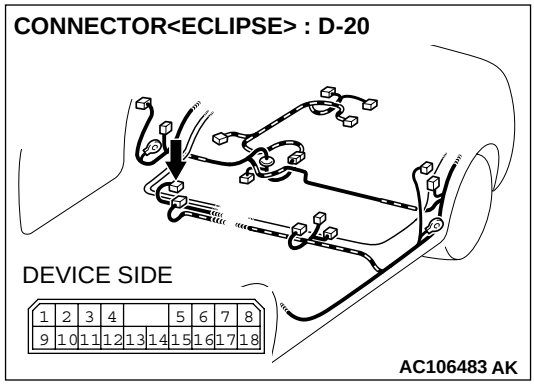


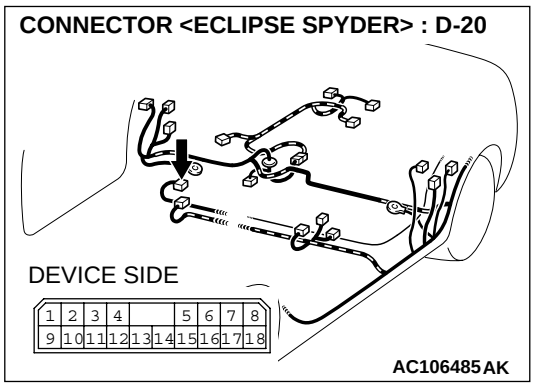
STEP 40. Check the tweeter (LH).

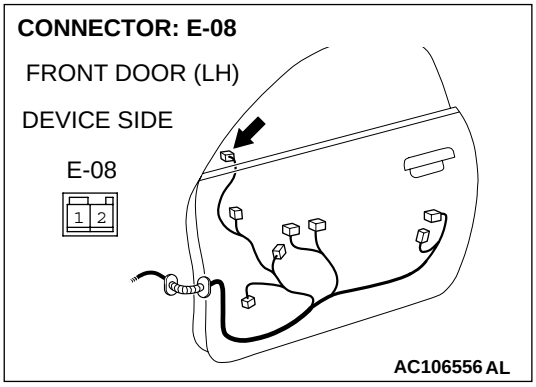
(1) Remove the tweeter (LH).
(2) Check that the tweeter (LH) generates noise when a five-volt voltage is applied on the tweeter (LH) terminal.

Q: Is the tweeter (LH) generating noise?

YES : Go to Step 41.
NO : Replace the tweeter (LH). The tweeter (LH) should sound.







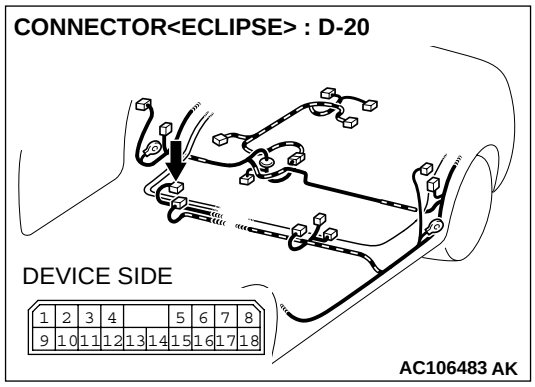
STEP 41. Check tweeter (LH) connector E-08 and amplifier connector D-20 for damage.

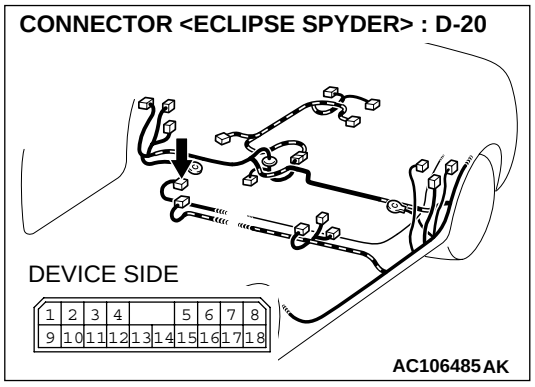
Q: Are harness connectors D-20 and E-08 in good condition?

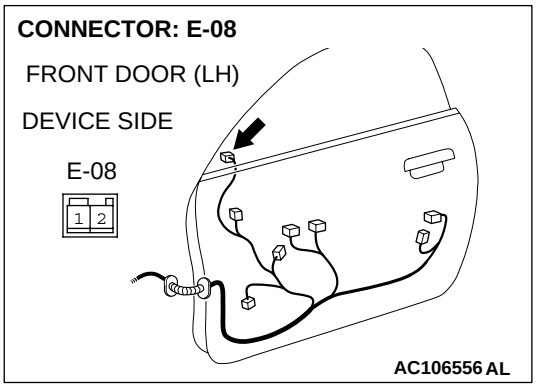
YES : Go to Step 42.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tweeter (LH) should sound.

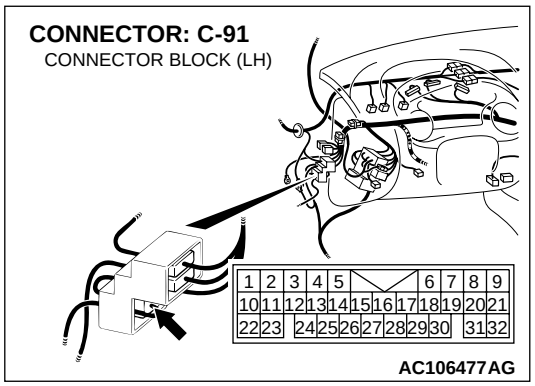
STEP 42. Check the wiring harness between tweeter (LH) connector E-08 (terminal 1 and 2) and amplifier connector D-20 (terminal 13 and 14).

NOTE: After inspecting intermediate connectors C-91, inspect the wire. If intermediate connectors C-91 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.









Q: Are the wiring harness between tweeter (LH) connector E-08 (terminal 1 and 2) and amplifier connector D-20 (terminal 13 and 14) in good condition?

YES : Go to Step 43.

NO : Repair the wiring harness. The tweeter (LH) should sound.

STEP 43. Check the DIN cable between amplifier and radio and CD player.

Q: Is the DIN cable in good condition?

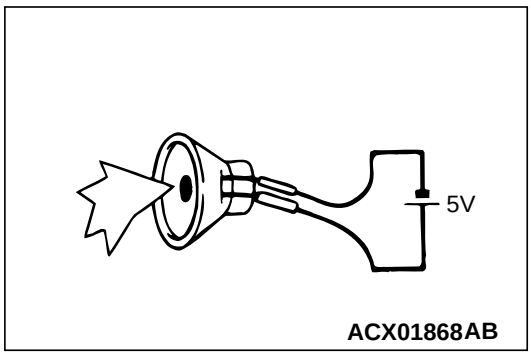
YES : Repair or replace the amplifier or radio and CD player. The tweeter (LH) should sound.

NO : Repair or replace the DIN cable. The tweeter (LH) should sound.

STEP 44. Check the tweeter (RH).

(1) Remove the tweeter (RH).

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

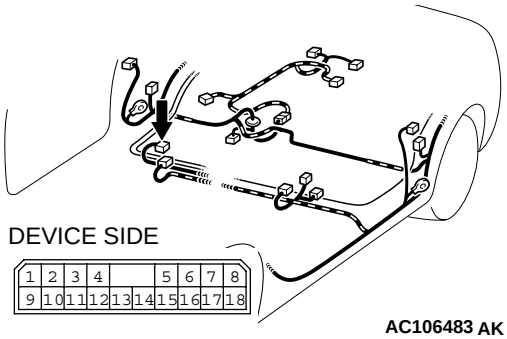


Q: Is the tweeter (RH) generating noise?

YES : Go to Step 45.

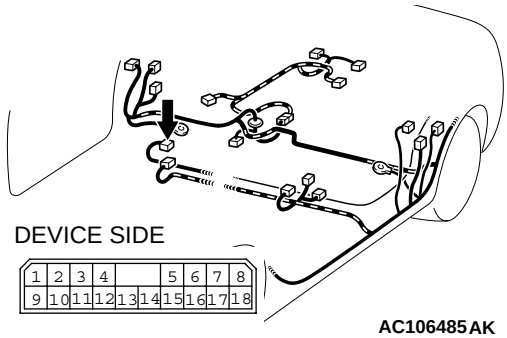
NO : Replace the tweeter (RH). The tweeter (RH) should sound.

CONNECTOR<ECLIPSE> : D-20



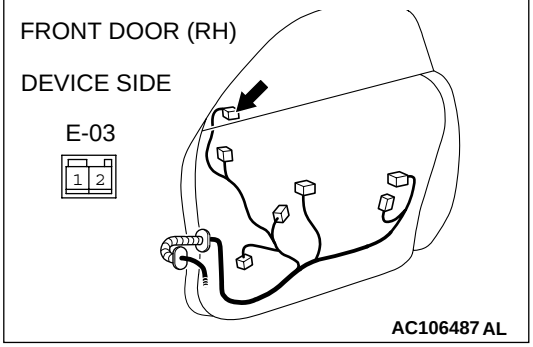
AC106483 AK

CONNECTOR <ECLIPSE SPYDER> : D-20



AC106485 AK

CONNECTOR: E-03



AC106487 AL

STEP 45. Check tweeter (RH) connector E-03 and amplifier connector D-20 for damage.

Q: Are harness connectors D-20 and E-03 in good condition?

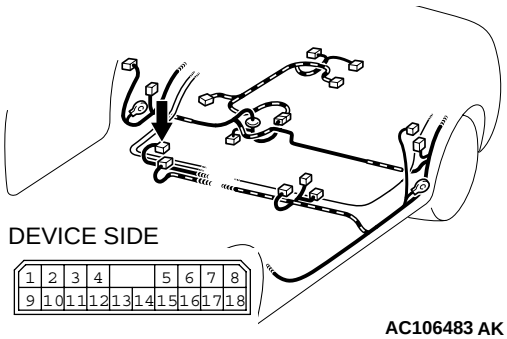
YES : Go to Step 46.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The tweeter (RH) should sound.

STEP 46. Check the wiring harness between tweeter (RH) connector E-03 (terminal 1 and 2) and amplifier connector D-20 (terminal 3 and 4).

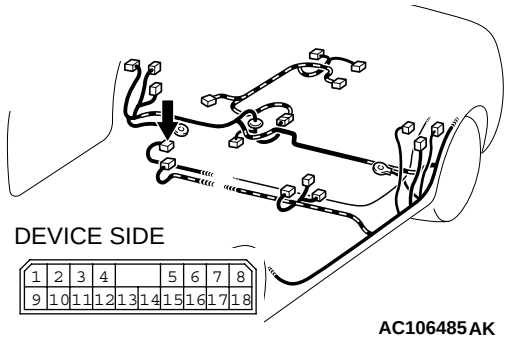
NOTE: After inspecting intermediate connectors C-95, inspect the wire. If intermediate connectors C-95 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR<ECLIPSE> : D-20



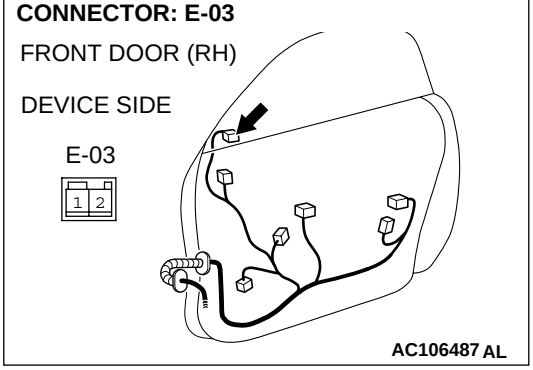
AC106483 AK

CONNECTOR <ECLIPSE SPYDER> : D-20



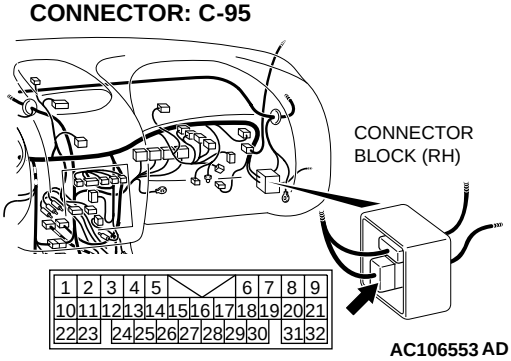
AC106485 AK

CONNECTOR: E-03



AC106487 AL

CONNECTOR: C-95



AC106553 AD

Q: Are the wiring harness between tweeter (RH) connector E-03 (terminal 1 and 2) and amplifier connector D-20 (terminal 3 and 4) in good condition?

YES : Go to Step 47.

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

STEP 47. Check the DIN cable between amplifier and radio, tape player and CD auto changer.

Q: Is the DIN cable in good condition?

YES : Repair or replace the amplifier or radio and CD player. The tweeter (RH) should sound.

NO : Repair or replace the DIN cable. The tweeter (RH) should sound.

INSPECTION PROCEURE 4: Separate Type CD Payer or CD Auto Changer does not Operate.

TECHNICAL DESCRIPTION (COMMENT)

The separate type CD player or CD auto changer is connected via only the DIN cable to the radio, tape player and CD player. Therefore, if the DIN cable is defective, the audio system does not operate normally.

TROUBLESHOOTING HINTS

- Damaged DIN cable.
- Malfunction of the separate type CD player or CD auto changer.
- Malfunction of the radio, tape player and CD player.

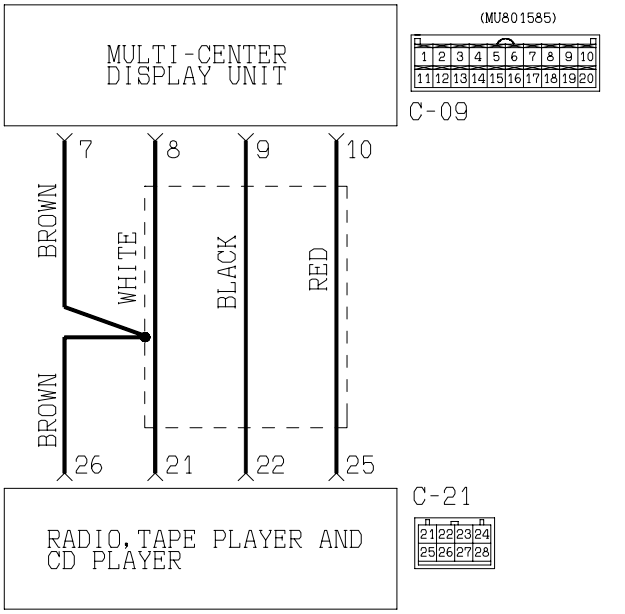
DIAGNOSIS

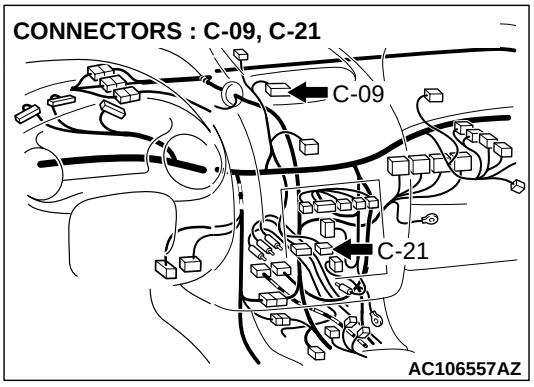
If the DIN cable between separate type CD player or CD auto changer and radio, tape player and CD player is damaged, repair or replace it. The separate type CD player or CD auto changer should operate normally.

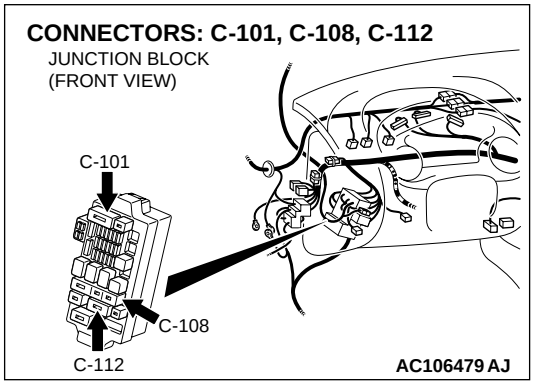
If the DIN cable is in good condition, repair or replace the separate type CD player or CD auto changer or radio, tape player and CD player. The separate type CD player or CD auto changer should operate normally.

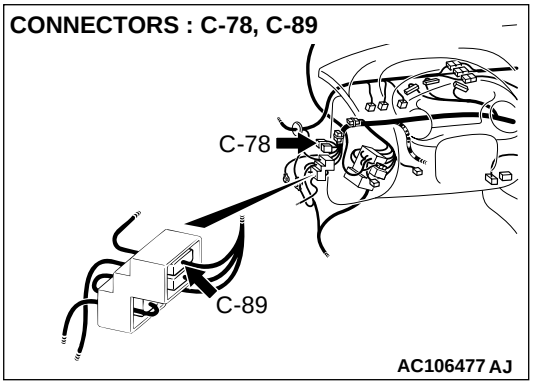
IINSPECTION PROCEDURE 5: The Multi-Center Display does not Display the Information Concerning the Audio System Correctly.

Multi-center Display Communication Circuit









TSB Revision

CIRCUIT OPERATION

The multi-center display and the radio, tape player, CD player and CD auto changer communicate with each other. The multi-center display shows the information concerning the radio, tape player, CD player and CD auto changer on the screen, based on that communication.

TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a faulty multi-center display communication circuit.

TROUBLESHOOTING HINTS

- Damaged wiring harness or connector.
- Malfunction of the multi-center display.
- Malfunction of the radio, tape player, CD player and CD auto changer.

DIAGNOSIS

Required Special Tool:

- MB991223: Harness set

STEP 1. Check the time display function of the multi-center display.

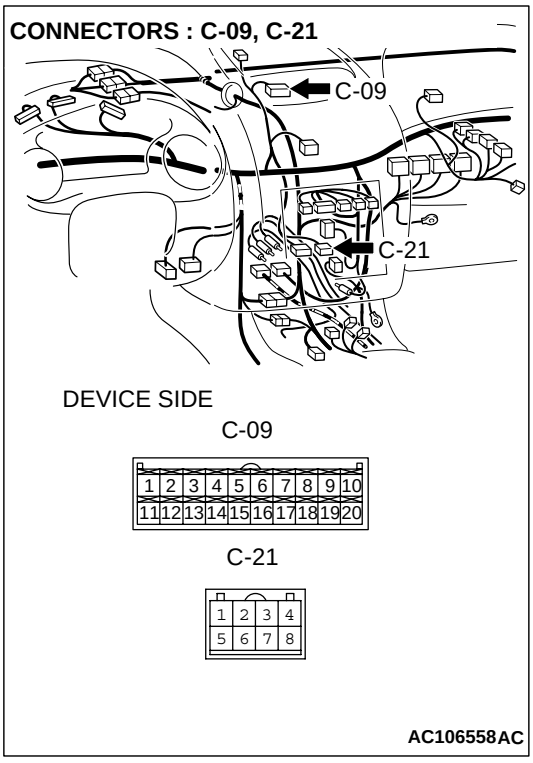
Q: Dose the time display function of the multi-center display operate normally?

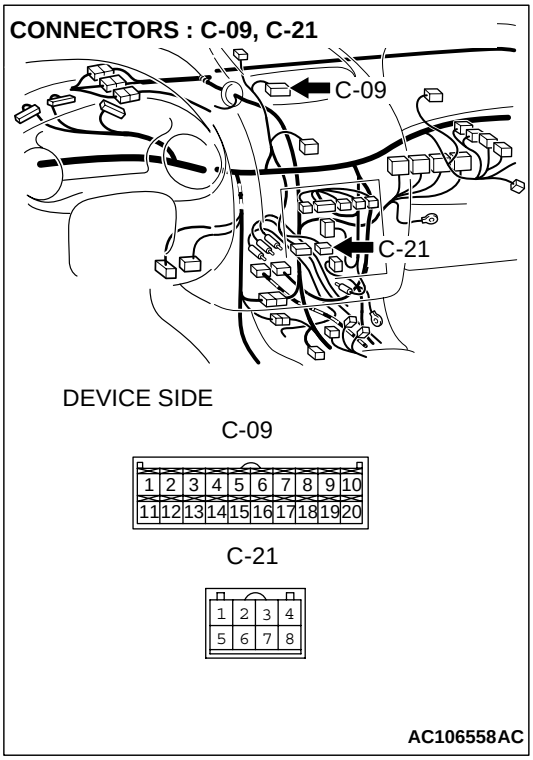
YES : Go to Step 5.
NO : Go to Step 2.

STEP 2. Check multi-center display connector C-09 and radio, tape player, CD player and CD auto changer connector C-21 for damage.

Q: Are multi-center display connector C-09 and radio, tape player, CD player and CD auto changer connector C-21 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 multi-center display should display the information concerning the audio system correctly.





STEP 3. Check the wiring harness between multi-center display connector C-09 (terminals 7, 8, 9, 10) and radio, tape player, CD player and CD auto changer connector C-21 (terminals 21, 22, 25, 26).

Q: Are the wiring harness between multi-center display connector C-09 (terminals 7, 8, 9, 10) and radio, tape player, CD player and CD auto changer connector C-21 (terminals 21, 22, 25, 26) in good condition?

YES : Go to Step 4.

NO : Repair the wiring harness. The multi-center display should display the information concerning the audio system correctly.

STEP 4. Replace the radio.

(1) Replace the radio.

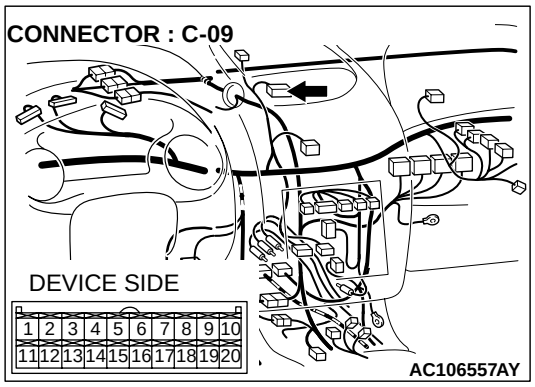
(2) The system should communicate with the multi-center display normally.

Q: Does the multi-center display show information concerning audio system correctly?

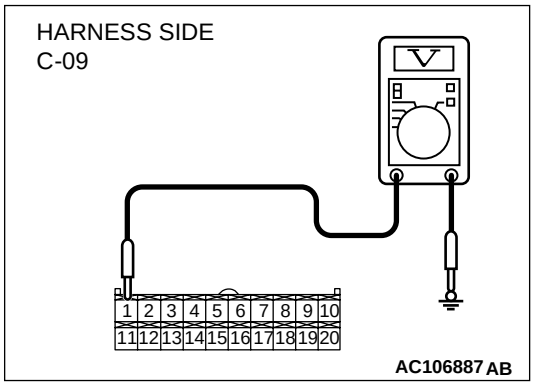
YES : No action to be taken.

NO : Replace the radio, tape player, CD player and CD auto changer.

STEP 5. Check the multi-center display power supply circuit (battery) at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.

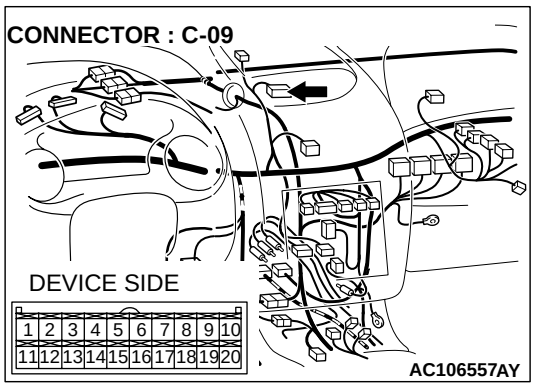


(2) Measure the voltage between terminal 1 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 8.
NO : Go to Step 6.

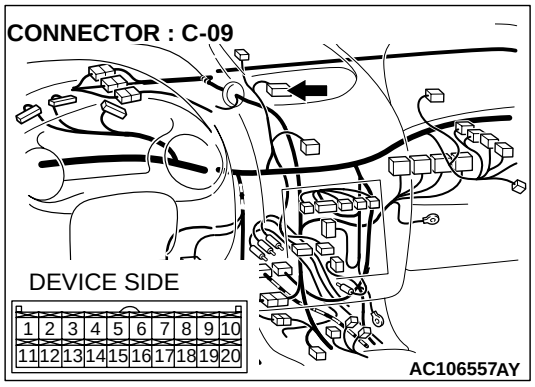
STEP 6. Check multi-center display connector C-09 for damage.

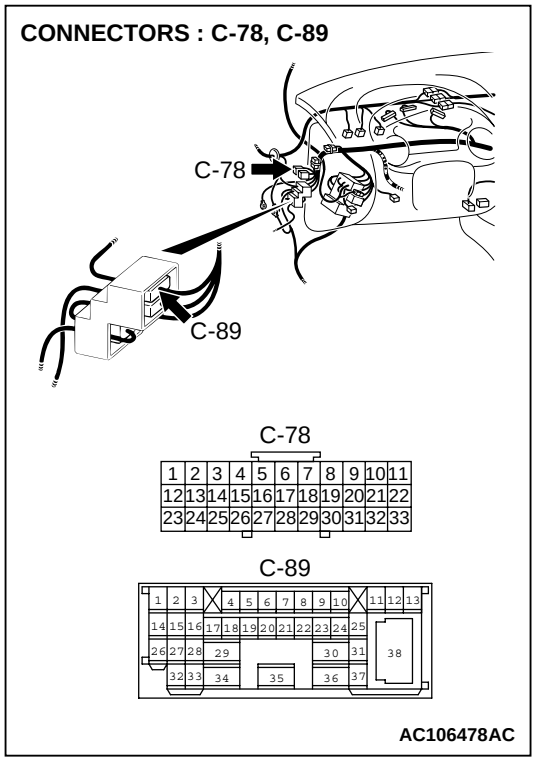


Q: Is multi-center display connector C-09 in good condition?

YES : Go to Step 7.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should display the information concerning the audio system correctly.

STEP 7. Check the wiring harness between C-09 and battery.





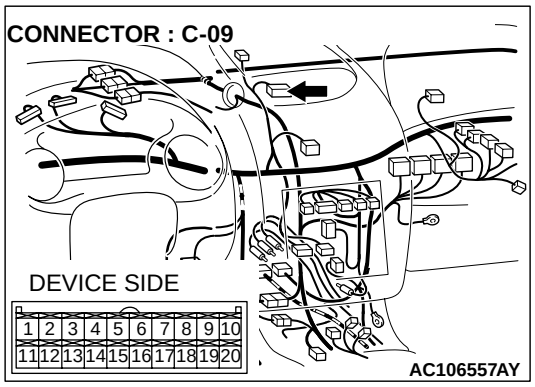
NOTE: After checking joint connector C-78 and intermediate connector C-89, check the wires. If joint connector C-78 and intermediate connector C-89 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between C-09 and battery in good condition?

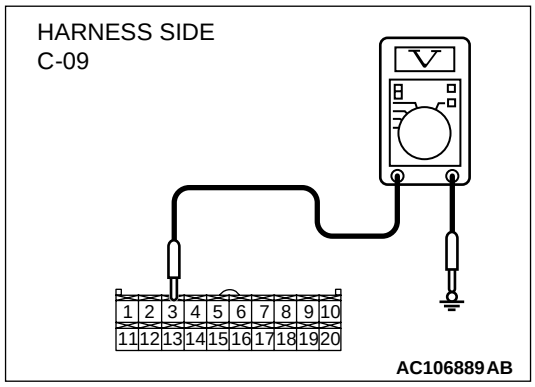
YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should display the information concerning the audio system correctly.

STEP 8. Check the multi-center display power supply circuit (ACC) at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.
(2) Turn the ignition switch to the "ACC" position.

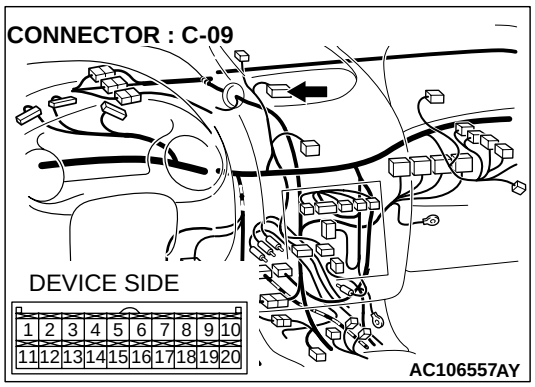


(3) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 11.
NO : Go to Step 9.

STEP 9. Check multi-center display connector C-09 for damage.

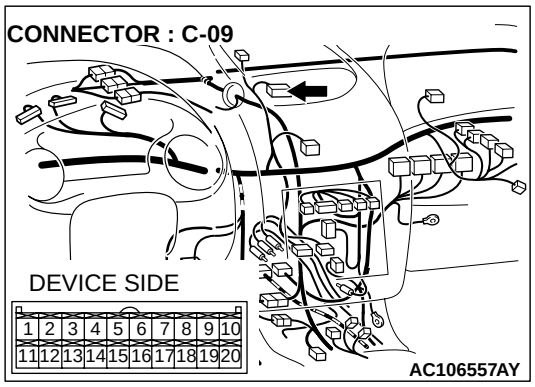


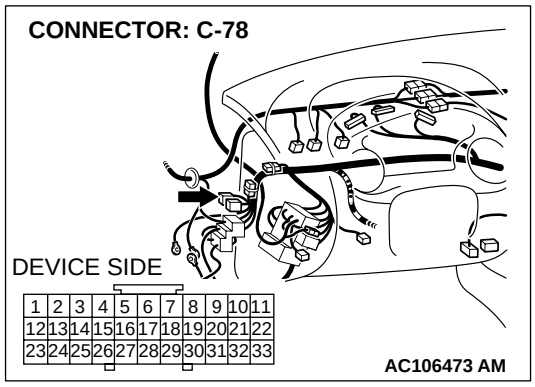
Q: Is multi-center display connector C-09 in good condition?

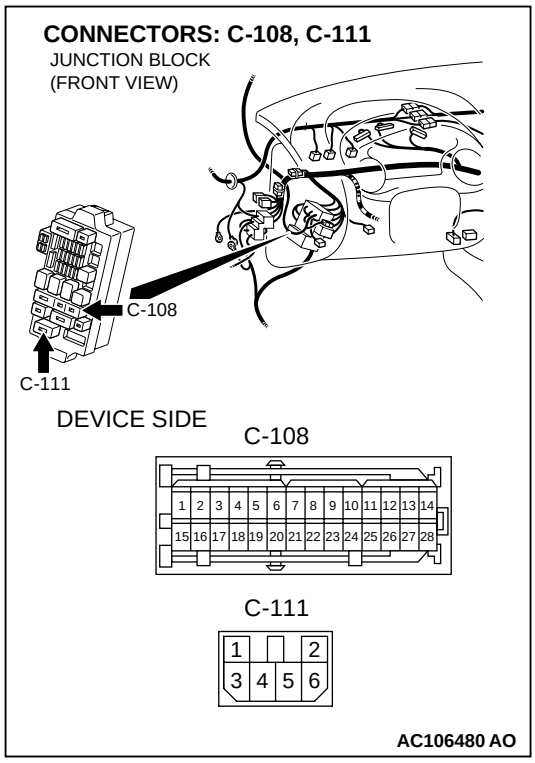
YES : Go to Step 10.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should display the information concerning the audio system correctly.

STEP 10. Check the wiring harness between multi-center display connector C-09 (terminal 3) and the ignition switch (ACC).

NOTE: After checking joint connector C-78 and junction block connector C-108 and C-111, check the wires. If joint connector C-78 and junction block connector C-108 and C-111 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





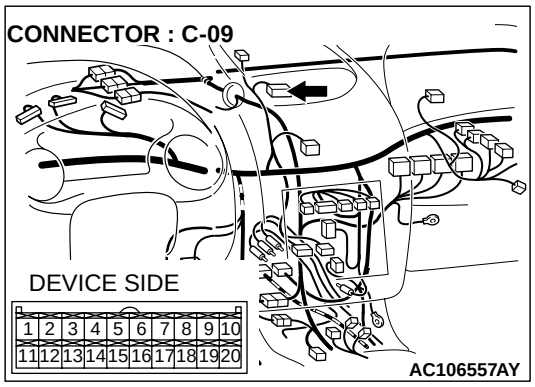


Q: Is the wiring harness between multi-center display connector C-09 (terminal 3) and the ignition switch (ACC) in good condition?

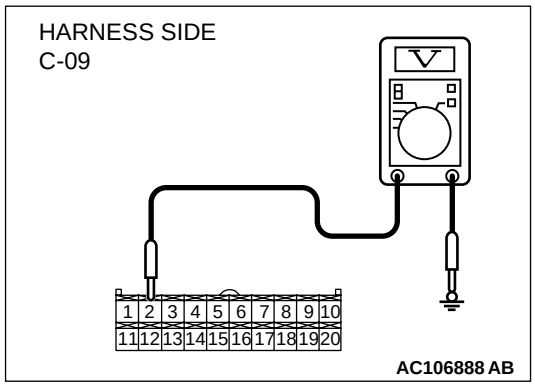
YES : No action to be taken.

NO : Repair the wiring harness. The multi-center display should display the information concerning the audio system correctly.

STEP 11. Check the multi-center display power supply circuit (IG1) at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

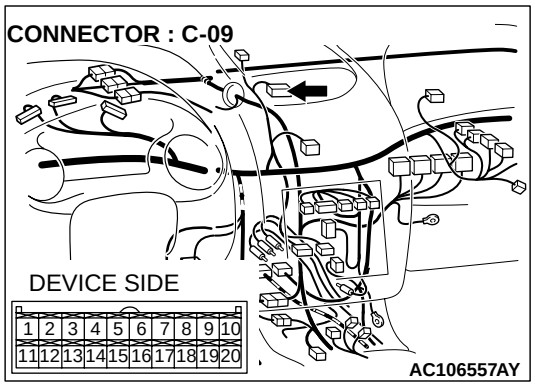
Q: Does the measured voltage correspond with this range?

YES : Go to Step 14.
NO : Go to Step 12.

STEP 12. Check multi-center display connector C-09.

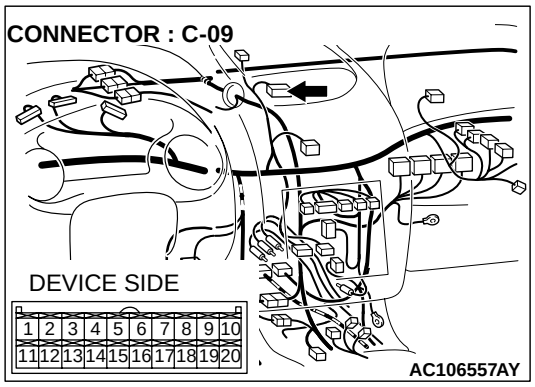
Q: Is multi-center display connector C-09 in good condition?

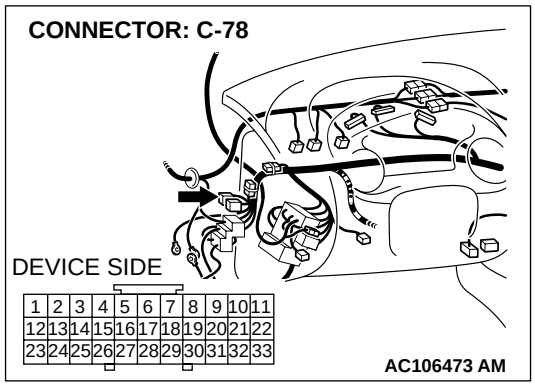
YES : Go to Step 13.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should display the information concerning the audio system correctly.

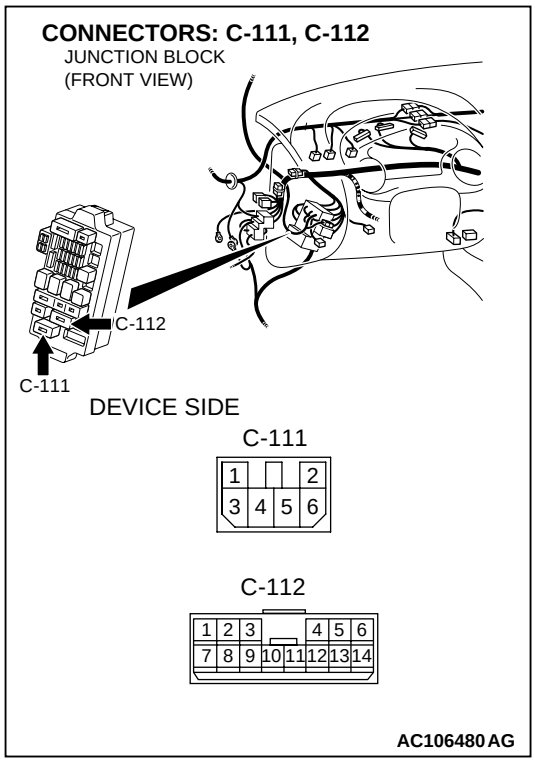


STEP 13. Check the wiring harness between multi-center display connector C-09 (terminal 2) and the ignition switch (IG1).

NOTE: After checking joint connector C-78 and junction block connector C-111 and C-112, check the wires. If joint connector C-78 and junction block connector C-111 and C-112 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





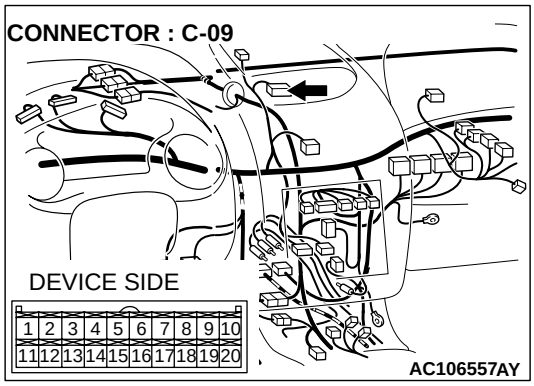


Q: Is the wiring harness between multi-center display connector C-09 (terminal 2) and ignition switch (IG1) in good condition?

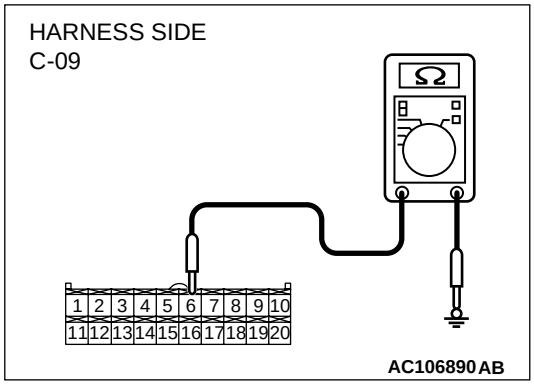
YES : No action to be taken.

NO : Repair the wiring harness. The multi-center display should display the information concerning the audio system correctly.

STEP 14. Check the multi-center display ground circuit at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.

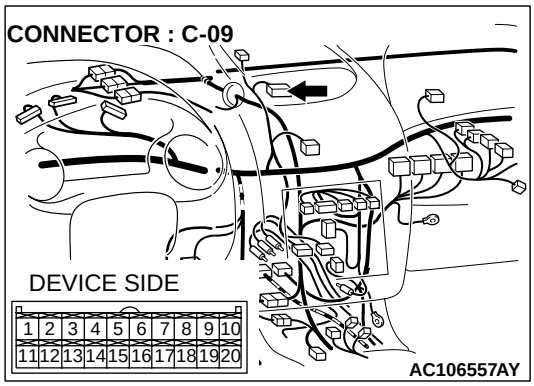


(2) Measure the resistance between terminal 6 and ground by backprobing.
- The measured value should be 2 ohm or less.

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

YES : Replace the multi-center display.
NO : Go to Step 15.

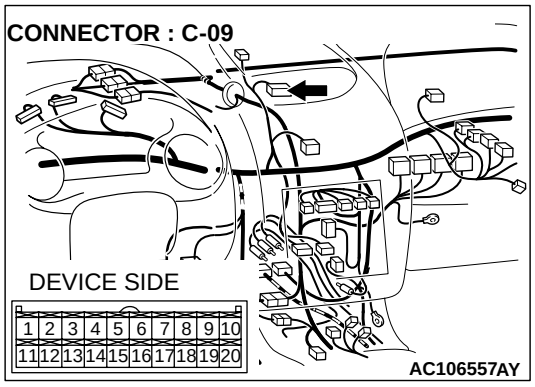
STEP 15. Check the multi-center display connector C-09 for damage.

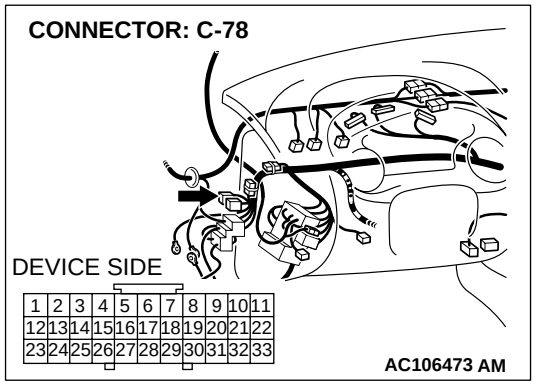


Q: Is the multi-center display connector C-09 in good condition?

YES : Go to Step 16.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.The multi-center display should display the information concerning the audio system correctly.

STEP 16. Check the wiring harness between multi-center display connector C-09 and ground.





NOTE: After checking joint connector C-78, check the wires. If joint connector C-78 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between multi-center display connector C-09 and ground in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should display the information concerning the audio system correctly.

INSPECTION PROCEDURE 6: Noise Appears at Certain Places when Traveling (AM).

DIAGNOSIS

STEP 1. Check the noise occur when entering or near a particular structure (building, tunnel, mountain, etc.)

Q: STEP 1. Dose the noise occur when entering or near a particular structure (building, tunnel, mountain, etc.)?

YES : Go to Step 3.

NO : Go to Step 2.

STEP 2. After taking the following measures to prevent the noise, check that no noise appears.

(1) Change to a different station with a stronger wave to boost resistance to interference.
(2) Suppress high tones to reduce noise.
(3) Extend antenna completely.

Q: Do the following measures eliminate the noise?

YES : The following causes can be considered.

NO : Go to Step 4.

STEP 3. Ask the owner about the state of 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: Which is the noise, vehicle noise or external noise?

Vehicle noise : It may not be possible to prevent noise if the signal is weak.

External noise : In almost all cases, prevention on the receiver side is impossible. Weak signals especially are susceptible to interference. Go to Step 4.

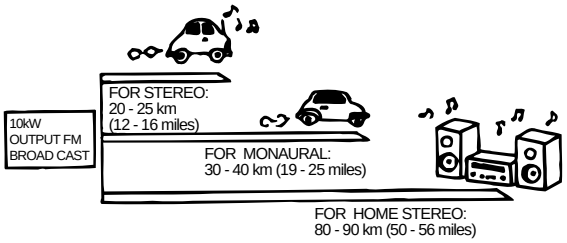
STEP 4. Check that there is no noise.

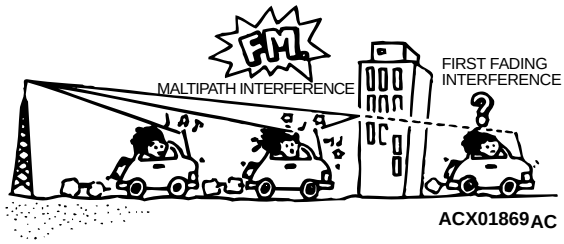
Q: Does noise still exist?

YES : 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.

NO : Normal.

INSPECTION PROCEDURE 7: Noise Appears at Certain Places when Traveling (FM).





DIAGNOSIS

NOTE: About FM waves: FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

1. The signal becomes weak as the distance from the station's transmission antenna increases. This may depend on the signal strength of the transmitting station and intervening geographical formation of buildings. 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 becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the station transmitter and the vehicle), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. During traveling, 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 wave to boost resistance to interference.
6. Suppress high tones to reduce noise.
7. Extend antenna completely.

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 impossible. 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 8: Mixed with Noise, Only at Night (AM).

The following factors can be considered as possible causes of noise appearing at night.

1. Factors due to signal conditions: Due to the fact that long-distance signals are more easily received at night, even stations that are received without problem during the day may experience interference in a general worsening of reception conditions. The weaker a station is the more susceptible it is to interference, and a change to different station or the appearance of a beating sound* may occur.

   NOTE: Beat sound: Two signals close in frequency interfere with each other, creating a repetitious high-pitched sound. This sound is generated not only by sound signals but electrical waves as well.*
2. Factors due to vehicles noise: Generator noise may be a cause.

DIAGNOSIS

STEP 1. Check that the noise still obvious even when the lights are off.

Q: Is the noise still obvious even when the lights are off?
YES : Go to Step 2.
NO : Go to Step 3.

STEP 2. Check hat the following actions.
(1) Tune to a station with a stronger wave.
(2) Tune to a station with a stronger wave without completely extending the antenna (Whip antenna).

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.

INSPECTION PROCEDURE 9: Broadcasts can be Heard but Both AM and FM have a lot of Noise.

DIAGNOSIS

STEP 1. Check 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 12 P.54A-190.)

STEP 2. Check that the following actions disappear the noise.
(1) Tune to a station with a stronger wave.
(2) Extend the antenna completely (Mast antenna).
(3) 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. Check 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 that the antenna plug properly connected to the radio?

Q: Is the antenna plug properly connected to the radio?
YES : Go to Step 7.
NO : Go to Step 5.

STEP 5. Check 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. Check 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 8.) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

NOTE: Furthermore, the amount of interference will be comparatively less for vehicles equipped with a diversity antenna system. If there is an equivalent amount of distortion in vehicles or radios of the same type, then differences will be because of differences in antenna systems, and this should be explained to the user.*

NOTE: Diversity antenna system: A system where two types of antenna (glass main antenna and glass sub antenna) are equipped and the antenna that provides the best reception car be selected.*

Q: Is the antenna in good condition?
YES : Consult the radio manufacturer's service center.
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 10: There is More Noise on Either AM or FM.

DIAGNOSIS
There is much noise only on AM. Due to differences in AM and FM systems, AM is more susceptible to noise interference.

STEP 1. Check that there is noise under the following state(s).
- A motorcycle was passing.
- Lighting was flashing.
- A vehicle passed close by, but it appeared to be a vehicle generating a particularly large amount of noise radiation.
- Passed beneath a power line.
- Passed beneath a telephone line.
- Passed close by a signal generator.
- Passed close by some other sources of electrical noise.
- Passed under a bridge.

Q: Is there noise in the above states?
YES : Go to Step 3.
NO : Go to Step 2.

STEP 2. Continue to check for static; when static is detected, check for the conditions listed above.

Q: Is there noise in the state described in Step 1?
YES : Noise prevention on the radio side is difficult. If the problem is particularly worse than other radios, consult a service center.
NO : Go to Step 3.

STEP 3. Check noise prevention on the radio side is difficult.

Q: Is the noise level worse than other radios?

YES : Consult a service center. Noise encountered during FM reception only. Due to differences in FM and AM systems, 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 8.) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to Furthermore, the amount of interference will be comparatively less for vehicles equipped with a diversity antenna system*. If there is an equivalent amount of distortion in vehicles or radios of the same type, then differences will be because of differences in antenna systems, and this should be explained to the user. a problem with the radio.> Furthermore, the amount of interference will be comparatively less for vehicles equipped with a diversity antenna system*. If there is an equivalent amount of distortion in vehicles or radios of the same type, then differences will be because of differences in antenna systems, and this should be explained to the user.

NO : f the noise level is roughly the same as other radios, there is no action to be taken.

INSPECTION PROCEDURE 11: There is Noise when Starting the Engine.

DIAGNOSIS

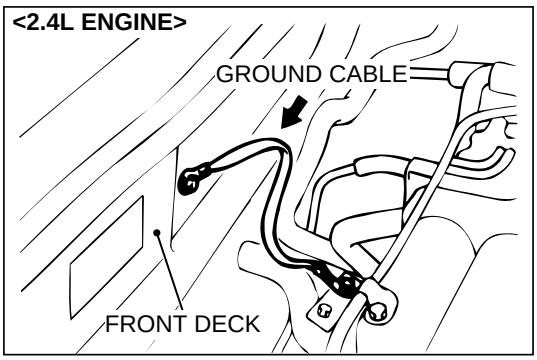
⚠ CAUTION

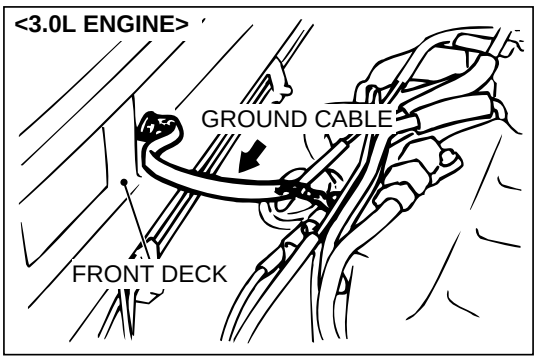
- **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
- **Check that there is no external noise. Since failure to do this may result in an incorrect diagnosis due to the inability to identify the noise source, this operation must be performed.**
- **Noise prevention should be performed by suppressing strong sources of noise step by step.**

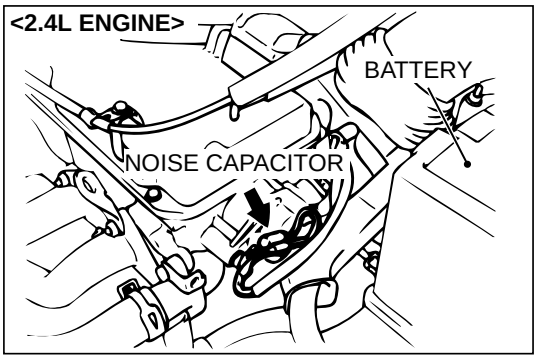
NOTE: Capacitor: The capacitor does not pass DC current, but as the number of waves increases when it passes AC current, impedance (resistance against AC) decreases, and current flow is facilitated. A noise suppressing capacitor which take advantage of this property is inserted between the power line for the noise source and the ground. This suppresses noise by grounding the noise component (AC or pulse signal) to the body of the vehicle.

NOTE: Coil: The coil passes DC current, but impedance rises as the number of waves increases relative to the AC current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.

NOISE TYPE SOUNDS ARE IN PARENTHESES	CONDITIONS	CAUSE	REMEDY
AM, FM: ignition noise (popping, snapping, cracking, buzzing)	• Increasing the engine speed causes the generator whine sound to speed up and the volume to decrease • Disappears when the ignition switch turned to "ACC."	• Mainly due to the spark plugs • Due to engine noise	• Check or replace the ground cable. • Check or replace the noise capacitor. <2.4L ENGINE>
Other electrical components	–	Noise may occur as the electrical components become older.	Repair or replace the electrical components.
Static electricity (cracking, crinkling)	• Disappears when the vehicle is completely stopped. • Severe when the clutch is engaged	Occurs when parts or wiring move for some reason and contact metal parts of the body.	Return parts or wiring to their proper position.
Static electricity (cracking, crinkling)	• Various noise are produced depending on the body part of the vehicle.	Due to removal of the front hood, bumpers, exhaust pipe and muffler, suspension, etc.	Ground parts by bonding. Cases where the problem is not eliminated by a signal response to one area are common, due to several body parts being imperfectly grounded.







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INSPECTION PROCEDURE 12: Some Noise Appears When There is Vibration or Shocks During Traveling.

DIAGNOSIS

STEP 1. Check that the connectors are properly connected.

NOTE: For the corresponding connectors, etc., refer to GROUP 90, Audio System <vehicles without amplifier P.90-266> or <vehicles with amplifier P.90-270.>

Q: Are the connectors properly connected?
YES : Go to Step 2.
NO : Check the condition of the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that there is no noise.

STEP 2. Check that 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

NOTE: Static electricity noise: Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. Since no measures can be taken 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 3.
NO : It may be static electricity noise.

STEP 3. Check that the radio correctly grounded.

Q: Is the radio correctly grounded?
YES : Go to Step 4.
NO : Tighten the screw securely. Check that there is no noise.

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STEP 4. Check that the antenna is correctly grounded. (If noise appears when the antenna is moved, this means the ground is not securely connected.)

Q: Is the antenna correctly grounded?
YES : Replace the radio. Check that there is no noise.
NO : If rust is present on the antenna ground screw, clean off the rust and tighten the ground screw securely. Check that there is no noise.

INSPECTION PROCEDURE 13: Noise Sometimes Appears on FM during Traveling.

DIAGNOSIS

STEP 1. Retune the radio, and check that no noise appears.

Q: Does the problem clear up when returned?
YES : Check that there is no noise.
NO : Go to Step 2.

STEP 2. Check that the noise appears only in certain locations and only with certain stations.

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 beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

Q: Does the problem appear only in certain locations and only with certain stations?
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 the connectors are properly connected.

NOTE: For the corresponding connectors, etc., refer to Audio System <vehicles without amplifier P.90-266> or <vehicles with amplifier P.90-270.>

Q: Are the connectors properly connected?
YES : Go to Step 4.
NO : Check the condition of the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that there is no noise.

STEP 4.Check that noise appears when the radio switch is turned on while the vehicle is stopped.

NOTE: Static electricity noise: Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. There is 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 5.
NO : It may be static electricity noise.

STEP 5. Check that the radio is correctly grounded.

Q: Is the radio correctly grounded?
YES : Go to Step 6.
NO : Tighten the screw securely. Check that there is no noise.

STEP 6. Check that the antenna is correctly grounded. (If noise appears when the antenna is moved, this means the ground is not securely connected.)

Q: Is the antenna correctly grounded?
YES : Replace the radio. Check that there is no noise.
NO : If rust is present on the antenna ground screw, clean off the rust and tighten the ground screw securely. Check that there is no noise.

INSPECTION PROCEDURE 14: Ever-Present Noise.

DIAGNOSIS
Noise is often created by the following factors, and often the radio is OK when it is checked individually.
- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions
- Time period

For this reason, if there are still problems with noise even after the measures described in inspection procedure 7 to 14 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc. and contact the radio manufacturer's service center.

INSPECTION PROCEDURE 15: There is Noise but No Reception for Both AM and FM or No Sound from AM, or No Sound from FM.

DIAGNOSIS

STEP 1. Make sure that the check is being conducted under special electrical field conditions.
Example: In an underground garage or inside a building.

Q: Is the check being conducted under special electrical field conditions?
YES : Go to Step 2.
NO : Go to Step 3.

STEP 2. Check that proper performance is obtained when the vehicles is moved.

Q: Is proper performance obtained when the vehicle is moved?
YES : The radio should sound normally.
NO : Go to Step 3.

STEP 3. Check that tuning solve the problem.

Q: Does tuning solve the problem?
YES : The radio should sound normally.
NO : Go to Step 4.

STEP 4. Check the antenna plug and radio unit connected

Q: Are the antenna plug and radio unit properly connected?
YES : Go to Step 5.
NO : Reconnect the antenna plug and radio unit properly. The radio should sound normally.

STEP 5. Check that the problem disappear if another radio is used.

Q: Does the problem disappear if another radio is used?
YES : Replace the radio. The radio should sound normally.
NO : Refer to Inspection Procedure 33 "Motor antenna won't extend or retract P.54A-202" and Inspection Procedure 34 "Motor antenna extends and retracts but does not receive radio signal P.54A-211."

INSPECTION PROCEDURE 16: Poor Reception.

DIAGNOSIS

STEP 1. Make sure that the check being conducted under special electrical field conditions.

Q: Is the check being conducted under special electrical field conditions (such as in an underground garage or inside a building?
YES : Go to Step 2.
NO : Go to Step 3.

STEP 2. Check that proper performance is obtained when the vehicle is moved.

Q: Is proper performance obtained when the vehicle is moved?
YES : Check that a poor reception is resolved.
NO : Go to Step 3.

STEP 3. Check that tuning solves the problem.

Q: Does tuning solve the problem?
YES : Check that a poor reception is resolved.
NO : Go to Step 4.

STEP 4. Check that the problem is limited to the reception of a specific radio station from a specific position.

NOTE: Multipath noise and fading noise: Because the frequency of FM waves is 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 beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

Q: Is the problem limited to the reception of a specific radio station from a specific position?
YES : Go to Step 5.
NO : Check that a poor reception is resolved.

STEP 5. Check that the antenna plug is connected to the radio properly.

Q: Is the antenna plug connected to the radio properly?
YES : Go to Step 6.
NO : Reconnect the antenna plug and radio unit properly. Check that a poor reception is resolved.

STEP 6. Check that the problem disappear when another radio is used?

Q: Does the problem disappear if another radio is used?
YES : Replace the radio. Check that a poor reception is resolved.
NO : Refer to Inspection Procedure 33 "Motor antenna won't extend or retract P.54A-202" and Inspection Procedure 34 "Motor antenna extends and retracts but does not receive radio signal P.54A-211."

INSPECTION PROCEDURE 17: Distortion on AM or on Both AM and FM.

DIAGNOSIS

STEP 1. Check how much distortion there is.

Q: How much distortion is there?
Occasional distortion : Go to Step 2.
Constant distortion : Go to Step 3.

STEP 2. Check that there is distortion near the radio station.

Q: Is there distortion near the radio station?
YES : The antenna may receive too strong signal.
NO : Go to Step 3.

STEP 3. Check that the speaker cords are in contact with the cone paper.

Q: Are the speaker cords in contact with the cone paper?
YES : Move the cords away from the cone paper. Check that a distortion is resolved.
NO : Go to Step 4.

STEP 4. Remove the speakers, and check for torn cone paper or foreign material.

Q: Is there torn cone paper or foreign material?
YES : Repair or replace the speakers. Check that a distortion is resolved.
NO : Go to Step 5.

STEP 5. Check for distortion with the speaker installed.

Q: Does a distortion occur?
YES : Install the speaker securely. Check that a distortion is resolved.
NO : Replace the radio. Check that a distortion is resolved.

INSPECTION PROCEDURE 18: Distortion on FM Only.

DIAGNOSIS

STEP 1. Check that the distortion persist when the radio is turned to another station.

Q: Does the distortion persist when the radio is turned to another station?
YES : Go to Step 2.
NO : The signal from that station is too weak.

STEP 2. Check that the distortion increase or decrease when the vehicle is moved.

Q: Does distortion increase or decrease when the vehicle is moved?
YES : The cause may be multipath noise.
NO : Replace the radio. Check that a distortion is resolved.

INSPECTION PROCEDURE 19: Using the Auto Select Function, Too Few Automatic Stations are Selected.

DIAGNOSIS

STEP 1. Consider the number of radio stations. Check that there are enough radio stations in the area.

Q: Consider the number of radio stations. Are there enough in the area?
YES : Go to Step 2.
NO : Confirm automatic selection selects the strongest signals in the area. If not, go to Step 3.

STEP 2. Consider the distance to the radio stations. Check that the transmitting antennas are within 2 miles.

Q: Consider the distance to the radio stations. Are the transmitting antennas within 2 miles?
YES : Go to Step 3.
NO : Confirm automatic selection selects the strongest signals in the area. If not, go to Step 4.

STEP 3. Make sure that the check is being conducted under special electrical field conditions.

Q: Is the check being conducted under special electrical field conditions (such as in an underground garage or inside a building)?
YES : Go to Step 4.
NO : Go to Step 5.

STEP 4. Check that the proper performance is obtained when the vehicle is moved.

Q: Is proper performance obtained when the vehicle is moved?
YES : The auto-select function should operate normally.
NO : Go to Step 5.

STEP 5. Check that the antenna plug is connected to the radio properly.

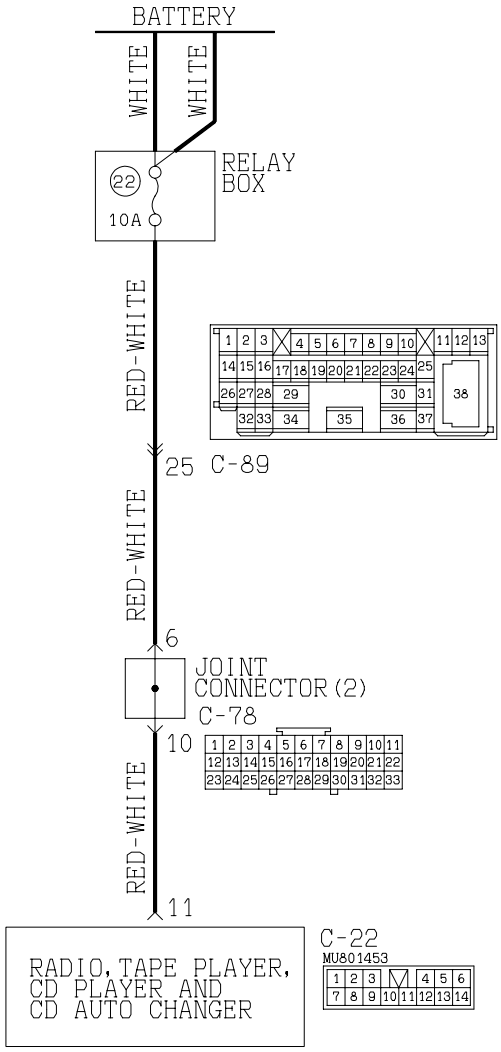
Q: Is the antenna plug connected to the radio properly?
YES : Go to Step 6.
NO : The antenna plug is reconnected to the radio properly. The auto-select function should operate normally.

STEP 6. Check that the problem disappear s when another radio is used.

Q: Does the problem disappear if another radio is used?
YES : Replace the radio. The auto-select function should operate normally.
NO : Refer to Inspection Procedure 33 "Motor antenna won't extend or retract P.54A-202" and Inspection Procedure 34 "Motor antenna extends and retracts but does not receive radio signal P.54A-211."

INSPECTION PROCEDURE 20: Preset Station are Erased.

Memory Backup Power Circuit



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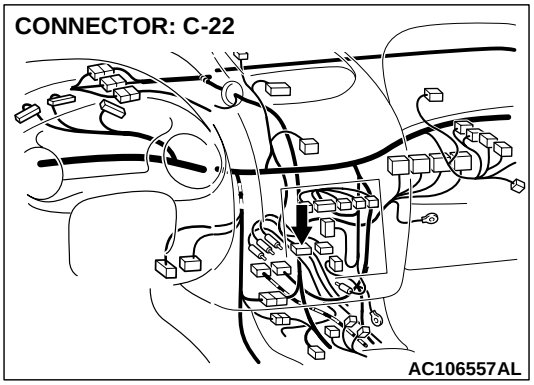
CONNECTOR: C-22



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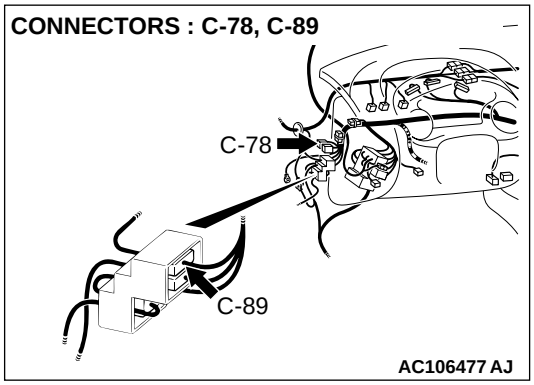
CONNECTORS : C-78, C-89



AC106477AJ

CIRCUIT OPERATION
The power is constantly supplied to the radio, tape player, CD player and CD auto changer.

TECHNICAL DESCRIPTION (COMMENT)
The cause is probably a faulty radio, tape player, CD player and CD auto changer memory backup power supply circuit system.

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TROUBLESHOOTING HINTS

- Damaged wiring harness or connector.
- Malfunction of the radio, tape player, CD player and CD auto changer.

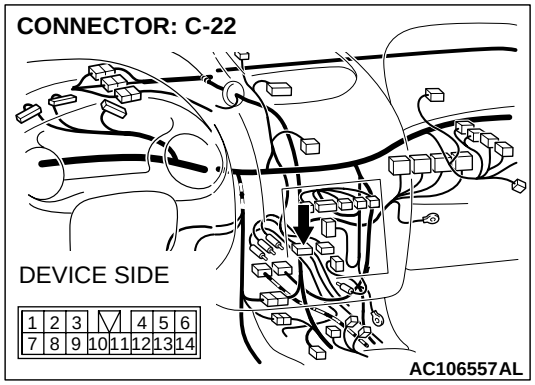
DIAGNOSIS

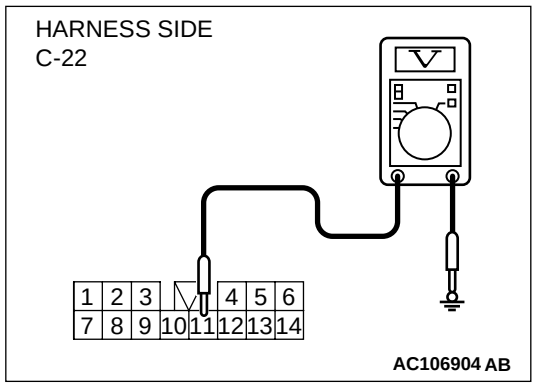
Required Special Tool:

- MB991223: Harness set

STEP 1. Check the radio, tape player, CD player and CD auto changer memory backup power supply circuit by back probing.

(1) Do not disconnect radio, tape player, CD player and CD auto changer connector C-22.





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

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

YES : Replace the radio, tape player, CD player and CD auto changer. Check that a memory is retained.

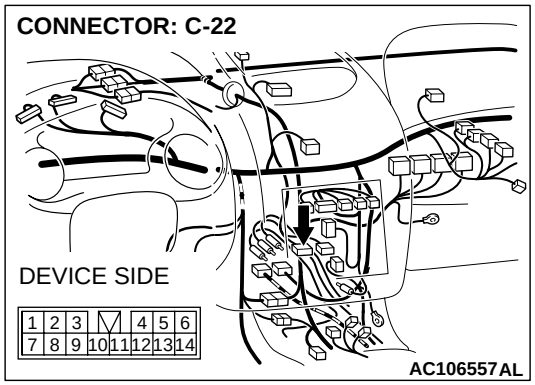
NO : Go to Step 2.

STEP 2. Check harness connector C-22 at the radio, tape player, CD player and CD auto changer for damage.

Q: Is harness connector C-22 in good condition?

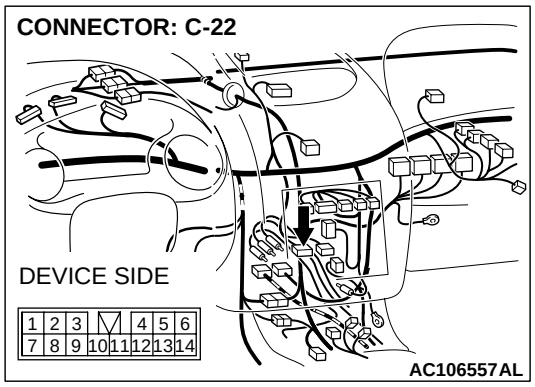
YES : Go to Step 3.

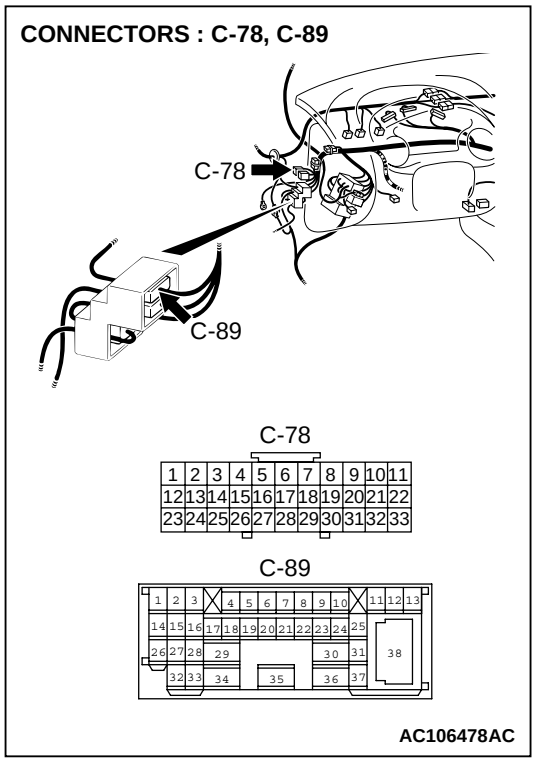
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that a memory is retained.



STEP 3. Check the wiring harness between radio, tape player, CD player and CD auto changer connector C-22 (terminal 11) and battery.

NOTE: After inspecting intermediate connector C-89 and joint connector C-78, inspect the wire. If intermediate connector C-89 and joint connector C-78 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.





Q: Are the wiring harness between the connector C-22 (terminal 11) and battery in good condition?

YES : Replace the radio, tape player, CD player and CD auto changer. Check that a memory is retained.

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

INSPECTION PROCEDURE 21: CD can Not be Inserted.

DIAGNOSIS

STEP 1. Check that the shutter open when a CD is inserted.

NOTE: If a CD is already loaded, does the shutter not open to allow insertion when another CD is inserted?

Q: Does the shutter open when a CD is inserted?

YES : Go to Step 2.

NO : Take out the CD. Check that a CD can be inserted.

STEP 2. Check that the CD ejected from approximately 15 mm (0.6 inch) inside the insertion panel even though it can be inserted.

NOTE: If the key switch is not at "ACC" or "ON," the CD stops at depth of 15 mm below the panel surface even when it is inserted, and it will be rejected when pushed farther?

Q: Is the CD ejected from approximately 15 mm inside the insertion panel even though it can be inserted?
YES : Go to Step 3.
NO : Check that a CD can be inserted.

STEP 3. Check that "E" (error) is displayed even though the CD is inserted completely.

NOTE: Even though the CD is loaded, "E" (error) is 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 "E" (error) displayed and the CD ejected?
YES : Go to Step 4.
NO : Check that a CD can be inserted.

STEP 4. Check the CD.

Q: Is the labeled side faced downward?
YES : Insert the CD correctly.
NO : Go to Step 5.

STEP 5. Check the CD.

Q: Is the recorded face of the CD dirty?
YES : Clean the CD.
NO : Go to Step 6.

STEP 6. Check the CD.

Q: Is there dew on the recorded face of the CD?
YES : Remove the dew.
NO : Replace the CD. Check that a CD can be inserted.

INSPECTION PROCEDURE 22: No Sound. (CD only)

DIAGNOSIS

STEP 1. Check that the CD play properly if another CD is inserted.

Q: Does it play properly if another CD is inserted?
YES : The CD used is defective. The CD player should sound normally.
NO : Go to Step 2.

STEP 2. Return it to the normal temperature, and recheck the operation. Check that the CD player operate properly.

Q: Return it to the normal temperature, and recheck the operation. Does it operate properly?
YES : The CD player should sound normally.
NO : Replace the CD player. The CD player should sound normally.

INSPECTION PROCEDURE 23: CD Sound Skips.

DIAGNOSIS

STEP 1. Malfunction occurrence state.

Q: When does a malfunction occur?
While parking : Go to Step 2.
While driving : Stop vehicle, go to Step 4.

STEP 2. Check that the CD face is scratched or dirty.

Q: Is the CD face scratched or dirty?
YES : CD is defective, or clean the CD. Check that a CD sound skip is resolved.
NO : Go to Step 3.

STEP 3. Check that the plays properly if another CD is inserted.

Q: Does it play properly if another CD is inserted?
- **YES :** CD is defective. Check that a CD sound skip is resolved.
- **NO :** Replace the CD player. Check that a CD sound skip is resolved.

STEP 4. Check that sound skip when the side of the CD player is tapped.

NOTE: Check by using a proper CD which is free from scratches, dirt or any other abnormality.

Q: Does sound skip when the side of the CD player is tapped?
- **YES :** Securely mount the CD player. Check that a CD sound skip is resolved.
- **NO :** Check the sound skipping state in detail while driving, and then contact a service shop. Check that a CD sound skip is resolved.

INSPECTION PROCEDURE 24: Sound Quality is Poor.

DIAGNOSIS

Check that the play properly if another CD is inserted.
- **YES :** CD used is defective. The sound quality should return to normal.
- **NO :** Replace the CD player. The sound quality should return to normal.

INSPECTION PROCEDURE 25: CD can Not be Ejected.

DIAGNOSIS

STEP 1. Check that the key switch (ignition key) at "ACC" or "ON".

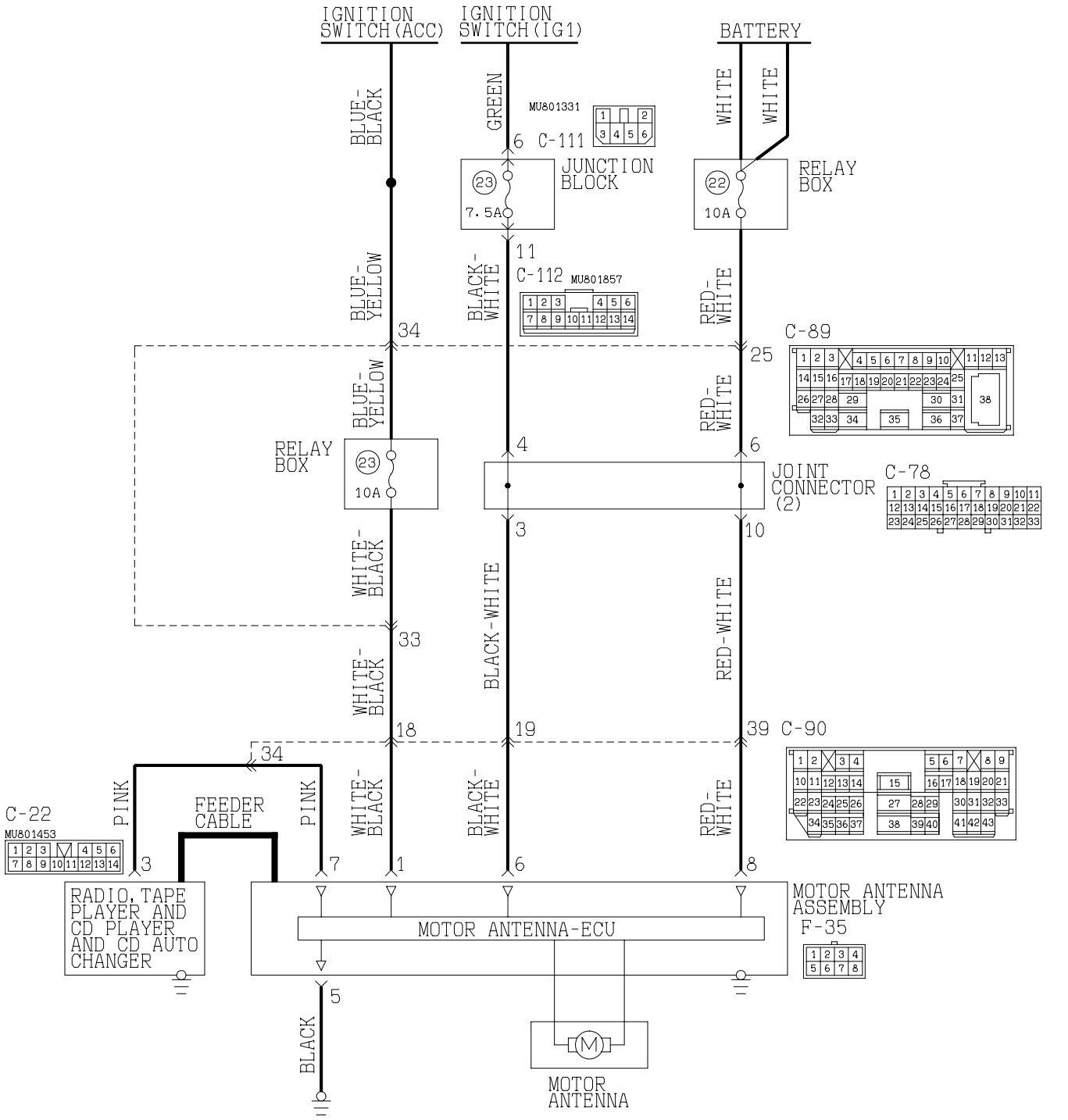
Q: Is the key switch (ignition key) at "ACC" or "ON?"
- **YES :** Go to Step 2.
- **NO :** Check the memory backup power supply circuit. Refer to Inspection Procedure 20 P.54A-197.

STEP 2. Check that the combined amplifier or radio set connected securely.

Q: Is the combined amplifier or radio set connected securely?
- **YES :** If the CD is not ejected, do not discard it, because the player may be damaged. Therefore, contact a service shop for repairs. Check that a CD can be ejected normally.
- **NO :** Connect the connectors securely. Check that a CD can be ejected normally.

INSPECTION PROCEDURE 26: Motor Antenna won't Extend or Retract.

Motor Antenna Circuit



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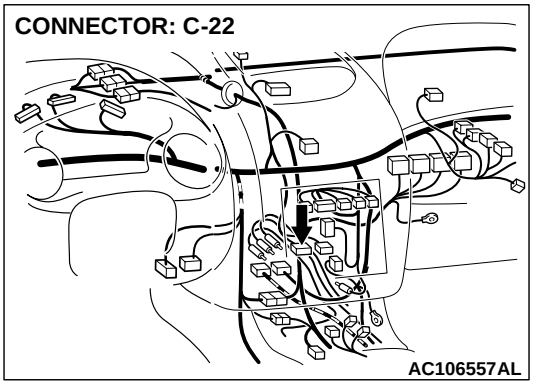
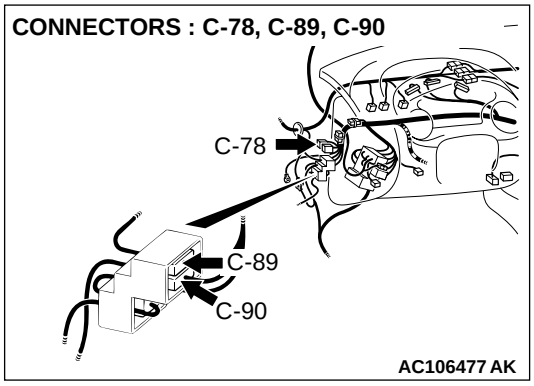
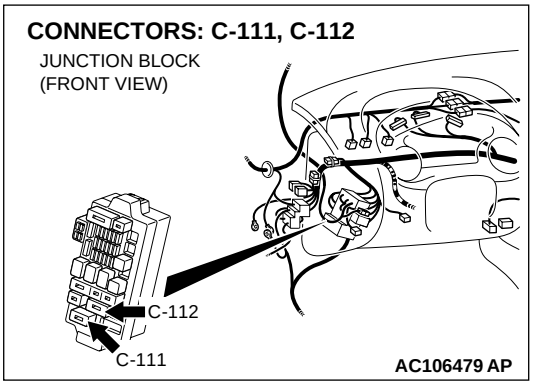
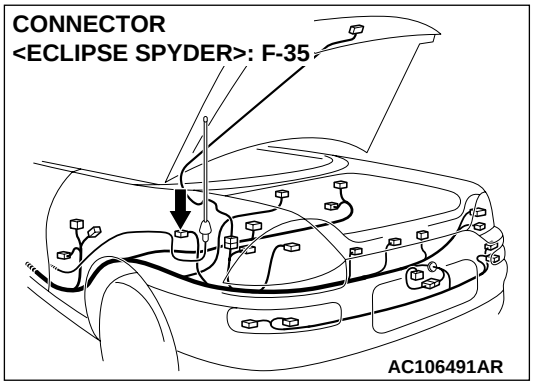
TSB Revision









CIRCUIT OPERATION

The motor antenna-ECU extends or retract the antenna when the radio switch is turned on or off with the ignition switch n the "ACC" or "ON" position.

TECHNICAL DESCRIPTION (COMMENT)

The cause is probably a defective motor antenna circuit system.

TROUBLESHOOTING HINTS

- Damaged wiring harness or connector.
- Malfunction of the motor antenna.
- Malfunction of the motor antenna-ECU

DIAGNOSIS

STEP 1. Check the surface of the antenna pole.

Q: Isn't the surface of antenna pole dirty?

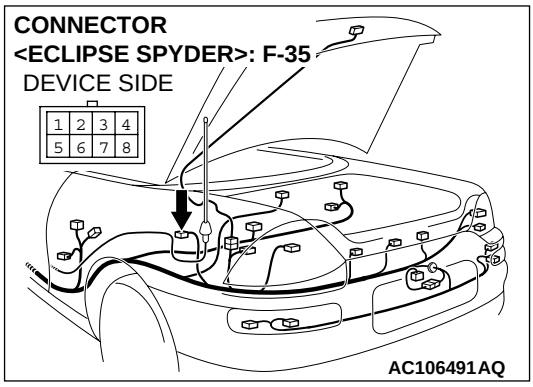
YES : Clean.
NO : Go to Step 2.

STEP 2. Check the motor antenna bent.

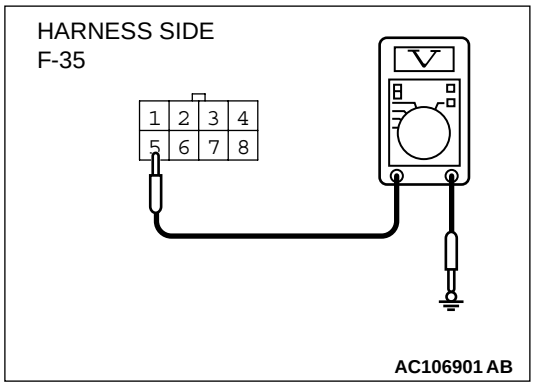
Q: Is the antenna bent?

YES : Repair the bent or replace the antenna pole.
NO : Go to Step 3.

STEP 3. Check the motor antenna assembly ground by backprobing



(1) Do not disconnect motor antenna assembly F-35 connector.

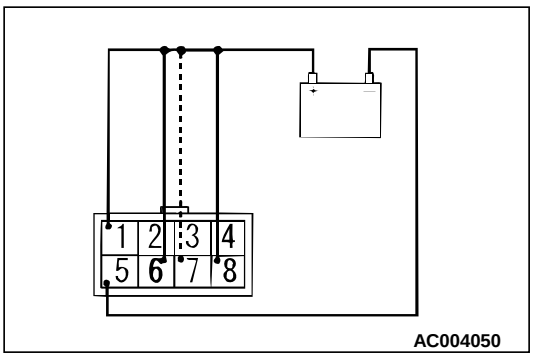


(2) Measure the voltage between terminal number 5 and ground by backprobing.

Q: Is the resistance less than two ohm?

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

STEP 4. Check the motor antenna assembly.

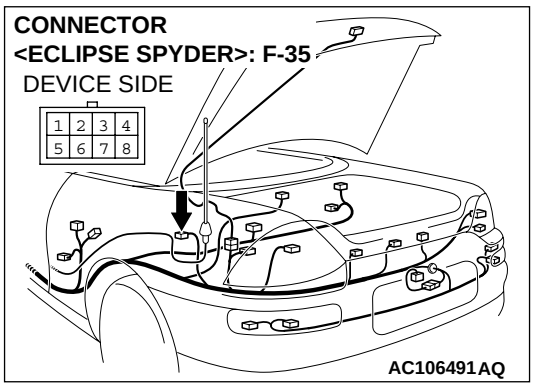


(1) Disconnect motor antenna connector F-35.
(2) Connect the circuit shown in the solid line.
(3) Check that antenna extends when the circuit shown in the dotted line is connected.
(4) Check that antenna retracts when the circuit shown in the dotted line is disconnected.

Q: Is motor antenna in good condition?

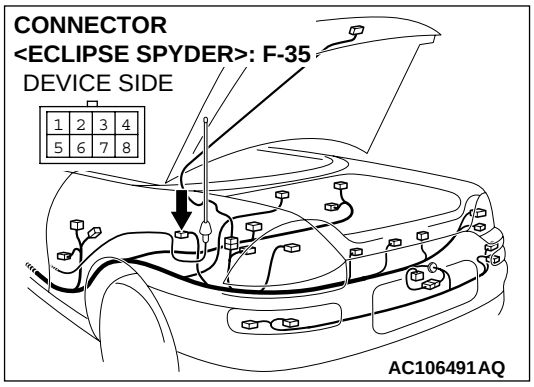
YES : Go to Step 7.
NO : Replace the motor antenna.

STEP 5. Check motor antenna connector F-35 for damage.



Q: Are motor antenna connector F-35 in good condition?

YES : Go to Step 6.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The motor antenna should work normally.

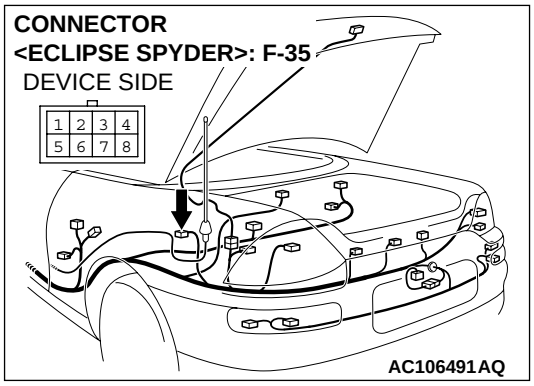


STEP 6. Check the wiring harness between motor antenna connector F-35 (terminal 5) and ground.

Q: Are the wiring harness between motor antenna connector F-35 (terminal 5) and ground in good condition?

YES : There is no action to be taken.

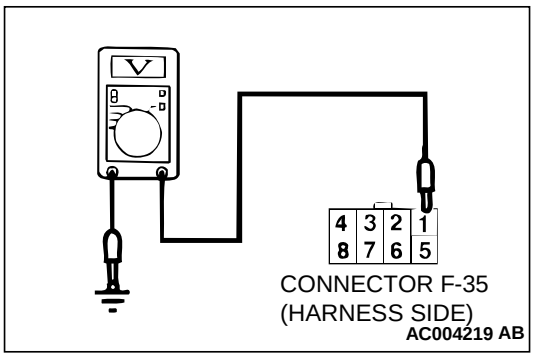
NO : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The motor antenna should work normally.



STEP 7. Check the motor antenna assembly power supply (ignition switch "ACC") by backprobing

(1) Do not disconnect motor antenna assembly F-35 connector.

(2) Turn the ignition switch "ACC."

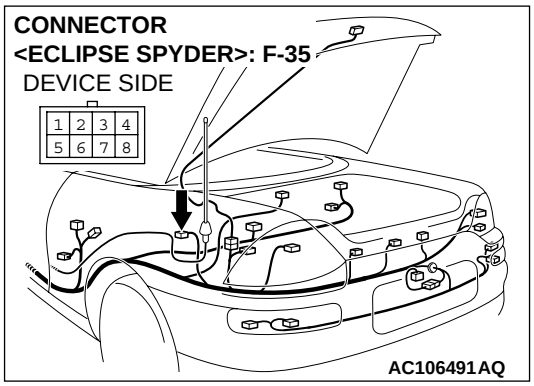


(3) Measure the voltage between terminal number 1 and ground by backprobing.

Q: Are the voltages proximately 12 volts (battery positive voltage)?

YES : Go to Step 10.

NO : Go to Step 8.

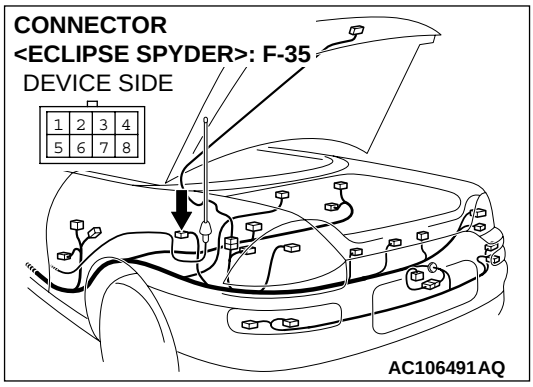


STEP 8. Check motor antenna connector F-35 for damage.

Q: Are motor antenna connector F-35 in good condition?

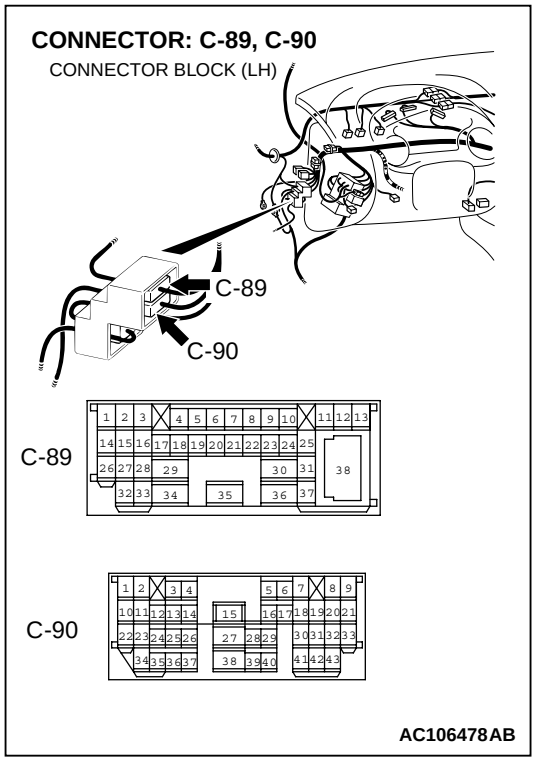
YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The motor antenna should work normally.



STEP 9. Check the wiring harness between motor antenna connector F-35 (terminal 1) and ignition switch (ACC).

NOTE: After inspecting intermediate connector C-89 and C-90, inspect the wire. If intermediate connector C-89 and C-90 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

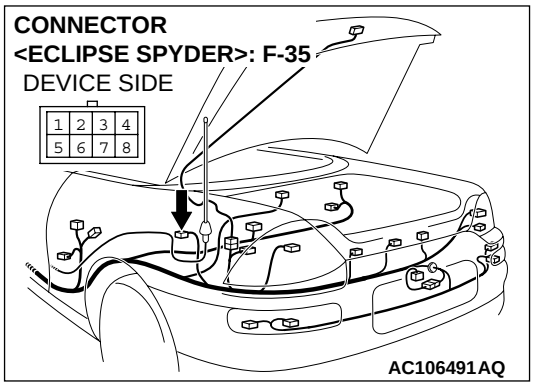


Q: Are the wiring harness between motor antenna connector F-35 (terminal 1) and ignition switch (ACC) in good condition?

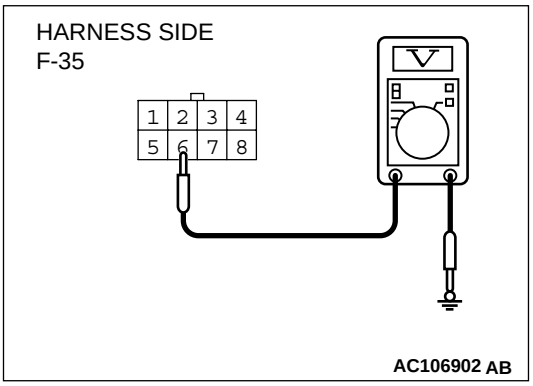
YES : There is no action to be taken.

NO : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The motor antenna should work normally.

STEP 10. Check the motor antenna assembly power supply circuit [ignition switch "ON (IG1)"] by backprobing



(1) Do not disconnect motor antenna F-35 connector.
(2) Turn the ignition switch "ON."

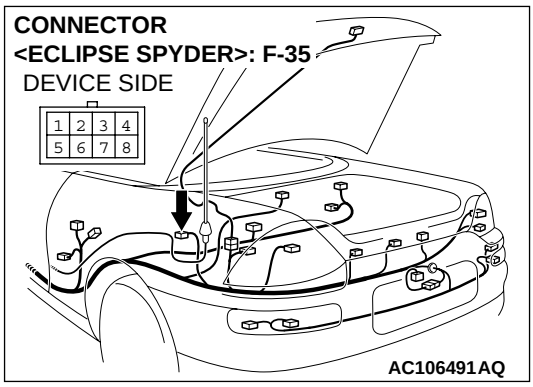


(3) Measure the voltage between terminal number 6 and ground by backprobing.

Q: Are the voltages proximately 12 volts (battery positive voltage)?

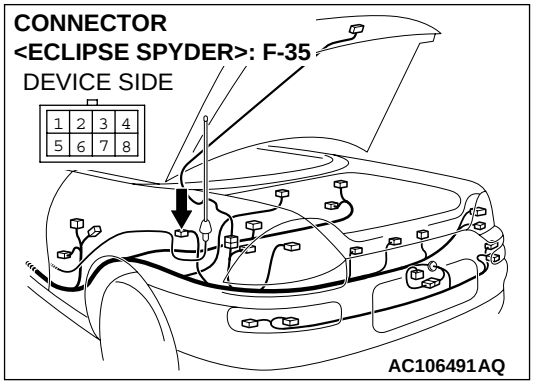
YES : Go to Step 13.
NO : Go to Step 11.

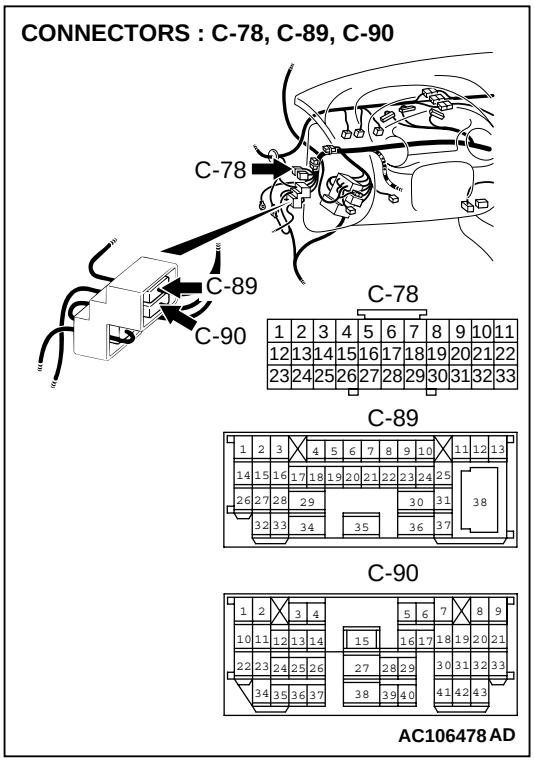
STEP 11. Check motor antenna connector F-35 for damage.



Q: Are motor antenna connector F-35 in good condition?

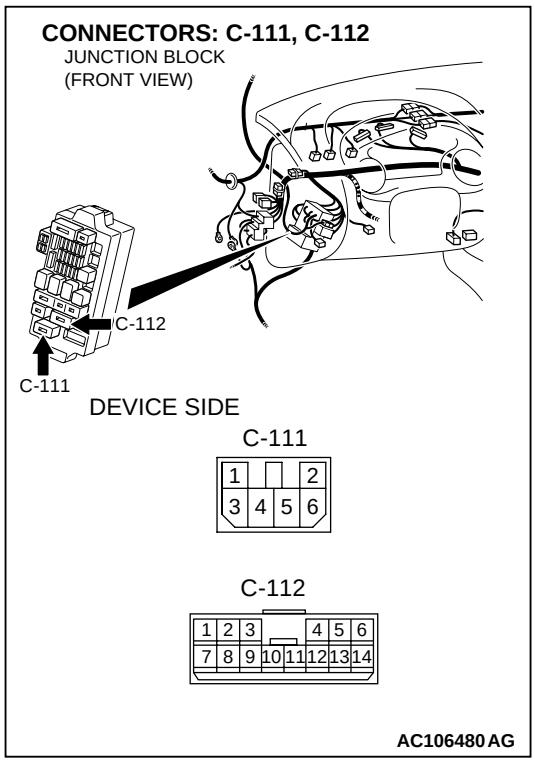
YES : Go to Step 12.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The motor antenna should work normally.





STEP 12. Check the wiring harness between motor antenna connector F-35 (terminal 6) and ignition switch (IG1).

NOTE: After inspecting junction block connector C-111, C-112 and intermediate connector C-89, C-90 and joint connector C-78, inspect the wire. If junction block connector C-111, C-112 and intermediate connector C-89, C-90 and joint connector C-78 are damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



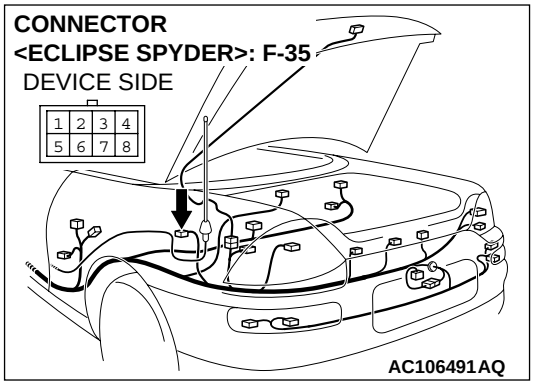
Q: Are the wiring harness between motor antenna connector F-35 (terminal 6) and ignition switch (IG1) in good condition?

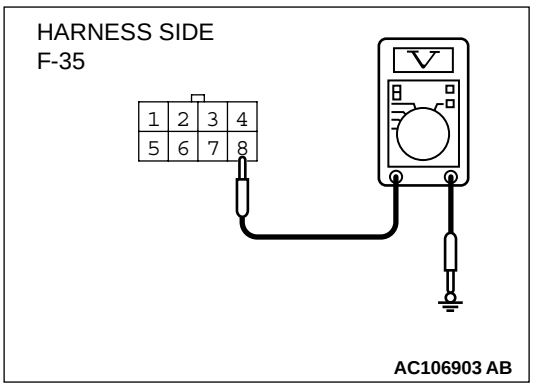
YES : There is no action to be taken.

NO : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 13. Check the motor antenna assembly power supply circuit (battery) by backprobing

(1) Do not disconnect motor antenna F-35 connector.



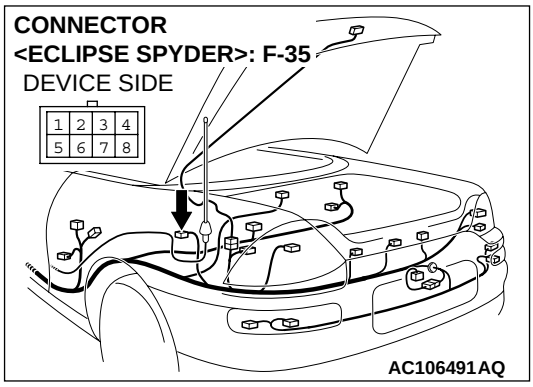


(2) Measure the voltage between terminal number 8 and ground by backprobing.

Q: Are the voltages proximately 12 volts (battery positive voltage)?

YES : Replace the motor antenna assembly.

NO : Go to Step 14.

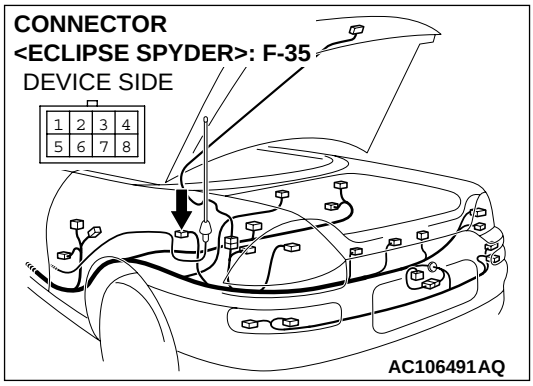


STEP 14. Check motor antenna connector F-35 for damage.

Q: Are motor antenna connector F-35 in good condition?

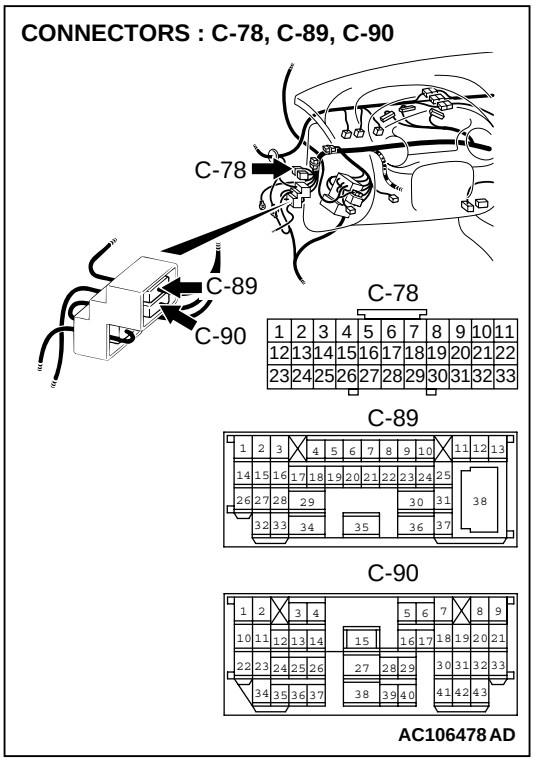
YES : Go to Step 15.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 15. Check the wiring harness between motor antenna connector F-35 (terminal 8) and battery.

NOTE: After inspecting joint connector C-78, intermediate connector C-89 and C-90, inspect the wire. If joint connector C-78, intermediate connector C-89 and C-90 are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

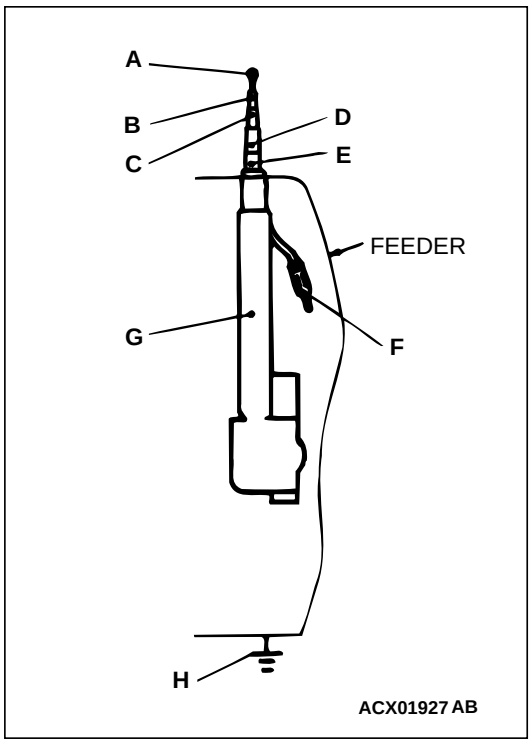


Q: Are the wiring harness between motor antenna connector F-35 (terminal 8) and battery in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

INSPECTION PROCEDURE 27: Motor Antenna Extends and Reracts but does not Receive Radio Signal.



DIAGNOSIS

STEP 1. Is the antenna normal?

Q: Is there continuity on the circuits from F to A, B, C, D and E, the circuit from G to H?

yes : Go to Step 2.

NO : Repair or replace the antenna. Then check the malfunction is eliminated.

STEP 2. Check the motor antenna.

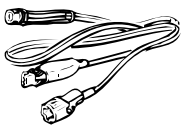
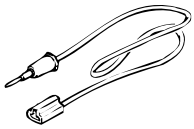
Q: Does the antenna operate normally when a new antenna assembly is directly install to the radio?

YES : Replace the motor antenna assembly.

NO : Radio and tape player may be defective. Carry out troubleshooting of the radio and tape player P.54A-128.

SPECIAL TOOLS

M1544000600191

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  B  C  D  MB991223AC	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	MB991223	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

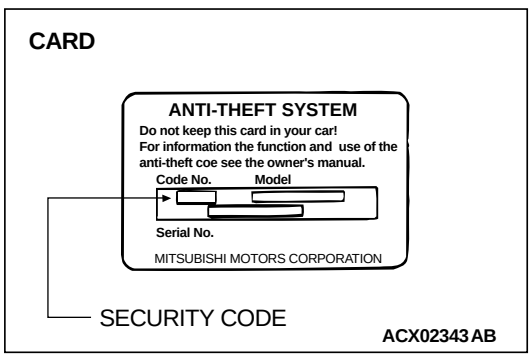
ON-VEHICLE SERVICE

PROCEDURE FOR INPUT OF ANTI-THEFT CODE FOR ANTI-THEFT SYSTEM

M1544004400188

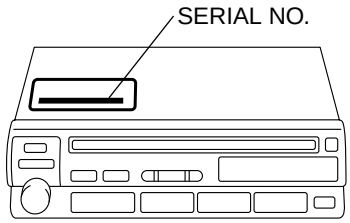
The radio with tape and CD player do not work under the following conditions:
Power supply to the radio with tape and CD player has been suspended for more than 25 seconds continuously by removing the cable from the battery terminal or disconnecting the harness connectors.
The power supply to the radio with tape and CD player has been suspended for more than an hour due to a blown fuse or discharged battery.
If the radio with tape and CD player does not work for these conditions, enter the security code as follows:
The radio, tape player, CD player and CD auto changer has been replaced.

1. Confirm the security code using any of the following methods.
   (1) Use the security code indicated on the cards retained in the vehicle.



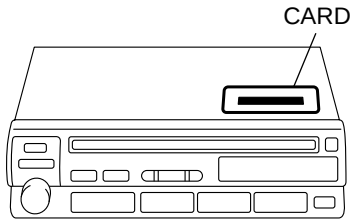
TSB Revision

TYPICAL NAME CARD



AC102576 AB

(2) If the security code is unknown owing to the owner's loss of the card:
   a. Remove the radio with tape and CD player referring to P.54A-217.
   b. Read the serial number stamped on the radio with tape and CD player.
   c. Look up the security code (anti-theft code table) corresponding to the serial number.



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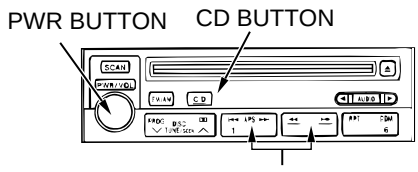
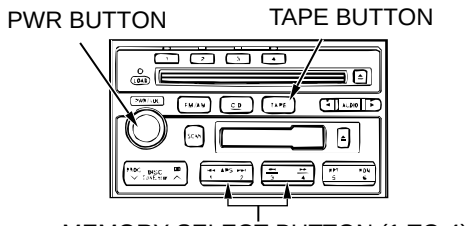
(3) When the radio with tape and CD player is replaced: Use the security code on the cards attached to the upper surface of the replacement radio with tape and CD player.
   NOTE: Deliver the two cards to the owner.

2. Connect the radio to the vehicle harness.
3. Turn the ignition key to the "ACC" or "ON" position.

TYPE 1

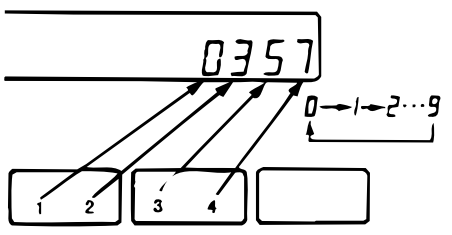


TYPE 2



AC102575 AB

4. Press the "PWR" button, and "code" will be displayed.



ACX01948AB

5. Press number 1 through number 4 memory select button to set the four-digit security code shown on the card. Every time each digit key is pressed, the figure changes as follows: 0 to 1 to 2 to 3 to 4 to 5 to 6 to 7 to 8 to 9 to 0
6. Press the "TAPE" button (type 1 and 3) or "CD" button (type 2), and a beep will be heard. If entered correctly, the radio with tape and CD player will work.
7. If the security code is not accepted, "Err" is displayed. In a few seconds, it will change to "code." Then repeat steps 5 and 6.

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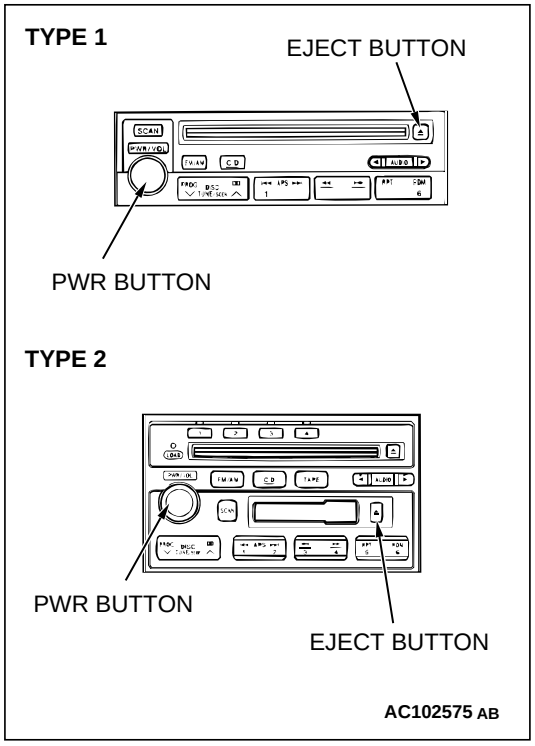
NOTE:

- *NOTE: The anti-theft system will allow three attempts maximum to input the correct code.*
- *NOTE: The second error is displayed as "2 Err." When the third error is made, "3 Err" is displayed and then the display changes to "OFF." If this should occur, the unit will not work any more.*
- *NOTE: To input the security code again, turn the ignition switch to the "ACC" or "ON" position and wait for one hour when "OFF" is displayed. After "OFF" disappears on the display, press the "PWR" button and "code" will be displayed. The security code can be input again.*

Three-minute operation mode

To facilitate replacement or check, the radio with tape and CD player can be operated for three minutes without inputting the security code.

1. Press the "PWR" button and "EJECT" button together to operate the radio with tape and CD player.
2. In three minutes the unit will not be able to work. Then the radio with tape and CD player will be switched off.



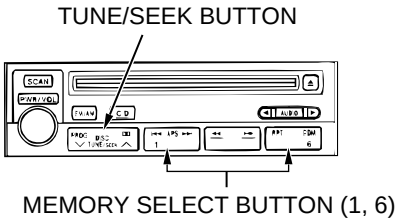
SPEAKER TEST

M1544005400147

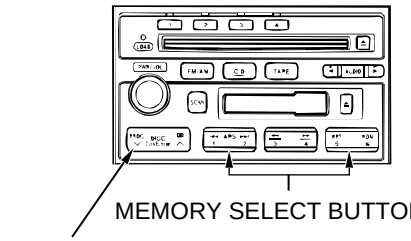
Enter the speaker test mode according to the following steps:

1. Turn the Ignition switch to "ACC" or "ON" position and switch off the radio with tape and CD player.

TYPE 1

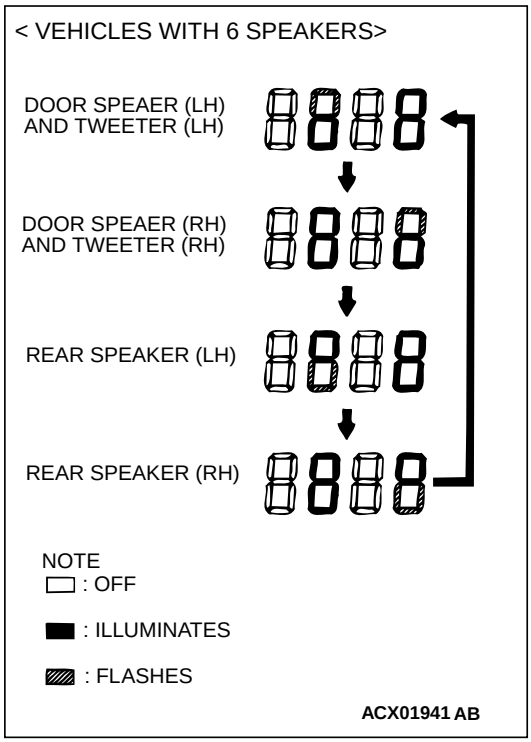


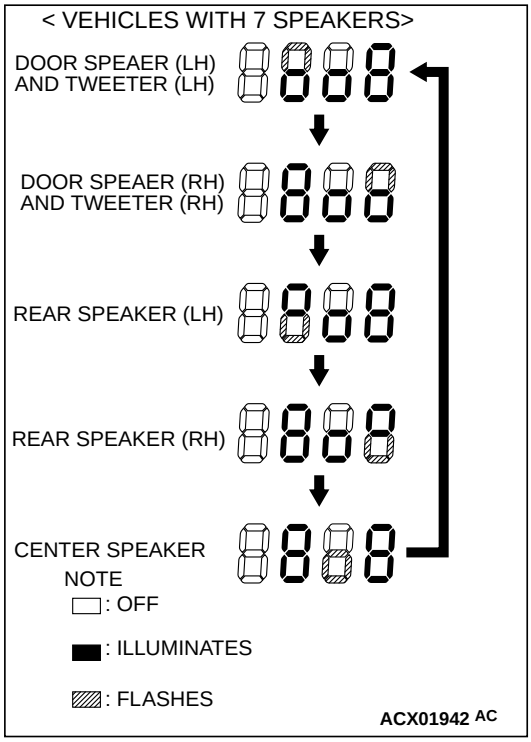
TYPE 2



AC102575 AD

2. Press the following buttons in that order within sixty seconds from step (1).
   (1) Memory select "1" button
   (2) "TUNE/SEEK (DOWN)" button
   (3) "TUNE/SEEK (UP)" button
   (4) Memory select "6" button



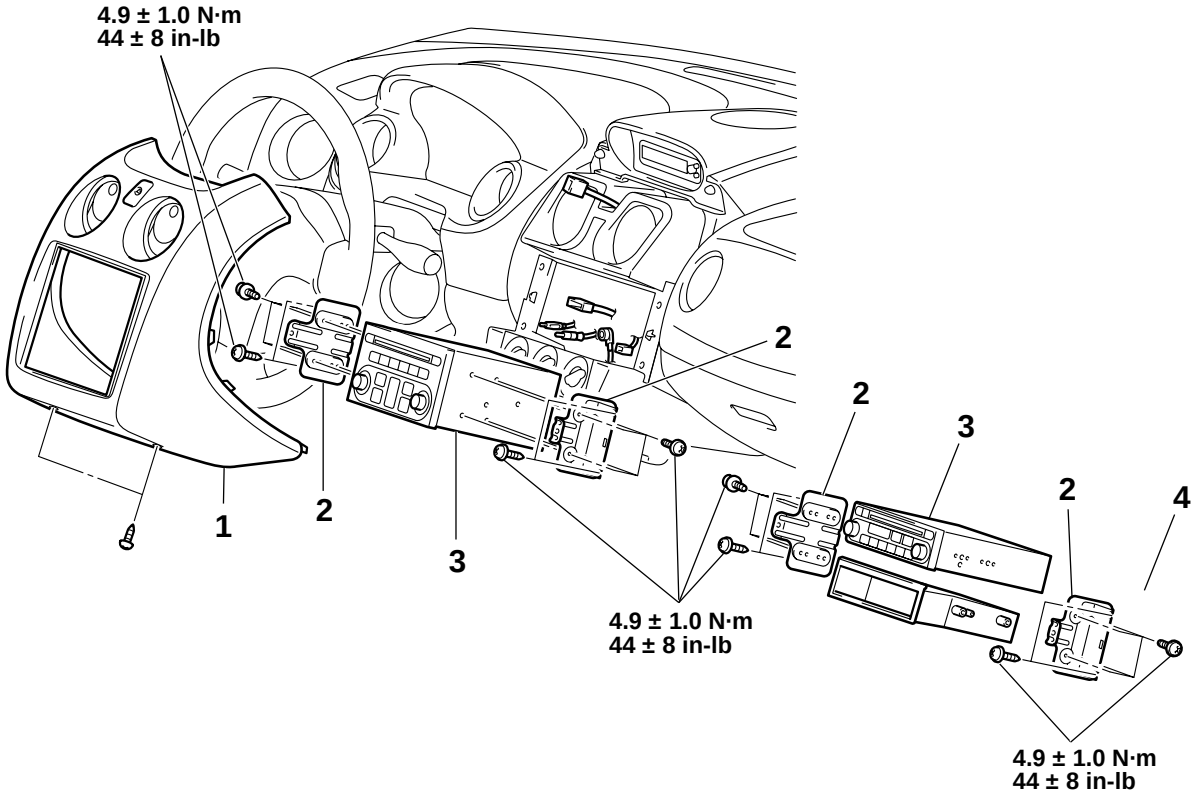


3. Check that the speaker, which is displayed on the multi-center display, sounds (If the memory select "6" button is pressed, the speaker will be changed).
4. If a button other than the memory select "6" button and "EJECT" button (tape or CD) is pressed, or the ignition switch is turned to "LOCK" (OFF) position, you will exit from the speaker test mode.

RADIO WITH TAPE PLAYER AND CD PLAYER

REMOVAL AND INSTALLATION

M1544001400190



RADIO REMOVAL STEPS

1. CENTER PANEL ASSEMBLY (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)

RADIO REMOVAL STEPS (Continued)

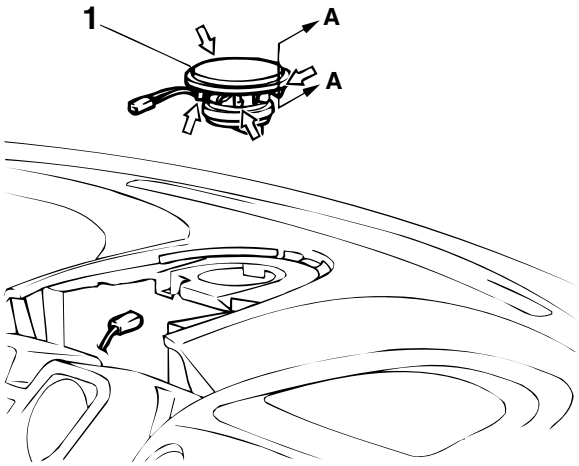
2. RADIO BRACKET
3. RADIO, TAPE CD PLAYER AND CD AUTO CHANGER

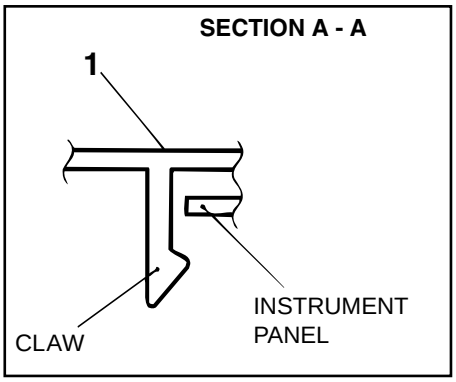
SPEAKER

REMOVAL AND INSTALLATION

M1544002600250

CENTER SPEAKER <VEHICLES WITH CENTER SPEAKER>





NOTE
⇦ : CLAW POSITION

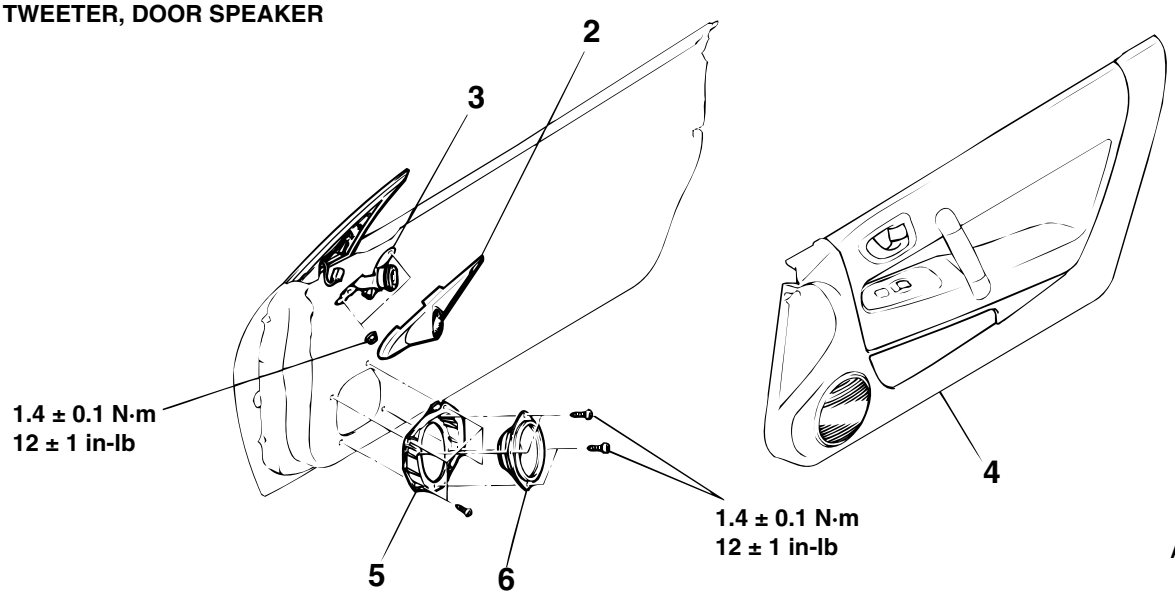
AC001354 AB

REMOVAL STEPS

- MULTI-CENTER DISPLAY (REFER TO P.54A-268.)

1. CENTER SPEAKER

TWEETER, DOOR SPEAKER



AC001355 AB

TWEETER REMOVAL STEPS <VEHICLES WITH TWEETER>

2. TWEETER COVER (REFER TO GROUP 51, DOOR MIRROR – DOOR MIRROR P.51-28.)
3. TWEETER

DOOR SPEAKER REMOVAL STEPS

4. DOOR TRIM (REFER TO GROUP 42, DOOR – DOOR TRIM AND WATERPROOF FILM P.42-54.)
5. DOOR SPEAKER BRACKET
6. DOOR SPEAKER

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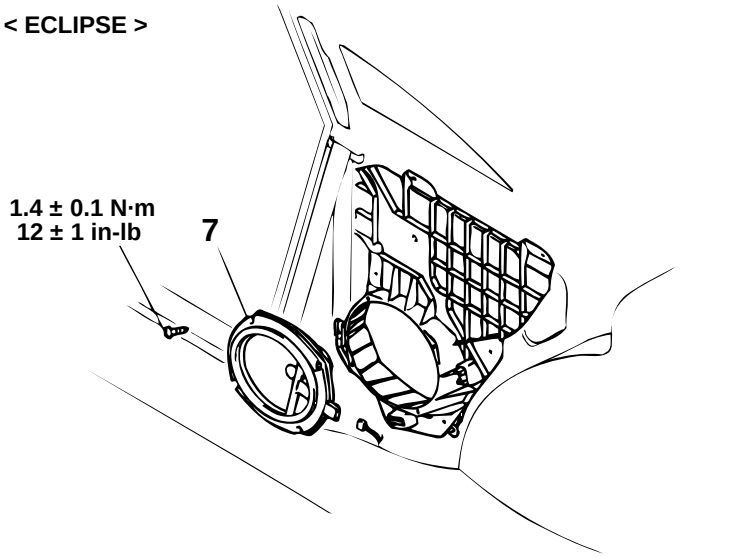
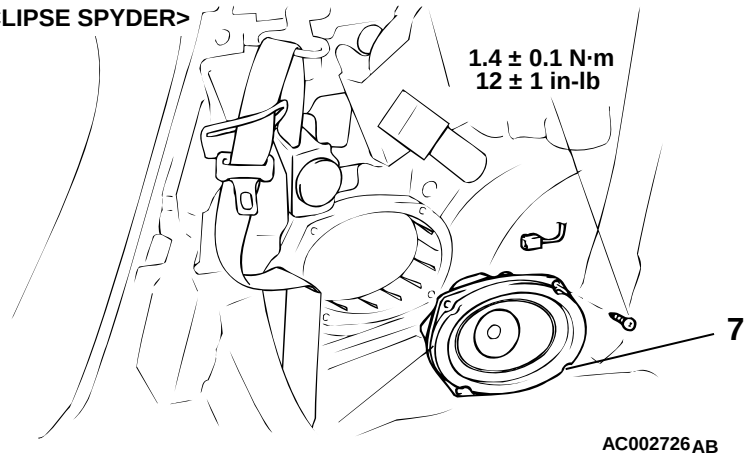
< ECLIPSE >



AC002725AB

<ECLIPSE SPYDER>



AC002726AB

REAR SPEAKER REMOVAL STEPS

- REAR SEAT (REFER TO GROUP 52A, REAR SEAT P.52A-20.)
- REAR SEAT BELT (REFER TO GROUP 52A, REAR SEAT BELT P.52A-20.)

REAR SPEAKER REMOVAL STEPS

- QUARTER TRIM, LOWER (REFER TO GROUP 52A, TRIMS P.52A-9.)

7. REAR SPEAKER

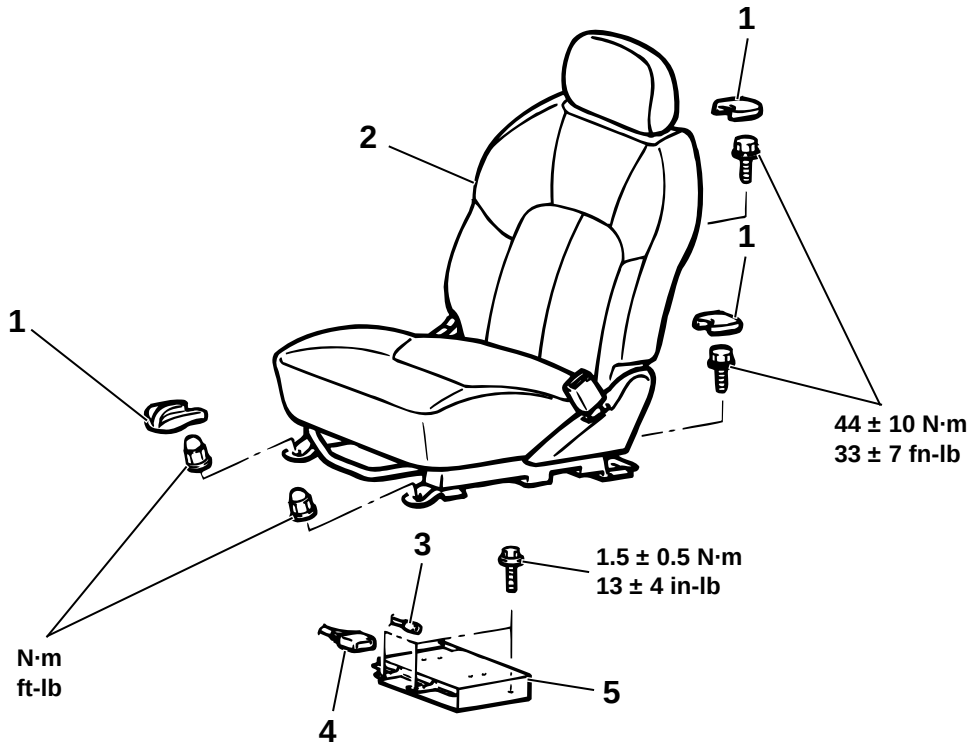
AMPLIFIER

AMPLIFIER REMOVAL AND INSTALLATION

M1544004100165

⚠ ***WARNING***

Before removing a seat equipped with the side air bag module, refer to GROUP 52B, SRS Service Precautions P.52B-17.



AMPLIFIER REMOVAL STEPS

1. SEAT ANCHOR COVER
2. FRONT PASSENGER'S SEAT ASSEMBLY
3. DIN CABLE

AMPLIFIER REMOVAL STEPS

4. HARNESS CONNECTOR
5. AMPLIFIER

NOTE: Install each seat assembly mounting bolt in every installation location, then tighten to the specified torque.

ANTENNA

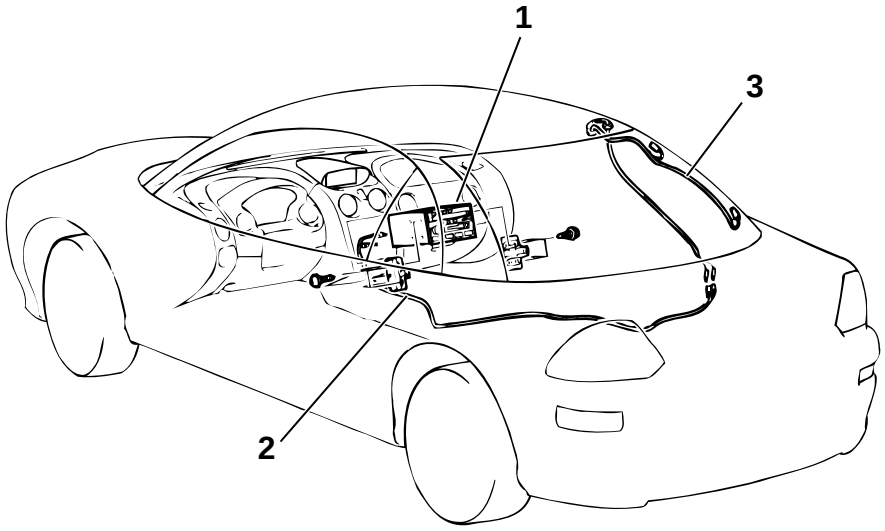
ANTENNA REMOVAL AND INSTALLATION

REMOVAL AND INSTALLATION

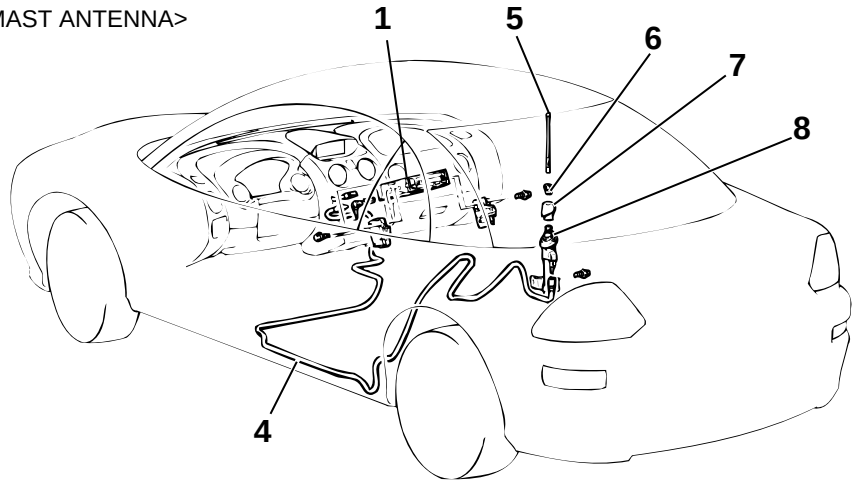
M1544002900262

< ECLIPSE >

<GLASS ANTENNA>



<MAST ANTENNA>



AC004031 AB

ANTENNA FEEDER CABLE REMOVAL STEPS <VEHICLES WITH GLASS ANTENNA>

1. RADIO, TAPE PLAYER, CD PLAYER AND CD AUTO CHANGER (REFER TO P.54A-217.)
- FLOOR CONSOLE (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)
- FRONT PASSENGER'S SEAT (REFER TO GROUP 52A, FRONT SEAT P.52A-15.)
- QUARTER TRIM LOWER (RH SIDE, REFER TO GROUP 52A, TRIMS P.52A-9.)
2. ANTENNA FEEDER CABLE (FRONT SIDE.)
- QUARTER TRIM UPPER (RH SIDE, REFER TO GROUP 52A, TRIMS P.52A-9.)
- LIFTGATE UPPER TRIM (RH SIDE, REFER TO GROUP 42, LIFTGATE – LIFTGATE TRIM P.42-72.)
3. ANTENNA FEEDER CABLE (REAR SIDE.)

ANTENNA FEEDER CABLE REMOVAL STEPS <VEHICLES WITH MAST ANTENNA>

1. RADIO, TAPE PLAYER, CD PLAYER AND CD AUTO CHANGER (REFER TO P.54A-217.)
- FLOOR CONSOLE (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)
- FRONT DRIVER'S SEAT (REFER TO GROUP 52A, FRONT SEAT P.52A-15.)
- REAR SEAT (REFER TO GROUP 52A, REAR SEAT P.52A-20.)
- QUARTER TRIM LOWER (LH SIDE, REFER TO GROUP 52A, TRIMS P.52A-9.)
2. ANTENNA FEEDER CABLE

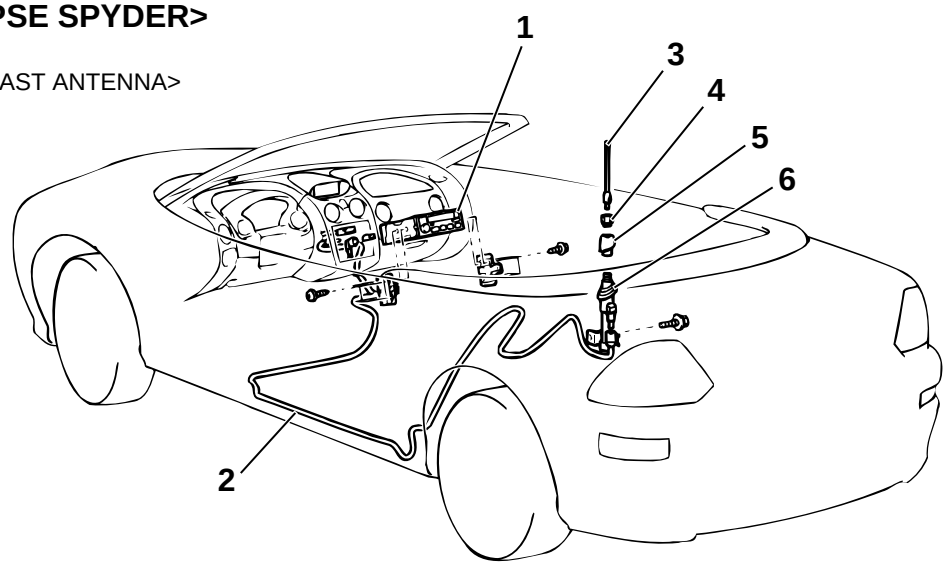
MAST ANTENNA REMOVAL STEPS

5. MAST ANTENNA
6. NUT
7. INSULATOR
- REAR SIDE TRIM (LH SIDE, REFER TO GROUP 52A, TRIMS P.52A-9.)
5. ANTENNA BASE

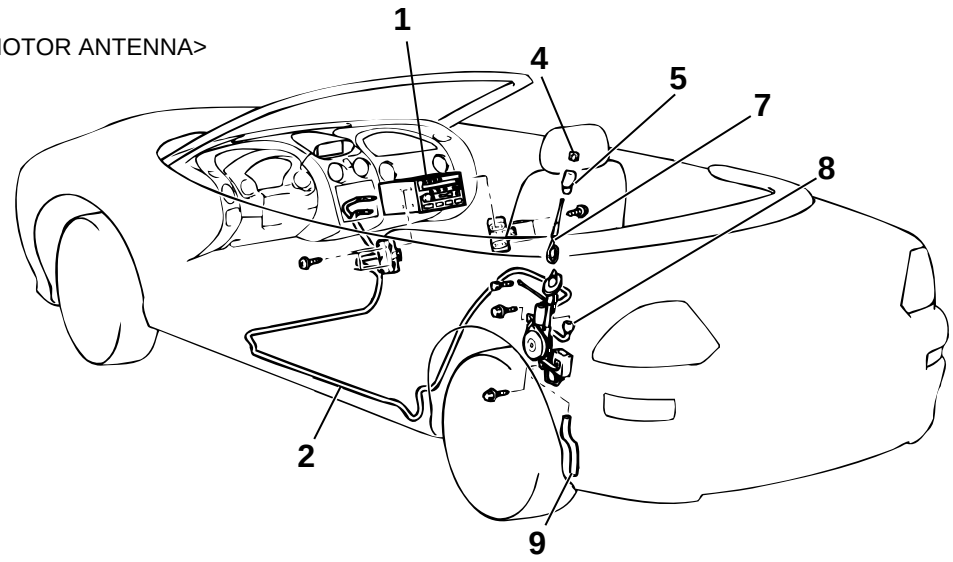
M1544002900273

<ECLIPSE SPYDER>

<MAST ANTENNA>



<MOTOR ANTENNA>



AC003983 AB

ANTENNA FEEDER CABLE REMOVAL STEPS

1. RADIO, TAPE PLAYER, CD PLAYER AND CD AUTO CHANGER (REFER TO P.54A-217.)
- FLOOR CONSOLE (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-8.)
- FRONT DRIVER'S SEAT (REFER TO GROUP 52A, FRONT SEAT P.52A-15.)

ANTENNA FEEDER CABLE REMOVAL STEPS (Continued)

- REAR SEAT (REFER TO GROUP 52A, REAR SEAT P.52A-20.)
- QUARTER TRIM LOWER (LH SIDE, REFER TO GROUP 52A, TRIMS P.52A-9.)

2. ANTENNA FEEDER CABLE

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MAST ANTENNA REMOVAL STEPS <VEHICLES WITH MAST ANTENNA>

3. MAST ANTENNA
4. NUT
5. INSULATOR
- TRUNK COMPARTMENT TRIM (REFER TO GROUP 52A, TRIMS P.52A-9.)
6. ANTENNA BASE

MOTOR ANTENNA REMOVAL STEPS <VEHICLES WITH MOTOR ANTENNA>

4. RING NUT
5. INSULATOR

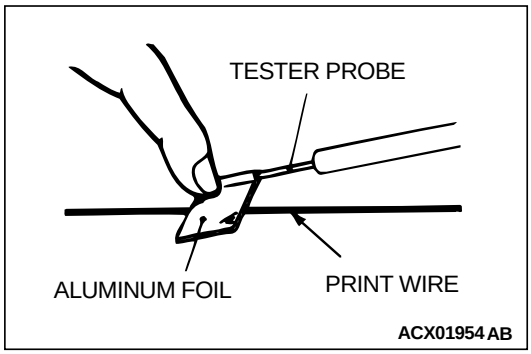
MOTOR ANTENNA REMOVAL STEPS <VEHICLES WITH MOTOR ANTENNA> (Continued)

7. ANTENNA POLE
- TRUNK COMPARTMENT TRIM (REFER TO GROUP 52A, TRIMS P.52A-9.)
8. MOTOR ANTENNA ASSEMBLY
9. DRAIN HOSE

INSPECTION

M1544009700065

GLASS ANTENNA CHECK



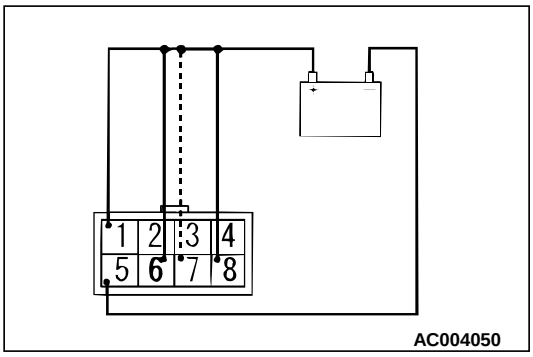
1. Wrap an aluminum foil around the tester probe a shown.

⚠ CAUTION

Be careful not to damage the print wire.

2. Check continuity while pressing the aluminum foil along the antenna print wire.

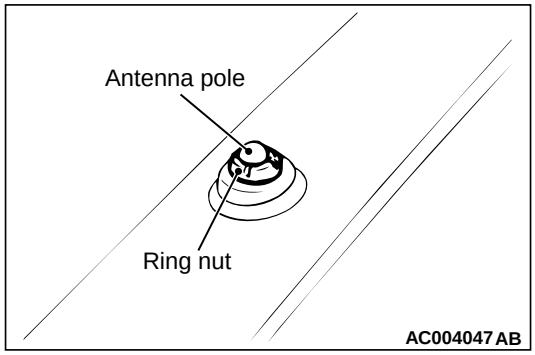
MOTOR ANTENNA ASSEMBLY INSPECTION



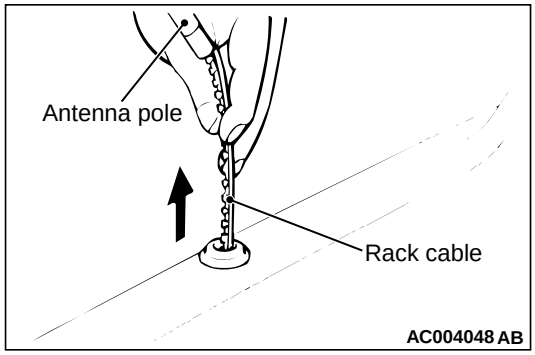
1. Remove the motor antenna assembly connector.
2. Connect the circuits shown in the solid lines.
3. Check that antenna extends when the circuit shown in the dotted lines is connected.
4. Check that the antenna retracts when the circuit shown in the dotted lines is disconnected.

ANTENNA POLE REPLACEMENT

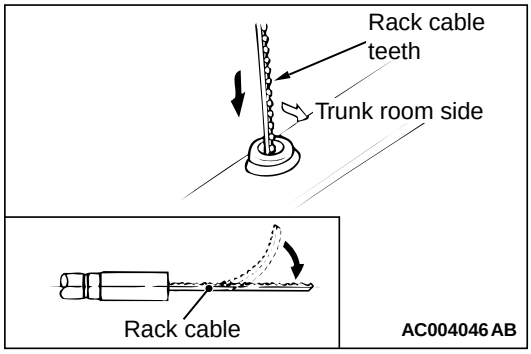
M1544000900158



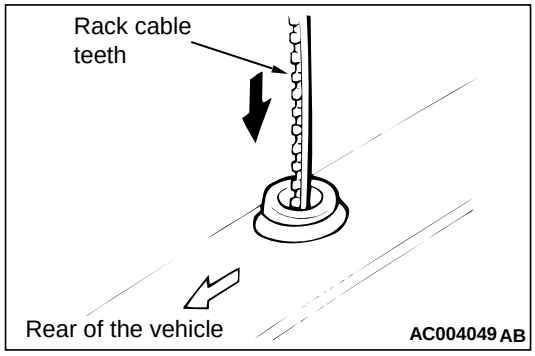
1. Remove the ring nut.



2. After turning the ignition switch to ACC or ON, turn the radio switch to ON to raise the antenna pole, and remove it, together with the rack cable.



3. Draw out the antenna pole to the maximum extension.
   NOTE: If there is a bend in the motor end of the rack cable remove the bend.
4. Insert the rack cable into the motor assembly with the rack cable teeth facing the luggage compartment room side.



5. Turn the rack cable teeth towards the rear of the vehicle (right 90) so that the rack cable meshes with the motor gear.
6. If the rack cable pulls out with no resistance when it is lightly pulled, then the cable is not meshed with the motor gear, so check that there are no bends in the end of the rack cable, and then repeat step (4) and (5) above.
7. Set the antenna pole vertically and turn the radio switch OFF to wind up the rack cable. Insert the antenna to the motor antenna side to align it with the wound-up rack cable.
8. After tightening the ring nut, check the movement of the antenna by turning the radio switch ON and OFF.

REMOTE CONTROLLED RADIO SWITCH

EQUIPMENT DIAGNOSIS

SYMPTOM CHART

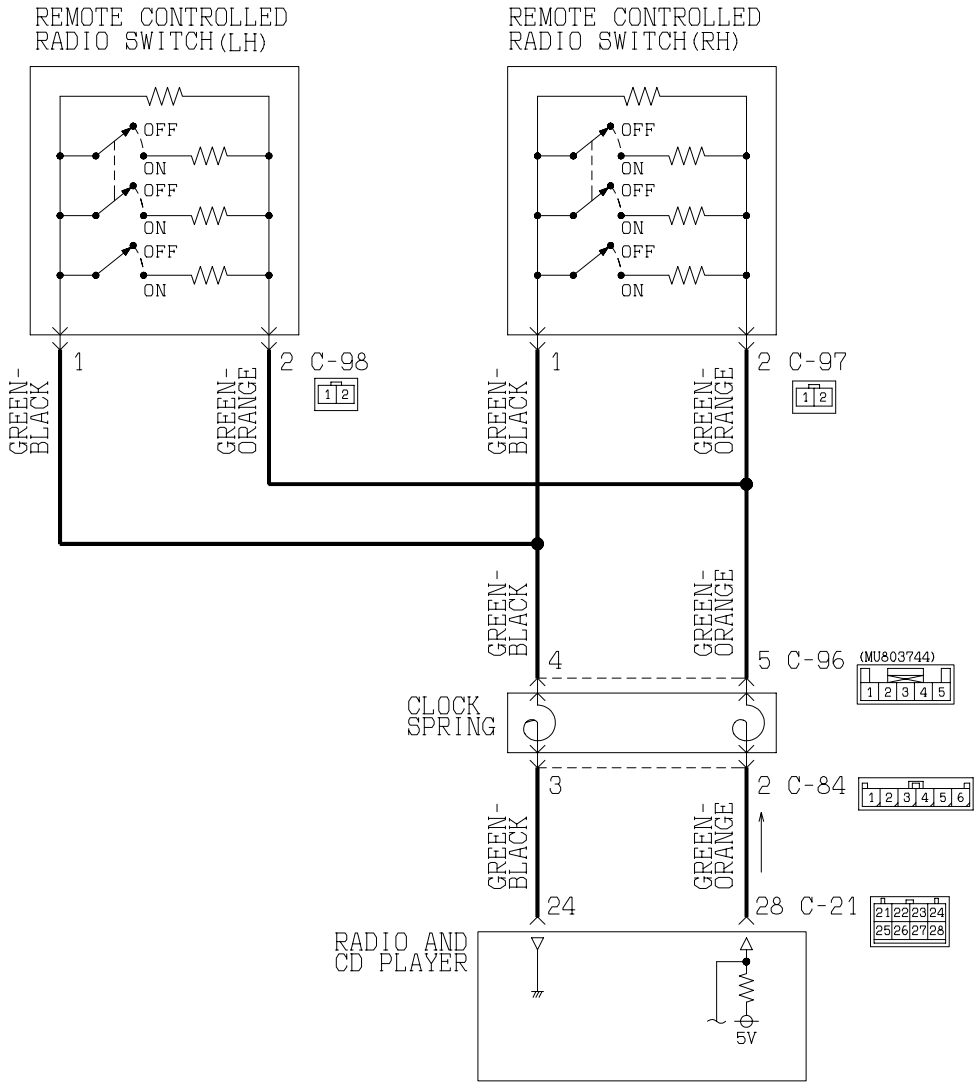
M1544004900224

SYMPTOMS	INSPECTION PROCEDURE	REFERENCE PAGE
The system does not accept remote controlled radio switches (RH and LH), but accepts radio and CD player switches.	1	P.54A-227
The system does not accept the remote controlled radio switch (RH) only.	2	P.54A-232
The system does not accept the remote controlled radio switch (LH) only.	3	P.54A-233

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The system does not accept remote controlled radio switches (RH and LH), but accepts radio and CD player switches.

Remote controlled radio switch circuit



CIRCUIT OPERATION

- If the remote controlled radio switch is operated, the output voltage will change. The radio and CD player operates according to the change on the voltage.

TECHNICAL DESCRIPTION (COMMENT)

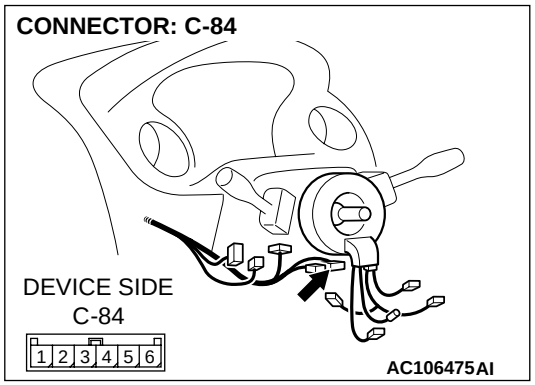
If the system does not accept the remote controlled radio switches, the remote controlled radio switch assembly, the clock spring or the radio and CD player may be defective.

TROUBLESHOOTING HINTS

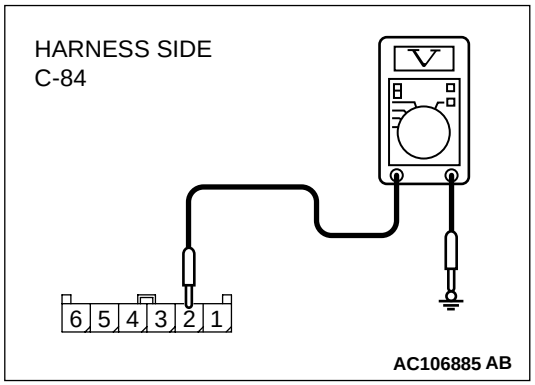
- Malfunction of the remote controlled radio switch
- Malfunction of the radio and cd player
- Malfunction of the clock spring
- Damaged wiring harness or connectors

DIAGNOSIS

STEP 1. Check the remote controlled radio switch power supply circuit at the clock spring connector C-84.



(1) Disconnect the clock spring connector C-84.
(2) Turn the ignition switch to "ON" position.

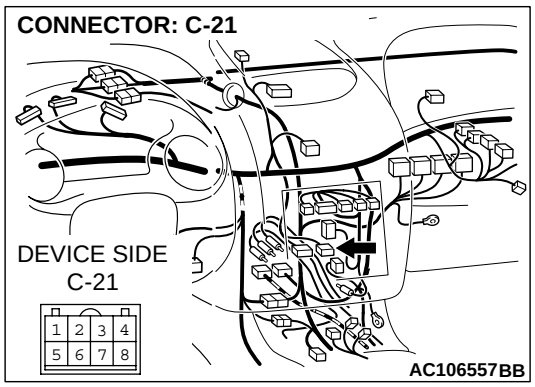


(3) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 5 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

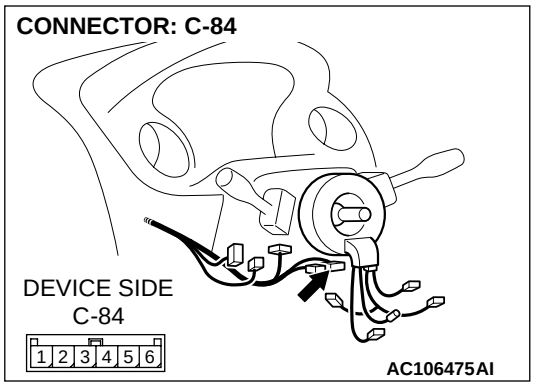
YES : Go to Step 4.
NO : Go to Step 2.

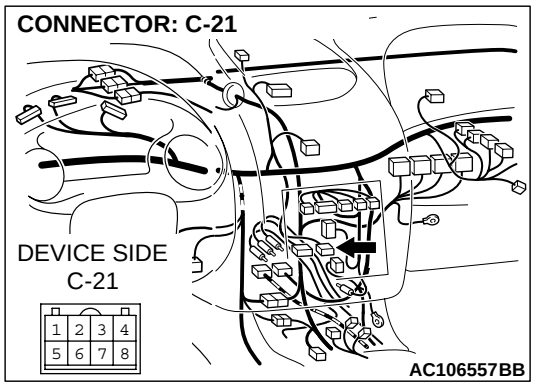
STEP 2. Radio and CD player connector C-21 and clock spring connector C-84 for damage.



Q: Are radio and CD player connector C-21 and clock spring connector C-84 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 should work normally.



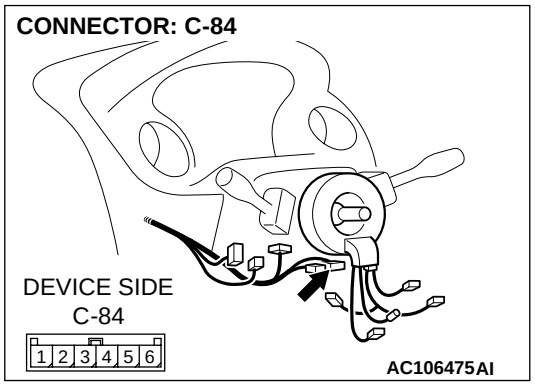


STEP 3. Check the wiring harness between clock spring connector C-84 (terminal 2) and radio and CD player connector C-21 (terminal 28).

Q: Is the wiring harness between radio and CD player connector C-21 (terminal 28) and clock spring connector C-84 (terminal 2) in good condition?

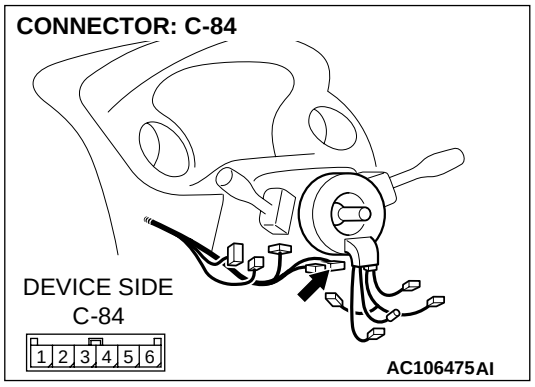
YES : Go to Step 5.

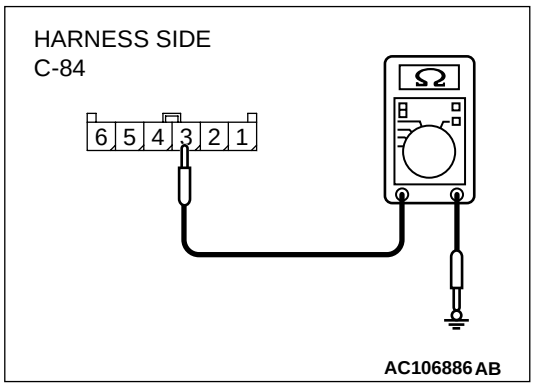
NO : Repair the wiring harness. The remote controlled radio switch should work normally.



STEP 4. Check the remote controlled radio switch ground circuit at the clock spring connector C-84.

(1) Disconnect the clock spring connector C-84.





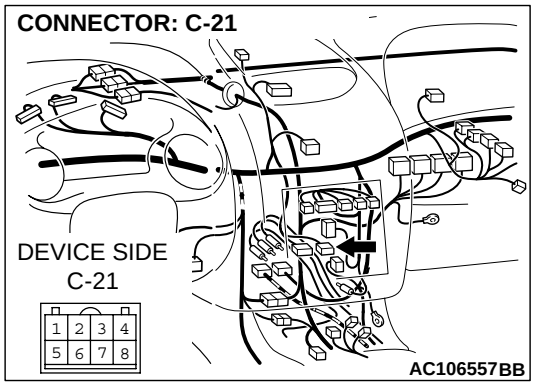
(2) Measure resistance between terminal 3 and ground.

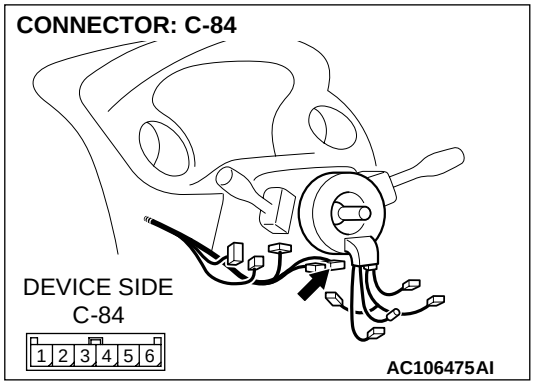
- The measured value should be 2 ohm or less.

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

YES : Go to Step 7.

NO : Go to Step 5.



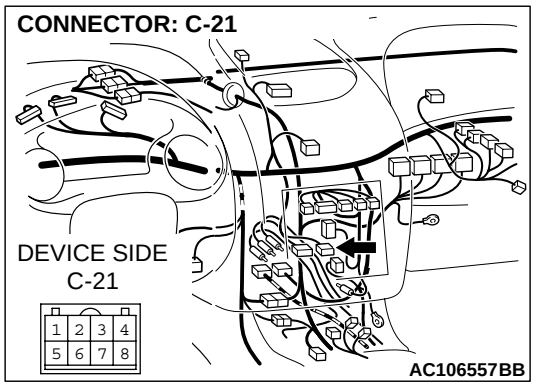


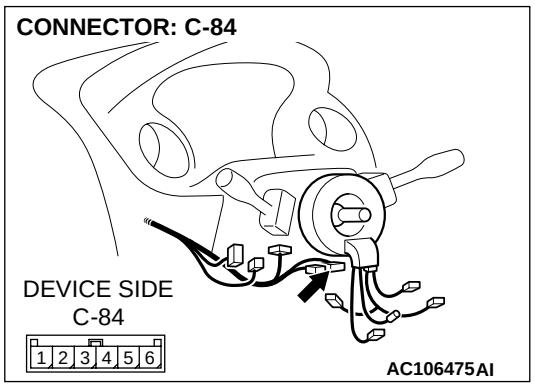
STEP 5. Check the clock spring connector C-84 and radio and cd player connector C-21 for damage.

Q: Is clock spring connector C-84 and radio and cd player connector C-21 in good condition?

YES : Go to Step 6.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The remote controlled radio switch should work normally.



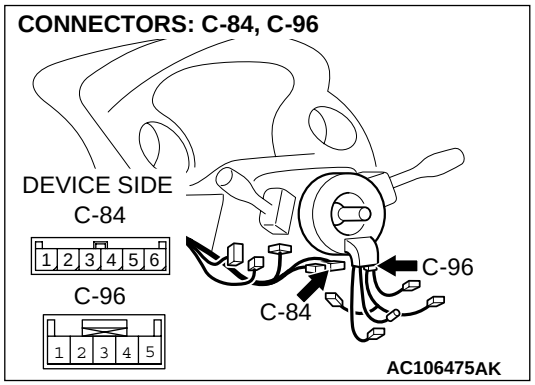


STEP 6. Check the wiring harness between clock spring connector C-84 (terminal 3) and radio and CD player connector C-21 (terminal 24).

Q: Is the wiring harness between clock spring connector C-84 (terminal 2) and radio and cd player connector C-21 (terminal 24) in good condition?

YES : Go to Step 7.

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



STEP 7. Check the clock spring continuity.

(1) Remove the clock spring (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-144).

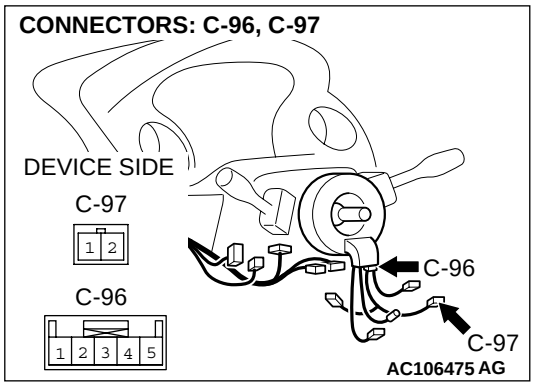
(2) Measure the resistance at clock spring connectors C-96 and C-84.

CIRCUIT TO BE MEASURED	CONNECTOR (TERMINAL) TO BE CHECKED	SPECIFIED CONDITION
Power supply circuit	C-96 (terminal 5) – C-84 (terminal 2)	Less than 2 ohm
Ground circuit	C-96 (terminal 4) – C-84 (terminal 3)	less than 2 ohm

Q: Is the clock spring normal?

YES : Go to Step 8.

NO : Replace the clock spring.

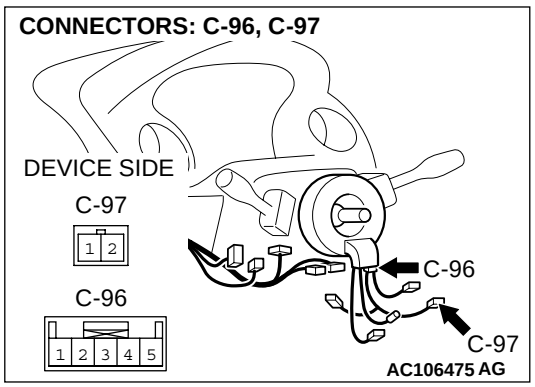


STEP 8. Check the clock spring connector C-96 and switch (RH) connector C-97 for damage.

Q: Are clock spring connector C-96 and switch (RH) connector C-97 in good condition?

YES : Go to step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The remote controlled radio switch should work normally.



STEP 9. Check the wiring harness between clock spring connector C-96 (terminals 4 and 5) and switch (RH) connector C-97 (terminals 1 and 2).

Q: Is the wiring harness between clock spring connector C-96 (terminals 4 and 5) and switch (RH) connector C-97 (terminals 1 and 2) in good condition?

YES : Replace the audio system.

NO : Repair the wiring harness. The speedometer should work normally.

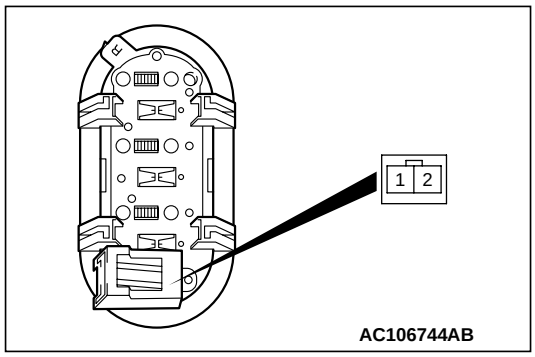
INSPECTION PROCEDURE 2: The system does not accept the remote controlled radio switch (RH) only.

CIRCUIT OPERATION
Refer to Inspection Procedure 1 P.54A-227.

TECHNICAL DESCRIPTION (COMMENT)
Refer to Inspection Procedure 1 P.54A-227.

TROUBLESHOOTING HINTS
Refer to Inspection Procedure 1 P.54A-227.

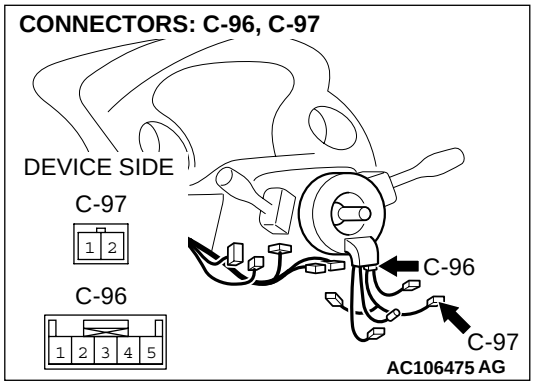
DIAGNOSIS



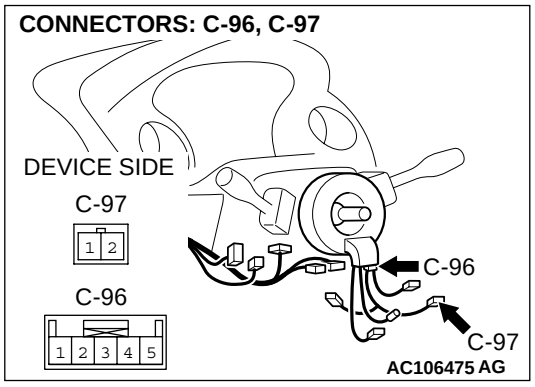
STEP 1. Check the remote controlled radio switch (RH).
(1) Remove the airbag module (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-144).
(2) Check the continuity by operating the remote controlled radio switch (RH) in each position.

SWITCH POSITION	MEASUREMENT VALUE
No push	24 kΩ
Upper	5.3 kΩ
Center	0 Ω
Lower	9.2 kΩ

Q: Is the remote controlled radio switch normal?
YES : Go to Step 2.
NO : Replace the remote controlled radio switch (RH).



STEP 2. Check the switch (RH) connector C-97 and clock spring connector C-96 for damage.
Q: Is remote controlled radio switch (RH) connector C-97 and clock spring connector C-96 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 connector C-97 (terminals 1 and 2) and clock spring connector C-96 (terminals 4 and 5).

Q: Are the wiring harness between emote controlled radio switch connector C-97 (terminals 1 and 2) and clock spring connector C-96 (terminals 4 and 5) in good condition?

YES : No action to be taken.

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

INSPECTION PROCEDURE 3: The system does not accept the remote controlled radio switch (LH) only.

CIRCUIT OPERATION

Refer to Inspection Procedure 1 P.54A-227.

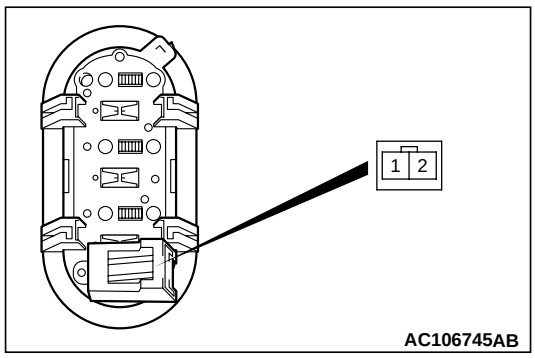
TECHNICAL DESCRIPTION (COMMENT)

Refer to Inspection Procedure 1 P.54A-227.

TROUBLESHOOTING HINTS

Refer to Inspection Procedure 1 P.54A-227.

DIAGNOSIS



STEP 1.Check the remote controlled radio switch (LH).

(1) Remove the airbag module (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-144).

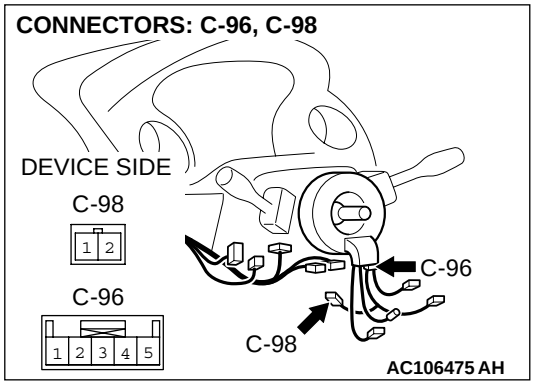
(2) Check the continuity by operating the remote controlled radio switch (LH) in each position.

SWITCH POSITION	MEASUREMENT VALUE
No push	Open circuit
Upper	3.3 kΩ
Center	473 Ω
Lower	1.2 kΩ

Q: Is the remote controlled radio switch normal?

YES : Go to Step 2.

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

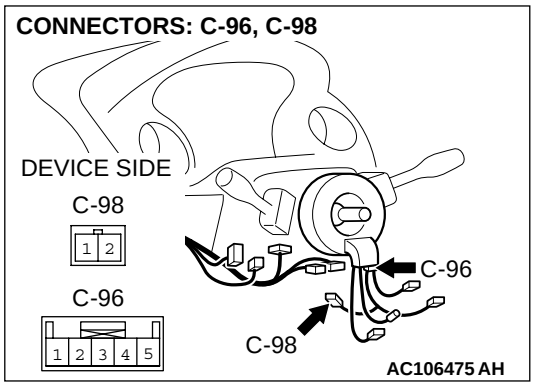


STEP 2. Check the switch (LH) connector C-98 and clock spring connector C-96 for damage.

Q: Is remote controlled radio switch (LH) connector C-98 and clock spring connector C-96 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-98 (terminals 1 and 2) and clock spring connector C-96 (terminals 4 and 5).

Q: Are the wiring harness between emote controlled radio switch connector C-98 (terminals 1 and 2) and clock spring connector C-96 (terminals 4 and 5) in good condition?

YES : No action to be taken.

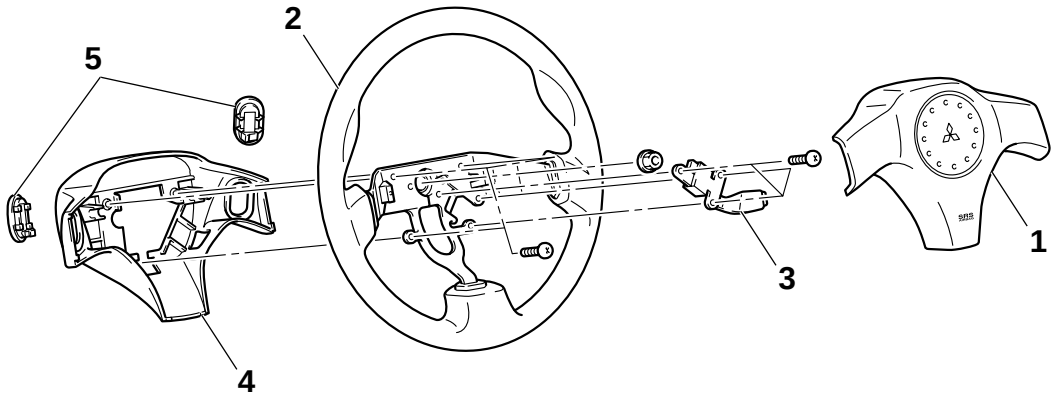
NO : Repair the wiring harness. The remote controlled radio switch (LH) should work normally.

REMOVAL AND INSTALLATION

M1544010100012

⚠ ***WARNING***

- ***Before removing the air bag module, refer to GROUP 52B, Service Precautions and Air Bag Module and Clock Spring P.52B-17.***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***



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REMOVAL STEP

1. AIR BAG MODULE (REFER TO GROUP 52B, AIR BAG MODULE AND CLOCK SPRING P.52B-144.)
2. STEERING WHEEL (REFER TO GROUP 37A, STEERING WHEEL AND SHAFT ASSEMBLY P.37A-21)

<<A>>

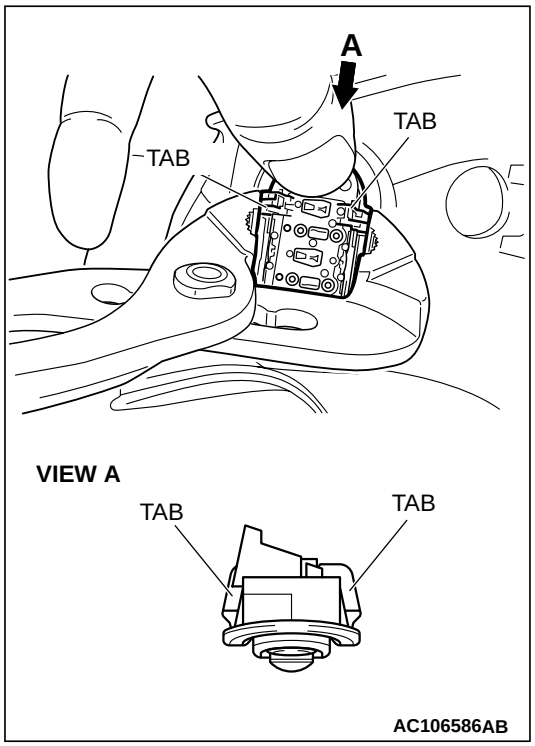
REMOVAL STEP (Continued)

3. AUTO-CRUISE CONTROL SWITCH
4. LOWER COVER CAP
5. REMOTE CONTROLLED RADIO SWITCH

TSB Revision

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 by your finger.



INSPECTION

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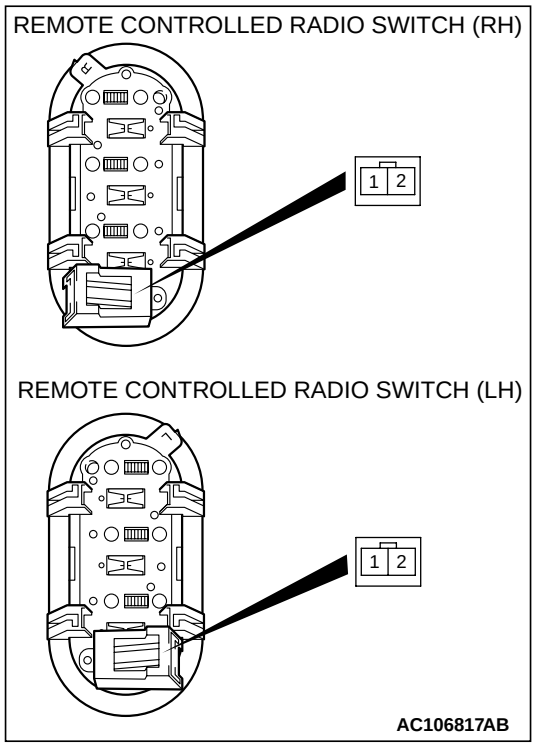
REMOTE CONTROLLED RADIO SWITCH CONTINUITY CHECK



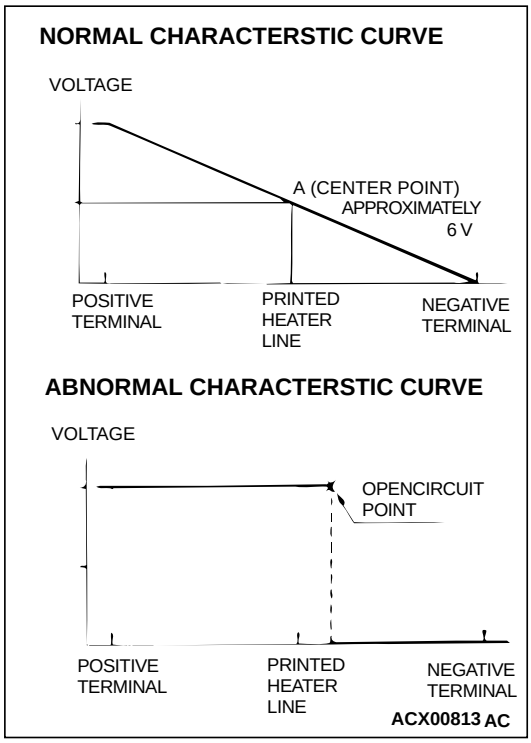
SWITCH POSITION	MEASUREMENT VALUE (RH)	MEASUREMENT VALUE (LH)
No push	24 kΩ	Open circuit
Upper	5.3 kΩ	3.3 kΩ
Center	0 Ω	473 Ω
Lower	9.2 kΩ	1.2 kΩ

REAR WINDOW DEFOGGER

ON-VEHICLE SERVICE

PRINTED-HEATER LINES CHECK

M1543001800162



1. Run engine at 2,000 r/min. Check heater element with battery at full.
2. Turn "ON" rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass centre A. Condition is good if it indicates about 6 V.
3. If 12 V is indicated at A, there is a break in the negative terminals from A. Move test bar slowly to 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. Defect where the voltage changes suddenly (12 V) in the same method described above.

REAR WINDOW DEFOGGER SWITCH REMOVAL AND INSTALLATION

REMOVAL AND INSTALLATION

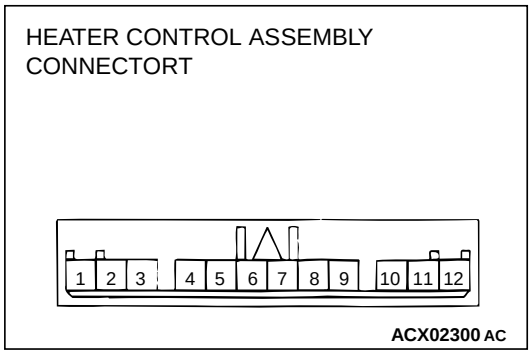
M1543006200165

Refer to GROUP 55, Heater Control Assembly and Blower Switch Assembly P.55-31.

INSPECTION

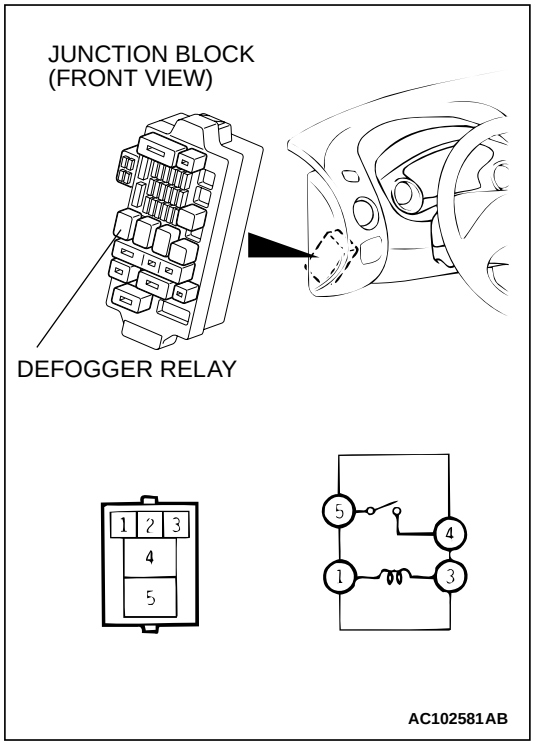
M1543019501233

REAR WINDOW DEFOGGER SWITCH



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	3 – 12	Open circuit
ON	3 – 12	Less than 2 ohm

DEFOGGER RELAY CHECK



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not supplied	4 – 5	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	4 – 5	Less than 2 ohm

MULTI-CENTER DISPLAY

EQUIPMENT DIAGNOSIS

DIAGNOSIS

M1543007200566

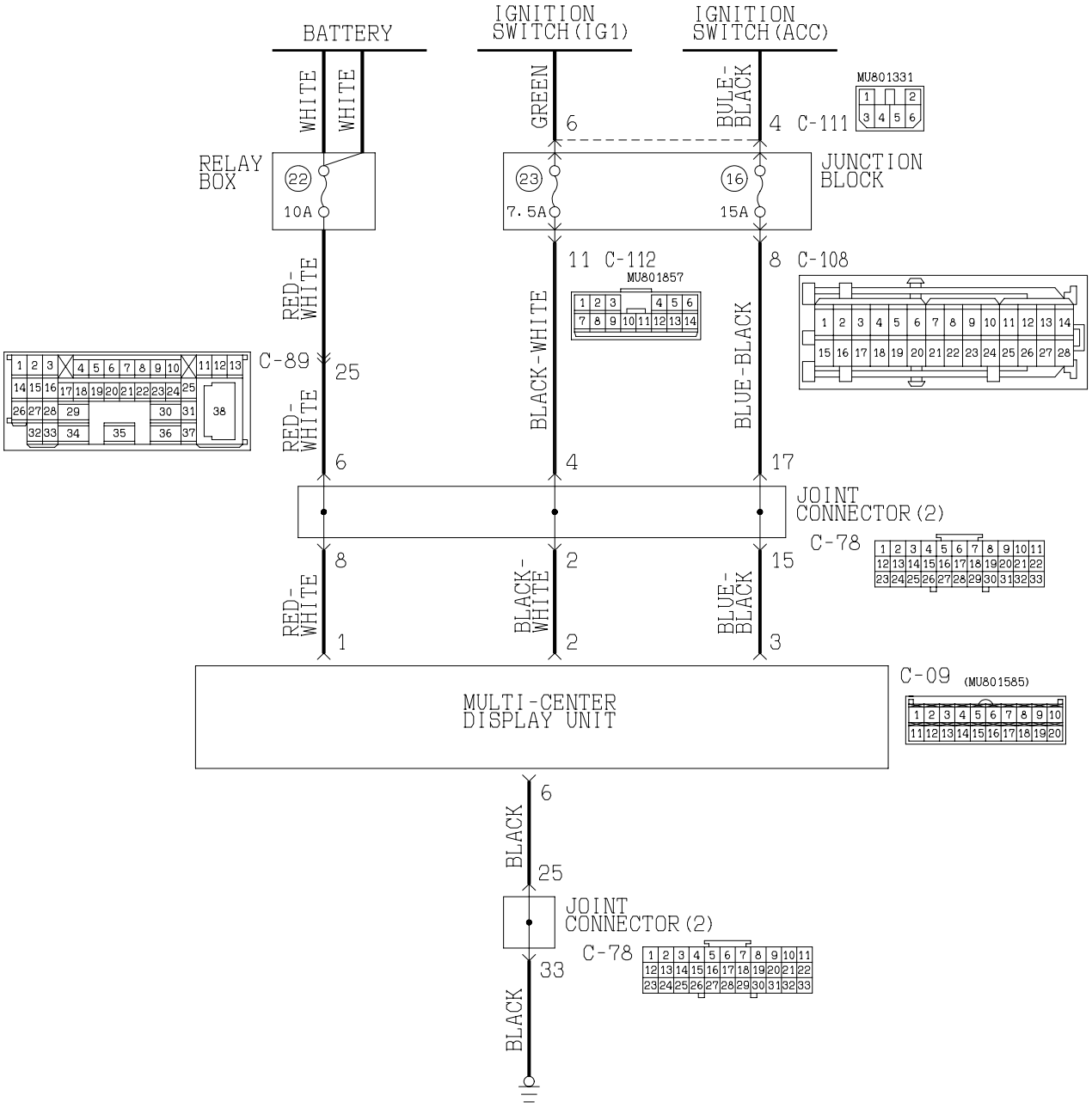
SYMPTOM CHART

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
The multi-center display does not show any information.	1	P.54A-239
Compass is not displayed.	2	P.54A-248
The compass is not displayed correctly.	3	P.54A-253
The outside temperature screen displays "E0°F" (ambient temperature sensor open circuit) or "-E5°F" (ambient temperature sensor short circuit) These are error messages.	4	P.54A-254
The ambient temperature and compass screen do not change.	5	P.54A-258
Information about the radio system is not displayed.	-	P.54A-175

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The Multi-center Display does not Show any Information.

Multi-center Display Power Supply and Ground Circuit



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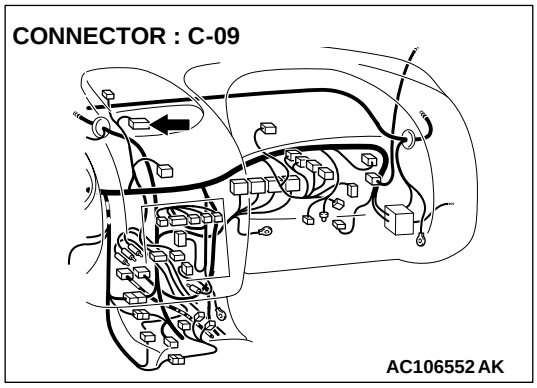
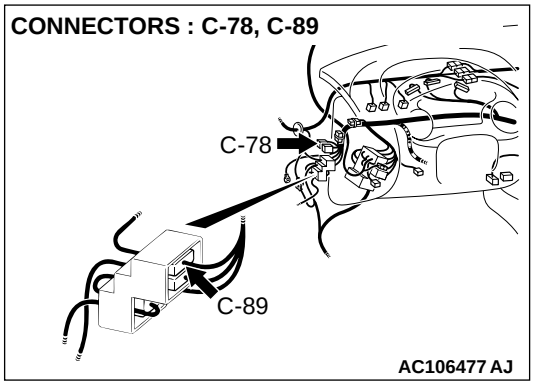
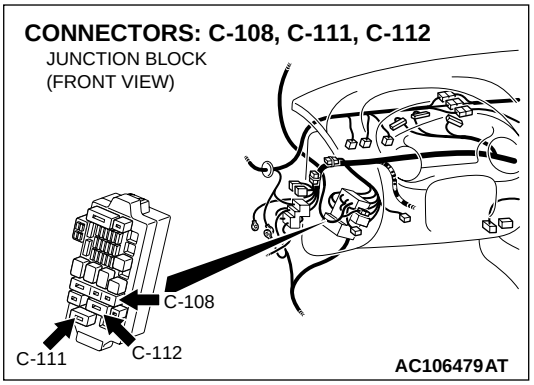
TSB Revision







CIRCUIT OPERATION

The multi-center display 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
- Damaged wiring harness and connectors

DIAGNOSIS

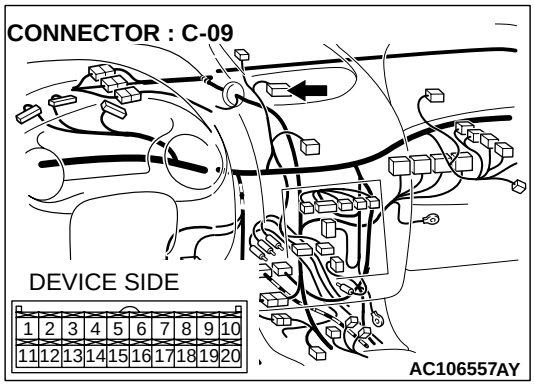
Required Special Tool:

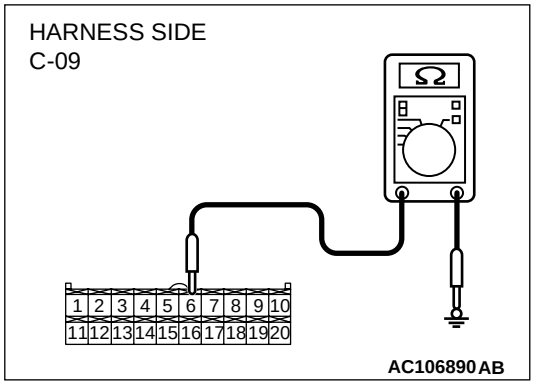
- MB991223: Harness Set

TSB Revision

STEP 1. Check the multi-center display ground circuit at the multi-center display connector C-09 by backprobing.

(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.





(2) Measure the resistance between terminal 6 and ground by backprobing.
- The measured value should be 2 ohm or less.

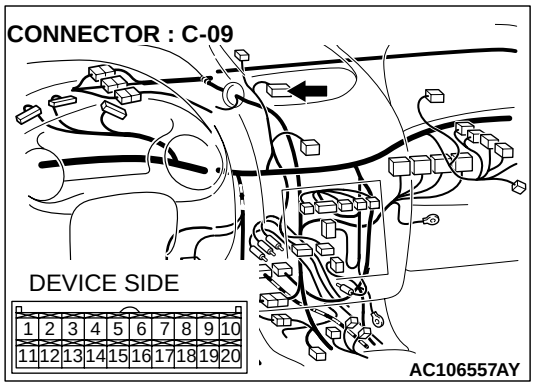
Q: Does the measured resistance value correspond with this range?

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

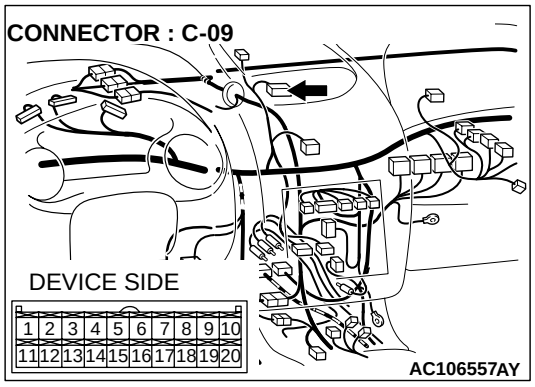
STEP 2. Check the multi-center display connector C-09 for damage.

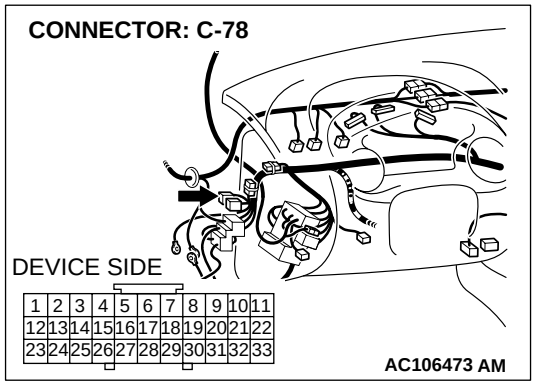
Q: Is the multi-center display connector C-09 in good condition?

YES : Go to Step 3.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 3. Check the wiring harness between multi-center display connector C-09 and ground.





NOTE: After checking joint connector C-78, check the wires. If joint connector C-78 is damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

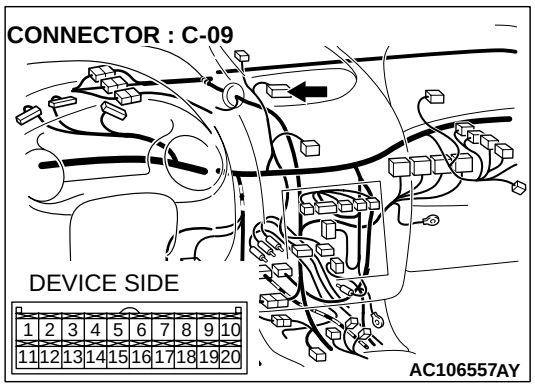
Q: Is the wiring harness between multi-center display connector C-09 and ground in good condition?

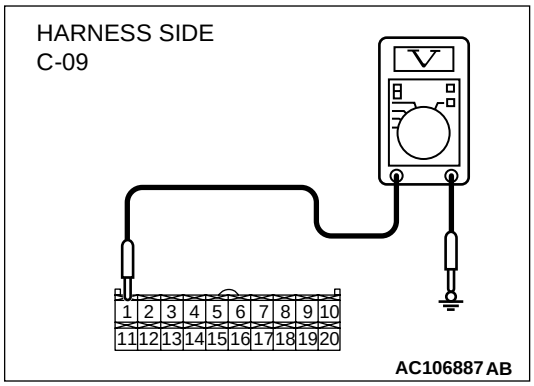
YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should work normally.

STEP 4. Check the multi-center display power supply circuit (battery) at the multi-center display connector C-09 by backprobing.

(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.





(2) Measure the voltage between terminal 1 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 7.

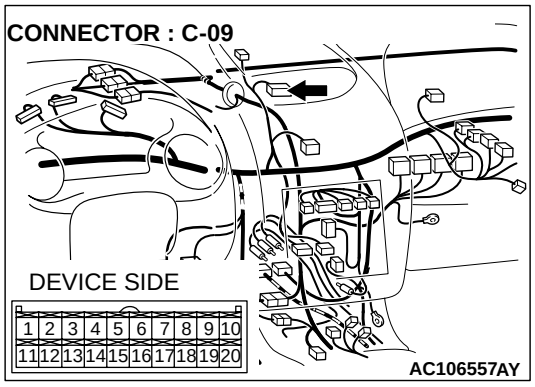
NO : Go to Step 5.

STEP 5. Check multi-center display connector C-09 for damage.

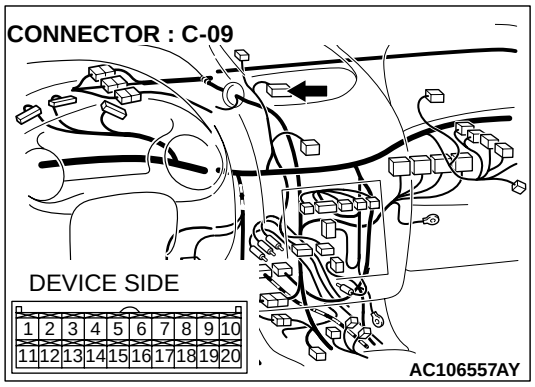
Q: Is multi-center display connector C-09 in good condition?

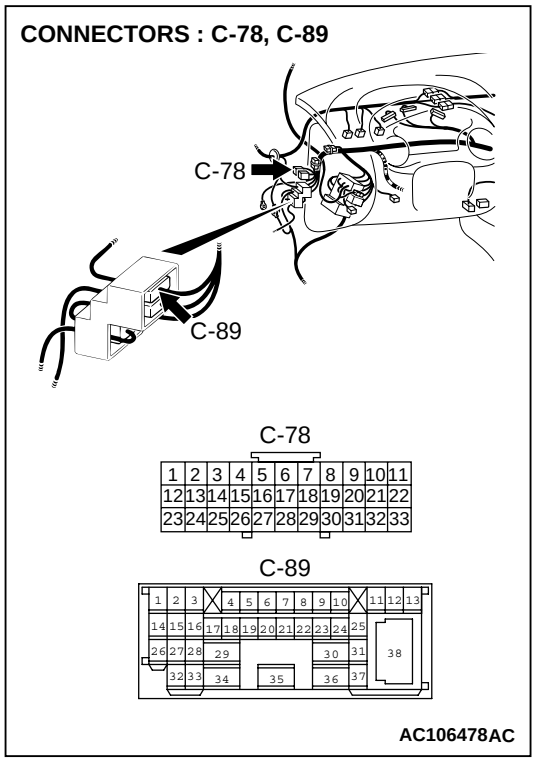
YES : Go to Step 6.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should work normally.



STEP 6. Check the wiring harness between C-09 and battery.





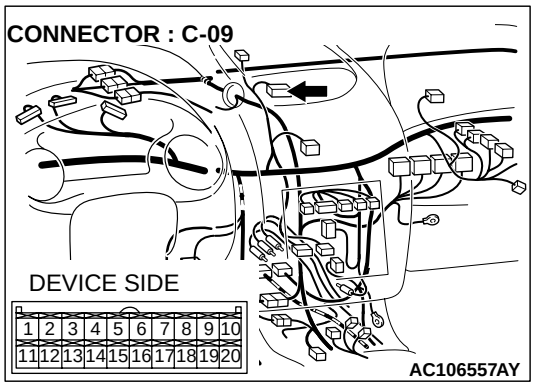
NOTE: After checking joint connector C-78 and intermediate connector C-89, check the wires. If joint connector C-78 and intermediate connector C-89 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between C-09 and battery in good condition?

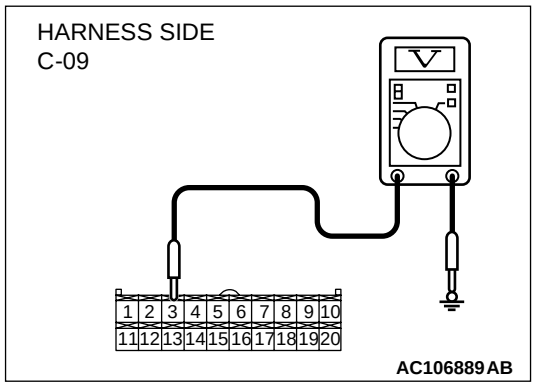
YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should work normally.

STEP 7. Check the multi-center display power supply circuit [ignition switch (ACC)] at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side.
(2) Turn the ignition switch to "ACC" position.

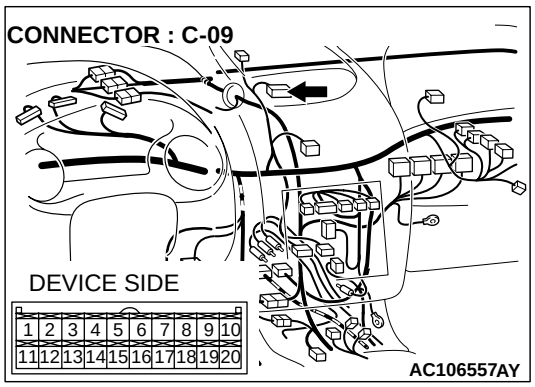


(3) Measure the voltage between terminal 3 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 10.
NO : Go to Step 8.

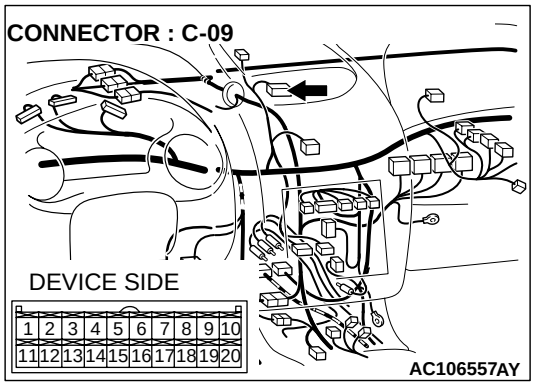
STEP 8. Check multi-center display connector C-09 for damage.

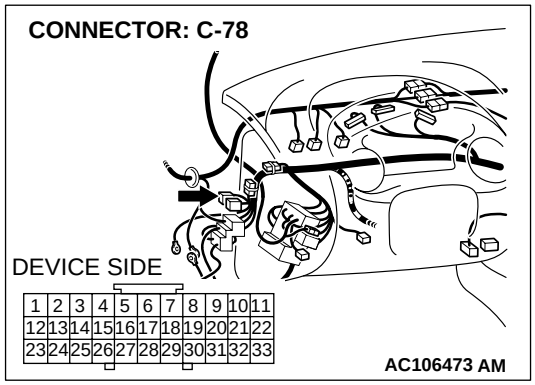


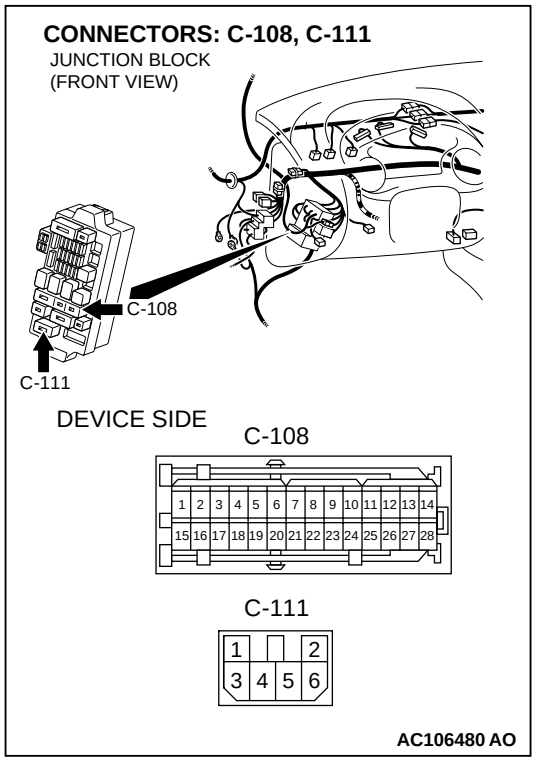
Q: Is multi-center display connector C-09 in good condition?

YES : Go to Step 9.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should work normally.

STEP 9. Check the wiring harness between C-09 and ignition switch (ACC).







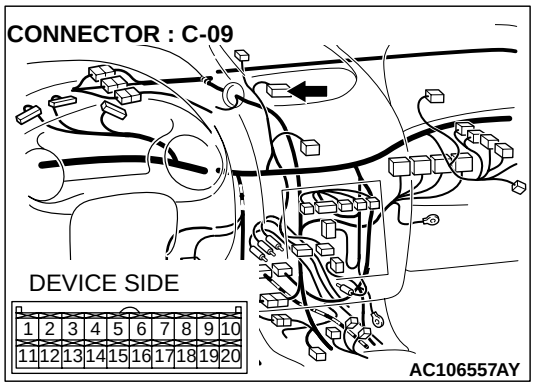
NOTE: After checking joint connector C-78 and junction block connector C-108 and C-111, check the wires. If joint connector C-78 and junction block connector C-108 and C-111 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between C-09 and ignition switch (ACC) in good condition?

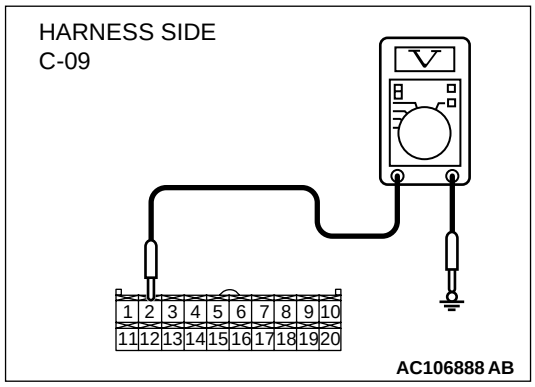
YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should work normally.

STEP 10. Check the multi-center display power supply circuit [ignition switch (IG1)] at the multi-center display connector C-09 by backprobing.



(1) Do not disconnect the multi-center display connector C-09 and measure at the harness side by backprobing.
(2) Turn the ignition switch to "ON" position.



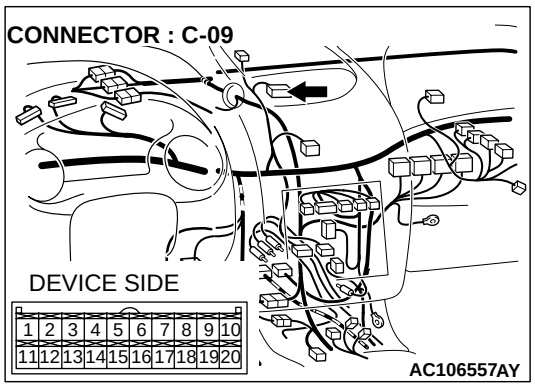
(3) Measure the voltage between terminal 2 and ground by backprobing.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Replace the multi-center display. The multi-center display should work normally.

NO : Go to Step 11.

STEP 11. Check the multi-center display connector C-09 for damage.

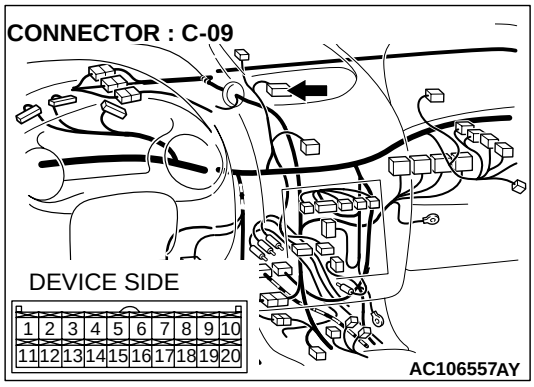


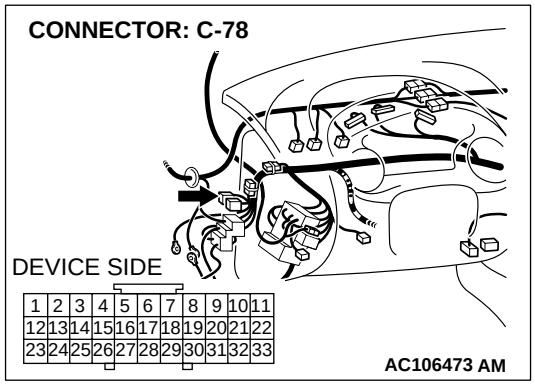
Q: Is multi-center display connector C-09 in good condition?

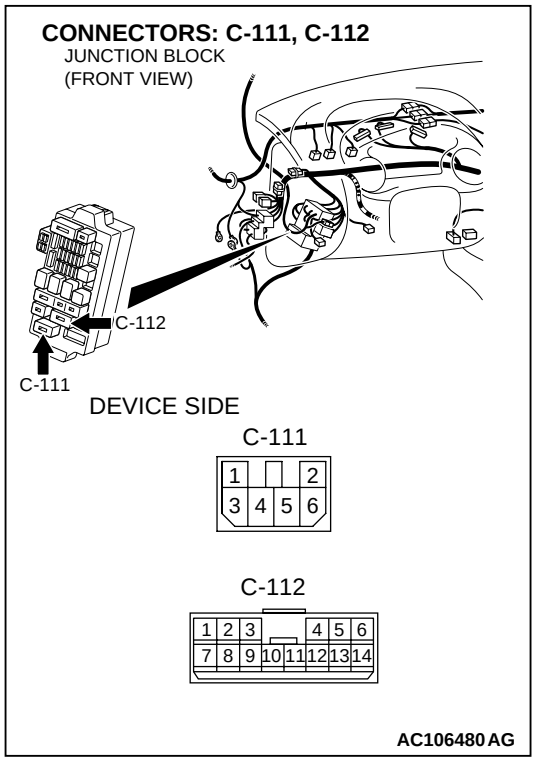
YES : Go to Step 12.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The multi-center display should work normally.

STEP 12. Check the wiring harness between multi-center display connector C-09 and ignition switch (IG1).







NOTE: After checking joint connector C-78 and junction block connector C-111 and C-112, check the wires. If joint connector C-78 and junction block connector C-111 and C-112 are damaged, repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

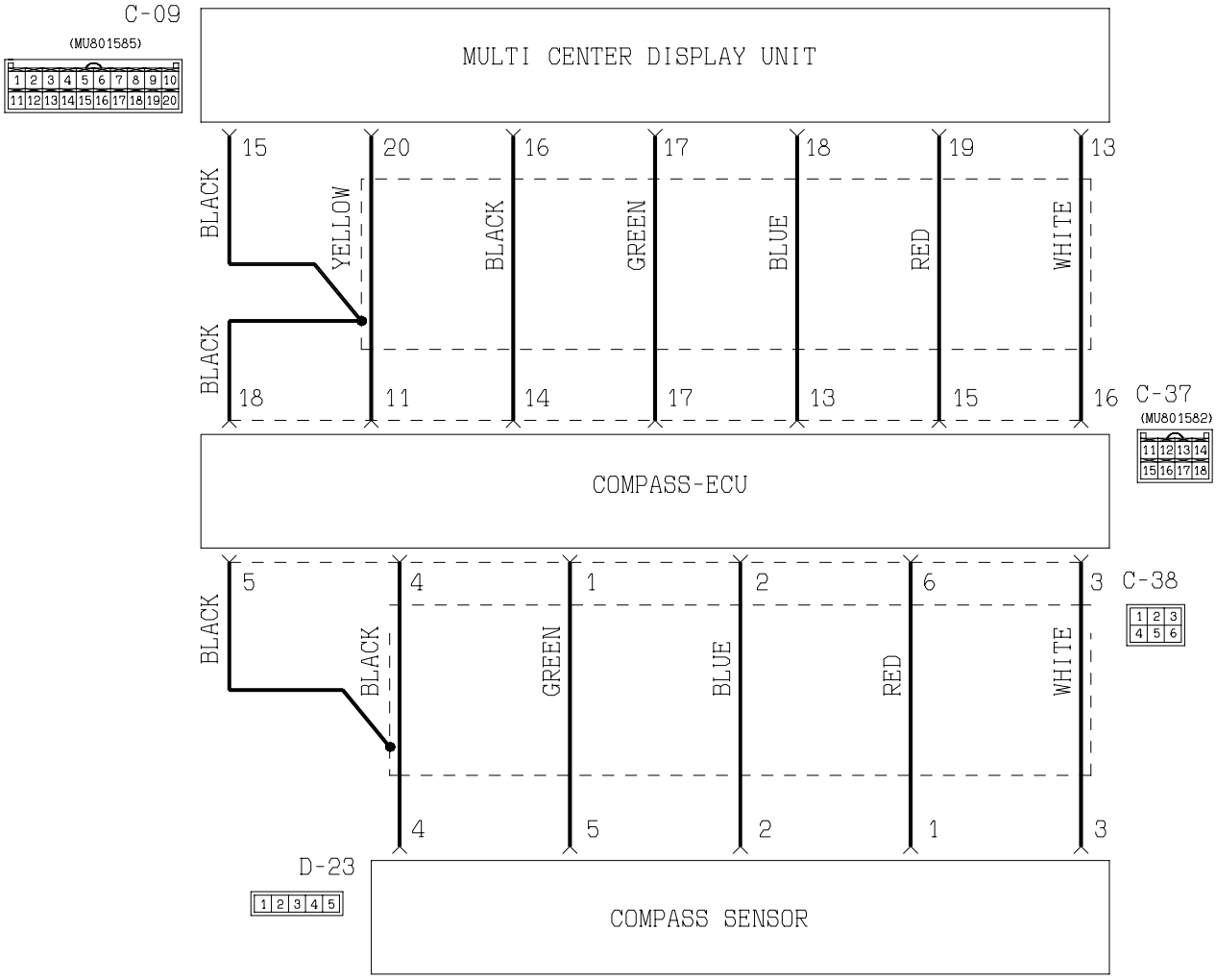
Q: Is the wiring harness between multi-center display connector C-09 and ignition switch (IG1) in good condition?

YES : There is no action to be taken.

NO : Repair the wiring harness. The multi-center display should work normally.

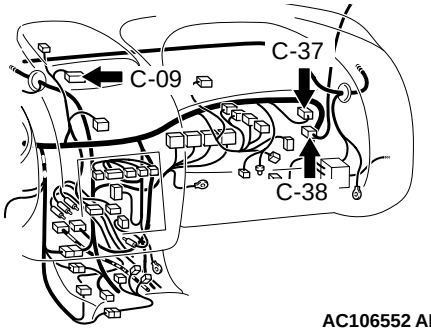
INSPECTION PROCEDURE 2: Compass is not Displayed.

Compass Circuit



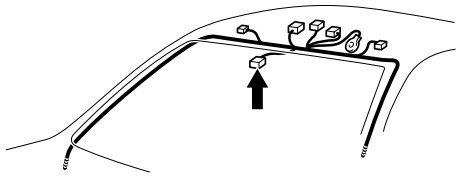
W1S11M04AA
AAC004629 AB

CONNECTORS : C-09, C-37, C-38



AC106552 AM

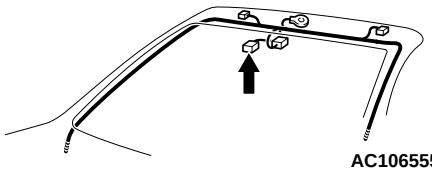
CONNECTOR <ECLIPSE> : D-23



AC106554 AI

TSB Revision

CONNECTOR <ECLIPSE SPYDER> : D-23



AC106555 AE

CIRCUIT OPERATION.

The compass sensor signal flows through the compass-ECU to multi-center display.

TECHNICAL DESCRIPTION (COMMENT)

If the compass is only not displayed on the multi-center display, the cause may be a malfunction of the compass-ECU.

TROUBLESHOOTING HINTS

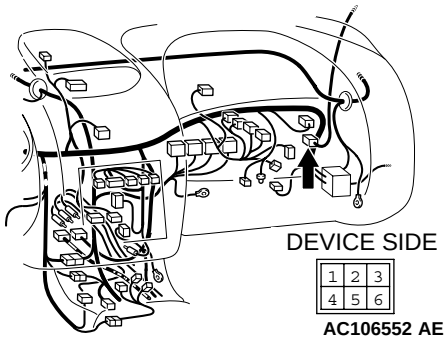
- Malfunction of the compass-ECU
- Damaged wiring harness and connectors

DIAGNOSIS

Required Special Tool:

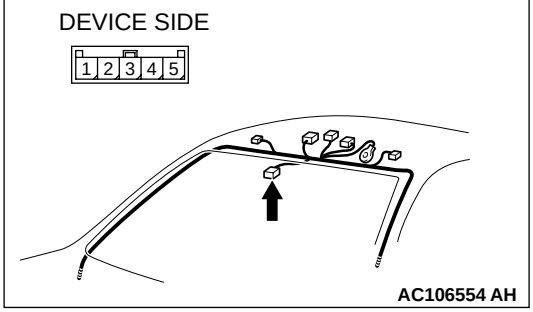
- MB991223: Harness Set

CONNECTOR: C-38



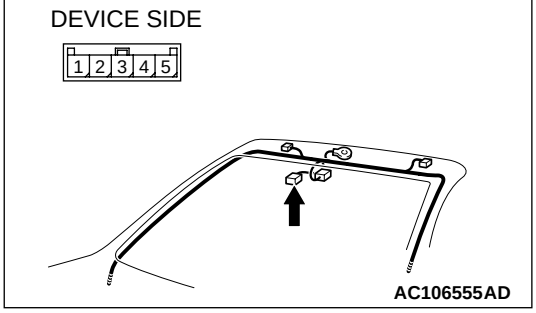
AC106552 AE

CONNECTOR <ECLIPSE> : D-23



AC106554 AH

CONNECTOR <ECLIPSE SPYDER> : D-23



AC106555AD

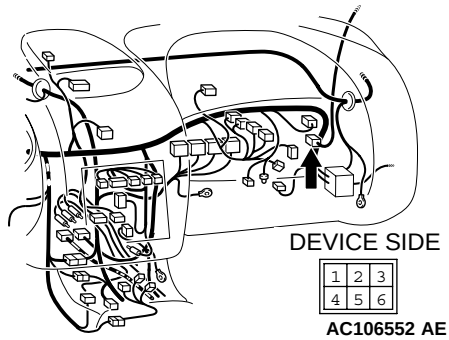
STEP 1. Check the compass-ECU connector C-38 and compass sensor connector D-23for damage.

Q: Are the compass-ECU connector C-38 and compass sensor D-23 in good condition?

YES : Go to Step 2.

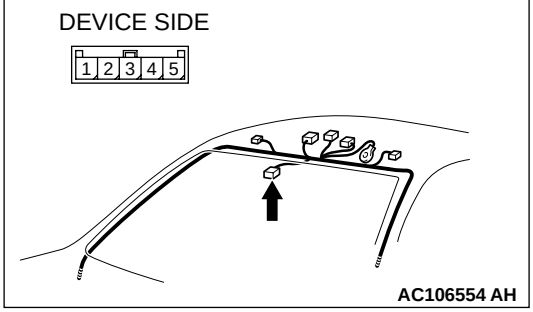
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR: C-38



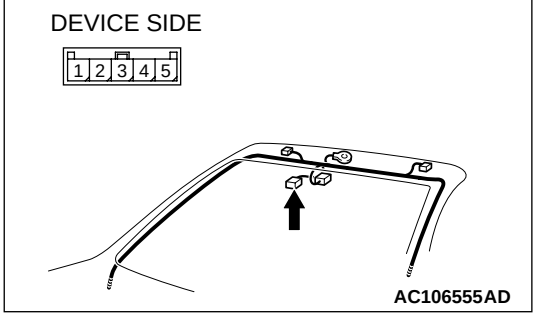
AC106552 AE

CONNECTOR <ECLIPSE> : D-23



AC106554 AH

CONNECTOR <ECLIPSE SPYDER> : D-23



AC106555AD

STEP 2. Check the compass sensor connector D-23 and compass-ECU connector C-38.

(1) Disconnect the compass sensor connector D-23 and compass-ECU connector C-38, measure at the harness side.

(2) Measure the resistance between compass sensor connector D-23 and compass-ECU connector C-38.

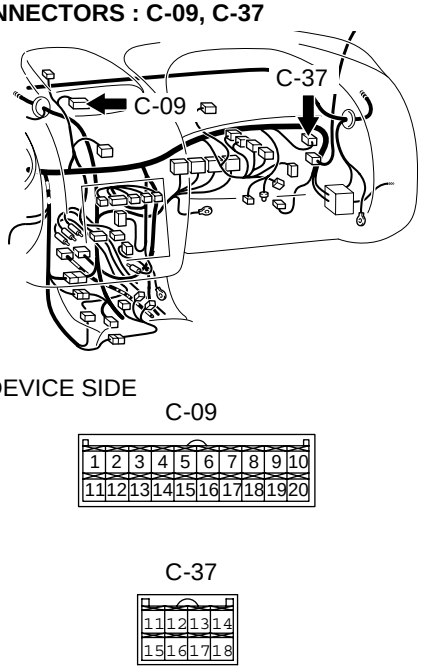
COMPASS-ECU CONNECTOR C-38 TERMINAL NO.	COMPASS SENSOR CONNECTOR D-23 TERMINAL NO.	SPECIFIED CONDITION
1	5	Should be less than two ohm
2	2	
3	3	
4	4	
6	1	
5	Shield wire between compass-ECU and compass sensor	

Q: Is the resistance value less than two ohm?

YES : Go to Step 3.

NO : Repair the wiring harness.

CONNECTORS : C-09, C-37



AC106563 AS

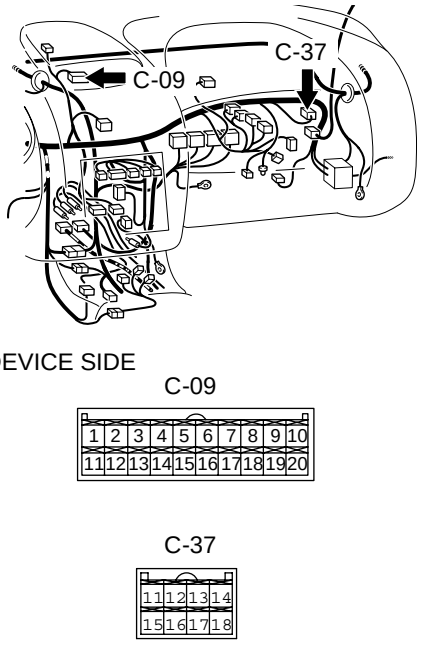
STEP 3. Check the compass-ECU connector C-37 and multi-center display connector C-09 for damage.

Q: Are the compass-ECU connector C-37 and multi-center display connector C-09 in good condition?

YES : Go to Step 4.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTORS : C-09, C-37



AC106563 AS

STEP 4. Check the compass-ECU connector C-37 and multi center display connector C-09.

(1) Disconnect the compass-ECU connector C-37 and multi-center display connector C-09, measure at the harness side.

(2) Measure the resistance between compass-ECU connector C-37 and multi-center display connector C-09.

COMPASS-ECU CONNECTOR C-37 TERMINAL NO.	MULTI-CENTER DISPLAY CONNECTOR C-09 TERMINAL NO.	SPECIFIED CONDITION
11	20	Should be less than two ohm
13	18	
14	16	
15	19	
16	13	
17	17	
18	Shield wire between compass-ECU and multi-center display	

Q: Is the resistance value less than two ohm?

YES : Go to Step 5.

NO : Repair the wiring harness.

TSB Revision

STEP 5. Replace the compass sensor.

(1) Replace the compass sensor.
(2) The system should communicate with the compass is normally.

Q: Is the compass displayed correctly?

YES : No action to be taken.
NO : Replace the compass-ECU.

INSPECTION PROCEURE 3: The Compass is not Correct.

STEP 1. Check the vehicle location

Q: Are there any constructions, such as high-voltage wires or a steel bridge, which might affect the compass sensor?

YES : After moving to a location where the magnetic field is stable, check the faulty condition again.
NO : Go to Step 2.

STEP 2. Correct magnetization

Q: Was magnetization corrected?

YES : Go to Step 3.
NO : Correct magnetization. (Refer to P.54A-266.)

STEP 3.Correct magnetic declination

Q: Was magnetic declination corrected?

YES : Go to Step 4.
NO : Correct the magnetic declination. (Refer to P.54A-264.)

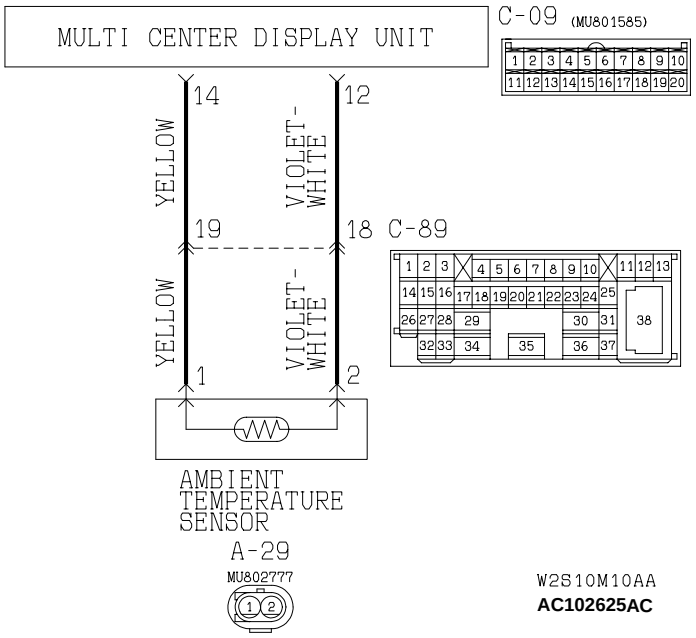
STEP 4. Demagnetize

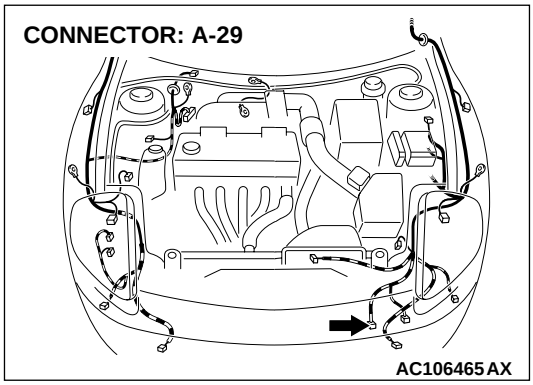
Q: Was that demagnetized?

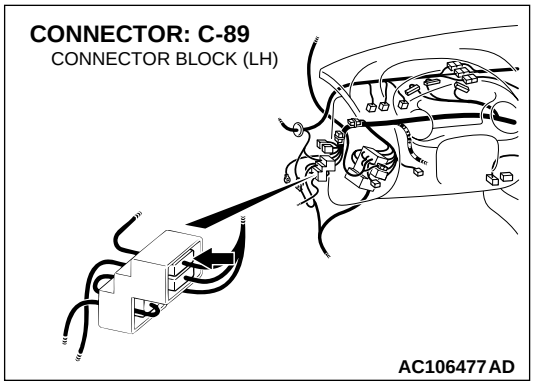
YES : Replace the compass sensor.
NO : Demagnetize it. (Refer to P.54A-266.)

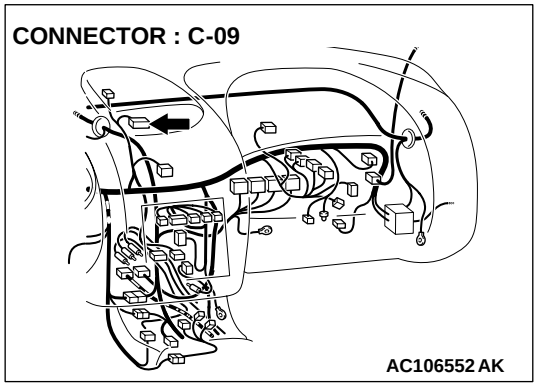
INSPECTION PROCEDURE 4: The Ambient Temperature Screen Displayed "E0°F" (Ambient Sensor Open Circuit) or "-E5°F" (Ambient Sensor Short Circuit). These are Error Message.

Ambient Temperature Sensor Circuit









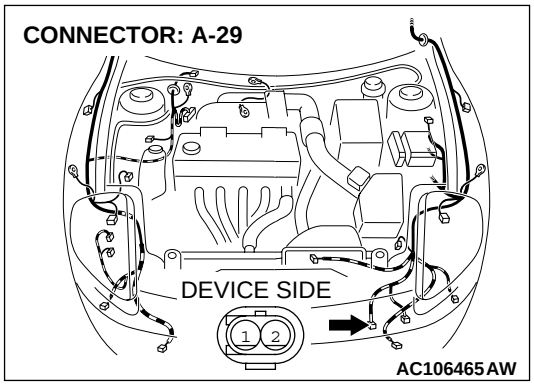
CIRCUIT OPERATION
The ambient sensor signal sent to multi-center display.

TECHNICAL DESCRIPTION (COMMENT)
The ambient circuit is suspected to be open or short.

TSB Revision

TROUBLESHOOTING HINTS

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

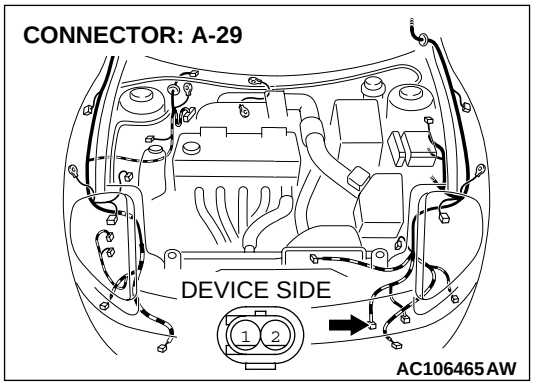


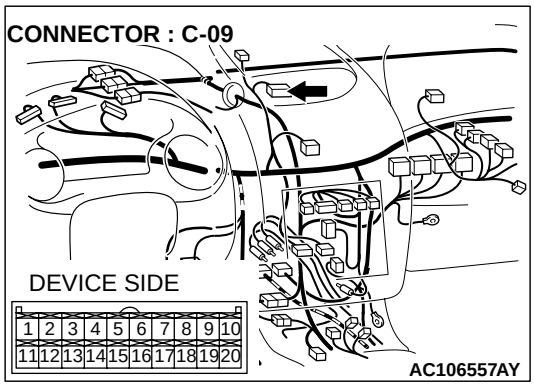
STEP 1. Check the ambient sensor connector A-29 for damage.

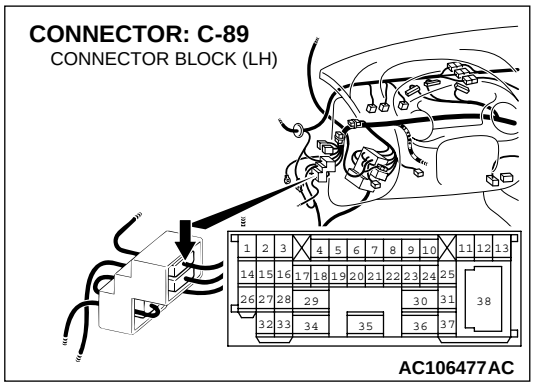
Q: Is the ambient sensor connector A-29 in good condition?

YES : Go to Step 2.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.







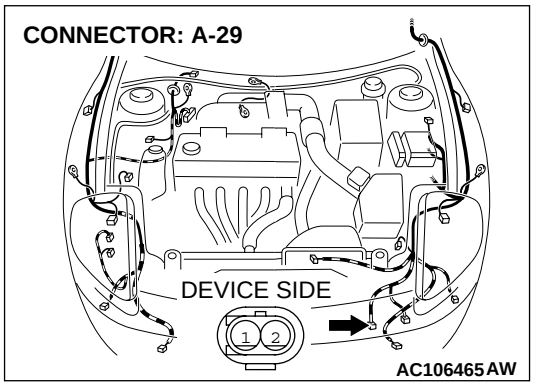
STEP 2. Check the wiring harness between ambient sensor connector A-29 (terminals 1 and 2) and multi-center display connector C-09 (terminals 14 and 12).

NOTE: After checking intermediate connector C-89, check the wires. If intermediate connector C-89 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 sensor connector A-29 (terminals 1 and 2) and multi-center display connector C-09 (terminals 14 and 12) in good condition?

YES : Go to Step 3.

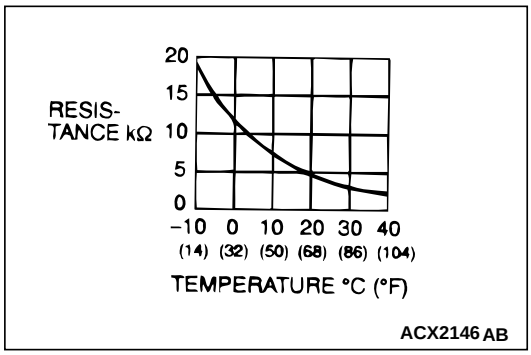
NO : Repair the wiring harness. The multi-center display should work normally.



STEP 3. Check the ambient sensor

(1) Remove the front bumper.

(2) Remove the ambient sensor connector A-29 (Refer to P.54A-268).



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

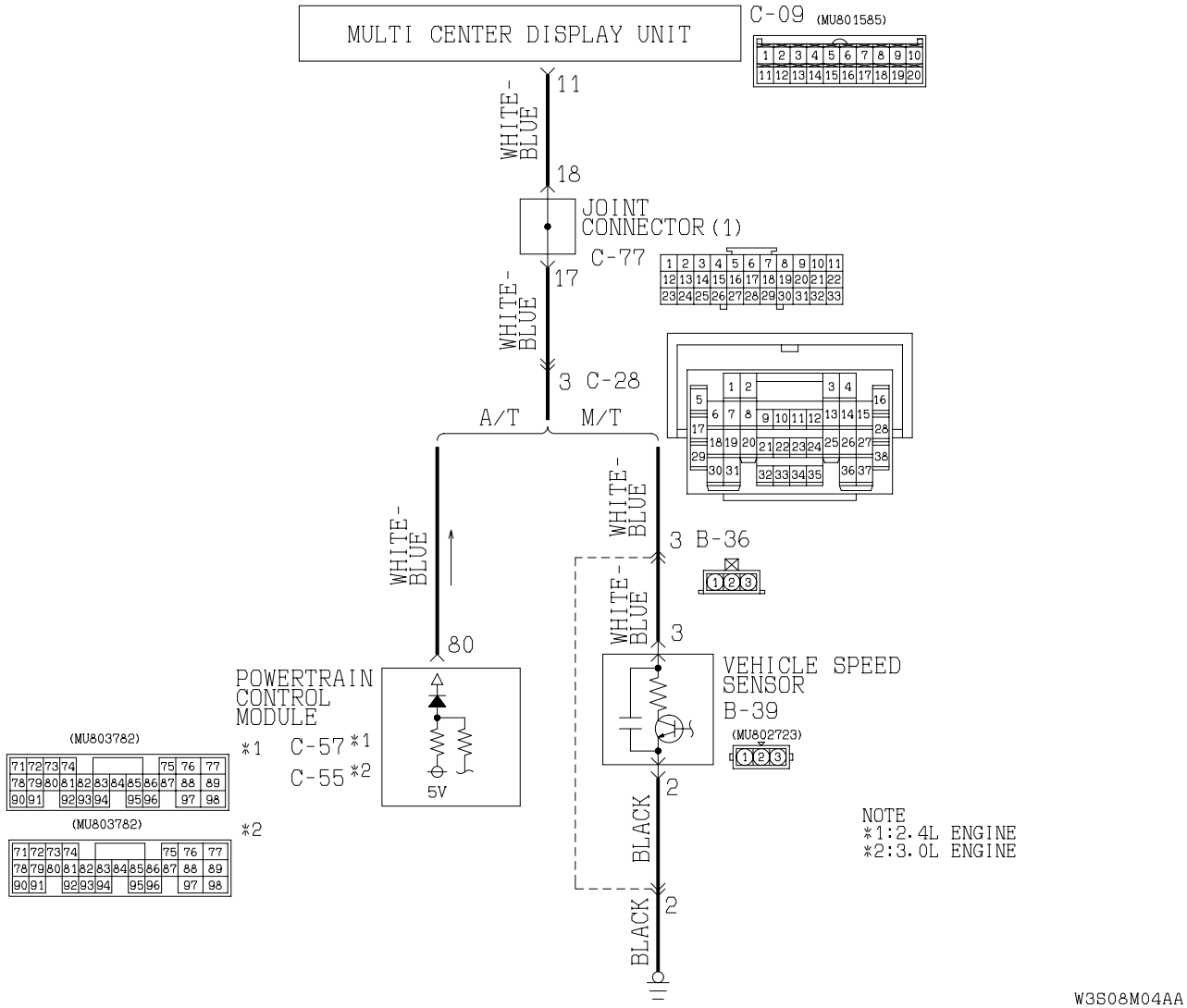
Q: Does the resistance value exist within the characteristic graph?

YES : There is no action to be taken.

NO : Replace the ambient sensor.

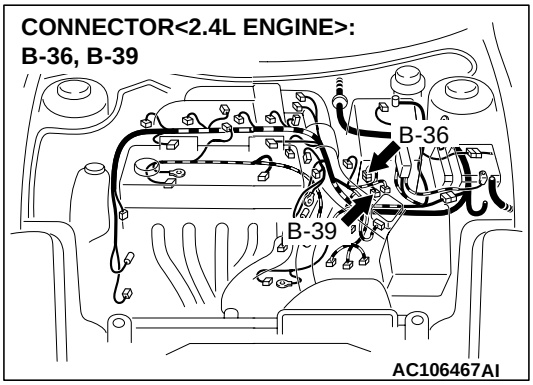
INSPECTION PROCEDURE 5: The Ambient Temperaure and Compass Screen do not Change.

Vehicles Speed Sensor Circuit



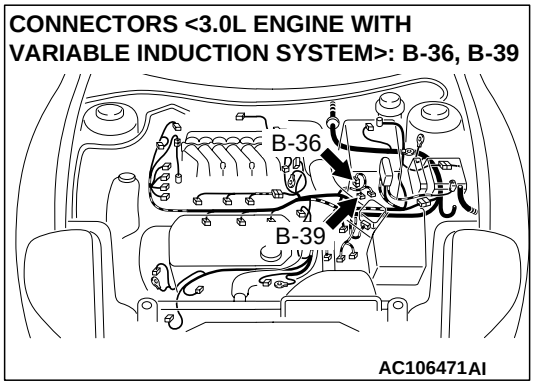
W3S08M04AA
AC106590AB

CONNECTOR<2.4L ENGINE>: B-36, B-39



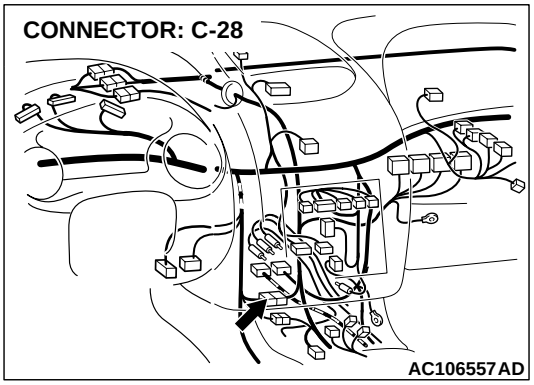
AC106467AI

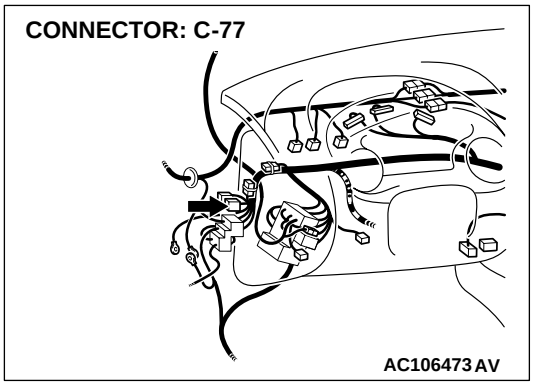
CONNECTORS <3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39

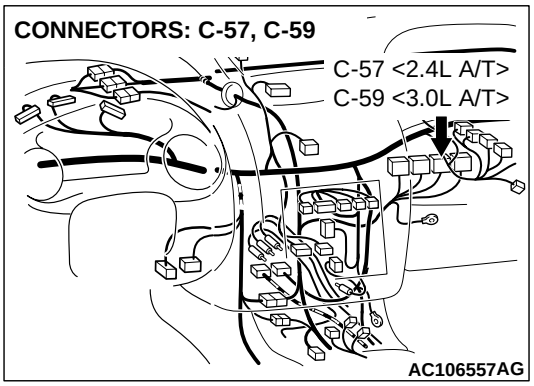


AC106471AI

TSB Revision







CIRCUIT OPERATION
Vehicle speed sensor signal is sent to multi-center display.

TECHNICAL DESCRIPTION (COMMENT)
Ambient temperature and compass display on multi-center display won't be updated until vehicle speed gets 6.2 mph (10km/h) or more.

TROUBLESHOOTING HINTS
- Malfunction of the vehicles speed sensor
- Malfunction of the multi-center display
- Damaged wiring harness and connectors

DIAGNOSIS

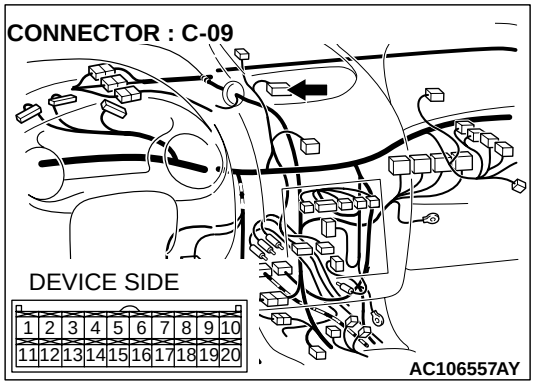
STEP 1. Check the speedometer

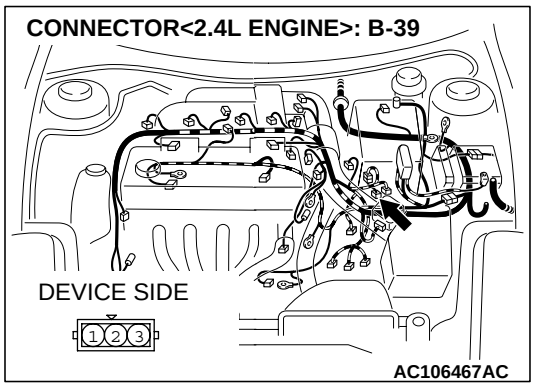
Q: Is the speedometer in good condition?

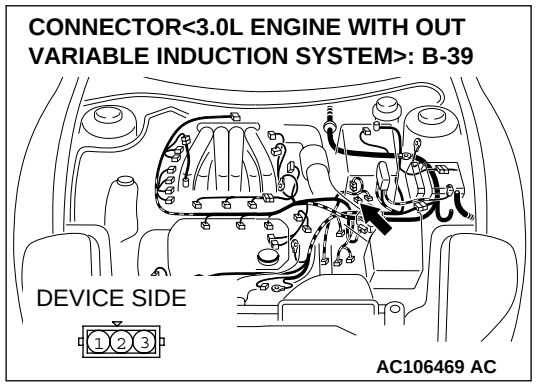
YES : Go to Step 2.

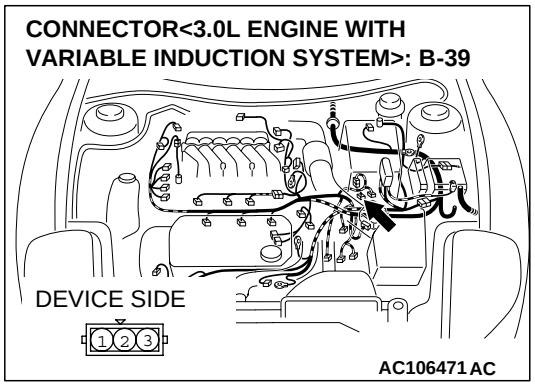
NO : Refer to Combination Meter – Troubleshooting P.54A-40.

STEP 2. Check the connector between multi-center display connector C-09 and vehicles speed sensor connector B-39 <M/T> or PCM connector C-57 <2.4L-A/T>, C-59 <3.0L-A/T> for damage.

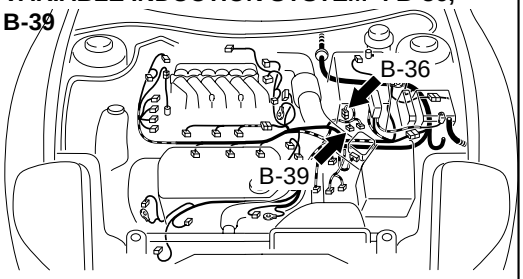


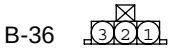






CONNECTORS<3.0L ENGINE WITH VARIABLE INDUCTION SYSTEM>: B-36, B-39





DEVICE SIDE

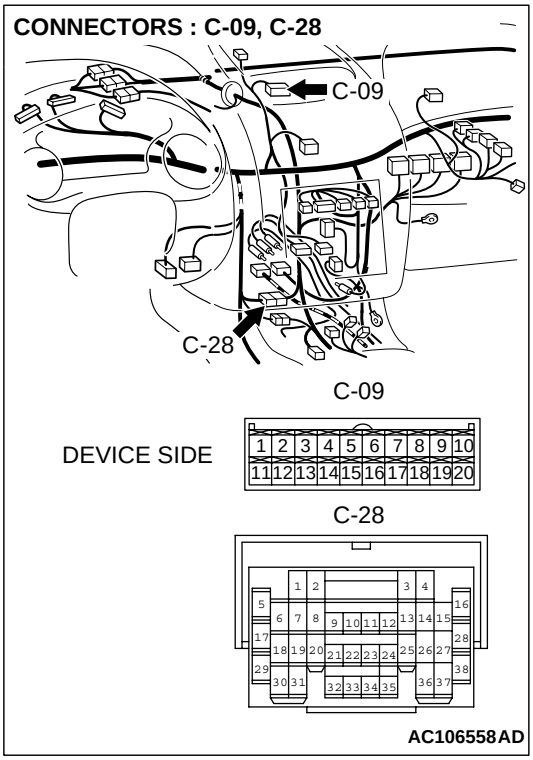
AC106472 AB

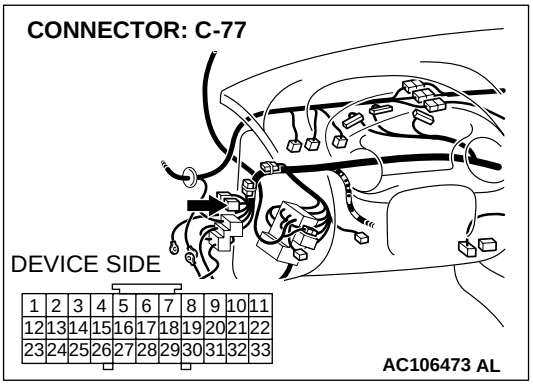
Q: Are multi-center display connector C-09 and vehicles speed sensor connector B-39 <M/T> or PCM connector C-57 <2.4L-A/T>, C-59 <3.0L-A/T> in good condition?

YES : Go to Step 3.

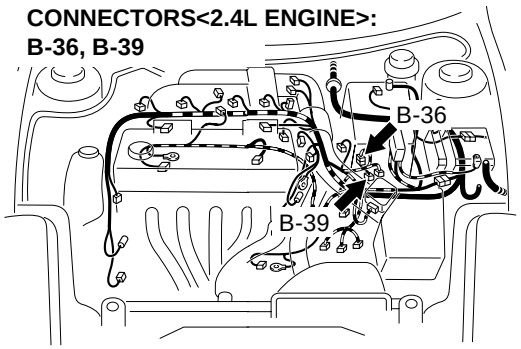
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 3. Check the wiring harness between multi-center display connector C-09 and vehicles speed sensor connector B-39 <M/T> or PCM connector C-57 <2.4L-A/T>, C-59 <3.0L-A/T>.





CONNECTORS<2.4L ENGINE>: B-36, B-39



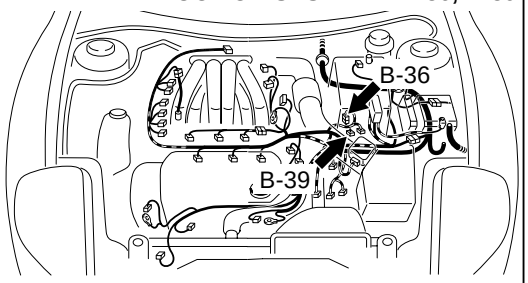
B-36 

DEVICE SIDE

B-39 

AC106468 AB

CONNECTORS<3.0L ENGINE WITH OUT VARIABLE INDUCTION SYSTEM>: B-36, B-39

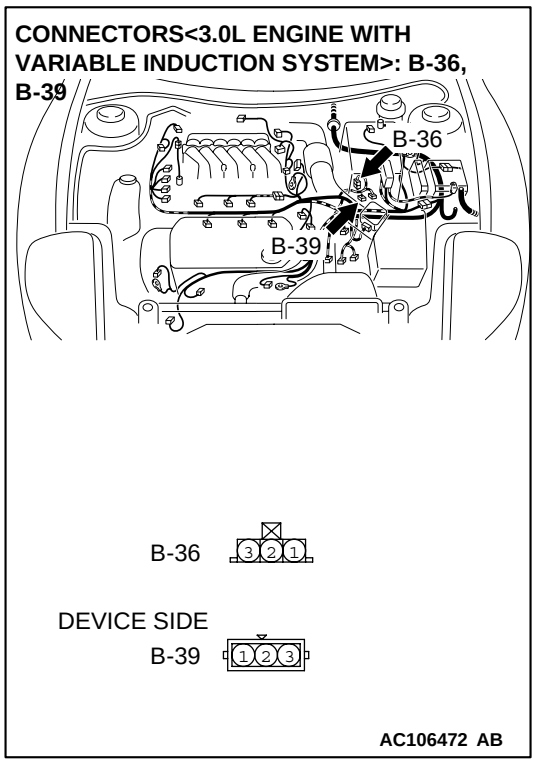


B-36 

DEVICE SIDE

B-39 

AC106469 AB



NOTE: After checking intermediate connector B-36 and C-28, joint connector C-77, check the wires. If intermediate connector B-36 and C-28, joint connector C-77 are 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 connector C-09 and vehicles speed sensor connector B-39 <M/T> or PCM connector C-57 <2.4L-A/T>, C-59 <3.0L-A/T> in good condition?

YES : Replace the multi-center display.

NO : Repair the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

ON-VEHICLE SERVICE

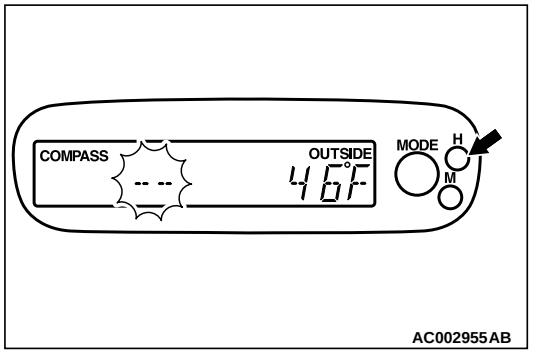
COMPASS CALIBRATION

M1543013800051

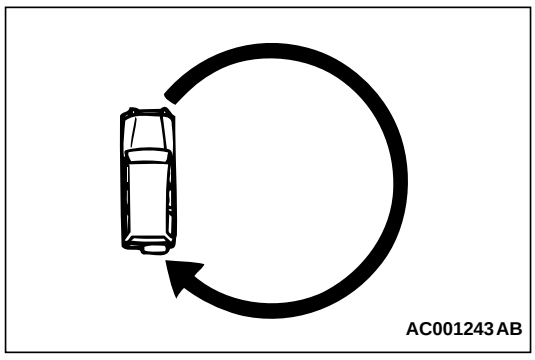
One Turn Magnetie Compensation

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.

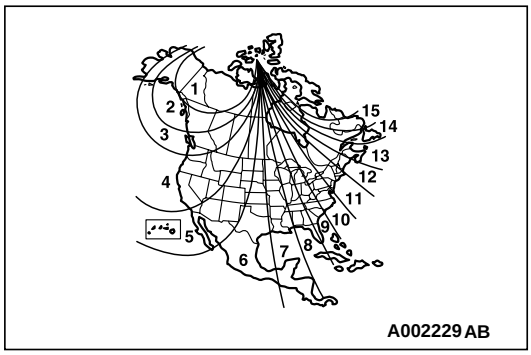
1. Engine started.
2. Display the compass on the multi-center display.
3. Press and hold the "H" switch until "-- --" appears in the display.
4. Release the switch to enter the calibration mode.



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



Deflection Angle Compensation

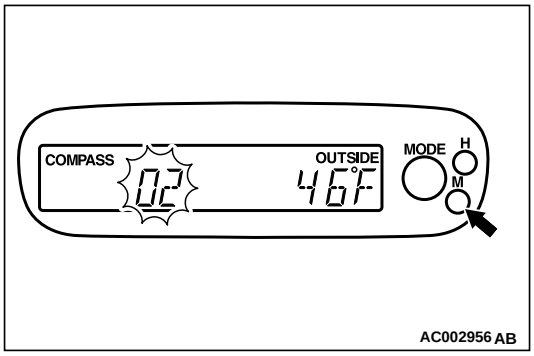


A002229 AB

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.

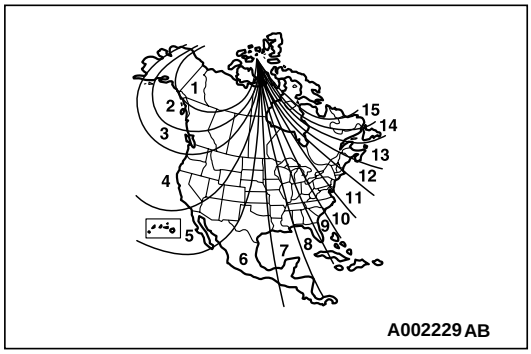
If not adjusted to account for compass variance, compass could give false readings.



AC002956 AB

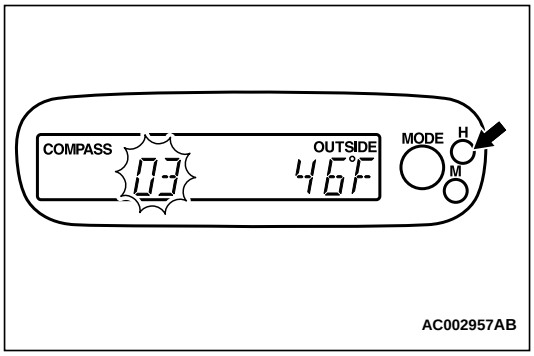
ADJUST FOR COMPASS VARIANCE

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



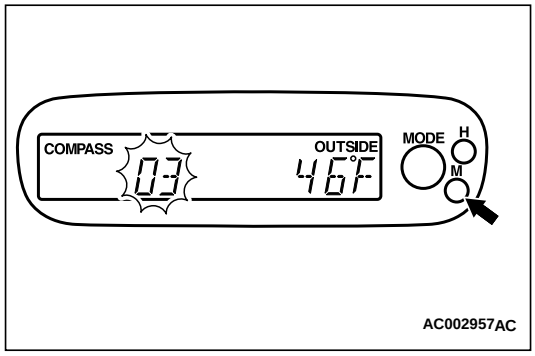
A002229 AB

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



AC002957AB

3. Press the "H" switch repeatedly until the new zone number.



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-253.

NOTE: Do not install the ski rack, antenna, etc., which are attached to the vehicle by means of a magnet. They affect the operation of compass.

NOTE: The compass may not indicate the correct compass direction in the place shown below:

- *Tunnels*
- *Railroads*
- *Underpass/Overpass*
- *Transforming station*
- *Large metal structures*
- *Area over the subway*

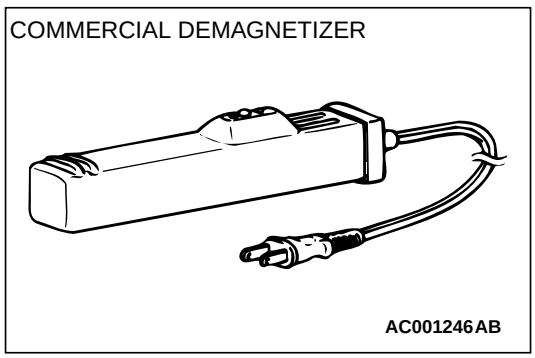
NOTE: The compass returns to the correct compass direction vehicle moves to an area where the geomagnetism is stabilized.

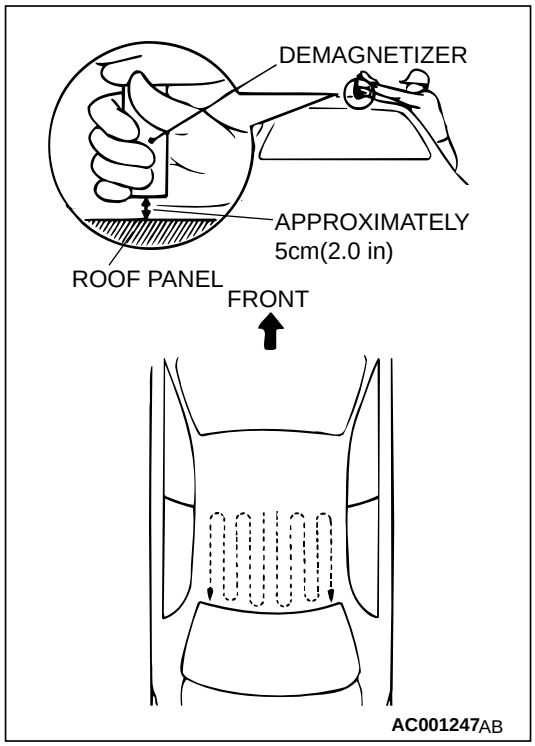
VEHICLE MAGNETIC COMPENSATION

M1543009700114

Demagnetization and correction method

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 contrary. Absolutely avoid this.

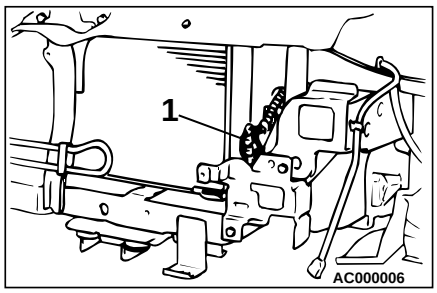
3. Slowly draw the demagnetizer apart from the body. Turn off the switch of demagnetizer when it is apart from the body more than 5 cm (2.0 inches).

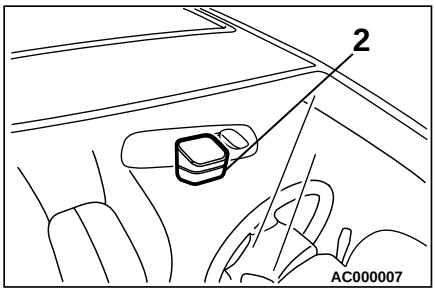
⚠ CAUTION

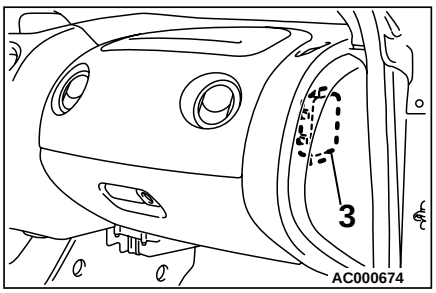
If the demagnetizer is turned off near the body or it is suddenly separated from the body, the magnetizing condition of body becomes worse to the contrary. Absolutely avoid these.

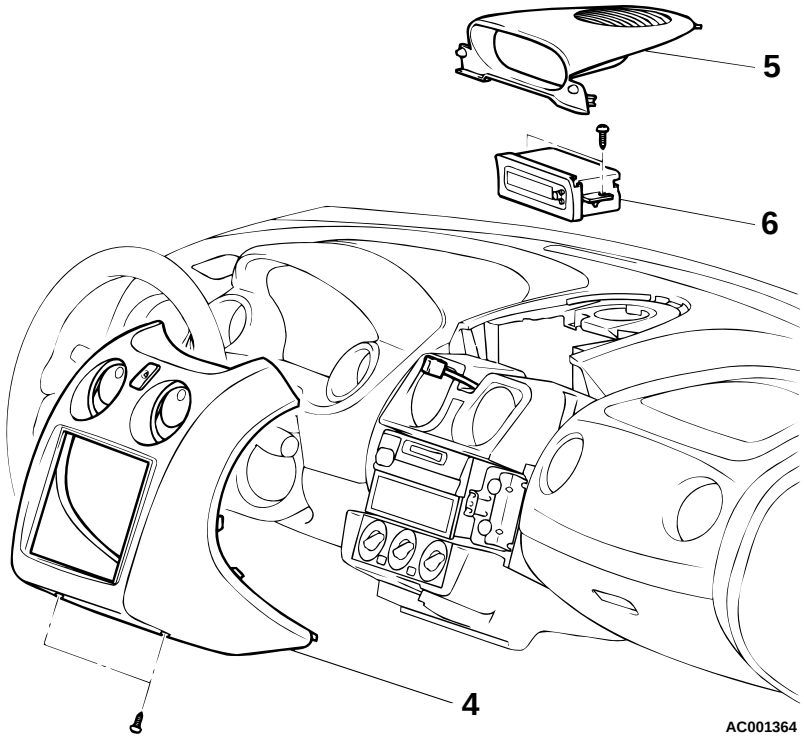
REMOVAL AND INSTALLATION

M1543013600068









AC002457 AB

AMBIENT SENSOR REMOVAL STEPS

- FRONT BUMPER (REFER TO GROUP 13, FRONT BUMPER P.51-4.)

1. AMBIENT SENSOR

COMPASS SENSOR REMOVAL

2. COMPASS SENSOR

COMPASS-ECU REMOVAL STEPS

- COWL SIDE TRIM (REFER TO GROUP 52A, TRIMS P.52A-9.)

3. COMPASS-ECU

MULTI-CENTER DISPLAY REMOVAL STEPS

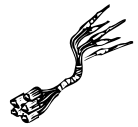
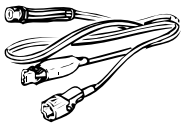
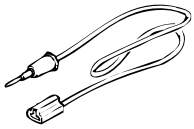
4. CENTER PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
5. CENTER HOOD (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
6. MULTI-CENTER DISPLAY

TSB Revision

SPECIAL TOOLS

SPECIAL TOOLS

M1543000600648

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  B  C  D  MB991223AC	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	MB991223	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

THEFT ALARM

THEFT-ALARM SYSTEM DIAGNOSIS

THEFT-ALARM SYSTEM

M1547000900157

The "SECURITY" system is controlled by the Simplified Wiring System (SWS). For troubleshooting, refer to GROUP 54B, SWS Diagnosis – Symptom Chart P.54B-17.

THEFT ALARM REMOVAL AND INSTALLATION

REMOVAL AND INSTALLATION

M1547001000157

Theft alarm system component parts

- Theft alarm horn and "SECURITY" horn relay (refer to P.54A-125.)
- Door switch (refer to GROUP 42, Door – Door Assembly P.42-53.)
- Door lock actuator and door lock key cylinder switch (refer to GROUP 42, Door - Door Handle and Latch P.42-62.)
- Hood switch (refer to GROUP 42, Hood P.42-7.)
- Liftgate lock key cylinder switch and liftgate latch switch (refer to GROUP 42, Liftgate – Liftgate Handle and Latch P.42-70.)
- Key reminder switch (refer to P.54A-37.)

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1544004600159

ITEMS	SPECIFICATIONS
Amplifier mounting screw	1.5 ±0.5 N·m (13 ± 4 in-lb)
Door speaker mounting screw	1.4 ±0.1 N·m (12 ± 1 in-lb)
Engine coolant temperature gauge unit	16 ±2 N·m (11 ± 2 ft-lb)
Fog light assembly mounting bolt	4.9 ±0.7 N·m (43 ± 6 in-lb)
Front seat mounting nut	30 ±5 N·m (22 ± 4 ft-lb)
Front seat mounting bolt	44 ±10 N·m (33 ± 7 ft-lb)
Headlight mounting bolt	4.9 ±0.7 N·m (43 ± 6 in-lb)
High-mounted stop light mounting bolt	4.9 ±0.7 N·m (43 ± 6 in-lb)
Horn mounting bolt	11 ±2 N·m (96 ± 17 in-lb)
Radio, tape player, CD player and CD auto changer mounting screw	1.4 ±0.1 N·m (12 ± 1 in-lb)
Radio bracket mounting bolt	1.4 ±0.1 N·m (12 ± 1 in-lb)
Rear combination light mounting nut	4.9 ±0.7 N·m (43 ± 6 in-lb)
Rear speaker mounting screw	1.4 ±0.1 N·m (12 ± 1 in-lb)
Tweeter mounting nut	1.4 ±0.1 N·m (12 ± 1 in-lb)

SERVICE SPECIFICATIONS

M1543000300142

<IMMOBILIZER SYSTEM>

ITEM	STANDARD VALUE
Ignition key ring antenna resistance Ω	2 or less

<COMBINATION METER>

ITEMS		STANDARD VALUE
Speedometer indication allowance range km/h (mph)	32 (20)	31 – 35 (19 – 22)
	64 (40)	61 – 71 (38 – 44)
	97 (60)	9 – 106 (57 – 66)
	129 (80)	122 – 142 (76 – 88)
	161 (100)	151 – 177 (94 – 110) (151 – 177)
Tachometer indication allowance range r/min	700	±100
	3,000	±150
	5,000	±250
	6,000	±300
Fuel gauge unit resistance Ω	Float point 'F'	3 – 5
	Float point 'E'	110 – 112
Fuel gauge unit float height mm (in)	A (Float point 'F')	180.3 (7.10)
	B (Float point 'E')	18.8 (0.74)
Engine coolant temperature gauge unit resistance Ω		104 + 13.5

ITEMS		STANDARD VALUE
Fuel gauge resistance Ω	Power supply and ground	Approximately 233
	Power supply and fuel gage	Approximately 108
	Fuel gage and ground	Approximately 125
Engine coolant temperature gauge resistance Ω	Power supply and ground	Approximately 176
	Power supply and engine coolant temperature	Approximately 54
	Engine coolant temperature and ground	Approximately 230

<HEADLIGHT>

ITEMS	STANDARD VALUE	LIMIT
Headlight aiming (vertical direction)	53mm(2.1 in) (0.4°) below horizontal (H)	Standard value± 50mm(2.0 in) (± 0.38°)
Headlight intensity cd (at high-beam)	-	40,000 or more {when a screen is set 18.3m(60 feet) ahead of the vehicles}

<FOG LIGHT>

ITEMS	STANDARD VALUE	LIMIT
Fog light aiming (vertical direction)	Top of the hot zone should be 101 mm (4.0 inches) (0.76°) downward from the height of the fog light center.	Top of the hot zone should be 152 cm (6.0 in) (1.14°) in maximum downward from the height of the fog light center.

SEALANTS AND ADHESIVES

M1543000500135

<COMBINATION METER>

ITEM	SPECIFIED SEALANT	REMARK
Engine coolant temperature gauge unit threaded portion	3M™ AAD part No. 8731, Locktite®242 Blue Service Tool Removable or equivalent	Drying sealant

NOTES