

GROUP 54A

CHASSIS ELECTRICAL

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BATTERY

SERVICE SPECIFICATIONS

M1541000300276

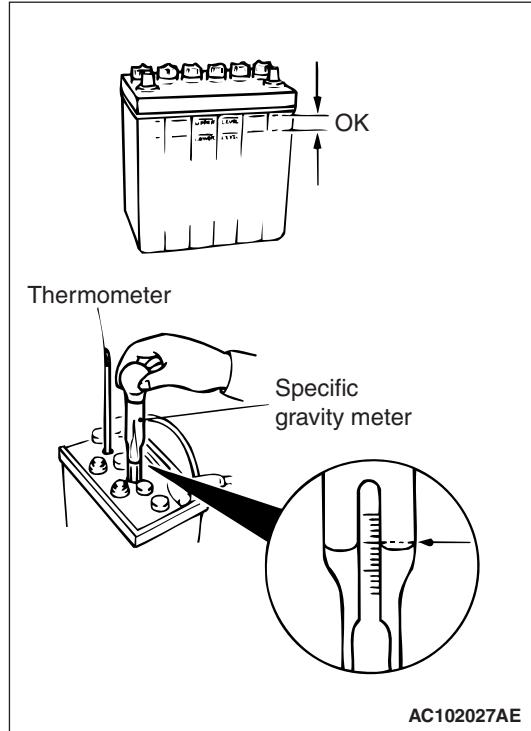
| Item | Standard value |
|--------------------------------------|--|
| Battery electrolyte specific gravity | 1.220 – 1.290 (electrolyte temperature 20°C) |

ON-VEHICLE SERVICE

FLUID LEVEL AND SPECIFIC GRAVITY
CHECK

M1541000900096

⚠ CAUTION



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

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

Standard value: 1.220 – 1.290 (electrolyte temperature 20°C)

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

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

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

t: Electrolyte temperature at the time of measurement

D_t: Actual specific gravity

CHARGING

M1541001100639

⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, replace the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

- Remove the battery from the vehicle.
- The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

| Battery type | Capacity (5-hour rate) | Normal charging current | Rapid charging current |
|--------------|------------------------|-------------------------|------------------------|
| 75D23L | 52 A | 5.2 A | 52 A |

3. Determine when charging is finished.

- When the specific gravity of the battery electrolyte is constantly within 1.250 – 1.290 for a continuous period of one hour or more.
- When the voltage per cell during charging is 2.5 – 2.8 V constantly for a continuous period of one hour or more.

Step 2. Battery charging

Q: Does the battery recharge?

YES : Recharge the battery at 5A (constant-current charging) and then go to Step 1. (Refer to Table 1.)

NO : Go to Step 3.

BATTERY TEST

TEST STEPS

M1541001200647

Step 1. Battery no-load voltage check

- (1) Illuminate the headlamp for 15 seconds.
- (2) Turn off the headlamp and then leave it for about 2 minutes to stabilise the battery voltage.
- (3) Remove the battery cable.
- (4) Measure the battery no-load voltage.

OK: 12.4 V or more (Specific gravity 1.240)

Q: Does the measured voltage correspond with this range?

YES : Go to Step 3.

NO : Go to Step 2.

STEP 3. Load test check

- (1) Connect the battery tester to battery.
- (2) Feed a load current through the battery. (Refer to Table 1.)
- (3) Measure the battery voltage after 15 seconds and then eliminate a load current.
- (4) Compare the measured voltage to the specified lowest voltage. (Refer to Table 2.)

Q: Is the measured voltage higher than the lowest voltage?

YES : The battery is normal.

NO : Replace the battery.

(TABLE 1)

| | | |
|--|--------|--|
| Battery type | 75D23L | |
| Charging time when fully discharged [5A constant current charging] (H) | 11 | |
| Load current (A) | 260 | |

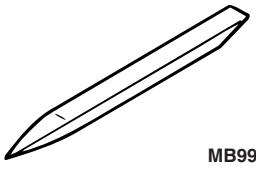
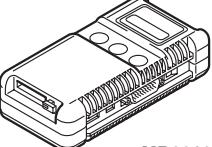
(TABLE 2)

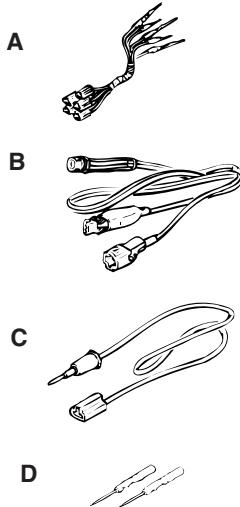
| Outside air temperature (°C) | 21 or more | 16 – 20 | 10 – 15 | 4 – 9 | -1 – -3 | -7 – -2 | -12 – -8 | -18 – -13 |
|------------------------------|------------|---------|---------|-------|---------|---------|----------|-----------|
| Minimum voltage (V) | 9.6 | 9.5 | 9.4 | 9.3 | 9.1 | 8.9 | 8.7 | 8.5 |

IGNITION SWITCH

SPECIAL TOOLS

M1543000602031

| Tool | Number | Name | Application |
|---|--|---|--|
|  MB990784 | MB990784 | Ornament remover | Steering column cover removal |
| A  MB991824 | MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826 | MUT-III sub-assembly A: (V. C.I.) Vehicle communication interface B: MUT-III USB cable C: MUT-III Main harness A (Vehicles with CAN communication system) D: MUT-III Main harness B (Vehicles without CAN communication system) E: MUT-III Measurement adapter F: MUT-III Trigger harness | Diagnosis code check CAUTION For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly. |

| Tool | Number | Name | 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 | 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 |

TROUBLESHOOTING

IGNITION SWITCH

The ignition switch is controlled by the Smart Wiring System (SWS). For troubleshooting, refer to respective Groups below.

- Not using SWS monitor: GROUP 54B, Troubleshooting [P.54B-74](#).
- Using SWS monitor: GROUP 54C, Troubleshooting [P.54C-44](#).

M1543000701198

ENCRYPTED CODE REGISTRATION CRITERIA TABLE

The ignition key contains a transponder (small transmitter), which retains an unique encrypted code. Under any of the conditions below, the encrypted code should be registered in the immobilizer-ECU again. The immobilizer-ECU can retain maximum eight different encrypted codes. This means that maximum eight ignition keys can be registered.

M1543026000033

| Component to be replaced | Engine-ECU <M/T> or Engine-A/T-ECU <A/T> | Immobilizer-ECU | Ignition key |
|---|--|------------------------|----------------------------|
| When engine-ECU <M/T> or engine-A/T-ECU <A/T> is replaced | - | Should not be replaced | Should not be replaced |
| | | | Should be registered again |

IMMOBILIZER

STANDARD FLOW OF DIAGNOSIS

TROUBLESHOOTING

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

DIAGNOSTIC FUNCTION

M1543007000647

HOW TO READ DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

| Component to be replaced | Engine-ECU <M/T> or Engine-A/T-ECU <A/T> | Immobilizer-ECU | Ignition key |
|---|--|---------------------------|--|
| When Engine-ECU <M/T> or Engine-A/T-ECU <A/T> is overwritten* | – | Should not be replaced | Should not be replaced |
| | | | Should be registered again |
| When immobilizer-ECU is replaced | Should not be replaced | – | Should not be replaced |
| | | | All ignition keys should be registered again |
| When ignition key is added | Should not be replaced | Should not be replaced | <ul style="list-style-type: none"> Additional ignition key should be registered All ignition keys should be registered again |
| When ignition key is lost | Should not be replaced | Should not be replaced | All the ignition keys other than the lost one should be registered again |

NOTE: *: When the engine-ECU <M/T> or
engine-A/T-ECU <A/T> other than immobilizer
system is rewritten, it is not necessary to register the
ignition key again.

CHART CLASSIFIED BY DIAGNOSIS CODES

M1543007100581

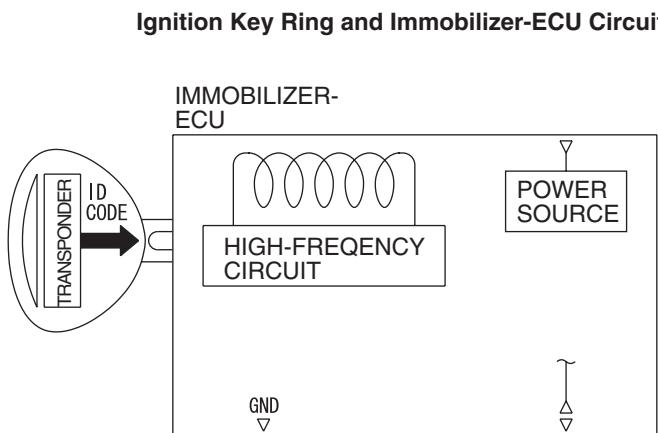
CAUTION

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

| Code No. | Diagnosis contents | Reference page |
|----------|--|--------------------------|
| 11 | Transponder communication system or radio interference of encrypted code. | P.54A-11 |
| 12 | Encrypted codes are not the same or are not registered. | P.54A-11 |

DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No.11 Trouble related to the communication with ignition key



W4X54E192A

DIAGNOSIS CODE SET CONDITIONS

This code is set if the ID code is sent to the immobilizer ECU from the ignition key when the ignition switch is turned to the ON position.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ignition key
- Malfunction of immobilizer ECU

DIAGNOSIS PROCEDURE

Step 1. Check that the engine is started with another registered ignition key.

Q: Is the check result normal?

YES : Replace the ignition key that cannot start the engine with new registered ignition key. Refer to [P.54A-26](#).

NO : Go to Step 2.

Step 2. MUT-III diagnosis code

Check that the immobilizer ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES (diagnosis code No.11 is set) : Replace the immobilizer ECU and register the ignition key.

YES (diagnosis code No.12 is set) : Code No.12 The ignition key is unregistered or ID codes do not match. Refer to [P.54A-11](#).

NO : The procedure is complete.

Code No.12 The ignition key is unregistered or ID codes do not match.

DIAGNOSIS CODE SET CONDITIONS

This code is set when the ignition key is not registered with the immobilizer ECU.

POSSIBLE CAUSES

- The ignition key is not registered with the immobilizer ECU.
- Malfunction of immobilizer ECU

DIAGNOSIS PROCEDURE

Register the encrypted code.

Q: Was the encrypted code registered?

YES : The procedure is complete.

NO : Replace the immobilizer ECU and register the encrypted code. (Refer to [P.54A-26](#).)

Trouble symptom chart

M1543007201321

⚠ CAUTION

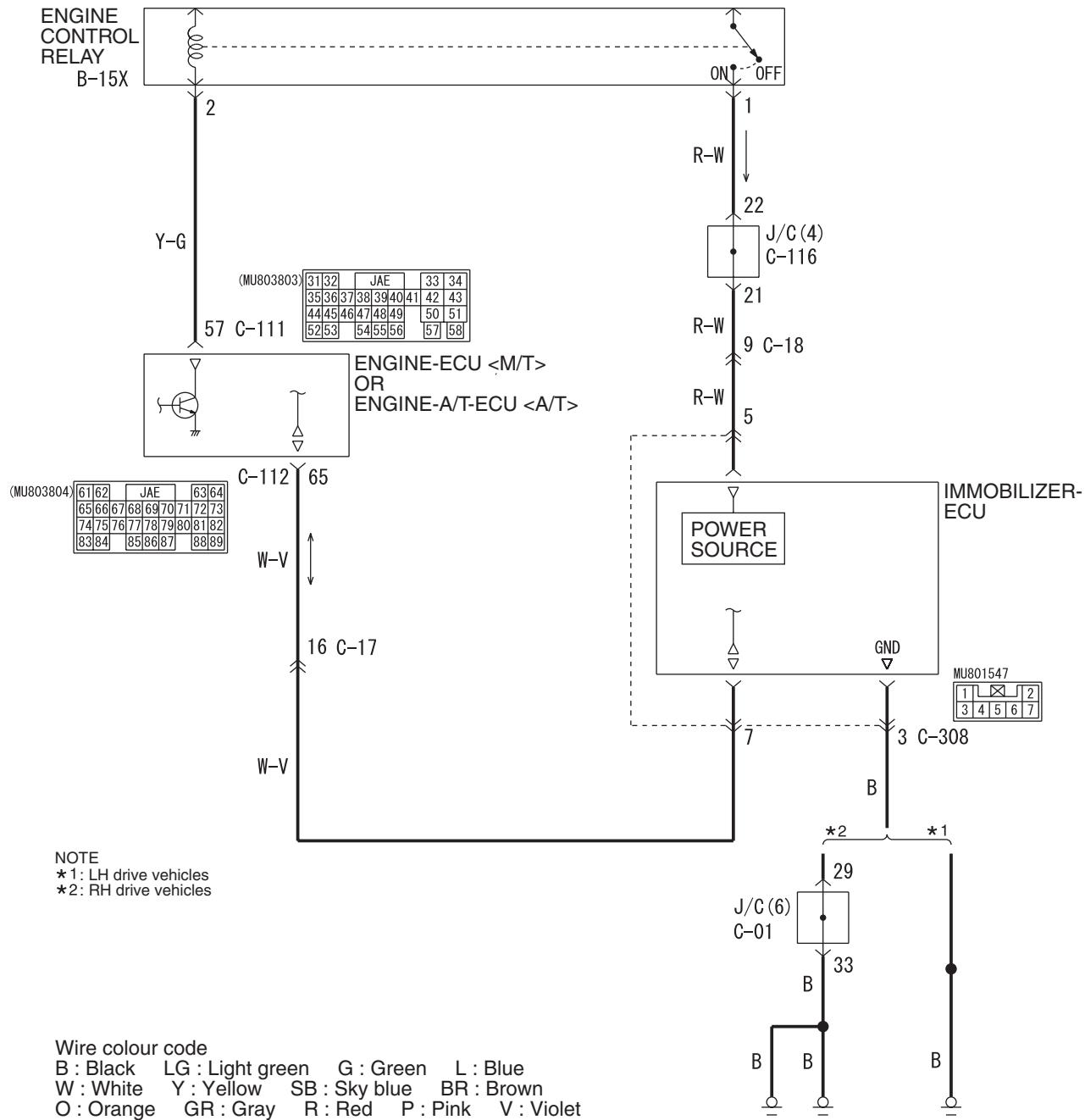
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

| Trouble symptom | Inspection procedure No. | Reference page |
|--|--------------------------|--------------------------|
| Diagnosis code No.P0513 is set to the MPI system or the immobilizer ECU cannot communicate with the MUT-III. | 1 | P.54A-13 |
| The ignition key cannot be registered with the MUT-III. | 2 | P.54A-17 |
| The engine does not start. (cranking occurs but initial combustion does not) | 3 | P.54A-21 |
| Check the power supply and earth circuit to the immobilizer ECU. | 4 | P.54A-21 |

SYMPTOM PROCEDURES

Inspection procedure: 1 Diagnosis code No.P0513 is set to the MPI system or the immobilizer ECU cannot communicate with the MUT-III.

Immobilizer-ECU Power Source, Earth and Engine-ECU <M/T> or Engine-A/T-ECU <A/T> Communication Line Circuit



COMMENTS ON TROUBLE SYMPTOM

The immobilizer ECU communicates with the MUT-III via the engine-ECU <M/T> or the engine-A/T-ECU.

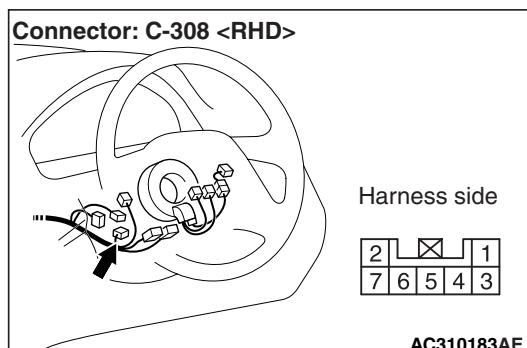
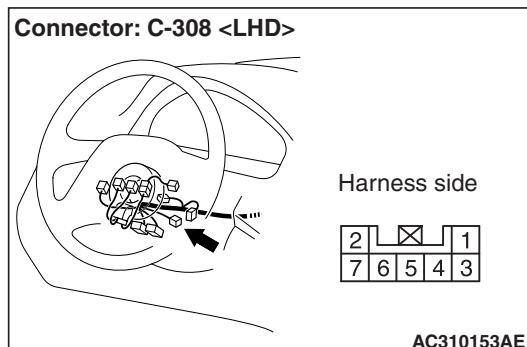
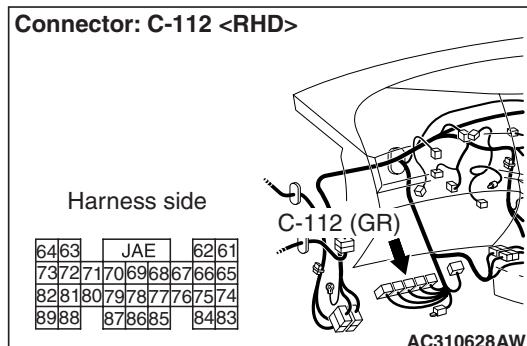
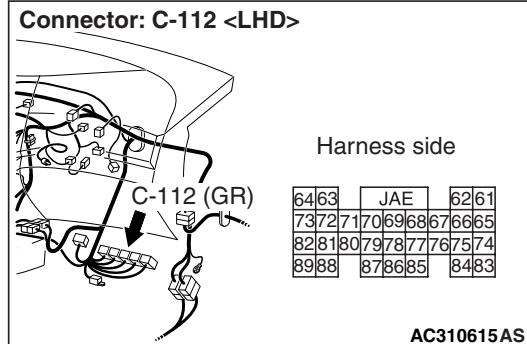
The communication error between the immobilizer ECU and the engine-ECU <M/T> or the engine-A/T-ECU may be occurred.

POSSIBLE CAUSES

- Malfunction of immobilizer ECU power supply and earth
- Damaged harness wires between the engine-ECU <M/T> or the engine-A/T-ECU and the immobilizer ECU

DIAGNOSTIC PROCEDURE

Step 1. Connector check: Key reminder switch connector C-308 and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112



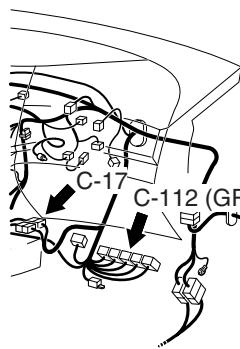
Q: Are key reminder switch connector C-308 and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 in good condition?

YES : Go to Step 2.

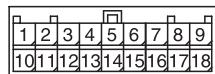
NO : Repair the defective connector.

Step 2. Check the harness wires between key reminder switch connector C-308 (terminal 7) and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 (terminal 65).

Connectors: C-17, C-112 <LHD>



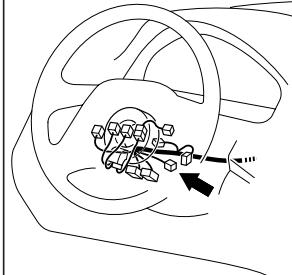
C-17

Harness side
C-112

| | | | | |
|----|----|-----|----|----|
| 64 | 63 | JAE | 62 | 61 |
| 73 | 72 | 71 | 70 | 69 |
| 68 | 67 | 66 | 65 | |
| 82 | 81 | 80 | 79 | 78 |
| 77 | 76 | 75 | 74 | |
| 89 | 88 | 87 | 86 | 85 |
| | | | 84 | 83 |

AC310616AF

Connector: C-308 <LHD>

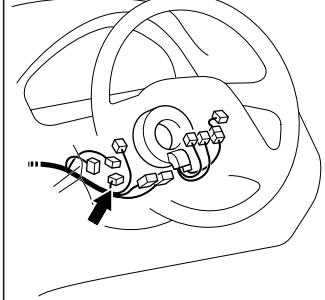


Harness side

| | | | |
|---|---|---|---|
| 2 | | | 1 |
| 7 | 6 | 5 | 4 |

AC310153AE

Connector: C-308 <RHD>

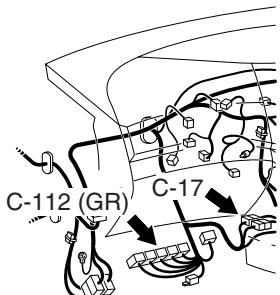


Harness side

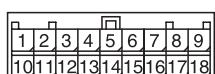
| | | | |
|---|---|---|---|
| 2 | | | 1 |
| 7 | 6 | 5 | 4 |

AC310183AE

Connectors: C-17, C-112 <RHD>



C-17

Harness side
C-112

| | | | | |
|----|----|-----|----|----|
| 64 | 63 | JAE | 62 | 61 |
| 73 | 72 | 71 | 70 | 69 |
| 68 | 67 | 66 | 65 | |
| 82 | 81 | 80 | 79 | 78 |
| 77 | 76 | 75 | 74 | |
| 89 | 88 | 87 | 86 | 85 |
| | | | 84 | 83 |

AC310629AD

NOTE: Prior to the wiring harness inspection, check intermediate connector C-17, and repair if necessary.

Q: Are the harness wires between key reminder switch connector C-308 (terminal 7) and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 (terminal 65) in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Check the immobilizer ECU power supply circuit and earth circuit (Refer to Inspection

Procedure 4 "Check the immobilizer ECU power supply circuit and earth circuit" [P.54A-21](#).)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the power supply and earth circuit to the immobilizer ECU.

STEP 4. Check the trouble symptom

Check that immobilizer ECU communicates with the MUT-III.

Q: Is the check result normal?

YES : Intermittent Malfunction (Refer to GROUP 00 – How to Use

Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#).)

NO : Replace the immobilizer ECU, and then go to Step 5.

STEP 5. Check the trouble symptom

Check that immobilizer ECU communicates with the MUT-III.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the engine-ECU <M/T> or
engine-A/T-ECU <A/T>.

INSPECTION PROCEDURE 2: The ignition key cannot be registered with the MUT-III.

CIRCUIT OPERATION

Refer to P.54A-13.

- Malfunction of engine-ECU <M/T> or
engine-A/T-ECU <A/T>

COMMENTS ON TROUBLE SYMPTOM

If only some ignition key cannot be registered, the ignition key itself may be defective. If no ignition key can be registered, the immobilizer ECU may be defective.

DIAGNOSTIC PROCEDURE

POSSIBLE CAUSES

- Malfunction of ignition key
- Damaged harness wires and connectors
- Malfunction of immobilizer ECU

Step 1. Check that no ignition key can be registered.

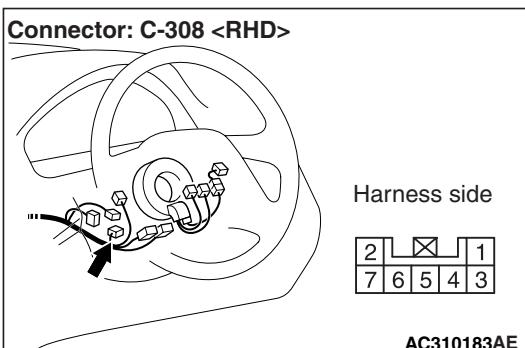
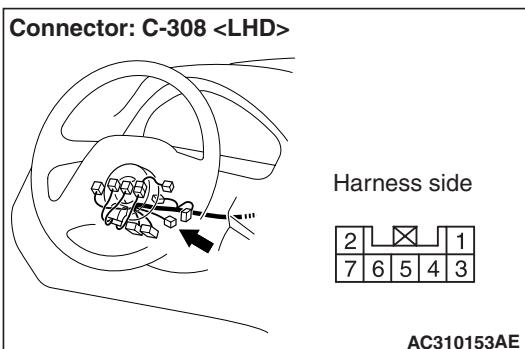
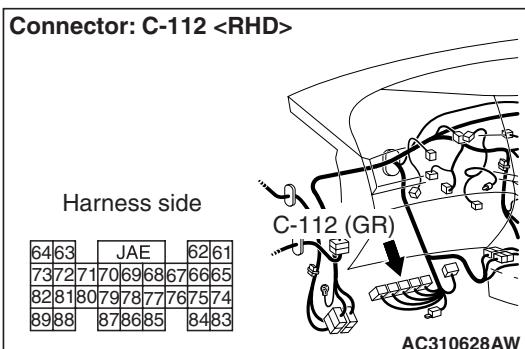
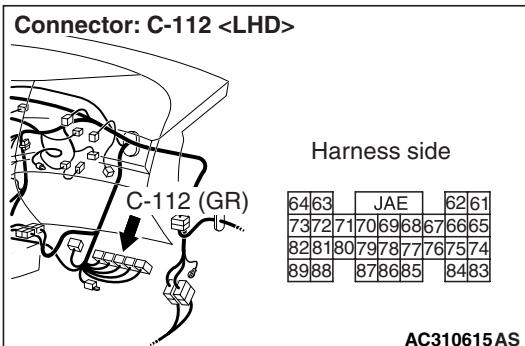
Q: Can any of the ignition keys be registered?

YES : Replace the ignition key that cannot be registered with new registered ignition key.

NO : Go to Step 2.

Step 2. Connector check: Key reminder switch connector C-308 and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112

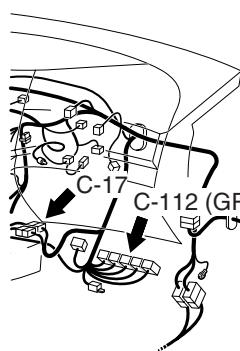
YES : Go to Step 3.
NO : Repair the defective connector.



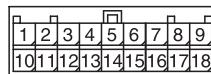
Q: Are key reminder switch connector C-308 and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 in good condition?

Step 3. Check the harness wires between key reminder switch connector C-308 (terminal 7) and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 (terminal 65).

Connectors: C-17, C-112 <LHD>



C-17

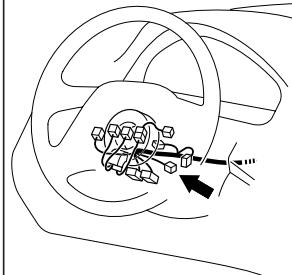
Harness side
C-112

| | | | | |
|----|----|-----|----|----|
| 64 | 63 | JAE | 62 | 61 |
| 73 | 72 | 71 | 70 | 69 |
| 82 | 81 | 80 | 79 | 78 |
| 89 | 88 | 87 | 86 | 85 |

6665 767574 8483

AC310616AF

Connector: C-308 <LHD>

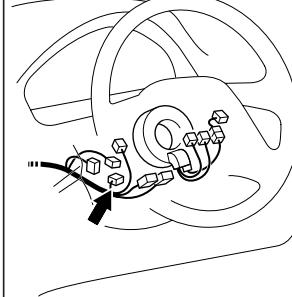


Harness side

| | |
|---|---|
| 2 | 1 |
| 7 | 6 |
| 5 | 4 |
| 3 | |

AC310153AE

Connector: C-308 <RHD>

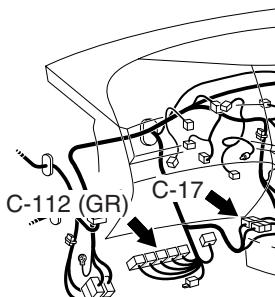


Harness side

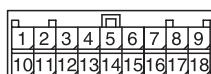
| | |
|---|---|
| 2 | 1 |
| 7 | 6 |
| 5 | 4 |

AC310183AE

Connectors: C-17, C-112 <RHD>



C-17

Harness side
C-112

| | | | | |
|----|----|-----|----|----|
| 64 | 63 | JAE | 62 | 61 |
| 73 | 72 | 71 | 70 | 69 |
| 82 | 81 | 80 | 79 | 78 |
| 89 | 88 | 87 | 86 | 85 |

6665 767574 8483

AC310629AD

NOTE: Prior to the wiring harness inspection, check intermediate connector C-17, and repair if necessary.

Q: Are the harness wires between key reminder switch connector C-308 (terminal 7) and engine-ECU <M/T> or engine-A/T-ECU <A/T> connector C-112 (terminal 65) in good condition?

YES : Go to Step 4.

NO : Repair the wiring harness.

Step 4. Check the communication with MUT-III.

Q: Can the system communicate with the MUT-III?

YES : Go to Step 5.

NO : Refer to Inspection procedure 1 "Diagnosis code No.P0513 is set to the MPI system or the immobilizer ECU cannot communicate with the MUT-III" [P.54A-13](#).

Step 5. MUT-III diagnosis code

Check whether the engine immobilizer system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to [P.54A-10](#).

NO : Go to Step 6.

STEP 6. Check the trouble symptom

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the immobilizer ECU, and then go to Step 7 .

STEP 7. Check the trouble symptom

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the engine-ECU <M/T> or engine-A/T-ECU <A/T>.

Inspection procedure: 3 The engine does not start. (cranking occurs but initial combustion does not)

COMMENTS ON TROUBLE SYMPTOM

If the fuel injection does not work, the immobilizer ECU and the MPI system may be defective. It is no problem with the malfunction above when the engine is started with unregistered ignition key.

POSSIBLE CAUSES

- Malfunction of MPI system
- Malfunction of immobilizer ECU

DIAGNOSIS PROCEDURE

Step 1. Battery voltage check

Measure the battery voltage when cranking.

OK: 8 V or more

Q: Is the check result normal?

YES : Go to Step 2.

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

Step 2. MUT-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to GROUP 13A – Troubleshooting [P.13A-20](#).

NO : Go to Step 3.

Step 3. MUT-III diagnosis code

Check whether the engine immobilizer system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to [P.54A-10](#).

NO : Go to Step 4.

Step 4. Check that the engine starts.

Q: Does the engine start?

YES : The procedure is complete.

NO : Refer to GROUP 13, Troubleshooting [P.13A-20](#). Replace the immobilizer ECU when the cause of the failure cannot tracked down by performing the troubleshooting.

Inspection procedure: 4 Check the power supply and earth circuit to the immobilizer ECU.

CIRCUIT OPERATION

Refer to [P.54A-13](#).

COMMENTS ON TROUBLE SYMPTOM

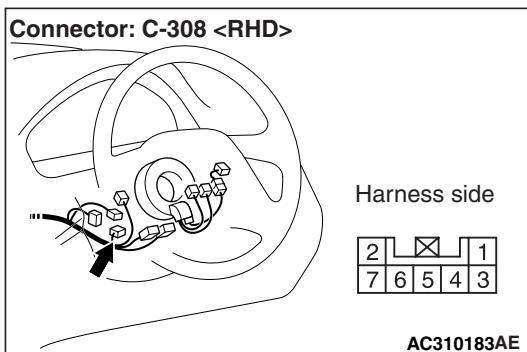
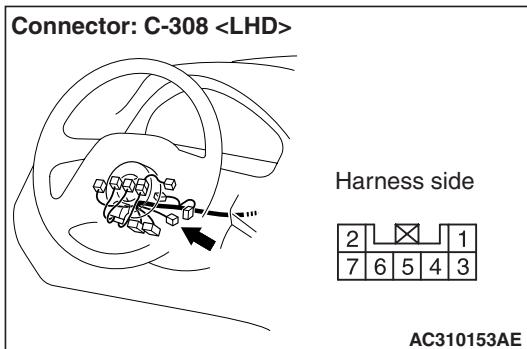
The power supply and earth circuit to the immobilizer ECU may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Connector check: Key reminder switch connector C-308

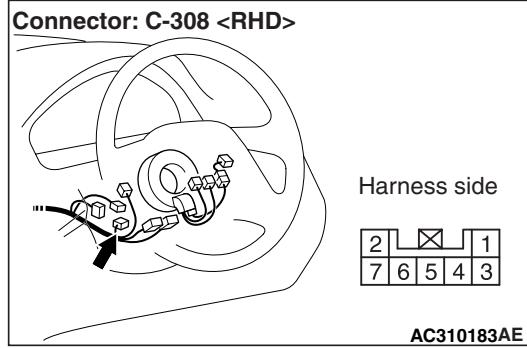
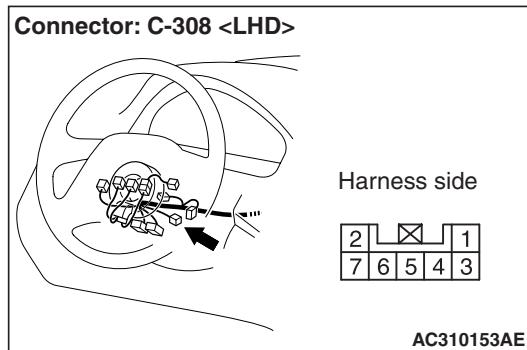


Q: Is the check result normal?

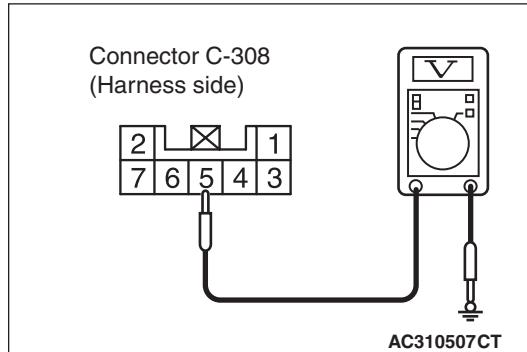
YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Voltage measurement at key reminder switch connector C-308 in order to check the battery circuit of power supply system to the key reminder switch.



- (1) Disconnect the key reminder switch connector C-308 and measure the voltage at key reminder switch connector C-308 harness side.
- (2) Turn the ignition switch to "ON" position.



- (3) Measure the voltage between terminal 5 and earth.

OK: Battery voltage

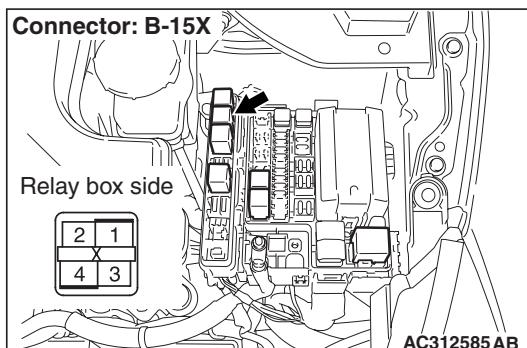
Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 3.

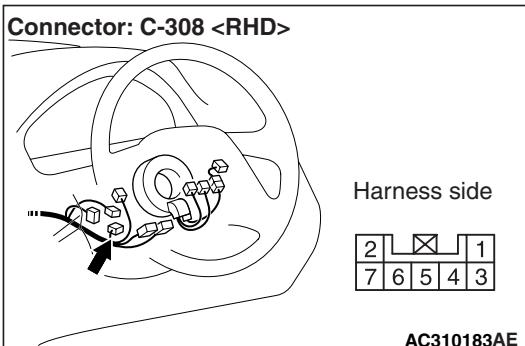
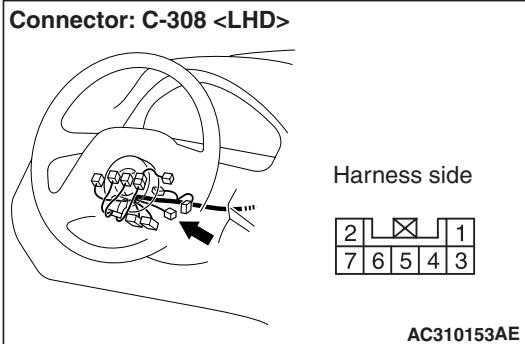
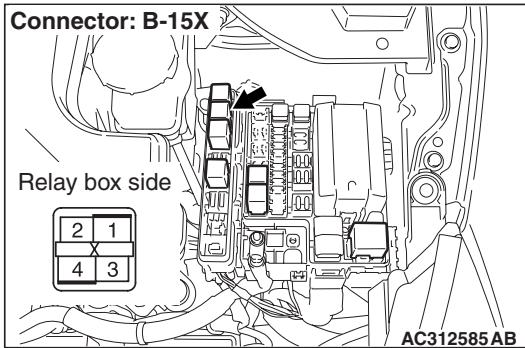
Step 3. Connector check: Engine control relay connector B-15X

YES : Go to Step 4.
NO : Repair the defective connector.



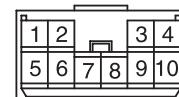
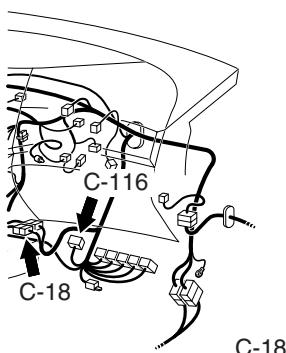
Q: Is the check result normal?

Step 4. Check the wiring harness between engine control relay connector B-15X (terminal 1) and key reminder switch connector C-308 (terminal 5).



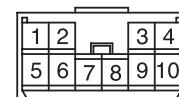
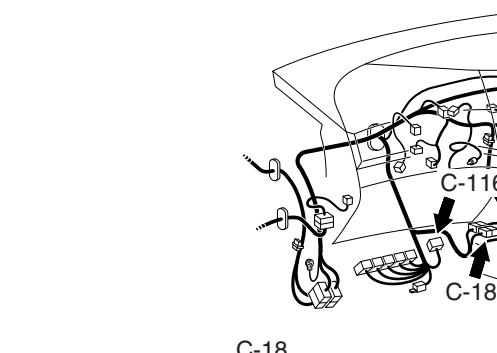
NOTE:

Connectors: C-18, C-116 <LHD>

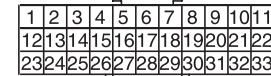


AC310616AG

Connectors: C-18, C-116 <RHD>



C-116



AC310629AE

Prior to the wiring harness inspection, check joint connector C-116, intermediate connector C-18, and repair if necessary.

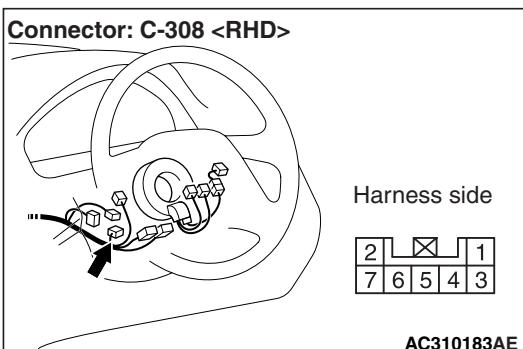
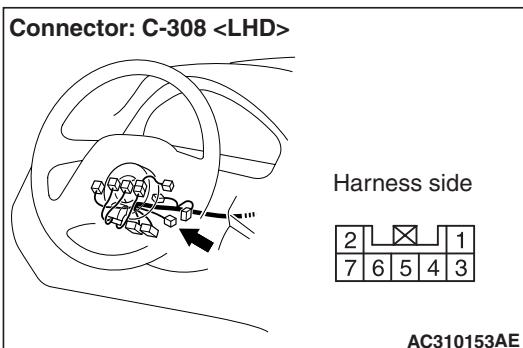
- Check the power supply line for open circuit.

Q: Are the wiring harness between engine control relay connector B-15X (terminal 1) and key reminder switch connector C-308 (terminal 5) in good condition?

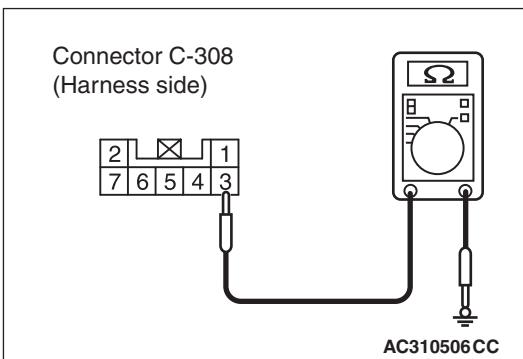
YES : Go to Step 5.

NO : Repair the wiring harness.

Step 5. Resistance measurement at key reminder switch connector C-308 to check the earth circuit to the key reminder switch connector.



(1) Disconnect the key reminder switch connector C-308 and measure the resistance at key reminder switch connector C-308 harness side.



(2) Measure the resistance between terminal 3 and earth.

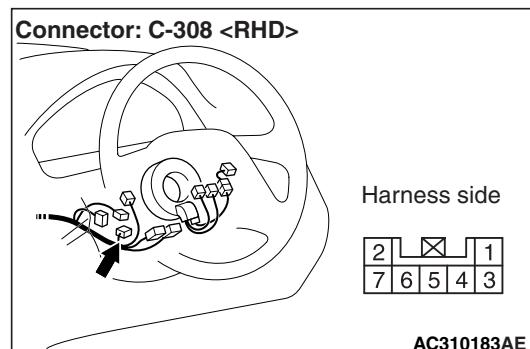
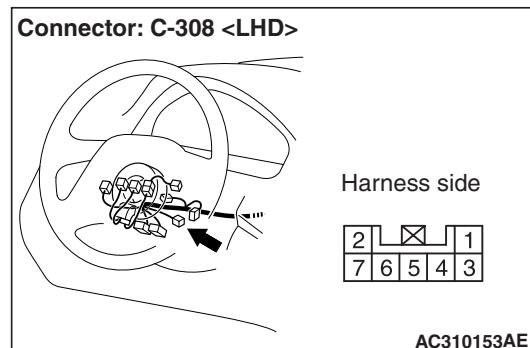
OK: 2 ohms or less

Q: Is the check result normal?

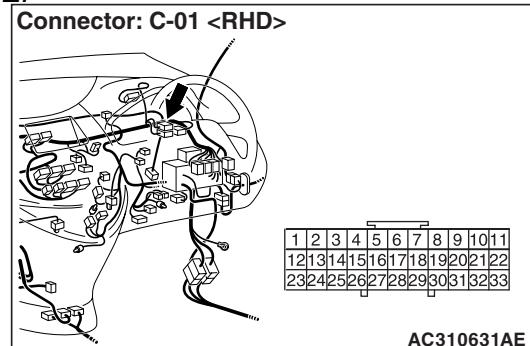
YES : The procedure is complete.

NO : Go to Step 6.

Step 6. Check the wiring harness between key reminder switch connector C-308 (terminal 3) and earth.



NOTE:



Prior to the wiring harness inspection, check joint connector C-01 <RH drive vehicles>, and repair if necessary.

- Check the earth wires for open circuit.

Q: Are the wiring harness between key reminder switch connector C-308 (terminal 3) and earth in good condition?

YES : The procedure is complete.

NO : Repair the wiring harness.

DATA LIST REFERENCE TABLE

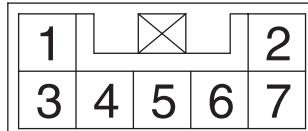
M1543007300411

| Item No. | Inspection item | Inspection requirement | Normal condition |
|----------|-------------------------|------------------------|------------------------------------|
| 01 | Key has been registered | — | Number of registered ignition keys |

CHECK IMMOBILIZER-ECU

M1543007600605

TERMINAL VOLTAGE CHECK TABLE



AC311921

| Terminal No. | Signal | Inspection condition | Terminal voltage |
|--------------|------------------------------------|-------------------------------|------------------|
| 3 | Immobilizer-ECU earth | Always | 0V |
| 5 | Immobilizer-ECU power supply | Ignition switch: "LOCK" (OFF) | 0V |
| | | Ignition switch: "ON" | System voltage |
| 7 | Engine-ECU <M/T> or engine-A/T-ECU | - | - |

ON-VEHICLE SERVICE

HOW TO REGISTER ENCRYPTED CODE

M1543008100562

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, engine-ECU <M/T> or engine-A/T-ECU <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 MUT-III 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 approximately.

NOTE: Engine-ECU <M/T> or engine-A/T-ECU <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 diagnosis codes, and after carrying out any necessary repairs, repeat the operation. If an incorrect password is input ten 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, "Unauthorized operation, start- prevention mode" will be cancelled.

**KEY ID (ENCRYPTED CODE)
REGISTRATION <MUT-III>**

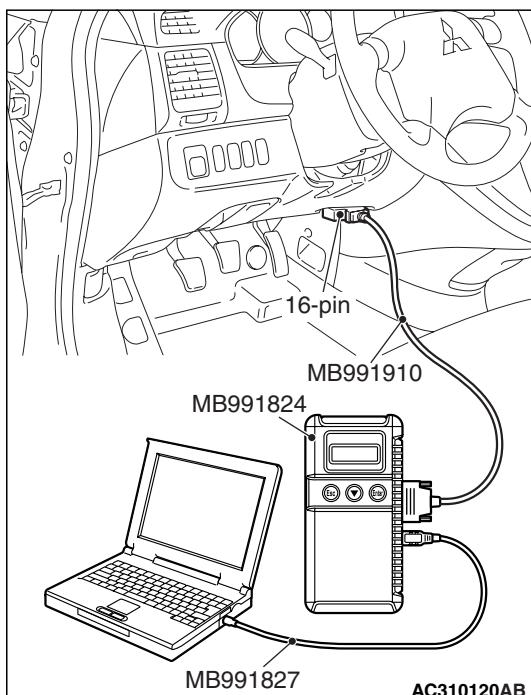
All ignition keys can be registered with MUT-III. Additional ignition keys can be registered with MUT-III.

REGISTRATION WITH THE MUT-III**CAUTION**

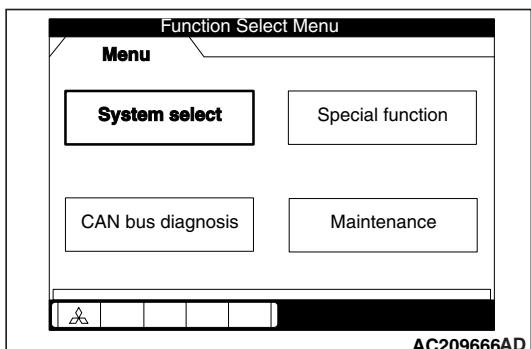
To prevent damage to MUT-III, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting MUT-III.

NOTE:

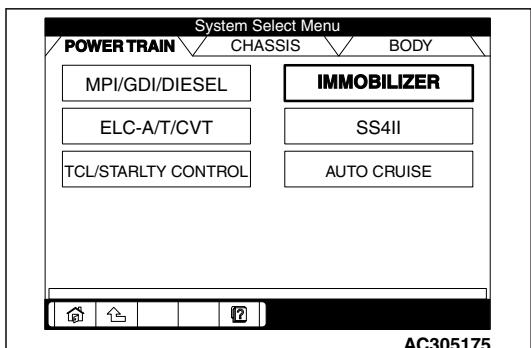
- Before registration, check that no diagnosis code is set. If a diagnosis code is set, resolve the problem beforehand.
- Using the key ID register function will cause all key IDs that have been previously registered in the immobilizer-ECU to be erased. All keys need to be registered. Those which have been registered before should be on hand before using this function.
- If registering more than one key, do not disconnect MUT-III halfway through the registration process.
- 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 Troubleshooting P.54A-9.



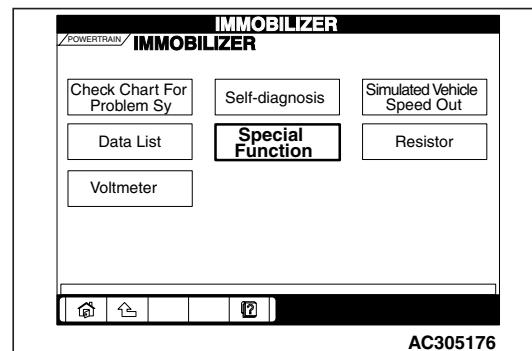
1. Connect the MUT-III to the diagnosis connector (16-pin).
2. Turn the ignition switch to "ON" position.



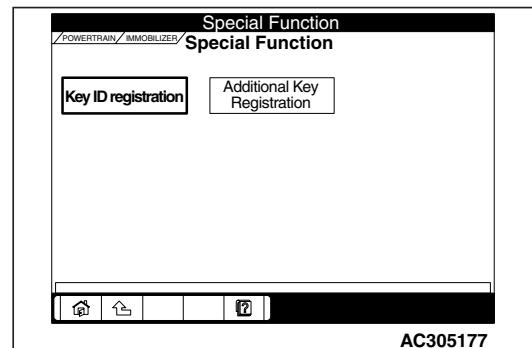
3. Select "System select" from the start-up screen.



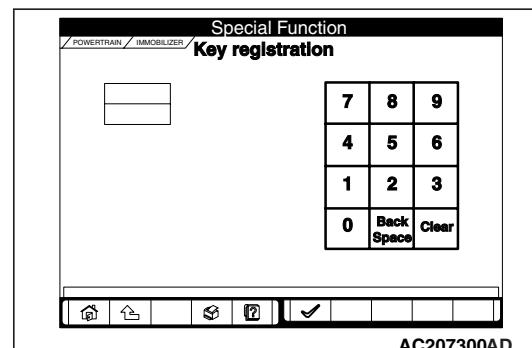
4. Choose "IMMOBILIZER" from the "POWER TRAIN" tab.



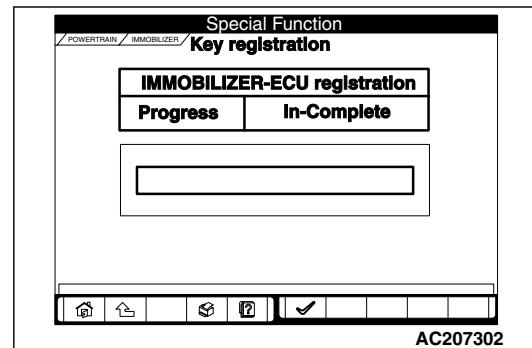
5. Choose "Special Function" from "IMMOBILIZER" screen.



6. Choose "Key registration" from "Special Function" screen.



7. Enter the vehicle's password (secret code) on the "Key registration" screen, and then click the check mark icon. Follow the prompts on the screen to insert key(s) into the ignition switch to begin key registration.



8. If the key ID was registered successfully, "Progress" indication will turn active (gray). Then the registration process completes. If the key ID failed to be registered, "In-Complete" indication will turn active (gray).
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. Key ID registration screen will be displayed, then register another key.

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

10. This completes the registration operation. Turn the ignition switch "LOCK" (OFF) 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 diagnosis code and MPI system diagnosis code did not set.
13. If not diagnosis code is shown, terminate the MUT-III.
14. Turn the ignition switch to "LOCK" (OFF) position.
15. Disconnect MUT-III.

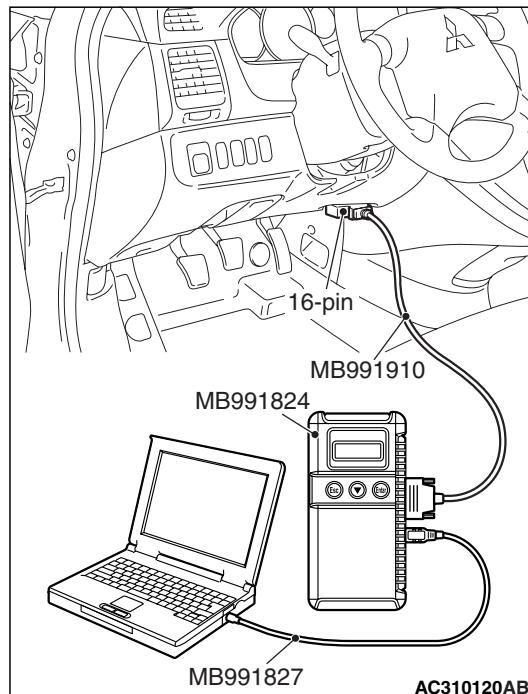
REGISTRATION OF ADDITIONAL KEYS WITH THE MUT-III

Additional key(s) can be registered with the MUT-III while keeping all existing key data.

CAUTION

To prevent damage to MUT-III, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting MUT-III.

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

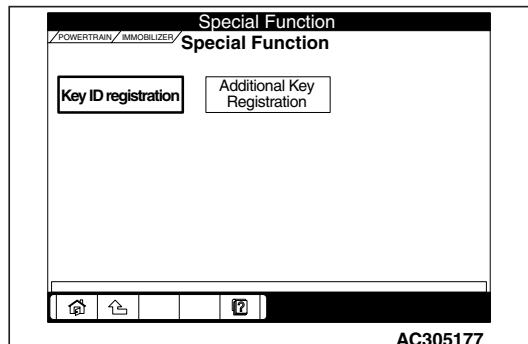


1. Connect MUT-III to the 16-pin diagnosis connector.

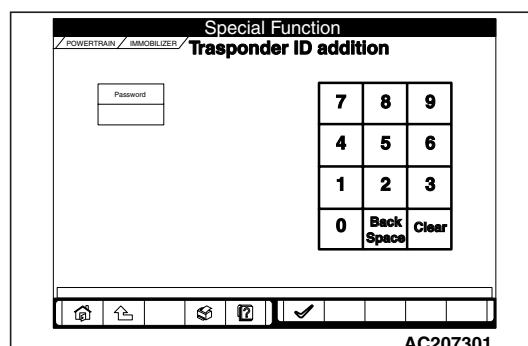
2. Turn the ignition switch to "ON" position.

NOTE: Before registration, check that no diagnosis code is set. If a diagnosis code is set, resolve the problem beforehand.

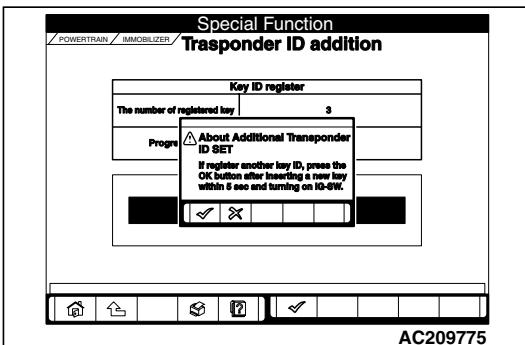
3. Carry out steps 3 to 6 of the sub-section "Registration with MUT-III."



4. Choose "Transponder ID addition" from "Special Function" screen.



5. Enter the vehicles password (secret code) on the "Transponder ID addition" screen, and then click the check mark icon.



6. If an additional registration is made successfully, the screen will ask if another key is registered or not. If the third ignition key is registered, remove the key, which has been registered. Then insert the third key within five seconds, and then turn it to the ON position.

7. Register the additional ignition key according to step 6 above. The number of the registered ignition keys are shown on "The number of registered key" screen.

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

8. This completes the registration operation. Turn the ignition switch "LOCK" (OFF) and leave it off for approximately ten seconds.

9. Check that the engine can be started with each of the ignition keys.

10. Check that the immobilizer system diagnosis code and MPI system diagnosis code did not set.

11. If not diagnosis code is shown, terminate the MUT-III.

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

13. Disconnect MUT-III.

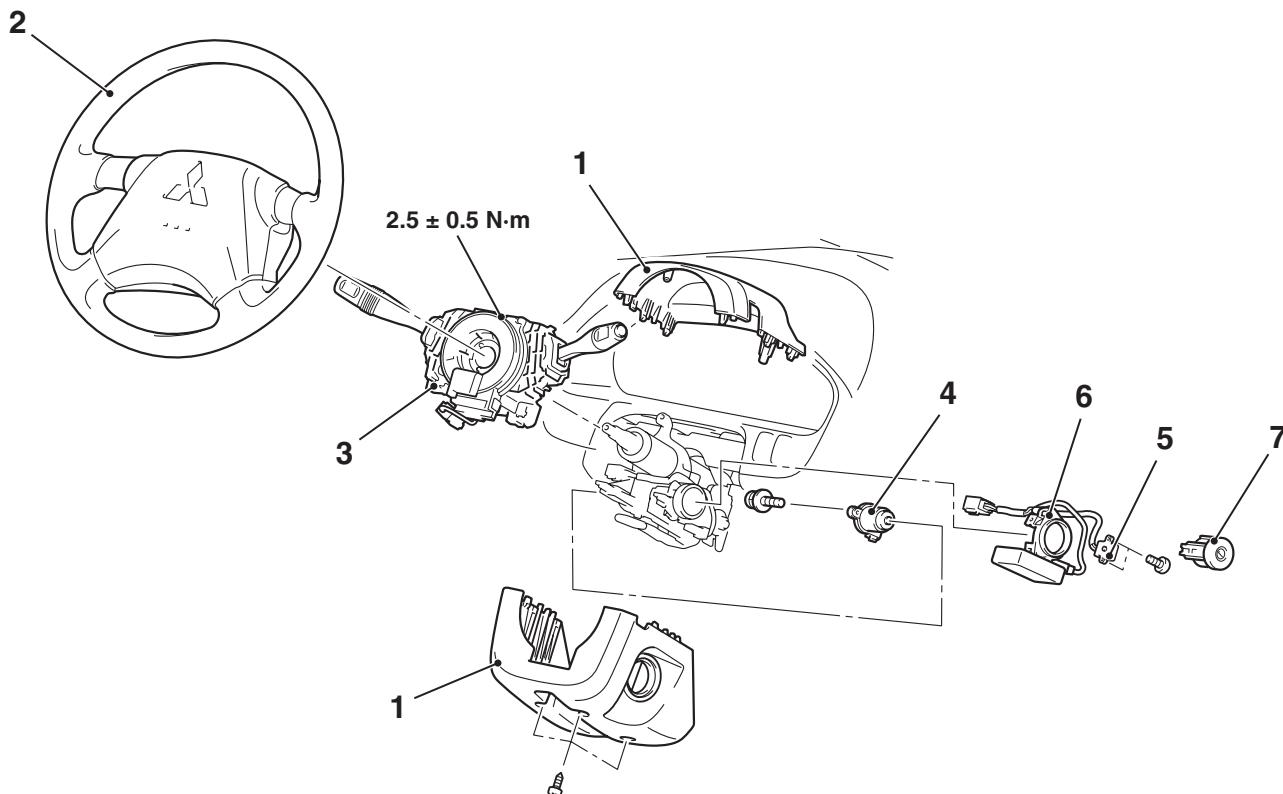
IGNITION SWITCH

REMOVAL AND INSTALLATION

M1543002100575

WARNING

- Before removal of the air bag module, refer to GROUP 52B, Service Precautions ([P.52B-7](#)) and Driver's, Front Passenger's Air Bag Module(s) and Clock Spring ([P.52B-225](#)).
- When removing and installing the steering wheel, do not let it bump against the air bag module.



AC311940AB

Removal steps

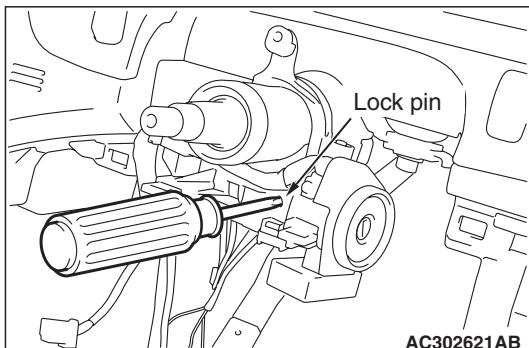
- Gearshift lever knob <M/T> (Refer to GROUP 22A, Transmission Control [P.22A-7](#)).
- Selector lever knob <A/T> (Refer to GROUP 23A, Transmission Control [P.23A-144](#)).
- Selector lever panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- Front scuff plate inner, Cowl side trim (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Fuel filler lid lock release handle (Refer to GROUP 42, Fuel Filler Lid [P.42-7](#)).
- Lower panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)). **<<A>>**

Removal steps (Continued)

1. Steering column cover (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
2. Steering wheel (Refer to GROUP 37A, Steering Wheel [P.37-14](#)).
3. Clock spring and column switch assembly (Refer to GROUP 37A, Steering Shaft [P.37-16](#) and GROUP 52B, Driver's, Front Passenger's Air Bag Module(s) and Clock Spring [P.52B-225](#)).
4. Ignition Switch
5. Key reminder switch
6. Immobilizer-ECU and key ring antenna assembly
7. Steering lock cylinder

REMOVAL SERVICE POINT**<<A>> STEERING LOCK CYLINDER****REMOVAL**

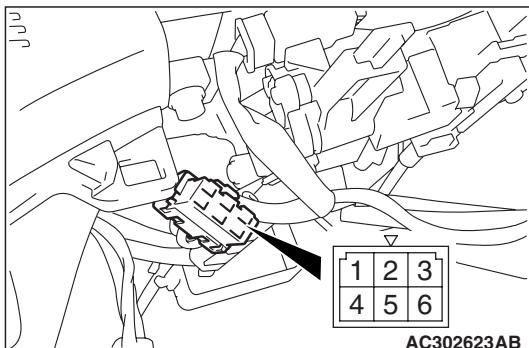
1. Insert the key in the steering lock cylinder and turn it to the "ACC" position.



2. Using a small Phillips head screwdriver, pull the steering lock cylinder toward you.

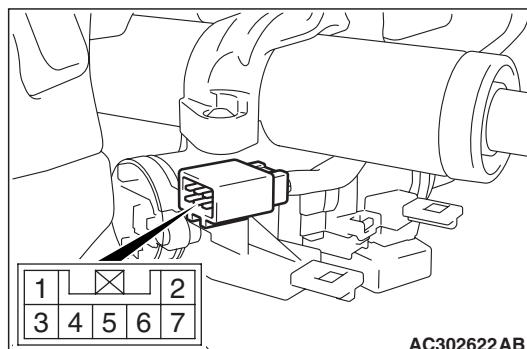
INSPECTION

M1543019502827

IGNITION SWITCH CONTINUITY CHECK

Disconnect ignition switch connector C-307 without removing the ignition switch. Then check the continuity.

| Switch position | Tester connection | Specified condition |
|-----------------|---|---------------------|
| "LOCK" (OFF) | 1 – 2, 1 – 4, 1 – 5, 1 – 6 | Open circuit |
| "ACC" | 1 – 6 | Less than 2 ohms |
| "ON" | 1 – 2, 1 – 4, 1 – 6, 2 – 4, 2 – 6, 4 – 6 | Less than 2 ohms |
| "START" | 1 – 2, 1 – 5, 2 – 5 | Less than 2 ohms |

KEY REMINDER SWITCH CONTINUITY CHECK

Disconnect key reminder switch connector C-308 without removing the ignition switch and key reminder switch. Then check the continuity.

| Status of ignition key | Tester connection | Specified condition |
|------------------------|-------------------|---------------------|
| Removed | 4 – 6 | Less than 2 ohms |
| Inserted | 4 – 6 | Open circuit |

COMBINATION METER**SERVICE SPECIFICATIONS**

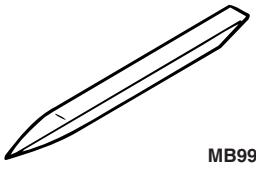
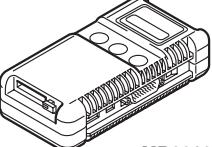
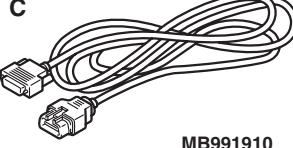
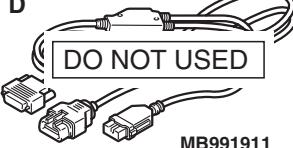
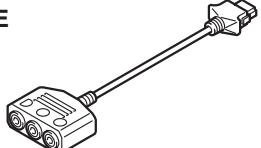
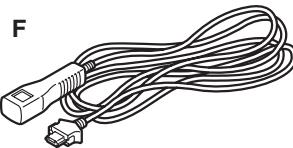
M1543000300465

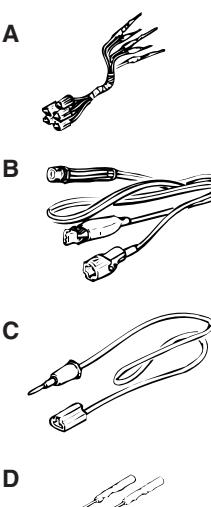
| Item | Standard value | Limit |
|---|----------------|-----------------------|
| Speedometer indicating range km/h (mph) | 20 (10) | 20 – 24 (10 – 12) |
| | 40 (25) | 40 – 44 (25 – 27) |
| | 80 (50) | 80 – 85 (50 – 53) |
| | 120 (75) | 121 – 127 (76 – 80) |
| | 160 (100) | 162 – 169 (101 – 106) |
| | 200 (125) | 203 – 211 (127 – 132) |
| The voltmeter needle fluctuation km/h (Vehicle speed is 35km/h or more) | – | ± 3 |

| Item | | Standard value | Limit |
|--|----------------------------|----------------|-------|
| Tachometer indicating error r/min | 2,000 | ± 100 | — |
| | 6,000 | ± 200 | — |
| Fuel tank pump and gauge unit assembly resistance Ω | Float position F (highest) | 6.5 ± 1 | — |
| | Float position E (lowest) | 53.2 ± 1 | — |
| Fuel tank gauge unit assembly resistance Ω | Float position F (highest) | 6.5 ± 1 | — |
| | Float position E (lowest) | 66.8 ± 1 | — |
| Fuel tank pump and gauge unit assembly float height mm | Float position F (A) | 57.6 ± 3 | — |
| | Float position E (B) | 158.4 ± 3 | — |
| Fuel tank gauge unit float height mm | Float position F (A) | 57.0 ± 3 | — |
| | Float position E (B) | 180.2 ± 3 | — |

SPECIAL TOOLS

M1543000602042

| Tool | Number | Name | Application |
|--|--|---|--|
|  MB990784 | MB990784 | Ornament remover | Removal of meter bezel |
| A  MB991824 | MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826 | MUT-III sub-assembly A: (V. C.I.) Vehicle communication interface B: MUT-III USB cable C: MUT-III Main harness A (Vehicles with CAN communication system) D: MUT-III Main harness B (Vehicles without CAN communication system) E: MUT-III Measurement adapter F: MUT-III Trigger harness | Combination meter (incorporating the meter-ECU) check (Diagnosis code, service data, actuator test) |
| B  MB991827 | | | CAUTION For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly. |
| C  MB991910 | | | |
| D  DO NOT USED MB991911 | | | |
| E  MB991825 | | | |
| F  MB991826 | | | |
| | MB991955 | | |

| Tool | Number | Name | Application |
|---|----------|--|--|
|  A: MB991219 B: MB991220 C: MB991221 D: MB991222 | MB991223 | Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe | 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 |

TROUBLESHOOTING

TROUBLESHOOTING

M1543000701262

STANDARD FLOW OF DIAGNOSIS

TROUBLESHOOTING

Refer to GROUP 00 – How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

DIAGNOSIS FUNCTION

M1543007000603

HOW TO READ DIAGNOSIS CODE

Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

DIAGNOSIS CODE CHART

M1543007100592

⚠ CAUTION

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

| Diagnosis code No. | Diagnosis item | Reference page |
|--------------------|---|--------------------------|
| B1200 | Malfunction odometer | P.54A-36 |
| B1201 | Trouble of fuel information | P.54A-37 |
| U1073 | Bus Off | P.54A-43 |
| U1100 | Engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to engine) | P.54A-44 |
| U1101* | Engine-A/T-ECU <A/T> time-out (related to automatic transmission) | P.54A-46 |
| U1102 | ABS-ECU or TCL/ASC-ECU time-out | P.54A-47 |
| U1109 | ETACS-ECU time-out | P.54A-49 |
| U1112 | SRS-ECU time-out | P.54A-50 |
| U1120 | Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine) | P.54A-51 |
| U1206 | Flag invalid | P.54A-52 |

NOTE: *: For M/T-vehicles, diagnosis code No. 12

does not mean that there is a problem.

DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No.B1200 Malfunction odometer

TROUBLE JUDGMENT

This code is stored when the odometer value cannot be determined when reading, writing or verifying the EEPROM storing the odometer value, or the odometer displays abnormal value.

COMMENTS ON TROUBLE SYMPTOM

The combination meter may be defective.

POSSIBLE CAUSES

Malfunction of the combination meter

DIAGNOSTIC PROCEDURE

Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

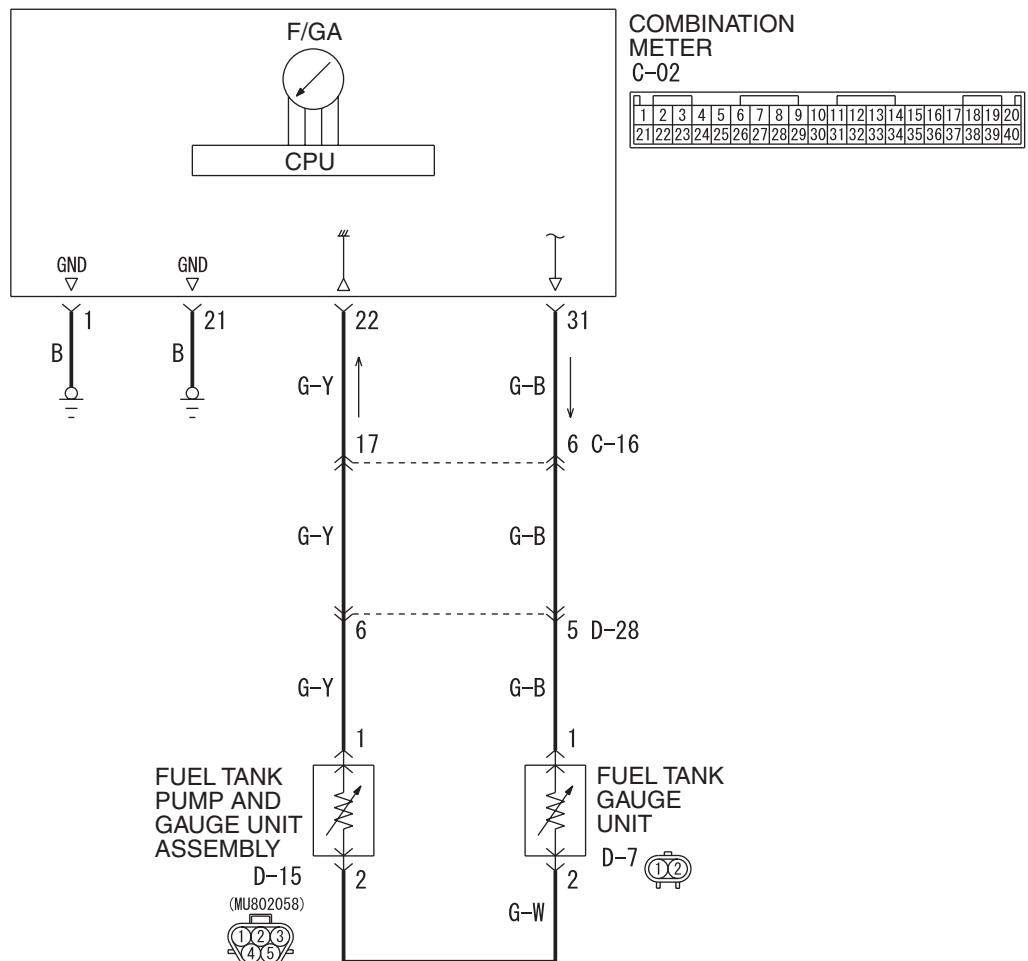
Q: Is the check result satisfactory?

YES : Replace combination meter.

NO : An intermittent malfunction is suspected.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –
How to Cope with Intermittent Malfunctions
[P.00-5](#).

Code No.B1201 Trouble of fuel information

Fuel Gauge Circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4X54E197A

COMMENTS ON TROUBLE SYMPTOM

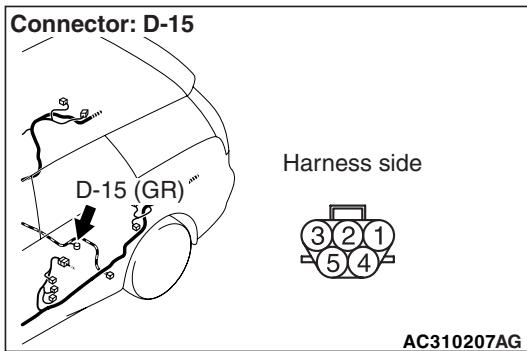
If only the fuel gauge does not operate, the fuel tank pump and gauge unit assembly, fuel tank gauge unit, combination meter, wiring harness or connector(s) may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of fuel tank gauge unit
- Malfunction of fuel tank pump and gauge unit assembly
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

Step 1. Connector check: Fuel tank pump and gauge unit assembly connector D-15.

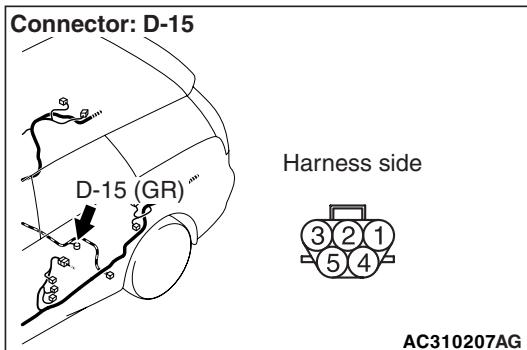


Q: Is fuel tank pump and gauge unit assembly connector C-02 in good condition?

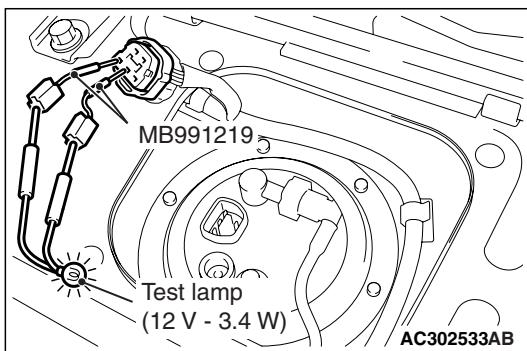
YES : Go to Step 2.

NO : Repair the connector, and then go to Step 11.

Step 2. Check the fuel gauge circuit.



(1) Disconnect fuel tank pump and gauge unit assembly connector D-15.



(2) Use special tool MB991219 to connect a test lamp (12 V - 3.4 W) between the wiring harness

connector terminals 1 and 2.

(3) Turn the Ignition switch to "ON" position.

(4) Check if the test lamp illuminates.

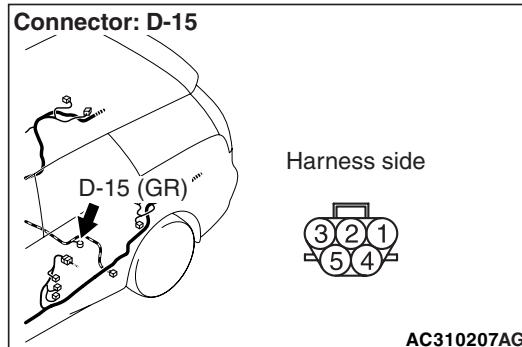
OK: Illuminates

Q: Is the check result satisfactory?

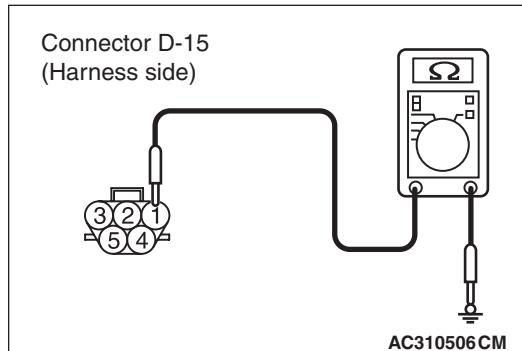
YES : Go to Step 8.

NO : Go to Step 3.

Step 3. Resistance measurement at fuel tank pump and gauge unit assembly connector D-15 to check the earth circuit to the fuel tank pump and gauge unit assembly.



- (1) Disconnect fuel tank pump and gauge unit assembly connector D-15, and measure at the wiring harness side.
- (2) Turn the Ignition switch to "LOCK" (OFF) position.
- (3) Disconnect the negative battery terminal.



(4) Measure the resistance value between terminal 1 and earth.

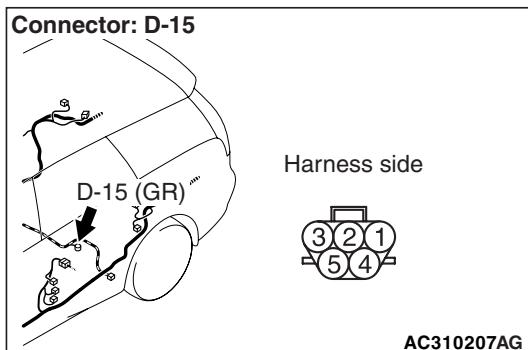
OK: 2 ohms or less

Q: Is the check result normal?

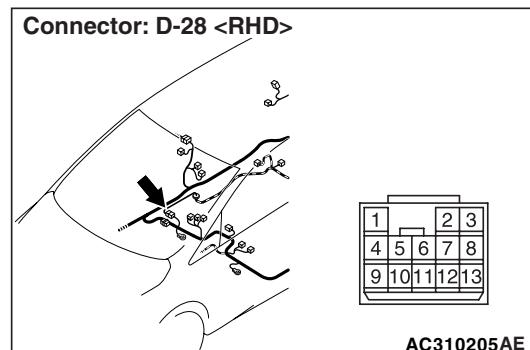
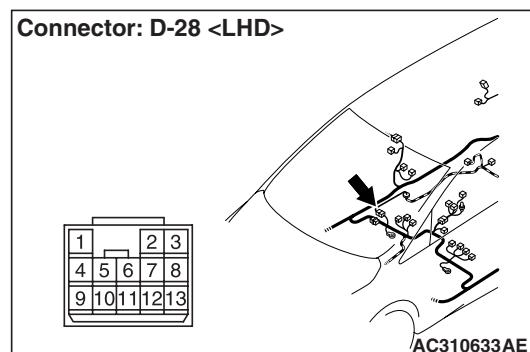
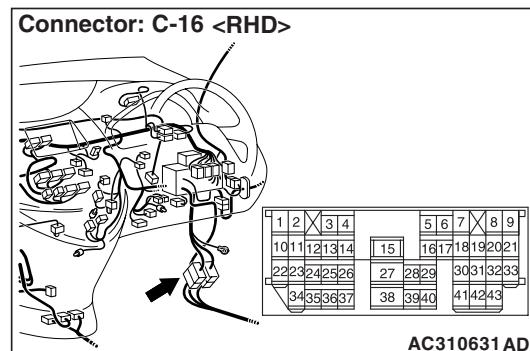
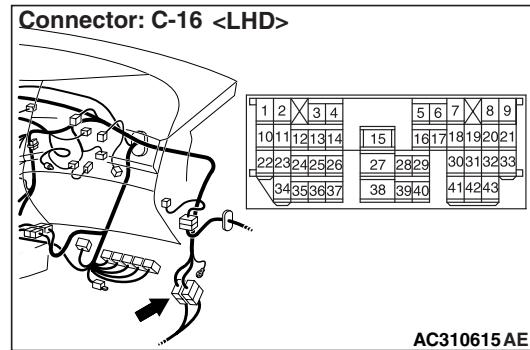
YES : Go to Step 5.

NO : Go to Step 4.

Step 4. Check the wiring harness between fuel tank pump and gauge unit assembly connector D-15 (terminal 1) and earth.



NOTE:



Also check intermediate connector D-28, C-16 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, C-16 are damaged, repair or replace the connector.

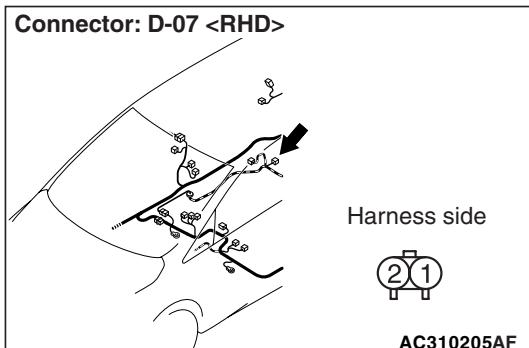
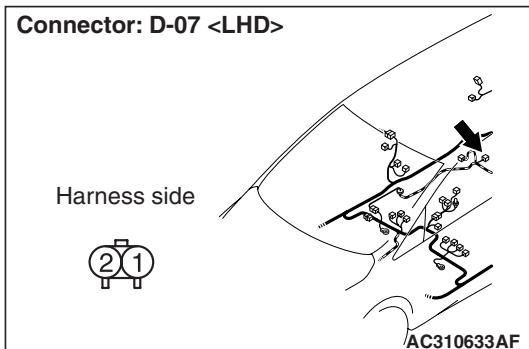
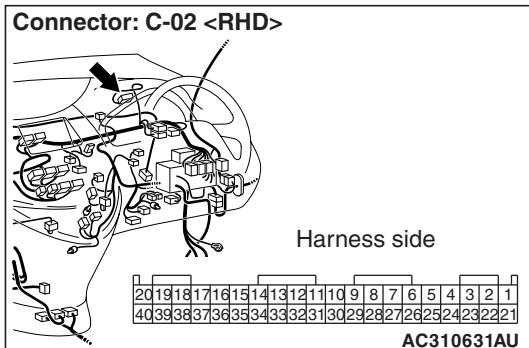
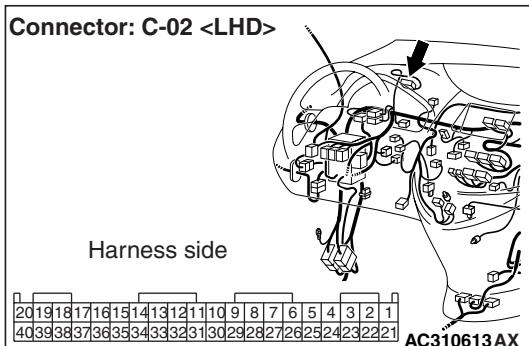
Q: Is the wiring harness between fuel tank pump and gauge unit assembly connector D-15 (terminal 1) and earth in good condition?

YES : Go to Step 11.

NO : Repair the harness, and then go to Step 11.

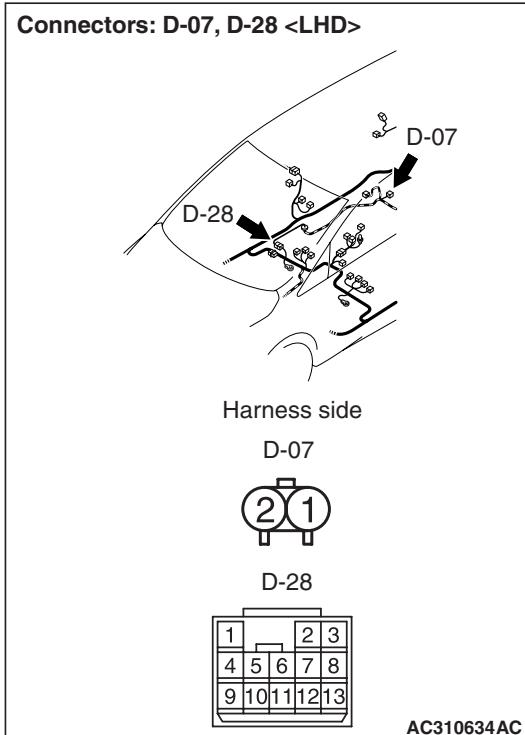
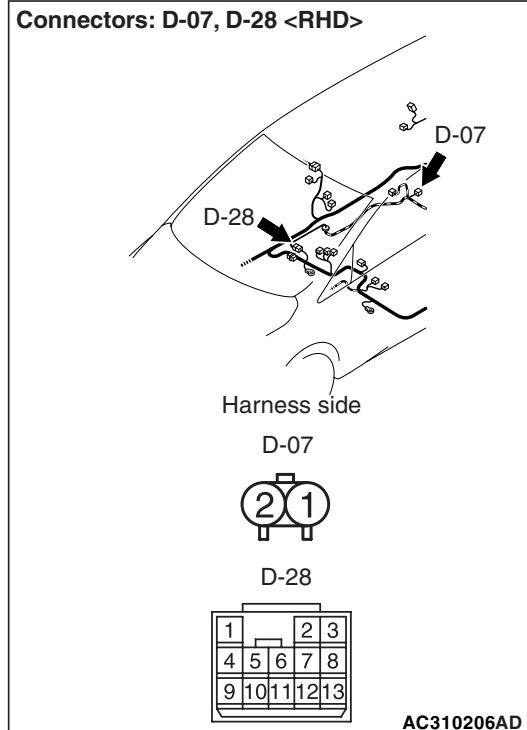
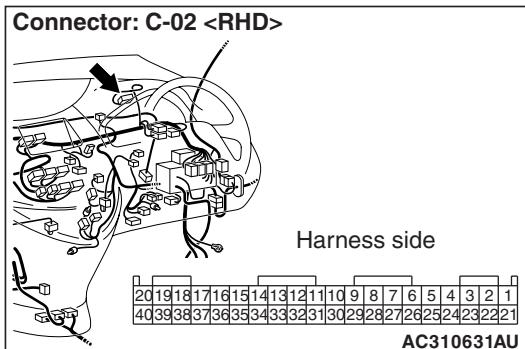
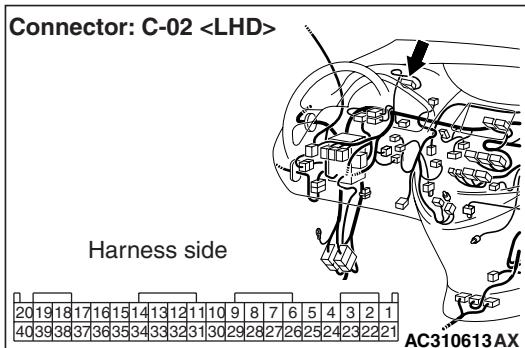
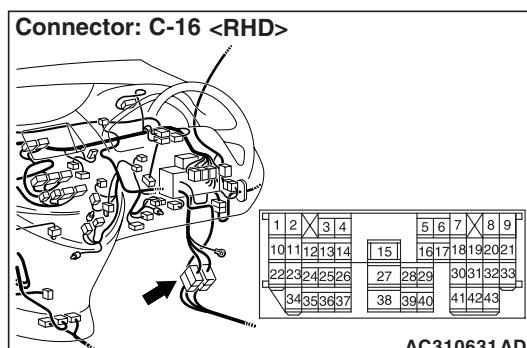
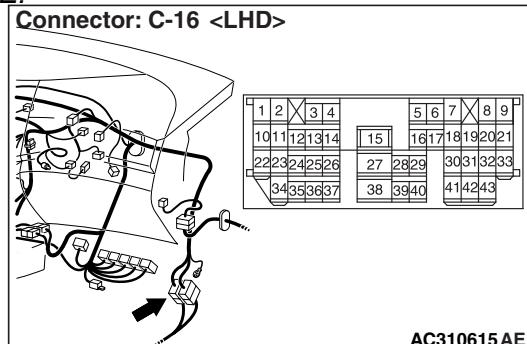
Step 5. Connector check: Combination meter connector C-02 and fuel gauge unit connector D-07.

YES : Go to Step 6.
NO : Repair the connector, and then go to Step 10.



Q: Is combination meter connector C-02 and fuel gauge unit connector D-07 in good condition?

**Step 6. Check the wiring harness between
combination meter connector C-02 (terminal 31)
and fuel gauge unit connector D-07 (terminal 1).**

**NOTE:**

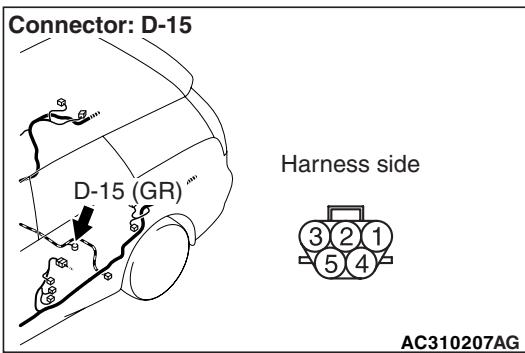
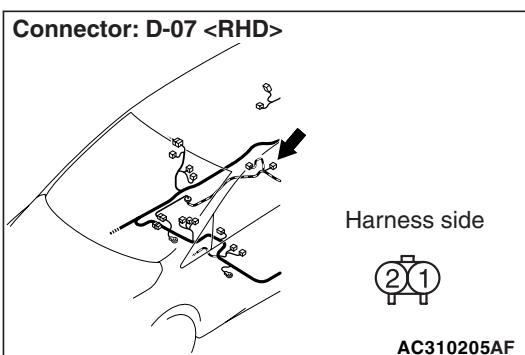
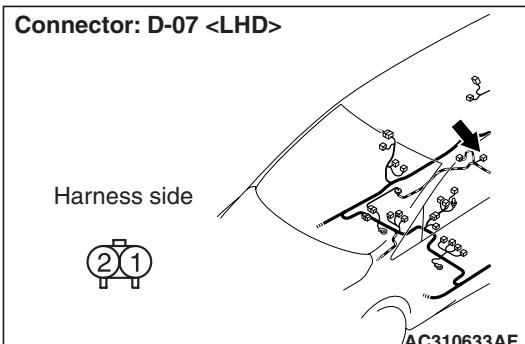
Also check intermediate connectors C-16, D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-16, D-28 are damaged, repair or replace the connector.

Q: Is the wiring harness between combination meter connector C-02 (terminal 31) and fuel gauge unit connector D-07 (terminal 1) in good condition?

YES : Go to Step 7.

NO : Repair the harness, and then go to Step 10.

Step 7. Check the wiring harness between fuel gauge unit connector D-07 (terminal 2) and fuel tank pump and gauge unit assembly connector D-15 (terminal 2).



Q: Is the wiring harness between fuel gauge unit connector D-07 (terminal 2) and fuel tank pump and

gauge unit assembly connector D-15 (terminal 2) in good condition?

YES : Go to Step 9.

NO : Repair the harness, and then go to Step 10.

Step 8. MUT-III data list

Item No.8A: Fuel gauge (target value)

OK: Fuel gauge and MUT-III displayed values agree with each other.

Q: Is the check result normal?

YES : Go to Step 11.

NO : Go to Step 9.

Step 9. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace fuel tank pump and gauge unit assembly and then go to Step 10.

Step 10. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace fuel gauge unit and then go to Step 11.

Step 11. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1073 Bus Off

CAUTION

If diagnosis code U1073 is set in the combination meter, always diagnose the CAN bus lines.

CAUTION

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

TROUBLE JUDGMENT

If the combination meter ceases communicating once (i.e. bus off) and then returns to it, the combination meter will not communicate for three

minutes immediately after that point. This three-minute period is called "Penalty mode." Immediately after the combination meter returns to communication, the diagnosis code is set.

COMMENTS ON TROUBLE SYMPTOM

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

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 3.

Step 2. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : If the trouble is solved, it is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace combination meter and then go to Step 3.

Step 3. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1100 Engine-ECU <M/T> or Engine-A/T-ECU <A/T> Time-out (Related to Engine)**⚠ CAUTION**

If diagnosis code U1100 or U1101 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

The combination meter receives engine control system-related signals from the engine-ECU <M/T> or engine-A/T-ECU <A/T> via CAN bus lines. If the display unit can not receive the necessary signals, diagnosis code U1100 will be set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter, and the power supply system to the engine-ECU <M/T> or engine-A/T-ECU <A/T>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

CAUTION

If the ignition switch is turned on without starting the engine and then three minutes passes, the combination meter may store U1102 as past trouble.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – CAN Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check whether the MPI system and the A/T system diagnosis codes are set or not.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system or the A/T system (Refer to GROUP 13A, Troubleshooting [P.13A-20](#) or GROUP 23A, Troubleshooting [P.23A-17](#)).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

ABS-ECU or TCL/ASC-ECU

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

Centre display

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

ETACS-ECU

- Code No.11: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

A/C-ECU

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace engine-ECU <M/T> or engine-A/T-ECU <A/T> and then go to Step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

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

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1101 Engine-A/T-ECU <A/T> Time-out (Related to Automatic Transmission)

⚠ CAUTION

If diagnosis code U1100 or U1101 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

The combination meter receives transmission control system-related signal from the engine-A/T-ECU <A/T> via CAN bus lines. If the display unit can not receive the necessary signals, diagnosis code U1101 will be set.

NOTE: For M/T-vehicles, diagnosis code No.U1101 does not mean that there is a problem.

COMMENTS ON TROUBLE SYMPTOM

Current trouble

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the engine-A/T-ECU <A/T> and the combination meter, and the power supply system to the engine-A/T-ECU <A/T>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

⚠ CAUTION

If the ignition switch is turned to the ON position without starting the engine, diagnosis code (past trouble) U1102 may be set on the combination meter after three minutes.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-A/T-ECU <A/T>
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – CAN Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check whether the MPI system and the A/T system diagnosis codes are set or not.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system or the A/T system (Refer to GROUP 13A, Troubleshooting P.13A-20 or GROUP 23A, Troubleshooting P.23A-17).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

ABS-ECU or TCL/ASC-ECU

- Code No.U1101: engine-A/T-ECU <A/T> time-out (related to automatic transmission)

ETACS-ECU

- Code No.12: engine-A/T-ECU <A/T> time-out (related to automatic transmission)

A/C-ECU

- Code No.U1101: engine-A/T-ECU <A/T> time-out (related to automatic transmission)

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace engine-A/T-ECU <A/T> and then go to Step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

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

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1102: ABS-ECU or TCL/ASC-ECU Time-out

⚠ CAUTION

If diagnosis code U1102 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

The combination meter communicates with the ABS-ECU or TCL/ASC-ECU through CAN bus lines.

If it can not receive all the necessary signals from the ABS-ECU or TCL/ASC-ECU, diagnosis code U1102 is set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ABS-ECU or TCL/ASC-ECU and the combination meter, and the power supply system to the ABS-ECU or TCL/ASC-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

CAUTION

If the ignition switch is turned to the ON position without starting the engine, diagnosis code (past trouble) U1100, U1101 may be set on the combination meter after one minutes.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ABS-ECU or TCL/ASC-ECU
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check that the ABS-ECU or TCL/ASC-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the ABS. Refer to GROUP 35B, Troubleshooting – Inspection Chart for Diagnosis Code [P.35B-7](#).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

MPI

U1102: ABS-ECU or TCL/ASC-ECU time-out

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the ABS-ECU or TCL/ASC-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace ABS-ECU or TCL/ASC-ECU and then go to step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the ABS-ECU or TCL/ASC-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace combination meter and go to Step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1109: ETACS-ECU Time-out**△ CAUTION**

If diagnosis code U1109 is set in the combination meter, diagnose the CAN main bus line.

△ CAUTION

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

TROUBLE JUDGMENT

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

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the combination meter, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow

down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ETACS-ECU
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 4.

Step 2. MUT-III other system diagnosis code

Check that the ETACS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the SWS. (Refer to GROUP 54B, Troubleshooting [P.54B-29](#) or GROUP 54C, Troubleshooting [P.54C-30](#).)

NO : Go to Step 3.

Step 3. MUT-III diagnosis code

Check that diagnosis code U1206 is set.

Q: Is the check result satisfactory?

YES : Replace ETACS-ECU and then go to step 4.

NO : Replace combination meter and then go to step 4.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1112: SRS-ECU Time-out**⚠ CAUTION**

If diagnosis code U1112 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

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

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the SRS-ECU and the combination meter, and the power supply system to the SRS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of SRS-ECU
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 4.

Step 2. MUT-III other system diagnosis code

Check that the SRS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the SRS. Refer to GROUP 52B, Troubleshooting – Check Chart for Diagnosis Code [P.52B-13](#).

NO : Go to Step 3.

Step 3. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the SRS-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace SRS-ECU and then go to step 4.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1120 Failure Information on engine-ECU <M/T> or Engine-A/T-ECU (Related to Engine)

⚠ CAUTION

If diagnosis code U1120 is set in the combination meter, diagnose the CAN main bus line.

TROUBLE JUDGMENT

The combination meter communicates with the engine-ECU <M/T> or engine-A/T-ECU <A/T> via CAN bus line. If failure information is sent to the engine-ECU <M/T> or engine-A/T-ECU <A/T>, diagnosis code U1120 will be set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – CAN Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check if an MPI system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting [P.13A-20](#)).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

Centre display

- Code No.U1120: Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine)

A/C-ECU

- Code No.U1120: Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine)

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace engine-ECU <M/T> or engine-A/T-ECU <A/T> and then go to step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace combination meter and then go to step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1206 Flag invalid**⚠ CAUTION**

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

TROUBLE JUDGMENT

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

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the ETACS-ECU and the door switch, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ETACS-ECU
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table [P.54D-16](#)). Repair the CAN bus line and go to Step 4.

Step 2. MUT-III other system diagnosis code

Check that the ETACS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the SWS. (Refer to GROUP 54B, Troubleshooting [P.54B-29](#) or GROUP 54C, Troubleshooting [P.54C-30](#).)

NO : Go to Step 3.

Step 3. Replace the ETACS-ECU and then recheck the diagnosis code.

Replace the ETACS-ECU, and then check that the diagnosis code is not reset.

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Replace combination meter and then go to step 4.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

TROUBLE SYMPTOM CHART

M1543007201332

⚠ CAUTION

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

⚠ CAUTION

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

| Trouble symptom | Inspection procedure number | Reference page |
|---|-----------------------------|--------------------------|
| Communication with the MUT-III is not possible. | 1 | P.54A-53 |
| Power supply circuit. | 2 | P.54A-55 |
| Odometer and trip meter are not displayed. | 3 | |
| All the needle meters do not work. | 4 | |
| When the ignition switch is turned to the ON position, the indicator and warning lamps do not illuminate. | 5 | |
| Speedometer does not work (other meters work). | 6 | P.54A-62 |
| The fuel gauge needle moves excessively. | 7 | |
| Tachometer does not work (other meters work). | 8 | P.54A-64 |
| Fuel Gauge does not work (other meters work). | 9 | P.54A-66 |
| Engine coolant temperature gauge does not work (other meters work). | 10 | P.54A-73 |

SYMPTOM PROCEDURES**INSPECTION PROCEDURE 1: Communication with the MUT-III is not possible.****COMMENTS ON TROUBLE SYMPTOM**

If the system does not communicate with the MUT-III, power supply to the diagnosis connector or CAN bus lines may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Check that the engine-ECU <M/T> or the engine-A/T-ECU <A/T> communicates with the MUT-III.

Check that the MUT-III communicates with the engine-ECU <M/T> or the engine-A/T-ECU when the MUT-III is operated..

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Diagnose the MPI system. (Refer to GROUP 13A, Troubleshooting [P.13A-20](#).)

Step 2. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

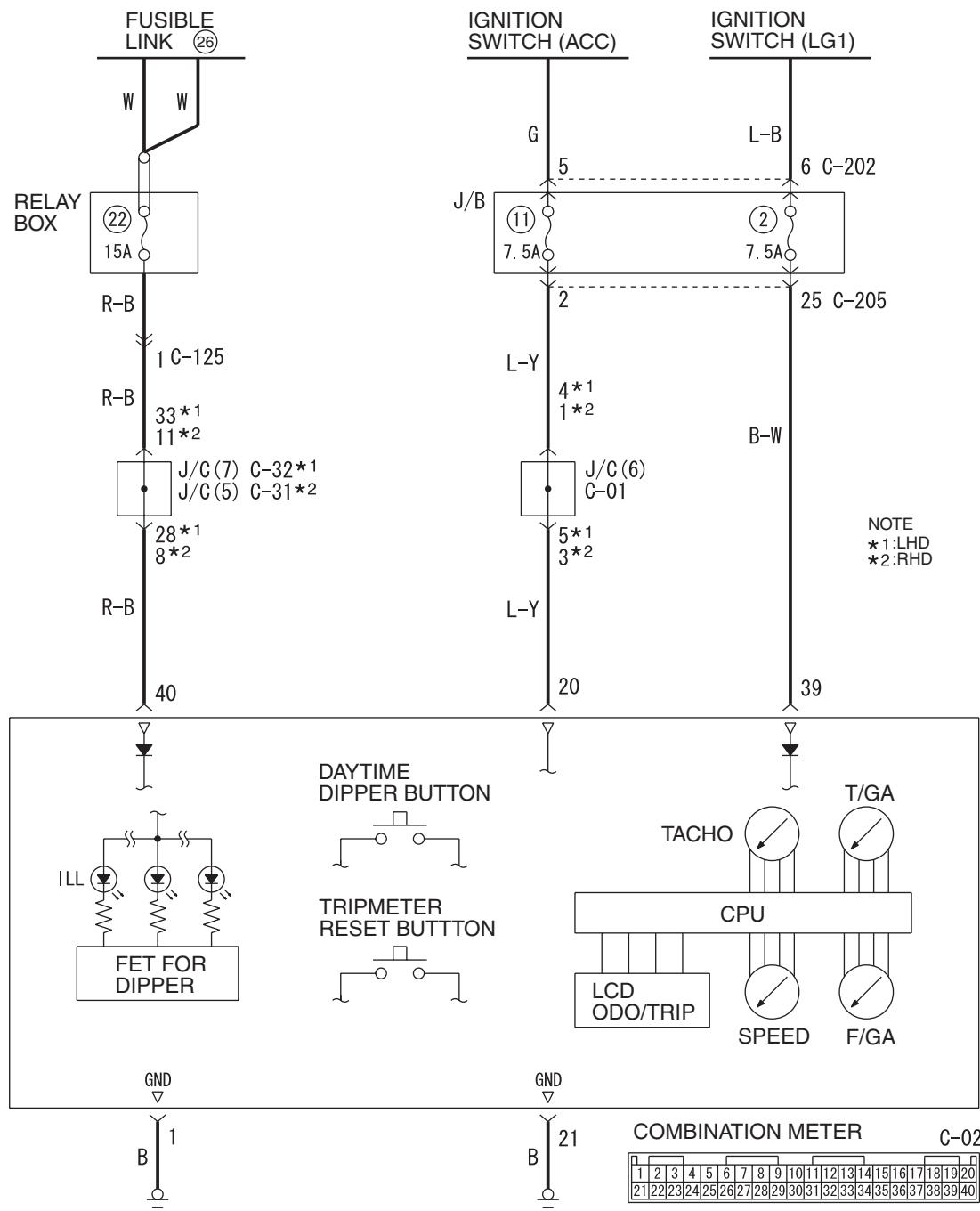
Q: Is the check result satisfactory?

YES : Diagnose the power supply circuit. Refer to [P.54A-55](#).

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)).

INSPECTION PROCEDURE 2: Power Supply Circuit. **INSPECTION PROCEDURE 3:** Odometer and Trip meter are not displayed. **INSPECTION PROCEDURE 4:** All the needle meters do not work. **INSPECTION PROCEDURE 5:** When the ignition switch turned to the ON position, the indicator and warning lamps do not illuminate.

Combination Meter Power Supply Circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

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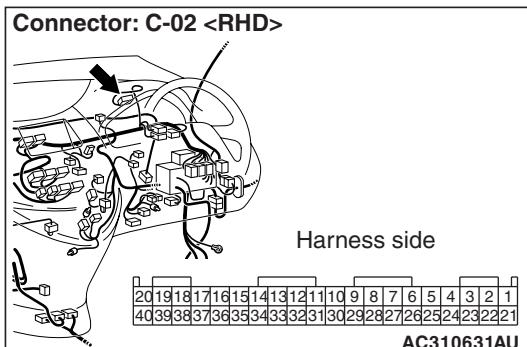
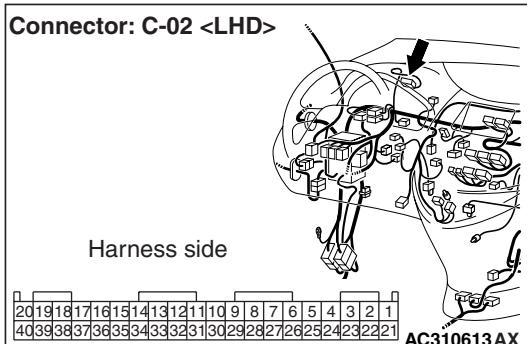
COMMENTS ON TROUBLE SYMPTOM

If the odometer and trip meter are not displayed or all meter needles don't move, power supply and earth

system to the combination meter, or the combination meter itself may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of combination meter

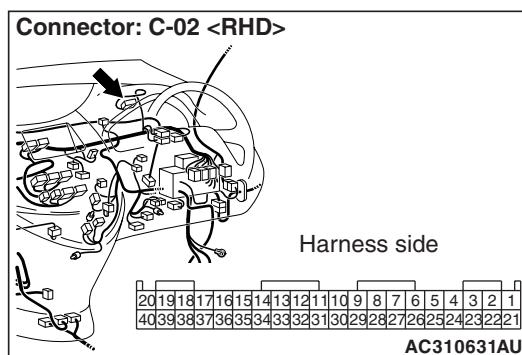
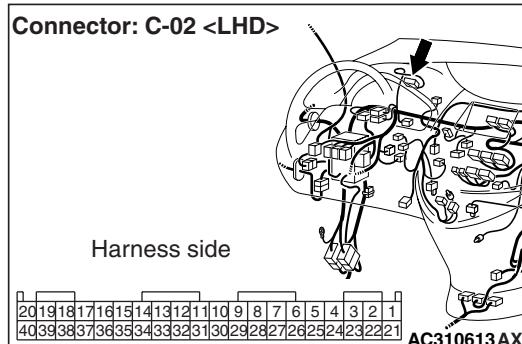
DIAGNOSTIC PROCEDURE**Step 1. Connector check: Combination meter connector C-02.**

Q: Is combination meter connector C-02 in good condition?

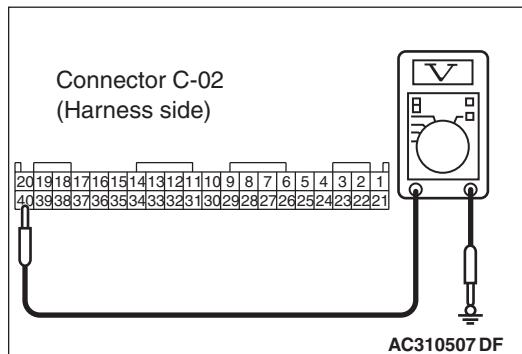
YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Voltage measurement at combination meter connector C-02 in order to power supply circuit to combination meter (battery power supply).



- (1) Disconnect combination meter connector C-02, and measure at the wiring harness side.
- (2) Turn the ignition switch to "LOCK" (OFF) position.



- (3) Measure the voltage between terminal 40 and earth.

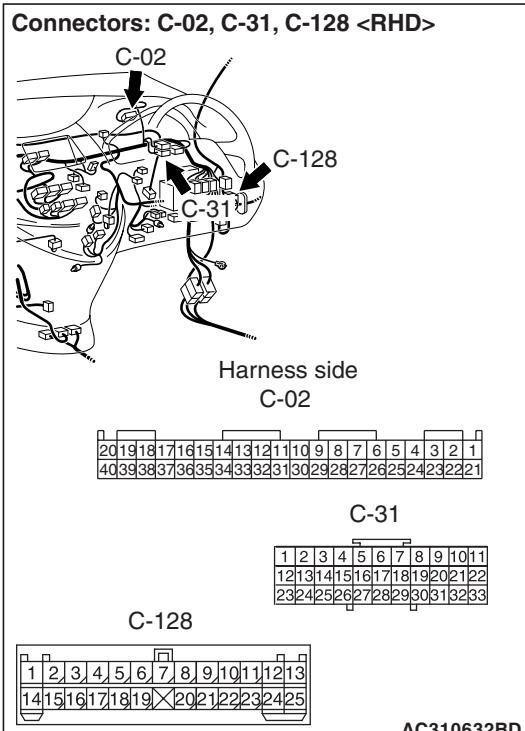
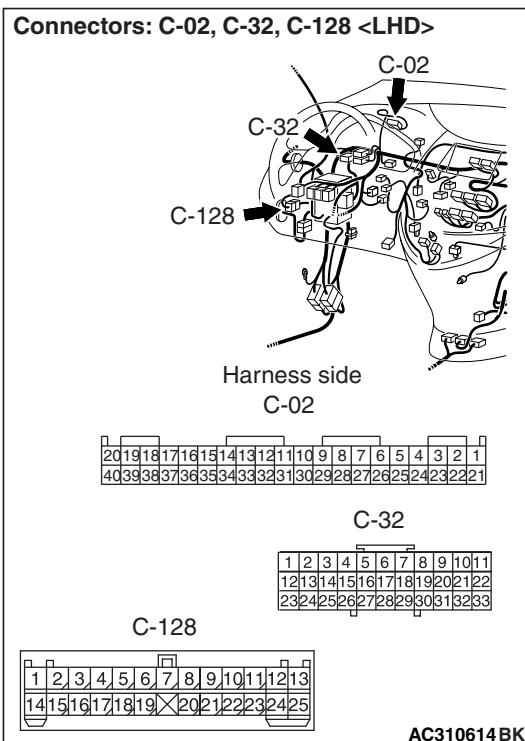
OK: Battery voltage

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

Step 3. Check the wiring harness between combination meter connector C-02 (terminal 40) and battery (fusible link No.26).



NOTE: Also check joint connector C-32 <LH drive vehicles> or C-31 <RH drive vehicles> and intermediate connector C-128 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-32 <LH drive vehicles> or C-31 <RH drive vehicles> or intermediate connector C-128 is damaged, repair or

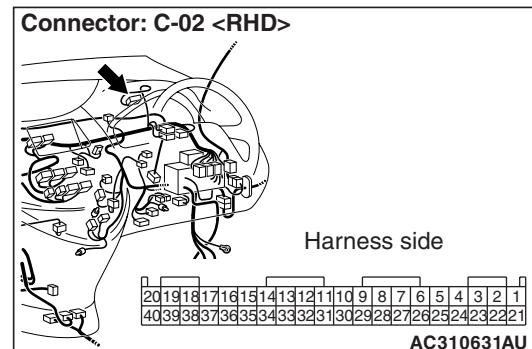
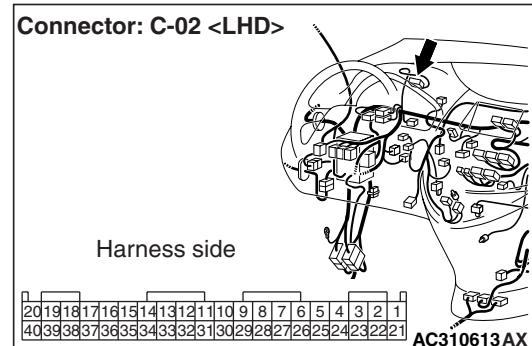
replace the connector.

Q: Is the wiring harness between combination meter connector C-02 (terminal 40) and battery (fusible link No.26) in good condition?

YES : Retest the system.

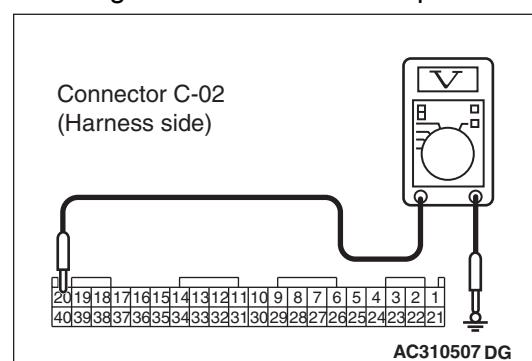
NO : Repair the wiring harness.

Step 4. Voltage measurement at combination meter connector C-02 in order to power supply circuit to combination meter (ACC power supply).



(1) Disconnect combination meter connector C-02, and measure at the wiring harness side.

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



(3) Measure the voltage between terminal 20 and earth.

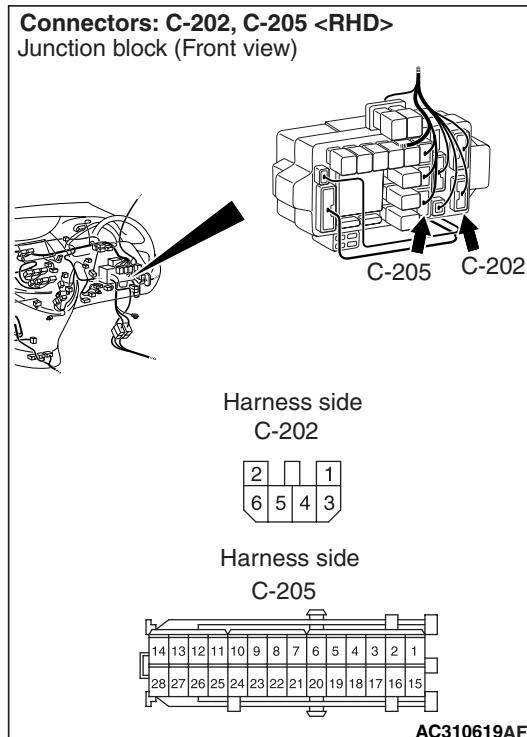
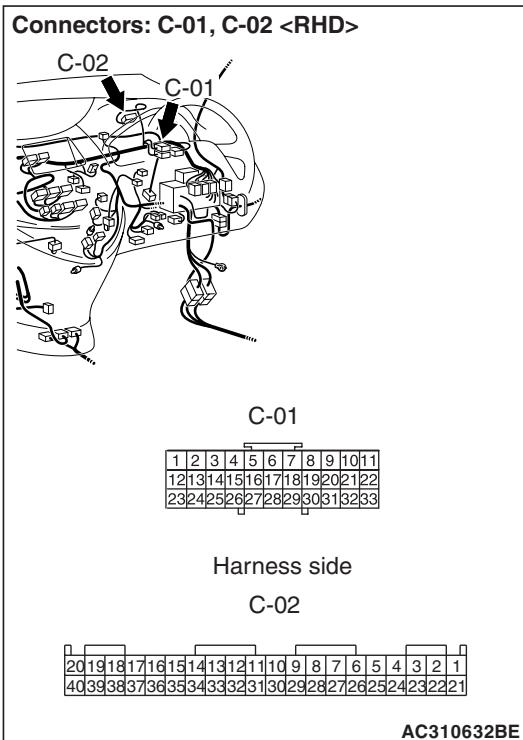
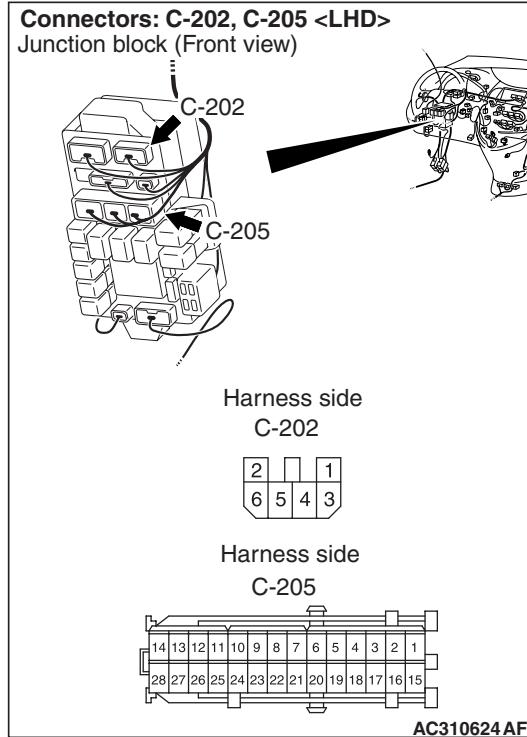
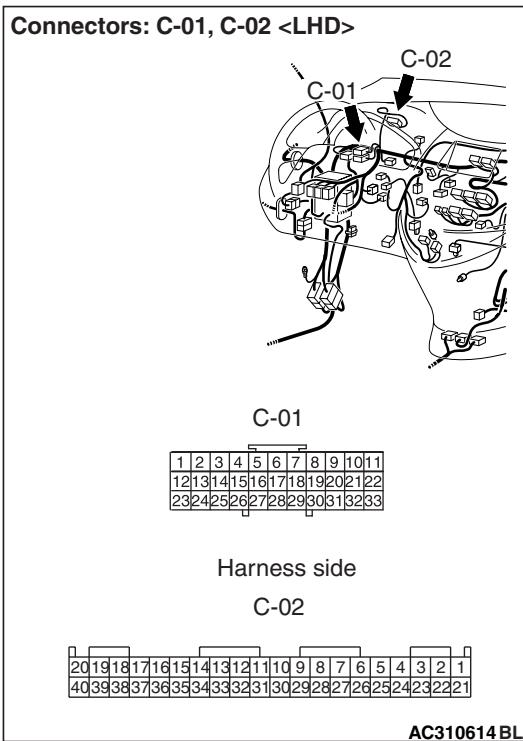
OK: Battery voltage

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

Step 5. Check the wiring harness between combination meter connector C-02 (terminal 20) and ignition switch (ACC).



NOTE:

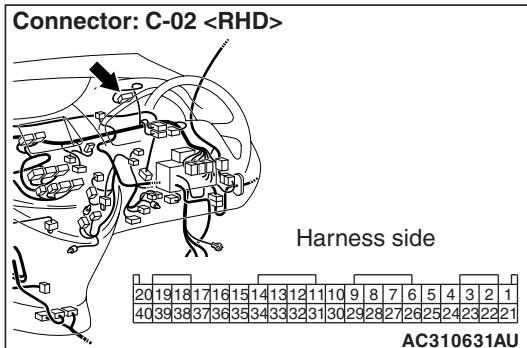
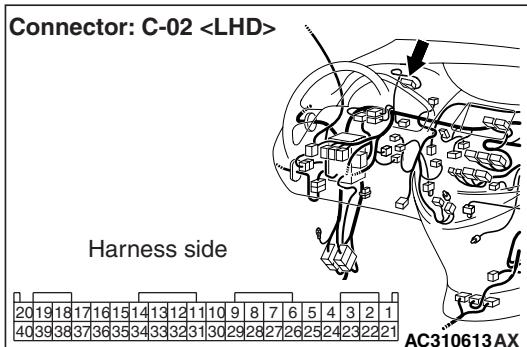
Also check joint connector C-01, junction block connector C-202 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 or junction block connector C-202 and C-205 is damaged, repair or replace the connector.

Q: Is the wiring harness between combination meter connector C-02 (terminal 20) and ignition switch (ACC) in good condition?

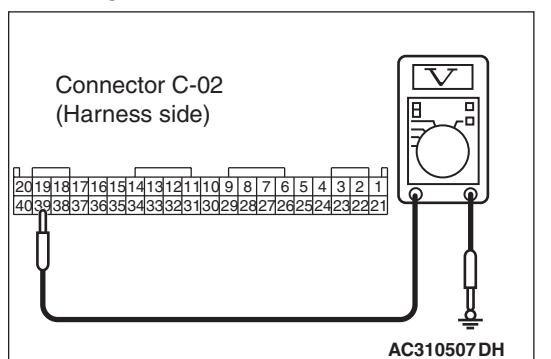
YES : Retest the system.
NO : Repair the wiring harness.

and measure at the wiring harness side.
(2) Turn the ignition switch to "ON" position.

Step 6. Voltage measurement at combination meter connector C-02 in order to power supply circuit to combination meter (IG1 power supply).



(1) Disconnect combination meter connector C-02,



(3) Measure the voltage between terminal 39 and earth.

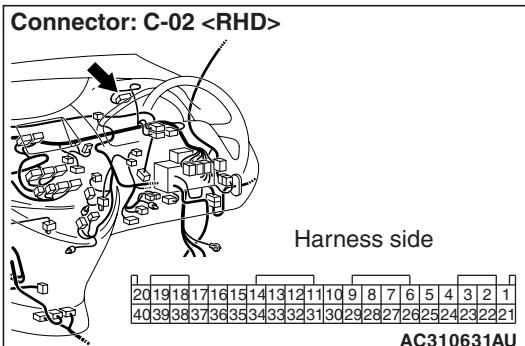
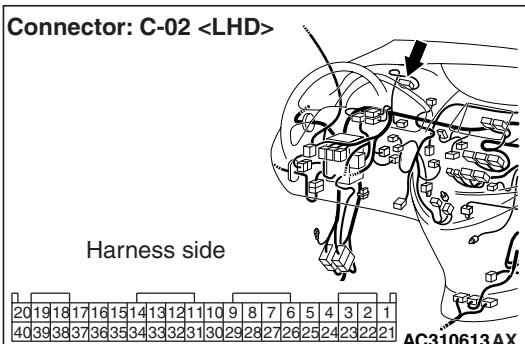
OK: Battery voltage

Q: Is the check result normal?

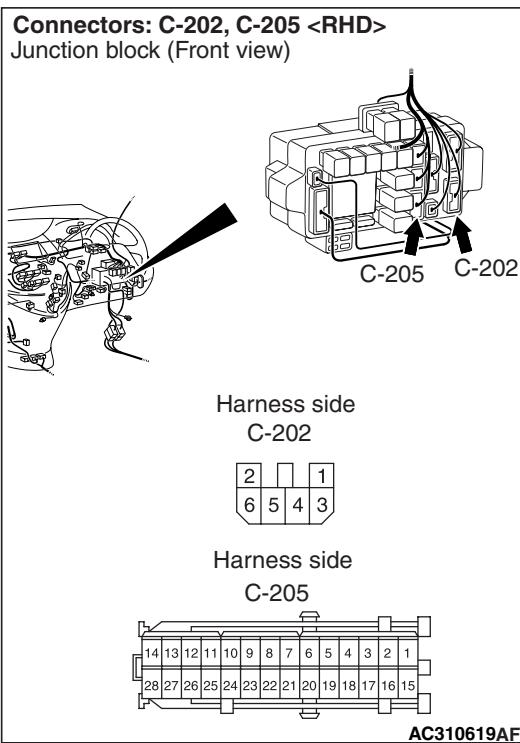
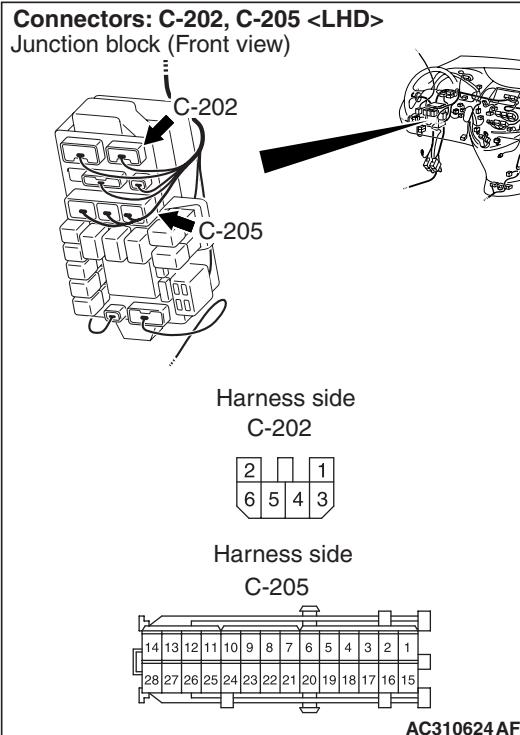
YES : Go to Step 8.

NO : Go to Step 7.

Step 7. Check the wiring harness between combination meter connector C-02 (terminal 39) and ignition switch (IG1).



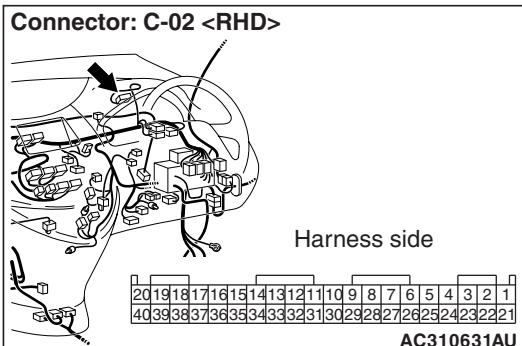
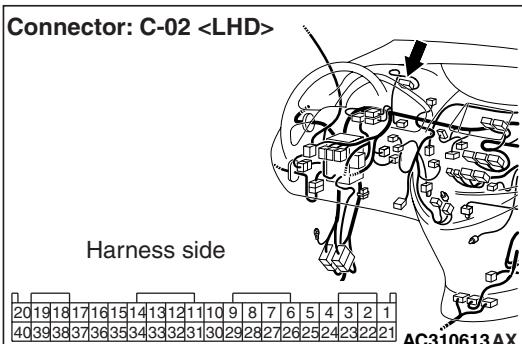
NOTE:



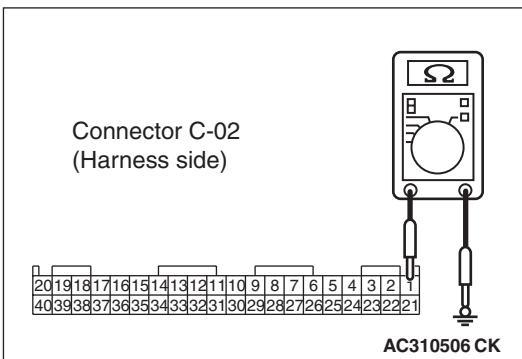
Also check junction block connector C-202 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 and C-205 is damaged, repair or replace the connector.

Q: Is the wiring harness between combination meter connector C-02 (terminal 39) and ignition switch (IG1) in good condition?
YES : Retest the system.
NO : Repair the wiring harness.

Step 8. Resistance measurement at combination meter connector C-02 in order to the earth circuit to the combination meter.

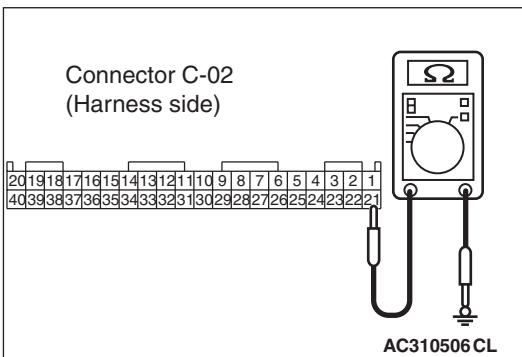


(1) Disconnect combination meter connector C-02, and measure at the wiring harness side.



(2) Measure the resistance between terminal 1 and earth.

OK: 2 ohms or less



(3) Measure the resistance between terminal 21 and

earth.

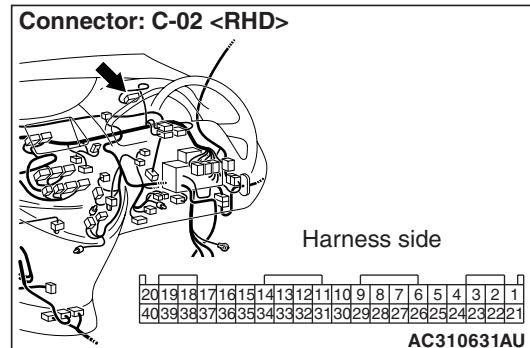
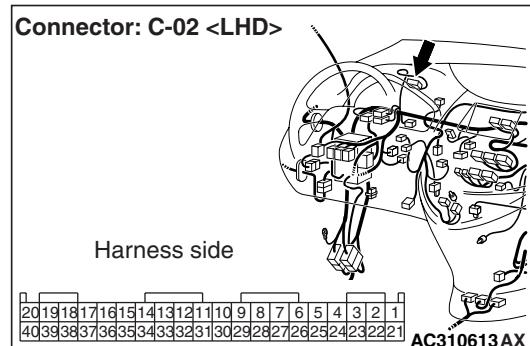
OK: 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

Step 9. Check the wiring harness between combination meter connector C-02 (terminals 1 and 21) and earth.



Q: Are the wiring harness between combination meter connector C-02 (terminals 1 and 21) and earth in good condition?

YES : Retest the system.

NO : Repair the wiring harness.

Step 10. Retest the system.

Q: Is the check result satisfactory?

YES : Intermittent Malfunction (Refer to GROUP

00 – How to Use

Troubleshooting/Inspection Service Points –

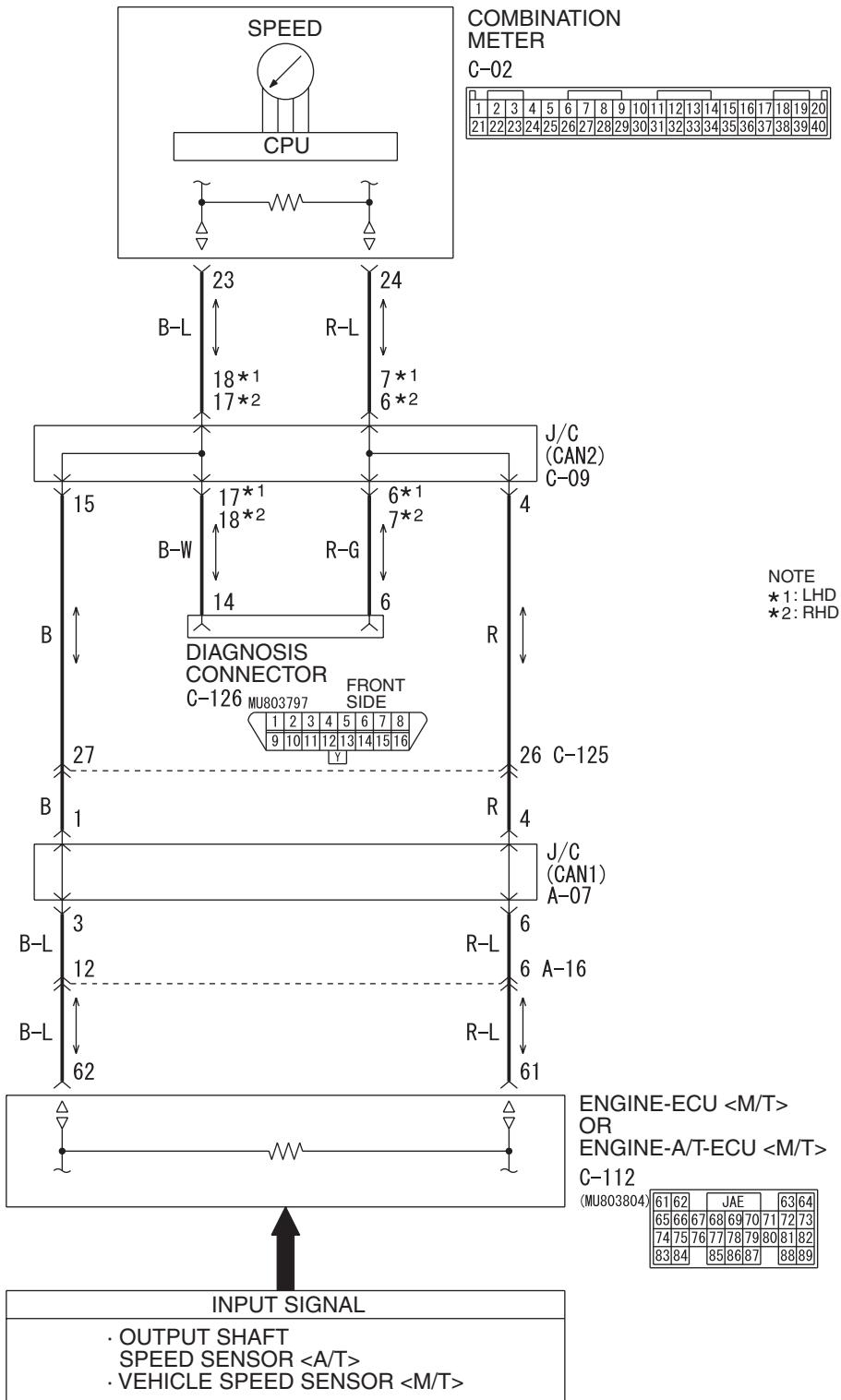
How to Cope with Intermittent Malfunctions

P.00-5.)

NO : Replace the combination meter.

INSPECTION PROCEDURE 6: Speedometer does not Work (other meters work). INSPECTION PROCEDURE 7: The Fuel Gauge Needle Moves Excessively.

Speedmeter Circuit



CAUTION

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

COMMENTS ON TROUBLE SYMPTOM

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

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table P.54D-16). After diagnosing the CAN bus lines, go to Step 5.

Step 2. MUT-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.
NO : Go to Step 3.

Step 3. MUT-III data list

- Item No.82: Vehicle speed sensor malfunction flag (Refer to P.54A-74.)
- Item No.83: Vehicle speed sensor definite flag (Refer to P.54A-74.)
- Item No.84: Vehicle stopped flag (Refer to P.54A-74.)

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.

Step 4. Check the speedometer.

- (1) Connect the MUT-III to the diagnosis connector.
- (2) Use the MUT-III to enter simulated vehicle speed.

OK: The speedometer shows that simulated vehicle speed.

Q: Is the check result satisfactory?

YES : Go to Step 5.

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

Step 5. Retest the system.

Check that the speedometer works normally.

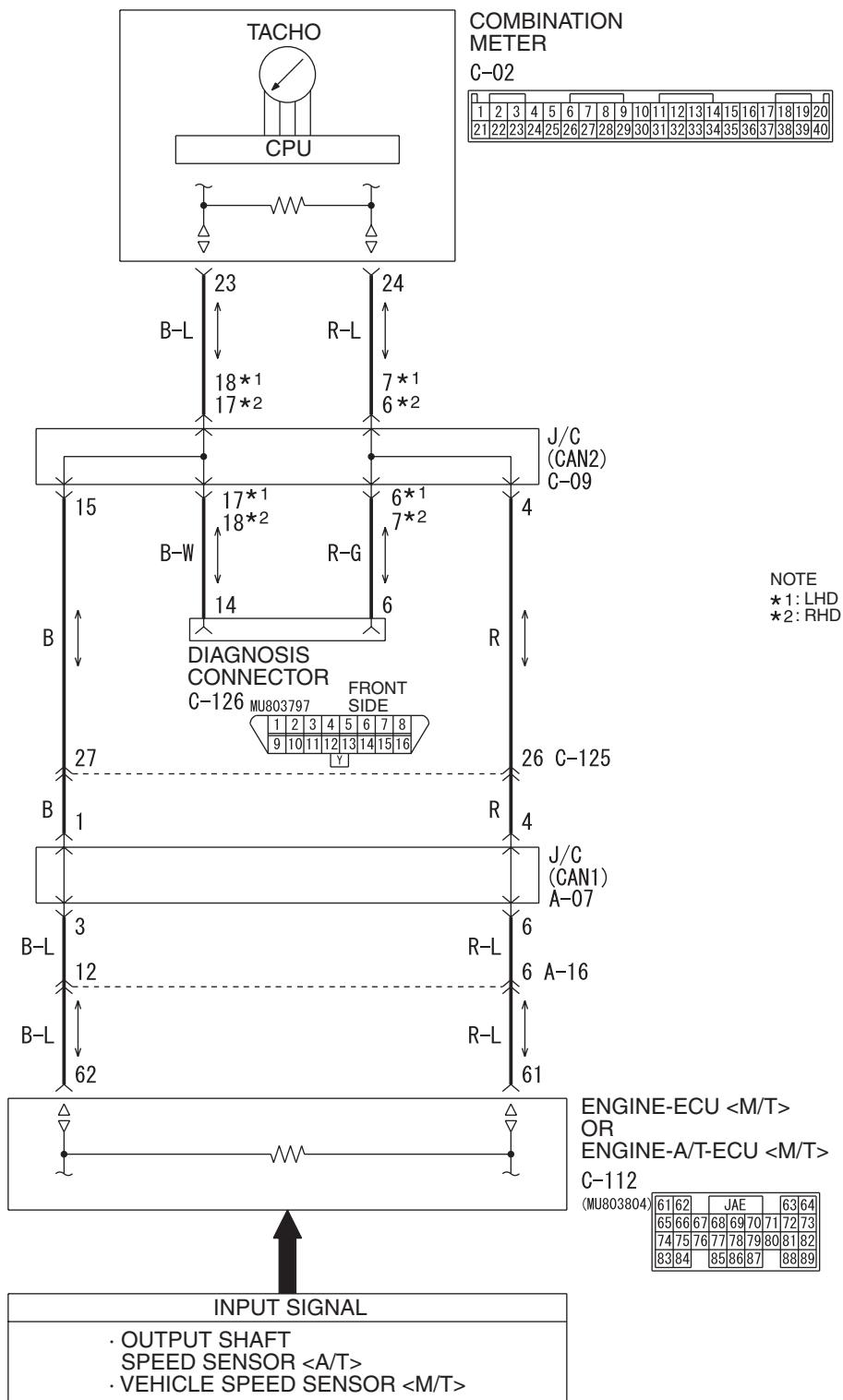
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

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

Tachometer Circuit



Wire colour code
B : Black
LG : Light green
G : Green
L: Blue
W : White
Y: Yellow
SB : Sky blue
BR : Brown
O : Orange
GR : Gray
R : Red
P : Pink
V : Violet

ENGINE-ECU <M/T>
OR
ENGINE-A/T-ECU <M/T>
C-112
(MU03804) 61 62 JAF 63 64

| | | | | | | | | | |
|----|----|----|----|-----|----|----|----|----|----|
| 4) | 61 | 62 | | JAE | | 63 | 64 | | |
| | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 |
| | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 |
| | 83 | 84 | | 85 | 86 | 87 | | 88 | 89 |

W4X54E195A

COMMENTS ON TROUBLE SYMPTOM

If only the tachometer does not operate, the engine-ECU <M/T> or engine-A/T-ECU <A/T> system may not be sending ignition signal, or the combination meter, the wiring harness or its connector may be defective.

POSSIBLE CAUSES

- Malfunction of combination meter
- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table P.54D-16). After diagnosing the CAN bus lines, go to Step 5.

Step 2. MUT-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.

NO : Go to Step 3.

Step 3. MUT-III data list

- Item No.87: Tachometer (Refer to P.54A-74.)

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.

Step 4. MUT-III actuator test

- Item No.84: Tachometer: 0 r/min
- Item No.85: Tachometer: 2000 r/min
- Item No.86: Tachometer: 5000 r/min

OK: The tachometer operates.

Q: Is the check result satisfactory?

YES : Go to Step 5.

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

Step 5. Retest the system.

Check that the tachometer works normally.

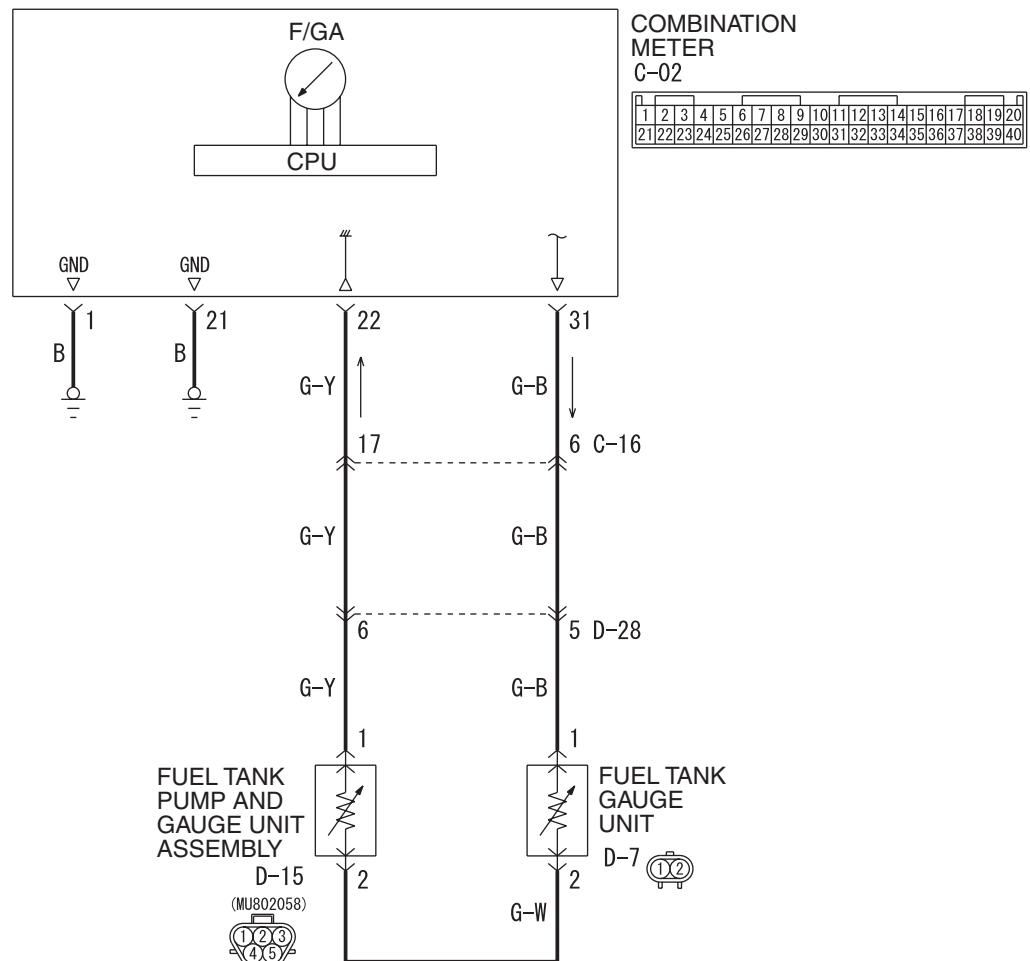
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

INSPECTION PROCEDURE 9: Fuel Gauge does not work (other meters work).

Fuel Gauge Circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4X54E197A

COMMENTS ON TROUBLE SYMPTOM

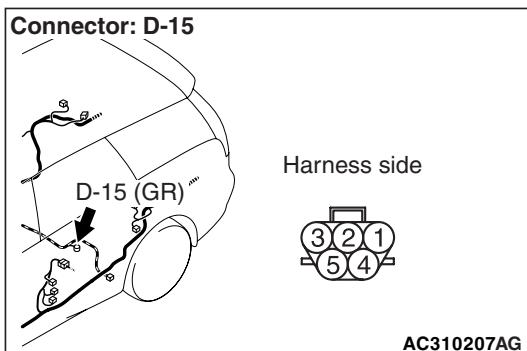
If only the fuel gauge does not operate, the fuel tank pump and gauge unit assembly, fuel tank gauge unit, combination meter, wiring harness or connector(s) may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of fuel tank gauge unit
- Malfunction of fuel tank pump and gauge unit assembly
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

Step 1. Connector check: Fuel tank pump and gauge unit assembly connector D-15.

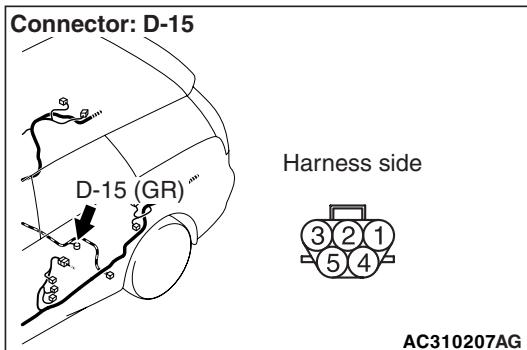


Q: Is fuel tank pump and gauge unit assembly connector C-02 in good condition?

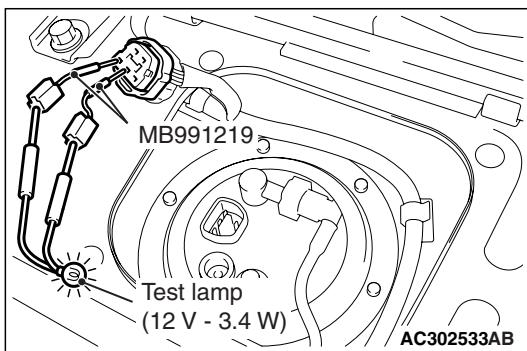
YES : Go to Step 2.

NO : Repair the connector, and then go to Step 11.

Step 2. Check the fuel gauge circuit.



(1) Disconnect fuel tank pump and gauge unit assembly connector D-15.



(2) Use special tool MB991219 to connect a test lamp (12 V - 3.4 W) between the wiring harness

connector terminals 1 and 2.

(3) Turn the Ignition switch to "ON" position.

(4) Check if the test lamp illuminates.

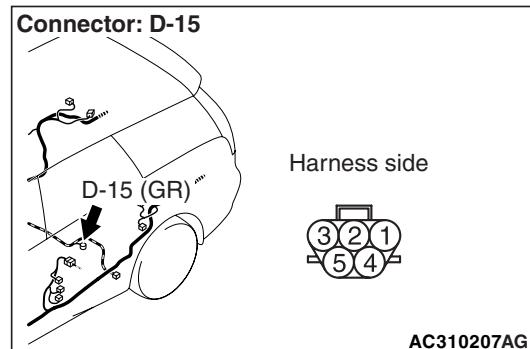
OK: Illuminates

Q: Is the check result satisfactory?

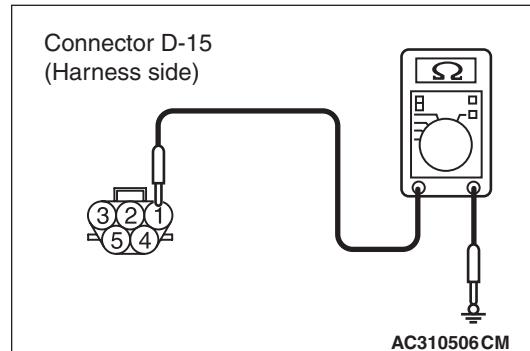
YES : Go to Step 8.

NO : Go to Step 3.

Step 3. Resistance measurement at fuel tank pump and gauge unit assembly connector D-15 to check the earth circuit to the fuel tank pump and gauge unit assembly.



- (1) Disconnect fuel tank pump and gauge unit assembly connector D-15, and measure at the wiring harness side.
- (2) Turn the Ignition switch to "LOCK" (OFF) position.
- (3) Disconnect the negative battery terminal.



(4) Measure the resistance value between terminal 1 and earth.

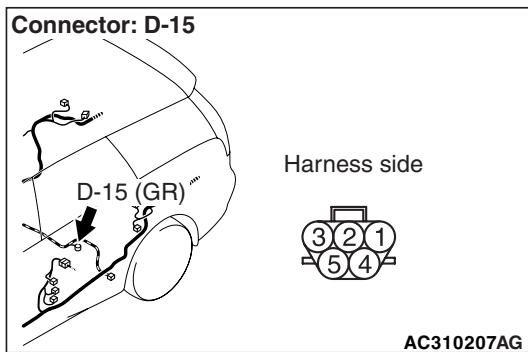
OK: 2 ohms or less

Q: Is the check result normal?

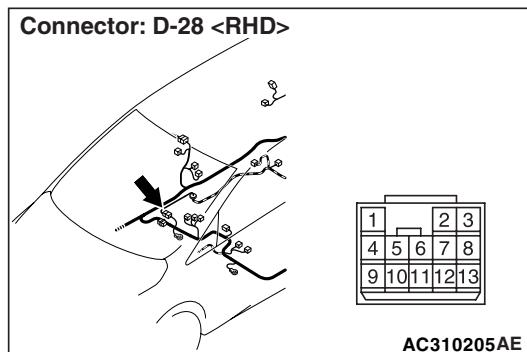
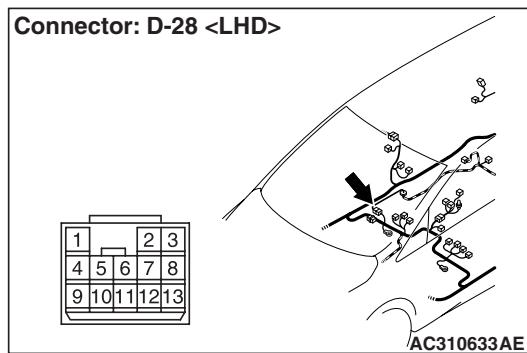
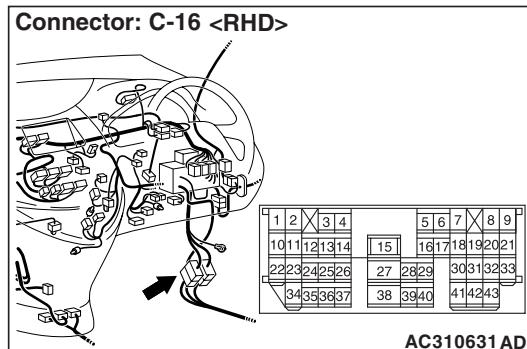
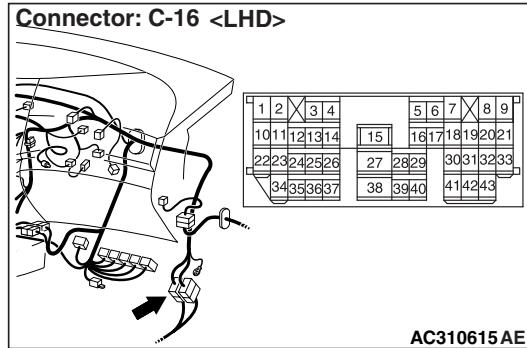
YES : Go to Step 5.

NO : Go to Step 4.

Step 4. Check the wiring harness between fuel tank pump and gauge unit assembly connector D-15 (terminal 1) and earth.



NOTE:



Also check intermediate connector D-28, C-16 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, C-16 are damaged, repair or replace the connector.

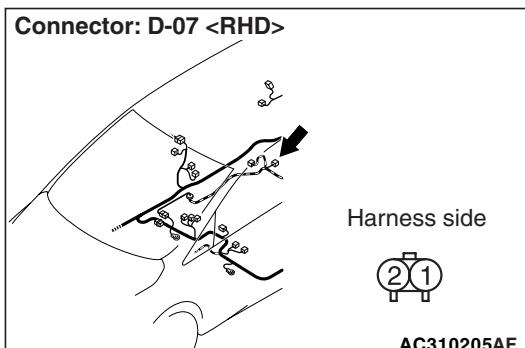
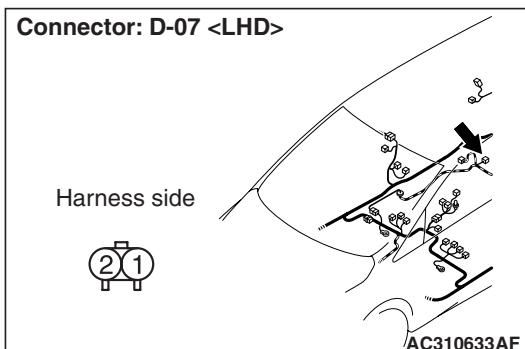
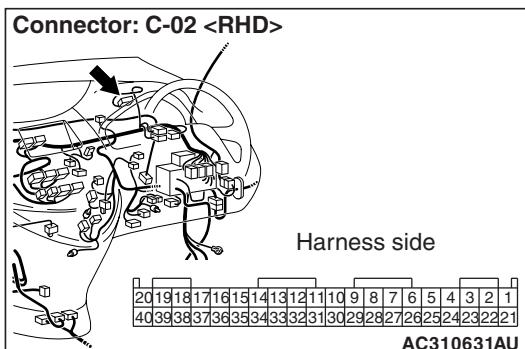
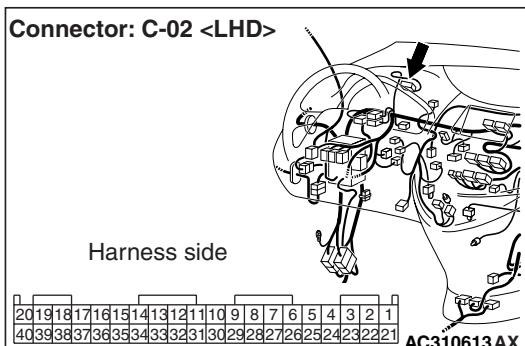
Q: Is the wiring harness between fuel tank pump and gauge unit assembly connector D-15 (terminal 1) and earth in good condition?

YES : Go to Step 11.

NO : Repair the harness, and then go to Step 11.

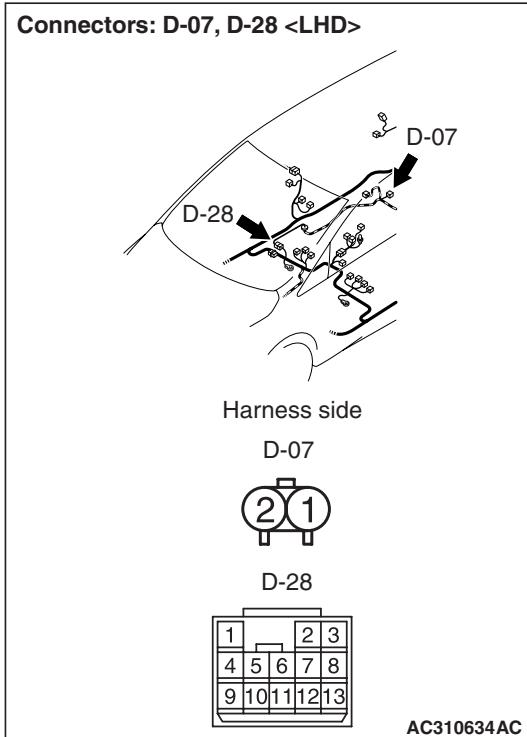
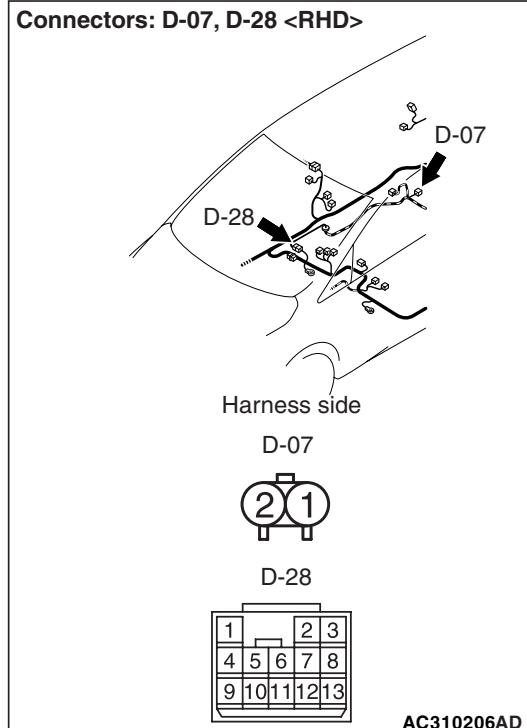
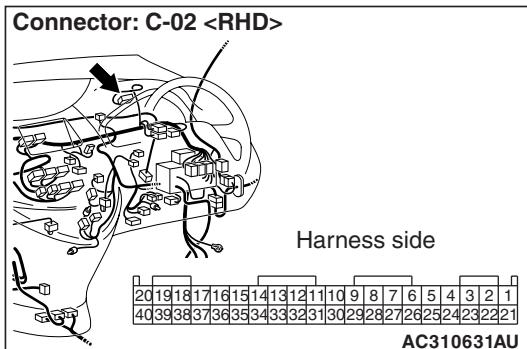
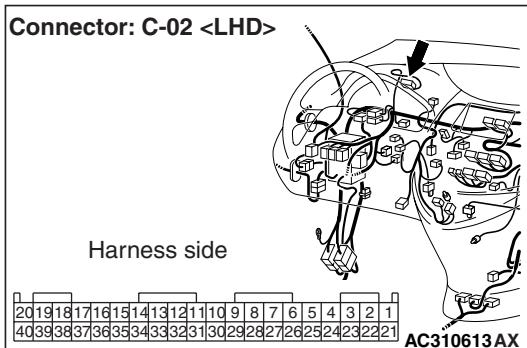
Step 5. Connector check: Combination meter connector C-02 and fuel tank gauge unit connector D-07.

YES : Go to Step 6.
NO : Repair the connector, and then go to Step 10.

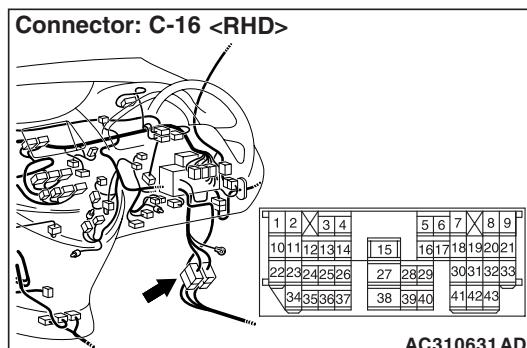
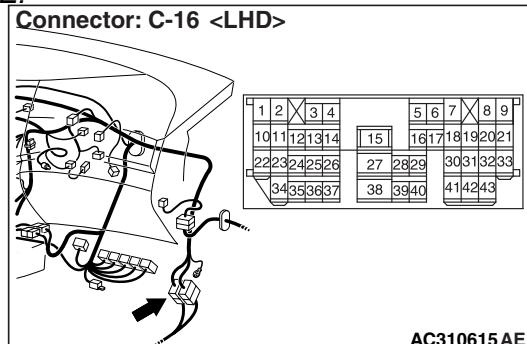


Q: Is combination meter connector C-02 and fuel tank gauge unit connector D-07 in good condition?

Step 6. Check the wiring harness between combination meter connector C-02 (terminal 31) and fuel tank gauge unit connector D-07 (terminal 1).



NOTE:

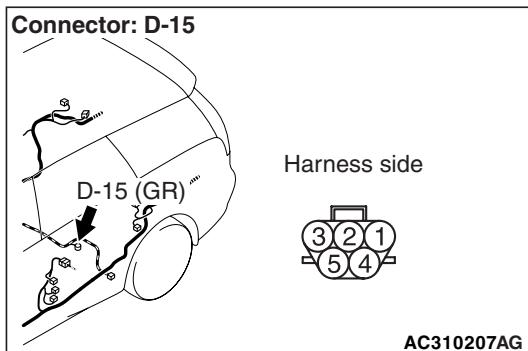
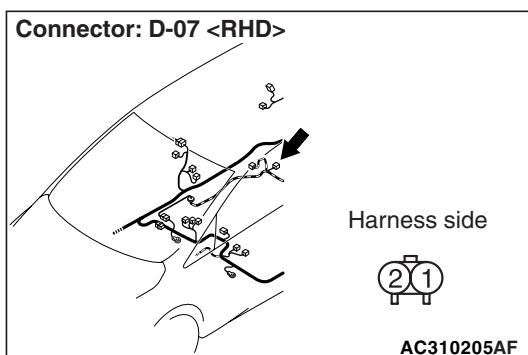
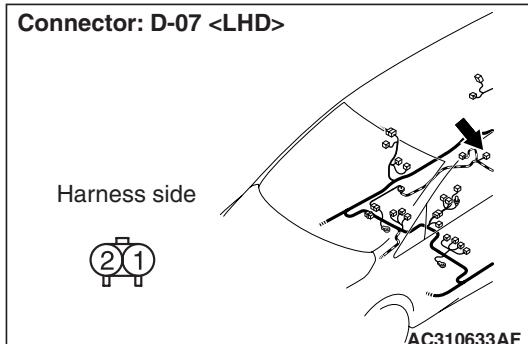


Also check intermediate connectors C-16, D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-16, D-28 are damaged, repair or replace the connector.

Q: Is the wiring harness between combination meter connector C-02 (terminal 31) and fuel tank gauge unit connector D-07 (terminal 1) in good condition?
YES : Go to Step 7.

NO : Repair the harness, and then go to Step 10.

Step 7. Check the wiring harness between fuel tank gauge unit connector D-07 (terminal 2) and fuel tank pump and gauge unit assembly connector D-15 (terminal 2).



Q: Is the wiring harness between fuel tank gauge unit connector D-07 (terminal 2) and fuel tank pump and

gauge unit assembly connector D-15 (terminal 2) in good condition?

YES : Go to Step 9.

NO : Repair the harness, and then go to Step 10.

Step 8. MUT-III data list

Item No.8A: Fuel gauge (target value)

OK: Fuel gauge and MUT-III displayed values agree with each other.

Q: Is the check result normal?

YES : Go to Step 11.

NO : Go to Step 9.

Step 9. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace fuel tank pump and gauge unit assembly and then go to Step 10.

Step 10. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace fuel tank gauge unit and then go to Step 11.

Step 11. Retest the system.

Check that the fuel gauge works normally.

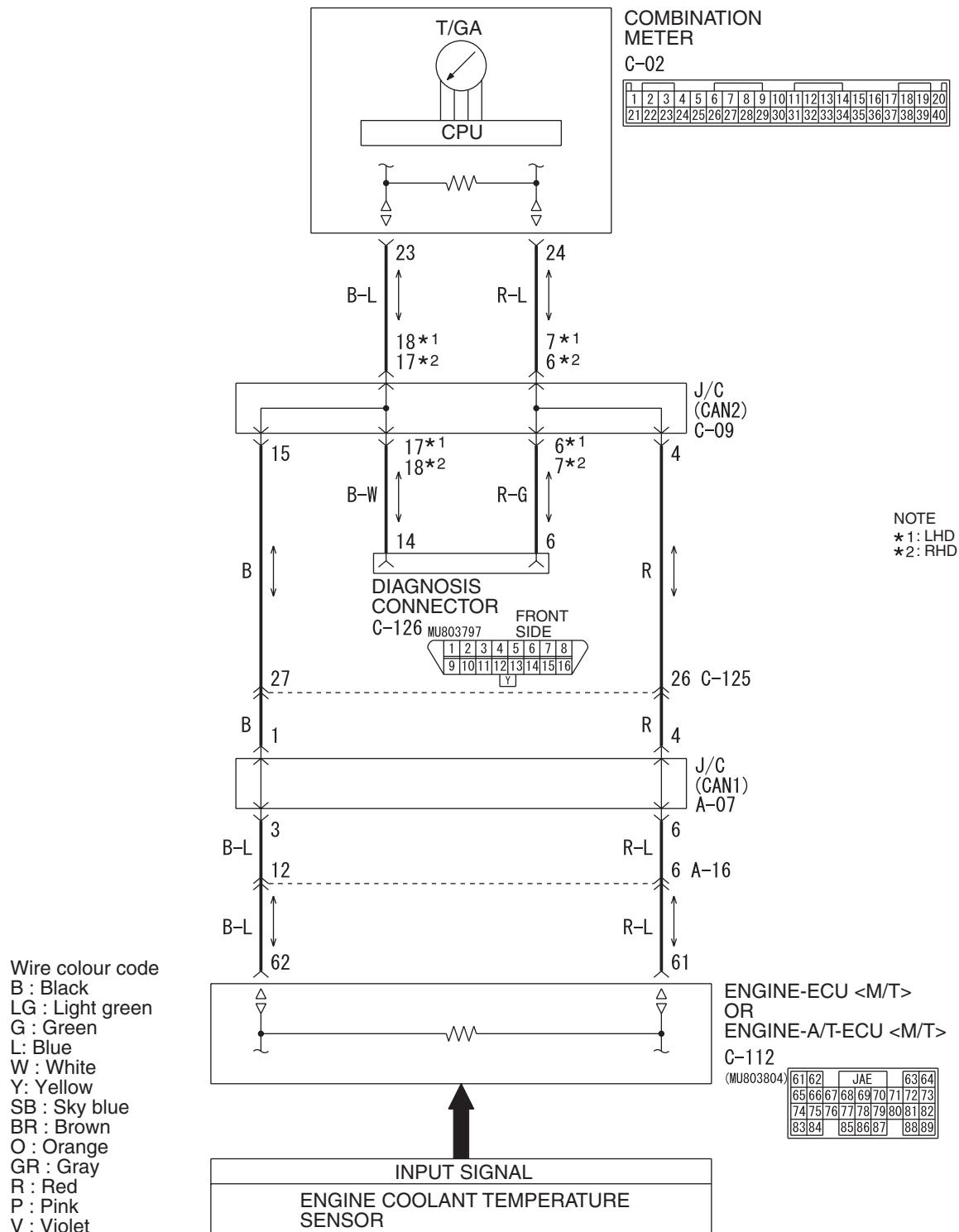
Q: Is the check result normal?

YES : The procedure is complete.

NO : Go to Step 1.

INSPECTION PROCEDURE 10: Engine Coolant Temperature Gauge does not Work (other meters work).

Engine Coolant Temperature Gauge Circuit



COMMENTS ON TROUBLE SYMPTOM

If only the engine coolant temperature gauge does not operate, the engine-ECU <M/T> or engine-A/T-ECU <A/T> system, the combination meter, the wiring harness or its connector may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of combination meter

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table P.54D-16). After diagnosing the CAN bus lines, go to Step 5.

Step 2. MUT-III other system diagnosis code

Check if an MPI system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.

NO : Go to Step 3.

Step 3. MUT-III data list

- Item No.8C: Water thermometer (Refer to P.54A-74.)
- Item No.8E: Water thermometer definite flag (Refer to P.54A-74.)

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting P.13A-20). After diagnosing the MPI system, go to Step 5.

Step 4. MUT-III actuator test

- Item No.88: Water temperature gauge: 0 °C
- Item No.89: Water temperature gauge: 85 °C
- Item No.8A: Water temperature gauge: 126 °C

OK: The water thermometer operates.

Q: Is the check result satisfactory?

YES : Go to Step 5.

NO : Replace combination meter and then go to step 5.

Step 5. Retest the system.

Check to see that the engine coolant temperature gauge operates normally.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

SERVICE DATA REFERENCE TABLE

M1543007300422

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

| Item No. | Check items | Check conditions | Normal conditions |
|----------|---------------------------------------|---|---|
| 80 | Speedometer | Perform a test run of the vehicle. | Speedometer displayed value and MUT-III displayed value agree with each other.* |
| 81 | Speedometer (target value) | Perform a test run of the vehicle. | Speedometer displayed value and MUT-III displayed value agree with each other.* |
| 82 | Vehicle speed sensor malfunction flag | Ignition switch: ON | Not set |
| 83 | Vehicle speed sensor definite flag | Ignition switch: ON | Set |
| 84 | Vehicle stopped flag | <ul style="list-style-type: none"> • Ignition switch: ON • Vehicle speed 0 km/h | Set |
| 87 | Tachometer | Start the engine. | Tachometer displayed value and MUT-III displayed value agree with each other. |

| Item No. | Check items | Check conditions | Normal conditions |
|----------|---------------------------------|--|---|
| 89 | Fuel gauge | Ignition switch: ON | Fuel gauge unit resistance value and MUT-III displayed value agree with each other. |
| 8A | Fuel gauge (target value) | Ignition switch: ON | Fuel gauge and MUT-III displayed values agree with each other. |
| 8C | Water thermometer | Ignition switch: ON | Water thermometer and MUT-III displayed values agree with each other. |
| 8E | Water thermometer definite flag | Ignition switch: ON | Set |
| 90 | Odometer | Ignition switch: ON | Odometer displayed value and MUT-III displayed value agree with each other. |
| 91 | Rheostat | Ignition switch: ON | The brightness of the combination meter illumination changes. |
| 92 | Tripmeter A | Ignition switch: ON | Tripmeter A displayed value and MUT-III displayed value agree with each other. |
| 93 | Tripmeter B | Ignition switch: ON | Tripmeter B displayed value and MUT-III displayed value agree with each other. |
| A1 | SRS warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After warning lamp pre-check | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • During warning lamp pre-check | ON |
| A2 | ABS warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After warning lamp pre-check | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • During warning lamp pre-check | ON |
| A3 | Hydraulic pressure warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After starting the engine | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • Before starting the engine | ON |
| A4 | Charging warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After starting the engine | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • Before starting the engine | ON |
| A5 | Engine warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After warning lamp pre-check | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • During warning lamp pre-check | ON |

| Item No. | Check items | Check conditions | Normal conditions |
|----------|----------------------------|--|-------------------|
| A6 | Fuel reserve warning lamp | • Ignition switch: ON • Much fuel | OFF |
| | | • Ignition switch: ON • Poor fuel | ON |
| A7 | Brake warning lamp | • Ignition switch: ON • Parking brake: At release | OFF |
| | | • Ignition switch: ON • Parking brake operates • During warning lamp pre-check | ON |
| A8 | Seat belt warning lamp | • Ignition switch: ON • Driver's seatbelt: fastened | OFF |
| | | • Ignition switch: ON • Driver's seatbelt: Not fastened | ON |
| | | • Ignition switch: ON • Front passenger: Set • Driver's seatbelt: Not fastened | ON |
| B1 | Turn-signal indicator (RH) | Turn signal lamp: OFF or only left side lamp illuminates | OFF |
| | | Turn signal lamp: Right side lamp illuminates | ON |
| B2 | Turn-signal indicator (LH) | Turn signal lamp: OFF or only right side lamp illuminates | OFF |
| | | Turn signal lamp: Left side lamp illuminates | ON |
| B3 | Front fog lamp indicator | Front fog lamp: OFF | OFF |
| | | Front fog lamp: ON | ON |
| B4 | High-beam indicator | Headlamps: OFF or low beam illuminates | OFF |
| | | Headlamps: High beam illuminates | ON |
| B5 | Door indicator (front, LH) | Left side front door closed | OFF |
| | | Left side front door open | ON |
| B6 | Door indicator (front, RH) | Right side front door closed | OFF |
| | | Right side front door open | ON |
| B7 | Door indicator (rear, LH) | Left side rear door closed | OFF |
| | | Left side rear door open | ON |
| B8 | Door indicator (rear, RH) | Right side rear door closed | OFF |
| | | Right side rear door open | ON |
| B9 | Door indicator (tailgate) | Tailgate closed | OFF |
| | | Tailgate open | ON |
| BA | Position lamp indicator | Position lamp: OFF | OFF |
| | | Position lamp: ON | ON |

| Item No. | Check items | Check conditions | Normal conditions |
|----------|-------------------------|--|-------------------|
| C1 | A/T indicator: P | Shift position: Other than P position | OFF |
| | | Shift position: P position | ON |
| C2 | A/T indicator: R | Shift position: Other than R position | OFF |
| | | Shift position: R position | ON |
| C3 | A/T indicator: N | Shift position: Other than N position | OFF |
| | | Shift position: N position | ON |
| C4 | A/T indicator: D | Shift position: Other than D position | OFF |
| | | Shift position: D position | ON |
| C8 | A/T indicator: 4 | Shift position: Other than 4 position | OFF |
| | | Shift position: 4 position | ON |
| C9 | A/T indicator: 3 | Shift position: Other than 3 position | OFF |
| | | Shift position: 3 position | ON |
| CA | A/T indicator: 2 | Shift position: Other than 2 position | OFF |
| | | Shift position: 2 position | ON |
| CB | A/T indicator: 1 | Shift position: Other than 1 position | OFF |
| | | Shift position: 1 position | ON |
| D1 | Cruise | <ul style="list-style-type: none"> • Ignition switch: ON • Cruise main switch: OFF | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • Cruise main switch: ON | ON |
| D2 | Rear fog lamp indicator | Rear fog lamp: OFF | OFF |
| | | Rear fog lamp: ON | ON |
| D3 | TCL OFF warning lamp | <ul style="list-style-type: none"> • Ignition switch: ON • After warning lamp pre-check • TCL OFF switch: OFF | OFF |
| | | <ul style="list-style-type: none"> • Ignition switch: ON • During warning lamp pre-check • TCL OFF switch: ON | ON |

| Item No. | Check items | Check conditions | Normal conditions |
|----------|------------------------|--|-------------------|
| D4 | TCL/ASC warning lamp | • Ignition switch: ON • After warning lamp pre-check | OFF |
| | | • Ignition switch: ON • During warning lamp pre-check | ON |
| D7 | Oil level warning lamp | • Ignition switch: ON • After starting the engine | OFF |
| | | • Ignition switch: ON • Before starting the engine | ON |

NOTE: * indicates that the slowest vehicle speed is 5

ACTUATOR TEST TABLE

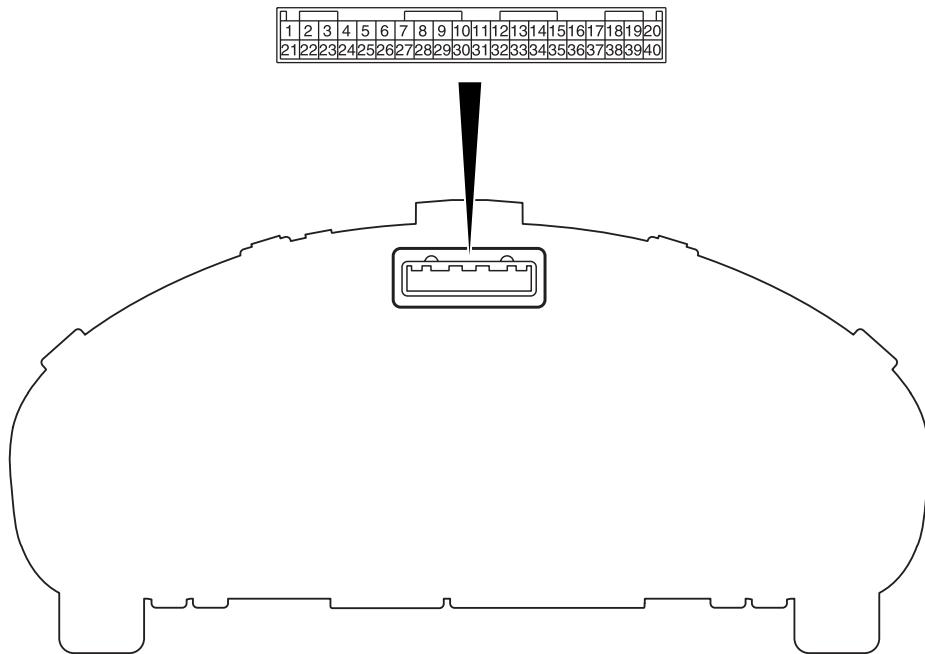
M1543007400054

| Item No. | Check items | Test content | Check conditions | Normal conditions |
|----------|--------------------------------|---|--|---|
| 80 | Speedometer | Set the speedometer to 0 km/h | Turn the ignition switch to the ON position. | Speedometer shows 0 km/h |
| 81 | | Set the speedometer to 40 km/h | | Speedometer shows 40 km/h |
| 82 | | Set the speedometer to 100 km/h | | Speedometer shows 100 km/h |
| 84 | Tachometer | Set the tachometer to 0 r/min | Turn the ignition switch to the ON position. | Tachometer shows 0 r/min |
| 85 | | Set the tachometer to 2000 r/min | | Tachometer shows 2000 r/min |
| 86 | | Set the tachometer to 5000 r/min | | Tachometer shows 5000 r/min |
| 88 | Water thermometer | Set the water thermometer to 0 °C | Turn the ignition switch to the ON position. | Water thermometer shows 0 °C |
| 89 | | Set the water thermometer to 85 °C | | Water thermometer shows 85 °C |
| 8A | | Set the water thermometer to 126 °C | | Water thermometer shows 126 °C |
| 90 | Fuel gauge (target value) | Set the fuel gauge to 0 % | Turn the ignition switch to the ON position. | Fuel gauge shows 0 % |
| 91 | | Set the fuel gauge to 50 % | | Fuel gauge shows 50 % |
| 92 | | Set the fuel gauge to 100 % | | Fuel gauge shows 100 % |
| A0 | Combination meter illumination | Set the combination meter illumination to 0 % | Turn the ignition switch to the ON position. | Combination meter illumination is 0 % |
| A1 | | Set the combination meter illumination to 50 % | | Combination meter illumination is 50 % |
| A2 | | Set the combination meter illumination to 100 % | | Combination meter illumination is 100 % |

| Item No. | Check items | Test content | Check conditions | Normal conditions |
|----------|---------------------------------|---|--|--|
| A3 | Indicator lamp and warning lamp | Illuminate the indicator lamp and the warning lamp. | Turn the ignition switch to the ON position. | Turn, door, fog, high beam, parking brake, check engine, charge, oil pressure, SRS, ABS and seatbelt indicator lamps, and fuel and cruise warning lamps illuminate. |
| A4 | | Extinguish the indicator lamps and the warning lamps. | | Turn, door, fog, high beam, parking brake, check engine, charge, oil pressure, SRS, ABS and seatbelt indicator lamps, and fuel and cruise warning lamps go out. |
| A5 | | Illuminate the indicator lamp and the warning lamp. | | The position indicator lamp illuminates. |
| A6 | | Extinguish the indicator lamps and the warning lamps. | | The position indicator lamp goes out. |
| A7 | | Illuminate the indicator lamp and the warning lamp. | | The oil level warning lamp illuminates. |
| | | Extinguish the indicator lamps and the warning lamps. | | The oil level warning lamp goes out. |
| A9 | A/T indicator lamp and display | Illuminate the A/T indicator lamp or display the A/T indicator. | Turn the ignition switch to the ON position. | <ul style="list-style-type: none"> • A/T indicator lamp (P, R, N, D) illuminates. • A/T indicator displays gear position (1,2,3 or 4) on LED. |
| AA | | Illuminate the A/T indicator lamp or display the A/T indicator. | | <ul style="list-style-type: none"> • A/T indicator lamp (P, R, N, D) goes out. • A/T indicator does not display gear position (1,2,3 or 4) on LED. |

CHECK AT ECU TERMINALS

M1543007600616



AC302719AB

| Terminal No. | Check items | Check conditions | Normal conditions |
|--------------|--|--|-------------------|
| 1 | Earth | Always | 0 V |
| 20 | Power supply from ignition switch (ACC) | Ignition switch: ACC | Battery voltage |
| 21 | Earth | Always | 0 V |
| 22 | Fuel earth | Ignition switch: ON | — |
| 23 | CAN L | — | — |
| 24 | CAN H | — | — |
| 31 | Input of fuel gauge | Ignition switch: ON | — |
| 32 | Input of seatbelt switch | Ignition switch: ON and the seat belt is unfastened. | — |
| 34 | Input of parking brake switch and brake fluid level switch | <ul style="list-style-type: none"> Ignition switch: ON and parking brake switch: ON Ignition switch: ON and brake fluid level switch: ON | — |
| 35 | Charging | Ignition switch: ON and before power generation by alternator | — |
| 36 | Oil pressure switch | Ignition switch: ON and before starting the engine | — |
| 38 | Illumination (power supply) | Illumination switch: ON | Battery voltage |
| 39 | Power supply from ignition switch (IG1) | Ignition switch: ON | Battery voltage |
| 40 | Battery power supply | Always | Battery voltage |

ON-VEHICLE SERVICE

CHECK THE SPEEDOMETER.

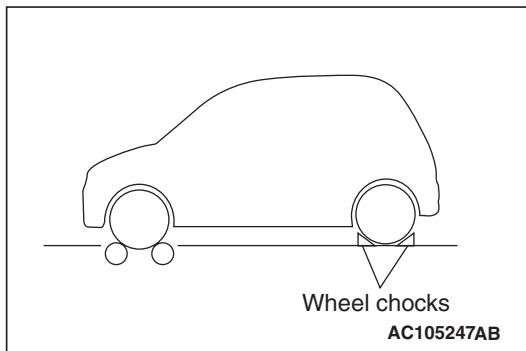
CAUTION

Since the diagnosis code may be stored in the ABS-ECU or the ASC-ECU when checking the speedometer with speedometer tester, erase the diagnosis code.

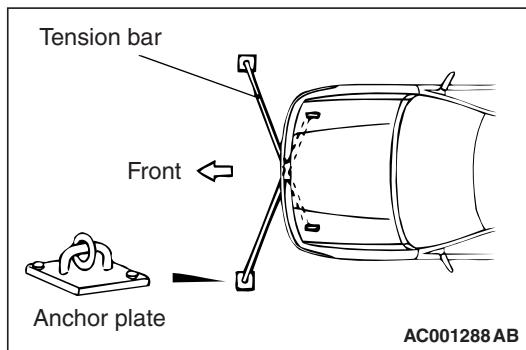
CAUTION

Do not accelerate or decelerate suddenly during servicing work.

1. Check that the tyre pressure is within the tyre pressure label. (Refer to GROUP 31 - On-vehicle Service P.31-8.)
2. Set the vehicle on the speedometer tester.



3. Chock the rear wheels and depress the parking brake pedal.



4. To prevent the front wheel from moving from side to side, attach tension bars to the tie-down hook, and secure both ends to anchor plates.
5. To prevent the vehicle from moving, attach a chain or wire to the rear retraction hook, and make sure the end of the chain or wire is secured.
6. Check that the speedometer indicating range is within the standard value or the needle fluctuation is within the limit.

Standard value:

| Standard indicator km/h (mph) | Allowance range km/h (mph) |
|----------------------------------|-------------------------------|
| 20 (10) | 20 – 24 (10 – 12) |
| 40 (25) | 40 – 44 (25 – 27) |
| 80 (50) | 80 – 85 (50 – 53) |
| 120 (75) | 121 – 127 (76 – 80) |
| 160 (100) | 162 – 169 (101 – 106) |
| 200 (125) | 203 – 211 (127 – 132) |

Limit: Needle fluctuation (Driving speed is 35 km/h (21 mph) or more) \pm 3 km/h (1 mph)

TACHOMETER CHECK

M1543001000531

Check that the tachometer indicating error is within the standard value when the actuator tests (item No.85 and 86) are performed using MUT-III.

Standard value:

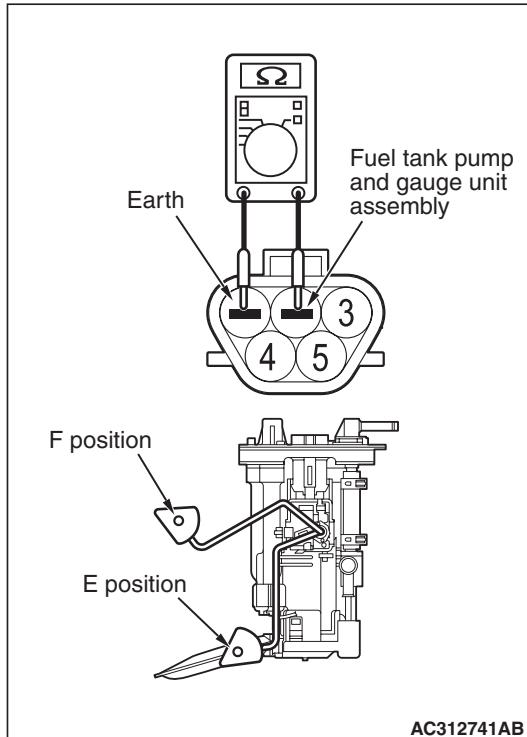
| Engine speed r/min | Tachometer indicating error r/min |
|--------------------|-----------------------------------|
| 2000 | \pm 100 |
| 5000 | \pm 200 |

FUEL TANK GAUGE UNIT CHECK

M1543001200676

Remove the fuel tank gauge unit and fuel tank pump and gauge unit assembly (Refer to GROUP 13B, Fuel Tank P.13B-5).

**FUEL TANK GAUGE UNIT RESISTANCE
FUEL TANK PUMP AND GAUGE UNIT
ASSEMBLY**



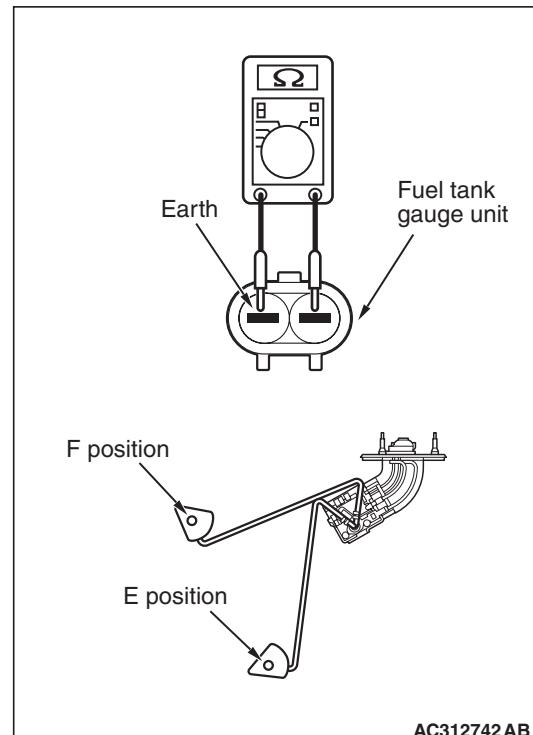
1. Check that the resistance value between the fuel tank pump and gauge unit assembly terminal and the earth terminal is at the standard value when the float of the fuel tank pump and gauge unit assembly is at the F position and the E position.

Standard values:

| Float Position | Gauge resistance value |
|----------------|------------------------|
| F position | $6.5 \pm 1 \Omega$ |
| E position | $53.2 \pm 1 \Omega$ |

2. Check that the resistance value changes smoothly when the float is moved slowly between the F position and the E position.
3. If all checks are correct, go to fuel tank pump and gauge unit assembly float height check. If any check is not correct, replace the fuel tank pump and gauge unit assembly.

FUEL TANK GAUGE UNIT



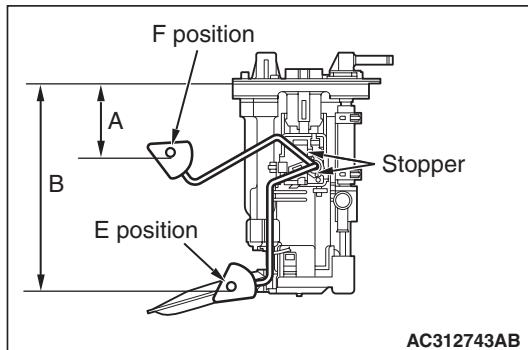
1. Check that the resistance value between the fuel tank gauge unit terminal and earth terminal is at the standard value when the float of the fuel tank gauge unit is at the F position and the E position.

Standard values:

| Float Position | Gauge resistance value |
|----------------|------------------------|
| F position | $6.5 \pm 1 \Omega$ |
| E position | $66.8 \pm 1 \Omega$ |

2. Check that the resistance value changes smoothly when the float moved slowly between the F position and the E position.
3. If all checks are correct, go to fuel tank gauge unit float height check. If any check is not correct, replace the fuel tank gauge unit.

FUEL TANK GAUGE UNIT FLOAT HEIGHT FUEL TANK GAUGE UNIT FUEL TANK PUMP AND GAUGE UNIT ASSEMBLY

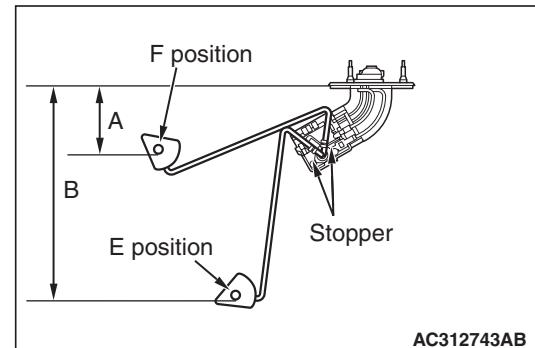


1. Move the float and check that F position height (A) and E position height (B) are at the standard values when the float arm touches the stopper.

Standard values:

| Float Position | Float Centre Height |
|----------------|---------------------|
| F position (A) | 57.6 ± 3 mm |
| E position (B) | 158.4 ± 3 mm |

2. If all checks are correct, go to fuel tank gauge unit float height check. If any check is not correct, replace the fuel tank gauge unit.



1. Move the float and check that F position height (A) and E position height (B) are at the standard values when the float arm touches the stopper.

Standard values:

| Float Position | Float Centre Height |
|----------------|---------------------|
| F position (A) | 57.0 ± 3 mm |
| E position (B) | 180.2 ± 3 mm |

2. If all checks are correct, go to fuel tank gauge unit float height check. If any check is not correct, replace the fuel tank gauge unit.

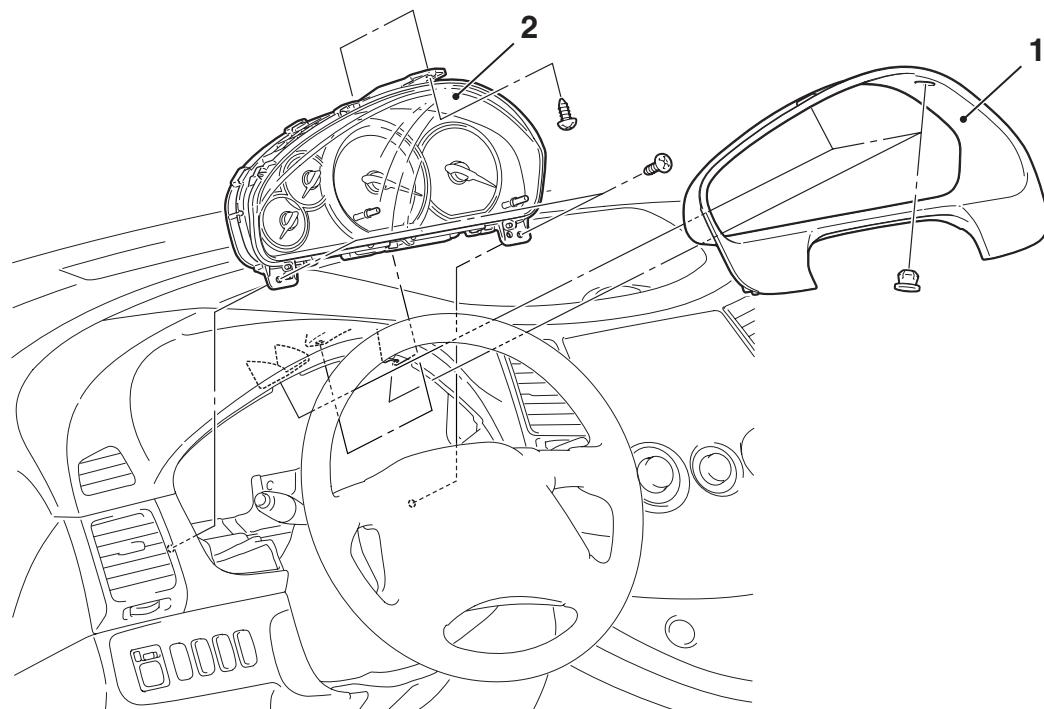
COMBINATION METER ASSEMBLY

REMOVAL AND INSTALLATION

M1543019800101

CAUTION

When the battery cable is disconnected or the combination meter is removed, the fuel gauge learned value will be erased. To let the display unit re-learn it, enter the vehicle speed (by driving the vehicle or entering simulated vehicle speed) and then stop the vehicle. Service on a level surface. (If the vehicle is inclined, the measurement value will go out.)



AC311964AB

Removal steps

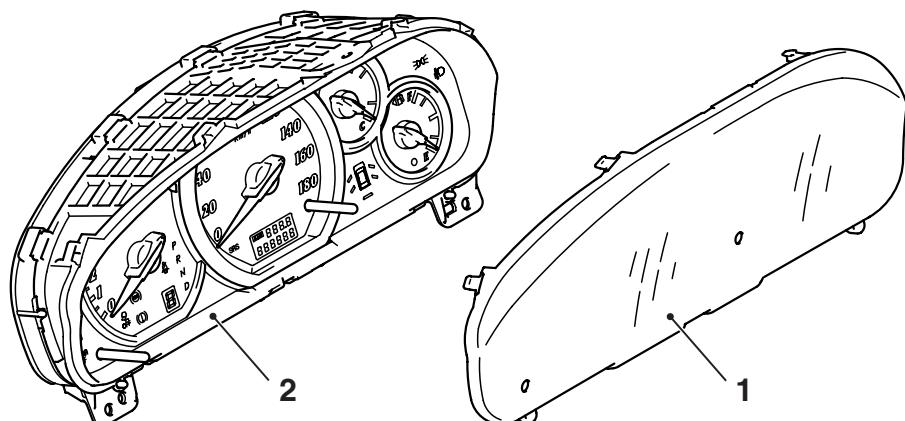
- Steering column cover (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).

Removal steps (Continued)

1. Combination meter bezel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
2. Combination meter assembly

DISASSEMBLY AND REASSEMBLY

M1543019900108



AC313279AB

Disassembly steps

1. Combination meter glass
2. Combination meter

HEADLAMP

SERVICE SPECIFICATIONS

M1542000300495

| Item | | Standard value | Limit |
|---|----------------------|--|-------|
| Headlamp aiming | Vertical direction | 60 mm below horizontal (H) | — |
| | Horizontal direction | 15° sloping section intersects the vertical line (V) | — |
| Headlamp luminous intensity measurement cd (Corresponding to the illumination 40 m ahead of the vehicle at low beam) | — | 30,000 cd or more | |

PRECAUTIONS ON HOW TO USE THE HEADLAMP ASSEMBLY

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

- Don't illuminate the headlamp for three minutes or more when the headlamp is covered with scratch protector.
- Don't tape the outer lens.
- Don't scratch the outer lens surface with a sharp edged special tool.
- Use the specified wax remover and rinse the wax off cleanly.
- Use the specified genuine bulb.

TROUBLESHOOTING

M1542011800201

Features the headlamp automatic-shutdown function to avoid battery drain when the headlamps are left on. The main features are as follows:

- Extinguishes automatically in three minutes if the ignition switch is turned off with the lighting switch on.
- Extinguishes in one second if the driver's door is opened within that 3-minute period.
- If the headlamps are turned on with the ignition switch off, the headlamps and tail lamps will extinguish in three minutes after the driver's door is opened or closed.

The headlamps are controlled by the Smart Wiring System (SWS). For troubleshooting, refer to respective Groups below.

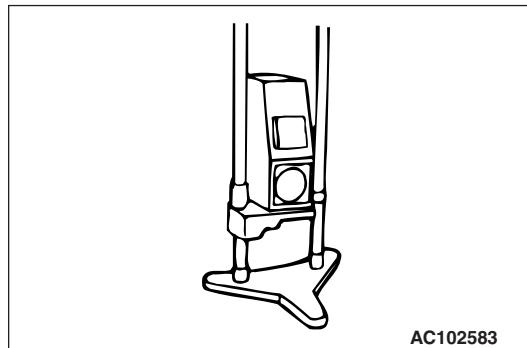
- Not using SWS monitor: GROUP 54B, Troubleshooting [P.54B-74](#).
- Using SWS monitor: GROUP 54C, Troubleshooting [P.54C-44](#).

ON-VEHICLE SERVICE

HEADLAMP AIMING

M1542000900635

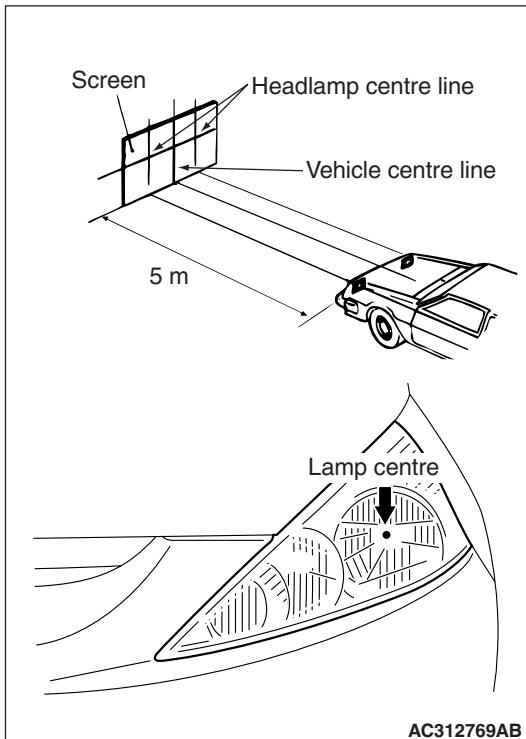
<USING A BEAM SETTING EQUIPMENT>



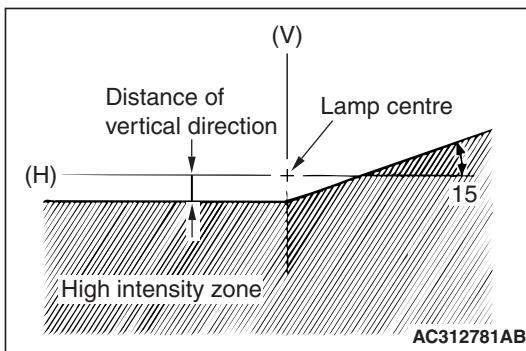
AC102583

1. The headlamps should be aimed with the proper beam setting equipment, and in accordance with the equipment manufacturer's instructions.
2. Alternately turn the adjusting screw to adjust the headlamp aiming.

<USING A SCREEN>



1. Inflate the tyres to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in driver's position.
2. Put the headlamp levelling switch in "0" position.
3. Set the distance between the screen and the centre marks of the headlamps as shown in the illumination.



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

Standard value:

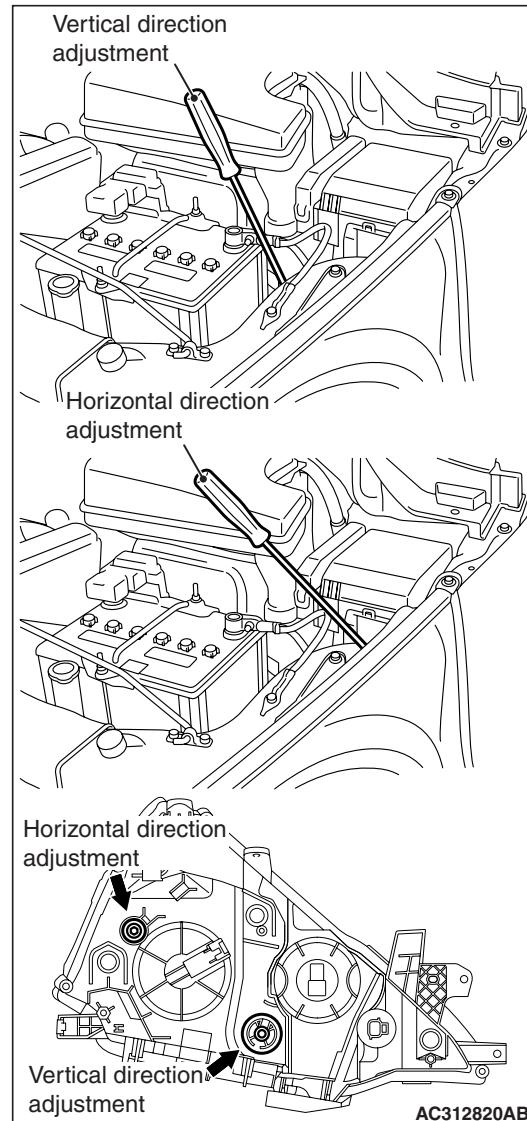
(Vertical direction) 60 mm below horizontal (H)

(Horizontal direction) 15° sloping section intersects the vertical line (V)

NOTE: The illustration shows LH drive vehicles. For RH drive vehicles, it is symmetrical.

CAUTION

Be sure to adjust the aiming adjustment screw in the tightening direction.



5. Alternately turn the adjusting screw to adjust the headlamp aiming.

HEADLAMP INTENSITY MEASUREMENT

M1542001000550

Using a photometer, and following its manufacturer's instruction manual, measure the headlamp intensity and check to be sure that the limit value is satisfied.

Limit: 30,000 cd or more

NOTE:

1. When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery in the charging condition.
2. There may be special local regulations pertaining to headlamp intensity, be sure to make any adjustments necessary to satisfy such regulations.
3. If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

$I = Er^2$ Where:

I =intensity (cd)

E =illumination (lux)

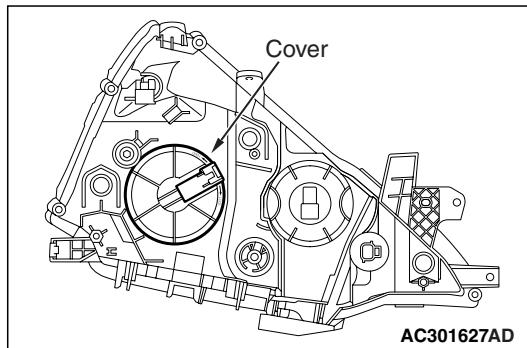
r =distance (m) from headlamps to illuminometer

BULB REPLACEMENT

M1542001300818

HEADLAMP BULB <LOW BEAM>
REPLACEMENT

1. Disconnect the connector.



2. Twist the cover to remove.
3. Withdraw the socket from the bulb.

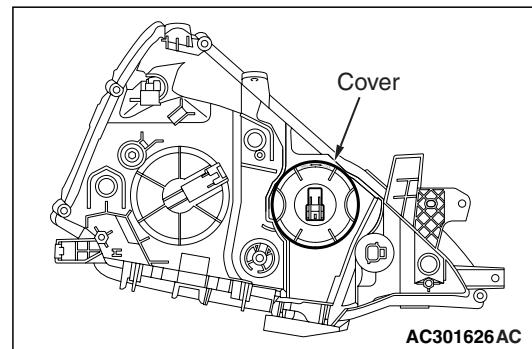
CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

4. Remove the spring to withdraw the bulb.

HEADLAMP BULB <HIGH BEAM>
REPLACEMENT

1. Disconnect the connector.



2. Twist the cover to remove.

CAUTION

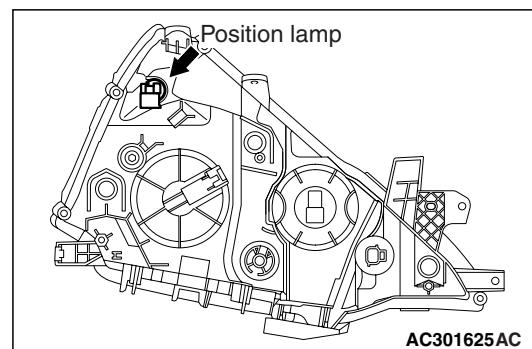
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

3. Twist the socket to remove.

POSITION LAMP BULB REPLACEMENT

CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

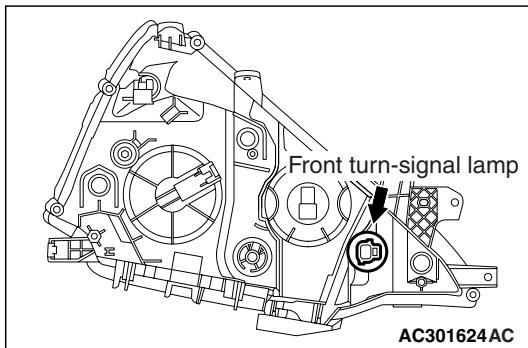


Disconnect the connector, and twist the position lamp socket to remove it.

FRONT TURN SIGNAL LAMP BULB REPLACEMENT

⚠ CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



Disconnect the connector, and twist the front turn signal lamp socket to remove it.

HEADLAMP AUTOMATIC-SHUTDOWN FUNCTION CHECK

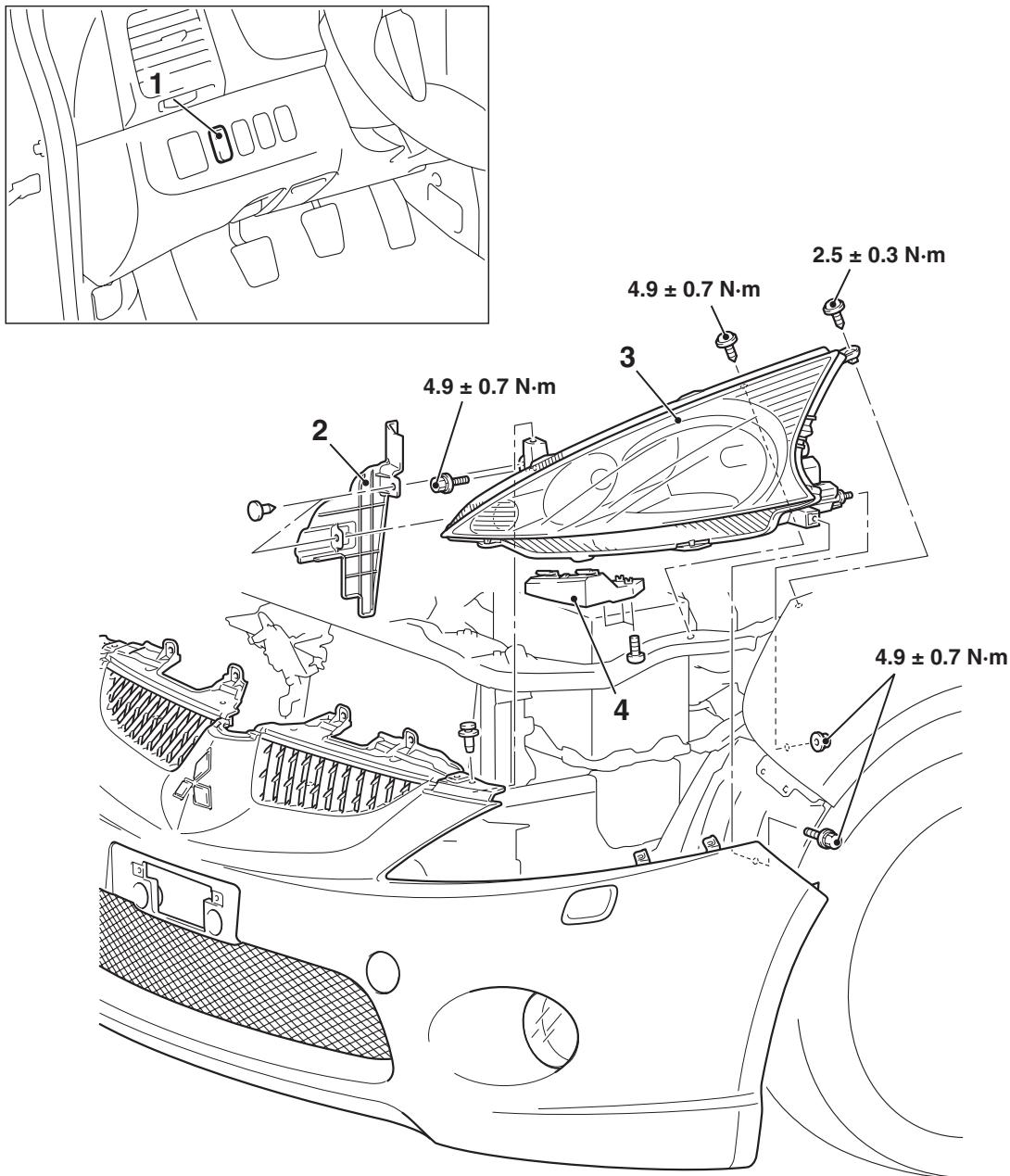
M1542011201194

Confirm that the headlamp turns off when the ignition switch is ON and the driver's door is opened and when the ignition key is pulled out with the lighting switch at ON (HEAD) position and the driver's door is opened. If not, carry out the troubleshooting. (Refer to GROUP 54B, Troubleshooting [P.54B-276](#) or GROUP 54C, Troubleshooting [P.54C-280](#)).

HEADLAMP

REMOVAL AND INSTALLATION

M1542001800318



Headlamp levelling switch removal steps

- Lower panel (Refer to GROUP 52A, <<A>> Instrument Panel Assembly P.52A-2).
1. Headlamp levelling switch

Headlamp removal steps

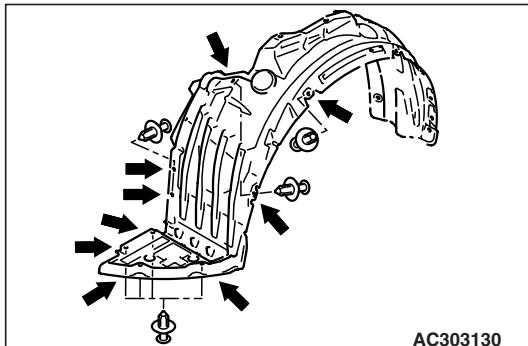
2. Air guide panel
3. Headlamp assembly
4. Headlamp bracket

AC312842AB

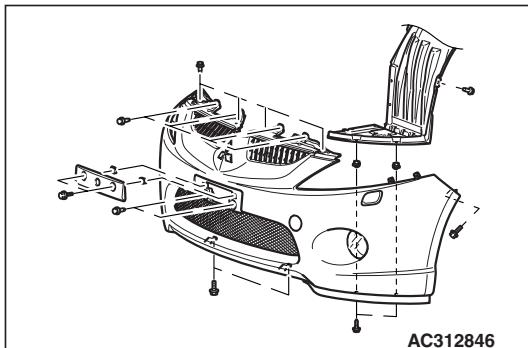
REMOVAL SERVICE POINTS

<<A>> HEADLAMP ASSEMBLY

REMOVAL



1. Remove the splash shield assembling clips as shown.

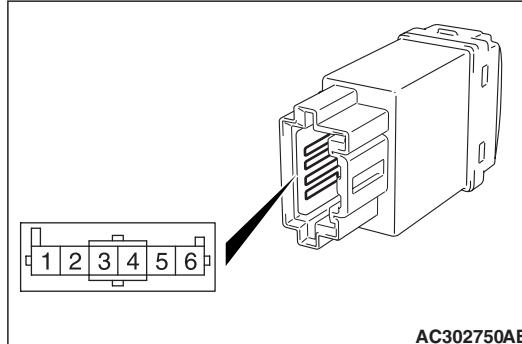


2. Remove the front bumper assembling bolts and clips as shown.
3. Remove the headlamp assembly by sliding out the front bumper.

INSPECTION

M1542011201224

HEADLAMP LEVELLING SWITCH CHECK



| Switch position | Resistance value between 4 TAG 5 |
|-----------------|----------------------------------|
| 0 | 120 Ω |
| 1 | 300 Ω |
| 2 | 620 Ω |
| 3 | 1.1 k Ω |
| 4 | 2 k Ω |

FRONT FOG LAMP

SERVICE SPECIFICATIONS

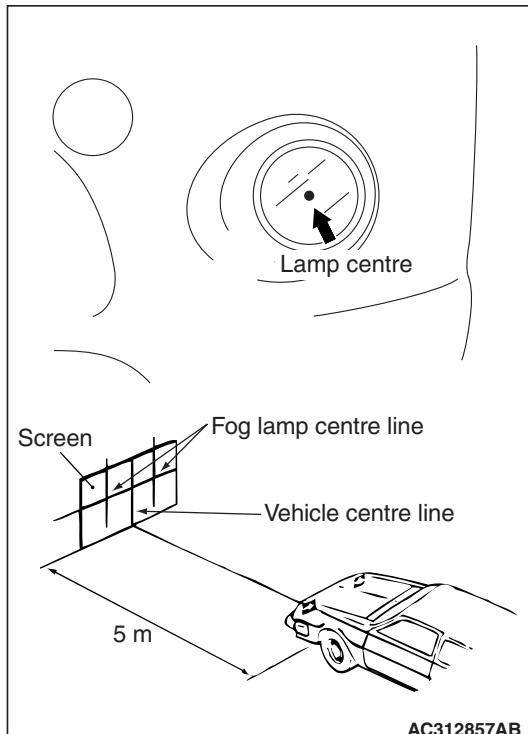
M1542000300525

| Item | Standard value | |
|-----------------|----------------------|---|
| Fog lamp aiming | Vertical direction | 100 mm below horizontal (H) |
| | Horizontal direction | Parallel to direction of vehicle travel |

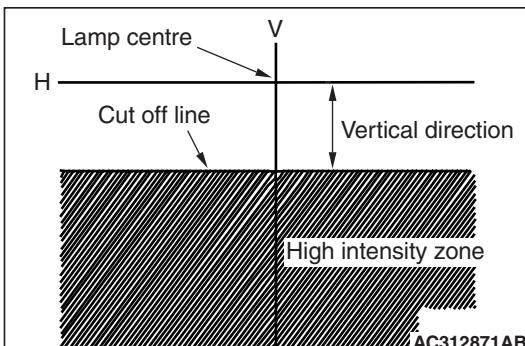
ON-VEHICLE SERVICE

FRONT FOG LAMP AIMING

M1542013500024

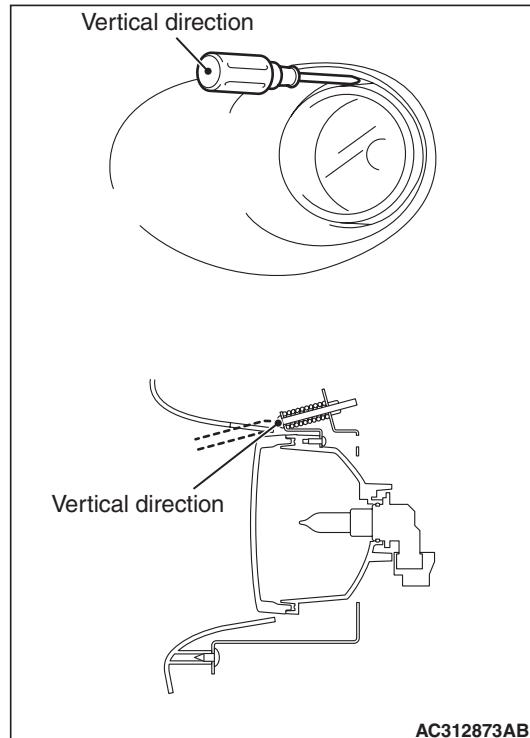


1. Measure the centre of the front fog lamps, as shown in the illustration.
2. Set the distance between the screen and the centre of the front fog lamps as shown in the illustration.
3. Inflate the tyres to the specified pressures and there should be no other load in the vehicle other than driver or substituted weight of approximately 75 kg placed in the driver's position.
4. With the engine running at 2,000 r/min, aim the front fog lamp.



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

Standard value:
 (Vertical direction) 100 mm below horizontal (H)
 (Horizontal direction) Parallel to direction of vehicle travel

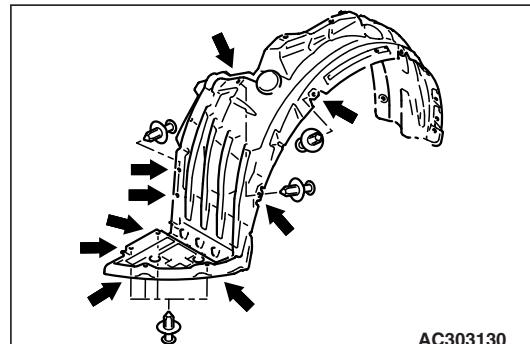
CAUTION


When marking the aiming adjustment, be sure to mask those lamps which are not being adjusted.

NOTE: The horizontal direction is non-adjustable. If the deviation of the light beam axis exceeds the standard value, check to be sure that the mounting location or some other point is not defective.

BULB REPLACEMENT

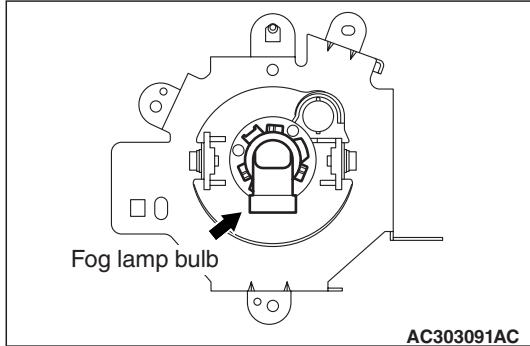
M1542001300830



1. Remove the under cover and the splash shield assembling clips as shown.

CAUTION

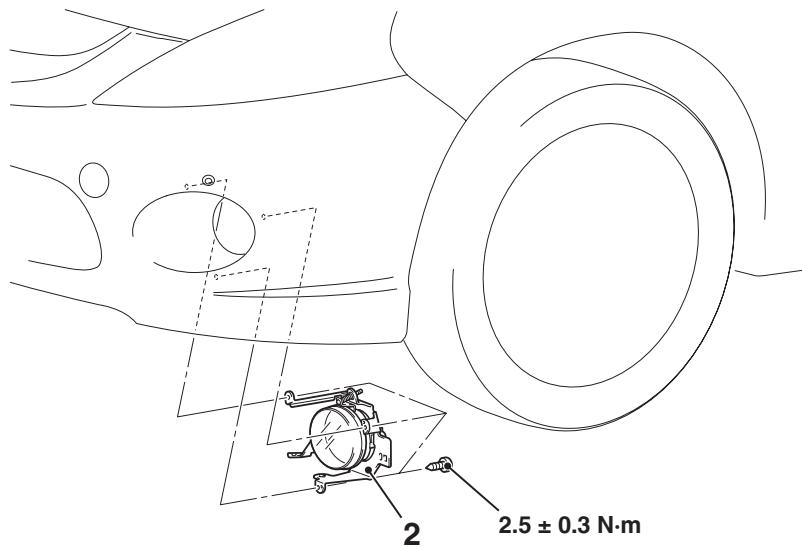
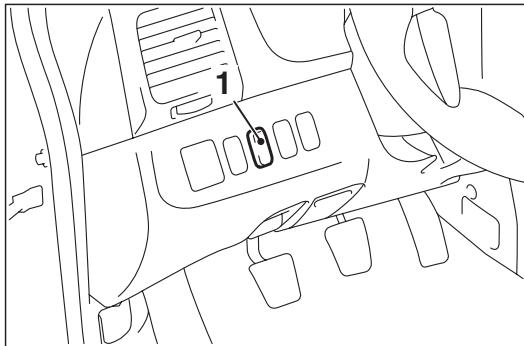
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



2. Disconnect the connector and withdraw the bulb.
3. Replace the valve, and connect securely the connector.

FRONT FOG LAMP**REMOVAL AND INSTALLATION**

M1542013600043

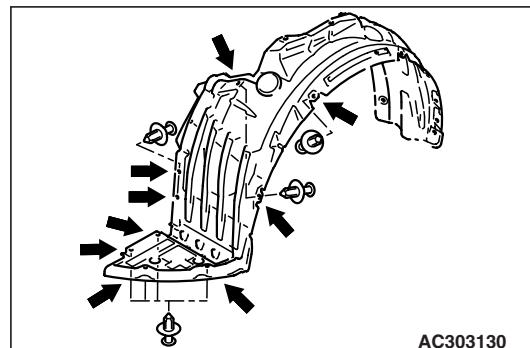


AC312874AB

Fog lamp switch removal steps

- Lower panel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-2).
- 1. Fog lamp switch
- Fog lamp removal steps**
- 2. Fog lamp assembly

<<A>>

REMOVAL SERVICE POINTS**<<A>> FOG LAMP ASSEMBLY REMOVAL**

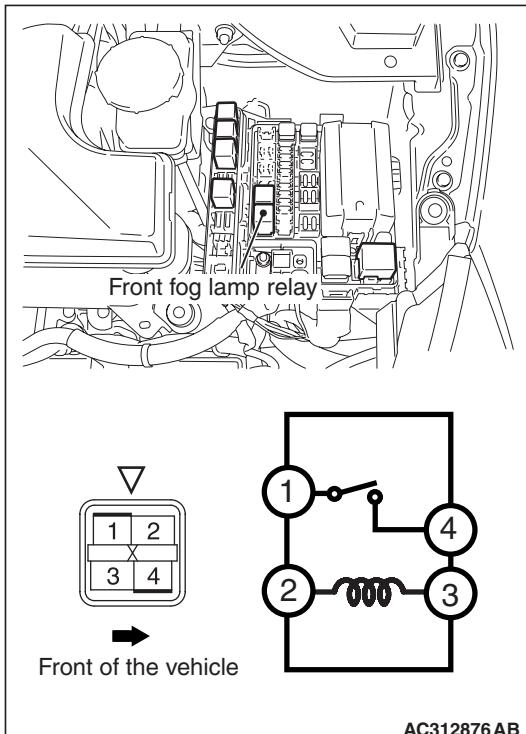
AC303130

Remove the splash shield assembling bolts and clips as shown.

INSPECTION

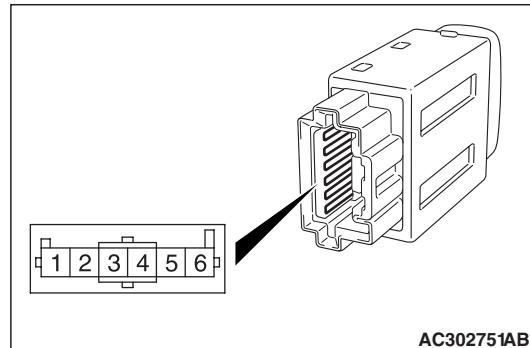
FRONT FOG LAMP RELAY CONTINUITY
CHECK

M1542011201310



| Battery voltage | Tester connection | Specified condition |
|-----------------|-------------------|---------------------|
| Not supplied | 1 – 4 | Less than 2 ohms |
| Supplied | | Open circuit |

FOG LAMP SWITCH CONTINUITY CHECK



| Switch position | Terminal number | Normal conditions |
|-----------------|-----------------|-------------------|
| OFF | 1 – 2 | Open circuit |
| ON | 1 – 2 | Less than 2 ohms |

REAR FOG LAMP

REMOVAL AND INSTALLATION

M1542017100051

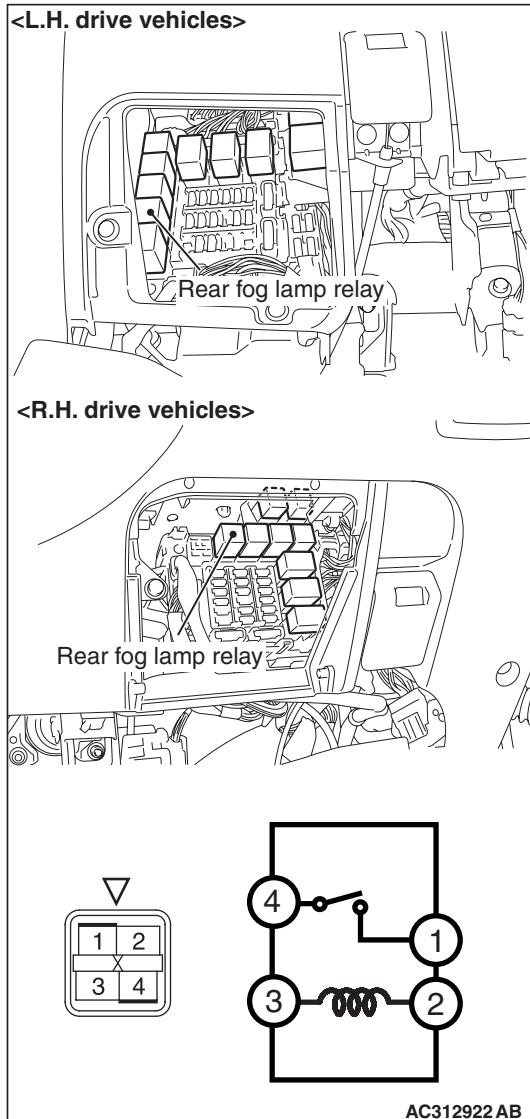
- Rear fog lamp (integrated with rear combination lamp) (Refer to [P.54A-97](#)).

- Fog lamp switch (Refer to [P.54A-92](#)).

INSPECTION

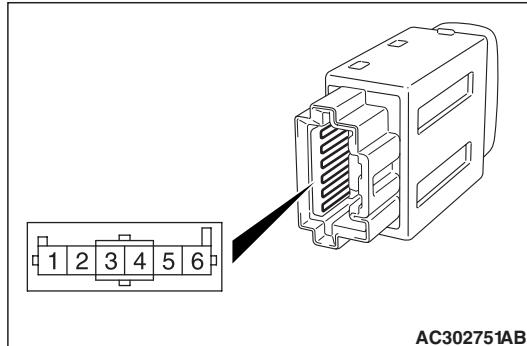
REAR FOG LAMP RELAY CONTINUITY
CHECK

M1542011201332



| Battery voltage | Tester connection | Specified condition |
|-----------------|-------------------|---------------------|
| Not supplied | 1 – 4 | Less than 2 ohms |
| Supplied | | Open circuit |

FOG LAMP SWITCH CONTINUITY CHECK



| Switch position | Terminal number | Normal conditions |
|-----------------|-----------------|-------------------|
| OFF | 5 – 6 | Open circuit |
| ON | 5 – 6 | Less than 2 ohms |

SIDE TURN-SIGNAL LAMP

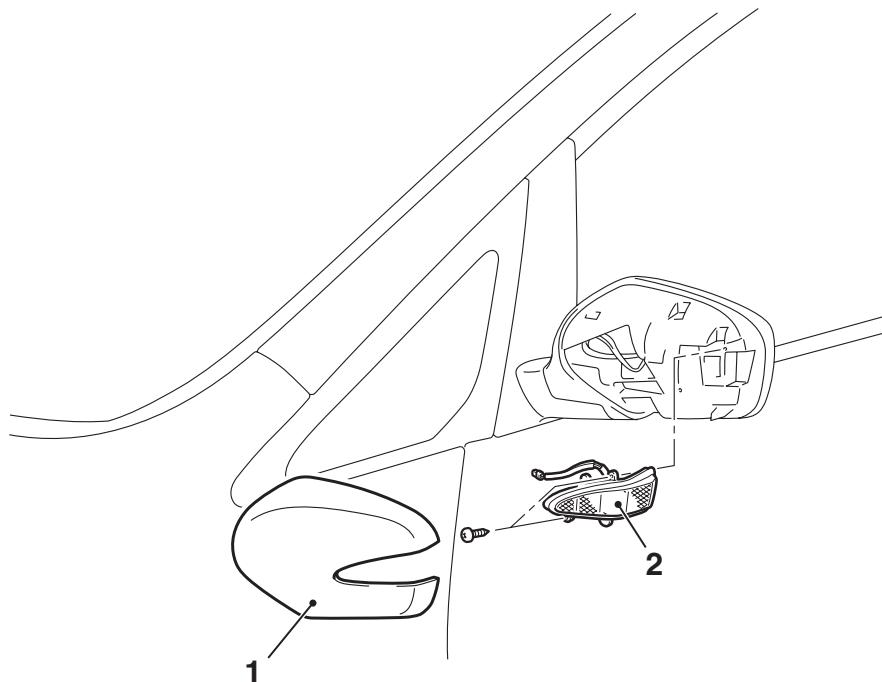
SPECIAL TOOL

M1542000600775

| Tool | Number | Name | Application |
|------|----------|------------------|------------------------------------|
| | MB990784 | Ornament remover | Removal of door mirror outer cover |

REMOVAL AND INSTALLATION

M1542012000112



AC312889AB

Removal steps

- Mirror (Refer to GROUP 51, Door Mirror [P.51-46](#)).

Removal steps (Continued)

1. Door mirror outer cover (GROUP 51, Mirror [P.51-46](#)).
2. Side turn-signal lamp

INTERIOR LAMP

TROUBLESHOOTING

M1542000701689

The room lamps are controlled by the Smart Wiring System (SWS). For troubleshooting procedures, refer to GROUP 54B, Trouble Symptom Chart [P.54B-74](#) or 54C, Trouble Symptom Chart [P.54C-44](#).

INTERIOR LAMP

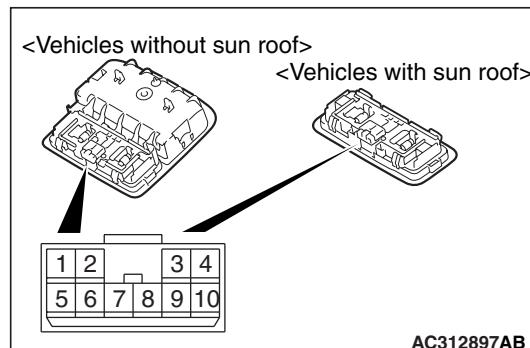
REMOVAL AND INSTALLATION

M1542006300039

- Front room lamp assembly (Refer to GROUP 52A, Headlining [P.52A-17](#)).
- Rear personal lamp (Refer to GROUP 52A, Headlining [P.52A-19](#)).

INSPECTION

M1542011201321

FRONT ROOM LAMP CONTINUITY
CHECK

AC312897AB

| Switch position | Terminal number | Normal conditions |
|-----------------|---------------------|-------------------|
| OFF | 5 – 6 | Less than 2 ohms |
| – | 5 – 9 | Less than 2 ohms |
| ON | 5 – 7, 5 – 9, 7 – 9 | Less than 2 ohms |

REAR COMBINATION LAMP

SPECIAL TOOL

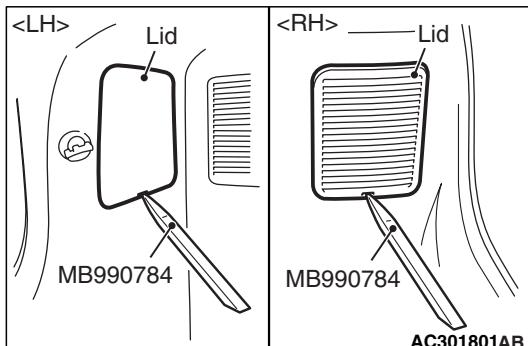
M1542000600786

| Tool | Number | Name | Application |
|------|----------|------------------|-----------------------------------|
| | MB990784 | Ornament remover | Rear combination bulb replacement |

ON-VEHICLE SERVICE

BULB REPLACEMENT

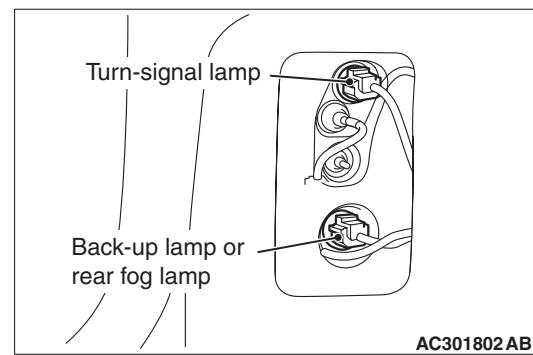
M1542001300625



1. Insert special tool MB990784 (Ornament Remover) into the notch under the lid, and pry out the lid.

CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

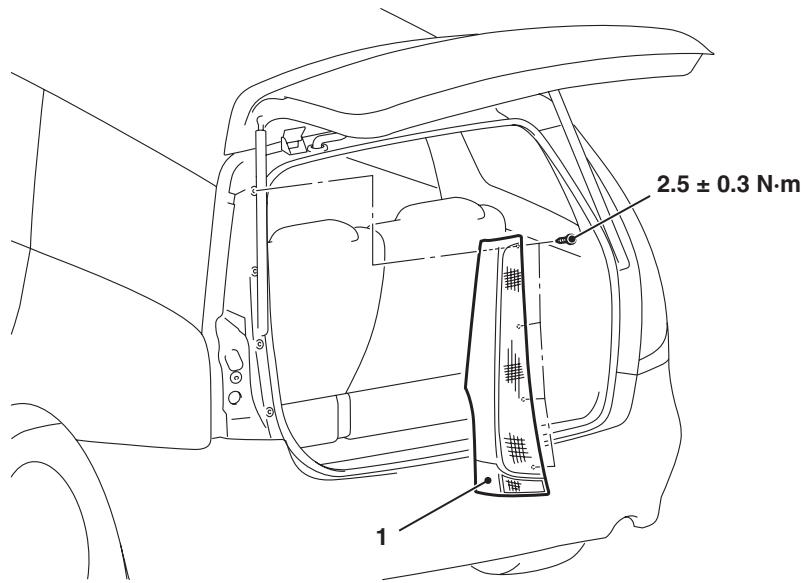


2. Twist the socket to remove.

REAR COMBINATION LAMP

REMOVAL AND INSTALLATION

M1542003900429



AC301887AB

Removal steps

- Quarter side cover (Refer to GROUP 52A, Interior Trim P.52A-10).
- Bulb connector connection

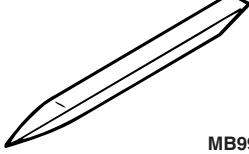
Removal steps (Continued)

- Tailgate damper lower (GROUP 42, Tailgate P.42-48).
- 1. Rear combination lamp assembly

HIGH-MOUNTED STOP LAMP

SPECIAL TOOL

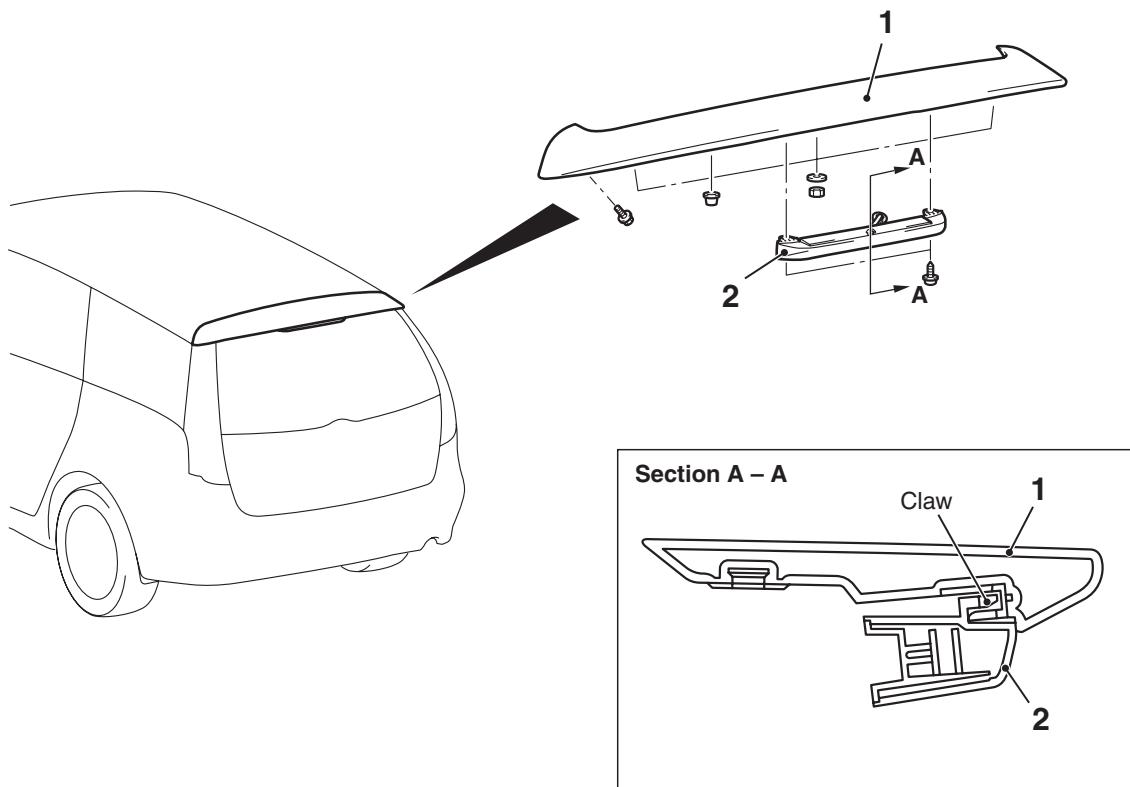
M1542000600797

| Tool | Number | Name | Application |
|---|----------|------------------|-----------------------------------|
|  MB990784 | MB990784 | Ornament remover | Removal of high-mounted stop lamp |

HIGH-MOUNTED STOP LAMP

REMOVAL AND INSTALLATION

M1542005100430



AC303890 AB

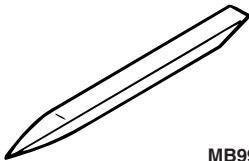
Removal steps

1. Tailgate spoiler assembly (Refer to GROUP 51, Tailgate spoiler [P.51-19](#)).
2. High-mounted stop lamp

LICENCE PLATE LAMP

SPECIAL TOOL

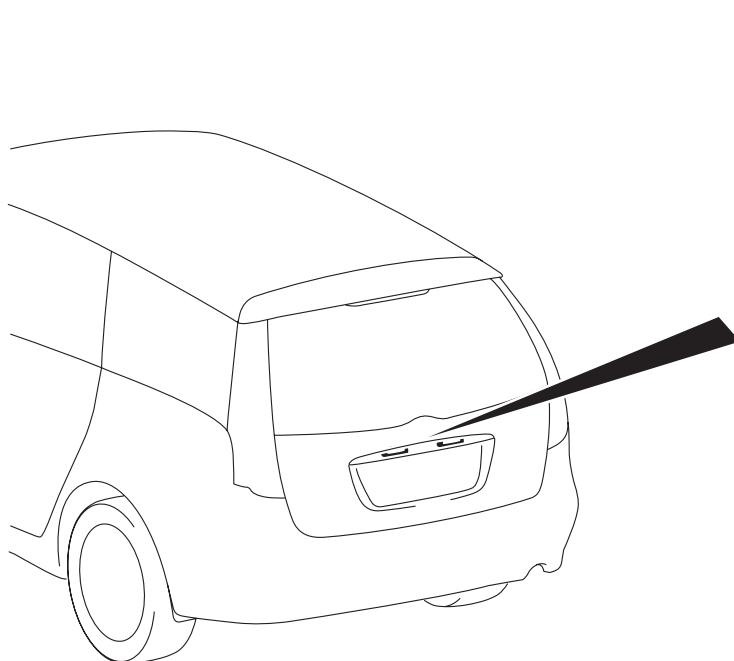
M1542000600838

| Tool | Number | Name | Application |
|---|----------|------------------|-------------------------------|
|  | MB990784 | Ornament remover | Removal of licence plate lamp |

LICENCE PLATE LAMP

REMOVAL AND INSTALLATION

M1542004200177



AC301889AB

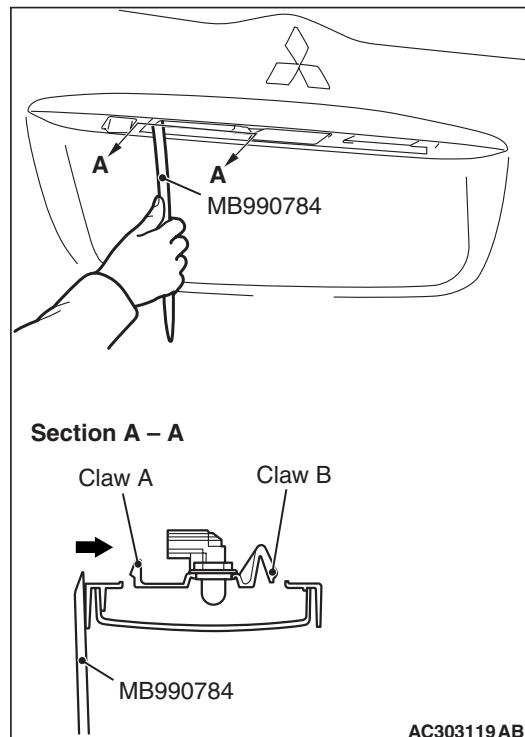
<<A>>

Removal steps

1. Licence plate lamp assembly
2. Socket
3. Bulb
4. Licence plate lamp body

REMOVAL SERVICE POINT

<<A>> LICENCE PLATE LAMP REMOVAL



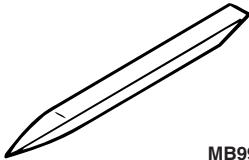
AC303119AB

Use special tool MB990784 (ornament remover) to press the licence plate assembly, shorten the clip B and disengage the claw A. Then remove the licence plate lamp assembly.

HAZARD WARNING LAMP SWITCH

SPECIAL TOOL

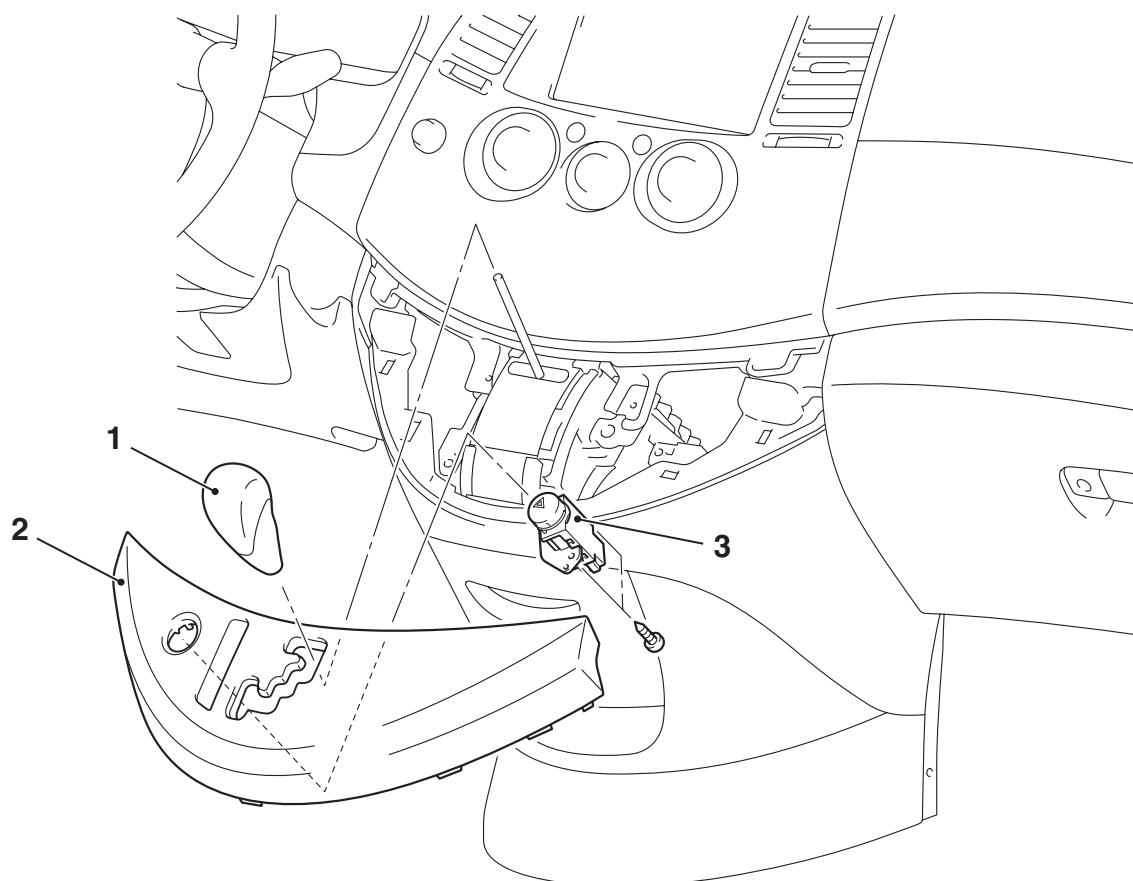
M1542000600805

| Tool | Number | Name | Application |
|---|----------|------------------|---------------------------------|
|  | MB990784 | Ornament remover | Removal of selector lever panel |

HAZARD WARNING LAMP SWITCH

REMOVAL AND INSTALLATION

M1542006600427



AC312952 AB

<<A>>

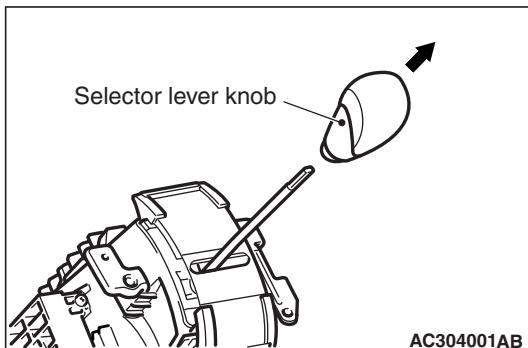
Removal steps

1. Gearshift lever knob <M/T>
1. Selector lever knob <A/T>

Removal steps (Continued)

2. Selector lever panel (Refer to GROUP 52A, Instrument panel assembly [P.52A-2](#)).
3. Hazard warning lamp switch

REMOVAL SERVICE POINTS

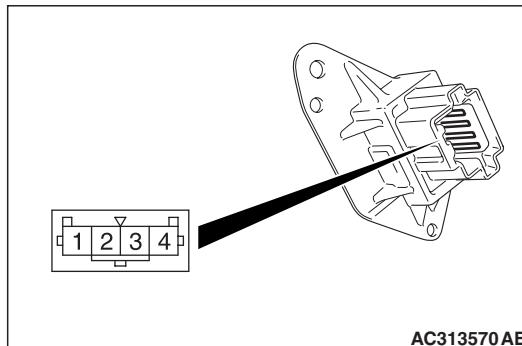
<<A>> SELECTOR LEVER KNOB
REMOVAL

Pull out the selector knob to the direction shown.

INSPECTION

HAZARD WARNING LAMP SWITCH
CONTINUITY CHECK

M1542011200845



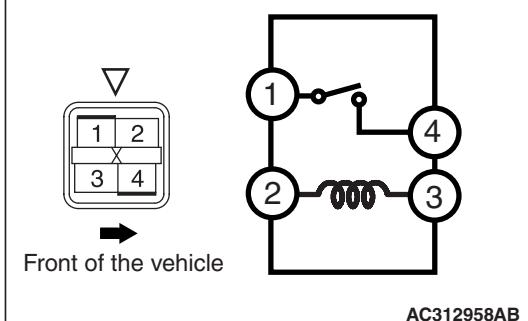
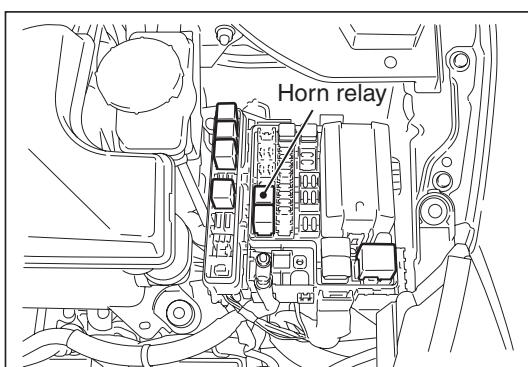
| Switch position | Tester connection | Specified condition |
|-----------------|-------------------|---------------------|
| OFF | 1 – 2 | Open circuit |
| ON | | Less than 2 ohms |

HORN

INSPECTION

HORN RELAY CONTINUITY CHECK

M1543019502247



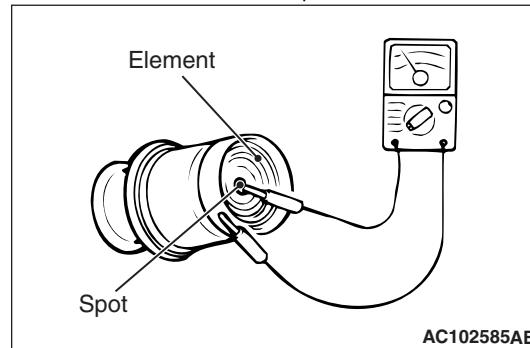
| Battery voltage | Tester connection | Specified condition |
|--|-------------------|---------------------|
| Not applied | 1 – 4 | Open circuit |
| • Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal | | Less than 2 ohms |

CIGARETTE LIGHTER

INSPECTION

M1543019502269

- Remove the plug and check the spot for wear.
- Check that there are no tobacco stains or foreign particles on the element.

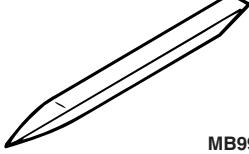


Use a multimeter to check the continuity of the element.

COLUMN SWITCH

SPECIAL TOOL

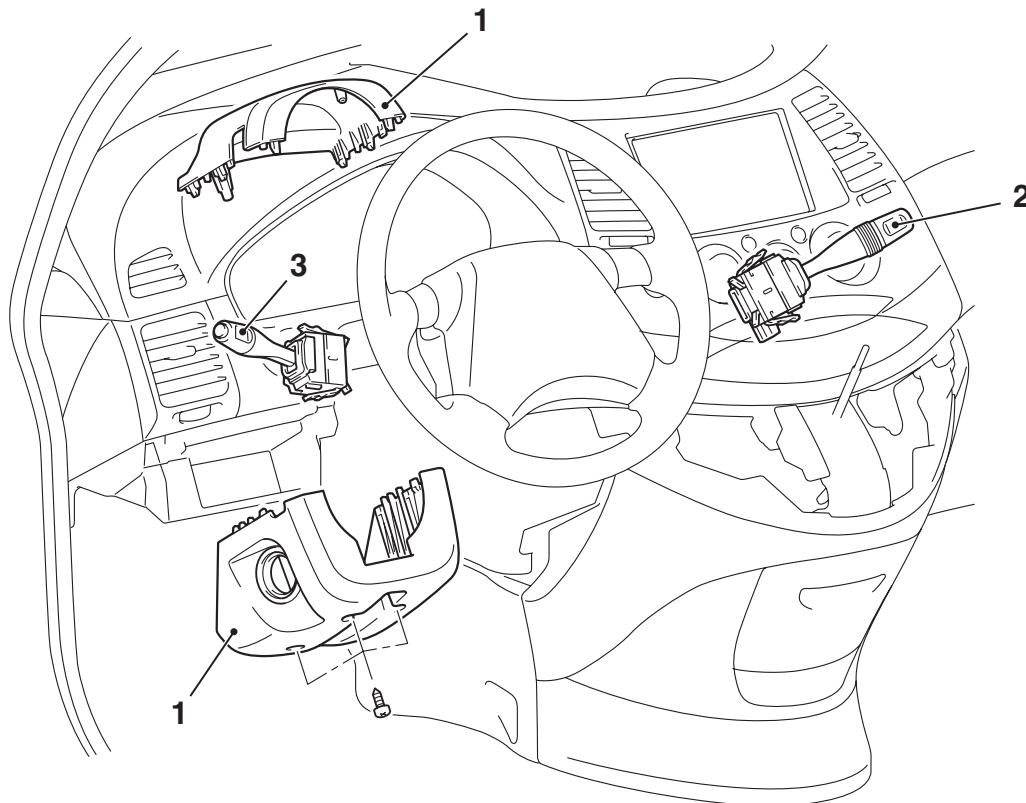
M1543000601566

| Tool | Number | Name | Application |
|--|----------|------------------|----------------------------------|
|  MB990784 | MB990784 | Ornament remover | Removal of steering column cover |

COLUMN SWITCH

REMOVAL AND INSTALLATION

M1543009100424



AC312967AB

Removal steps

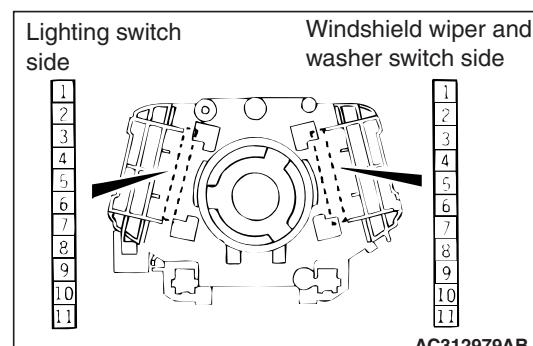
- Gear shift lever knob <M/T> (Refer to GROUP 22A, Transmission Control [P.22A-7](#)).
- Selector lever knob <A/T> (Refer to GROUP 23A, Transmission Control [P.23A-141](#)).
- Selector lever panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- Front scuff plate inner, Cowl side trim (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Fuel filler lid lock release handle (Refer to GROUP 42, Fuel Filler Lid [P.42-7](#)).
- Lower panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- 1. Steering column cover (Refer to GROUP 52, Instrument Panel Assembly [P.52A-2](#)).
- 2. Windshield wiper and washer switch
- 3. Lighting switch

INSPECTION

M1543019502270

COLUMN SWITCH (SWITCH BODY)
CONTINUITY CHECK

1. Removal the lighting switch and the windshield wiper and washer switch.
2. Check that there is continuity between the same terminals [terminals (3) and (11)] of each connector of the column switch body which is still on the steering column.



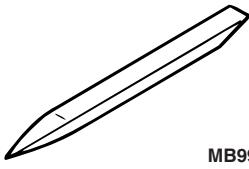
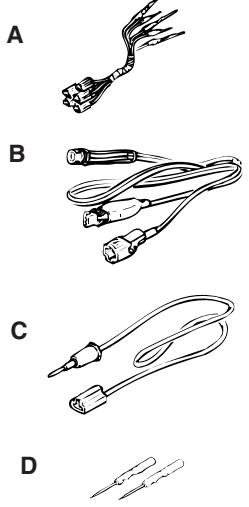
AC312979AB

| Column switch body | Tester connection | Specified condition |
|--|---|---------------------|
| Lighting switch side connector side, Windshield wiper and washer switch side connector | 3 – 3, 4 – 4, 5 – 5, 6 – 6, 7 – 7, 8 – 8, 9 – 9, 10 – 10, 11 – 11 | Less than 2 ohms |

RADIO AND CD PLAYER

SPECIAL TOOLS

M1542000601240

| Tool | Number | Name | Application |
|---|--|--|--|
|  MB990784 | MB990784 | Ornament remover | Removal of selector panel, instrument centre panel |
|  MB991223AC | MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 | Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe | For checking voltage (continuity and value) at harness and connectors A: For checking connector pin contact voltage B: For checking power supply circuits C: For checking power supply circuits D: For connection to commercially available tester |

TROUBLESHOOTING

TROUBLESHOOTING

M1544000700143

Use these steps to plan your diagnostic strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding an audio system fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

TROUBLE SYMPTOM CHART

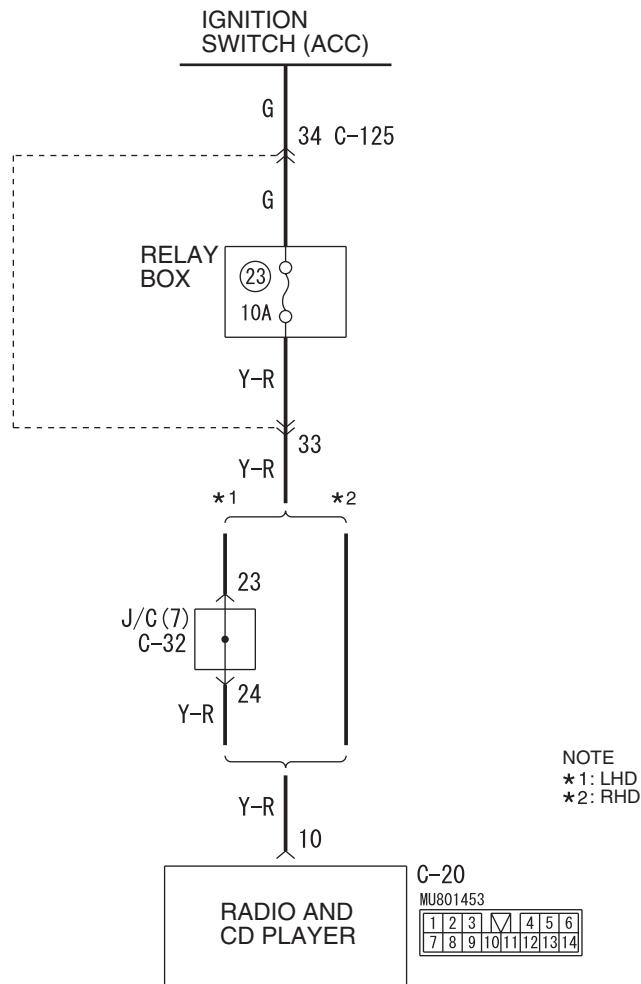
M1544004900514

| Symptom | Inspection Procedure No. | Reference Page |
|---|--------------------------|---------------------------|
| Power of radio and CD player does not turn ON when the ignition switch is in the "ACC" position or "ON" position. | 1 | P.54A-106 |
| No sound from one speaker. | 2 | P.54A-109 |
| Noise | 3 | P.54A-121 |
| Noise appears at certain places when travelling (AM). | 4 | P.54A-122 |
| Noise appears at certain places when travelling (FM). | 5 | P.54A-123 |
| Mixed with noise, only at night (AM). | 6 | P.54A-123 |
| Broadcasts can be heard but both AM and FM have a lot of noise. | 7 | P.54A-124 |
| There is more noise on either AM or FM. | 8 | P.54A-125 |
| There is noise when starting the engine. | 9 | P.54A-127 |
| Some noise appears when there is vibration or shocks during travelling. | 10 | P.54A-127 |
| Noise sometimes appears on FM during travelling. | 11 | P.54A-128 |
| Ever-present noise. | 12 | P.54A-128 |
| Radio | 13 | P.54A-129 |
| There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM. | 14 | P.54A-130 |
| Poor reception. | 15 | P.54A-131 |
| Distortion on AM or on both AM and FM. | 16 | P.54A-131 |
| Distortion on FM only. | 17 | P.54A-132 |
| Using the auto select function, too few automatic stations are selected. | 18 | P.54A-135 |
| Preset stations are erased. | 19 | P.54A-135 |
| CD player | 20 | P.54A-136 |
| CD can not be inserted. | 21 | P.54A-136 |
| No sound (CD only). | 22 | P.54A-136 |
| CD sound skips. | | |
| Sound quality is poor. | | |
| CD cannot be ejected. | | |

SYMPTOM PROCEDURES

Inspection Procedure 1: Power of radio and CD player does not turn ON when the ignition switch is in the "ACC" position or "ON" position.

Radio and CD Player Power Supply Circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4X54E200A

COMMENTS ON TROUBLE SYMPTOM

The cause is probably a faulty radio and CD player power supply circuit system.

POSSIBLE CAUSES

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

DIAGNOSIS PROCEDURE

Step 1. Check to see that the power turns ON when the power switch is turned ON.

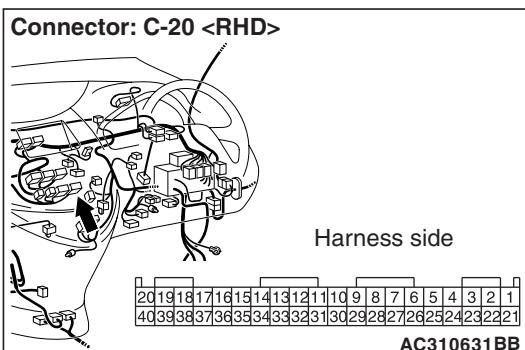
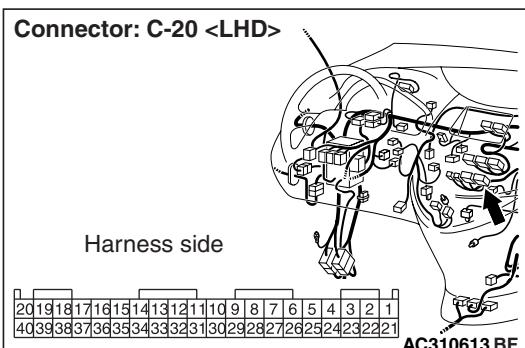
- (1) Turn the ignition switch to "ACC" position.
- (2) Turn ON the radio and CD player power switch.

Q: Is it possible to put the radio and CD player power in the "ON" position?

YES : Go to Step 2.

NO : Go to Step 5.

Step 2. Connector check: Radio and CD player connector C-20.

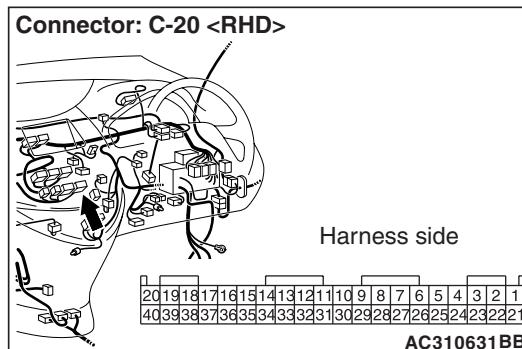
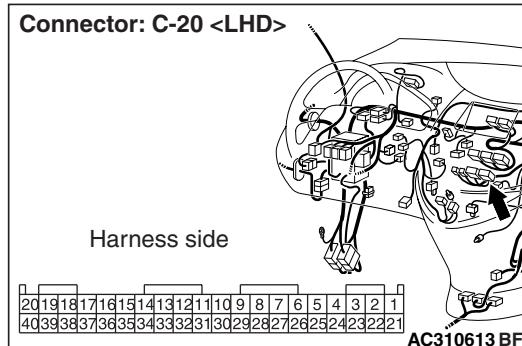


Q: Is radio and CD player connector C-20 in good condition?

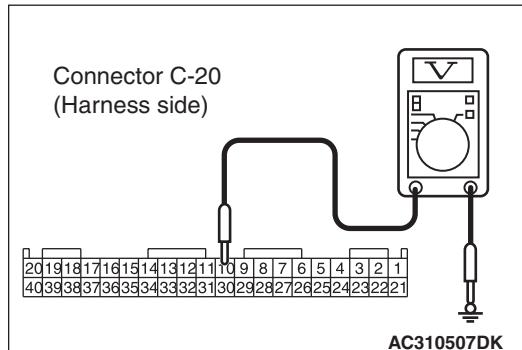
YES : Go to Step 3.

NO : Repair or replace the component(s). If the power switch is turned on, the radio and CD player should operate normally.

Step 3. Voltage measurement at radio and CD player connector C-20 in order to check the battery circuit of power supply system to the radio and CD player (ignition switch ACC).



- (1) Disconnect radio and CD player connector C-20, and measure at the wiring harness side.
- (2) Turn the ignition switch to "ACC" position.



- (3) Measure the voltage between terminal 10 and earth.

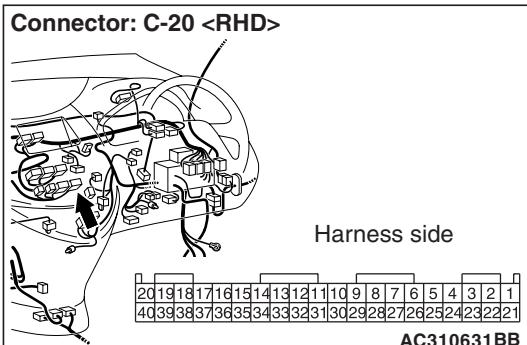
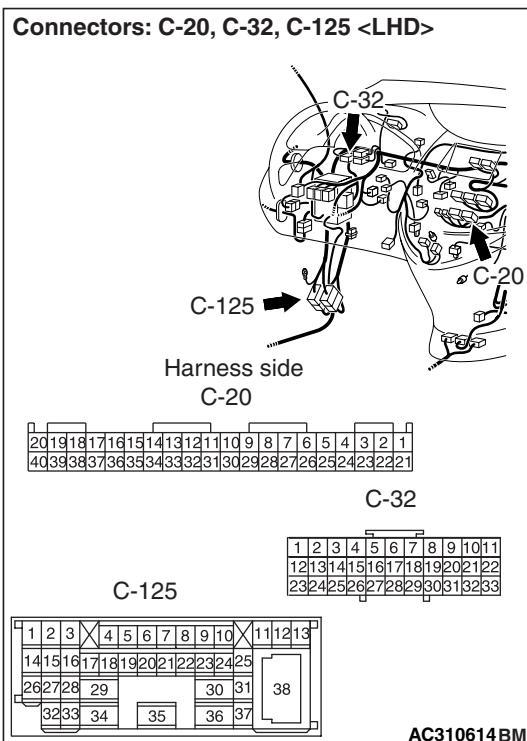
OK: Battery positive voltage

Q: Is the check result normal?

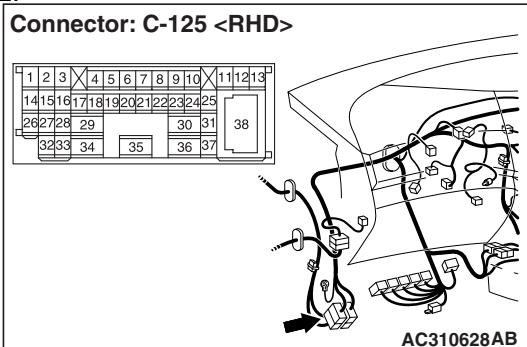
YES : Go to Step 5.

NO : Go to Step 4.

Step 4. Check the wiring harness between radio and CD player connector C-20 (terminal 10) and ignition switch (ACC).



NOTE:



Prior to the wiring harness inspection, check joint connector C-32 <LH drive vehicles> and intermediate connectors C-125, and repair if necessary.

Q: Are the wiring harnesses between radio and CD player connector C-20 (terminal 10) and ignition switch (ACC) in good condition?
YES : Go to Step 5.

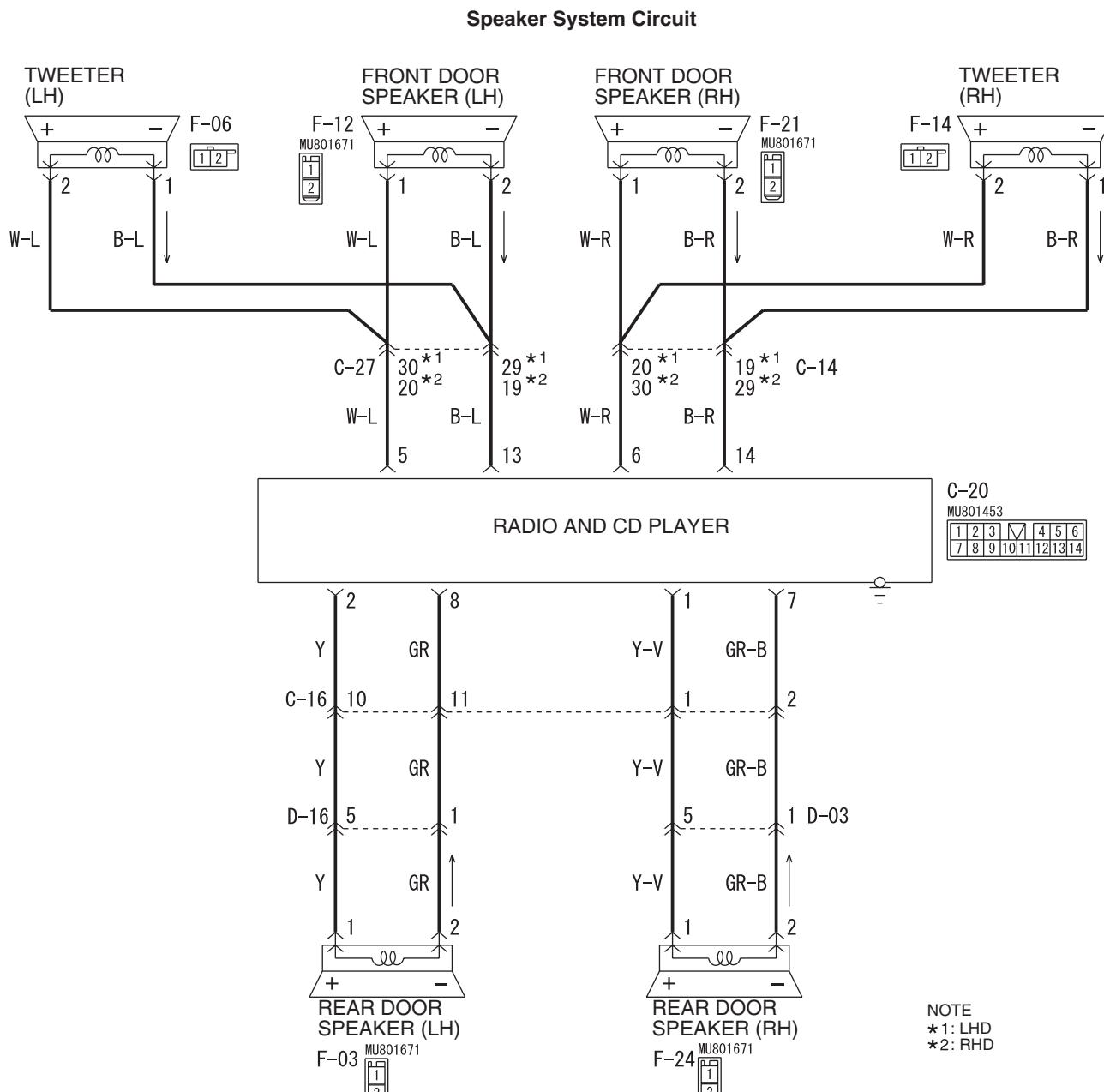
NO : Repair or replace the damage component(s). If the power switch is turned on, the radio and CD player should operate normally.

Step 5. Check the assembling state of the radio and CD player.

NOTE: The radio and CD player is earthed to the instrument panel centre reinforcement directly.

Q: Is the radio and CD player installed correctly?
YES : Repair or replace the radio and CD player. If the power switch is turned on, the radio and CD player should operate normally.
NO : Install properly. If the power switch is turned on, the radio and CD player should operate normally.

Inspection Procedure 2: No Sound from One Speaker.



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4X54E198A

COMMENTS ON TROUBLE SYMPTOM

The cause is probably a faulty speaker circuit system.

POSSIBLE CAUSES

- Malfunction of speaker.
- Damaged wiring harness or connector.
- Malfunction of radio and CD player.

DIAGNOSIS PROCEDURE

Step 1. Check to see which speaker the sound is not output from.

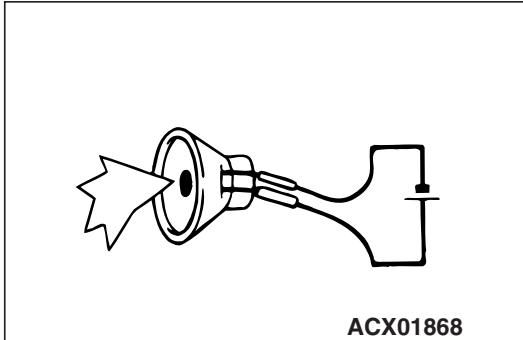
Use the speaker test to determine which speaker does not sound.

Q: Which speaker is not working?

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

Step 2. Check the front door speaker (LH).

(1) Remove the front door speaker (LH). Refer to [P.54A-139](#).



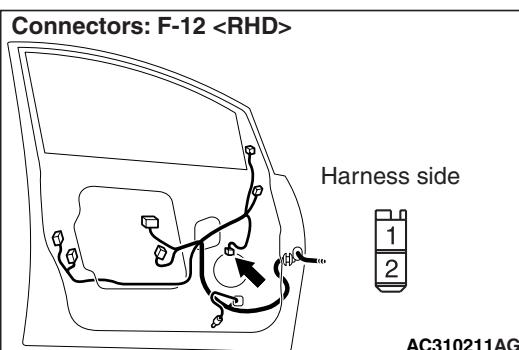
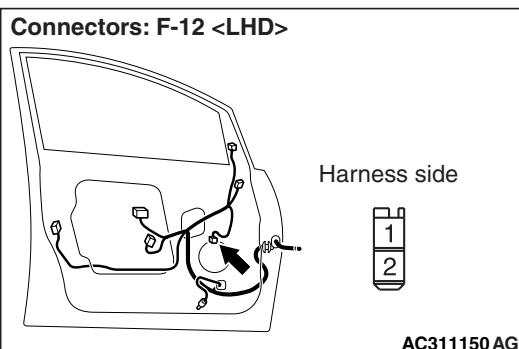
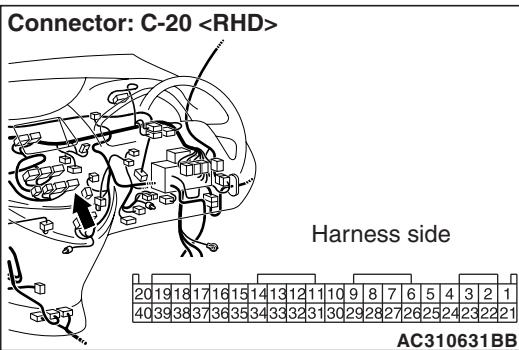
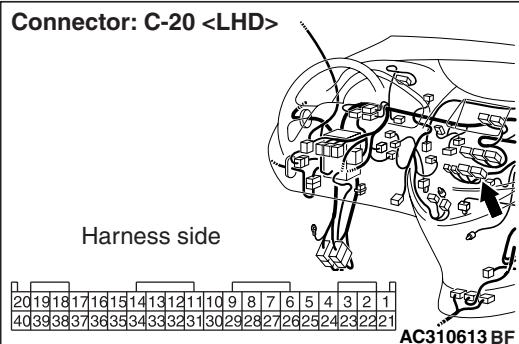
(2) Check that the front door speaker (LH) generates noise when a five-volt voltage is applied on the front door speaker (LH) terminal.

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. Connector check: Front door speaker (LH) connector F-12 and radio and CD player connector C-20.

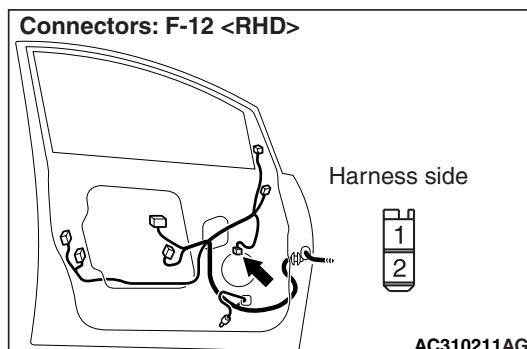
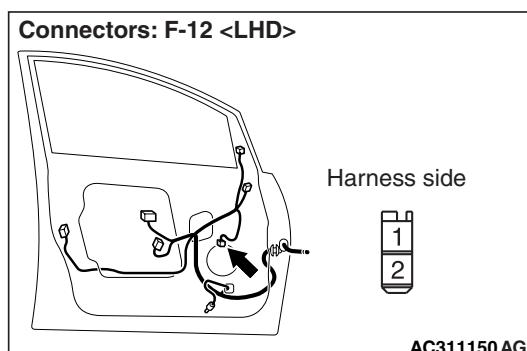
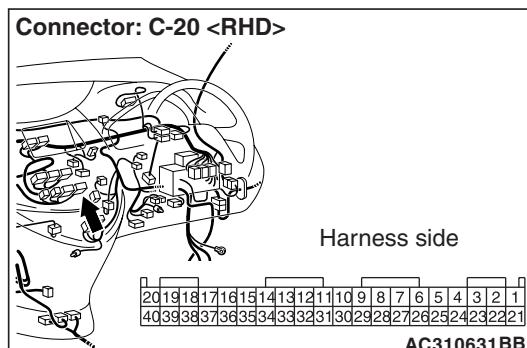
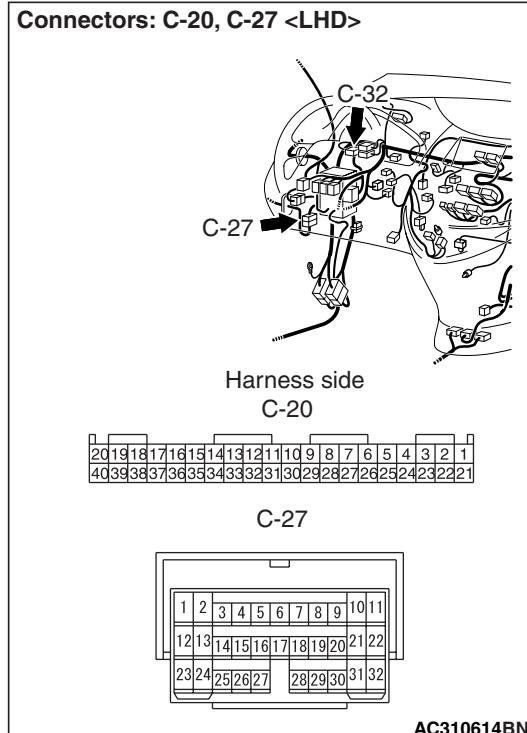


Q: Are harness connectors F-12 and C-20 in good condition?

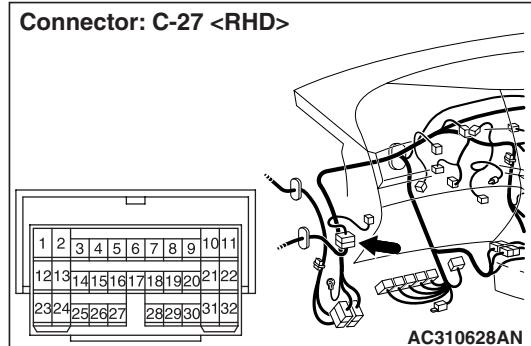
YES : Go to Step 4.

NO : Repair or replace the damage component(s). The front door speaker (LH) should sound.

Step 4. Check the wiring harness between front door speaker (LH) connector F-12 (terminal 1 and 2) and radio and CD player connector C-20 (terminals 5 and 13).



NOTE:



Prior to the wiring harness inspection, check intermediate connectors C-27, and repair if necessary.

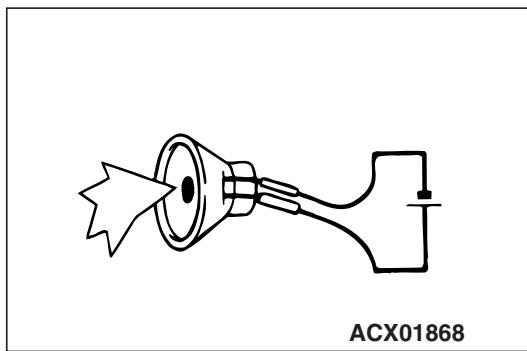
Q: Is the wiring harness between front door speaker (LH) connector F-12 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 5 and 13) in good condition?

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

NO : Repair or replace the damage component(s). The front door speaker (LH) should sound.

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

(1) Remove the front door speaker (RH). Refer to [P.54A-139](#).



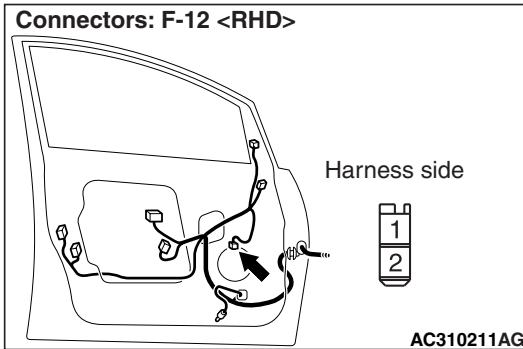
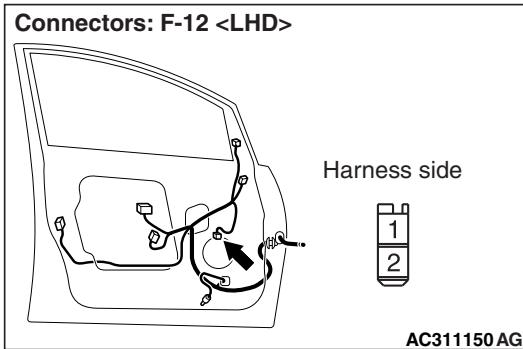
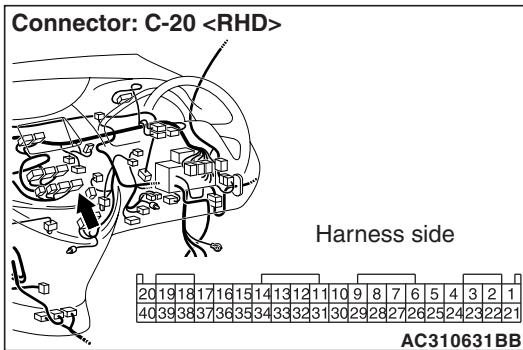
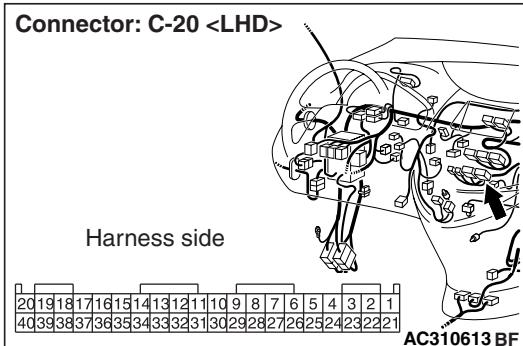
(2) Check that the front door speaker (RH) generates noise when a five-volt voltage is applied on the front door speaker (RH) terminal.

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. Connector check: Front door speaker (RH) connector F-21 and radio and CD player connector C-20.

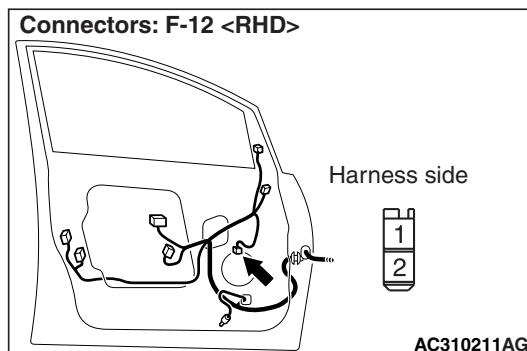
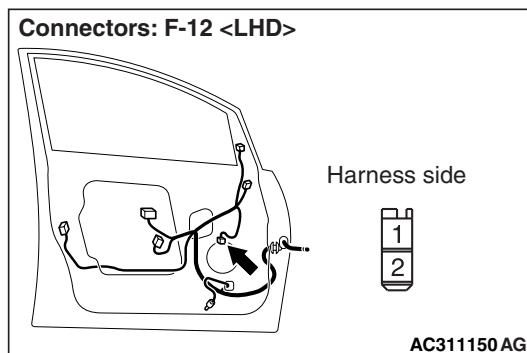
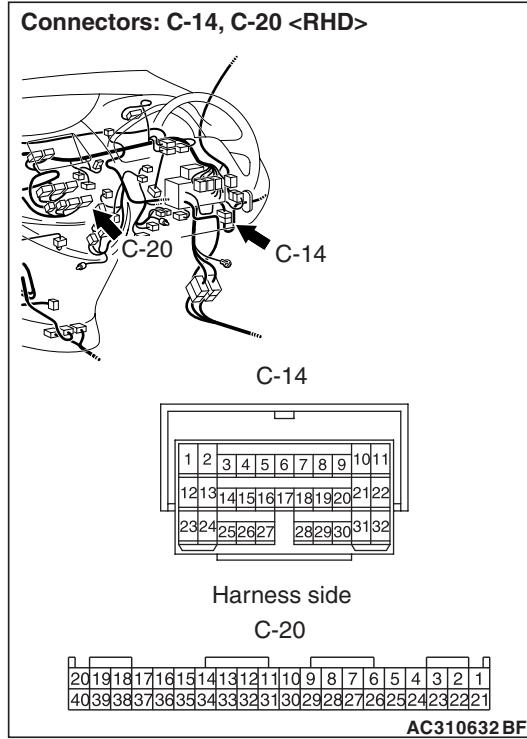
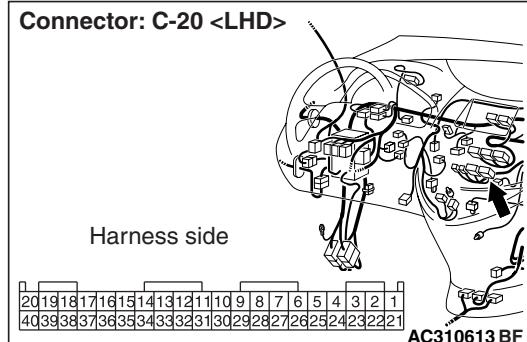


Q: Are harness connectors F-21 and C-20 in good condition?

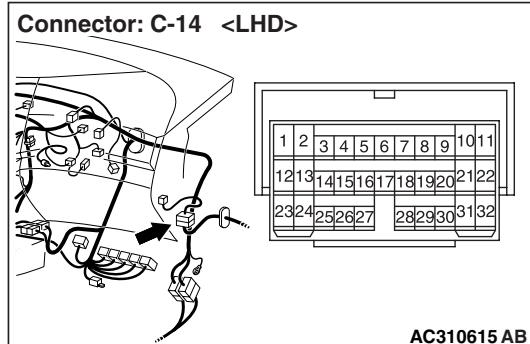
YES : Go to Step 7.

NO : Repair or replace the damage component(s). The front door speaker (RH) should sound.

Step 7. Check the wiring harness between front door speaker (RH) connector F-21 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 6 and 14).



NOTE:



Prior to the wiring harness inspection, check intermediate connector C-14, and repair if necessary.

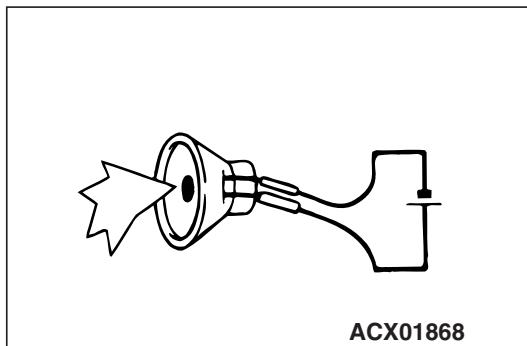
Q: Is the wiring harness between front door speaker (RH) connector F-21 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 6 and 14) in good condition?

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 tweeter (LH).

(1) Remove the tweeter (LH). Refer to [P.54A-139](#).



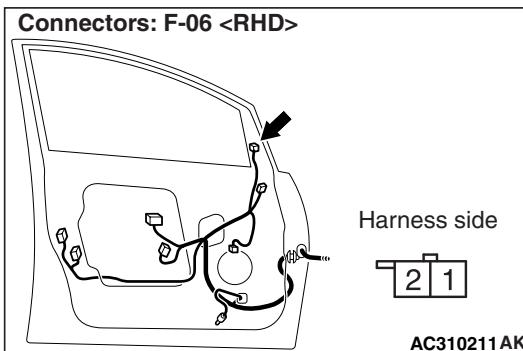
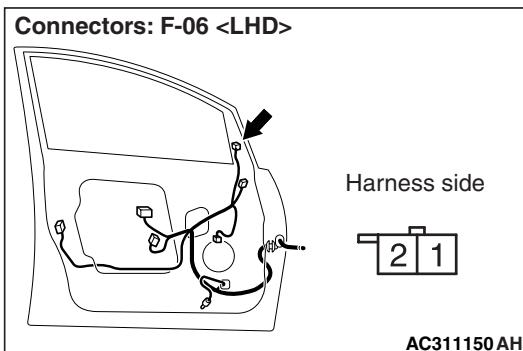
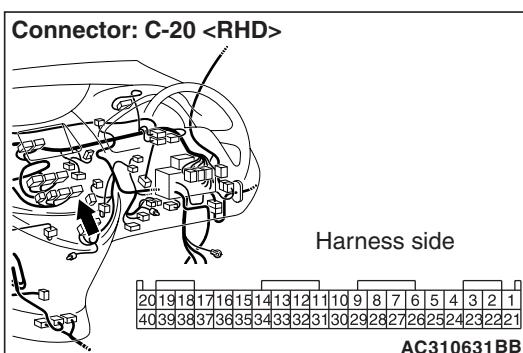
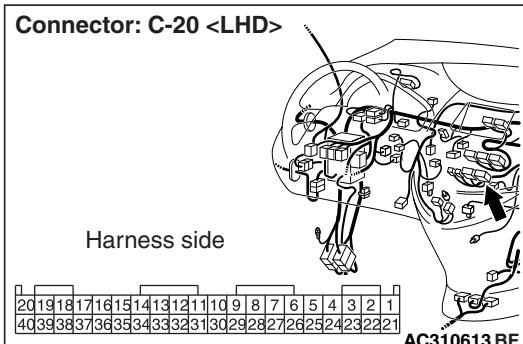
(2) Check that the tweeter (LH) generates noise when a five-volt voltage is applied on the tweeter (LH) terminal.

Q: Is the tweeter (LH) generating noise?

YES : Go to Step 9.

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

Step 9. Connector check: Tweeter (LH) connector F-06 and radio and CD player connector C-20



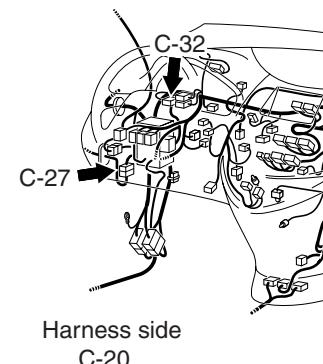
Q: Are harness connectors F-06 and C-20 in good condition?

YES : Go to Step 10.

NO : Repair or replace the damage component(s). The tweeter (LH) should sound.

Step 10. Check the wiring harness between tweeter (LH) connector F-06 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 13 and 5).

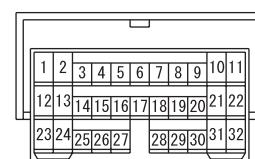
Connectors: C-20, C-27 <LHD>



Harness side
C-20

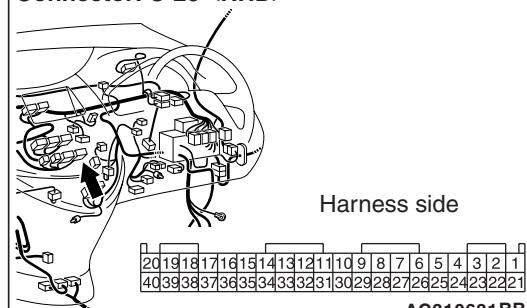
| | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28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

C-27



AC310614BN

Connector: C-20 <RHD>

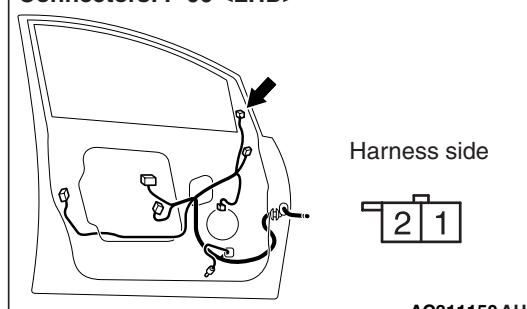


Harness side

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

AC310631BB

Connectors: F-06 <LHD>

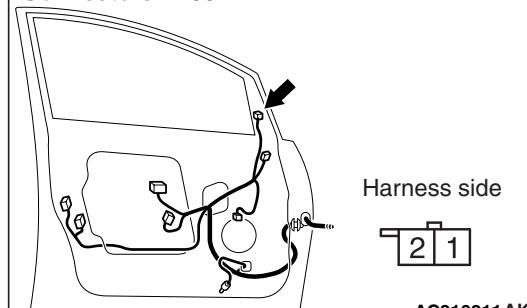


Harness side

| | |
|---|---|
| 2 | 1 |
|---|---|

AC311150AH

Connectors: F-06 <RHD>

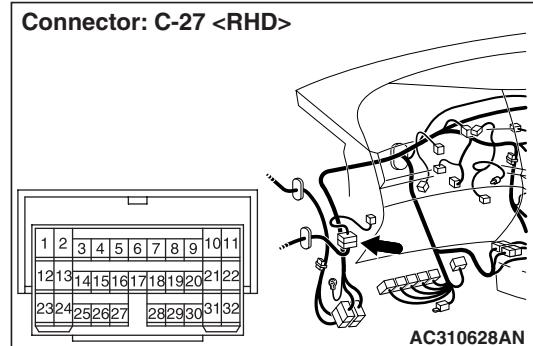


Harness side

| | |
|---|---|
| 2 | 1 |
|---|---|

AC310211AK

NOTE:



Prior to the wiring harness inspection, check intermediate connectors C-27, and repair if necessary.

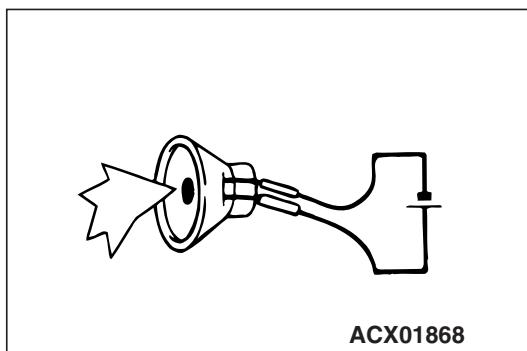
Q: Is the wiring harness between tweeter (LH) connector F-06 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 5 and 13) in good condition?

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

NO : Repair or replace the damage component(s). The tweeter (LH) should sound.

Step 11. Check the tweeter (RH).

(1) Remove the tweeter (RH). Refer to [P.54A-139](#).



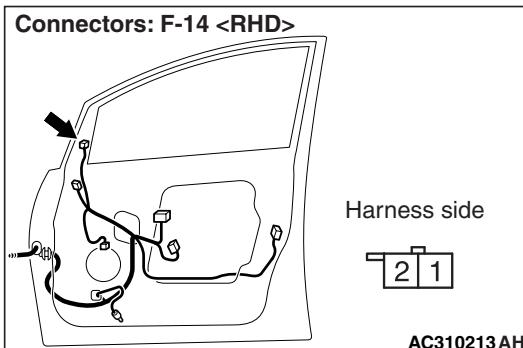
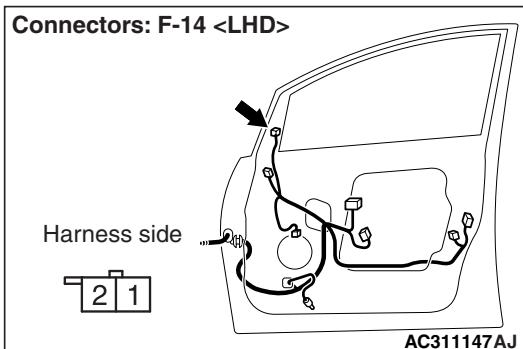
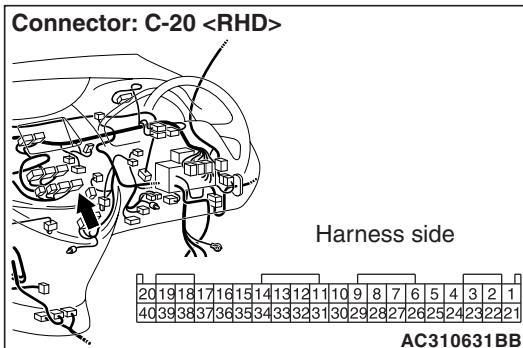
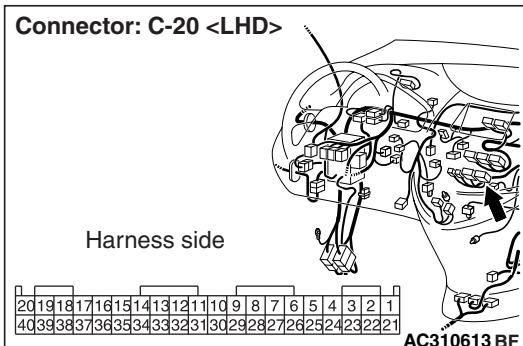
(2) Check that the tweeter (RH) generates noise when a five-volt voltage is applied on the tweeter (RH) terminal.

Q: Is the tweeter (RH) generating noise?

YES : Go to Step 12.

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

Step 12. Connector check: Tweeter (RH) connector F-14 and radio and CD player connector C-20.

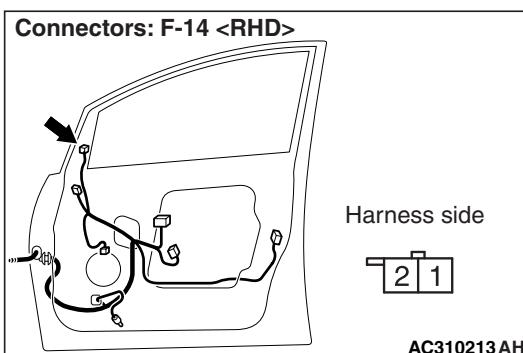
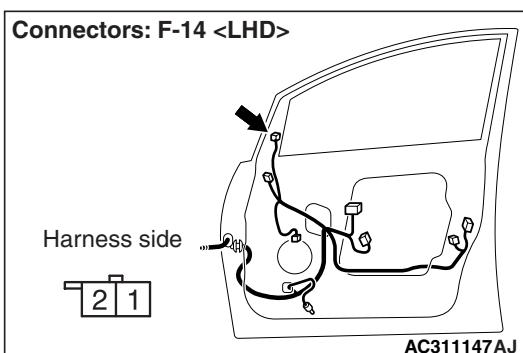
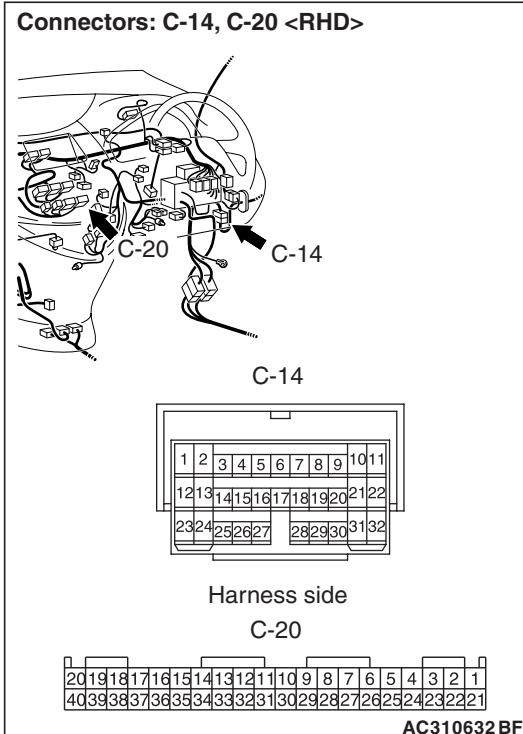
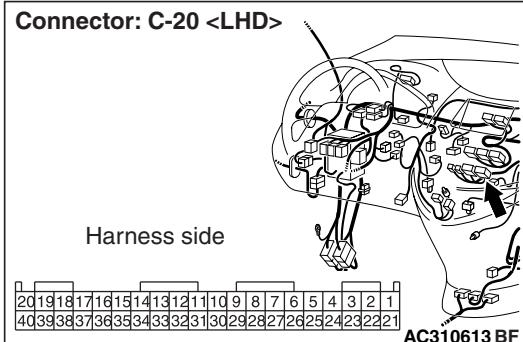


Q: Are harness connectors F-14 and C-20 in good condition?

YES : Go to Step 13.

NO : Repair or replace the damage component(s). The tweeter (RH) should sound.

Step 13. Check the wiring harness between tweeter (RH) connector F-14 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 14 and 6).



NOTE: Prior to the wiring harness inspection, check intermediate connectors C-14, and repair if necessary.

Q: Is the wiring harness between tweeter (RH) connector F-14 (terminals 1 and 2) and radio and CD player connector C-20 (terminals 14 and 6) in good condition?

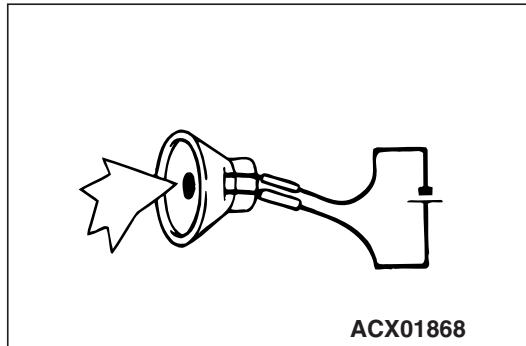
YES : Repair or replace the radio and CD player.

The tweeter (RH) should sound.

NO : Repair or replace the damage component(s). The tweeter (RH) should sound.

Step 14. Check the rear door speaker (LH).

(1) Remove the rear door speaker (LH). Refer to [P.54A-139](#).



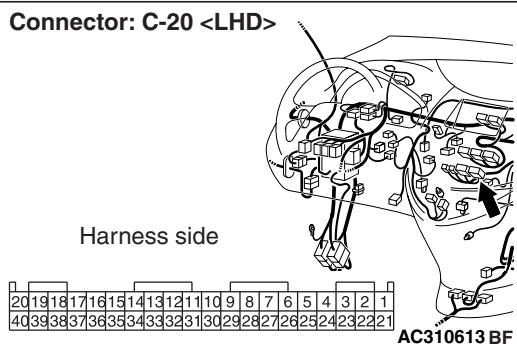
(2) Check that the rear door speaker (LH) generates noise when a five-volt voltage is applied on the rear door speaker (LH) terminal.

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

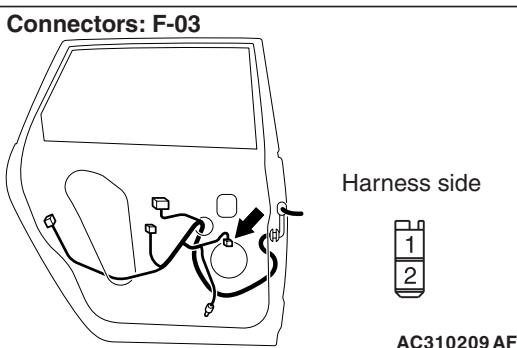
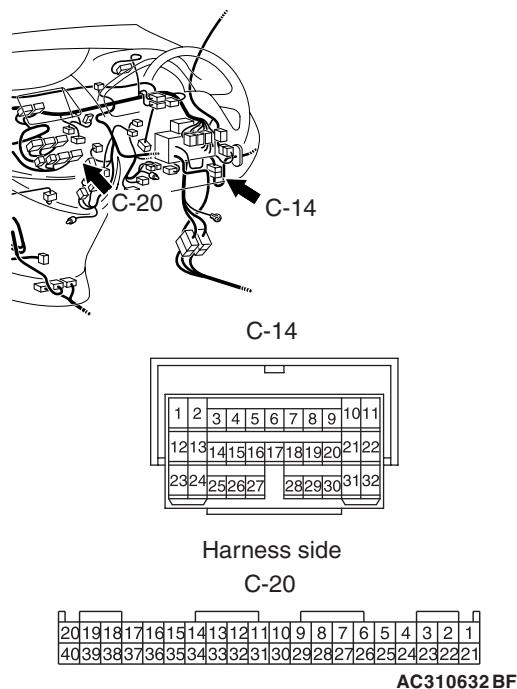
YES : Go to Step 15.

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

Step 15. Connector check: Rear door speaker (LH) connector F-03 and radio and CD player connector C-20.



Connectors: C-14, C-20 <RHD>

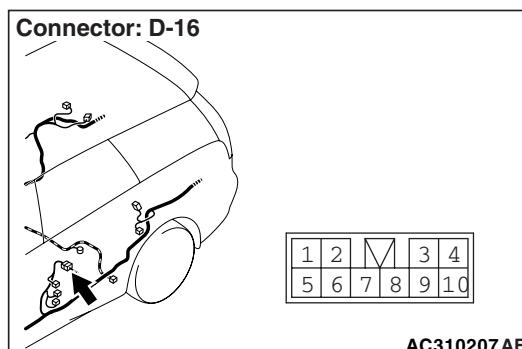
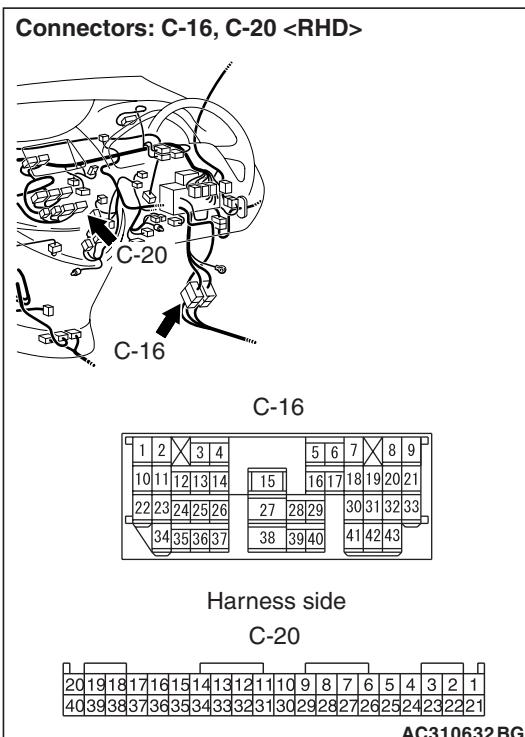
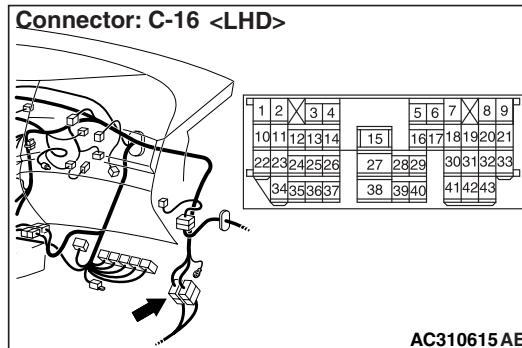
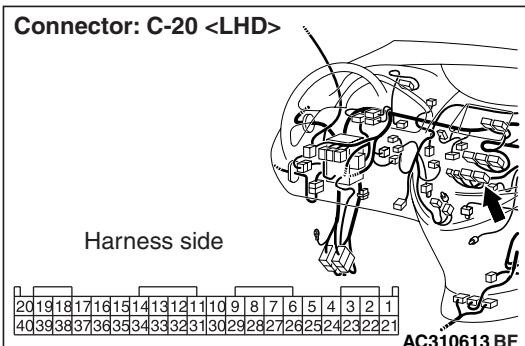


Q: Are harness connectors F-03 and C-20 in good condition?

YES : Go to Step 16.

NO : Repair or replace the damage component(s). The rear door speaker (LH) should sound.

Step 16. Check the wiring harness between rear door speaker (LH) connector F-03 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 2 and 8).



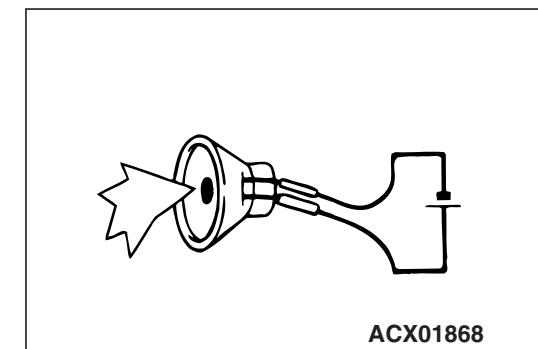
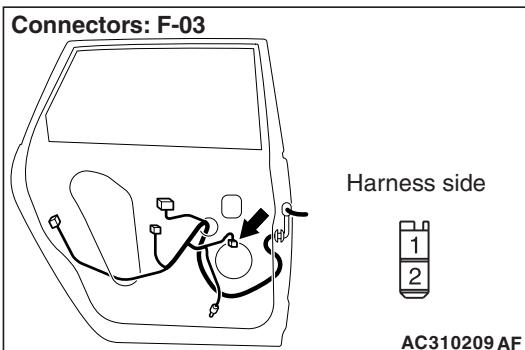
Prior to the wiring harness inspection, check intermediate connectors D-16 and C-16, and repair if necessary.

Q: Is the wiring harness between rear door speaker (LH) connector F-03 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 2 and 8) in good condition?

YES : Repair or replace the radio and CD player.

The rear door speaker (LH) should sound.

NO : Repair or replace the damage component(s). The rear door speaker (LH) should sound.



NOTE:

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

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

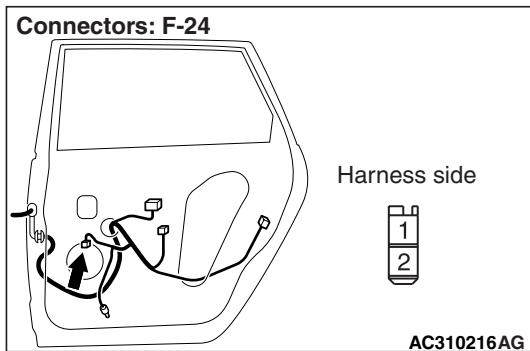
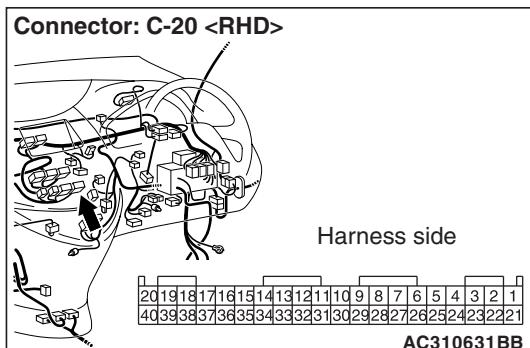
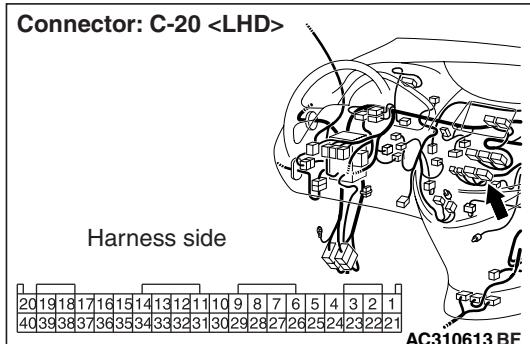
YES : Go to Step 18.

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

YES : Go to Step 19.

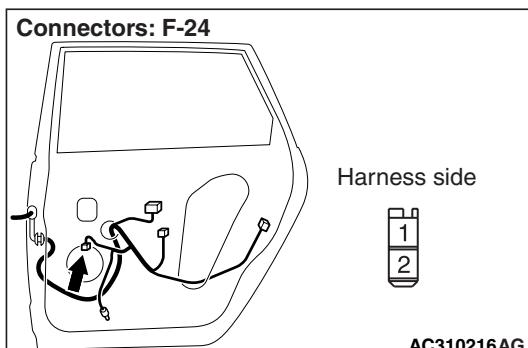
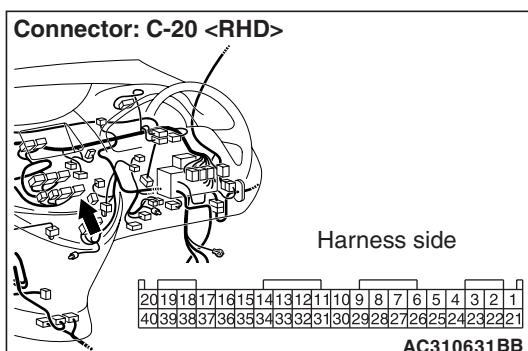
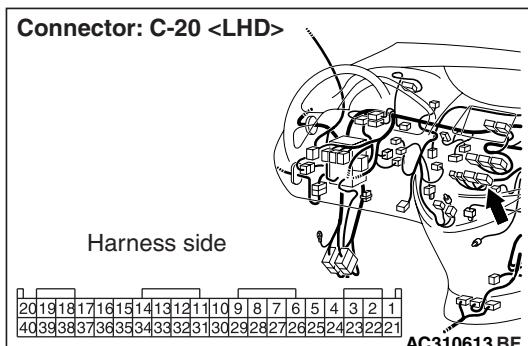
NO : Repair or replace the damage component(s). The rear door speaker (RH) should sound.

Step 18. Connector check: Rear door speaker (RH) connector F-24 and radio and CD player connector C-20.

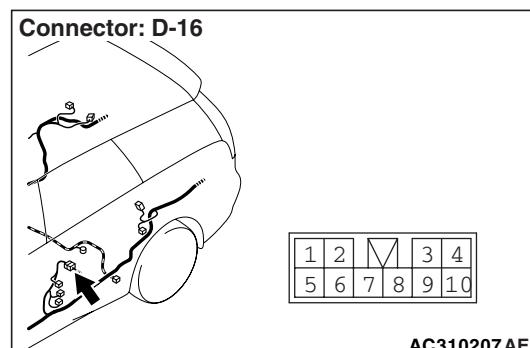
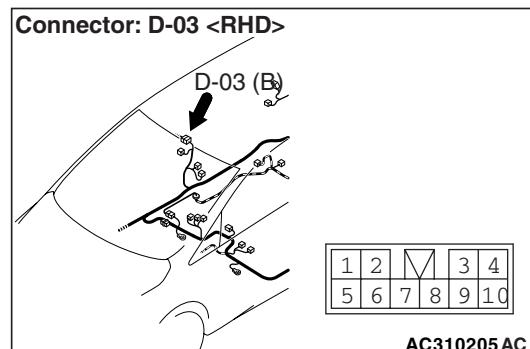
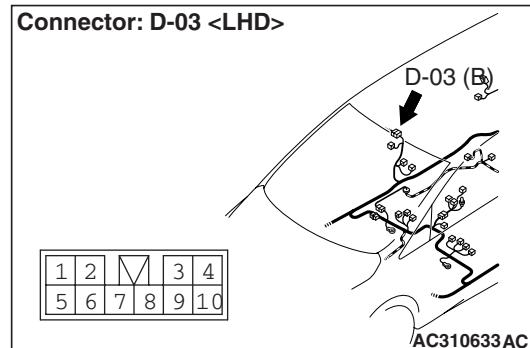


Q: Are harness connectors F-24 and C-20 in good condition?

Step 19. Check the wiring harness between rear door speaker (RH) connector F-24 (terminals 1 and 2) and radio and CD player connector C-20 (terminals 1 and 7).



NOTE:



Prior to the wiring harness inspection, check intermediate connectors D-03, D-16, and repair if necessary.

Q: Is the wiring harness between rear door speaker (RH) connector F-24 (terminal 1 and 2) and radio and CD player connector C-20 (terminal 1 and 7) in good condition?

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

NO : Repair or replace the damage component(s). The rear door speaker (RH) should sound.

INSPECTION PROCEDURE 3: Noise Appears at Certain Places when Travelling (AM).

DIAGNOSIS PROCEDURE

Step 1. Check the noise occur when entering or near a particular structure (building, tunnel, mountain, etc).

Q: Does the noise occur when entering or near a particular structure (building, tunnel, mountain, etc.)?

YES : Go to Step 3.

NO : Go to Step 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?

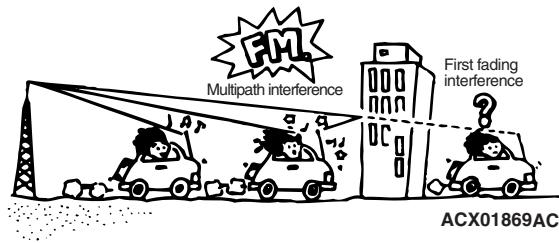
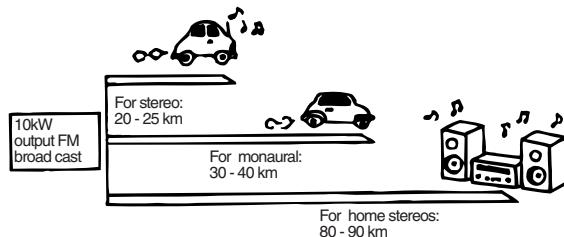
Vehicle noise : It may not be possible to prevent noise if the signal is weak.

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 centre.

NO : Normal.

INSPECTION PROCEDURE 4: Noise is Present while Moving (FM).**DIAGNOSIS PROCEDURE**

NOTE: FM waves have the same properties as lamp, and can be deflected and blocked. FM signal reception is severely degraded in the shadow of obstructions such as buildings or mountains. An FM receiver will then only receive a reflected signal.

1. The signal becomes weak as the distance from the station's transmission antenna increases. The signal strength received depends on the signal strength of the transmitting station and intervening obstructions such as buildings and hills. Generally speaking, the area of good reception is approximately 20 – 25 km for stereo reception, and 30 – 40 km for monaural reception.
2. The signal will become weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the station transmitter and the vehicle), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>

3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. When moving, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitive buzzing.>

4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

After taking measures to prevent the noise, check that no noise occurs.

5. Change to a different station with a stronger 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 not possible. Weak signals especially are susceptible to interference.

If there is more noise than on radios in other vehicles, find out the noise condition and the name and frequency of the receiving stations from the owner, and consult with the radio manufacturer's service centre.

INSPECTION PROCEDURE 5: 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: Alternator noise may be a cause.

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 (Mast antenna).

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

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

DIAGNOSIS PROCEDURE

Step 1. Check that the noise still obvious even when the lamps are off.

Q: Is the noise still obvious even when the lamps are off?

INSPECTION PROCEDURE 6: Broadcasts can be Heard but Both AM and FM have a lot of Noise.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. Check to see that the noise is gone.

Step 2. 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 3.

When the engine is running : Check the vehicle's noise suppressor (Refer to Inspection Procedure 9 [P.54A-127](#)).

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

YES : Go to Step 7.**NO** : Go to Step 6.**Step 4. Check that the radio is correctly earthed**

The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?

YES : Go to Step 5.
NO : Consult the radio manufacturer's service centre.

Step 5. Check the connection of the antenna plug and radio and CD player.**Q: Is the antenna plug thoroughly connected to the radio and CD player?****Step 6. 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 centre.
NO : Go to Step 7.

Step 7. 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 centre.
NO : Either repair or replace the antenna assembly. Check to see that the noise is gone.

INSPECTION PROCEDURE 7: There is More Noise on Either AM or FM.**DIAGNOSIS PROCEDURE**

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 alternator.
- 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 centre.
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 centre. 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). <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 : If the noise level is roughly the same as other radios, there is no action to be taken.

INSPECTION PROCEDURE 8: There is Noise when Starting the Engine.

DIAGNOSIS PROCEDURE

CAUTION

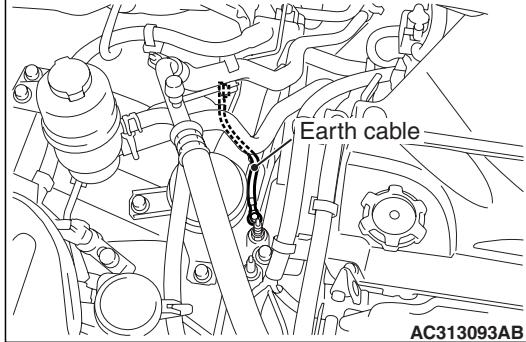
- Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.
- Check that there is no external noise. Since failure to do this may result in an incorrect diagnosis due to the inability to identify the noise source, this operation must be performed.
- Noise 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 takes advantage of this property is inserted between the power line for the noise source and the earth. This suppresses

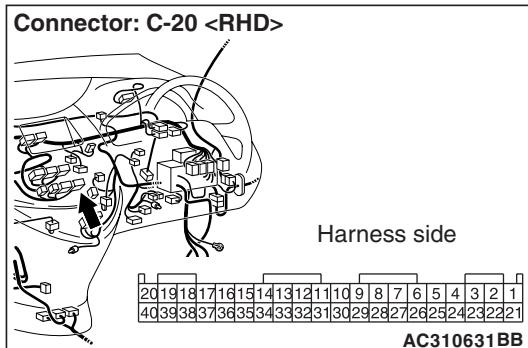
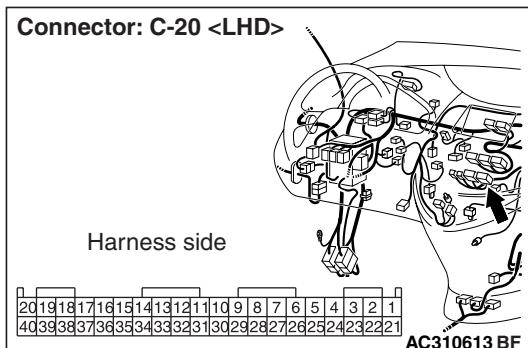
noise by earthing the noise component (AC or pulse signal) to the body of the vehicle.

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 or FM: ignition noise (popping, snapping, cracking, buzzing) | <ul style="list-style-type: none"> Increasing the engine speed causes the alternator whine sound to speed up and the volume to decrease Disappears when the ignition switch turned to "ACC." | <ul style="list-style-type: none"> Mainly due to the spark plugs Due to engine noise | <ul style="list-style-type: none"> Check or replace the earth cable. Check or replace the noise capacitor. |
| Other electrical components | — | Noise may occur as the electrical components become older. | Repair or replace the electrical components. |
| Static electricity (cracking, crinkling) | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> 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. | Earth 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 earthed. |



INSPECTION PROCEDURE 9: Some Noise Appears When There is Vibration or Shocks During Travelling.

DIAGNOSIS PROCEDURE
Step 1. Connector check: Radio and CD player connector C-20.


Q: Is radio and CD player connector C-20 in good condition?

YES : Go to Step 2.

NO : Repair or replace the connector. 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 earth, 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 earthed.

The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?

YES : Go to Step 4.

NO : Tighten the screw securely. Check that there is no noise.

Step 4. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?

YES : Either repair or replace the radio and CD player. Check that there is no noise.

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

INSPECTION PROCEDURE 10: Noise Sometimes Appears on FM during Travelling.

DIAGNOSIS PROCEDURE
Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. Check that there is no noise.

Step 2. The check after adjusting the radio.

Q: Readjust the radio. Is the noise eliminated?

YES : Check that there is no noise.

NO : Go to Step 3.

Step 3. Check with several broadcasting stations.

NOTE: *Multipath noise and fading noise: Because of 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 abnormality in reception generated only within a certain range?

YES : The effect of an electrical field condition (multipath noise, fading noise) could be the cause. Check that there is no noise.

NO : Go to Step 4.

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 earth, 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 earthed.

The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?

YES : Go to Step 6.

NO : Tighten the screw securely. Check that there is no noise.

Step 6. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?

YES : Either repair or replace the radio and CD player. Check that there is no noise.

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

INSPECTION PROCEDURE 11: Ever-Present Noise.**DIAGNOSIS PROCEDURE**

Noise is often created by the following factors, and often the radio is OK when it is checked individually.

- Travelling 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 4 to 10 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 centre.

INSPECTION PROCEDURE 12: There is Noise but No Reception for Both AM and FM or No Sound from AM, or No Sound from FM.**DIAGNOSIS PROCEDURE****Step 1. Check the state of the antenna.**

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. The radio should sound normally.

Step 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc).?

YES : Go to Step 3.

NO : Go to Step 4.

Step 3. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?

YES : There is no action to be taken.

NO : Go to Step 4.

INSPECTION PROCEDURE 13: Poor Reception.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. Check that a poor reception is resolved.

Step 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underneath garage, inside a building, etc).?

Step 4. Tune then check.

Q: Did the sensitivity improve after tuning?

YES : There is no action to be taken.

NO : Go to Step 5.

Step 5. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Go to Step 6.

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

Step 6. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?

YES : Either repair or replace the radio and CD player. The radio should sound normally.

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

YES : Go to Step 3.

NO : Go to Step 4.

Step 3. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?

YES : Check that a poor reception is resolved.

NO : Go to Step 4.

Step 4. Tune then check.

Q: Did the sensitivity improve after tuning?

YES : Check that a poor reception is resolved.

NO : Go to Step 5.

Step 5. Check with several broadcasting stations.

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 abnormality in reception generated only within a certain range?

YES : Check that a poor reception is resolved.
NO : Go to Step 6.

Step 6. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Go to Step 7.

NO : Thoroughly connect the antenna plug and the radio and CD player. Check that a poor reception is resolved.

Step 7. Check by replacing the radio and CD player.

Q: Does the another radio and CD player work normally?

YES : Either repair or replace the radio and CD player. Check that a poor reception is resolved.

NO : Either repair or replace the antenna assembly. Check that a poor reception is resolved.

INSPECTION PROCEDURE 14: Distortion on AM or on Both AM and FM.**DIAGNOSIS PROCEDURE****Step 1. Check the degree in which distortion is generated.**

Q: How much distortion is generated?

Occasional distortion : Go to Step 2.

Constant distortion : Go to Step 3.

Step 2. Check by the transmission antenna.

Q: Is there distortion by the transmission antenna?

YES : The input from the antenna is too big.

NO : Go to Step 3.

Step 3. Check how the speakers are setup.

Q: Are any cords coming in contact with the paper cones of the speakers?

YES : Move the cords so that they do not come in contact with the paper cones of the speaker. Check that a distortion is resolved.

NO : Go to Step 4.

Step 4. Check the speakers.

1. Remove the speakers.

2. Check to see if there is any ripping of the paper cones or any foreign obstacles in the paper cone.

Q: Are the speakers normal?

YES : Go to Step 5.

NO : Repair or replace the speakers. Check that a distortion is resolved.

Step 5. Check how the speakers are setup.

Q: Check to see if the speakers are setup in a deformed manner.

YES : Correct the way the speakers are setup so they are securely setup. Check that a distortion is resolved.

NO : Repair or replace the radio and CD player. Check that a distortion is resolved.

INSPECTION PROCEDURE 15: Distortion on FM Only.

DIAGNOSIS PROCEDURE**Step 1. Check with another broadcasting station.**

Q: Is there distortion when turning to another broadcasting station?

YES : Go to Step 2.

NO : The signal from that station is too weak.

Step 2. Relocate the reception area and check.

Q: When relocating the reception area does the distortion increase or decrease?

YES : The cause may be multipath noise.

NO : Repair or replace the radio and CD player. Check that a distortion is resolved.

INSPECTION PROCEDURE 16: Using the Auto Select Function, Too Few Automatic Stations are Selected.

DIAGNOSIS PROCEDURE**Step 1. Check the state of the antenna.**

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. The auto-select function should operate normally.

YES : There is no action to be taken.

NO : Go to Step 5.

Step 5. Check to see if inspections are taking place in an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underneath garage, inside a building, etc.)?

YES : Go to Step 6.

NO : Go to Step 7.

Step 6. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?

YES : There is no action to be taken.

NO : Go to Step 7.

Step 7. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Repair or replace the radio and CD player.

The auto-select function should operate normally.

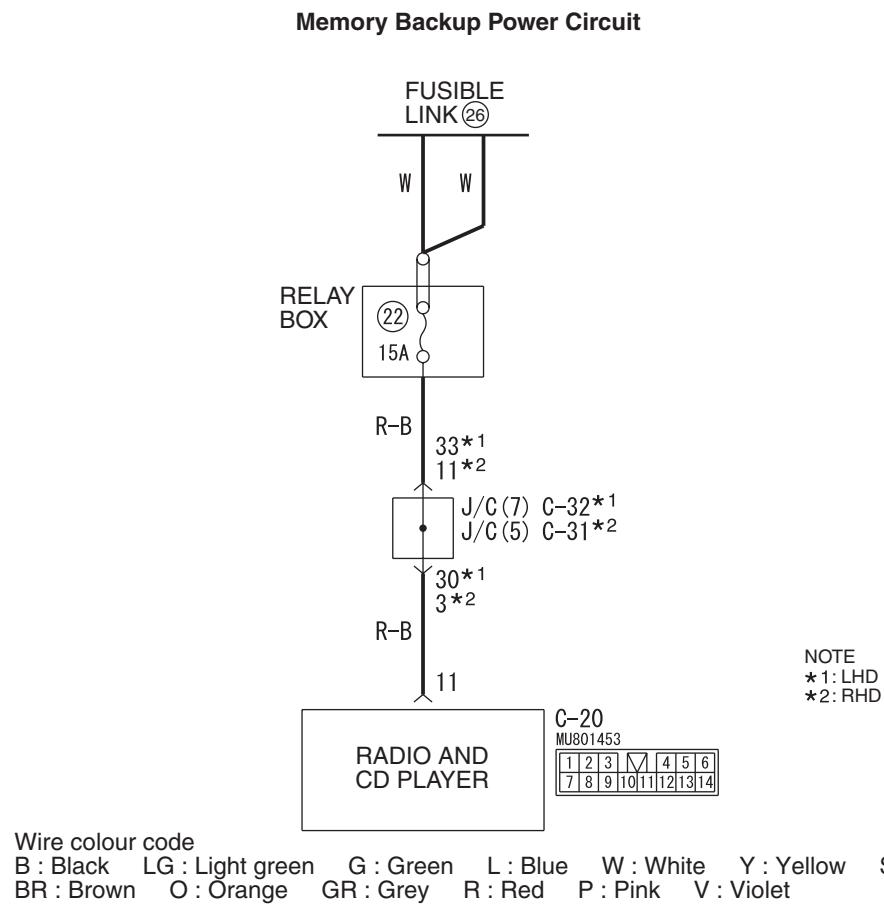
NO : Thoroughly connect the antenna plug and the radio and CD player. The auto-select function should operate normally.

Step 4. The check if there are not that many radio stations and when there is no transmission antenna in the vicinity.

Execute automatic selection and check to see that the strongest radio frequency is receivable within the area.

Q: Is reception of the strongest radio frequency possible within the area?

Inspection Procedure 17: Preset Station are Erased.

**COMMENTS ON TROUBLE SYMPTOM**

The cause is probably a faulty radio and CD player memory backup power supply circuit system.

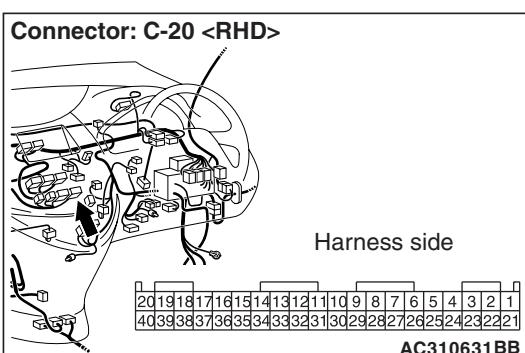
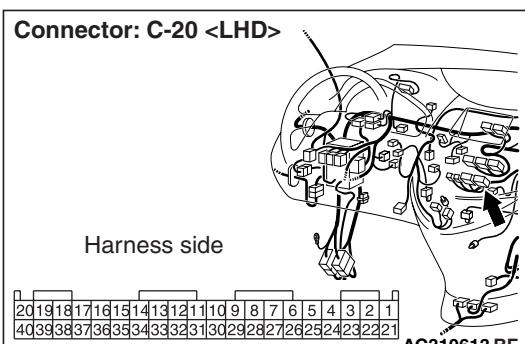
POSSIBLE CAUSES

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

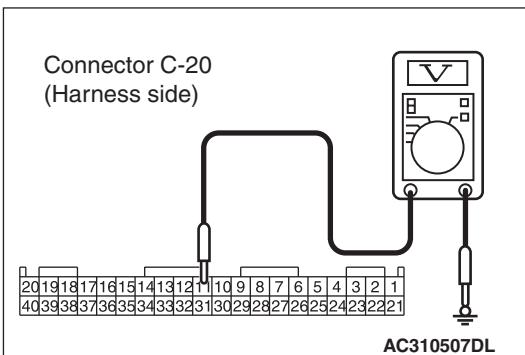
W4X54E199A

DIAGNOSIS PROCEDURE

Step 1. Voltage measurement at radio and CD player connector C-20.



(1) Disconnect radio and CD player connector C-20.



(2) Measure the voltage between terminal number 11

and earth.

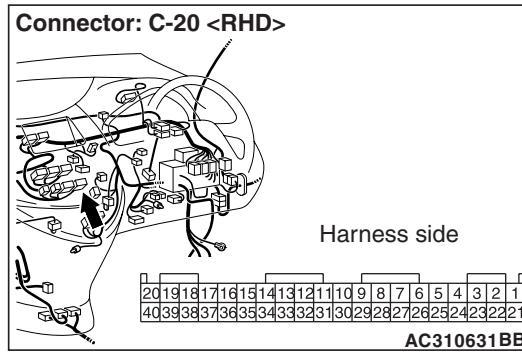
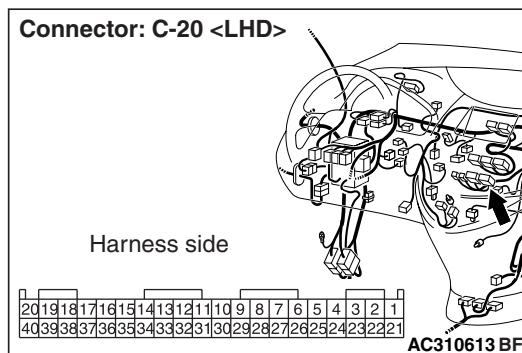
OK: Battery positive voltage

Q: Does the measured voltage correspond with this range?

When YES <radio and CD player does not execute memory save then. > : Either repair or replace the radio and CD player. Check that a memory is retained.

NO : Go to Step 2.

Step 2. Connector check: Radio and CD player connector C-20.

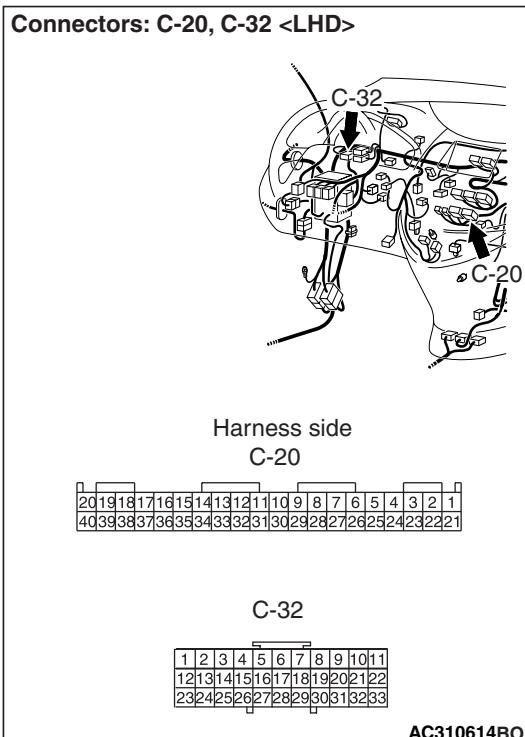


Q: Is radio and CD player connector C-20 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damage component(s). Check that a memory is retained.

Step 3. Check the wiring harness between radio and CD player connector C-20 (terminal 11) and fusible link 26 (battery).

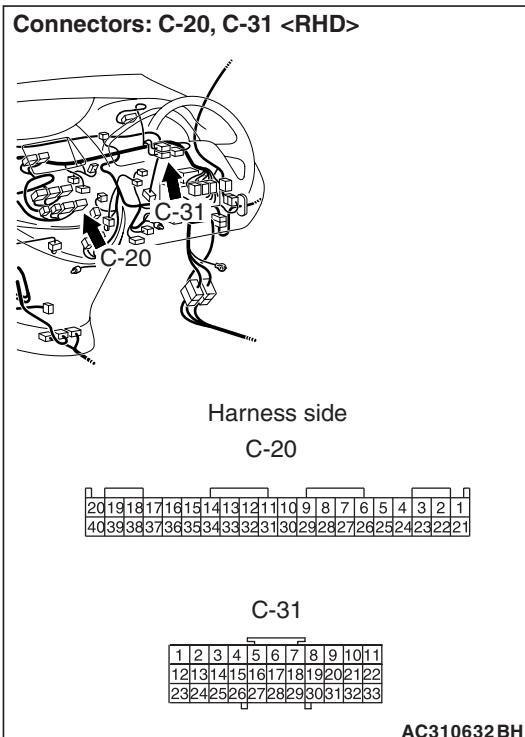


Q: Are the wiring harness between radio and CD player connector C-20 (terminal 11) and fusible link 26 (battery) in good condition?

YES : Repair or replace the radio and CD player.

Check that a memory is retained.

NO : Repair or replace the damage component(s). Check that a memory is retained.



NOTE: Prior to the wiring harness inspection, check joint connector C-32 <LH drive vehicles>, C-31 <RH drive vehicles>, and repair if necessary.

INSPECTION PROCEDURE 18: CD can Not be Inserted.

DIAGNOSIS PROCEDURE**Step 1. Check that a CD has been already loaded.**

Q: Has a CD been already loaded?

NO : Go to Step 2.

YES : Take out the CD (If the CD can not be ejected, refer to INSPECTION PROCEDURE 22 [P.54A-136](#)). Check that a CD can be inserted.

Step 2. Check how a CD is inserted.

- Ensure that the ignition switch is at "ACC" or "ON".

NOTE: If you try to load a CD when the ignition switch is at the positions other than "ACC" or "ON", the CD will not be inserted completely and then rejected.

Q: If you try to load the CD, does the CD stops halfway and then rejected?

YES : Refer to INSPECTION PROCEDURE 22 [P.54A-136](#).

NO : Go to Step 3.

Step 3. Check after the CD is loaded.

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 : The procedure is complete.

Step 4. Check the CD.

Check the CD for the conditions below:

- Is the CD loaded with its label facing down?
- Is the recorded face dirty or scratched?
- Is there dew on the recorded face?

Q: Is the CD in good condition?

YES : Go to Step 5.

NO : The original CD is defective. Check that a CD can be inserted.

Step 5. Check again using a normal CD, which is not dirty or scratched.

- Load another normal CD.
- Check that the CD player recognizes and play the CD.

Q: When you substitute another normal CD, is the CD loaded correctly?

YES : The original CD is defective. Check that a CD can be inserted.

NO : Replace the radio with CD player. The procedure is complete.

INSPECTION PROCEDURE 19: No Sound. (CD only)

DIAGNOSIS PROCEDURE**Step 1. Check again using a normal CD, which is not dirty or scratched.**

Q: When you substitute another normal CD, is the CD played normally?

YES : The original CD is defective. The CD player should sound normally.

NO : Go to Step 2.

Step 2. Check power supply to the CD player when the ignition switch is at "ACC" or "ON".

Q: Is the radio and CD player energized when the ignition switch is turned to the "ACC" or "ON" position?

YES : Replace the radio and CD player. The procedure is complete.

NO : Check the memory backup power supply circuit. Refer to Inspection Procedure 1 [P.54A-106](#).

INSPECTION PROCEDURE 20: CD Sound Skips.

DIAGNOSIS PROCEDURE**Step 1. Check the state in which the sound on the CD jumps.****Q: Does the sound jump when the car is parked?****YES** : Go to Step 2.**NO** : Go to Step 4.**Step 2. Check the surface of the CD.****Q: Are there any scratches or soiling on the CD?****YES** : The CD is defective if there are any scratches. Clean the CD surface if it is dirty. Check that a CD sound skip is resolved.**NO** : Go to Step 3.**Step 3. Check when replacing with a CD that can be played normally without any scratches or soiling.****Q: Does the CD play normally when replaced with a CD that is not scratched or dirty and can play normally?****YES** : Defective CD used. Check that a CD sound skip is resolved.**NO** : Go to Step 4.**Step 4. Check by tapping the radio and CD player.****NOTE:** Check by using a proper CD which is free from scratches, dirt or any other abnormality.**Q: Does the sound jump when tapping the radio and CD player?****YES** : Securely mount the radio and CD player. Check that a CD sound skip is resolved.**NO** : Either repair or replace the radio and CD player. (Take the following measures if a servicing shop is closely).

1. Investigate in detail the state when the sound jumps while driving the car.
2. Describe the state to the service shop for consultation.
3. Either repair or replace the radio and CD player according to the instructions of the service shop.

Check that a CD sound skip is resolved.

INSPECTION PROCEDURE 21: Sound Quality is Poor.

DIAGNOSIS PROCEDURE**Check to see that the CD can be played normally and that it is free of any scratches or soiling.**

Replace with better sound quality CD.

Q: Is the sound quality better replacing the CD with a clean CD without any scratches that can be played?**YES** : Defective CD used. The sound quality should return to normal.**NO** : Either repair or replace the radio and CD player. The sound quality should return to normal.

INSPECTION PROCEDURE 22: CD can not be ejected.

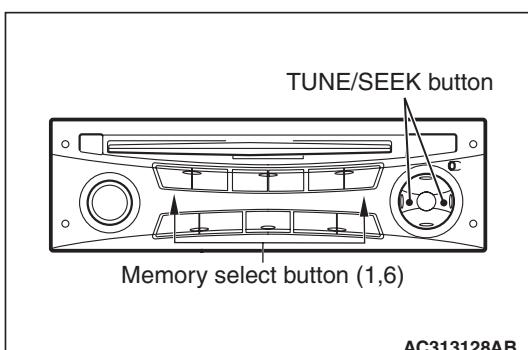
DIAGNOSIS PROCEDURE**Check the power of ignition switch "ACC".****Q: Does the radio and CD player power turn ON when the ignition switch is in the "ACC" or "ON" position?****YES** : Replace the radio and CD player. Check that a CD can be ejected normally.**NO** : Check the power supply circuit. Refer to Inspection Procedure 1 [P.54A-106](#).

ON-VEHICLE SERVICE

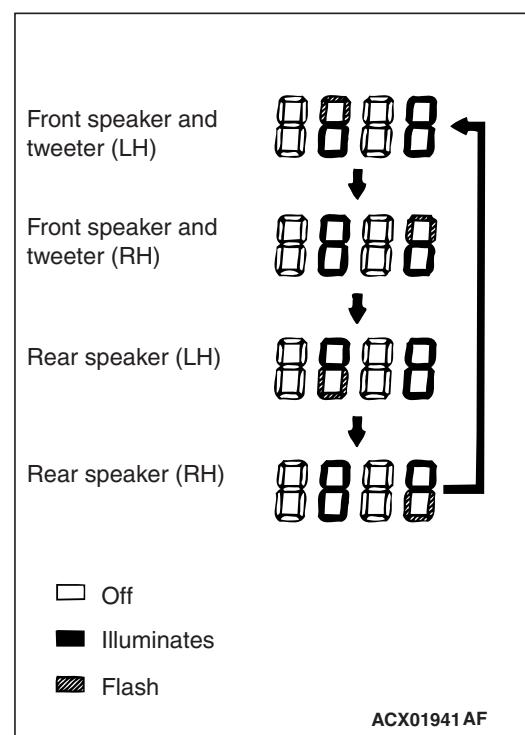
SPEAKER TEST

M1544005400363
Enter the speaker test mode according to the following steps:

1. Turn the Ignition switch to the "ACC" or "ON" position and switch off the radio and cd player.



2. Press the following buttons in that order within sixty seconds from step (1).
 - (1) Memory select "1" button
 - (2) "TUNE/SEEK (DOWN)" button
 - (3) "TUNE/SEEK (UP)" button
 - (4) Memory select "6" button

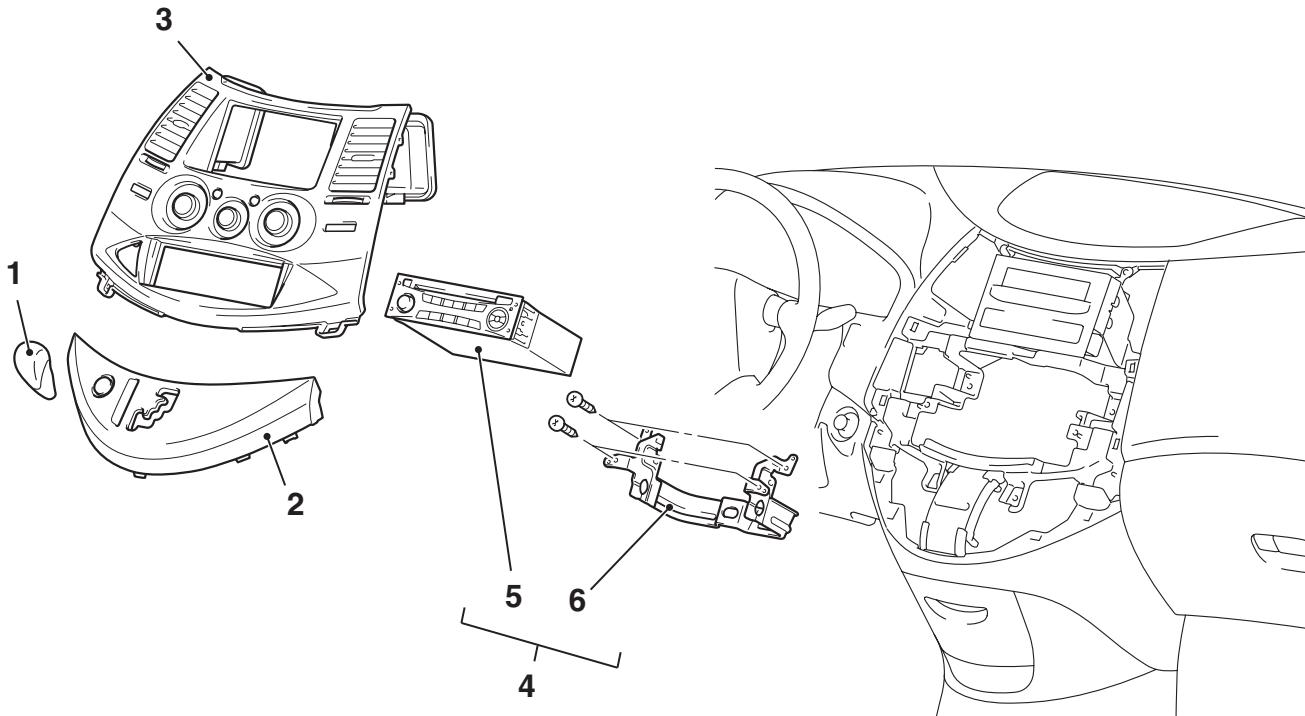


3. Check that the speaker, which is displayed on the radio panel display, sounds (If the memory select "6" button is pressed, the speaker will be changed).
4. If a button other than the memory select "6" button and "EJECT" button (tape or CD) is pressed, or the ignition switch is turned to "LOCK" (OFF) position, you will exit from the speaker test mode.

RADIO AND CD PLAYER

REMOVAL AND INSTALLATION

M1544011300019



AC312235 AB

Removal steps

1. Gear shift lever knob <M/T>
(Refer to GROUP 22A, Transmission Control [P.22A-7](#)).
1. Selector lever knob <A/T> (Refer to GROUP 23A, Transmission Control [P.23A-141](#)).
2. Selector lever panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).

Removal steps (Continued)

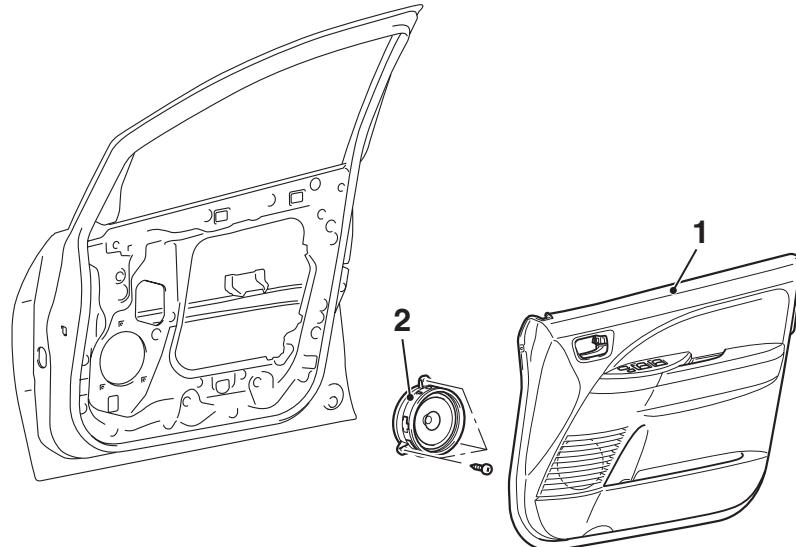
3. Instrument centre panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
4. Radio and CD player and bracket assembly
5. Radio and CD player
6. Bracket

SPEAKER

REMOVAL AND INSTALLATION

M1544002600603

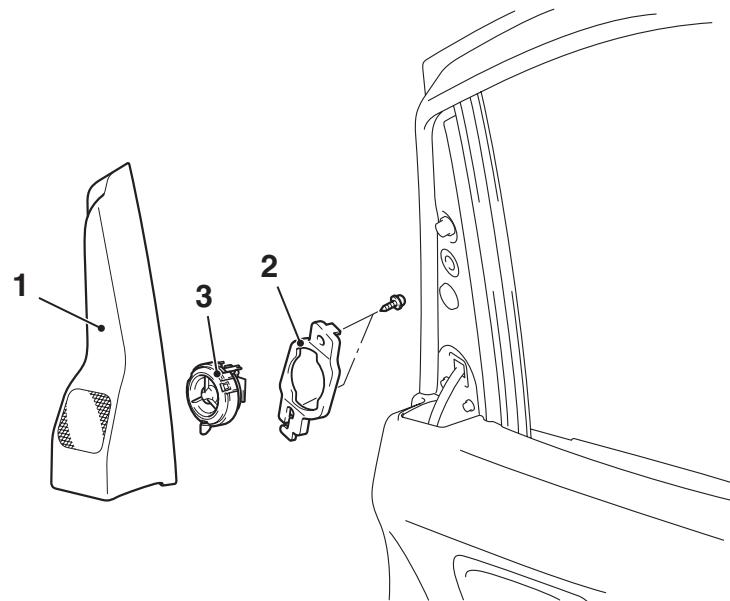
<SPEAKER>



Removal steps

1. Door trim (Refer to GROUP 52A, Door Trim [P.52A-12](#)).
2. Speaker

<TWEETER>



Removal steps

1. Front door sash trim (Refer to GROUP 52A, Door Trim [P.52A-12](#)).

Removal steps (Continued)

2. Bracket
3. Tweeter

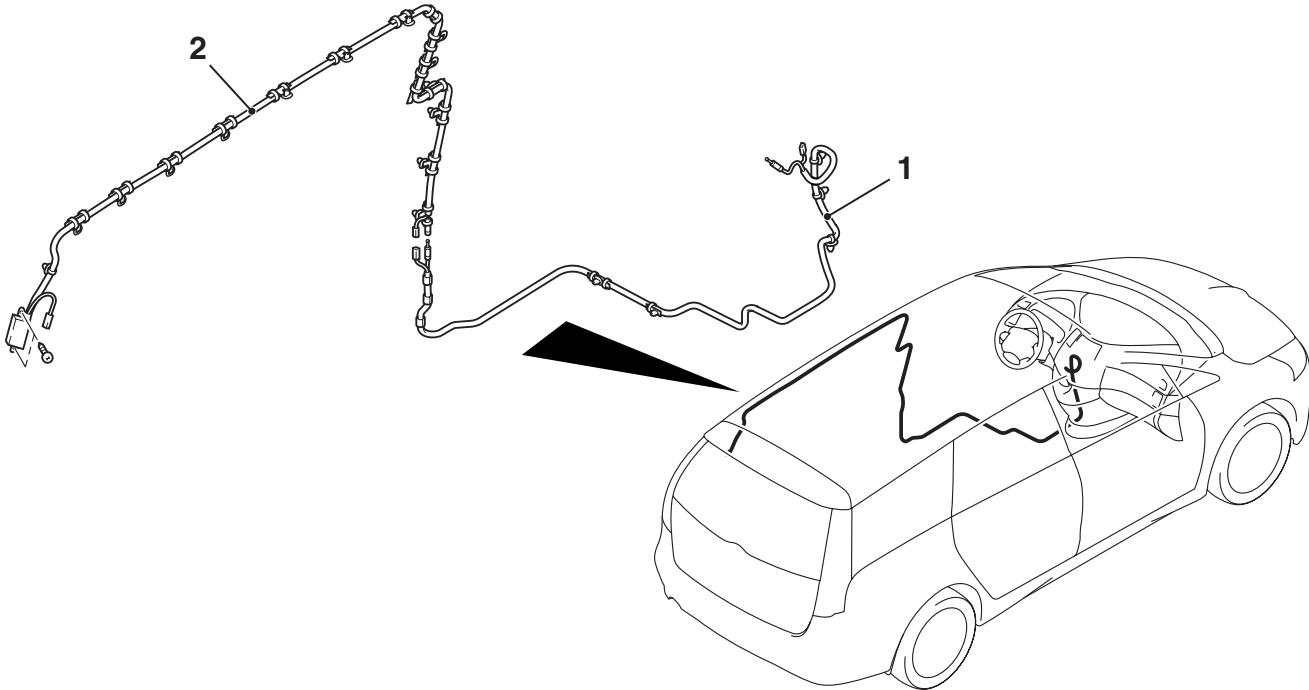
GLASS ANTENNA

REMOVAL AND INSTALLATION

M1544005100061

CAUTION

For the removal of the headlining, refer to GROUP 52B, Service Precautions [P.52B-7](#) and Side and Curtain Air Bag Module [P.52B-231](#).



AC312281AB

Removal steps

- Headlining assembly (Refer to GROUP 52A, Headlining [P.52A-17](#)).
- Front seat assembly (Refer to GROUP 52A, Front Seat Assembly [P.52A-21](#)).
- Front scuff plate inner, Scuff plate rear (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Outer seat belt lower anchor bolt (Refer to GROUP 52A, Front Seat Belt [P.52A-35](#)).
- Centre pillar trim lower (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Second seat assembly, Seat anchor cover outer/inner, Slide adjuster end cover outer/inner, Rail cover outer/inner (Refer to GROUP 52A, Second Seat Assembly [P.52A-26](#)).
- Gear shift lever knob <M/T> (Refer to GROUP 22A, Transmission Control [P.22A-7](#)).

Removal steps (Continued)

- Selector lever knob <A/T> (Refer to GROUP 23A, Transmission Control [P.23A-141](#)).
- Selector lever panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- Cowl side trim <LH> (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Glove box assembly (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- Fuel filler lid lock release handle (Refer to GROUP 42, Fuel Filler Lid [P.42-7](#)).
- Cowl side trim <RH> (Refer to GROUP 52A, Interior Trim [P.52A-10](#)).
- Lower panel, Console side cover, Centre console (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
- Foot rest
- Accelerator pedal arm stopper (Refer to GROUP 17, Accelerator pedal [P.17-3](#)).

Removal steps (Continued)

- Floor carpet
- Side roof duct, Centre roof duct
(Refer to GROUP 55, Duct
[P.55-228](#)).
- Curtain air bag module (Refer to
GROUP 52B, Side and Curtain Air
Bag Module(s) [P.52B-231](#)).
- Instrument centre panel (Refer to
GROUP 52A, Instrument Panel
Assembly [P.52A-2](#)).
- Radio and CD player (Refer to
[P.54A-138](#)).
- 1. Antenna feeder cable
- 2. Glass antenna amplifier

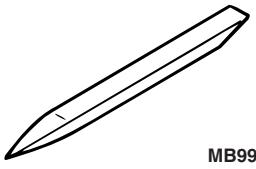
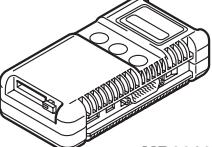
54A-142

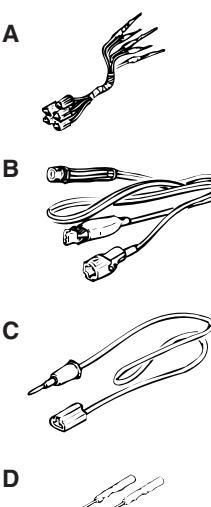
**CHASSIS ELECTRICAL
CENTRE DISPLAY**

CENTRE DISPLAY

SPECIAL TOOLS

M1543000602097

| Tool | Number | Name | Application |
|---|--|--|--|
|  MB990784 | MB990784 | Ornament remover | Removal of selector lever panel, instrument centre panel |
| A  MB991824 | MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826 | MUT-III sub-assembly A: (V.C.I.) Vehicle communication interface B: MUT-III USB cable C: MUT-III Main harness A (Vehicles with CAN communication system) D: MUT-III Main harness B (Vehicles without CAN communication system) E: MUT-III Measurement adapter F: MUT-III Trigger harness | Centre display check (diagnosis code) CAUTION For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly. |

| Tool | Number | Name | Application |
|---|----------|--|--|
|  A: MB991219 B: MB991220 C: MB991221 D: MB991222 | MB991223 | Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe | 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 |

TROUBLESHOOTING

TROUBLESHOOTING

M1543000701273

STANDARD FLOW OF DIAGNOSIS

TROUBLESHOOTING

Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

DIAGNOSIS FUNCTION

M1543007000636

HOW TO READ DIAGNOSIS CODE

Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points [P.00-5](#).

DIAGNOSIS CODE CHART

M1546500800022

⚠ CAUTION

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

| Diagnosis code No. | Diagnostic item | Reference page |
|--------------------|---|---------------------------|
| U1073 | Bus Off | P.54A-145 |
| U1100 | Engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to engine) | P.54A-146 |
| U1108 | Combination meter time-out | P.54A-147 |
| U1109 | ETACS-ECU time-out | P.54A-148 |
| U1110 | A/C-ECU time-out | P.54A-149 |
| U1120 | Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine) | P.54A-151 |
| U1128 | Failure information on combination meter | P.54A-152 |
| U1130 | Failure information on A/C-ECU | P.54A-153 |
| U1600 | MBUSY open | P.54A-154 |
| U1601 | MBUSY short | |

| Diagnosis code No. | Diagnostic item | Reference page |
|--------------------|-----------------|---------------------------|
| U1602 | M-DATA open | P.54A-155 |
| U1603 | M-DATA short | |
| U1604 | M-SCK open | P.54A-156 |
| U1605 | M-SCK short | |

DIAGNOSIS CODE INSPECTION PROCEDURES

Code No.U1073 Bus Off

⚠ CAUTION

If diagnosis code U1073 is set in the centre display, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

If the centre display ceases communicating once (i.e. bus off) and then returns to it, the centre display will not communicate for three minutes immediately after that point. This three-minute period is called "Penalty mode." Immediately after the centre display returns to communication, the diagnosis code is set.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus line wiring harness, connector(s), or the centre display unit may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 3.

Step 2. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : If the trouble is solved, it is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace centre display and then go to step 3.

Step 3. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1100 engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to engine)

CAUTION

If diagnosis code U1100 is set in the centre display, always diagnose the CAN bus lines.

CAUTION

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

TROUBLE JUDGMENT

The centre display unit receives engine control system-related signals from the engine-ECU <M/T> or engine-A/T-ECU <A/T> via CAN bus lines. If the display unit can not receive the necessary signals, diagnosis code U1100 will be set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the centre display unit, the power supply system to the display unit, the display unit itself, or the engine-ECU <M/T> or engine-A/T-ECU <A/T> may be defective.

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the centre display unit, and the power supply system to the engine-ECU <M/T> or engine-A/T-ECU <A/T>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors

- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check if an MPI system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting [P.13A-20](#)).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

ASC-ECU

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

ETACS-ECU

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

A/C-ECU

- Code No.U1100: engine-ECU <M/T> or engine-A/T-ECU <A/T> time-out (related to Engine)

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace engine-ECU <M/T> or engine-A/T-ECU <A/T> and then go to step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-A/T-ECU <A/T> and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace centre display and then go to step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1108 Combination Meter Time-out

CAUTION

If diagnosis code U1108 is set in the centre display, always diagnose the CAN bus lines.

CAUTION

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

TROUBLE JUDGMENT

The centre display unit receives signals from the combination meter via CAN bus lines. If the display unit can not receive the necessary combination meter signals, diagnosis code U1108 will be set.

COMMENTS ON TROUBLE SYMPTOM

Current trouble

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the combination meter and the centre display unit, the power supply system to the display unit. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of combination meter
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table P.54D-16). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check whether the combination meter-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the combination meter. Refer to P.54A-35.

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

MPI

- Code No.U1108: Combination meter time-out ETACS-ECU
- Code No.14: Combination meter time-out

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace combination meter and then go to step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace centre display and then go to step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1109 ETACS-ECU Time-out**CAUTION**

If diagnosis code U is set in the ETACS-ECU, diagnose the CAN main bus line.

CAUTION

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

TROUBLE JUDGMENT

The centre display unit communicates with the

ETACS-ECU via CAN bus lines. If it can not receive all the necessary signals from the ETACS-ECU, diagnosis code U1109 is set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

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

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the centre display unit, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ETACS-ECU
- Malfunction of centre display unit

Code No.U1110 A/C-ECU Time-out**⚠ CAUTION**

If diagnosis code U1110 is set in the centre display, always diagnose the CAN bus lines.

⚠ CAUTION

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

TROUBLE JUDGMENT

When the centre display unit can not receive necessary signals from the A/C-ECU via CAN bus lines. If the display unit can not receive the

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). Repair the CAN bus line and go to Step 4.

Step 2. MUT-III other system diagnosis code

Check that the ETACS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the SWS. (Refer to GROUP 54B, Troubleshooting [P.54B-29](#) or GROUP 54C, Troubleshooting [P.54C-30](#).)

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

Check whether combination meter-related diagnosis code U1109 is set.

Q: Is the diagnosis code set?

YES : Replace ETACS-ECU and then go to step 4.

NO : Replace centre display unit and then go to step 4.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

necessary A/C-ECU signals, diagnosis code U1110 will be set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

- Connector(s) or wiring harness in the CAN bus lines between the A/C-ECU and the centre display unit, the power supply system to the display unit, the display unit itself, or the A/C-ECU may be defective.

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the A/C-ECU and the centre display unit, and the power supply system to the A/C-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

NOTE: For a past trouble, you may not find it by the MUT-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the MUT-III CAN Bus Diagnostics [P.54D-9](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of A/C-ECU
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE**Step 1. MUT-III CAN bus diagnostics**

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)). On completion, go to Step 6.

Step 2. MUT-III other system diagnosis code

Check if an A/C system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the A/C system (Refer to GROUP 55, Troubleshooting [P.55-8](#)).

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

Engine-ECU <M/T> or engine-A/T-ECU <A/T>

- Code No.U1110: A/C-ECU time-out
- ETACS-ECU
- Code No.013: A/C-ECU time-out

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

- Erase the diagnosis code.
- Turn the ignition switch to "ON" position.
- Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace A/C-ECU and then go to step 6.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

- Erase the diagnosis code.
- Turn the ignition switch to "ON" position.
- Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace centre display and then go to step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

- Erase the diagnosis code.
- Turn the ignition switch to "ON" position.
- Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1120 Failures Information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (Related to Engine)

⚠ CAUTION

If diagnosis code U1120 is set in the centre display, always diagnose the CAN bus lines.

TROUBLE JUDGMENT

The centre display receives the vehicle speed signal for the display from the combination meter via CAN bus lines. If failure information is sent to the vehicle speed signal for the display, diagnosis code U1120 will be set.

COMMENTS ON TROUBLE SYMPTOM

Current trouble

- The combination meter or the centre display may be defective.

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the centre display and the combination meter. For diagnosis procedures, refer to "How to treat past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-5).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-A/T-ECU <A/T>
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table P.54D-16). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check whether the combination meter-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the combination meter. (Refer to P.54A-35.)

NO : Go to Step 3.

Step 3. MUT-III other system diagnosis code

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

Combination meter

- Code No.U1120: Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine)

A/C-ECU

- Code No.U1120: Failure information on engine-ECU <M/T> or engine-A/T-ECU <A/T> (related to engine)

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

Step 4. Check whether the diagnosis code is reset.

Replace the centre display temporarily, and then check that the diagnosis code is not reset.

- (1) Replace the centre display temporarily.
- (2) Erase the diagnosis code.
- (3) Turn the ignition switch to "ON" position.
- (4) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : Replace centre display and then go to step 6.

NO : Go to Step 5.

Step 5. Check whether the diagnosis code is reset.

Replace the combination meter temporarily, and then check that the diagnosis code is not reset.

- (1) Replace the combination meter temporarily.
- (2) Erase the diagnosis code.
- (3) Turn the ignition switch to "ON" position.
- (4) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : Replace combination meter and then go to step 6.

NO : A poor connection, open circuit or other intermittent malfunction is present in the lines between the centre display and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1128 Failures Information on Combination Meter

△ CAUTION

If diagnosis code U1128 is set in the centre display, always diagnose the CAN bus lines.

TROUBLE JUDGMENT

The centre display unit communicates with the combination meter via CAN bus lines. If failure information is sent to the combination meter, diagnosis code U1128 will be set.

COMMENTS ON TROUBLE SYMPTOM

Current trouble

- The combination meter or the centre display unit may be defective.

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the combination meter and the centre display unit. For diagnosis procedures, refer to "How to treat past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of combination meter
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table [P.54D-16](#)). Repair the CAN bus line and go to Step 6.

Step 2. MUT-III other system diagnosis code

Check that the combination meter sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the combination meter. Refer to [P.54A-35](#).

NO : Go to Step 3.

Step 3. Check the combination meter operation.

Check that the fuel gauge in the combination meter works normally.

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose the combination meter. Refer to [P.54A-53](#).

Step 4. Check whether the diagnosis code is reset.

Replace the centre display temporarily, and then check that the diagnosis code is not reset.

- Replace the centre display temporarily.
- Erase the diagnosis code.
- Turn the ignition Switch to "ON" position.
- Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : Replace centre display unit and then go to step 6.

NO : Go to Step 5.

Step 5. Check whether the diagnosis code is reset.

Replace the combination meter temporarily, and then check that the diagnosis code is not reset.

- Replace the combination meter temporarily.
- Erase the diagnosis code.
- Turn the ignition Switch to "ON" position.
- Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the combination meter and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace combination meter and then go to step 6.

Step 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

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

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1130 Failures Information on A/C-ECU

△ CAUTION

If diagnosis code U1130 is set in the centre display, always diagnose the CAN bus lines.

TROUBLE JUDGMENT

The centre display unit communicates with the A/C-ECU via CAN bus lines. If the A/C-ECU sends failure information, diagnosis code U1130 will be set.

COMMENTS ON TROUBLE SYMPTOM**Current trouble**

- The A/C-ECU or the centre display unit may be defective.

Past trouble

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the A/C-ECU and the centre display unit. For diagnosis procedures, refer to "How to treat past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of A/C-ECU
- Malfunction of centre display unit

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table [P.54D-16](#)). Repair the CAN bus line and go to Step 5.

Step 2. MUT-III other system diagnosis code

Check if an A/C-ECU diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the A/C system (Refer to GROUP 55, Troubleshooting [P.55-8](#)).

NO : Go to Step 3.

Step 3. Check whether the diagnosis code is reset.

Replace the centre display temporarily, and then check that the diagnosis code is not reset.

- (1) Replace the centre display temporarily.
- (2) Erase the diagnosis code.
- (3) Turn the ignition Switch to "ON" position.
- (4) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : Replace centre display unit and then go to step 5.

NO : Go to Step 4.

Step 4. Check whether the diagnosis code is reset.

Replace the A/C-ECU temporarily, and then check that the diagnosis code is not reset.

- (1) Replace the A/C-ECU temporarily.
- (2) Erase the diagnosis code.
- (3) Turn the ignition Switch to "ON" position.
- (4) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : Replace A/C-ECU and then go to step 5.

NO : A poor connection, open circuit or other intermittent malfunction is present in the lines between the A/C-ECU and the centre display unit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

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

(3) Check if the diagnosis code is set.

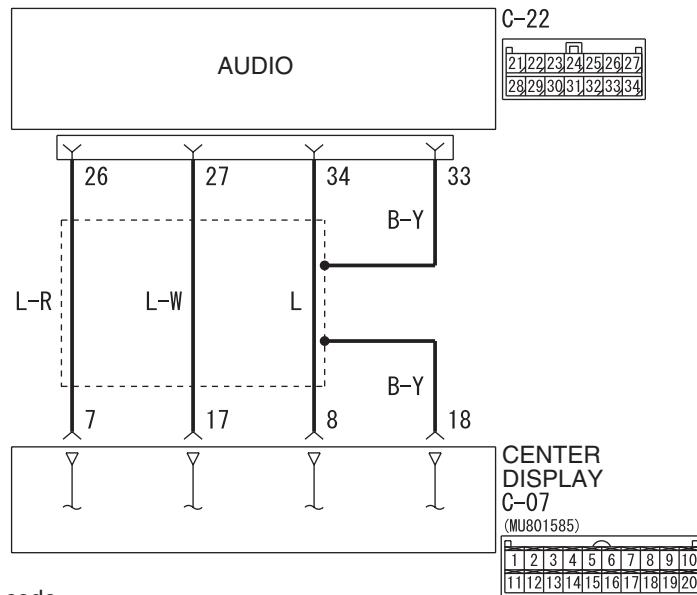
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1600, U1601 M-BUSY open, short

M-BUS Line Circuit



W4X54E205A

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player operation screen will be frozen if the centre display have received abnormal data from the radio and CD player and via M-bus communication.

POSSIBLE CAUSES

- Malfunction of centre display unit
- Malfunction of radio and CD player
- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE**Step 1. Connector check: Radio and CD player connector C-22 and centre display unit connector C-07.**

Q: Is radio and CD player connector C-22 and centre display unit connector C-07 in good condition?

YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Check the wiring harness between radio and CD player connector C-22 (terminal 27) and centre display unit connector C-07 (terminal 17).

Q: Is the wiring harness between radio and CD player connector C-22 (terminal 27) and centre display unit connector C-07 (terminal 17) in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace radio and CD player and then go to step 4.

Step 4. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace centre display and then go to step 5.

Code No.U1602, U1603 M-DATA open, short

CIRCUIT OPERATION

Refer to [P.54A-154](#).

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player operation screen will be frozen if the centre display have received abnormal data from the radio and CD player and via M-bus communication.

POSSIBLE CAUSES

- Malfunction of centre display unit
- Malfunction of radio and CD player
- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Connector check: Radio and CD player connector C-22 and centre display unit connector C-07.

Q: Is radio and CD player connector C-22 and centre display unit connector C-07 in good condition?
YES : Go to Step 2.
NO : Repair the defective connector.

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace radio and CD player and then go to step 4.

Step 4. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-5).

NO : Replace centre display and then go to step 5.

Step 2. Check the wiring harness between radio and CD player connector C-22 (terminal 26) and centre display unit connector C-07 (terminal 7).

Q: Is the wiring harness between radio and CD player connector C-22 (terminal 26) and centre display unit connector C-07 (terminal 7) in good condition?

Step 5. Retest the system

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to step 1.

Code No.U1604, U1605 M-SCK open, short**CIRCUIT OPERATION**

Refer to [P.54A-154](#).

COMMENTS ON TROUBLE SYMPTOM

The radio and CD player operation screen will be frozen if the centre display have received abnormal data from the radio and CD player and via M-bus communication.

POSSIBLE CAUSES

- Malfunction of centre display unit
- Malfunction of radio and CD player
- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE**Step 1. Connector check: Radio and CD player connector C-22 and centre display unit connector C-07.**

Q: Is radio and CD player connector C-22 and centre display unit connector C-07 in good condition?

YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Check the wiring harness between radio and CD player connector C-22 (terminal 34) and centre display unit connector C-07 (terminal 8).

Q: Is the wiring harness between radio and CD player connector C-22 (terminal 34) and centre display unit connector C-07 (terminal 8) in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace radio and CD player and then go to step 4.

Step 4. Retest the system.

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-5](#)).

NO : Replace centre display and then go to step 5.

Step 5. Retest the system

Confirm that the radio and CD player operation screen is displayed normally.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to step 1.

TROUBLE SYMPTOM CHART

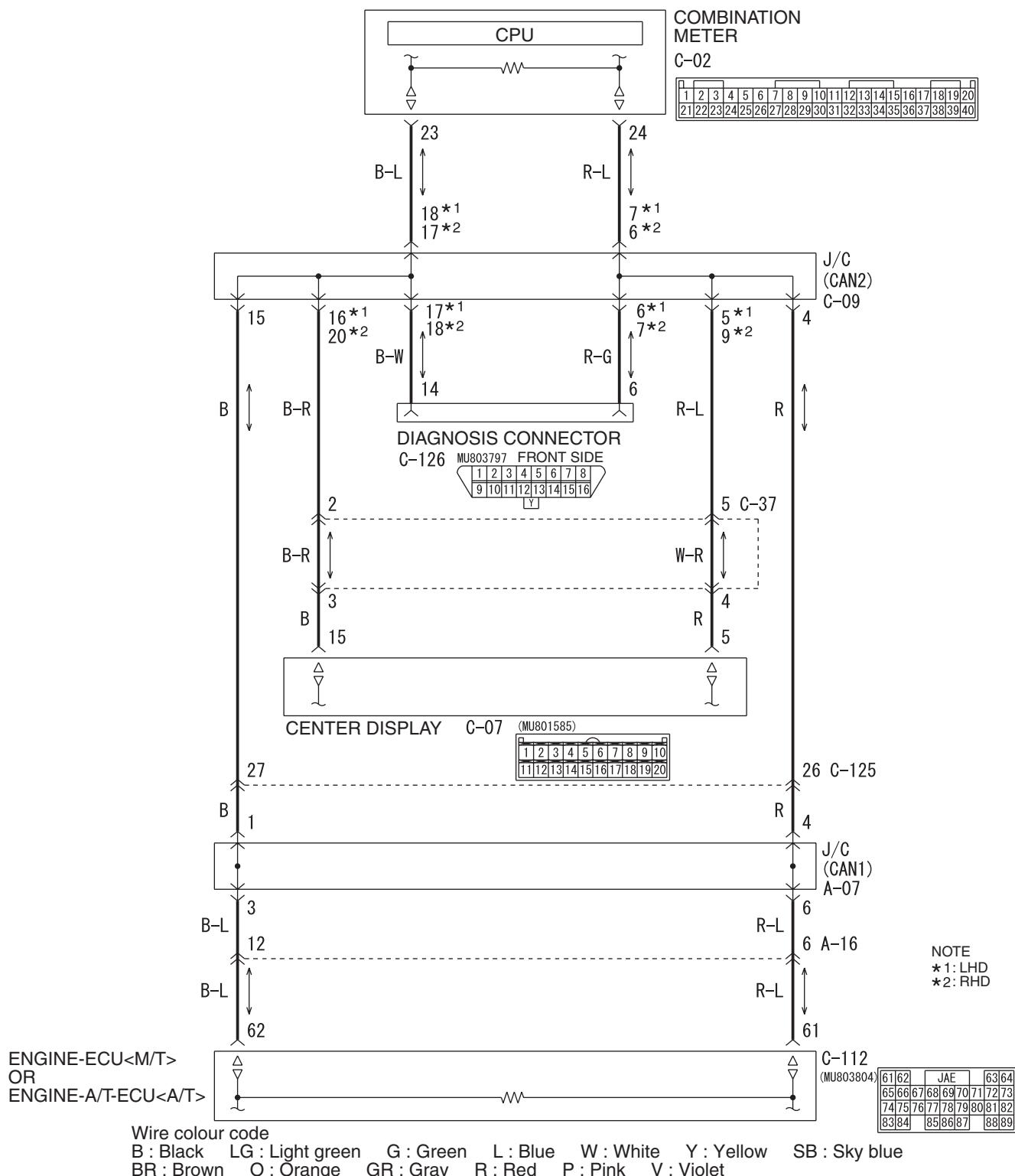
M1546502100018

| Trouble symptom | Inspection procedure number | Reference page |
|---|-----------------------------|---------------------------|
| Communication with the MUT-III is not possible. | 1 | P.54A-158 |
| Check the centre display power supply circuit. | 2 | P.54A-161 |
| The clock display is not normal. | 3 | P.54A-168 |
| "—" is displayed on the driving information display or the display is not normal. | 4 | P.54A-170 |
| "—" is displayed on the ambient temperature display. | 5 | P.54A-172 |
| The radio and CD player information cannot be displayed or the display is not normal. | 6 | P.54A-173 |

**INSPECTION PROCEDURE FOR
TROUBLE SYMPTOMS**

INSPECTION PROCEDURE 1: Communication with the MUT-III is not possible.

Center Display CAN-BUS Line Circuit



COMMENTS ON TROUBLE SYMPTOM

If the system does not communicate with the MUT-III, power supply to the diagnosis connector or CAN bus lines may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Check that the engine-ECU <M/T> or the engine-A/T-ECU <A/T> communicates with the MUT-III.

Check that the MUT-III communicates with the engine-ECU <M/T> or the engine-A/T-ECU when the MUT-III is operated..

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Diagnose the MPI system (Refer to GROUP 13A, Troubleshooting [P.13A-20](#)).

Step 2. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

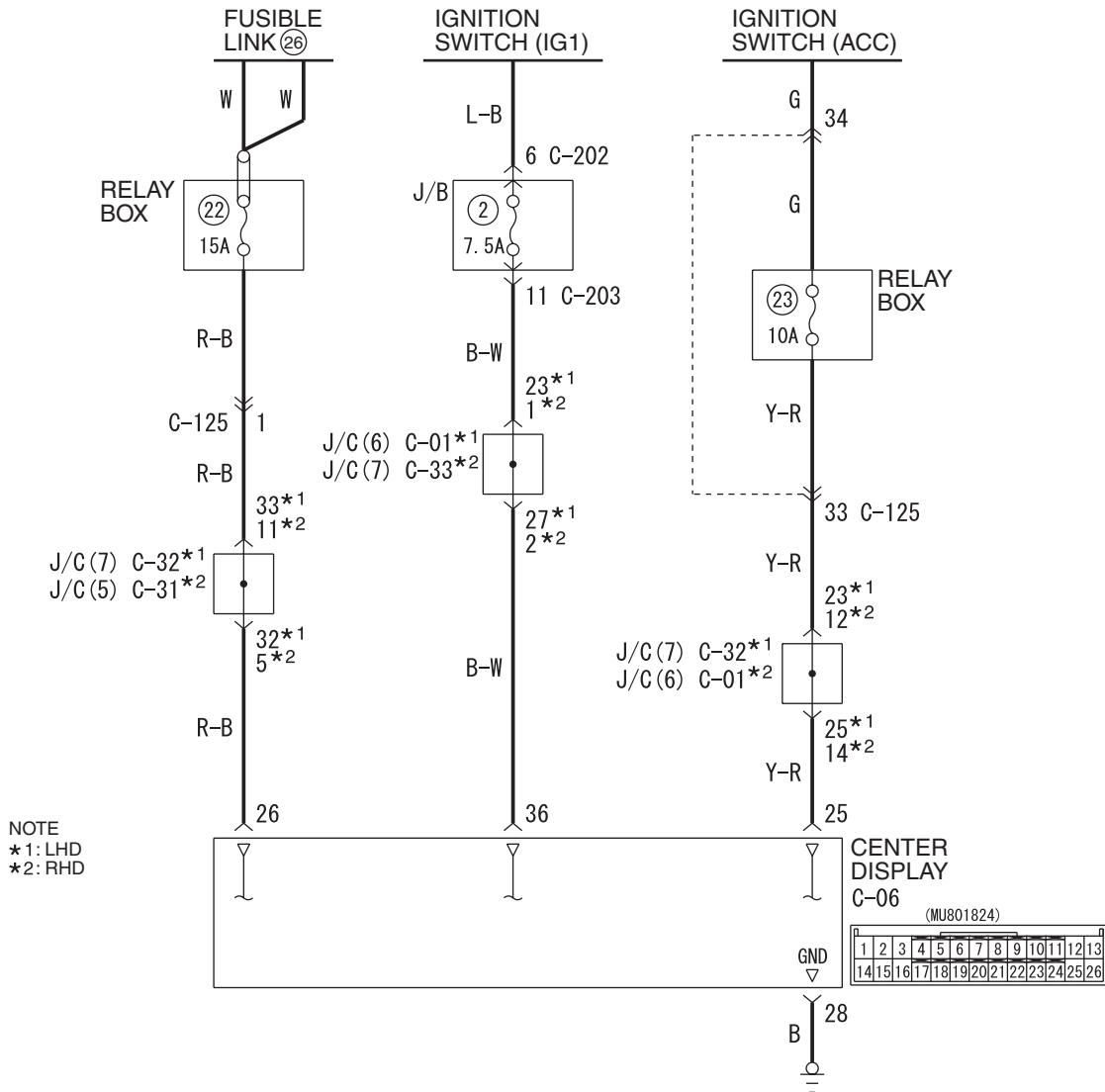
Q: Is the check result satisfactory?

YES : Diagnose the power supply circuit. Refer to [P.54A-161](#).

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table [P.54D-16](#)).

INSPECTION PROCEDURE 2: Check the centre display power supply circuit.

Centre Display Power Supply Circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4X54E203A

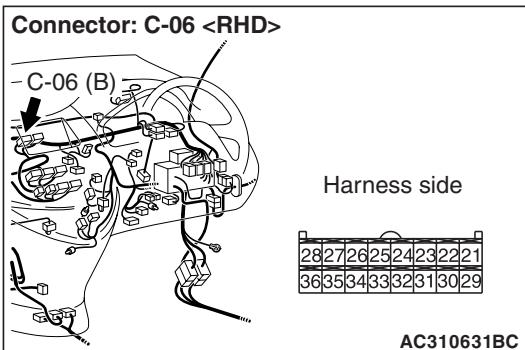
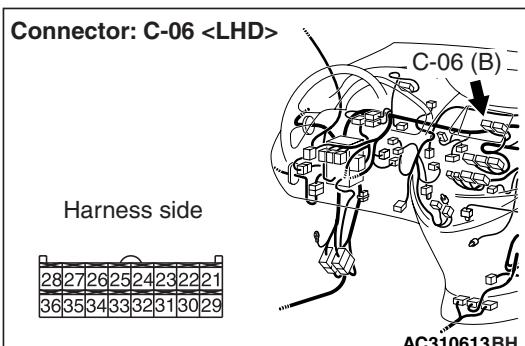
COMMENTS ON TROUBLE SYMPTOM

The earth circuit, the ignition switch (ACC) circuit or the ignition switch (IG1) circuit is suspected to be open or defective.

POSSIBLE CAUSES

- Malfunction of the centre display unit
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

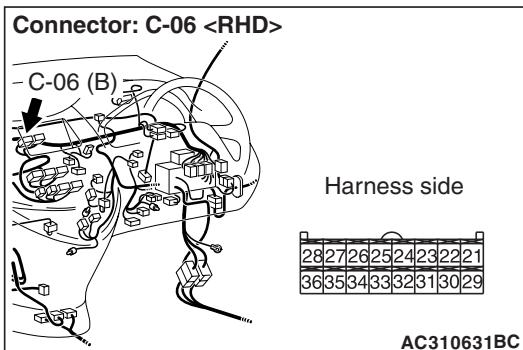
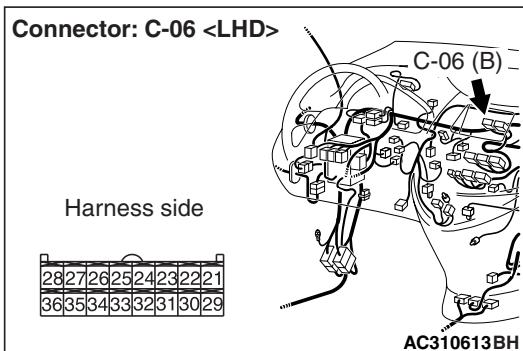
Step 1. Check the following connector: C-06
Centre display connector

Q: Is the check result normal?

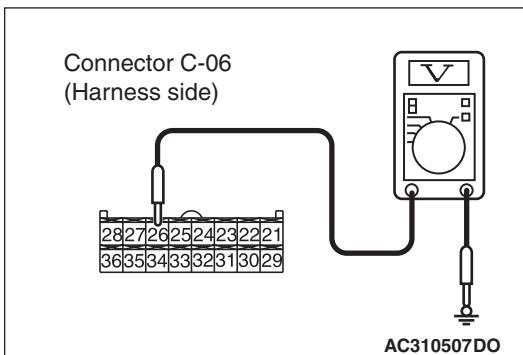
YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Measure the voltage at C-06 multi-centre display connector.



- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Ignition switch: LOCK (OFF) position



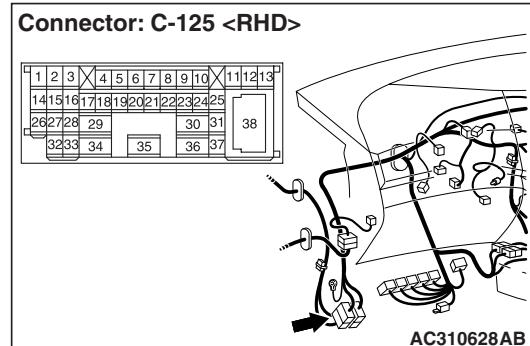
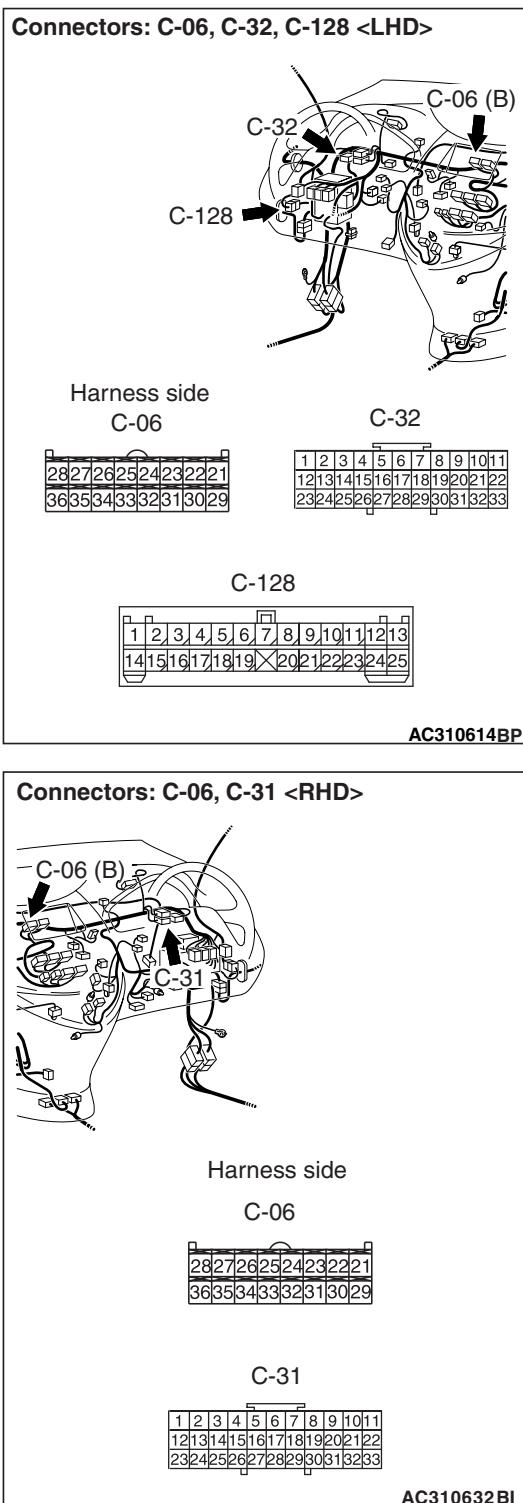
- (3) Voltage between C-06 centre display connector terminal No.26 and body earth
OK: Battery voltage

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

Step 3. Check the harness wire between battery (fusible link No.26) and C-06 centre display connector terminal No.26.



Prior to the wiring harness inspection, check joint connector C-32 <LH drive vehicles>, C-31 <RH drive vehicles> or intermediate connector C-125, and repair if necessary.

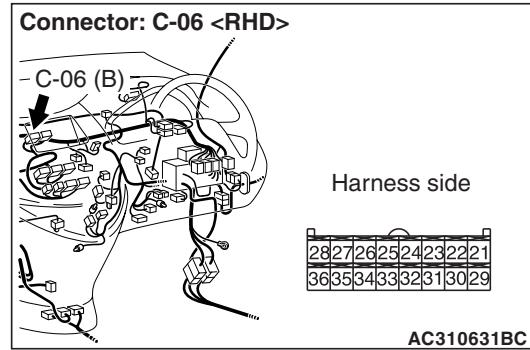
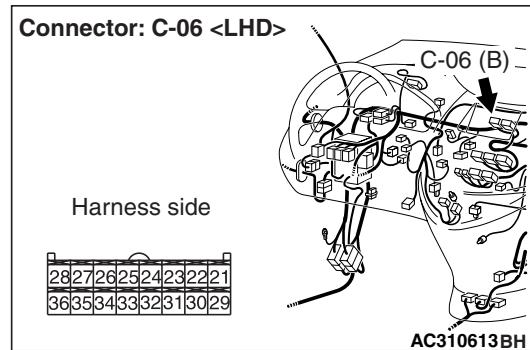
- Check the battery power supply open circuit.

Q: Is the check result normal?

YES : Retest the system.

NO : Repair the wiring harness.

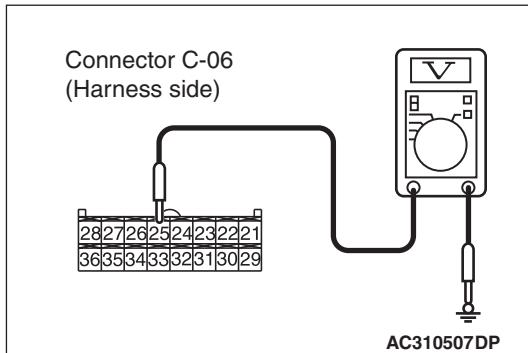
Step 4. Measure the voltage at C-06 multi-centre display connector.



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

NOTE:

(2) Ignition switch: ACC



connector terminal No.25 and body earth

OK: Battery voltage

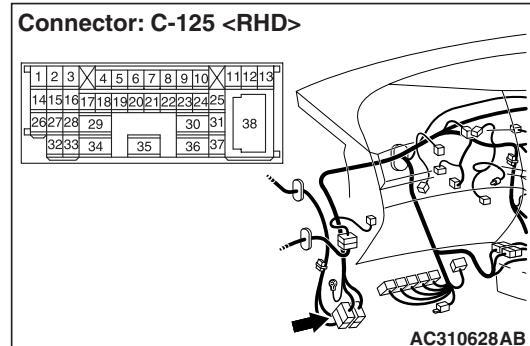
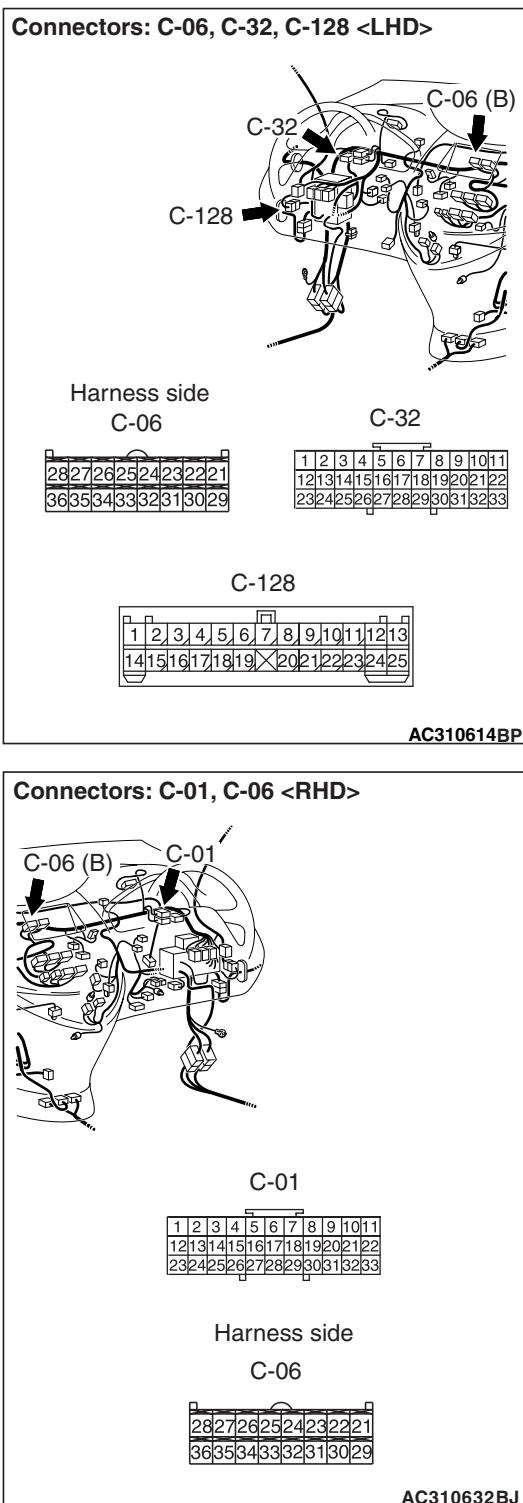
Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

(3) Voltage between C-06 multi-centre display

Step 5. Check the harness wire between ignition switch (ACC) and C-06 centre display connector terminal No.25.



Prior to the wiring harness inspection, check joint connector C-32 <LH drive vehicles>, C-01 <RH drive vehicles> or intermediate connector C-125, and repair if necessary.

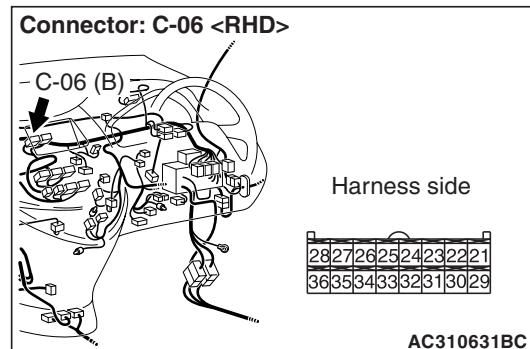
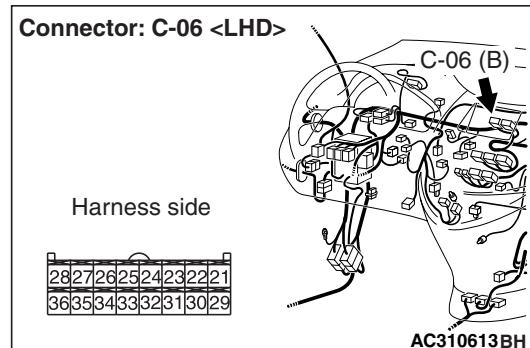
- Check the ACC power supply open circuit.

Q: Is the check result normal?

YES : Retest the system.

NO : Repair the wiring harness.

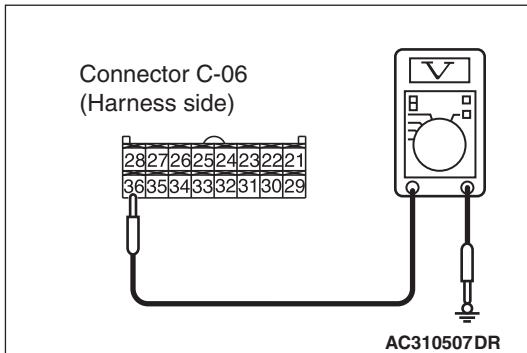
Step 6. Measure the voltage at C-06 centre display connector.



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

NOTE:

(2) Ignition switch: ON



connector terminal No.36 and body earth

OK: Battery voltage

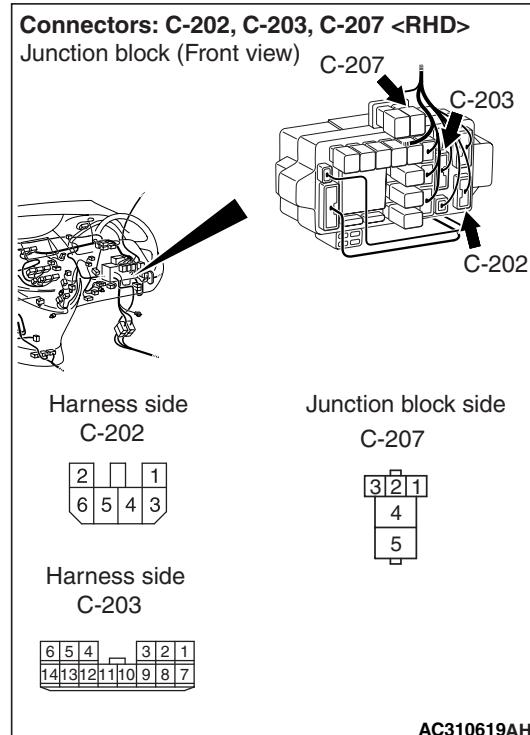
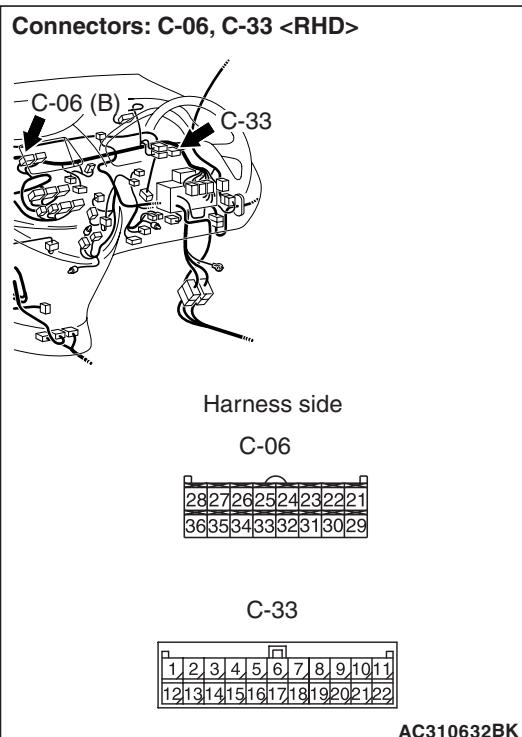
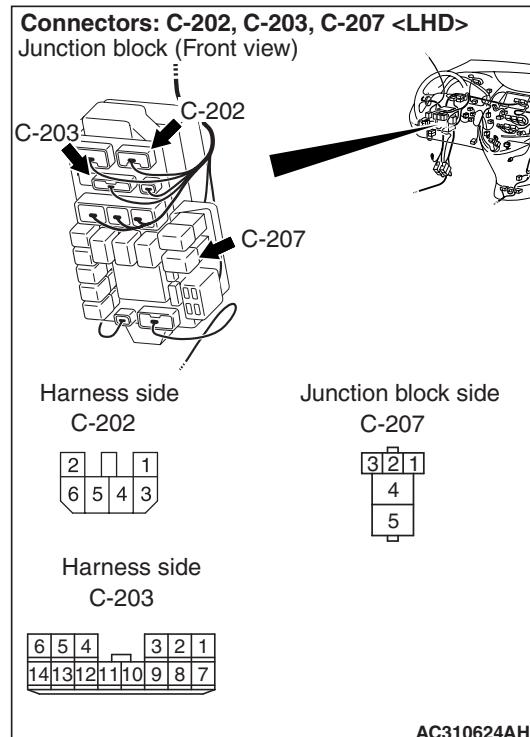
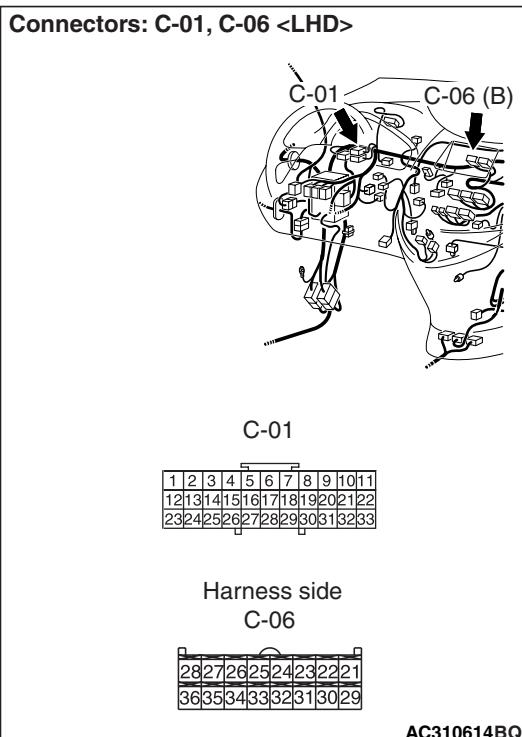
Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

(3) Voltage between C-06 multi-centre display

Step 7. Check the harness wire between ignition switch (IG1) and C-06 centre display connector terminal No.36.



Prior to the wiring harness inspection, check joint connector C-01 <LH drive vehicles>, C-33 <RH drive vehicles>, junction block connector C-207, C-202 and C-203, and repair if necessary.

- Check the IG1 power supply open circuit.

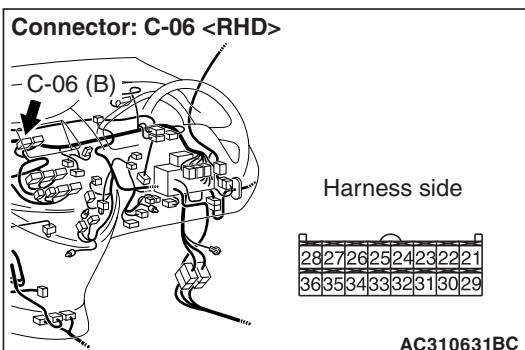
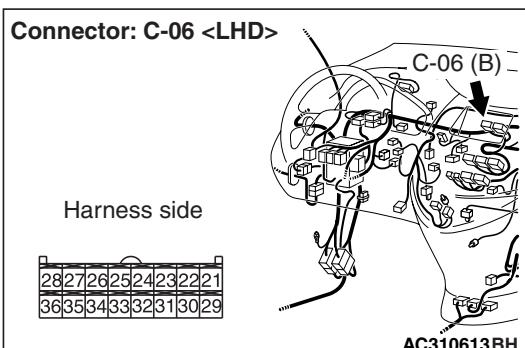
Q: Is the check result normal?

YES : Retest the system.

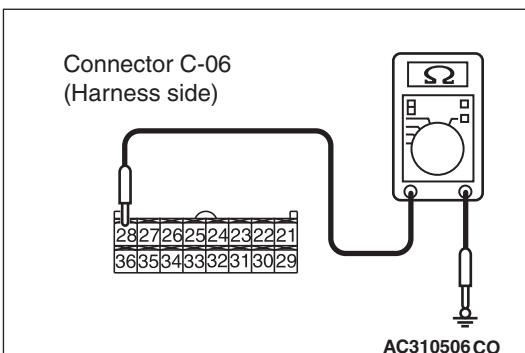
NO : Repair the wiring harness.

NOTE:

Step 8. Measure the resistance at C-06 centre display connector.



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



(2) Resistance between C-06 multi-centre display connector terminal No.28 and body earth

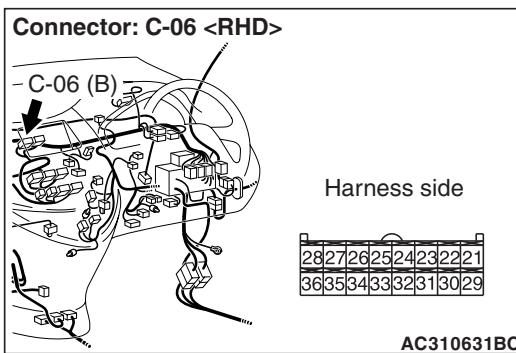
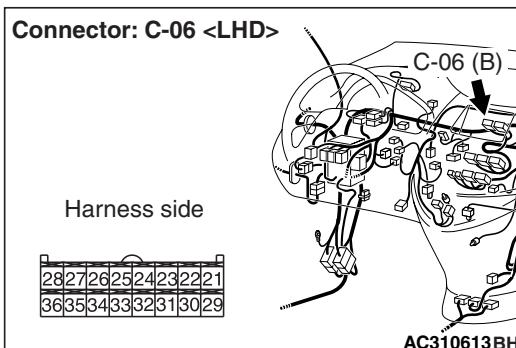
OK: $2\ \Omega$ or less

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

Step 9. Check the harness wire between C-06 centre display connector terminal No.28 and body earth.



- Check the earth wires for open circuit.

Q: Is the check result normal?

YES : Retest the system.

NO : Repair the wiring harness.

Step 10. Replace the centre display temporarily and retest the system.

Check that the multi-centre display displays correctly when the multi-centre display is replaced temporarily.

Q: Is the check result normal?

YES : Replace the multi-centre display.

NO : Go to Step 11.

Step 11. Retest the system.

Check that the multi-centre display displays correctly.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 3: The clock display is not normal.

COMMENTS ON TROUBLE SYMPTOM

The centre display unit may be defective.

POSSIBLE CAUSES

- Malfunction of centre display unit
- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Replace the centre display and retest the system.

Check that the clock display is displayed correctly when the centre display is replaced temporarily.

Q: Is the check result normal?

YES : Replace the centre display.
NO : Go to Step 2.

Step 2. Retest the system.

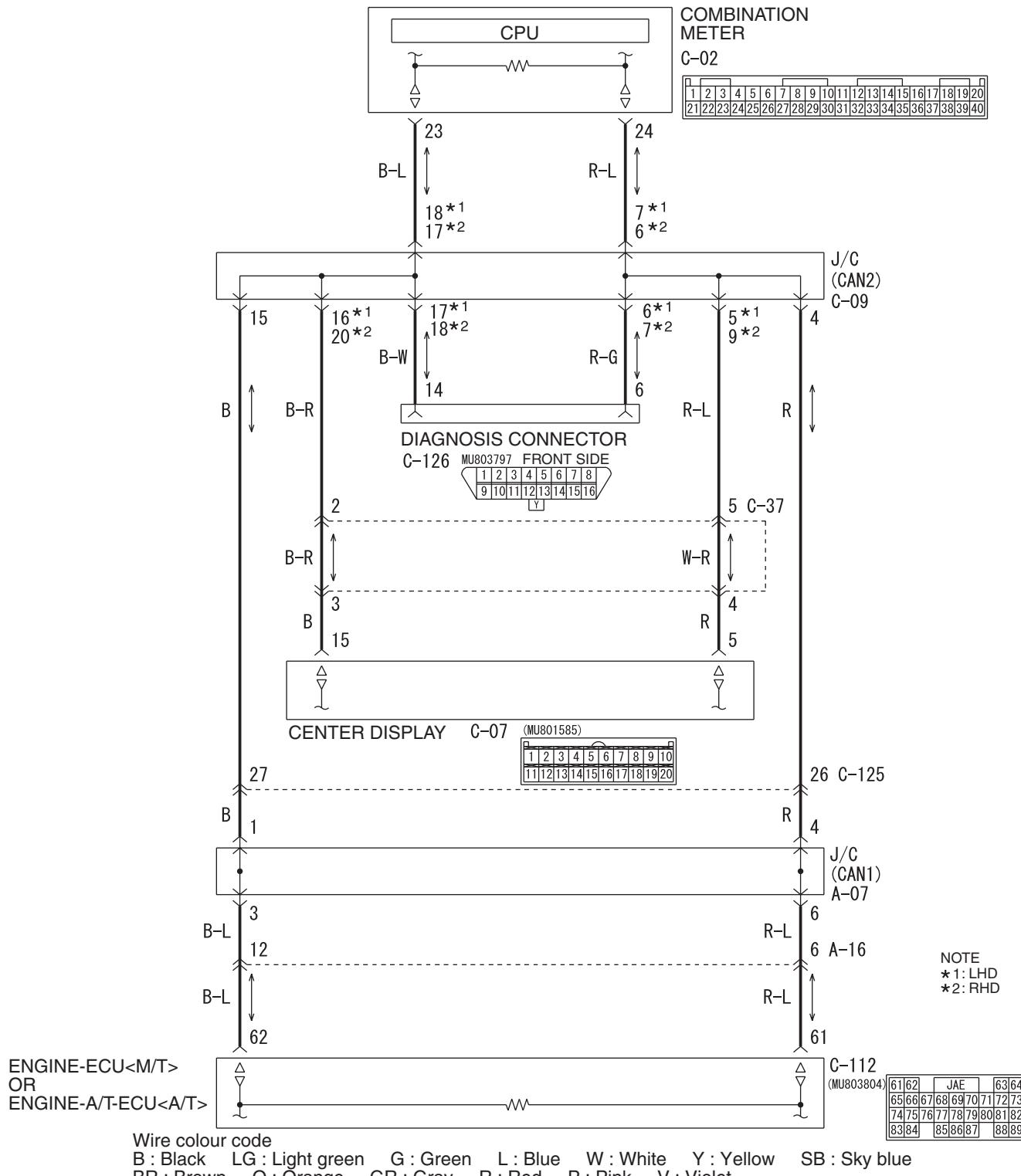
Check that the clock display is displayed on the centre display correctly.

Q: Is the check result normal?

YES : The procedure is complete.
NO : Return to Step 1.

Inspection Procedure 4: "—" is displayed on the driving information display or the display is not normal.

Center Display CAN-BUS Line Circuit



COMMENTS ON TROUBLE SYMPTOM

The CAN bus line wiring harness, connector(s), or the engine-ECU <M/T> or engine-A/T-ECU <A/T>, combination meter may be defective. But it is no problem that "—" is displayed when the average fuel consumption display or the possible cruising distance display is reset.

POSSIBLE CAUSES

- Malfunction of centre display unit
- Malfunction of combination meter
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

Step 1. MUT-III CAN bus diagnostics

Use the MUT-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostic Table [P.54D-16](#)). After diagnosing the CAN bus lines, go to Step 4.

Step 2. MUT-III other system diagnosis code

Check if an combination meter diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to [P.54A-35](#) and then go to Step 4.

NO : Replace combination meter and then go to Step 3.

Step 3. MUT-III other system diagnosis code

Check if an MPI system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to GROUP13A, Troubleshooting [P.13A-20](#) and then go to Step 4.

NO : Replace combination meter and then go to Step 4.

Step 4. Retest the system

Check if the driving information displays normally.

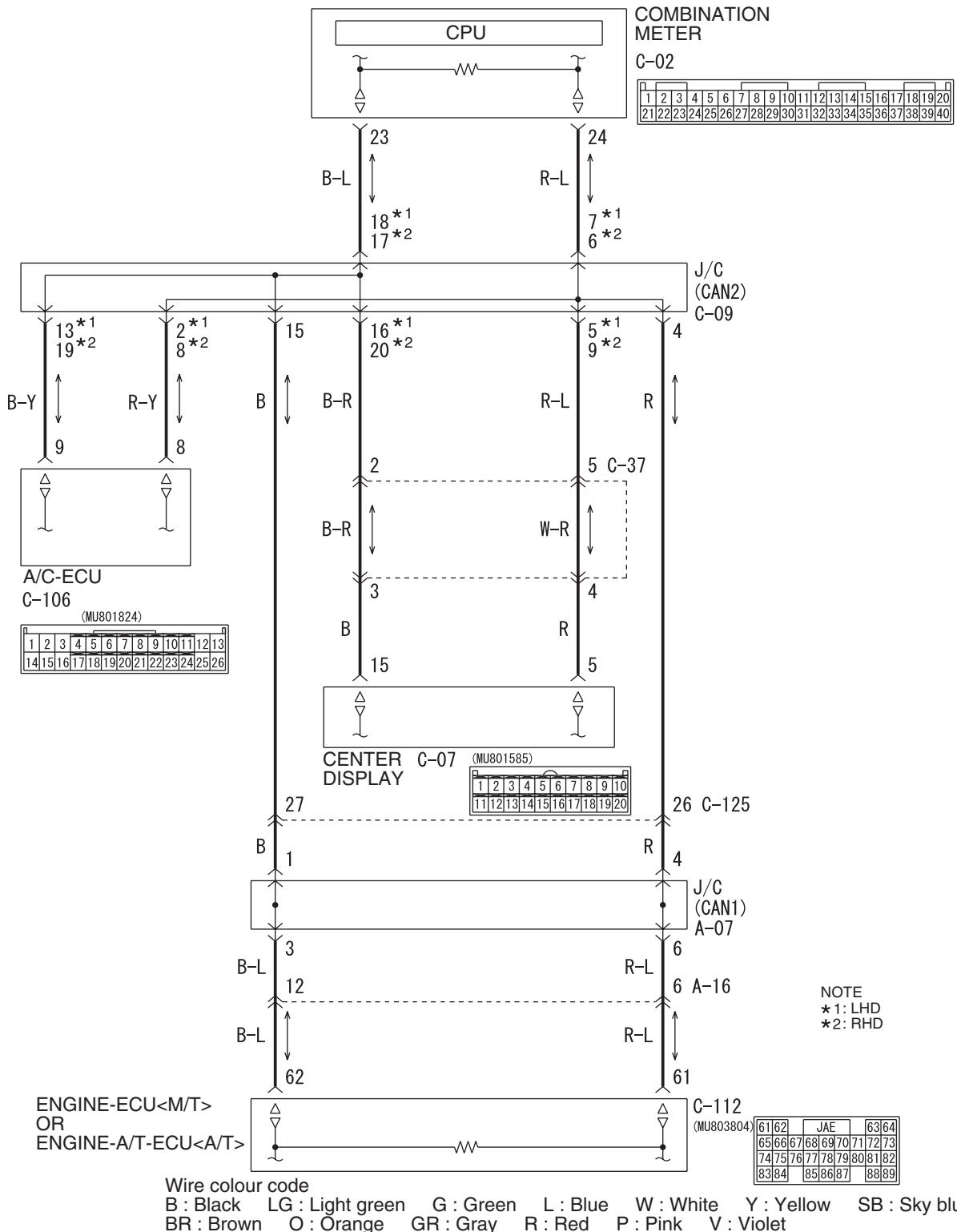
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Inspection Procedure 5: "—" is displayed on the ambient temperature display.

Circuit of Time-out During CAN Communication with A/C-ECU



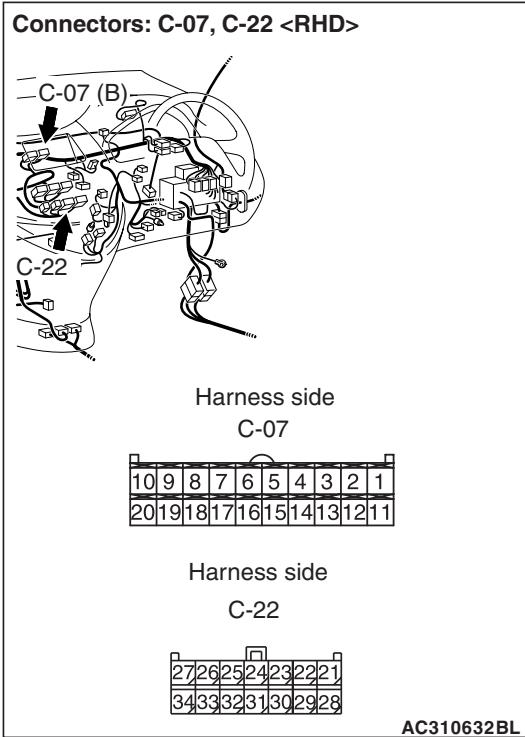
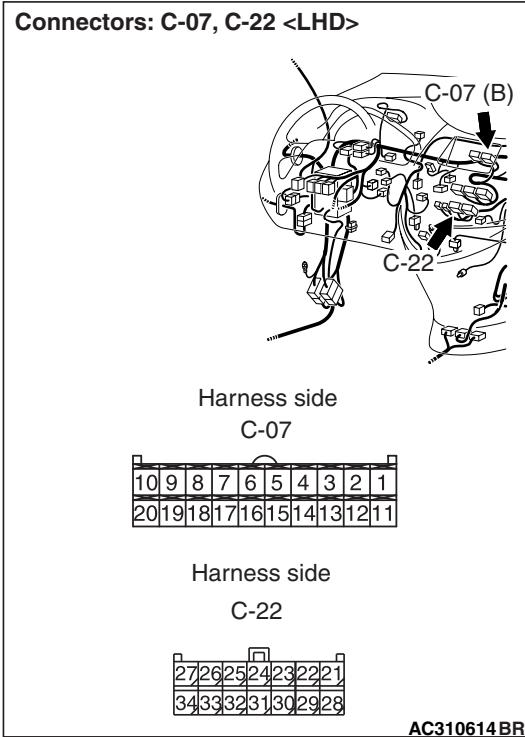
COMMENTS ON TROUBLE SYMPTOM

The CAN bus line wiring harness, connector(s), or

the A/C-ECU may be defective.

DIAGNOSTIC PROCEDURE

Step 1. Connector check: Radio and CD player connector C-22 and centre display unit connector C-07.

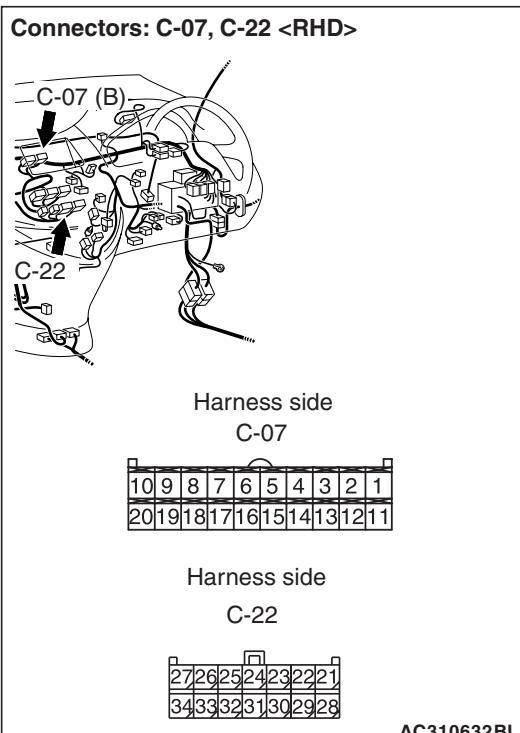
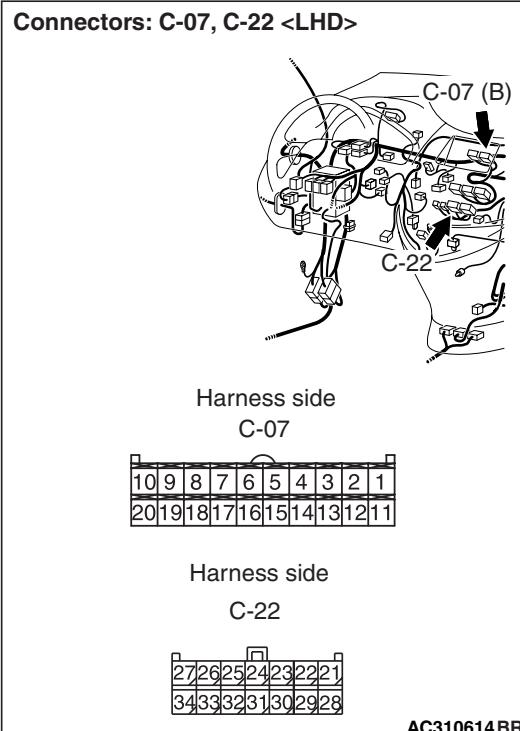


Q: Is radio and CD player connector C-22 and centre display unit connector C-07 in good condition?

YES : Go to Step 2.

NO : Repair the defective connector.

Step 2. Check the wiring harness between radio and CD player connector C-22 (terminal 26, 27 and 34) and centre display unit connector C-07 (terminal 7, 17 and 8).



Q: Is the wiring harness between radio and CD player connector C-22 (terminal 26, 27 and 34) and centre display unit connector C-07 (terminal 7, 17 and 8) in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Retest the system

Confirm that the radio and CD player operation screen is displayed normally.

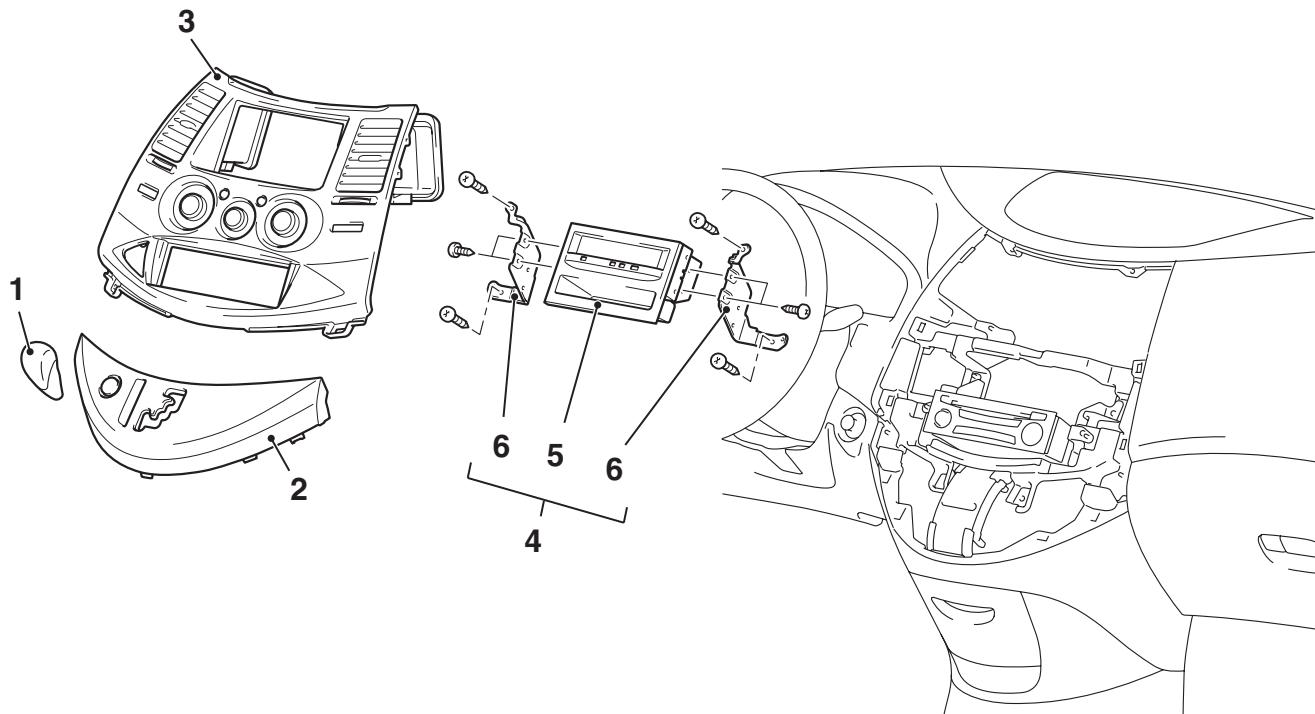
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to step 1.

CENTRE DISPLAY**REMOVAL AND INSTALLATION**

M1543029800016



AC312234 AB

Removal steps

1. Gear shift lever knob <M/T> (Refer to GROUP 22A, Transmission Control [P.22A-7](#)).
1. Selector lever knob <A/T> (Refer to GROUP 23A, Transmission Control [P.23A-141](#)).
2. Selector lever panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).

Removal steps (Continued)

3. Instrument centre panel (Refer to GROUP 52A, Instrument Panel Assembly [P.52A-2](#)).
4. Centre display unit and bracket assembly
5. Centre display unit
6. Bracket

DEFOGGER**TROUBLESHOOTING**

M1543019600174

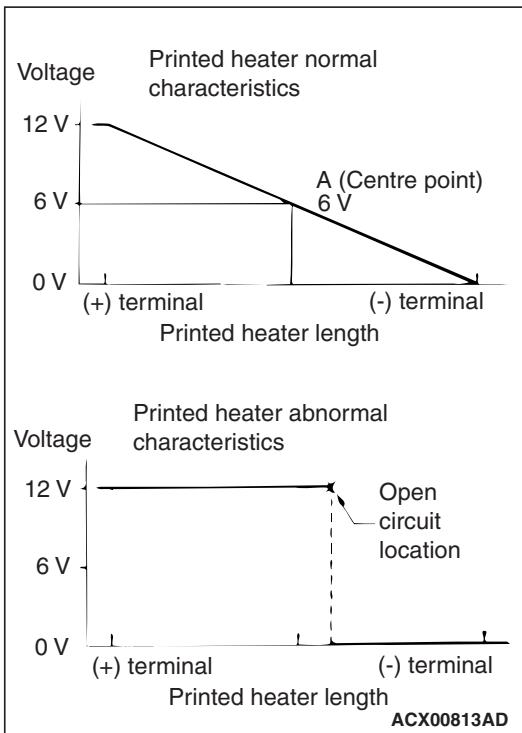
Refer to GROUP 55, Troubleshooting [P.55-43](#).

ON-VEHICLE SERVICE

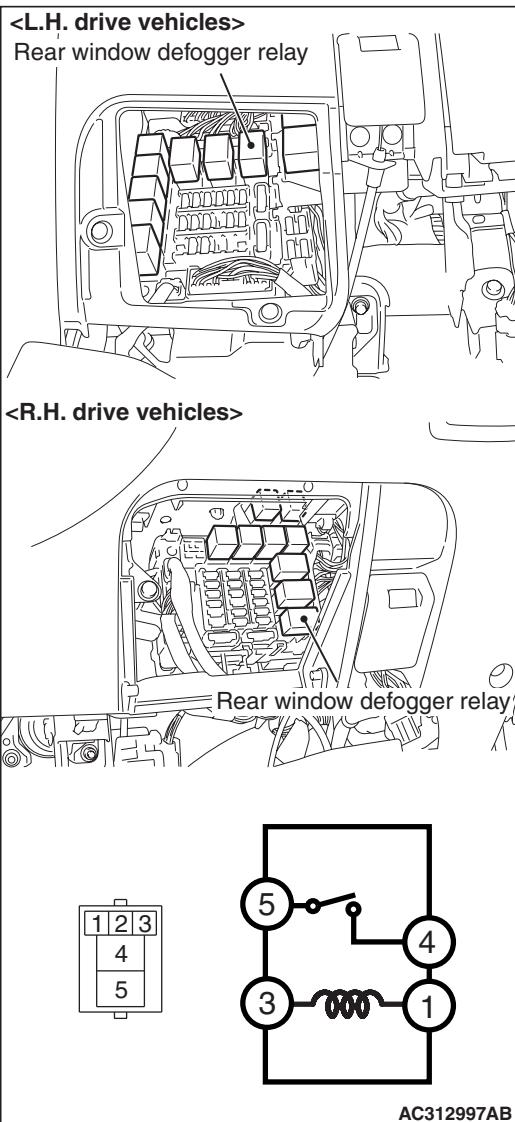
INSPECTION

PRINTED HEATER CHECK

M1543019502281



1. Run the engine at a speed of 2,000 r/min to fully charge the battery, and then check the printed heater.
2. With the defogger switch turned on, use a multimeter to measure the voltages of each printed heater at centre point A on the window glass. The printed heater is okay if 6 V is displayed.
3. If a voltage of 12 V is indicated at point A, the open circuit location is between point A and the (-) terminal to find the point where the voltage changes is the location of the open circuit.
4. In addition, if a voltage of 0 V is indicated at point A, the open circuit location is between point A and the (+) terminal. Use the same procedure as described above to find the point where the voltage changed to 12 V.

REAR WINDOW DEFROGGER RELAY
CONTINUITY CHECK

| Battery voltage | Tester connection | Specified condition |
|--|-------------------|---------------------|
| Not applied | 4 – 5 | Open circuit |
| <ul style="list-style-type: none"> • Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal | | Less than 2 ohms |

DEFROGGER SWITCH

REMOVAL AND INSTALLATION

M1543006200381

Refer to GROUP 55, Heater control unit [P.55-199](#).