# CHASSIS ELECTRICAL

## CONTENTS

54109000297



CONTINUED ON NEXT PAGE

CONTINUED ON NEXT PAGE

**HEADLAMP WASHER**
**. . . . . Refer to GROUP 51**

**DOOR MIRROR (ELECTRONIC CONTROLLED DOOR MIRROR)**
**. . . . . Refer to GROUP 51**

**FRONT SEAT (HEATED SEAT)**
**. . . . . Refer to GROUP 52A**

**SRS AIR BAG**
**. . . . . Refer to GROUP 52B**

**HEATER . . . . . Refer to GROUP 55**

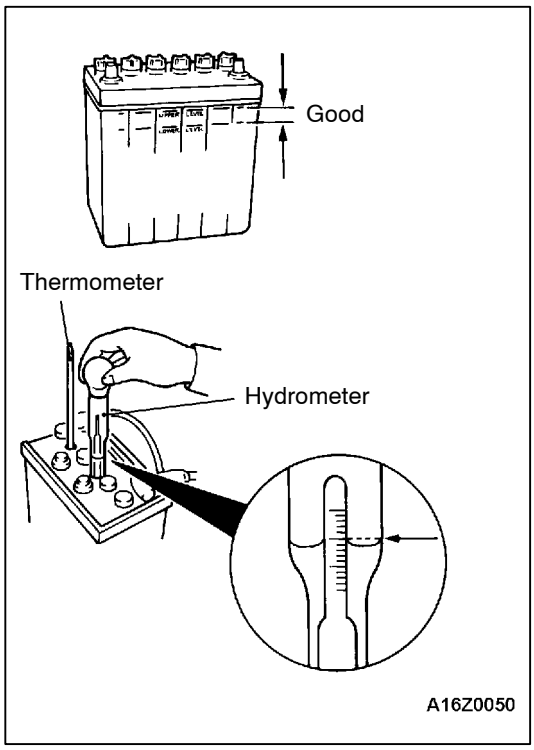
**AIR CONDITIONER**
**. . . . . Refer to GROUP 55**

# BATTERY

54100030028

## SERVICE SPECIFICATION

| Item | Specification |
|---|---|
| Specific gravity of the battery fluid | 1.220 – 1.290 [20°C] |




## ON-VEHICLE SERVICE

54100090064

### FLUID LEVEL AND SPECIFIC GRAVITY CHECK

1. Inspect whether or not the battery fluid is between the UPPER LEVEL and LOWER LEVEL marks.
2. Use a hydrometer and thermometer to check the specific gravity of the battery fluid.

   **Standard value: 1.220 – 1.290 [20°C]**

   The specific gravity of the battery fluid varies with the temperature, so use the following formula to calculate the specific gravity for 20°C. Use the calculated value to determine whether or not the specific gravity is satisfactory.

   **D20=Dt+0.0007 (t – 20)**

   **D20: Specific gravity of the battery fluid calculated for 20°C.**

   **Dt: Actually measured specific gravity**

   **t: Actually measured temperature**

## CHARGING

54100110029

1. When charging a battery while still installed in the vehicle, disconnect the battery cables to prevent damage to electrical parts.
2. The current normally used for charging a battery should be approximately 1/10th of the battery capacity.
3. When performing a quick-charging due to lack of time, etc., the charging current should never exceed the battery capacity as indicated in amperes.
4. Determining if charging is completed.
   (1) If the specific gravity of the battery fluid reaches 1.250–1.290 and remains constant for at least one hour.
   (2) If the voltage of each cell reaches 2.5–2.8 V and remains constant for at least one hour.

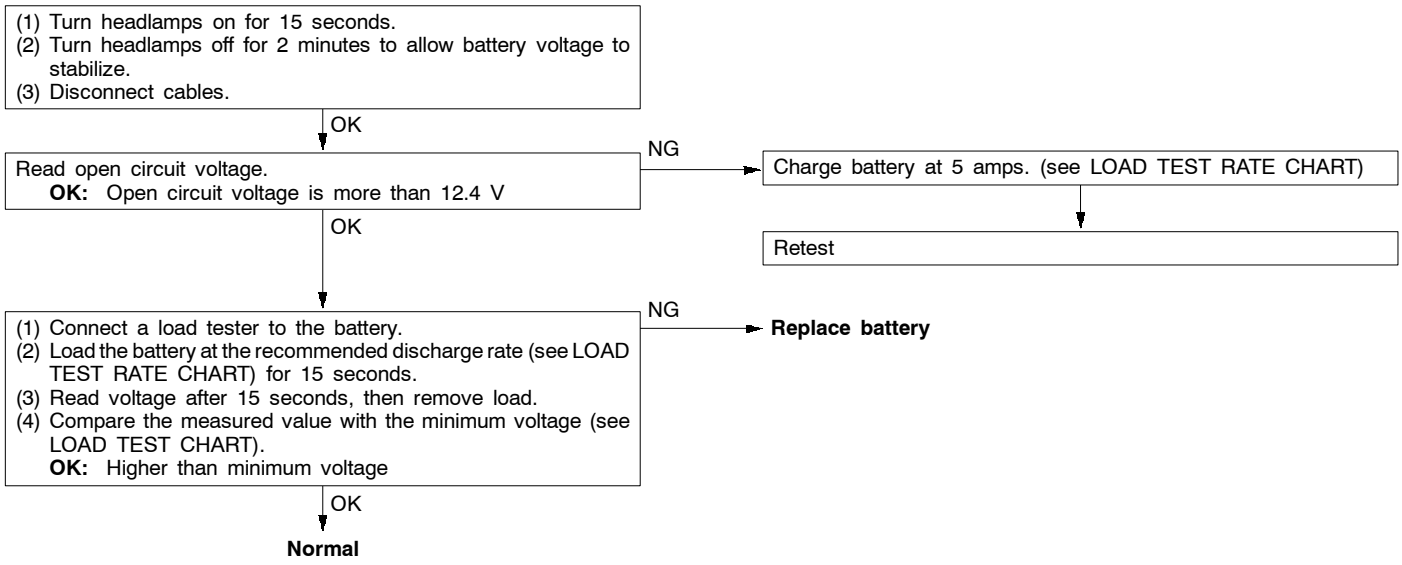
**Caution**

**(1) Be careful since the battery fluid level may rise during charging.**
**(2) Keep all sources of fire away while charging because there is a danger of explosion.**
**(3) Be careful not to do anything that could generate sparks while charging.**
**(4) When charging is completed, replace the battery caps, pour clean water over the battery to remove any sulfuric acid and dry.**

## BATTERY TESTING PROCEDURE

54100120237

### TEST STEP




### LOAD TEST RATE CHART

| Battery type | 75D26R | 80D26R | 95D31R |
|---|---|---|---|
| Charging time when fully discharged h [5-amp rated current charging] | 12 | 12 | 14 |
| Load test (Amps) | 240 | 290 | 310 |

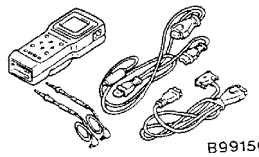
### LOAD TEST CHART

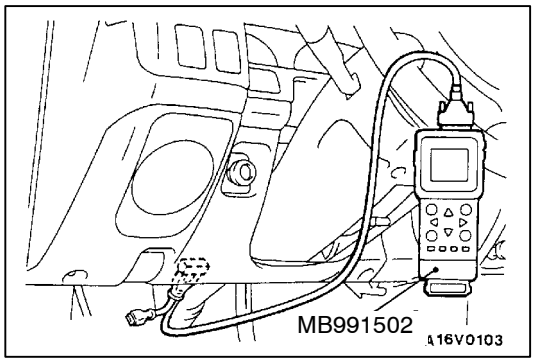
| Temperature °C | 21 and above | 16 | 10 | 4 | –1 | –7 | –12 | –18 |
|---|---|---|---|---|---|---|---|---|
| Minimum voltage V | 9.6 | 9.5 | 9.4 | 9.3 | 9.1 | 8.9 | 8.7 | 8.5 |

# IGNITION SWITCH AND IMMOBILIZER SYSTEM

54300060528

## SPECIAL TOOL

| Tool | Number | Name | Use |
|---|---|---|---|
|  B991502 | MB991502 | MUT-II sub assembly | • ETACS-ECU input signal checking<br>• Immobilizer system check (Diagnosis display using the MUT-II)<br>• Registration of the ID code<br>• Resetting the code to the factory setting <4D5><br>• Change of the password |




## TROUBLESHOOTING
## Ignition Switch

54300700185

### DIAGNOSIS FUNCTION

#### INPUT SIGNAL INSPECTION POINTS

1. Connect the MUT-II to the diagnosis connector.
2. If buzzer of the MUT-II sounds once when a switch is operated (ON/OFF), the ETACS-ECU input signal for that switch circuit system is normal.

### INSPECTION CHART FOR TROUBLE SYMPTOMS

54300720747

| Trouble symptoms | | Inspection procedure | Reference page |
|---|---|---|---|
| Communication with MUT-II is impossible. | Communication with all systems is impossible. | 1 | 54-8 |
| | Communication with one-shot pulse input signal only is impossible. | 2 | 54-8 |
| Ignition key hole illumination lamp system | Even if the driver's side door is opened, the key hole illumination lamp does not illuminate. | 3 | 54-9 |
| | The key hole illumination lamp remains illuminated. | 4 | 54-9 |

## INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

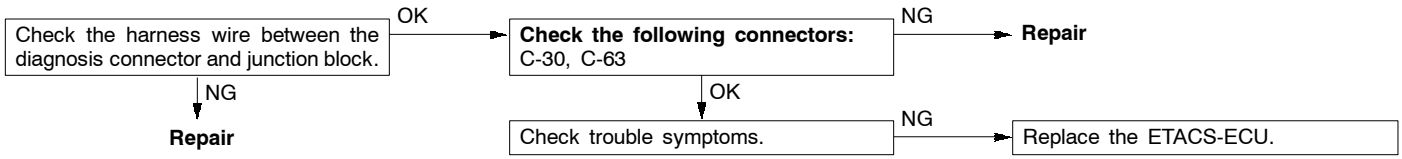
### Inspection Procedure 1

| Communication with MUT-II is impossible. (Communication with all systems is impossible.) | Probable cause |
|---|---|
| The cause is probably a defective power supply system (including earth) for the diagnosis line. | • Malfunction of connector<br>• Malfunction of harness wire |

Refer to GROUP 13A – Troubleshooting.

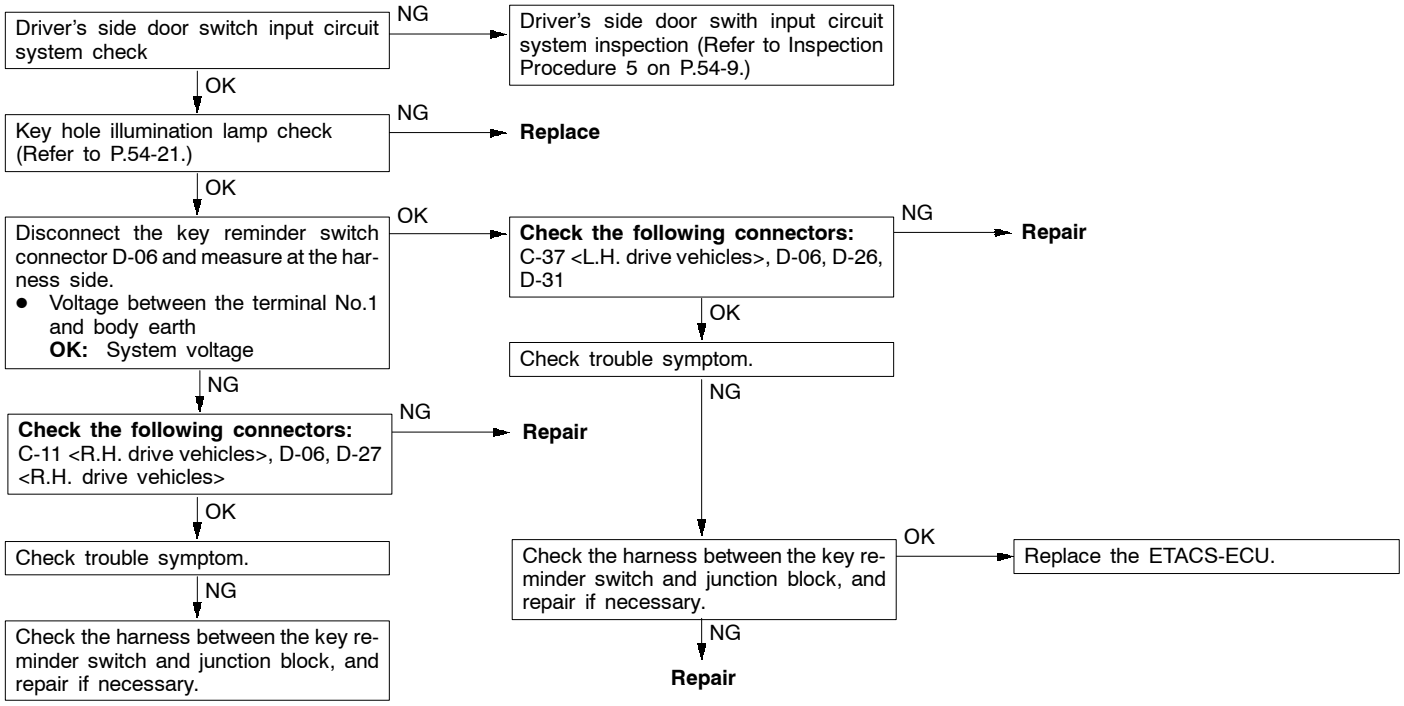
### Inspection Procedure 2

| Communication with MUT-II is impossible. (Communication with the one-shot pulse input signal only is impossible.) | Probable cause |
|---|---|
| The cause is probably a defective one-shot pulse input circuit system of the diagnosis line. | • Malfunction of connector<br>• Malfunction of harness wire<br>• Malfunction of ETACS-ECU |



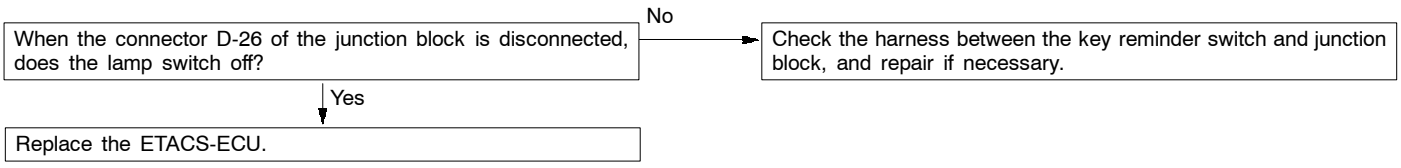
## Inspection Procedure 3

| Even if the driver's side door is opened, the key hole illumination lamp does not illuminate. | Probable cause |
|---|---|
| The cause is probably a defective key hole illumination lamp circuit system or a defective driver's side door switch input circuit system. | • Malfunction of driver's side door switch<br>• Malfunction of key hole illumination lamp<br>• Malfunction of harness or connector<br>• Malfunction of ETACS-ECU |



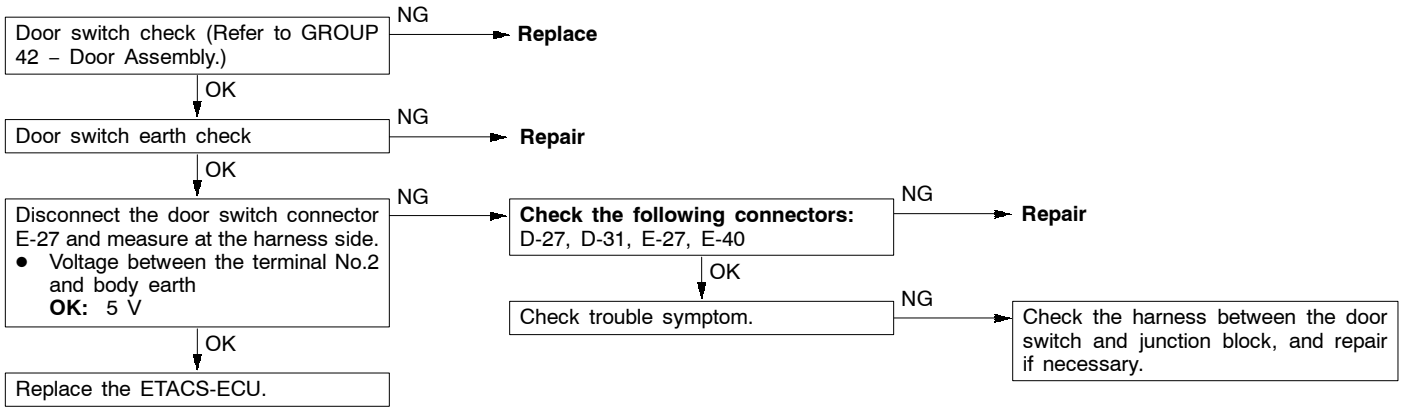

## Inspection Procedure 4

| Key hole illumination lamp remains illuminated. | Probable cause |
|---|---|
| The cause is probably a short harness or a defective ETACS-ECU. | • Malfunction of harness<br>• Malfunction of ETACS-ECU |



**Inspection Procedure 5**

**Driver's side door switch input circuit system check**




# Immobilizer System

54300690130

**Caution**

1. **The encrypted code should always be re-registered when replacing the immobilizer-ECU. <6G7>**
2. **If the immobilizer-ECU has been replaced, you will need to re-register the ignition key encrypted codes and to reset the code for the fuel cut valve controller to the factory setting. <4D5>**
3. **If the immobilizer-ECU has been replaced with a new part, the password (vehicle secret code) which has been stored in the immobilizer-ECU for each vehicle will be replaced by the password (secret code) specified by the customer.**

## STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to GROUP 00 – How To Use Troubleshooting/Inspection Service Points.

## DIAGNOSIS FUNCTION

54300700192

### DIAGNOSIS CODES CHECK

Refer to GROUP 00 – How To Use Troubleshooting/Inspection Service Points.

### ERASING DIAGNOSIS CODES

Refer to GROUP 00 – How To Use Troubleshooting/Inspection Service Points.

**Caution**

**The diagnosis codes which result from disconnecting the battery cables cannot be erased.**

## INSPECTION CHART FOR DIAGNOSIS CODES <6G7>

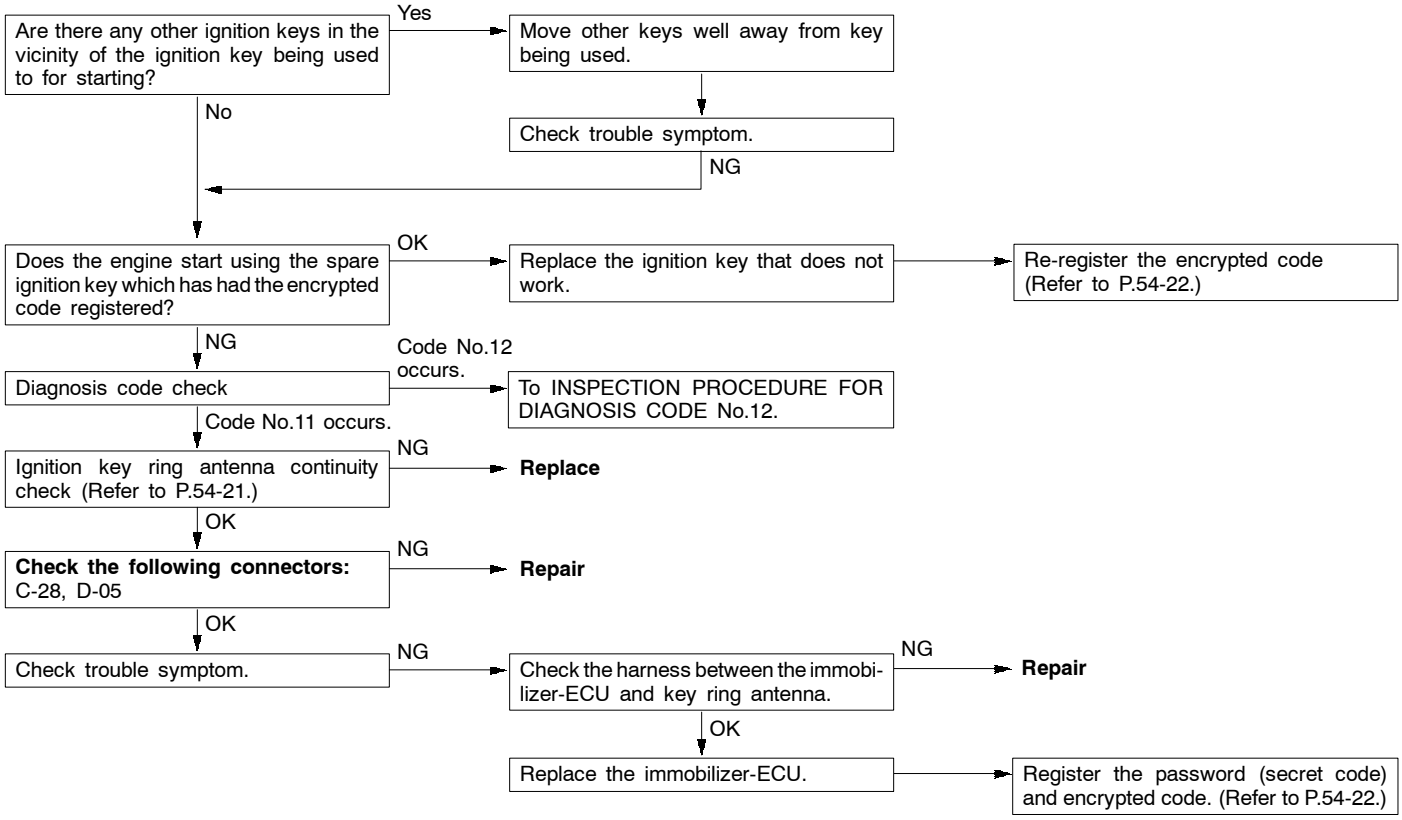
54300710119

| Diagnosis code No. | Inspection items | Reference page |
|---|---|---|
| 11 | Transponder communication system or radio interference of encrypted code | 54-11 |
| 12 | Encrypted code are not the same or are not registered | 54-11 |

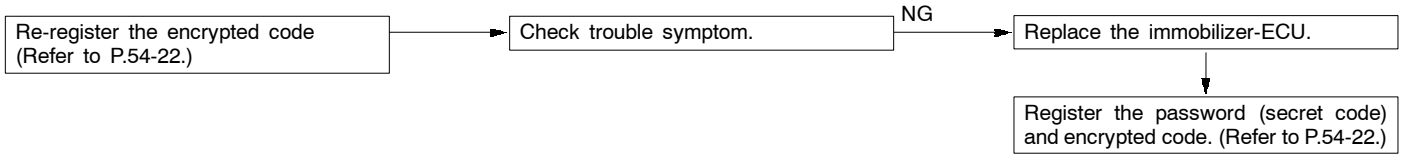
NOTE
Diagnosis code is not recorded.

## INSPECTION PROCEDURE FOR DIAGNOSIS CODES <6G7>

| Code No.11 Transponder communication system or radio interference of encrypted code | Probable cause |
|---|---|
| • The encrypted code of the transponder is not sent to the immobilizer-ECU immediately after the ignition switch is turned to ON position.<br>• If the engine is started while several ignition keys are in the vicinity, then interference between the different keys may occur, which will cause this code to be generated. | • Radio interference of encrypted code<br>• Malfunction of transponder<br>• Malfunction of ignition key ring antenna<br>• Malfunction of harness or connector<br>• Malfunction of immobilizer-ECU |




| Code No.12 Encrypted codes are not the same or not registered. | Probable cause |
|---|---|
| The encrypted code which is sent from the transponder is not the same as the encrypted code which is registered in the immobilizer-ECU. | • The encrypted code in the ignition key being used has not been properly registered.<br>• Malfunction of immobilizer-ECU |



## INSPECTION CHART FOR DIAGNOSIS CODES <4D5>

54300710126

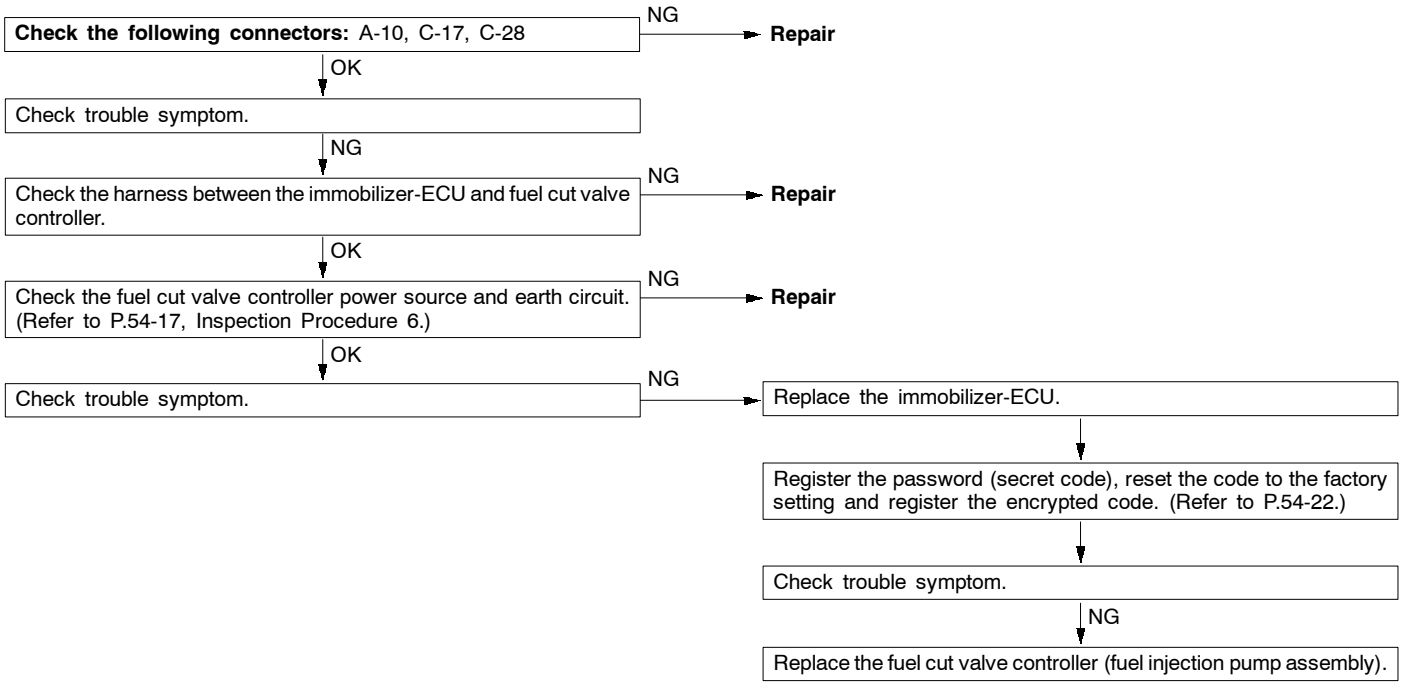
| Diagnosis code No. | Inspection items | Reference page |
|---|---|---|
| 11* | Transponder communication system or radio interference of encrypted code | 54-11 |
| 12* | Encrypted codes are not the same or not registered | 54-11 |
| 21 | Communication system between fuel cut valve controller and immobilizer-ECU | 54-12 |
| 22 | Malfunction of fuel cut valve controller system | 54-13 |
| 23* | Identification codes are not identical | 54-13 |

NOTE
*: diagnosis code Nos. 11, 12, 23 are recorded.

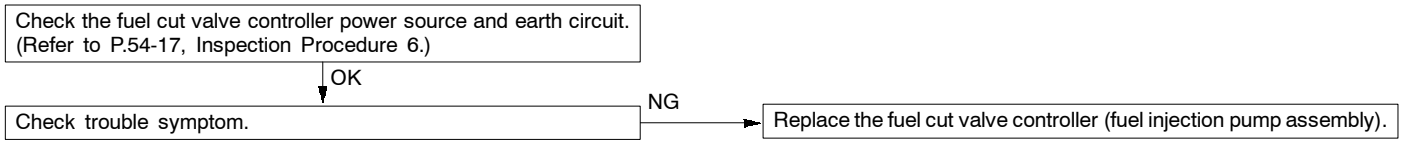
## INSPECTION PROCEDURE FOR DIAGNOSIS CODES <4D5>

For diagnosis code numbers other than those listed below, refer to “INSPECTION PROCEDURE FOR DIAGNOSIS CODES <6G7>”.

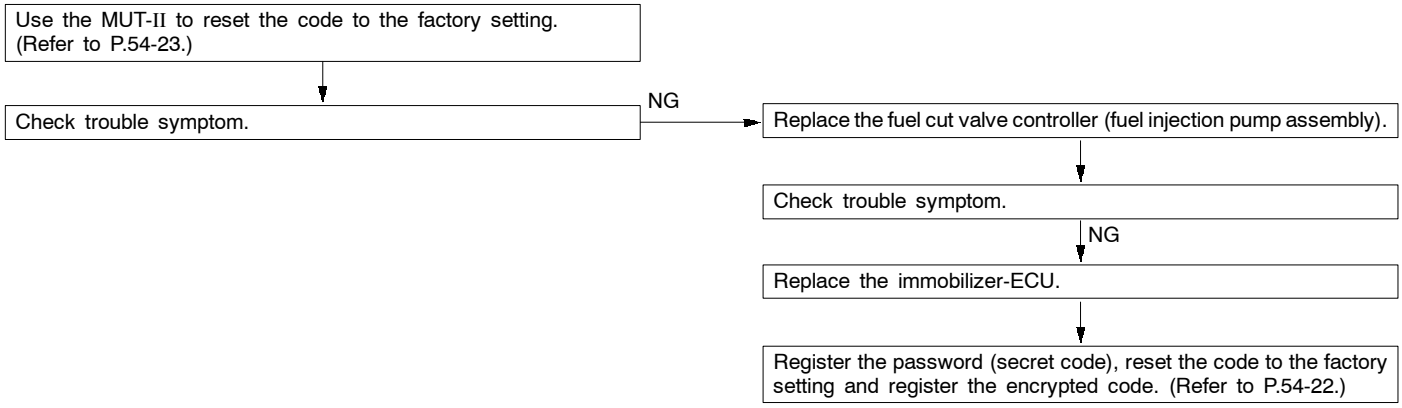
| **Code No.21 Communication system between fuel cut valve controller and immobilizer-ECU** | **Probable cause** |
|---|---|
| The confirmation code is not sent from the fuel cut valve controller within the specified time after the ignition key is turned to ON or, an incorrect code is sent. | • Malfunction of harness or connector<br>• Malfunction of fuel cut valve controller<br>• Malfunction of immobilizer-ECU |



| Code No.22 Malfunction of fuel cut valve controller system | Probable cause |
|---|---|
| The cause is probably a malfunction of the fuel cut valve controller. | • Malfunction of fuel cut valve controller |




| Code No.23 Identification codes are not identical | Probable cause |
|---|---|
| The identification code received from the immobilizer-ECU is not identical to the identification code that has been recorded in the fuel cut valve controller. | • Resetting the code to the factory setting is not made using the MUT-II<br>• Malfunction of fuel cut valve controller |




## INSPECTION CHART FOR TROUBLE SYMPTOMS

54300720754

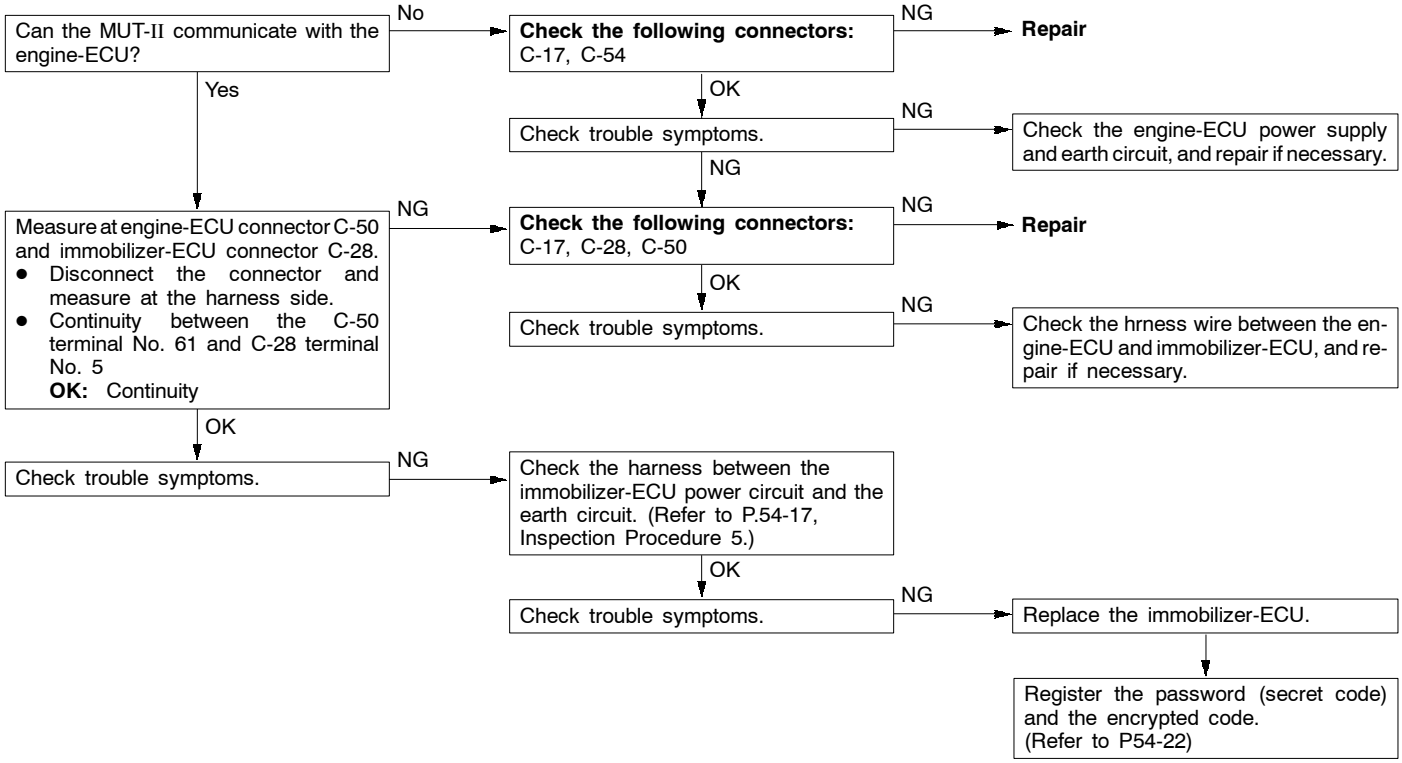
| Trouble symptom | Inspection procedure No. | Reference page |
|---|---|---|
| Communication with MUT-II is impossible | 1 | 54-14 |
| Encrypted code cannot be registered using the MUT-II | 2 | 54-15 |
| Engine does not start (Cranking but no initial combustion). <6G7> | 3 | 54-15 |
| Engine does not start (Cranking but no initial combustion). <4D5> | 4 | 54-16 |
| Malfunction of the immobilizer-ECU power source and earth circuit | 5 | 54-17 |
| Malfunction of the fuel cut valve controller power source and earth circuit <4D5> | 6 | 54-17 |

# INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

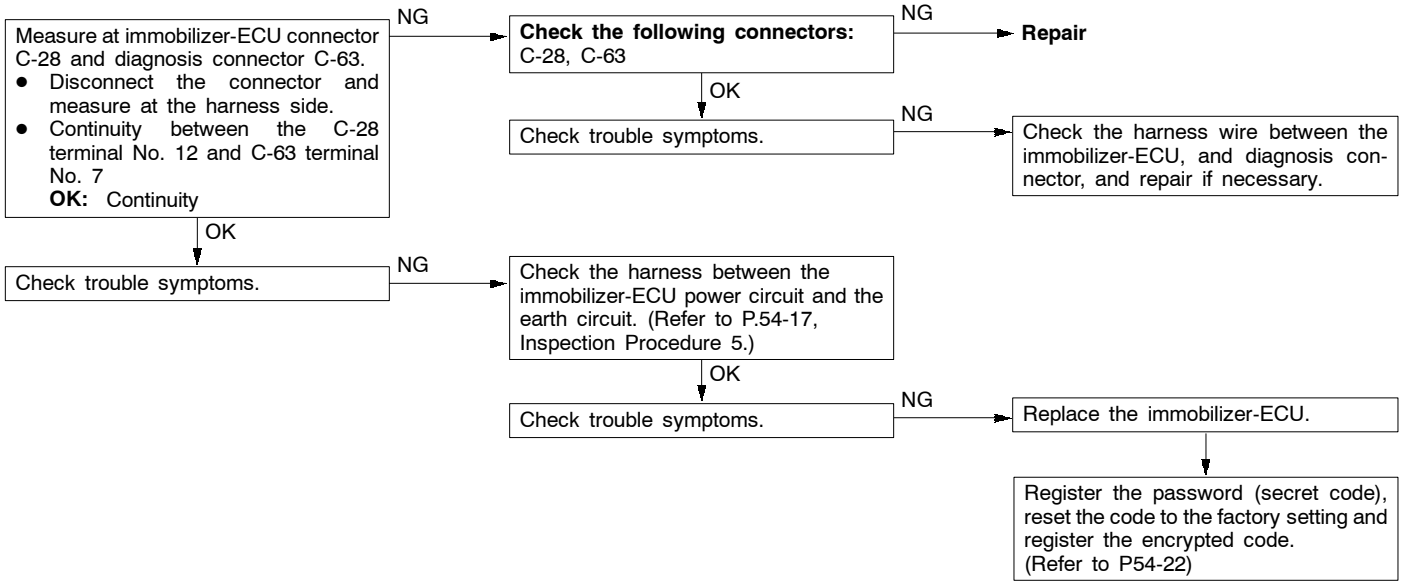
## Inspection Procedure 1

| Communication with MUT-II is impossible | Probable cause |
|---|---|
| The cause is probably that a malfunction of the diagnosis line or the immobilizer-ECU ia not functioning. | • Malfunction of diagnosis line<br>• Malfunction of harness or connector<br>• Malfunction of immobilizer-ECU |

**<6G7>**

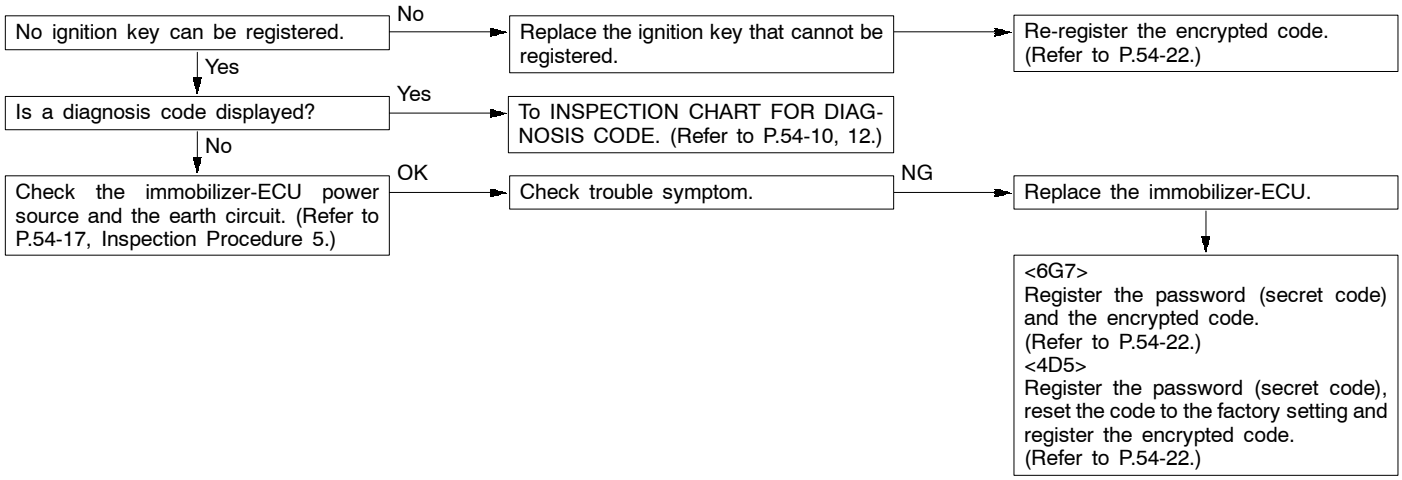



**<4D5>**



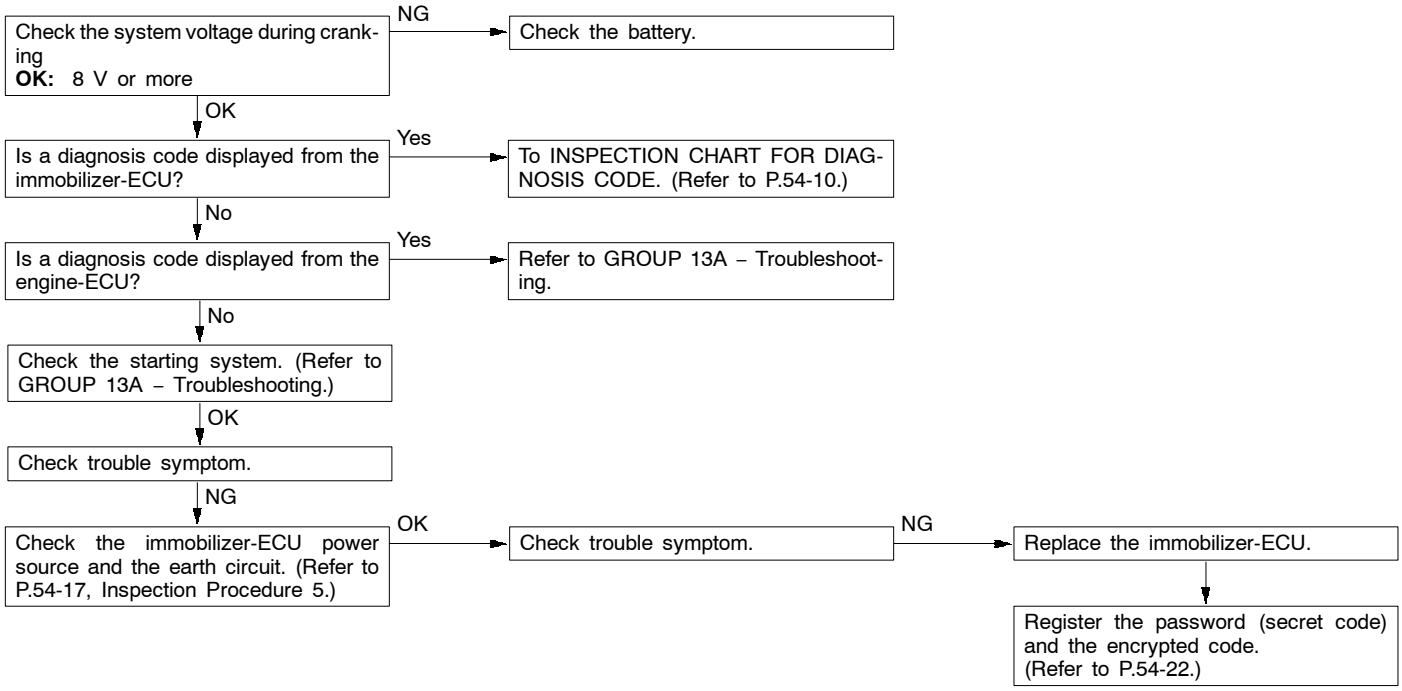
## Inspection Procedure 2

| Encrypted code cannot be registered using the MUT-II | Probable cause |
|---|---|
| The cause is probably that there is no encrypted code registered in the immobilizer-ECU or there is a malfunction of the immobilizer-ECU. | • Malfunction of transponder<br>• Malfunction of ignition key ring antenna<br>• Malfunction of harness or connector<br>• Malfunction of immobilizer-ECU |



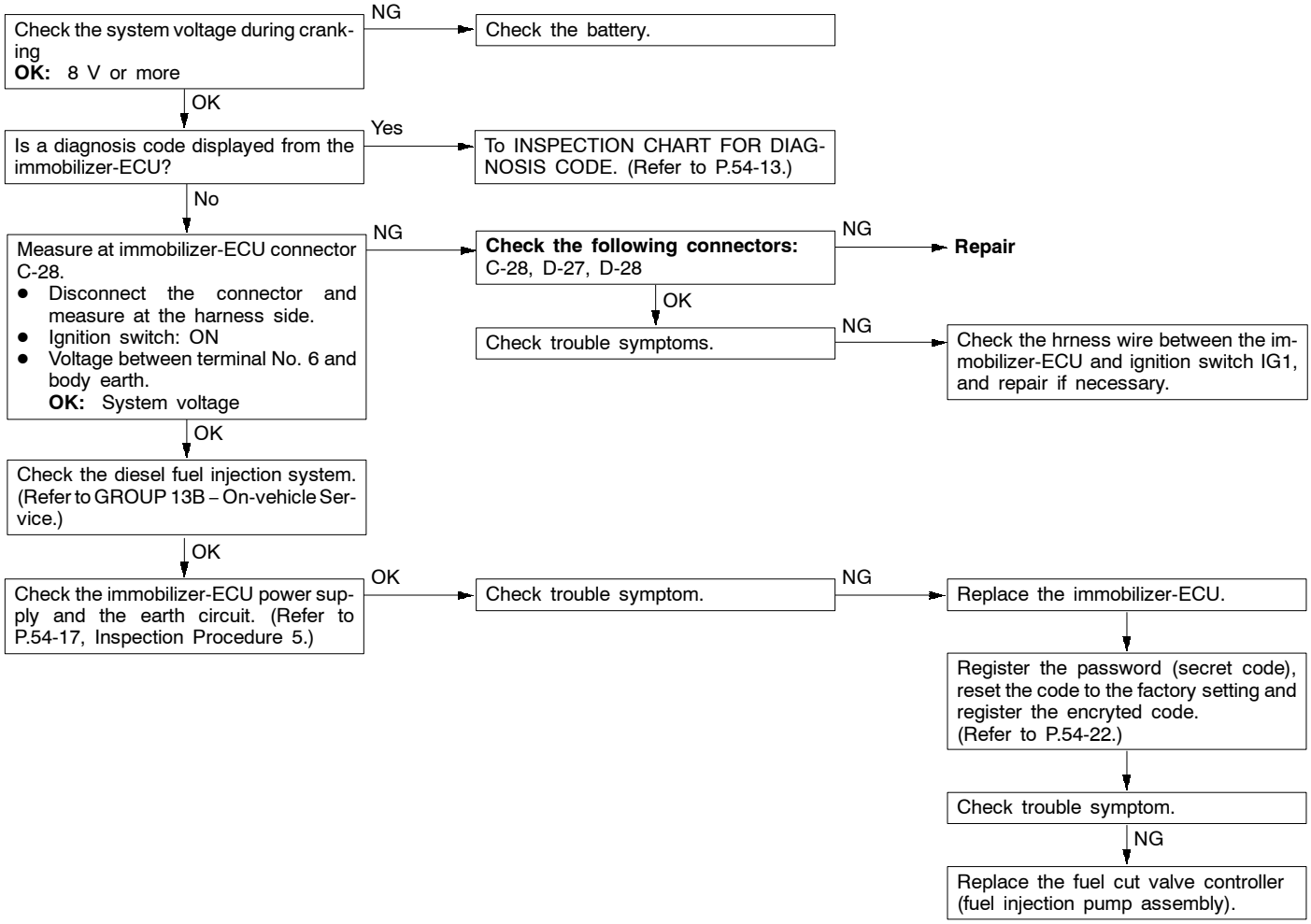

## Inspection Procedure 3

| Engine does not start (Cranking but no initial combustion). <6G7> | Probable cause |
|---|---|
| If the fuel injectors are not operating, there might be a problem with the MPI system in addition to a malfunction of the immobilizer system.<br>It is normal for this to occur if an attempt is made to start the engine using a key that has not been properly registered. | • Malfunction of MPI system<br>• Malfunction of immobilizer-ECU |



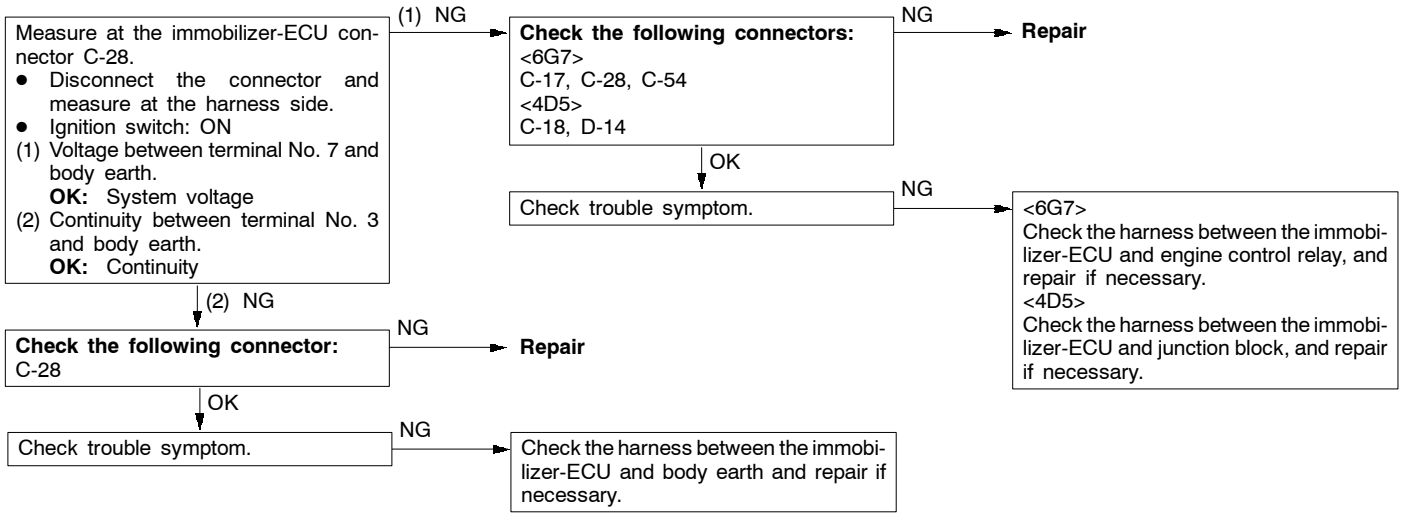
## Inspection Procedure 4

| Engine does not start (Cranking but no initial combustion). <4D5> | Probable cause |
|---|---|
| If no fuel injection, there might be a problem with the fuel injection system in addition to a malfunction of the immobilizer system.<br>It is normal for this to occur if an attempt is made to start the engine using a key that has not been properly registered. | • Malfunction of diesel fuel injection system<br>• Malfunction of immobilizer-ECU |



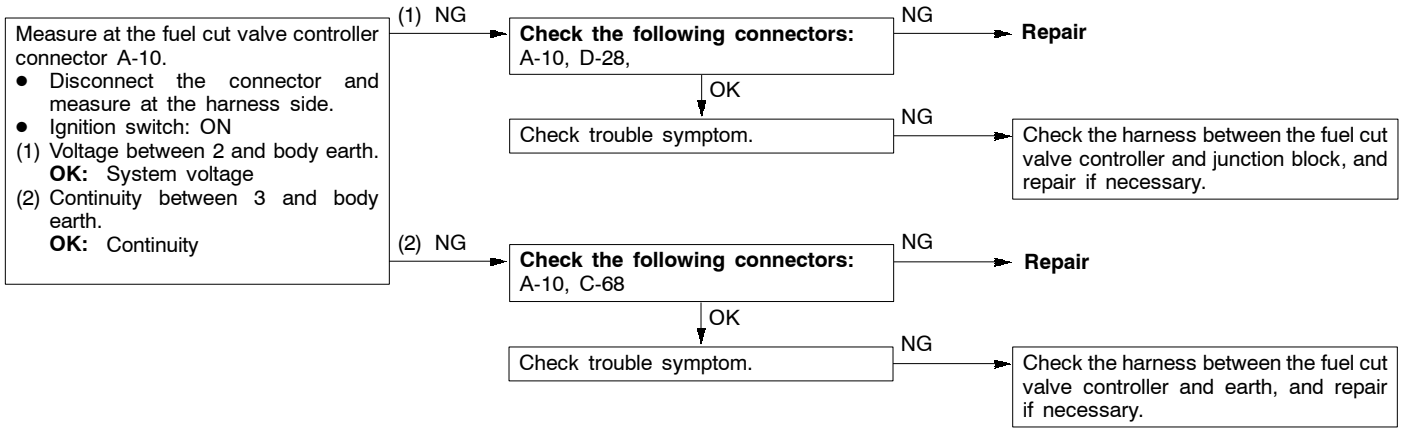
## Inspection Procedure 5

### Malfunction of the immobilizer-ECU power source and earth circuit




## Inspection Procedure 6

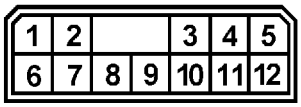
### Malfunction of the fuel cut valve controller power source and earth circuit <4D5>



## CHECK AT IMMOBILIZER-ECU

54300760053

### Terminal Voltage Check Chart



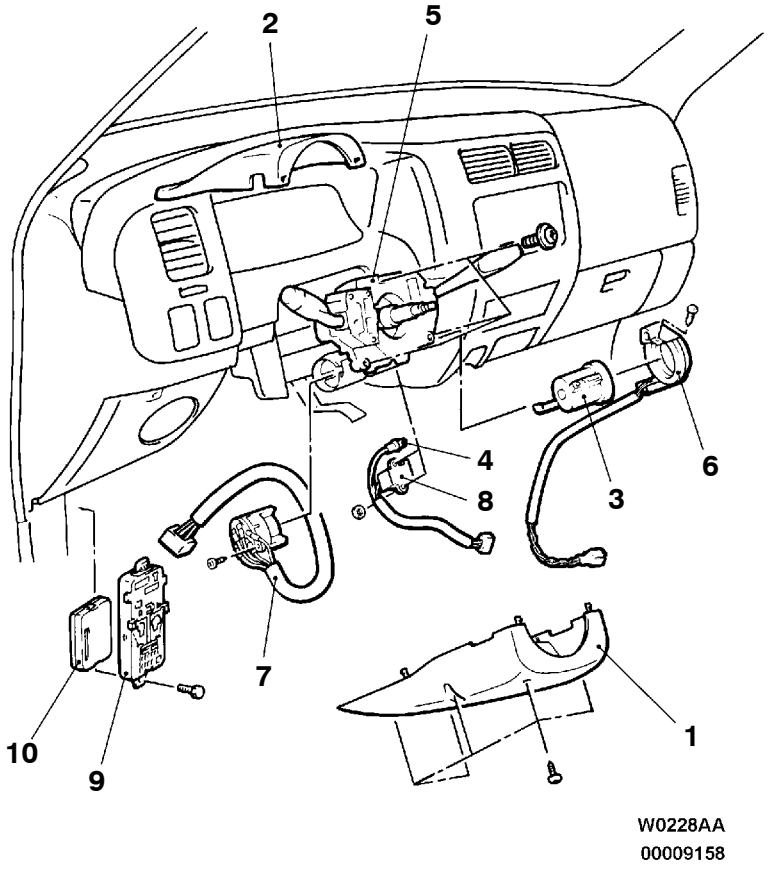

20F0191

| Terminal No. | Signal | Checking requirements | Terminal voltage |
|---|---|---|---|
| 3 | Immobilizer-ECU earth | Always | 0 V |
| 6 | Ignition switch-IG <4D5> | Ignition switch: OFF | 0 V |
| | | Ignition switch: ON | System voltage |
| 7 | Immobilizer-ECU power supply <6G7> | Always | System voltage |
| | Immobilizer-ECU power supply <4D5> | Ignition switch: OFF or approx. 5 or more seconds after switch has been turned from ON to OFF. | 0 V |
| | | Ignition switch: ON or within approx. 5 seconds after switch has been turned from ON to OFF. | System voltage |

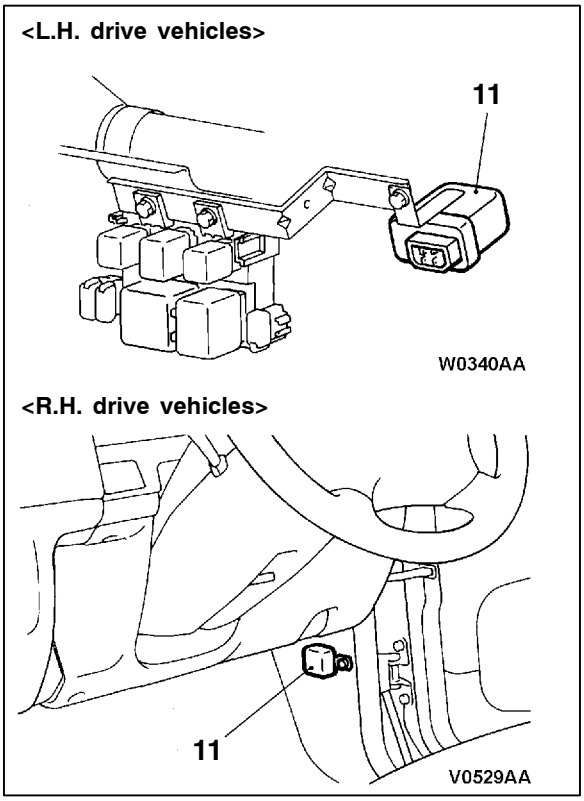
# IGNITION SWITCH AND IMMOBILIZER SYSTEM

54300210367

## REMOVAL AND INSTALLATION




W0228AA
00009158




**Steering lock cylinder and key hole illumination lamp removal steps**

- Driver's side under cover or knee protector assembly (Refer to GROUP 52A – Instrument Panel.)

1. Column cover, lower
2. Column cover, upper

◀A▶

3. Steering lock cylinder
4. Key hole illumination lamp

**Ignition switch, key reminder switch and ignition key ring antenna removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- Clock spring (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
- Driver's side under cover or knee protector assembly (Refer to GROUP 52A – Instrument Panel.)

1. Column cover, lower
2. Column cover, upper

▶A◀

5. Column switch assembly
6. Ignition key ring antenna
7. Ignition switch
8. Key reminder switch

**ETACS-ECU removal steps**

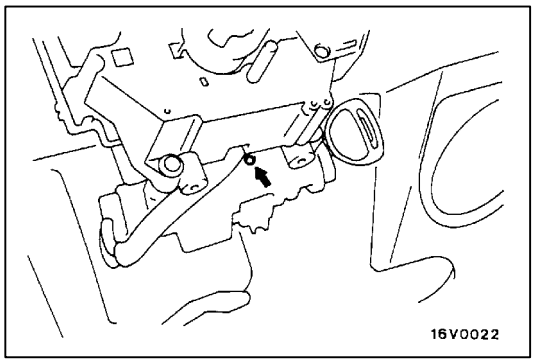
- Driver's side under cover or knee protector assembly (Refer to GROUP 52A – Instrument Panel.)

9. Junction block
10. ETACS-ECU

**Immobilizer-ECU removal steps**

- Front scuff plate and cowl side trim <driver's side> (Refer to GROUP 52A – Trims.)

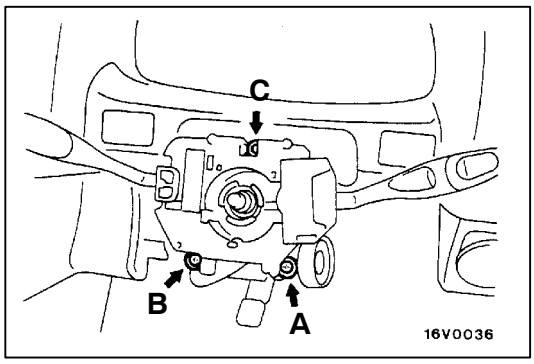
11. Immobilizer-ECU




## 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 cross-tip (+) screwdriver (small) or a similar tool, push the lock pin of the steering lock cylinder inward and then pull the steering lock cylinder toward you.

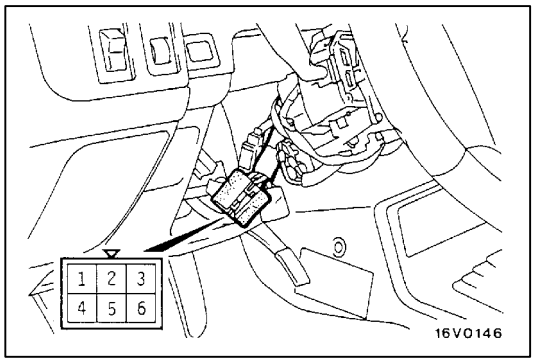



## INSTALLATION SERVICE POINT

### ▶A◀ COLUMN SWITCH ASSEMBLY INSTALLATION

Tighten the column switch assembly mounting screws to the specified torque in the order of A, B and C.

**Tightening torque: 25 Nm**



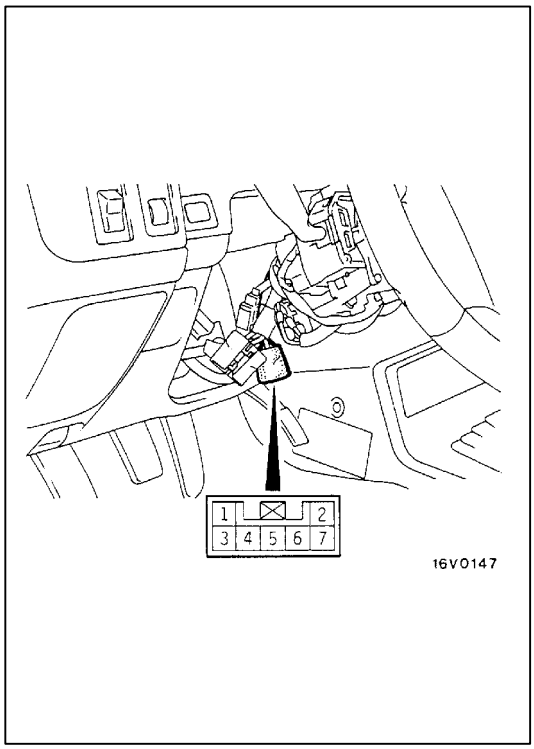

## INSPECTION

54300220285

### IGNITION SWITCH CONTINUITY CHECK

1. Remove the driver’s side under cover or knee protector assembly.
2. Remove the column cover lower and upper.
3. Disconnect the wiring connector from the ignition switch.
4. Operate the switch and check the continuity between the terminals.

| Ignition key position | Terminal No. | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 4 | 5 | 6 |
| LOCK | | | | | |
| ACC | ○ | | | | ○ |
| ON | ○ | ○ | ○ | | ○ |
| START | ○ | ○ | | ○ | |

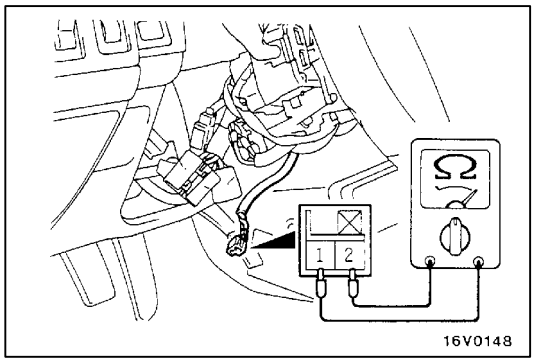



## KEY REMINDER SWITCH CONTINUITY CHECK

54300770094

1. Remove the driver's side under cover or knee protector assembly.
2. Remove the column cover lower and upper.
3. Disconnect the wiring connector from the key reminder switch.
4. Check the continuity between the terminal when the ignition key is pulled out of and inserted into the steering lock cylinder.

| Ignition key position | Terminal No. | | | | |
|---|---|---|---|---|---|
| | 1 | ILL | 2 | 4 | 6 |
| Pulled out | ○ | ○ | ○ | ○ | ○ |
| Inserted | ○ | ○ | ○ | | |




## IGNITION KEY RING ANTENNA CONTINUITY CHECK

54300930027

Use a circuit tester to check the continuity between the terminals.

## ENCRYPTED CODE REGISTRATION METHOD AND RESETTING THE CODE TO THE FACTORY SETTING

54300810086

Register the encrypted code in the immobilizer-ECU and then reset the code to the factory setting after parts have been replaced.

| Replacement part | 6G7 | 4D5 | |
|---|---|---|---|
| | Encrypted code registration | Encrypted code registration | Resetting the code to the factory setting |
| Ignition key | Necessary | Necessary | Not necessary |
| Ignition key ring antenna | Not necessary | Not necessary | Not necessary |
| Immobilizer-ECU | Necessary | Necessary | Necessary |
| Engine-ECU <6G7>* | Necessary | – | – |
| Fuel cut valve controller (fuel injection pump) <4D5> | – | Not necessary | Not necessary (New part)<br>Necessary (Used part) |

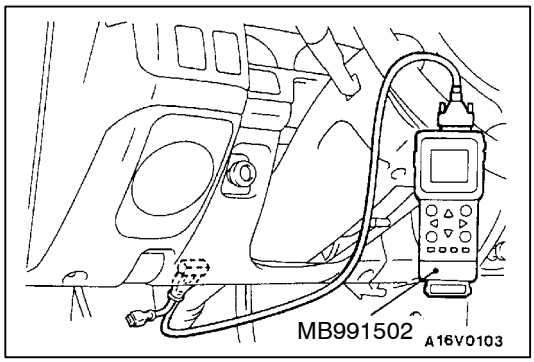
NOTE

*: If the engine-ECU is replaced, the immobilizer-ECU and ignition key should be replaced together with it.
Each engine-ECU has encrypted code for immobilizer-ECU, and the encrypted code is registered in the immovilizer-ECU.

### Encrypted Code Registration Method

If using an ignition key that has just been newly purchased, or if the immobilizer-ECU has been replaced, you will need to register the encrypted codes for each ignition key being used into the immobilizer-ECU. (A maximum of eight different encrypted codes can be registered.)
Moreover, when the immobilizer-ECU has been replaced, you will need to use the MUT-II to input the vehicle secret code and to register the password (secret code) that the user specifies into the immobilizer-ECU. (Refer to the “MUT-II REFERENCE MANUAL” or “MUT-II OPERATING INSTRUCTIONS”)

**Caution**
**Because registering of the encrypted codes is carried out after all previously-registered codes have been erased, you should have ready all of the ignition keys that have already been registered.**




1. Connect the MUT-II to the diagnosis connector.

   **Caution**
   **Turn off the ignition switch before connecting or disconnecting of the MUT-II.**

2. Check that the diagnosis code No.54 is not being generated by the engine-ECU. If it is being generated check according to the Troubleshooting Procedures.

3. Use the ignition key that is to be registered to turn on the ignition switch.
4. Use the MUT-II to register the encrypted code. To register the second or subsequent key, leave the MUT-II connected and remove the first registered key. Within 5 seconds insert the key to be registered and turn on the ignition switch.

   NOTE
   After 5 seconds have elapsed, the key registration must be repeated from the begining because the key registration mode terminates.
5. This complete the registration operation. Turn the ignition switch OFF and leave it for approx. 10 seconds.
6. Check that the engine can be started with each of the ignition keys.
7. Check the diagnosis output from the engine-ECU, and erase code No.54 if it appears.

**Resetting the code to the factory setting <4D5>**

Refer to the “MUT-II REFERENCE MANUAL” or “MUT-II OPERATING INSTRUCTIONS” on handling the MUT-II.

NOTE
Resetting the code to the factory setting refers to the process of clearing the identification code which has been recorded in the fuel cut valve controller and switching the controller to learning mode. After this resetting is carried out, the identification code in the immobilizer-ECU will be recorded in the controller the next time the ignition switch is turned to the ON.

1. Connect the MUT-II to the diagnosis connector.

   **Caution**
   **Turn off the ignition switch before connecting or disconnecting of the MUT-II.**

2. Turn on the ignition switch.
3. Use the MUT-II to reset the code to the factory setting.

   NOTE
   Approximately 16 minutes are required to complete resetting the code to the factory setting.

4. Disconnect the MUT-II

# COMBINATION METERS

54300030260

## SERVICE SPECIFICATIONS

| Items | | | Standard value |
|---|---|---|---|
| Speedometer indication error km/h (mph) | | 40 (20) | 40 – 48 (20 – 25) |
| | | 80 (40) | 80 – 92 (40 – 47) |
| | | 120 (60) | 120 – 136 (60 – 69) |
| | | 160 (80) | 160 – 180 (80 – 91) |
| | | – (100) | – (100 – 114) |
| Tachometer indication error r/min | 6G7 | 700 | ±100 |
| | | 3,000 | ±150 |
| | | 5,000 | ±250 |
| | | 6,000 | ±300 |
| | 4D5 | 700 | ±100 |
| | | 3,000 | ±150 |
| | | 4,750 | ±160 |
| | | 5,000 | ±250 |
| Fuel gauge unit resistance Ω | Float point F | | 1 – 5 |
| | Float point E | | 103 – 117 |
| Fuel gauge unit float height mm | A (Float point F) | | 16 |
| | B (Float point E) | | 219.5 |
| Engine coolant temperature gauge unit resistance (at 70 °C) Ω | | | 104 ± 13.5 |
| Fuel gauge resistance Ω | Power supply and earth | | 250 ± 25 |
| | Power supply and fuel gauge | | 91 ± 9.1 |
| | Fuel gauge and earth | | 159 ± 15.9 |
| Engine coolant temperature gauge resistance Ω | Power supply and earth | | 179 ± 17.9 |
| | Power supply and engine coolant temperature gauge | | 54 ± 5.4 |
| | Engine coolant temperature gauge and earth | | 233 ± 23.3 |

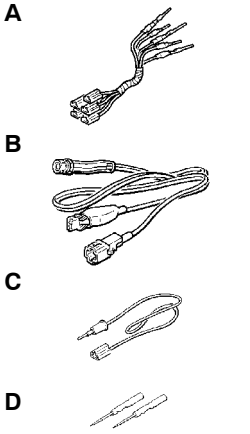
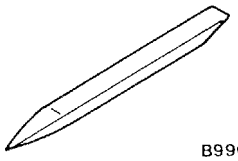
## SEALANT

54300050075

| Items | Specified sealant | Remark |
|---|---|---|
| Engine coolant temperature gauge unit threaded portion | 3M Adhesive nut locking No. 4171 or equivalent | Drying sealant |

# SPECIAL TOOLS

54300060504

| Tool | Number | Name | Use |
|---|---|---|---|
| A<br>B<br>C<br>D<br>  <br>C991223 | MB991223<br>A: MB991219<br>B: MB991220<br>C: MB991221<br>D: MB991222 | Harness set<br>A: Test harness<br>B: LED harness<br>C: LED harness adapter<br>D: Probe | • Fuel gauge check<br>• Engine coolant temperature gauge check <4D5><br>A: Connector pin contact pressure check<br>B: Power circuit check<br>C: Power circuit check<br>D: Commercial tester connection |
|  <br>B990784 | MB990784 | Ornament remover | Removal of meter bezel assembly |

# TROUBLESHOOTING

54300720761

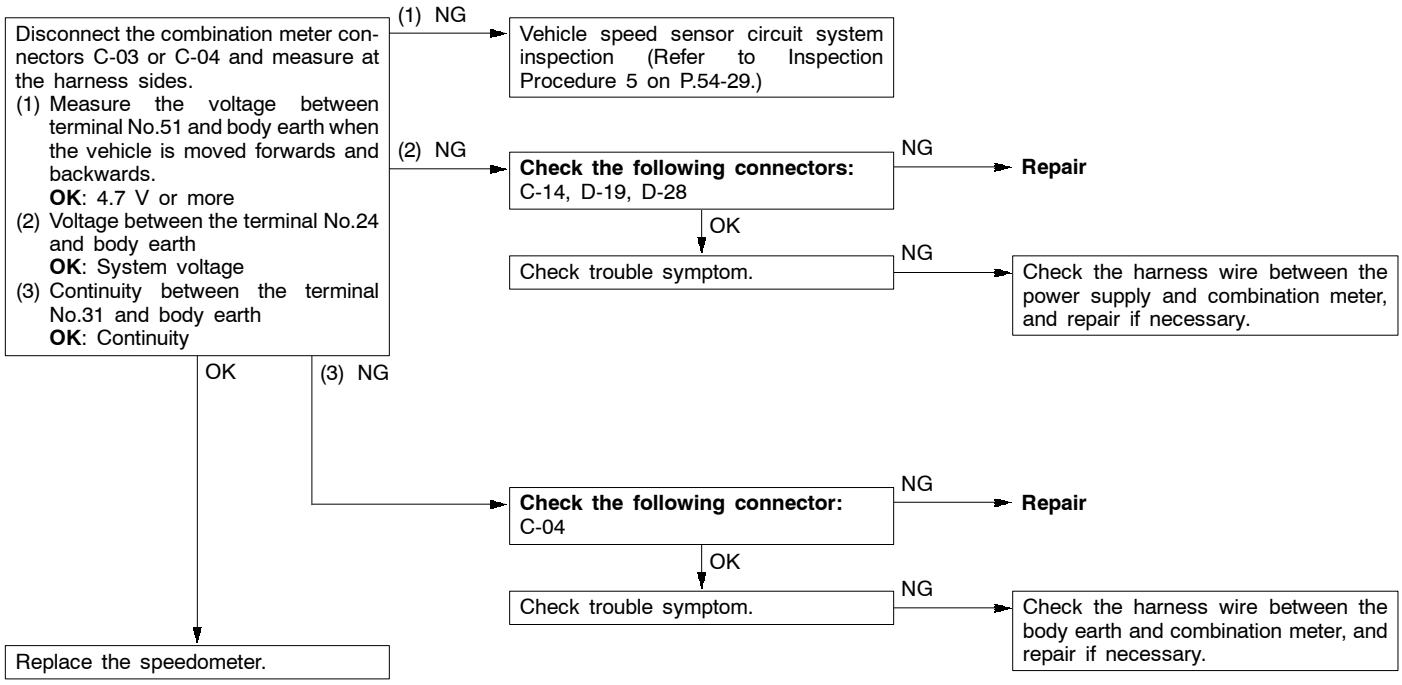
## INSPECTION CHART FOR TROUBLE SYMPTOMS

| Trouble symptom | Inspection procedure | Reference page |
|---|---|---|
| Speedometer does not work. | 1 | 54-26 |
| Tachometer does not work. | 2 | 54-26 |
| Fuel gauge does not work. | 3 | 54-27 |
| Engine coolant temperature gauge does not work. | 4 | 54-27 |

# INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

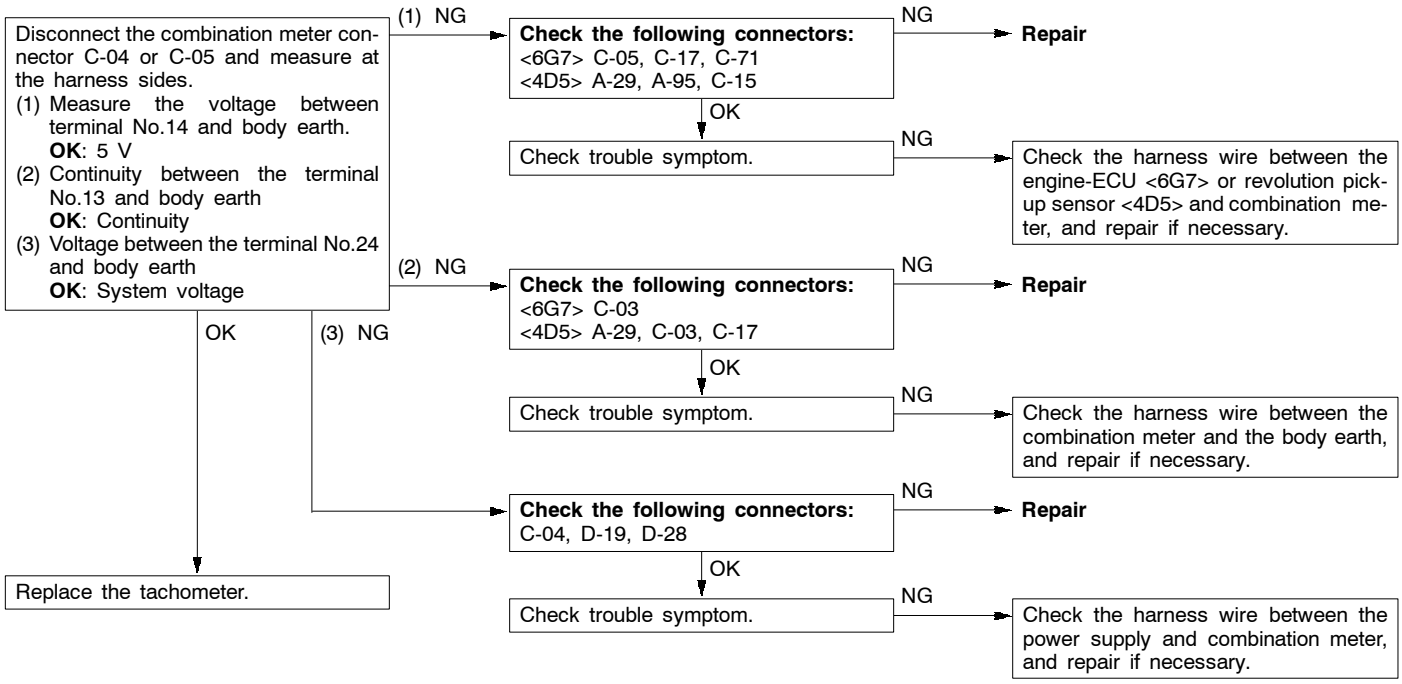
## Inspection Procedure 1

| Speedometer does not work. | Probable cause |
|---|---|
| The cause may be a defective vehicle speed sensor circuit system or a defective speedometer. Vehicle speed sensor is co-used among the engine-ECU and A/T-ECU. | • Malfunction of vehicle speed sensor<br>• Malfunction of speedometer<br>• Malfunction of harness or connector |



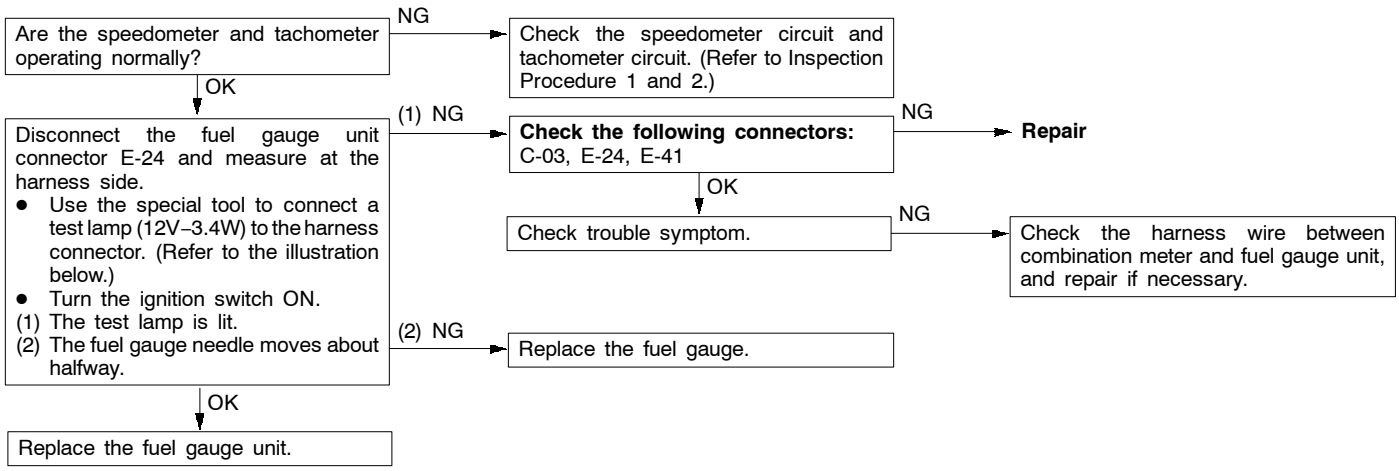

## Inspection Procedure 2

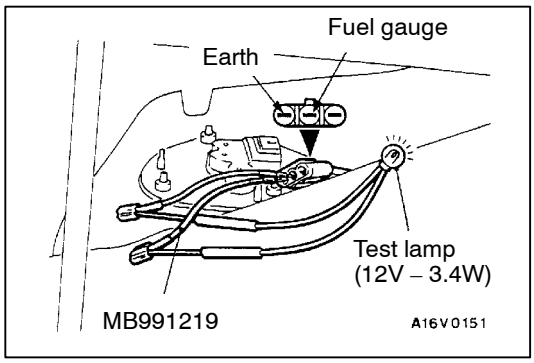
| Tachometer does not work. | Probable cause |
|---|---|
| The ignition signal may not be input from the engine, or there may be a malfunction in the power supply or earth circuit. | • Malfunction of tachometer<br>• Malfunction of harness or connector |



## Inspection Procedure 3

| Fuel gauge does not work. | Probable cause |
|---|---|
| If the speedometer and tachometer are normal, the circuit from the ignition switch ($IG_1$) to the combination meter is normal. | • Malfunction of the fuel gauge unit<br>• Malfunction of the fuel gauge<br>• Malfunction of the harness wire or connector |



## Inspection Procedure 4

| Engine coolant temperature gauge does not work. | Probable cause |
|---|---|
| If the speedometer and tachometer are normal, the circuit from the ignition switch ($IG_1$) to the combination meter is normal. | • Malfunction of the engine coolant temperature gauge unit<br>• Malfunction of the engine coolant temperature gauge<br>• Malfunction of the harness wire or connector |

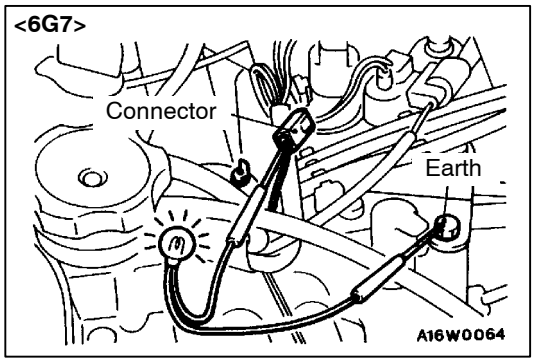
Are the speedometer and tachometer operating normally?
- NG → Check the speedometer circuit and tachometer circuit. (Refer to Inspection Procedure 1 and 2.)
- OK ↓

Disconnect the engine coolant temperature gauge unit connector A-60 <6G7> or A-96 <4D5> and measure at the harness side.
- Connect a test lamp (12V–3.4W) to the terminal No.1 and earth. (Refer to the illustration below.)
- Turn the ignition switch ON.

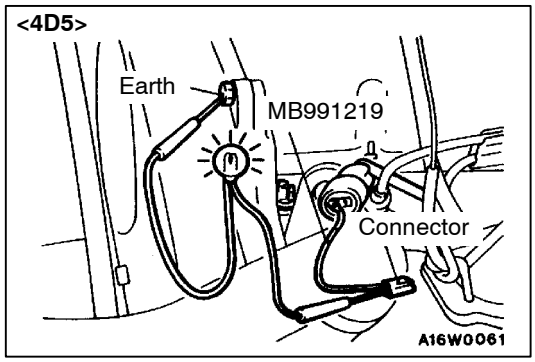
(1) The test lamp is lit.
(2) The engine coolant temperature gauge needle moves about halfway.

- (1) NG → **Check the following connectors:** A-63, C-10, C-32
  - NG → **Repair**
  - OK ↓ Check trouble symptom.
    - NG → Check the harness wire between combination meter and engine coolant temperature gauge unit, and repair if necessary.
- (2) NG → Replace the engine coolant temperature gauge.
- OK ↓ Replace the engine coolant temperature gauge unit.

**<6G7>**

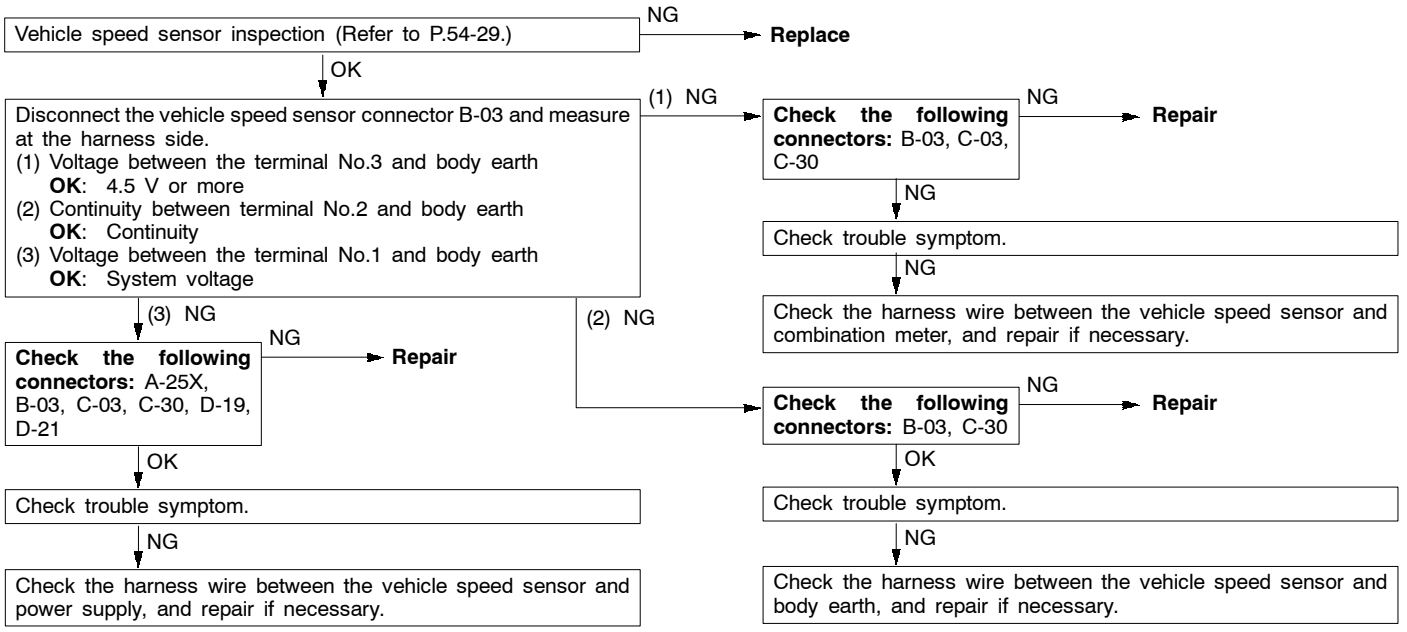


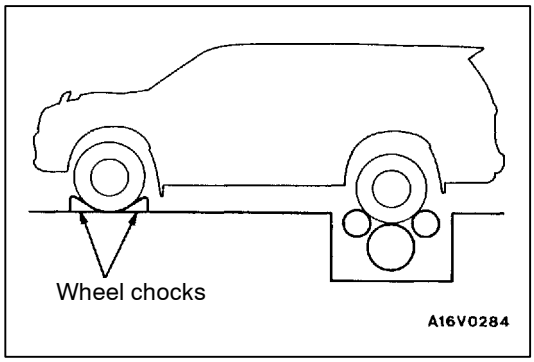

**<4D5>**



### Inspection Procedure 5

**Vehicle speed sensor circuit system inspection**




# ON-VEHICLE SERVICE

54300090213

## SPEEDOMETER CHECK

1. Adjust the pressure of tyres.to the specified level. (Refer to GROUP 31 – On-vehicle Service.)
2. Set the vehicle onto a speedometer tester and use wheel chocks to hold the front wheels.
   **Caution**
   **Place the transfer shift lever to 2H position.**
3. Check if the speedometer indicator range is within the standard values.
   **Caution**
   **Do not operate the clutch suddenly. Do not increase/decrease speed rapidly while testing.**
   **Standard value:**

| Standard indication km/h (mph) | Allowance range km/h (mph) |
|---|---|
| 40 (20) | 40 – 48 (20 – 25) |
| 80 (40) | 80 – 92 (40 – 47) |
| 120 (60) | 120 – 136 (60 – 69) |
| 160 (80) | 160 – 180 (80 – 91) |
| – (100) | – (100 – 114) |

## TACHOMETER CHECK

54300100220

**<6G7>**

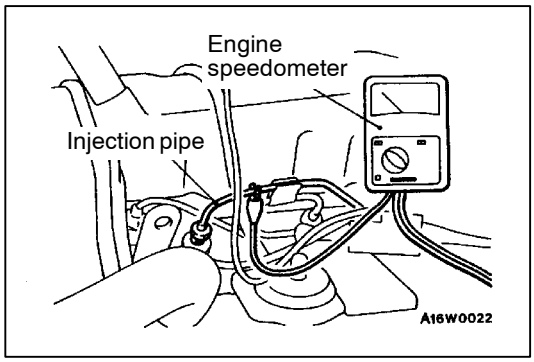
1. Connect the MUT-II to the diagnosis connector (16-pin).

   **Caution**
   **Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.**

2. Start the engine and run.
3. Select the item No.22 of the MUT-II Service Data.
4. Compare the readings of the engine speedometer and the tachometer at every engine speed, and check if the variations are within the standard value.

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

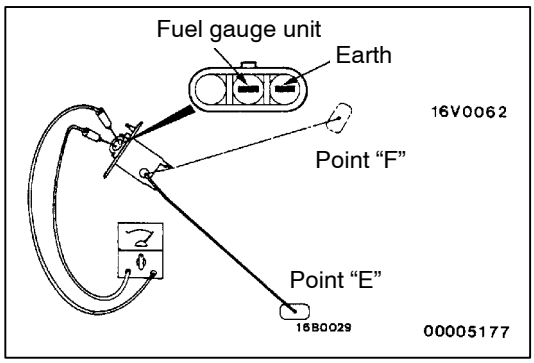
   NOTE
   For tachometer inspection, use of a fluxmeter-type engine speedometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)




**<4D5>**

1. Connect the engine speedometer to the injection pipe.
2. Compare the readings of the engine speedometer and the tachometer at every engine speed, and check if the variation are within the standard values.

   **Standard value:**
   **700 r/min: ±100 r/min**
   **3,000 r/min: ±150 r/min**
   **4,750 r/min: ±160 r/min**
   **5,000 r/min: ±250 r/min**




## FUEL GAUGE UNIT CHECK

54300120363

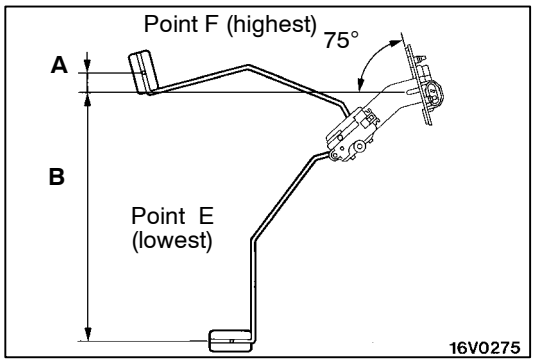
Remove the fuel gauge unit from the fuel tank.

**FUEL GAUGE UNIT RESISTANCE**

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

   **Standard value:**
   **Point F: 1 – 5 Ω**
   **Point E: 103 – 117 Ω**

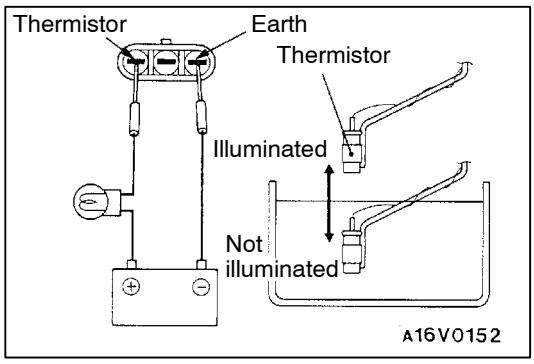
2. Check that resistance value changes smoothly when float moves slowly between point F (highest) and point E (lowest).




### FUEL GAUGE UNIT FLOAT HEIGHT

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

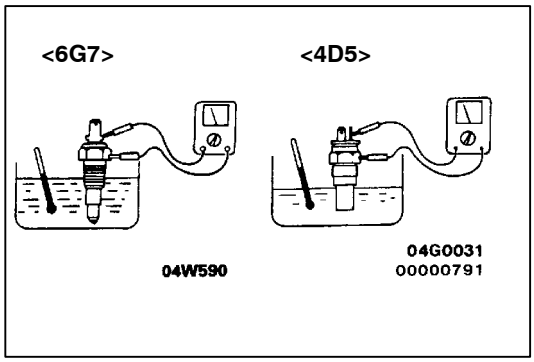
**Standard value:**
**A: 16 mm**
**B: 219.5 mm**




### THERMISTOR

1. Connect fuel gauge unit (thermistor) to battery via test lamp (12 V – 3.4 W). Immerse in water.
2. Condition is good if lamp goes off when the thermistor is immersed in water and goes on when it is taken out of water.

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

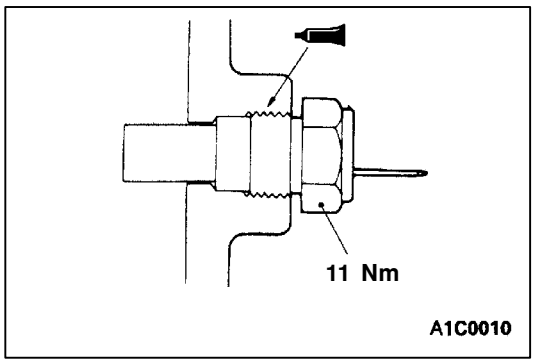



## ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

54300150287

1. Bleed the engine coolant.
(Refer to GROUP 14 – On-vehicle Service.)
2. Remove the engine coolant temperature gauge unit.
3. Immerse the unit in 70°C water to measure the resistance.

**Standard value: 104 ± 13.5 Ω**




4. After checking, apply the specified adhesive around the thread of engine coolant temperature gauge unit.

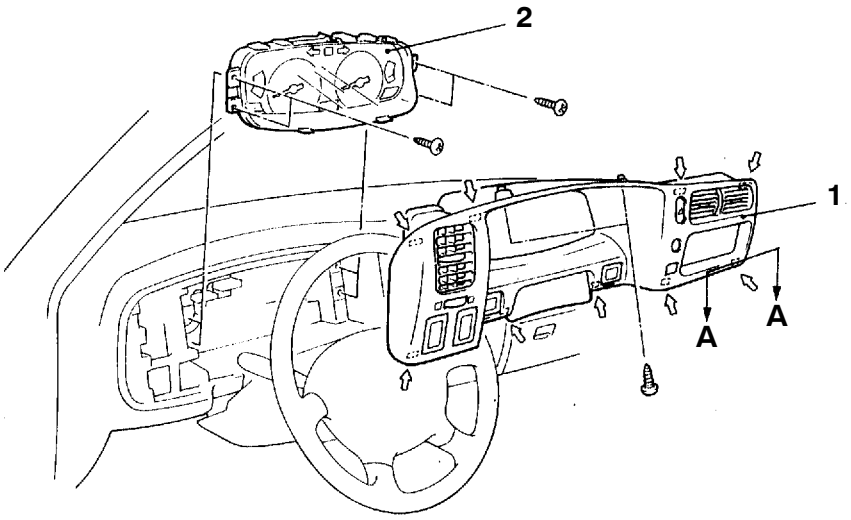
**Specified sealant:**
**3M Adhesive Nut Locking No. 4171 or equivalent**

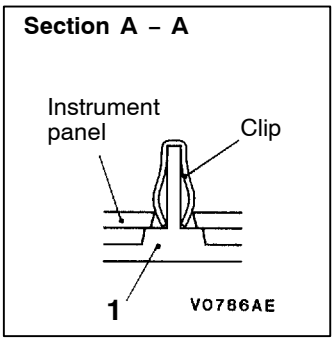
5. Add engine coolant.
(Refer to GROUP 14 – On-vehicle Service.)

# COMBINATION METERS

54300290248

## REMOVAL AND INSTALLATION



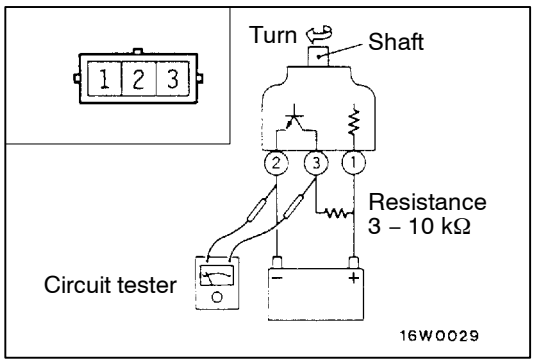

NOTE
⇦ : metal clip position

T0280AA

00009159

**Removal steps**

1. Meter bezel assembly
2. Combination meter

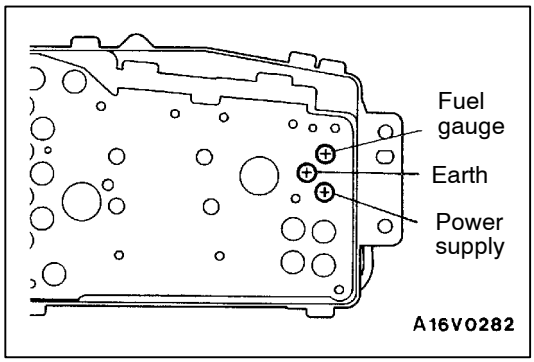



## INSPECTION

54300640173

### VEHICLE SPEED SENSOR CHECK

1. Remove the vehicle speed sensor and connect a 3 – 10 kΩ resistance as shown in the illustration.
2. Turn the shaft of the vehicle speed sensor and check that there is voltage between terminals 2 – 3. (1 turn = 4 pulses)




## FUEL GAUGE RESISTANCE CHECK

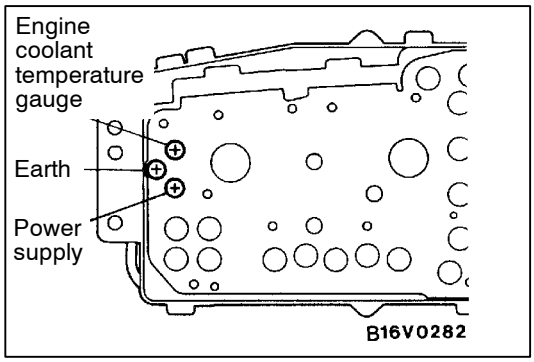
54300300187

1. Remove the power supply tightening screw.
2. Use a circuit tester to measure the resistance value between the terminals.

**Standard value:**

**Power supply – Earth: 250 ± 25 Ω**
**Power supply – Fuel gauge: 91 ± 9.1 Ω**
**Fuel gauge – Earth: 159 ± 15.9 Ω**

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




## ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE CHECK

1. Remove the power supply tightening screw.
2. Use a circuit tester to measure the resistance value between the terminals.

**Standard value:**

**Power supply – Earth: 179 ± 17.9 Ω**
**Power supply – Engine coolant temperature gauge: 54 ± 5.4 Ω**
**Engine coolant temperature gauge – Earth: 233 ± 23.3 Ω**

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

# MULTI-METER

54300720778

## TROUBLESHOOTING

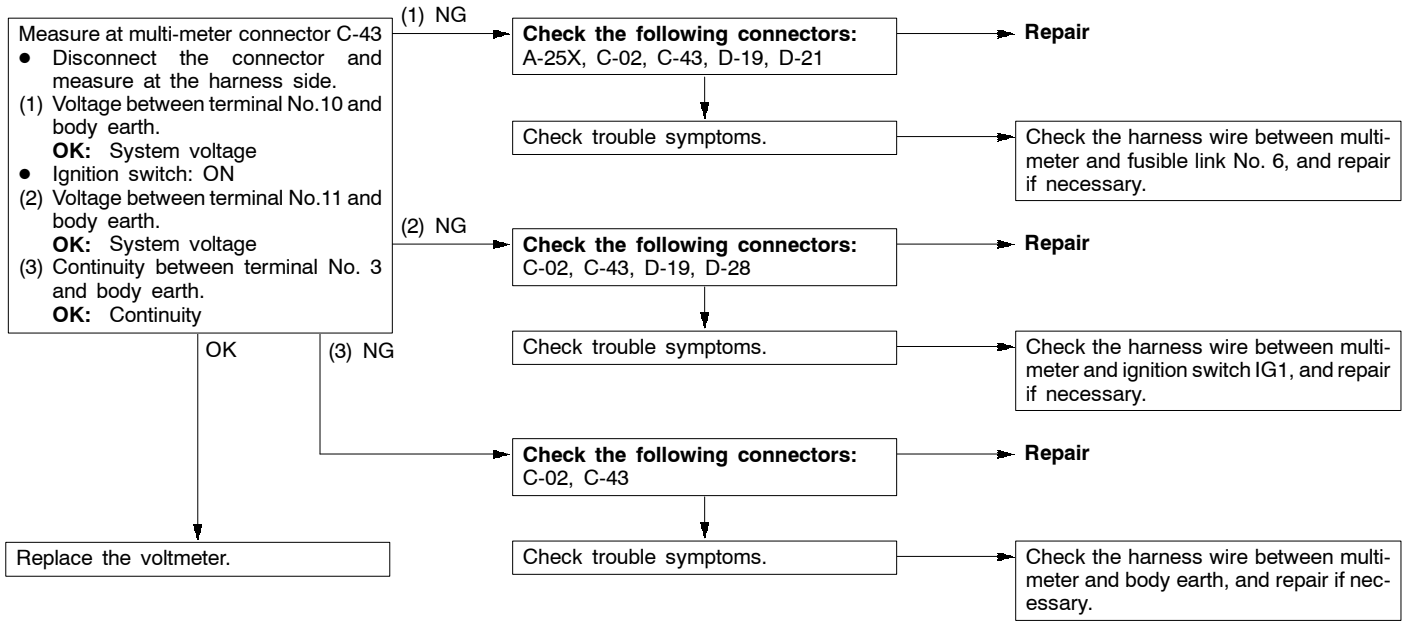
### INSPECTION CHART FOR TROUBLE SYMPTOMS

| Trouble symptom | Inspection procedure | Reference page |
|---|---|---|
| Voltmeter does not work. | 1 | 54-34 |
| Oil pressure gauge does not work. | 2 | 54-35 |
| Bearing indcator is off when moving forward. (for electronic compass) | 3 | 54-36 |
| Vehicle magnetic compensation cannot be made. (for electronic compass) | 4 | 54-36 |
| Discrepancy between the actual outside temperature and displayed temperature. | 5 | 54-36 |
| Display is hard to see or no display appears. | 6 | 54-37 |

### INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

#### Inspection Procedure 1

| Voltmeter does not work. | Probable cause |
|---|---|
| The ignition switch circuit system, the body earth circuit system, the power circuit system or the voltmeter may be defective. | • Malfunction of the voltmeter<br>• Malfunction of the harness wire or connector |



## Inspection Procedure 2

| Oil pressure gauge does not work. | Probable cause |
|---|---|
| The oil pressure gauge unit, the oil pressure unit circuit system. The ignition switch circuit system, the body earth circuit system, the multi-meter power circuit system or the oil pressure gauge may be defective. | • Malfunction of the oil pressure gauge unit<br>• Malfunction of the oil pressure gauge<br>• Malfunction of the harness wire or connector |

Measure at oil pressure gauge unit connector C-43
- Disconnect the wiring connector A-40 from the oil pressure gauge unit.
- Start the engine and let it run at idle.
- Resistance between oil pressure gauge unit terminal and oil filter case (engine earth).
  **OK:** Approx. 2 Ω

NG → Replace the oil pressure gauge unit.

OK ↓

Measure at oil pressure gauge unit connector A-40
- Disconnect the connector and measure at the harness side.
- Connect a test lamp (12 V – 3.4 W) to the harness connector and earth. (Refer to the illustration below.)
- Ignission switch: ON

(1) The test lamp is lit.
(2) The test oil pressure gauge needle sways.

(1) NG → **Check the following connectors:** A-40, C-02, C-11, C-15 <4D5>, C-17 <6G7>
- NG → **Repair**
- OK ↓ Check trouble symptoms.
  - NG → Check the harness wire between oil pressure gauge unit and multi-meter, and repair if necessary.

(2) NG → Replace the oil pressure gauge.

OK ↓

Measure at multi-meter connector C-43
- Disconnect the connector and measure at the harness side.

(1) Voltage between terminal No.10 and body earth.
**OK:** System voltage
- Ignition switch: ON

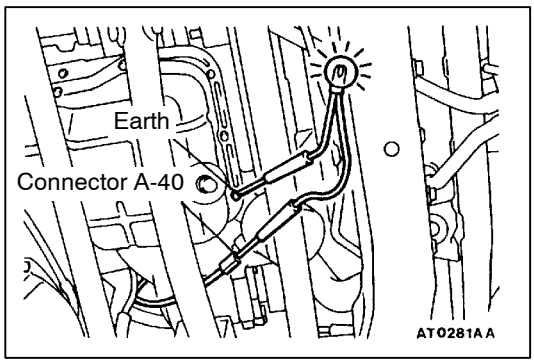
(2) Voltage between terminal No.11 and body earth.
**OK:** System voltage
(3) Continuity between terminal No. 3 and body earth.
**OK:** Continuity

(1) NG → **Check the following connectors:** A-25X, C-02, C-43, D-19, D-21
- NG → **Repair**
- OK ↓ Check trouble symptoms.
  - NG → Check the harness wire between multi-meter and fusible link No. 6, and repair if necessary.

(2) NG → **Check the following connectors:** C-02, C-43, D-19, D-28
- NG → **Repair**
- OK ↓ Check trouble symptoms.
  - NG → Check the harness wire between multi-meter and ignition switch IG1, and repair if necessary.

(3) NG → **Check the following connectors:** C-02, C-43
- NG → **Repair**
- OK ↓ Check trouble symptoms.
  - NG → Check the harness wire between multi-meter and body earth, and repair if necessary.

OK ↓ Replace the oil pressure gauge.



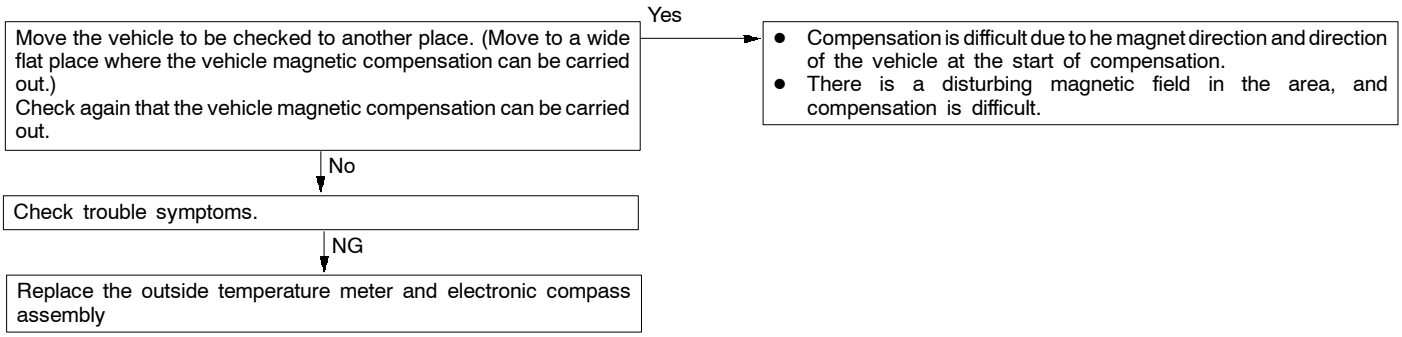
## Inspection Procedure 3

| Bearing indicator is off when moving forward. (for electric compass) | Probable cause |
|---|---|
| The vehicle magnetism tends to be disturbed particularly at such places as tunnel, railway crossing, area along railway, elevated road, urban above subway, etc. if disturbed, the driving direction marker will fluctuate. | • The vehicle magneitic compensation failed |

Vehicle maganetic compensation. (Refer to P.54-38)

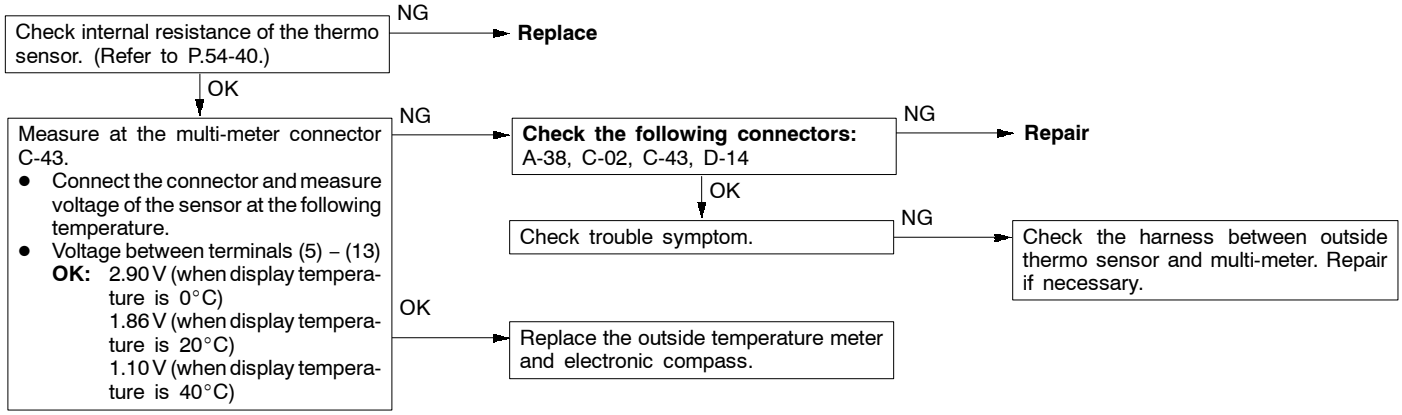
## Inspection Procedure 4

| Vehicle magnetic compensation cannot be made. (for electronic compass) | Probable cause |
|---|---|
| The multi-meter (outside temperature meter of the electronic compass) may be defective. | • Malfunction of the multi-meter (outside temperature meter and electronic compass) |



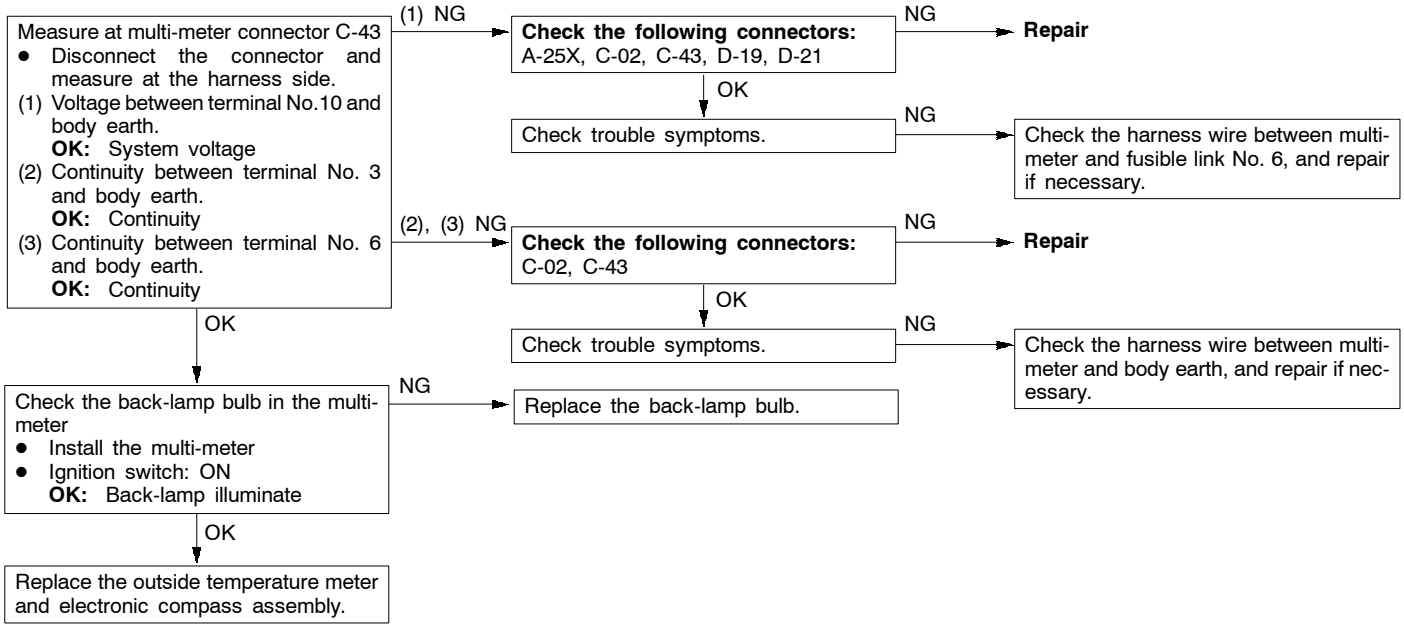

## Inspection Procedure 5

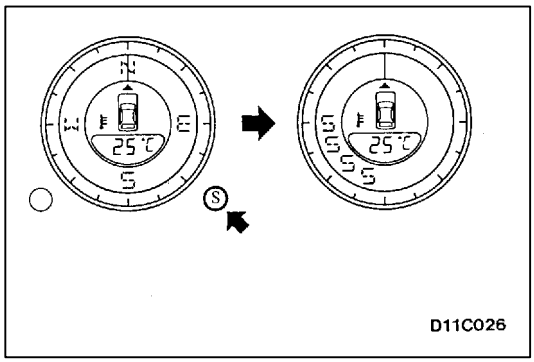
| Discrepancy between the actual outside temperature and displayed temperature. | Probable cause |
|---|---|
| The outside thermo sensor, multi-meter (outside temperature meter and electronic compass), harness, or connector may be defective. | • Malfunction of the outside thermo sensor<br>• Malfunction of the multi-meter (outside temperature meter and electronic compass)<br>• Malfunction of the harness or connector |



## Inspection Procedure 6

| Display is hard to see or no display appears. | Probable cause |
|---|---|
| The The multi-meter (outside temperature meter of the electronic compass), harness, or connector may be defective. | • Malfunction of the multi-meter (outside temperature meter and electronic compass)<br>• Blown back-lamp<br>• Malfunction of the harness wire and connector |



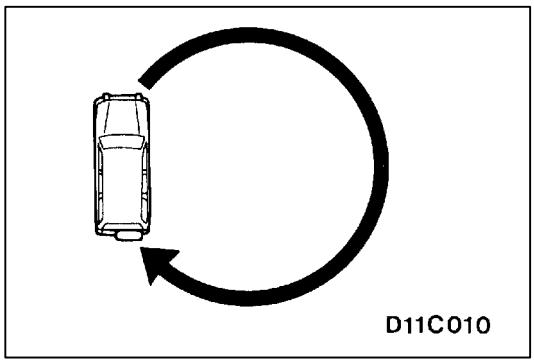



# ON-VEHICLE SERVICE

54300970029

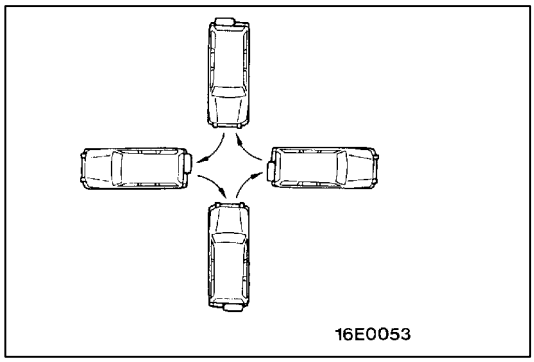
## VEHICLE MAGNETIC COMPENSATION

1. When the vehicle magnetic compensation switch (S) is pressed, “S” will display on the full scale. When pressed down longer (0.5 second or more), the “S” display will move to the right turn or left turn, and the magnetic compensation mode will be entered.




2. The compensastion will be completed automatically when the vehicle is slowly steered 360° or more.

   NOTE
   - The compensation can be carried out by steering to the right or to the left.
   - The “S” display speed will increase as the compensation degree advances.

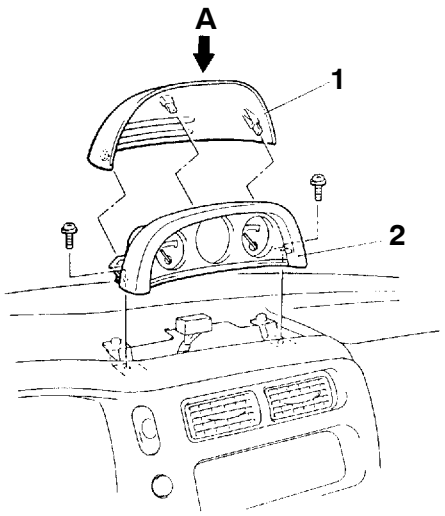



3. If there is not enough space to steer the vehicle, rotate the vehicle once without turning the handle.
4. After compensation is completed, the forward direction will be displayed.

# MULTI-METER

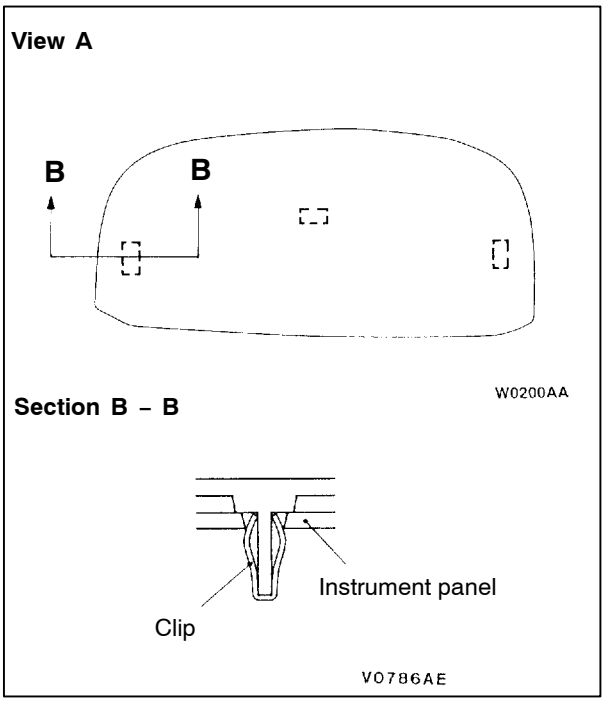
54300390054

## REMOVAL AND INSTALLATION




T0282AA

00009160

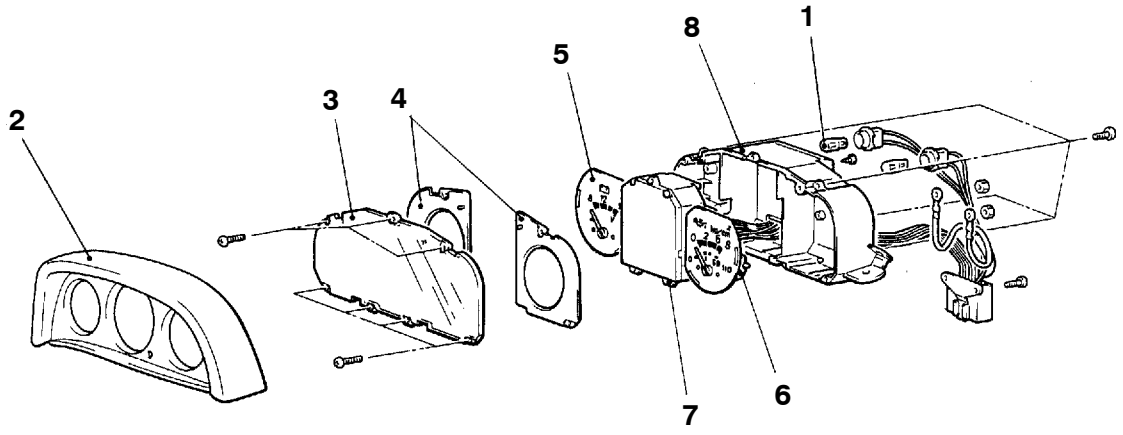



**Removal steps**

1. Multi-meter panel
2. Multi-meter

## DISASSEMBLY AND REASSEMBLY

54300410064




BT0283AA

**Disassembly steps**

1. Bulb
2. Meter garnish
3. Meter glass
4. Window plate
5. Oil pressure gauge
6. Voltmeter
7. Electronic compass
8. Meter case

# OUTSIDE THERMO SENSOR

54300030123

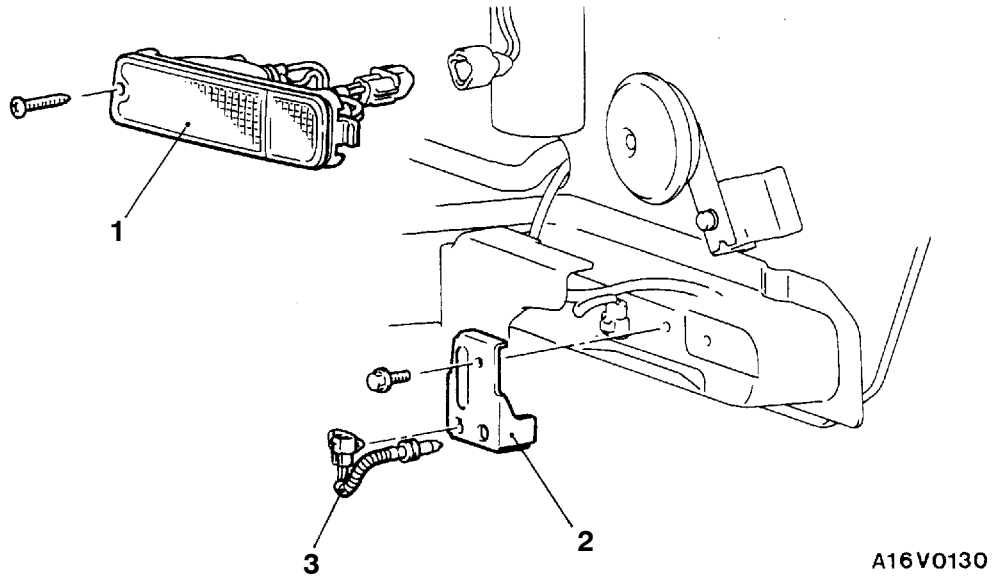
## SERVICE SPECIFICATIONS

| Items | | Standard value |
|---|---|---|
| Internal resistance of outside thermo sensor Ω | At 20°C | Approx. 1,200 |
| | At 40°C | Approx. 500 |

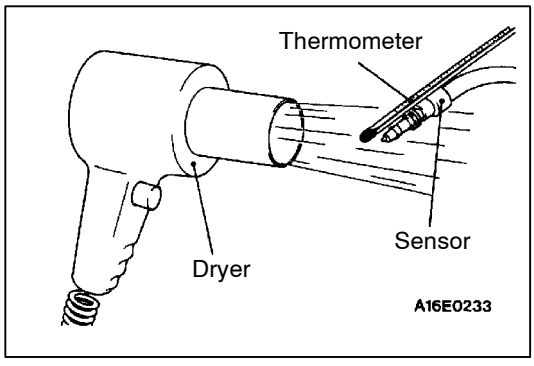
## OUTSIDE THERMO SENSOR

54300950030

### REMOVAL AND INSTALLATION




1. Front turn-signal lamp (L.H.)
2. Bracket
3. Outside thermo sensor




### INSPECTION

54300960019

#### OUTSIDE THERMO SENSOR INTERNAL RESISTANCE CHECK

Check the internal resistance of the outside thermo sensor are at the standard values at temperatures of 20°C and 40°C.

**Standard value:**
**Approx. 1,200 Ω (at 20°C)**
**Approx. 500 Ω (at 40°C)**

# HEADLAMP AND FRONT COMBINATION LAMP

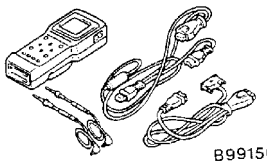
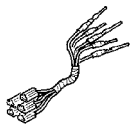
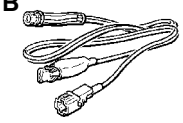
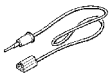
54200030267

## SERVICE SPECIFICATIONS

| Items | | Standard value | Limit |
|---|---|---|---|
| Headlamp aiming for low beam | Vertical direction | 60 mm below horizontal (H) | – |
| | Horizontal direction | Position where the 15° sloping section intersects the vertical line (V) | – |
| Headlamp intensity cd | | – | 30,000 or more |

## SPECIAL TOOLS

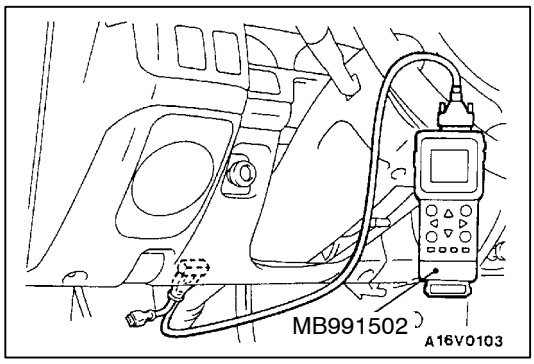
54200060570

| Tool | Number | Name | Use |
|---|---|---|---|
|  B991502 | MB991502 | MUT-II sub assembly | ETACS-ECU input signal checking |
| A  B  C  D  C991223 | MB991223<br>A: MB991219<br>B: MB991220<br>C: MB991221<br>D: MB991222 | Harness set<br>A: Test harness<br>B: LED harness<br>C: LED harness adapter<br>D: Probe | Making voltage and resistance measurements during troubleshooting<br>A: Connector pin contact pressure inspection<br>B: Power circuit inspection<br>C: Power circuit inspection<br>D: Commercial tester connection |

# TROUBLESHOOTING

54200900100

The special tool (MB991223) should always be used to measure voltages and resistances when carrying out troubleshooting.




## DIAGNOSIS FUNCTION

### INPUT SIGNAL INSPECTION POINTS

1. Connect the MUT-II to the diagnosis connector.
2. If buzzer of the MUT-II sounds once when a switch is operated (ON/OFF), the ETACS-ECU input signal for that switch circuit system is normal.

## INSPECTION CHART FOR TROUBLE SYMPTOMS

54200910226

| Trouble symptoms | | Inspection procedure | Reference page |
|---|---|---|---|
| Communication with MUT-II is impossible. | Communication with all systems is impossible. | 1 | 54-43 |
| | Communication with one-shot pulse input signal only is impossible. | 2 | 54-43 |
| The lighting monitor buzzer doesn't sound under the following conditions while tail lamps or headlamps illuminate.<br>● When the ignition switch is turned to OFF and the driver's side door is open. | | 3 | 54-43 |
| Headlamp leveling does not occur when the headlamp leveling switch is operated. | | 5 | 54-44 |
| The headlamps do not illuminate when the vehicle is in the following condition and the ignition switch is at the ON position. However, the headlamps illuminate when the lighting switch is moved to the HEAD position.<br><Vehicles with daytime running lamp system><br>● Lighting switch: OFF<br>● Passing switch: OFF | | 6 | 54-45 |
| The headlamps do not switch off when the vehicle is in the following condition and the lighting switch is moved to the TAIL position.<br><Vehicles with daytime running lamp system><br>● Ignition switch: OFF<br>● Passing switch: OFF | | 7 | 54-46 |

## INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

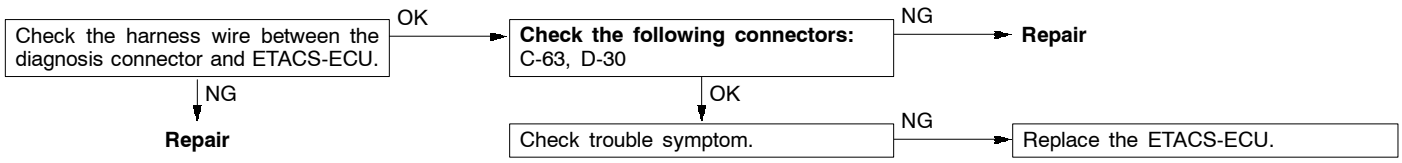
### Inspection Procedure 1

| Communication with MUT-II is impossible. (Communication with all systems is impossible.) | Probable cause |
|---|---|
| The cause is probably a defective power supply system (including earth) for the diagnosis line. | • Malfunction of connector<br>• Malfunction of harness wire |

Refer to GROUP 13A – Troubleshooting.

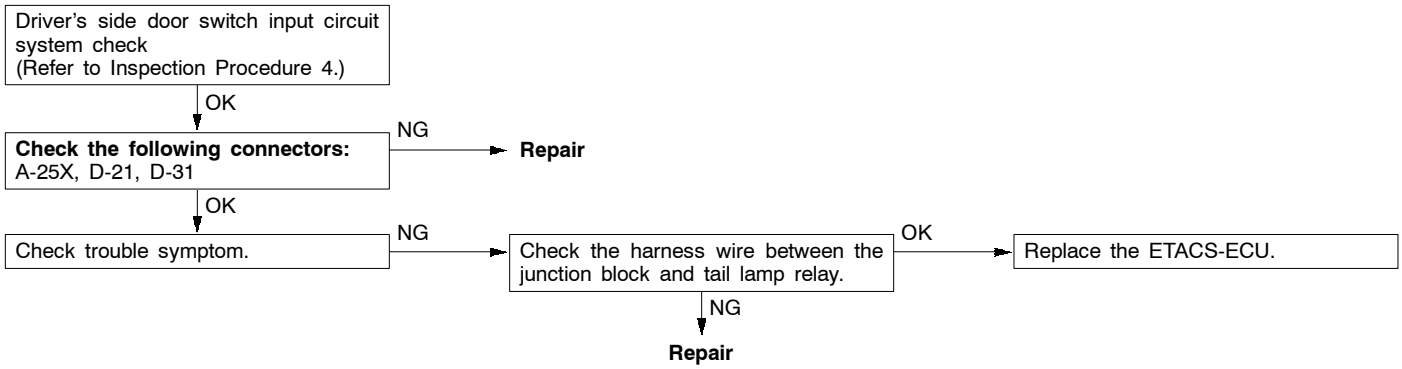
### Inspection Procedure 2

| Communication with MUT-II is impossible. (Communication with the one-shot pulse input signal only is impossible.) | Probable cause |
|---|---|
| The cause is probably a defective one-shot pulse input circuit system of the diagnosis line. | • Malfunction of connector<br>• Malfunction of harness wire<br>• Malfunction of ETACS-ECU |



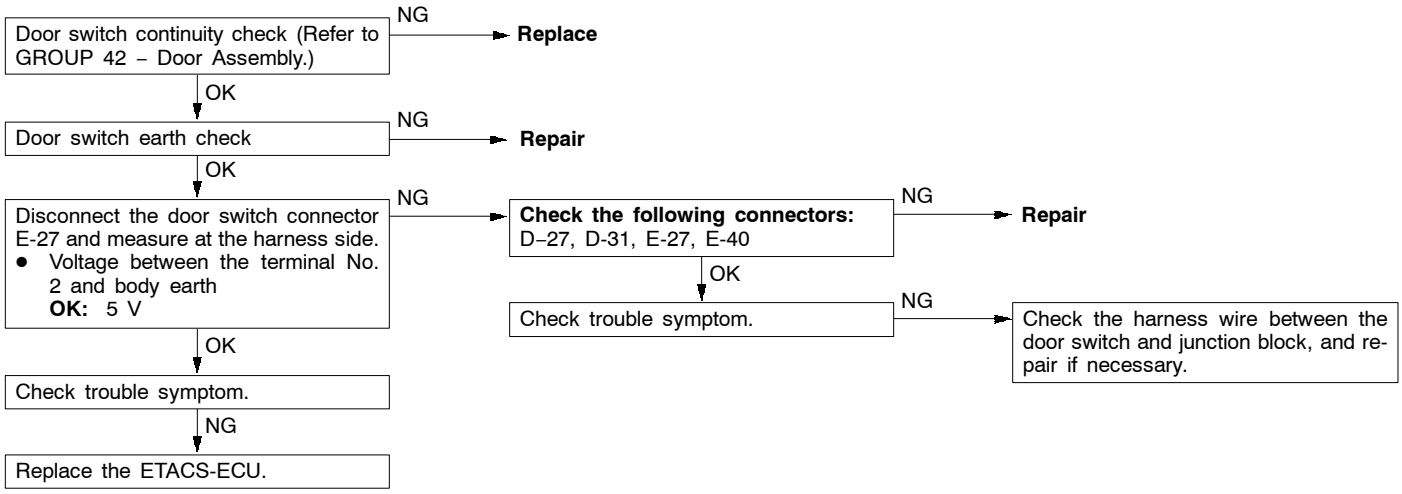

### Inspection Procedure 3

| The ignition switch is turned to the OFF position and the driver's side door is opened while the tail lamps or headlamps are operating, but the light reminder warning buzzer does not sound. | Probable cause |
|---|---|
| The cause is probably a defective lighting switch input circuit system or a defective driver's side door switch input circuit system. | • Malfunction of driver's side door switch<br>• Malfunction of harness or connector<br>• Malfunction of ETACS-ECU |



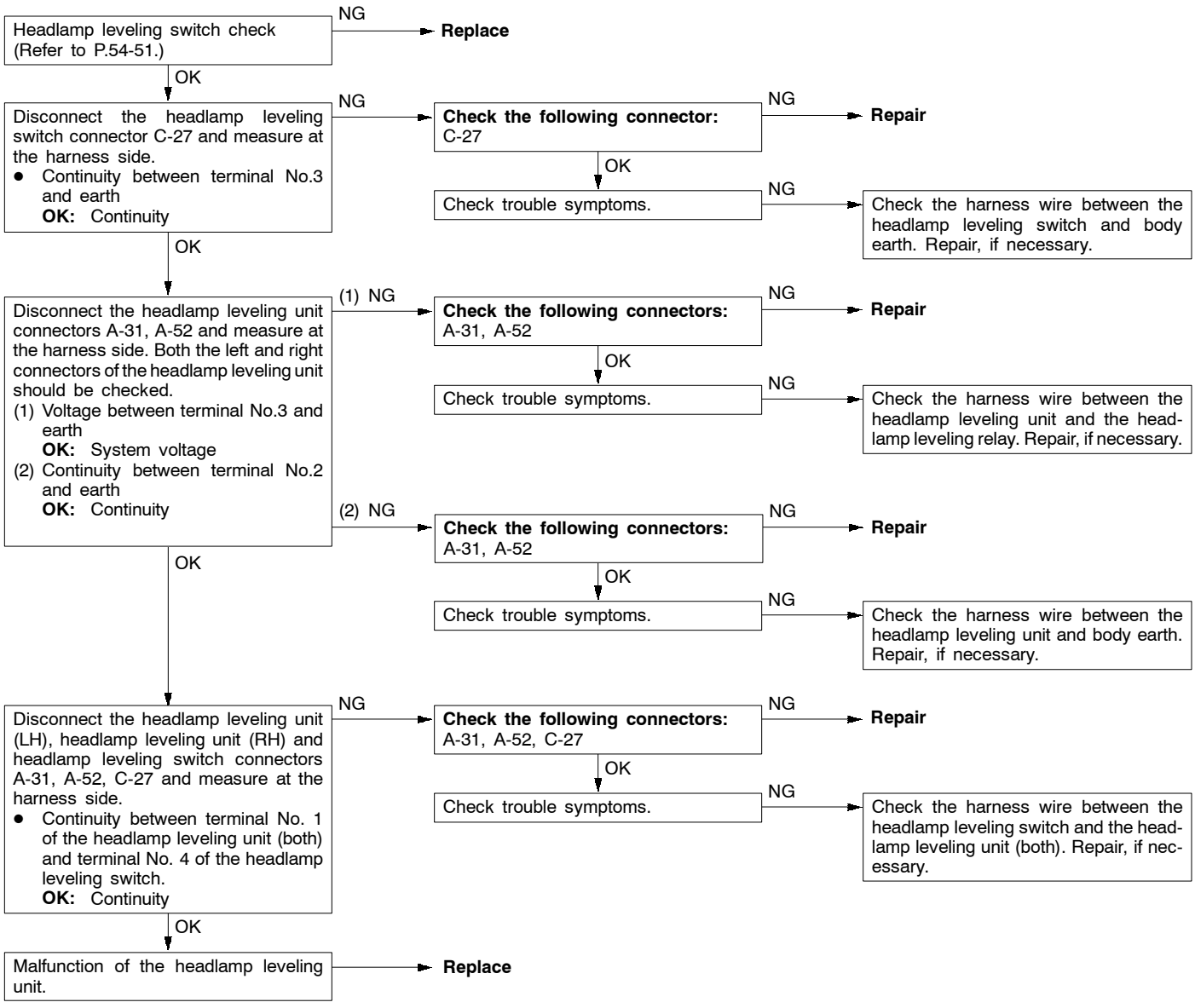
## Inspection Procedure 4

### Driver's side door switch input circuit system check



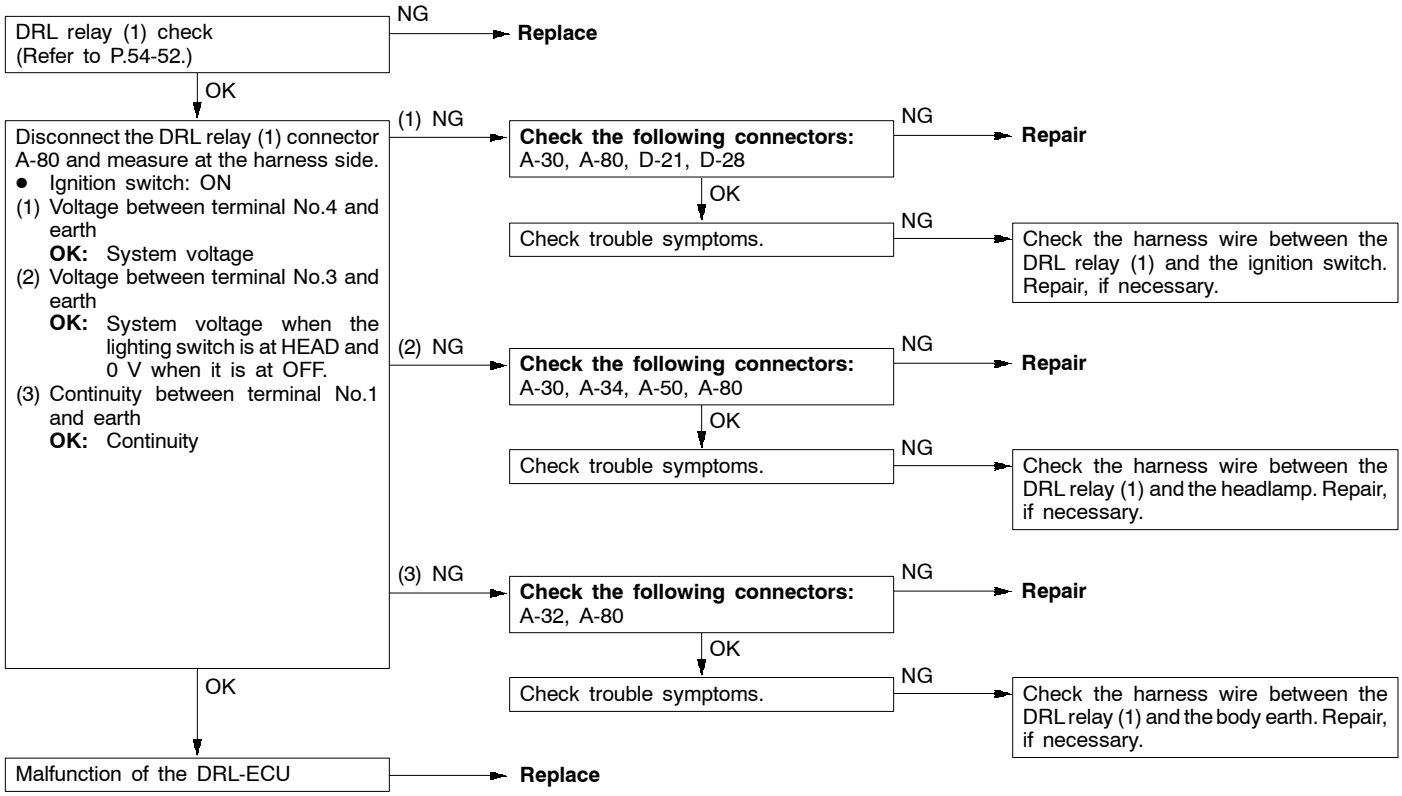
## Inspection procedure 5

| Headlamp leveling does not occur when the headlamp leveling switch is operated. | Probable cause |
|---|---|
| The cause is probably a malfunction of the headlamp leveling switch circuit system or a malfunction of the headlamp leveling unit circuit system.<br>If there is a blown fuse, there may also be a short-circuit in a harness. | • Malfunction of fuse<br>• Malfunction the headlamp leveling switch<br>• Malfunction of connector<br>• Malfunction of harness wire<br>• Malfunction of the headlamp leveling unit |



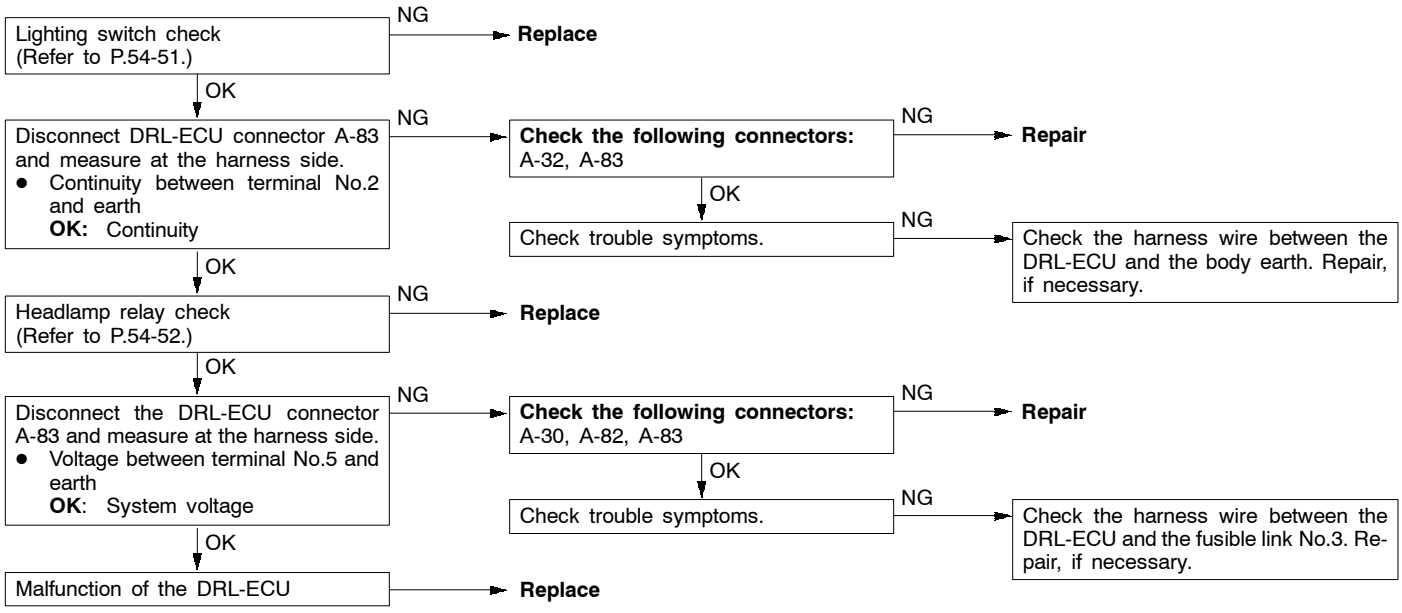
## Inspection procedure 6

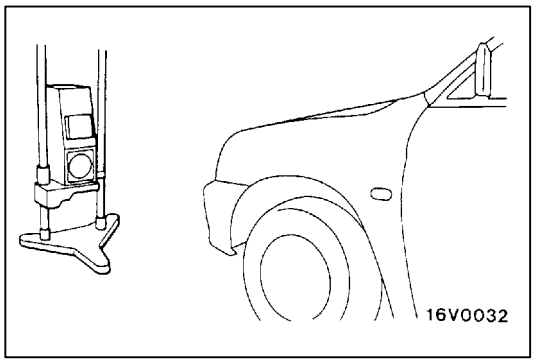
| The headlamps do not illuminate when the vehicle is in the following condition and the ignition switch is moved to the ON position. However, they illuminate when the lighting switch is moved to the HEAD position.<br><Vehicles with daytime running lamp><br>● Lighting switch: OFF<br>● Passing switch: OFF | Probable cause |
|---|---|
| The cause is probably a malfunction of the daytime running lamp control unit (DRL-ECU) circuit system. If there is a blown fuse, there may also be a short-circuit in a harness. | ● Malfunction of fuse<br>● Malfunction of connector<br>● Malfunction of harness wire<br>● Malfunction of the DRL relay (1)<br>● Malfunction of the DRL-ECU |



## Inspection procedure 7

| The headlamps do not switch off when the vehicle is in the following condition and the lighting switch is moved to the TAIL position.<br><Vehicles with daytime running lamp><br>● Ignition switch: OFF<br>● Passing switch: OFF | Probable cause |
|---|---|
| The cause is probably a malfunction of the daytime running lamp control unit (DRL-ECU) circuit system. If there is a blown fuse, there may also be a short-circuit in a harness. | ● Malfunction of fuse<br>● Malfunction of connector<br>● Malfunction of harness wire<br>● Malfunction of the tail lamp relay<br>● Malfunction of the DRL-ECU |






# ON-VEHICLE SERVICE

54200090265

## HEADLAMP AIMING

### <USING A BEAMSETTING EQUIPMENT>

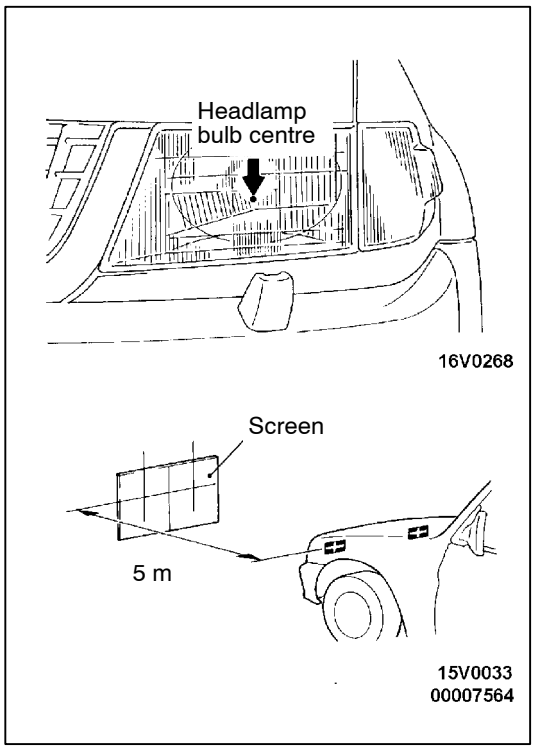
1. The headlamps should be aimed with the proper beamsetting equipment, and in accordance with the equipment manufacture's instructions.

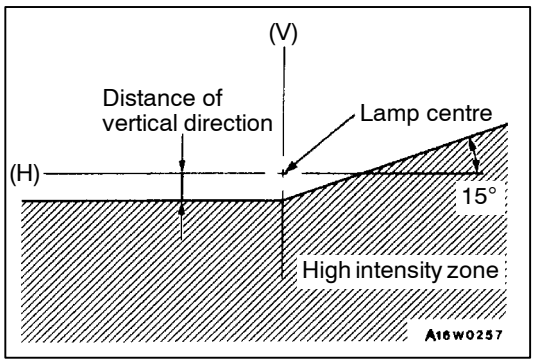
   NOTE
   If there are any regulations pertinent to the aiming of headlamps in the area where the vehicle is to be used, adjust so as to meet those requirements.

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 leveling switch in "0" position.
3. Set the distance between the screen and the centre of the headlamps as shown in the illustration.



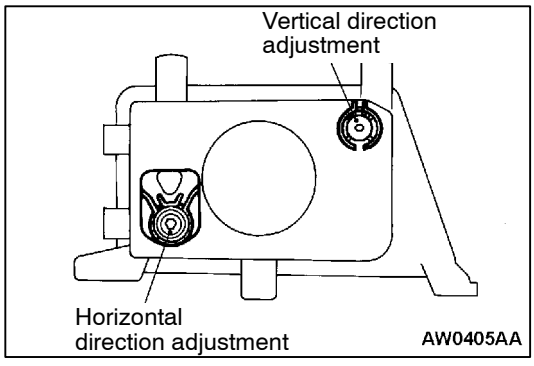




4. Check if the beam shining onto the screen is at the standard value.

   **Standard value:**
   **(Vertical direction)**
   **60 mm below horizontal (H)**
   **(Horizontal direction)**
   **Position where the 15° sloping section intersects the vertical line (V)**

   NOTE
   Illustration is for L.H. drive vehicles. For R.H. drive vehicles, beam pattern is symmetrical.

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



## INTENSITY MEASUREMENT

54200100074

Using a photometer, and following its manufacture'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.

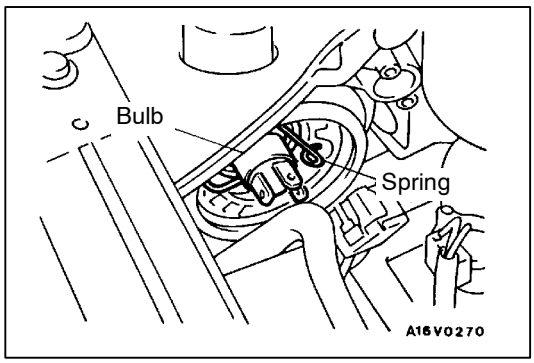
   $I = Er^2$ Where:
   - I = intensity (cd)
   - E = illumination (lux)
   - r = distance (m) from headlamps to illuminometer

## BULB REPLACEMENT

54200130264

**<Headlamp Bulb>**

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




3. Unhook the spring which secures the bulb, and then remove the bulb.

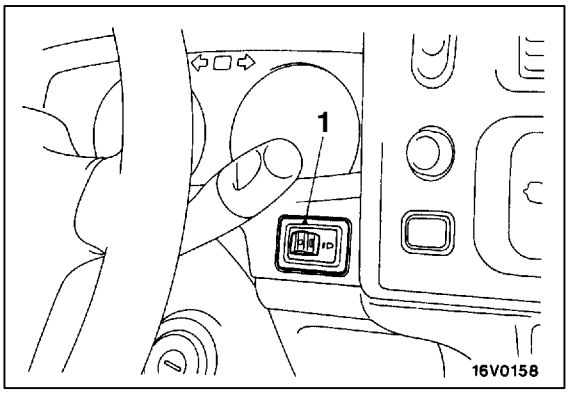
   **Caution**
   **Do not touch the surface of the bulb with hands or dirty gloves. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.**

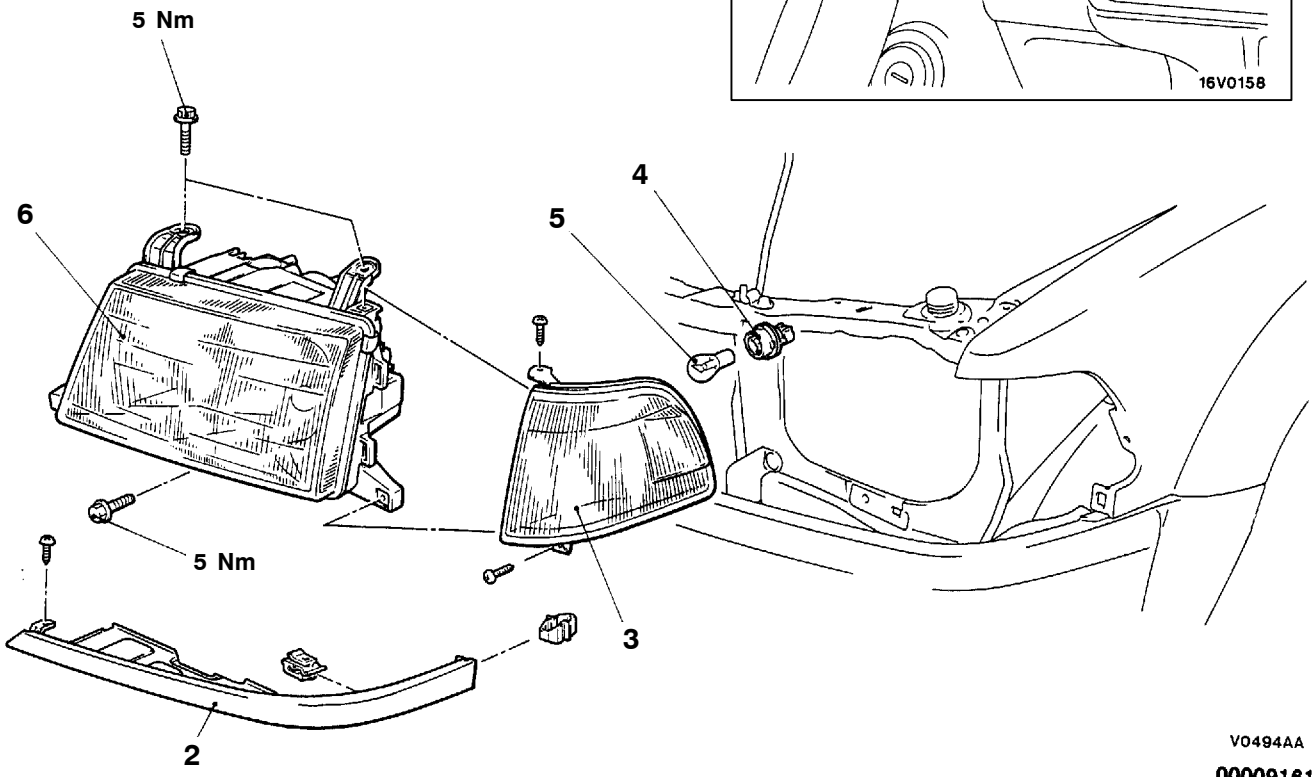
# HEADLAMP AND FRONT COMBINATION LAMP

54200270065

## REMOVAL AND INSTALLATION

**Post-installation operation**
- Headlamp aiming adjustment (Refer to P.54-48.)




00009161

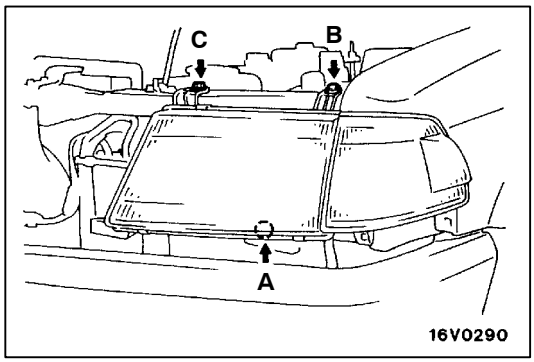
NOTE
For removal and installation of the column switch assembly (lighting switch, dimmer/passing switch), refer to GROUP 37A – Steering Wheel and Shaft.

1. Headlamp leveling switch

**Headlamp and front combination lamp removal steps**
- Radiator grille (Refer to GROUP 51 – Grille, Moulding and Garnish)

2. Grille filler panel
3. Front combination lamp
4. Bulb socket
5. Bulb

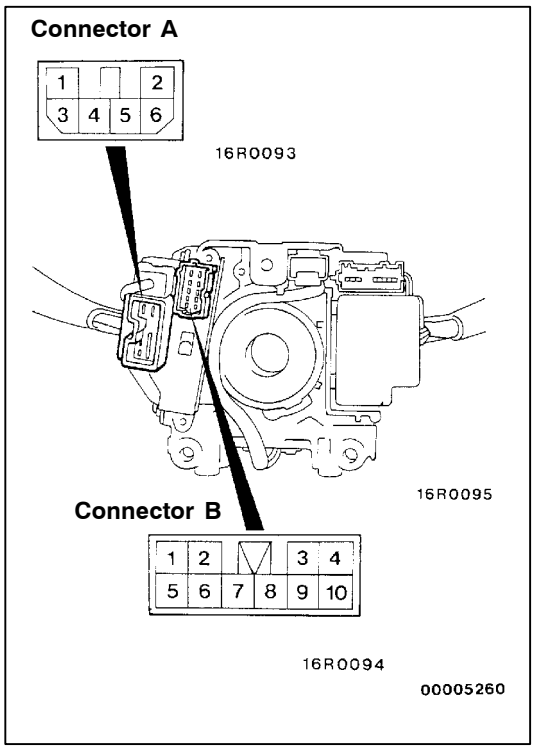
▶A◀ 6. Headlamp




## INSTALLATION SERVICE POINT

### ▶A◀ HEADLAMP INSTALLATION

Tighten the mounting bolts in A, B, C order.



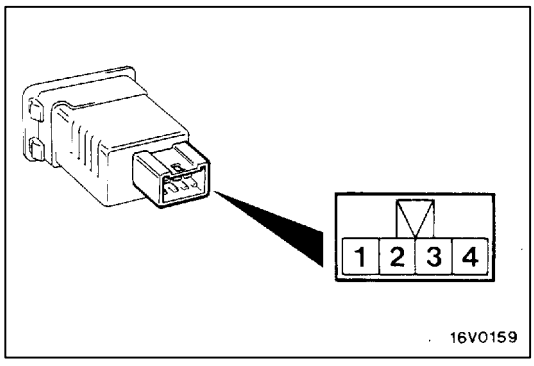

## INSPECTION

54200800127

### LIGHTING SWITCH AND DIMMER/PASSING SWITCH CONTINUITY CHECK

| Switch position | | Connector A–terminal No. | | | | | Connector B–terminal No. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 6 | 5 | 6 | 7 |
| LIGHTING SWITCH | OFF | | | | | | | | |
| | TAIL | | | | | | ○ | | ○ |
| | HEAD | ○ | | | | ○ | ○ | | ○ |
| DIMMER/ PASSING SWITCH | LOWER | | | ○ | ○ | | | | |
| | UPPER | | | | ○ | ○ | | | |
| | PASSING | ○ | ○ | ○ *1 | ○ *1 | ○ *2 | | | |

NOTE
1. *1 indicates continuity when the dimmer switch is in the lower position.
2. *2 indicates continuity when the dimmer switch is in the upper position.

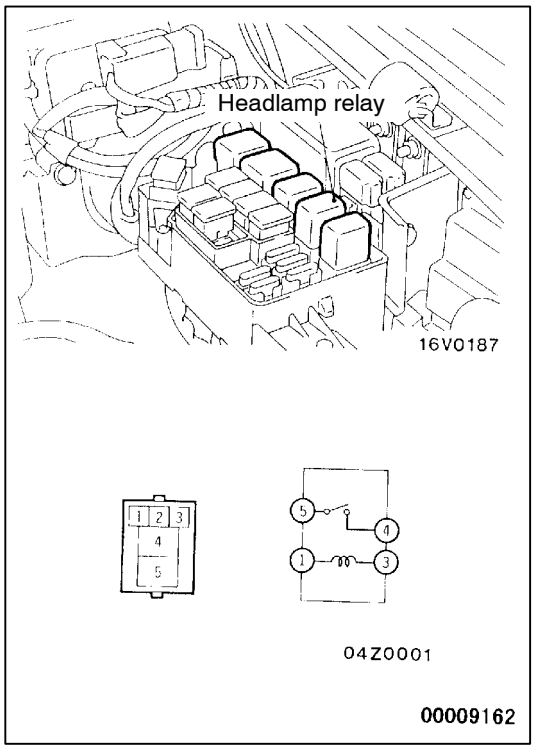



### HEADLAMP LEVELING SWITCH CHECK

54200810038

Check the resistance between the terminals when the headlamp leveling switch is operated.

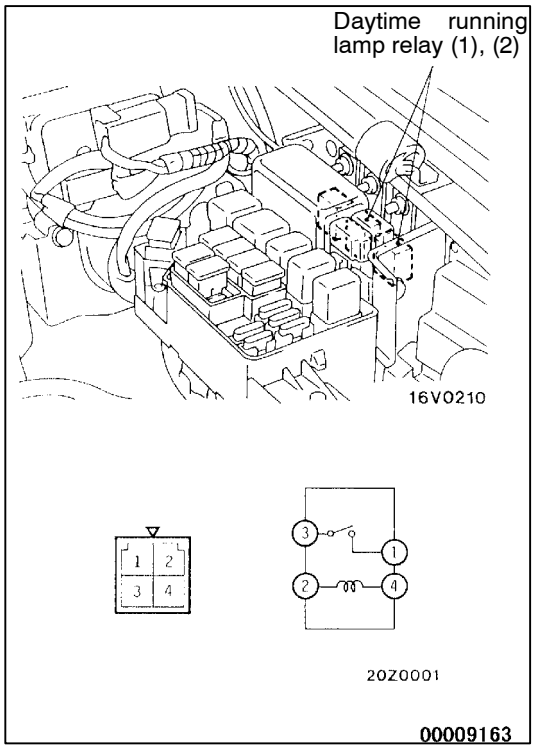
| Switch position | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Resistance measurement between terminal No.3 and 4 Ω | 120 | 300 | 620 | 1,100 | 2,000 |




## HEADLAMP RELAY

54200820161

| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 3 | 4 | 5 |
| Supplied | ⊕ | ⊖ | ○ | ○ |
| Not supplied | ○ | ○ | | |




## DAYTIME RUNNING LAMP RELAY (1) AND (2) CONTINUITY CHECK

54200830041

| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Supplied | ○ | ⊕ | ○ | ⊖ |
| Not supplied | | ○ | | ○ |

# FRONT FOG LAMP

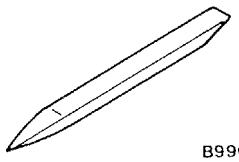
54200030069

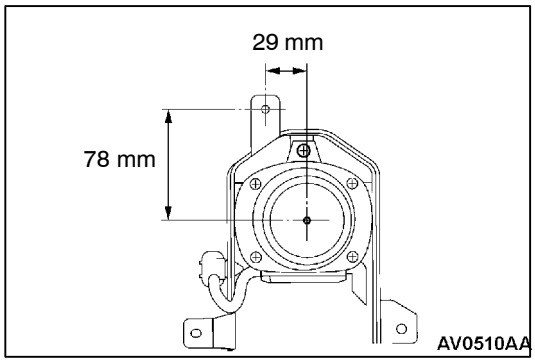
## SERVICE SPECIFICATIONS

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

## SPECIAL TOOL

54200060464

| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Removal of switch garnish |

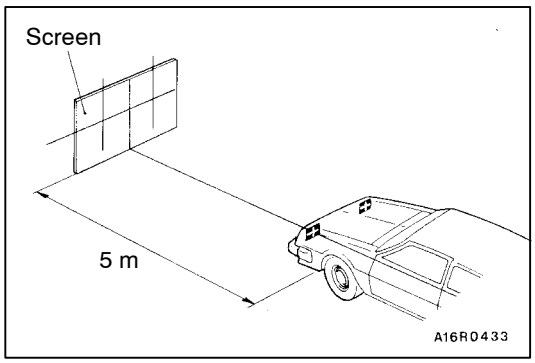



## ON-VEHICLE SERVICE

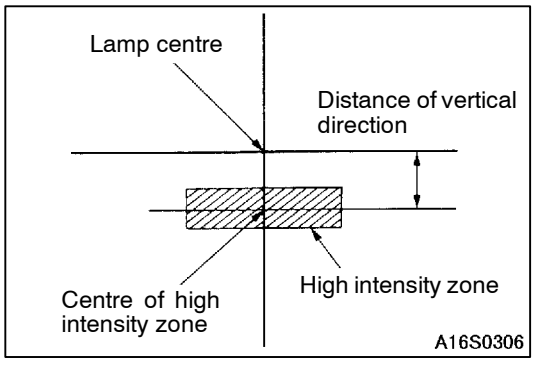
54200110190

### FRONT FOG LAMP AIMING

1. Measure the centre of the fog lamps, shown in the illustration.

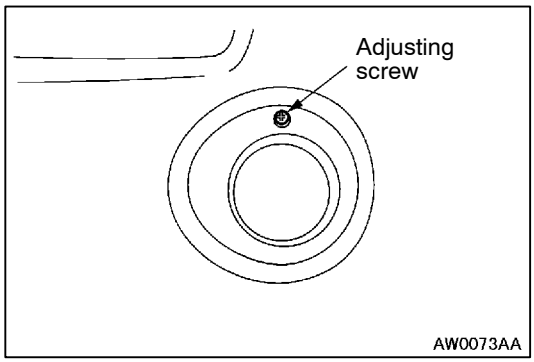



2. Set the distance between the screen and the centre of the fog lamps as shown in the illustration.
3. Inflate the tyres to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in the driver's position.
4. With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

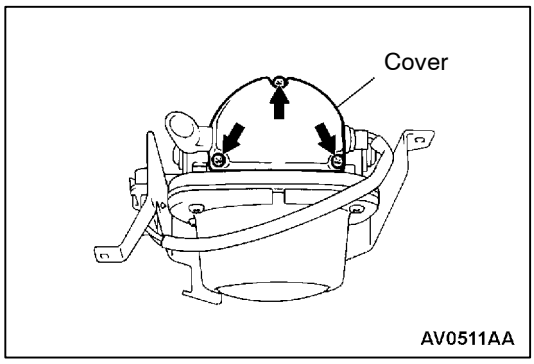



NOTE
The horizontal direction is non-adjustable. If deviation of the light beam axis exceeds the standard value, check to be sure that the mounting location or some other point is not defective.

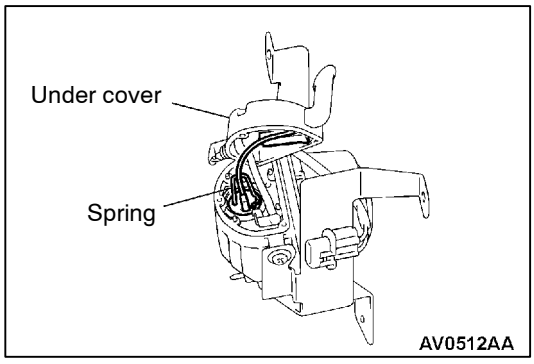
**Caution**
**When making the aiming adjustment, be sure to mask those lamps which are not being adjusted.**

## BULB REPLACEMENT

54200130271




1. Remove the fog lamp.
2. Remove the screws shown in the illustration, then remove the under cover.



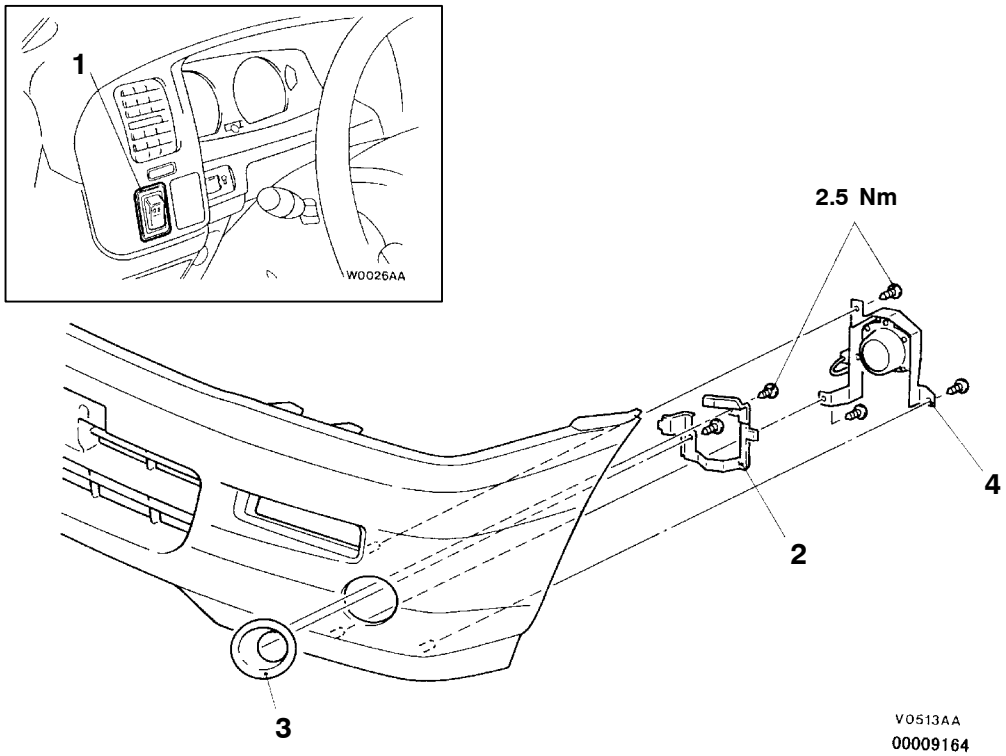

3. Unhook the spring which secures the bulb and then remove the bulb.

**Caution**
- **Do not touch the surface of the bulb with hands or dirty gloves. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.**
- **If the under cover is not attached properly, the lens might become cloudy or water might penetrate inside the lamp unit. Always be sure to install the under cover securely.**

# FRONT FOG LAMP

54200150246

## REMOVAL AND INSTALLATION

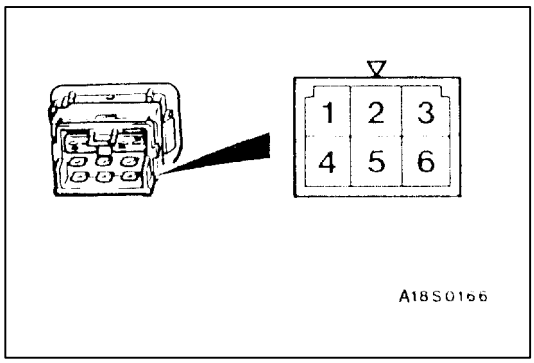



1. Fog lamp switch

**Fog lamp removal steps**

- Front bumper (Refer to GROUP 51.)

2. Fog lamp bracket
3. Fog lamp bezel
4. Fog lamp




## INSPECTION

54200740115

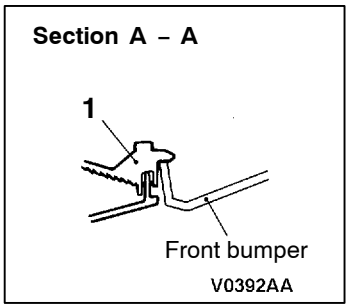
### FOG LAMP SWITCH CONTINUITY CHECK

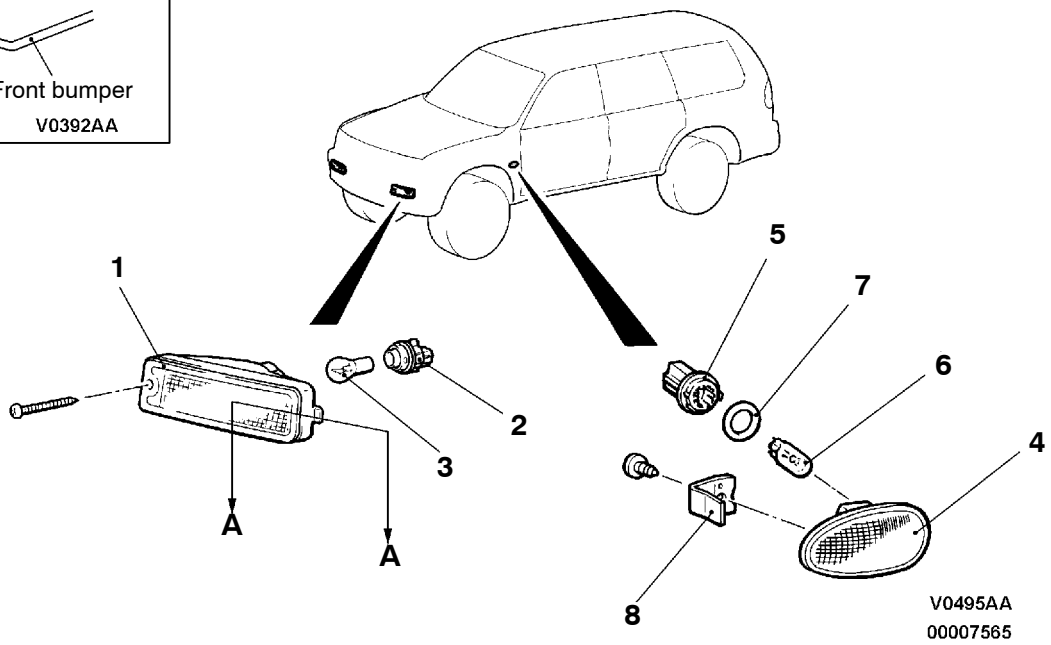
| Switch position | Terminal No. | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | IND | 4 | 5 | 6 |
| OFF | | | ○ | ○ | | | ○ |
| ON | ○ | ○ | | | ○ | ○ | |
| | | | ○ | ○ | | | ○ |

# TURN-SIGNAL LAMP

54200330138

## REMOVAL AND INSTALLATION




NOTE

For removal and installation of the column switch assembly (turn-signal switch), refer to GROUP 37A – Steering Wheel and Shaft.

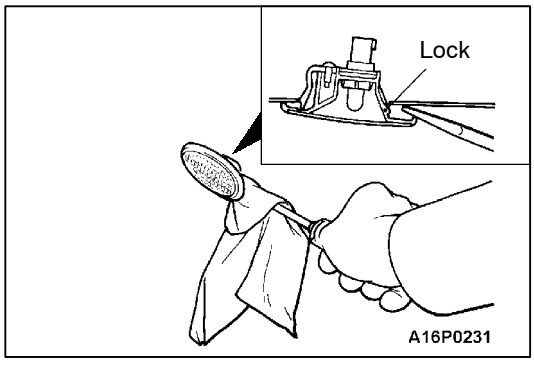
**Front turn-signal lamp removal steps**

1. Front turn-signal lamp
2. Bulb socket
3. Bulb

◀A▶

**Side turn-signal lamp removal steps**

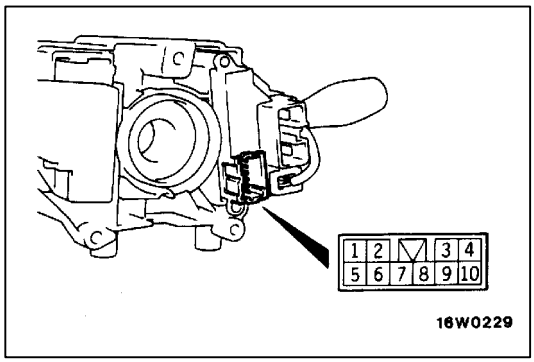
4. Side turn-signal lamp
5. Bulb socket
6. Bulb
7. Packing
8. Hook




## REMOVAL SERVICE POINT

### ◀A▶ SIDE TURN-SIGNAL LAMP REMOVAL

Use a flat-tipped screw driver or similar tool to remove the lock from the fender panel, and then remove the side turn-signal lamp.




## INSPECTION

54200760173

### TURN-SIGNAL LAMP SWITCH CONTINUITY CHECK

| Switch position | Terminal No. | | |
|---|---|---|---|
| | 3 | 8 | 9 |
| L.H. | ○ | ○ | |
| OFF | | | |
| R.H. | | ○ | ○ |

# REAR COMBINATION LAMP

54200070566

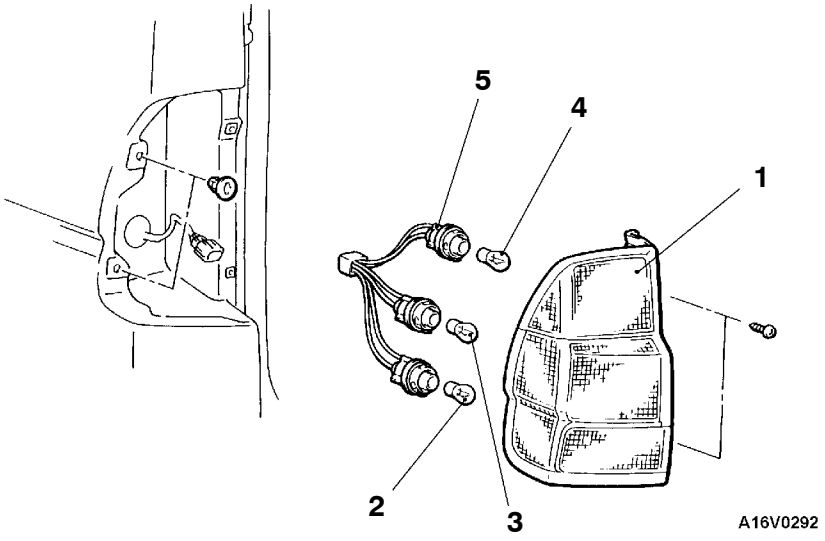
## TROUBLESHOOTING

Refer to P.54-42.

## REAR COMBINATION LAMP

54200390204

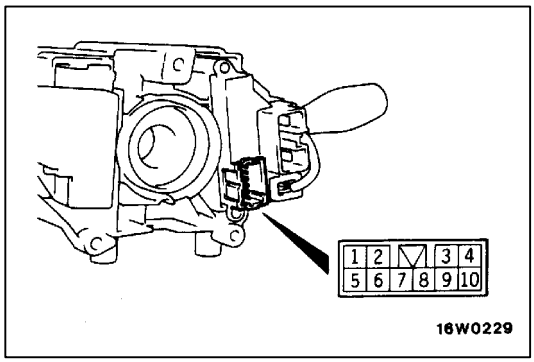
### REMOVAL AND INSTALLATION




NOTE
For removal and installation of the column switch assembly lighting switch, dimmer/passing switch and turn-signal switch, refer to GROUP 37A – Steering Wheel and Shaft.

**Removal steps**

1. Rear combination lamp
2. Bulb (For back-up lamp)
3. Bulb (For tail and stop lamp)
4. Bulb (For turn-signal lamp)
5. Bulb socket assembly




## INSPECTION

54200760180

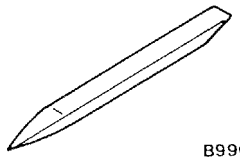
### LIGHTING SWITCH AND TURN-SIGNAL LAMP SWITCH CONTINUITY CHECK

| Switch position | | Terminal No. | | | | |
|---|---|---|---|---|---|---|
| | | 3 | 5 | 7 | 8 | 9 |
| LIGHTING SWITCH | OFF | | | | | |
| | TAIL | | ○ | ○ | | |
| TURN-SIGNAL LAMP SWITCH | R.H. | | | | ○ | ○ |
| | OFF | | | | | |
| | L.H. | ○ | | | ○ | |

# REAR FOG LAMP

54200060334

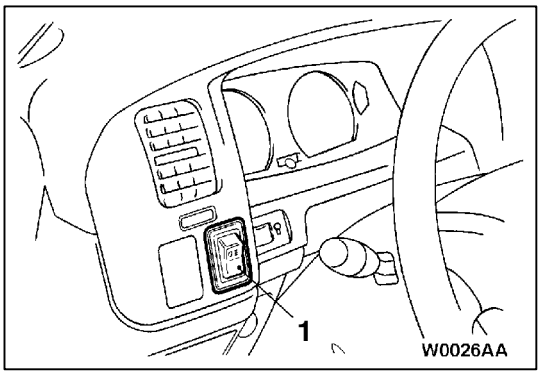
## SPECIAL TOOL

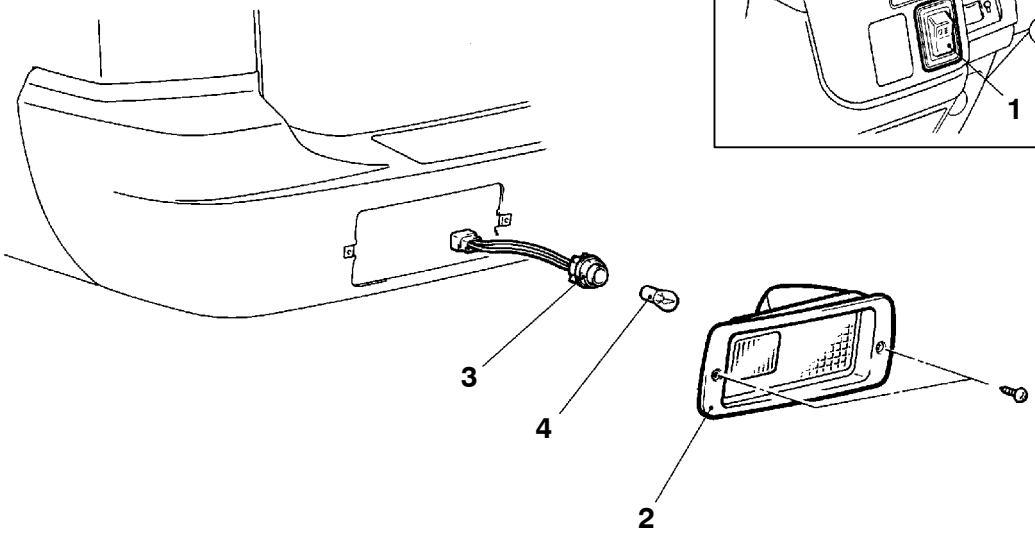
| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Fog lamp switch removal |

## REAR FOG LAMP

54200980029

### REMOVAL AND INSTALLATION



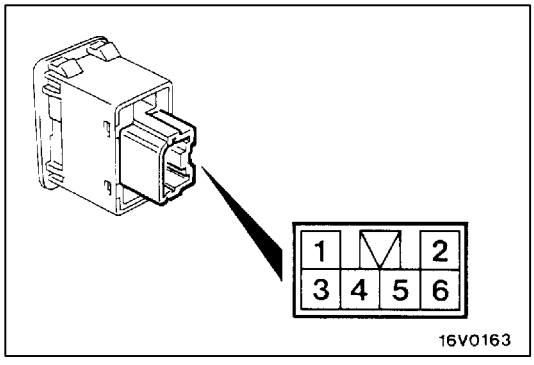




W0229AA
00009165

1. Rear fog lamp switch

**Rear fog lamp removal steps**

2. Rear fog lamp
3. Bulb
4. Bulb socket

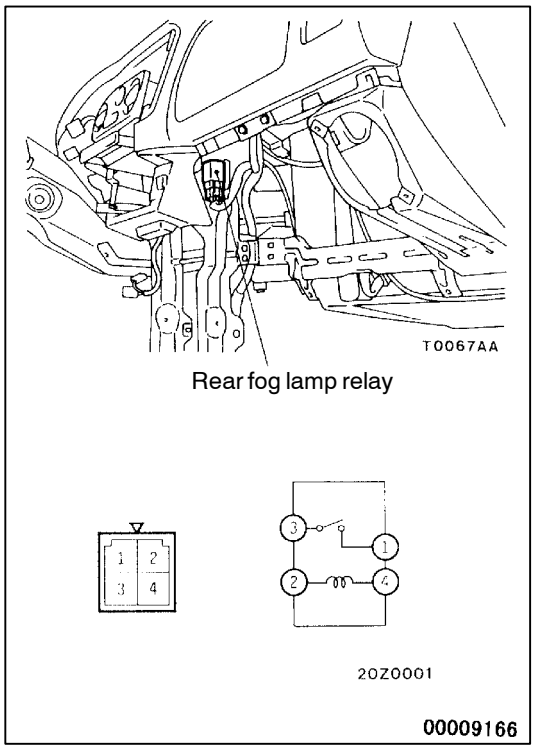



## INSPECTION

54200920021

### REAR FOG LAMP SWITCH CONTINUITY CHECK

| Switch position | Terminal No. | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | ILL | 3 | 6 |
| OFF | | ○ | ○ | | ○ |
| ON | ○ | ○ | ○ | ○ | ○ |




## REAR FOG LAMP RELAY CONTINUITY CHECK

54200930024

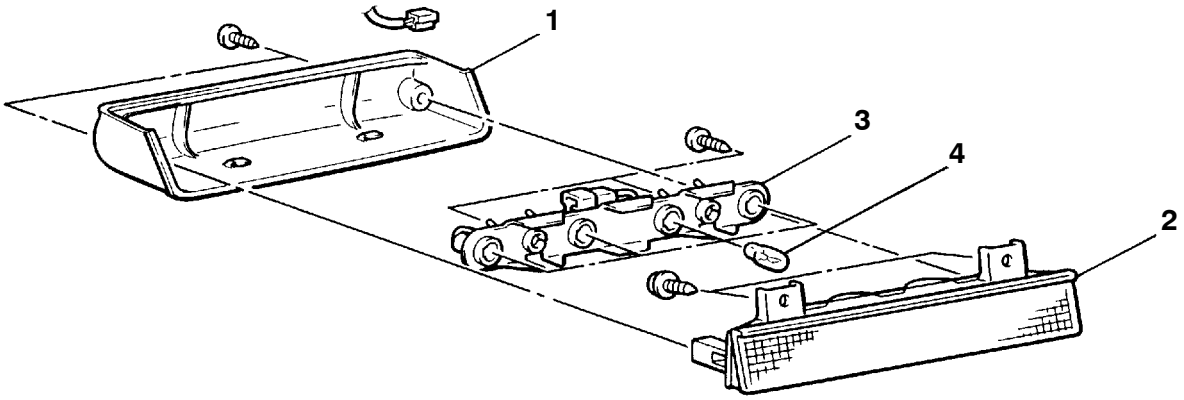
| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Supplied | ○ | ⊕ | ○ | ⊖ |
| Not supplied | | ○ | | ○ |

# HIGH-MOUNTED STOP LAMP

54200510297

## REMOVAL AND INSTALLATION

**<Tailgate mounted type>**

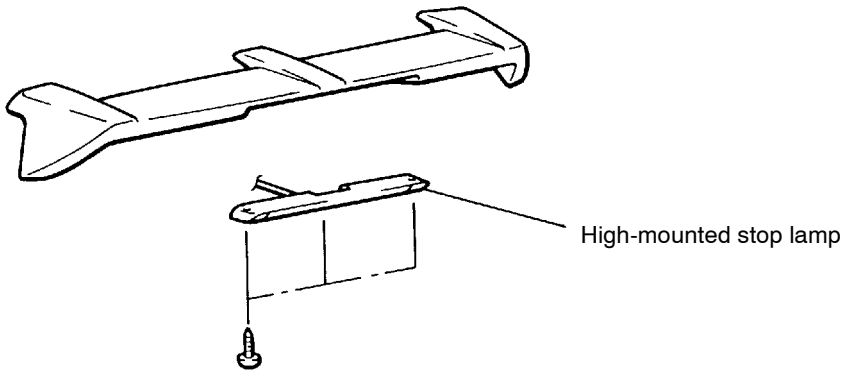



A16V0288

**Removal steps**

1. Cover
2. Light unit
3. Bulb socket
4. Bulb

**<Roof spoiler mounted type>**

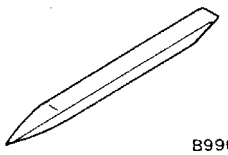


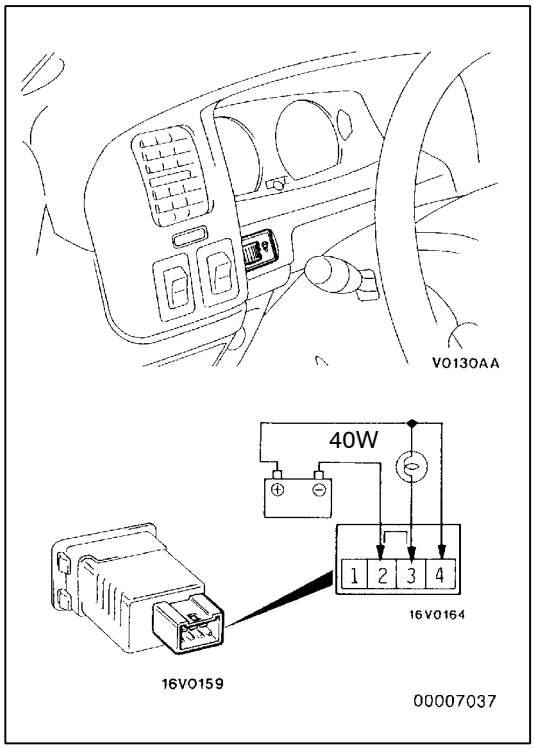

A18V0240

# RHEOSTAT

54200060341

## SPECIAL TOOL

| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Rheostat removal |




# RHEOSTAT

54200610201

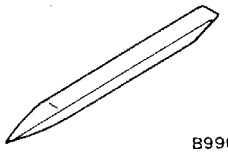
## INSPECTION

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

# HAZARD WARNING LAMP SWITCH

54200060358

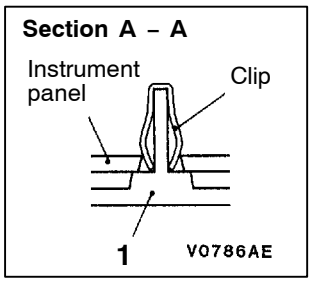
## SPECIAL TOOL

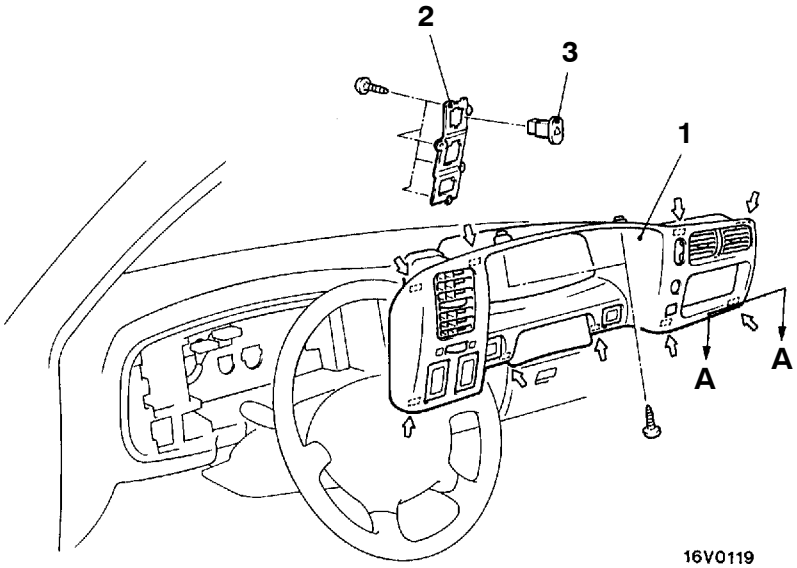
| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Meter bezel assembly removal |

## HAZARD WARNING LAMP SWITCH

54200660183

### REMOVAL AND INSTALLATION

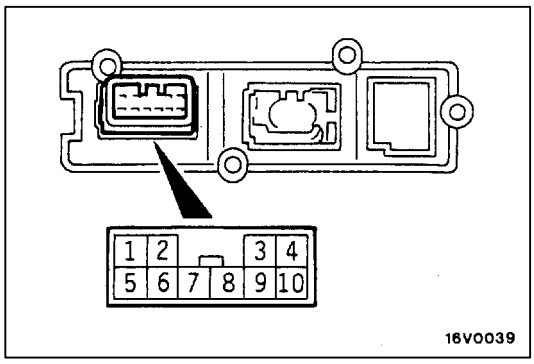



NOTE
⇦ : metal clip position

**Removal steps**

1. Meter bezel assembly
2. Switch holder
3. Hazard warning lamp switch




## INSPECTION

54200670209

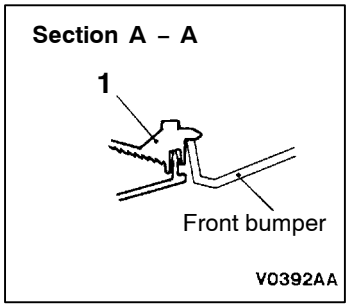
### HAZARD WARNING LAMP SWITCH CONTINUITY CHECK

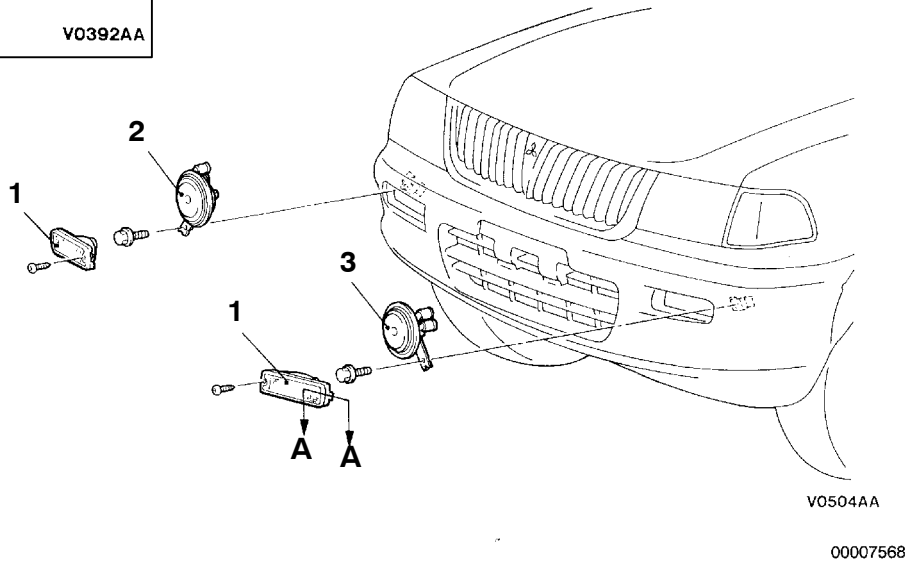
| Switch position | Terminal No. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 5 | 6 | 7 | 9 | ILL | 10 |
| OFF | | | | ○ | | ○ | ○ | ○ | ○ |
| ON | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |

# HORN

54300790069

## REMOVAL AND INSTALLATION

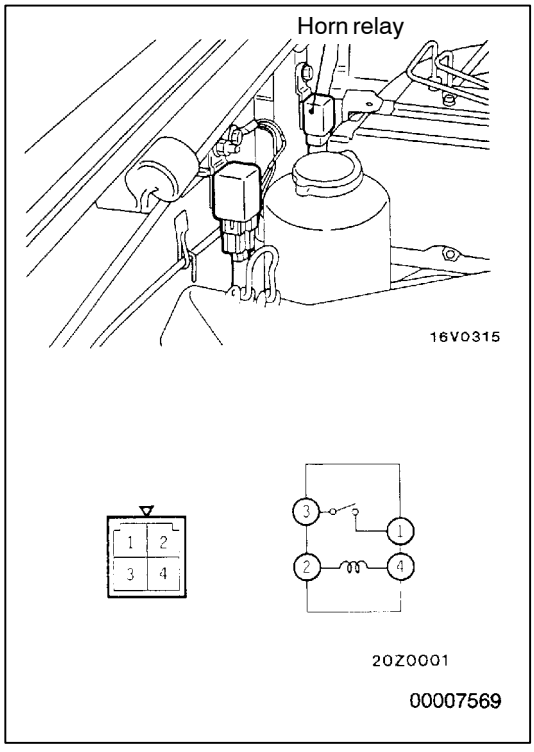



00007568

**Removal steps**

1. Front turn-signal lamp
2. Horn (high sound)
3. Horn (low sound)




00007569

## INSPECTION

54200650036

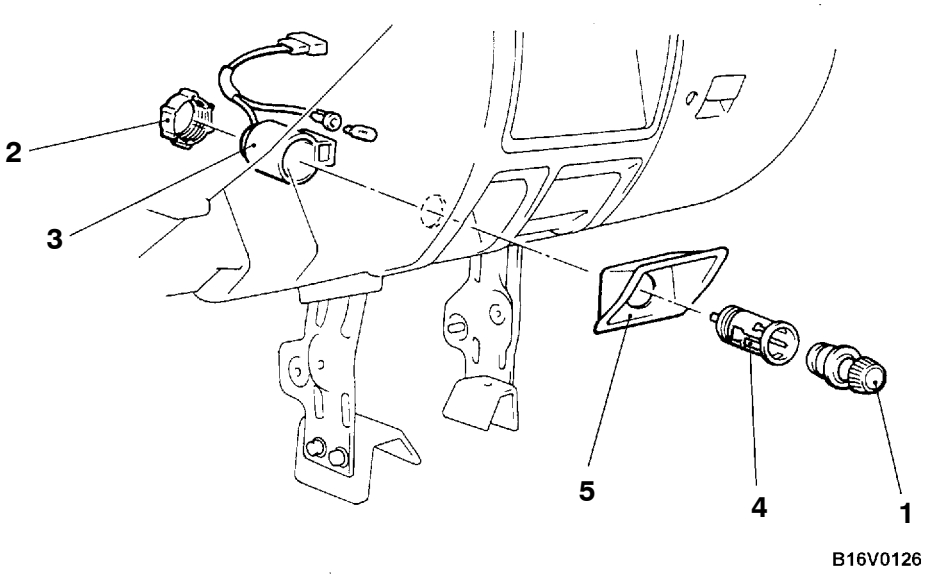
### HORN RELAY CONTINUITY CHECK

| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Supplied | ○ | ⊕ | ○ | ⊖ |
| Not supplied | | ○ | | ○ |

# CIGARETTE LIGHTER

54300560189

## REMOVAL AND INSTALLATION

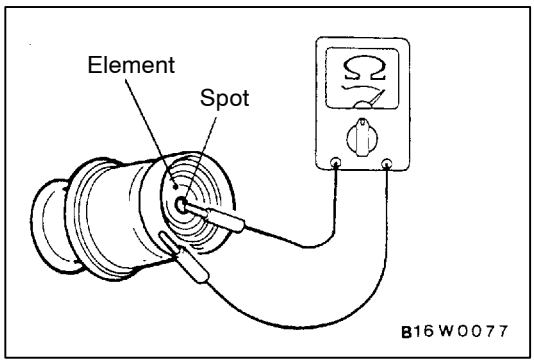



B16V0126

**Removal steps**

- Front floor console assembly (Refer to GROUP 52A.)

1. Plug
2. Fixing ring
3. Socket case
4. Socket
5. Protector




B16W0077

## INSPECTION

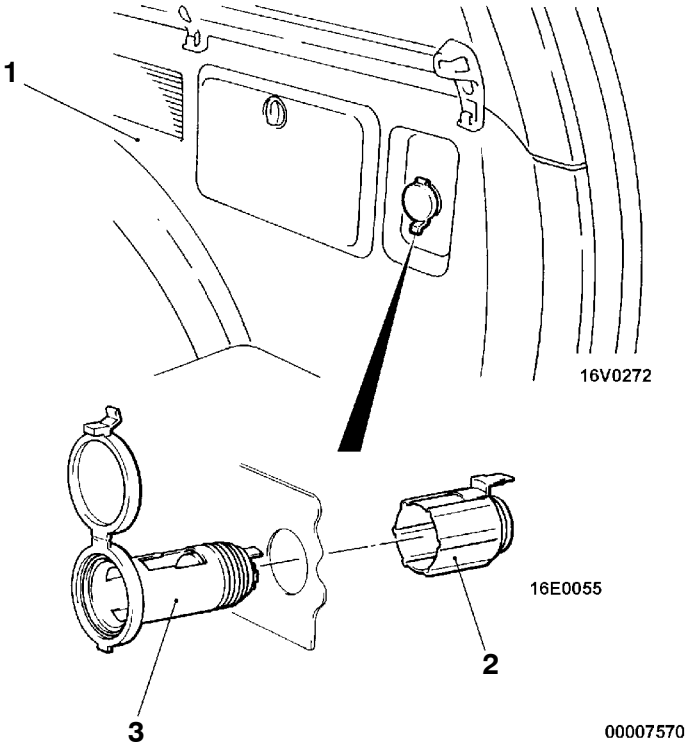
54300570113

- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using a circuit tester, check the continuity of the element.

# ACCESSORY SOCKET

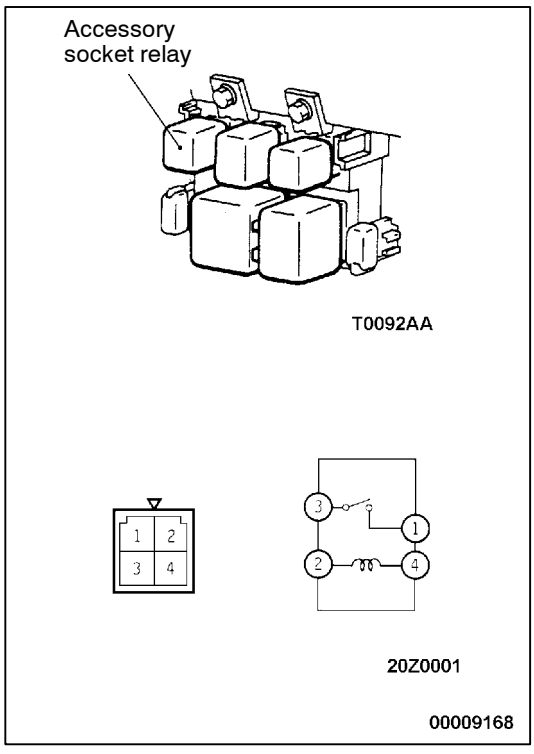
54300890059

## REMOVAL AND INSTALLATION




**Removal steps**

1. Quarter trim, lower <R.H.> (Refer to GROUP 52A – Trims.)
2. Outer case
3. Socket




## INSPECTION

54300900042

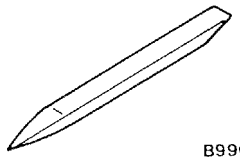
**Accessory socket relay continuity check**

| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Not supplied | | ○ | | ○ |
| Supplied | ○ | ⊕ | | ⊖ |

# RADIO AND TAPE PLAYER

54400060057

## SPECIAL TOOL

| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Meter bezel assembly removal |

## TROUBLESHOOTING

54400070265

### QUICK-REFERENCE TROUBLESHOOTING CHART

| Items | Problem symptom | Relevant chart |
|---|---|---|
| Noise | Noise appears at certain places when travelling (AM). | A-1 |
| | Noise appears at certain places when travelling (FM). | A-2 |
| | Mixed with noise, only at night (AM). | A-3 |
| | Broadcasts can be heard but both AM and FM have a lot of noise. | A-4 |
| | There is more noise either on AM or on FM. | A-5 |
| | There is noise when starting the engine. | A-6 |
| | Some noise appears when there is vibration or shocks during travelling. | A-7 |
| | Noise sometimes appears on FM during travelling. | A-8 |
| | Ever-present noise. | A-9 |
| Radio | When switch is set to ON, no power is available. | B-1 |
| | No sound from one speaker. | B-2 |
| | There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM. | B-3 |
| | Insufficient sensitivity. | B-4 |
| | Distortion on AM or on both AM and FM. | B-5 |
| | Distortion on FM only. | B-6 |
| | Too few automatic select stations. | B-7 |
| | Insufficient memory (preset stations are erased). | B-8 |

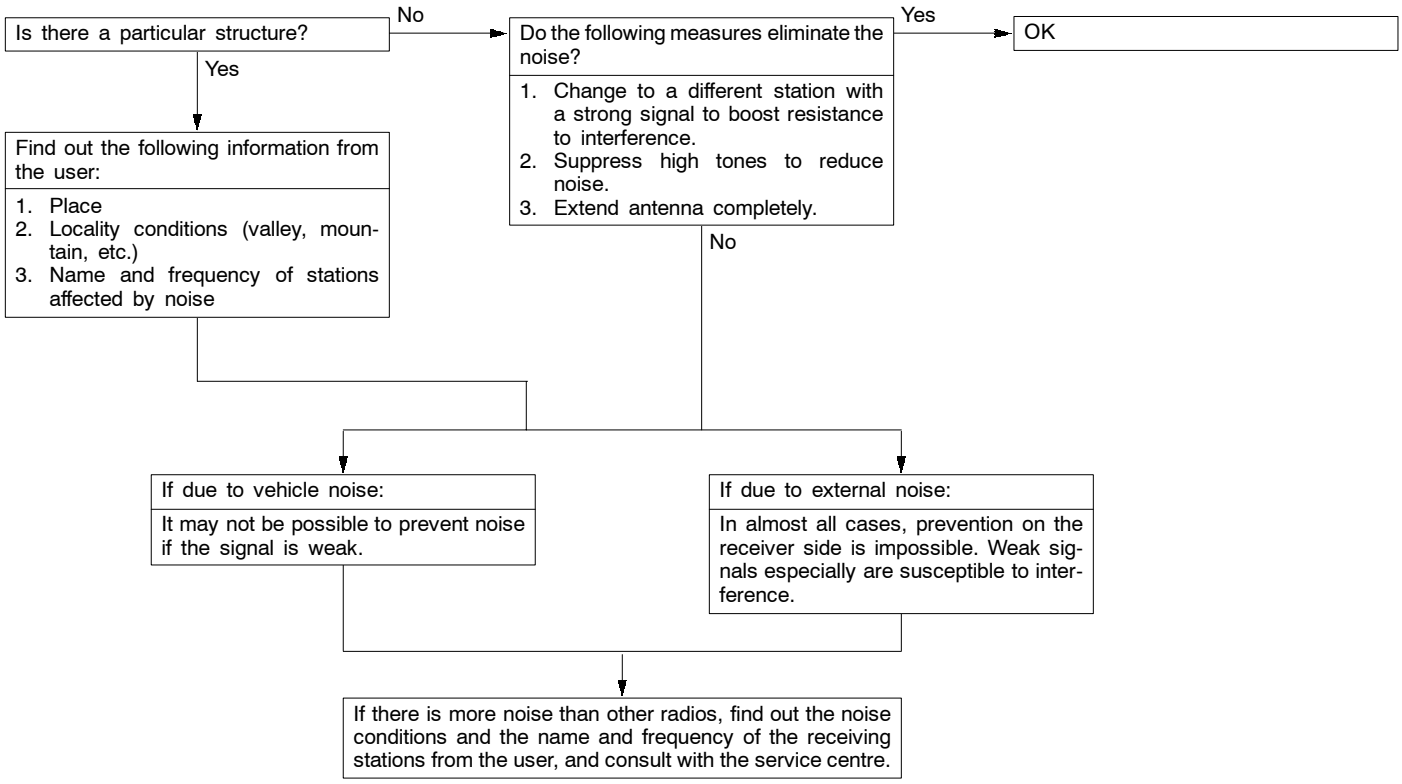
NOTE
Refer to problem symptoms of AM radio for MW radio.

| Items | Problem symptom | Relevant chart |
|---|---|---|
| Tape player | Cassette tape will not be inserted. | C-1 |
| | No sound. | C-2 |
| | No sound from one speaker. | C-3 |
| | Sound quality is poor, or sound is weak. | C-4 |
| | Cassette tape will not be ejected. | C-5 |
| | Uneven revolution. Tape speed is fast or slow. | C-6 |
| | Faulty auto reverse. | C-7 |
| | Tape gets caught in mechanism. | C-8 |

## CHART

### A. NOISE

**A-1 Noise appears at certain places when travelling (AM).**



## A-2 Noise appears at certain places when travelling (FM).

Do the following measures eliminate the noise?
- Change to a different station with a strong signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Extend antenna completely.

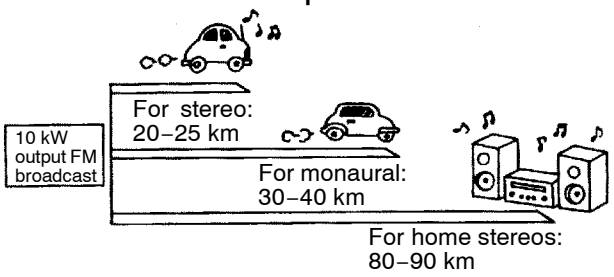
Yes → OK

No → If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service centre.

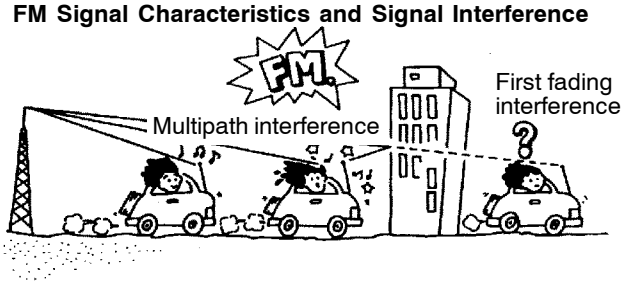
NOTE
About FM waves:
FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

1. The signal becomes weak as the distance from the station's transmission antenna increases. Although this may vary according to the signal strength of the transmitting station and intervening geographical formation or buildings, the area of good reception is approx. 20–25 km for stereo reception, and 30–40 km for monaural reception.
2. The signal becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the antenna and the car), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. During travelling, 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 repetitious buzzing.>
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

**FM Broadcast Good Reception Areas**




**FM Signal Characteristics and Signal Interference**

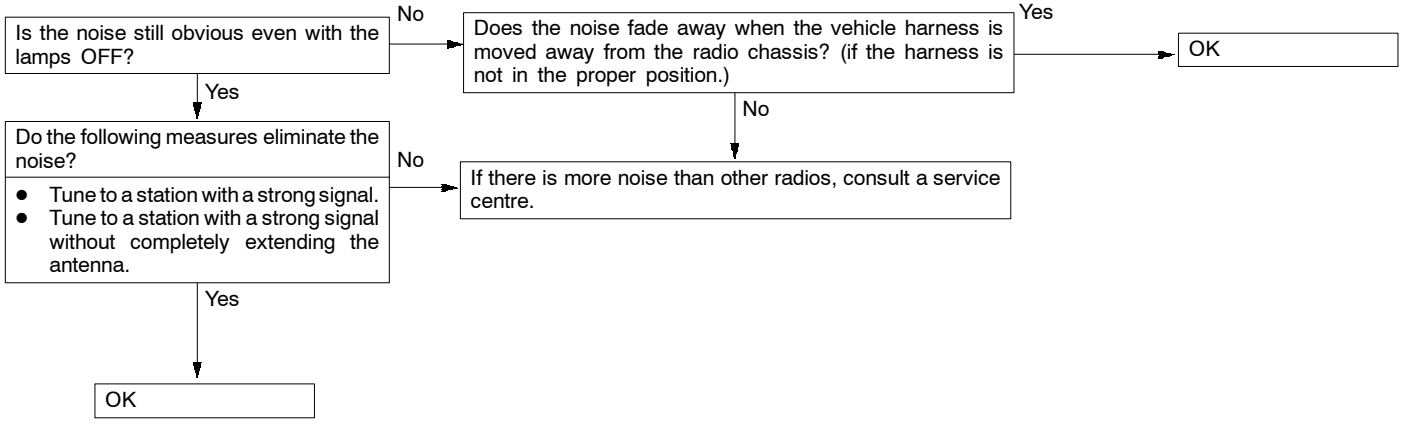



16W0268

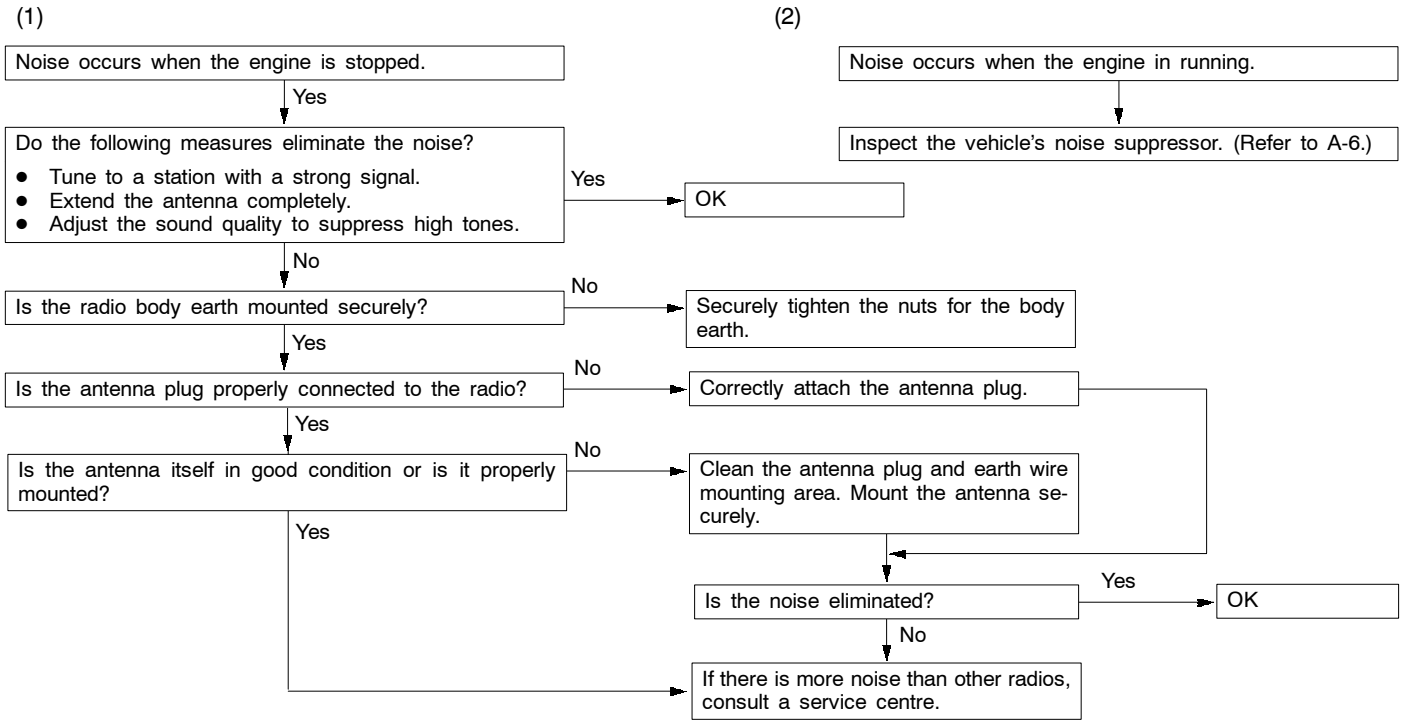
## A-3 Mixed with noise, only at night (AM).

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 a different station or the appearance of a beating sound* may occur. 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 by electrical waves as well.
2. Factors due to vehicle noise: Alternator noise may be a cause.




## A-4 Broadcasts can be heard but both AM and FM have a lot of noise.



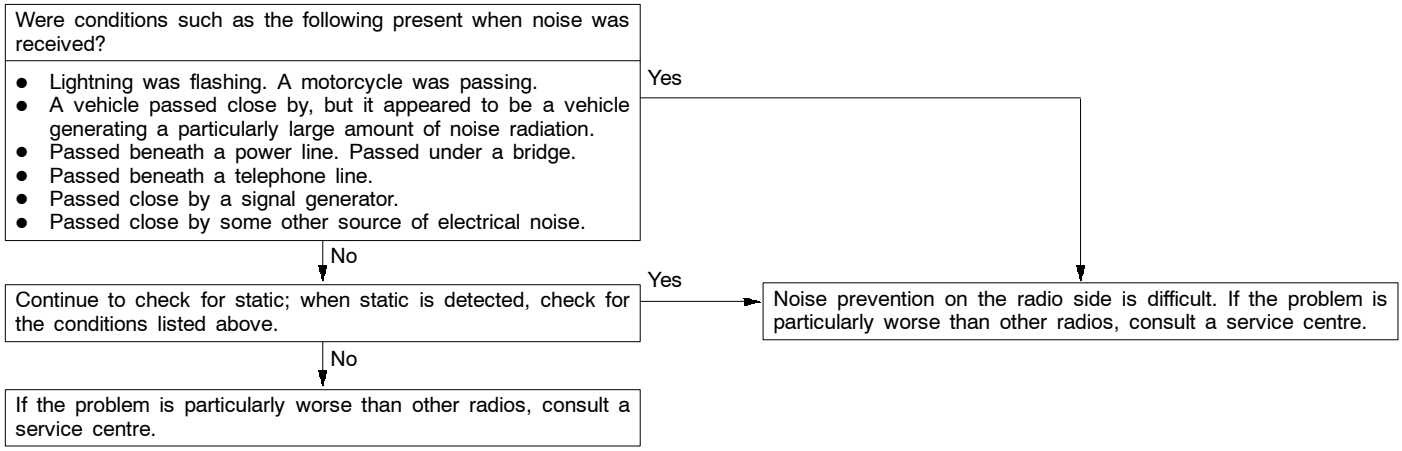

NOTE

About 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, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2.)

<Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

**A-5 There is more noise either on AM or on FM.**

1. There is much noise only on AM.
   Due to differences in AM and FM systems, AM is more susceptible to noise interference.




2. There is much noise only on FM.
   Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

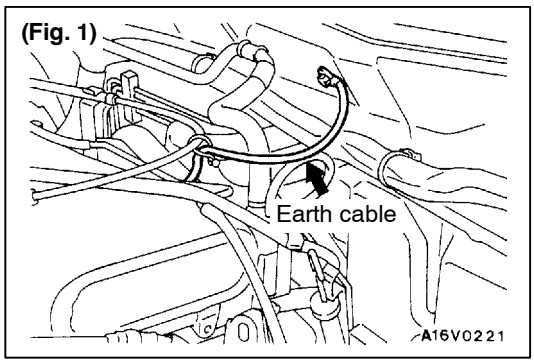
**A-6 There is noise when starting the engine.**

| Noise type Sounds are in parentheses ( ). | Conditions | Cause | Remedy |
|---|---|---|---|
| AM, FM: Ignition noise (Popping, snapping, cracking, buzzing) | • Increasing the engine speed causing the popping sound to speed up, and volume decreases.<br>• Disappears when the ignition switch is turned to ACC. | • Mainly due to the spark plugs.<br>• Due to the engine noise. | • Check or replace the earth cable. (Refer to Fig. 1, 2 and 3 on P.54-72, 73.)<br>• Check or replace the noise capacitor. <6G7> (Refer to 4 on P.54-73.) |
| Other electrical components | – | Noise may appear as electrical components become older. | Repair or replace electrical components. |
| Static electricity (Cracking, crinkling) | • Disappears when the vehicle is completely stopped.<br>• 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. |
| | • Various noises are produced depending on the body part of the vehicle. | Due to detachment from the body of the front hood, bumpers, exhaust pipe and muffler, suspension, etc. | Tighten the mounting bolts securely. Cases where the problem is not eliminated by a single response to one area are common, due to several body parts being imperfectly earthed. |

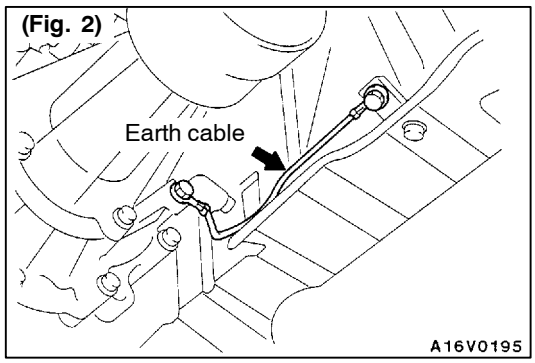
**Caution**
1. **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
2. **Check that there is no external noise. Since failure caused by this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.**
3. **Noise prevention should be performed by suppressing strong sources of noise step by step.**

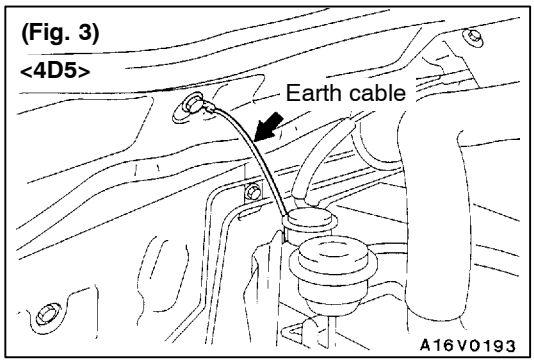
NOTE
1. Capacitor
   The capacitor does not pass D.C. current, but as the number of waves increases when it passes A.C. current, impedance (resistance against A.C.) decreases, and current flow is facilitated. A noise suppressing condenser which takes advantage of this property is inserted between the power line for the noise source and the earth. This suppresses noise by earthing the noise component (A.C. or pulse signal) to the body of the vehicle.
2. Coil
   The coil passes D.C. current, but impedance rises as the number of waves increases relative to the A.C. 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.

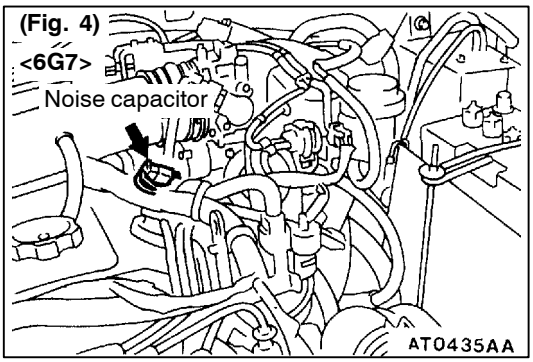
(Fig. 1)




(Fig. 2)



(Fig. 3)
<4D5>



(Fig. 4)
<6G7>



## A-7 Some noise appears when there is vibration or shocks during travelling.

Are connectors properly connected?
- No → Ensure proper connection.
- Yes ↓

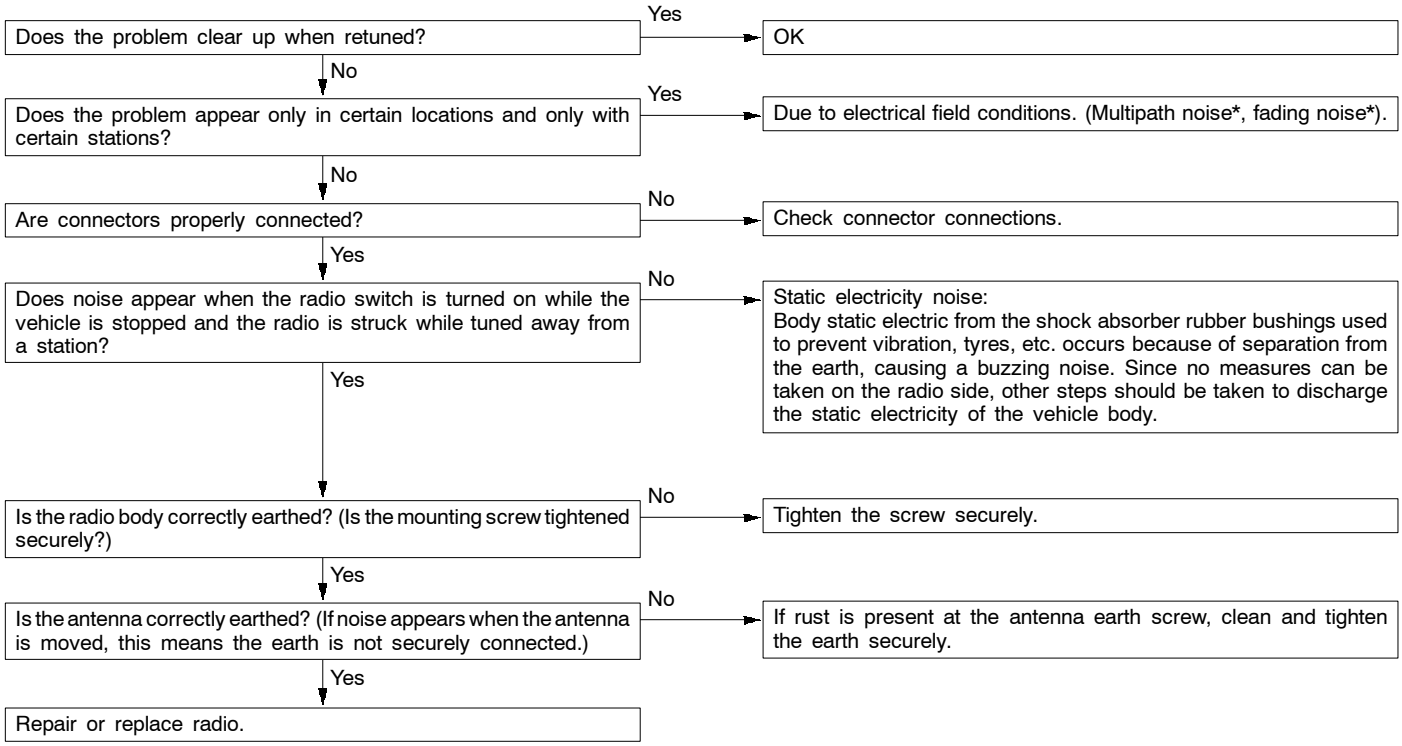
Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is struck while tuned away from a station?
- No → Static electricity noise:
  Body static electric from the shock absorber rubber bushings used to prevent vibration, tyres, etc. occurs because of separation from the earth, causing a buzzing noise. Since no measures can be taken on the radio side, other steps should be taken to discharge the static electricity of the vehicle body.
- Yes ↓

Is the radio correctly earthed? (Is the mounting screw tightened securely?)
- No → Tighten the screw securely.
- Yes ↓

Is the antenna correctly earthed? (If noise appears when the antenna is moved, this means the earth is not securely connected.)
- No → If rust is present at the antenna earth screw, clean and tighten the earth securely.
- Yes ↓

Repair or replace radio.

## A-8 Noise sometimes appears on FM during travelling.




* About 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.

### A-9 Ever-present noise.

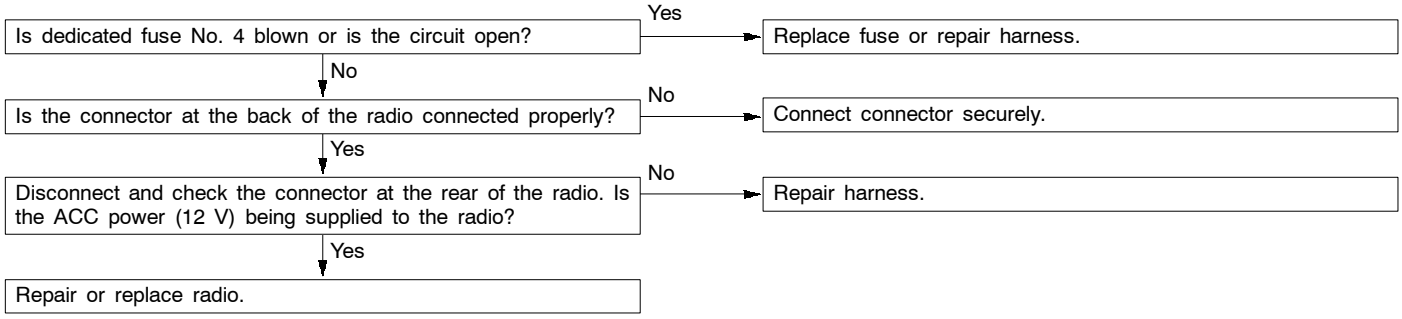
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

- Travelling conditions of the vehicle
- Terrain of area travelled through
- Surrounding buildings
- Signal conditions
- Time period

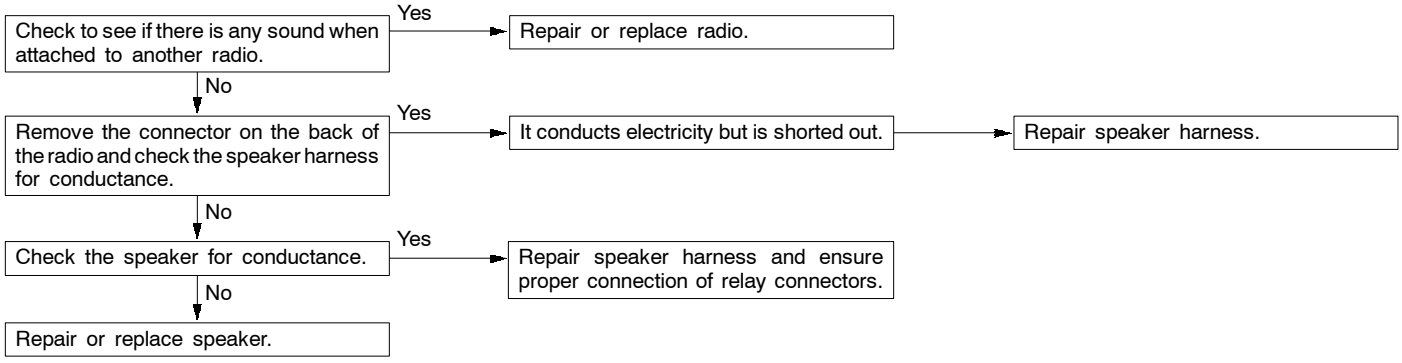
For this reason, if there are still problems with noise even after the measures described in steps A-1 to A-8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service centre.

## B. RADIO

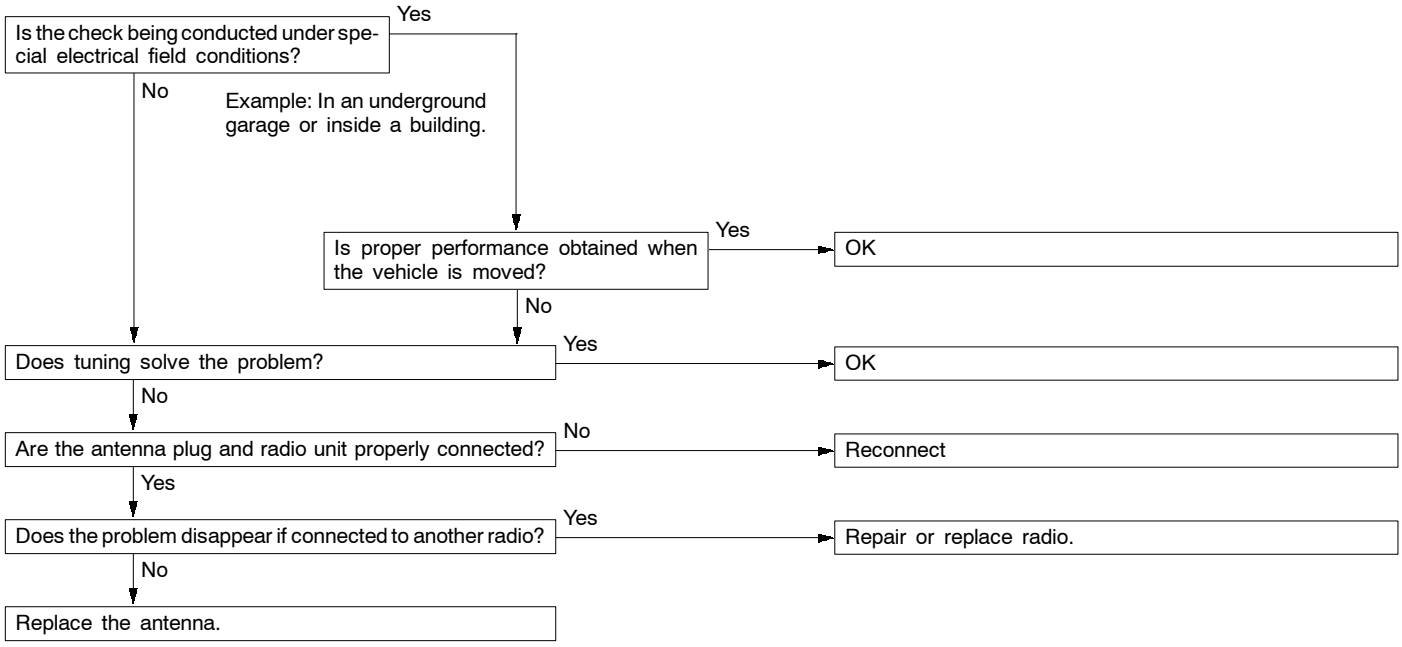
### B-1 No power is supplied when the switch is set to ON.



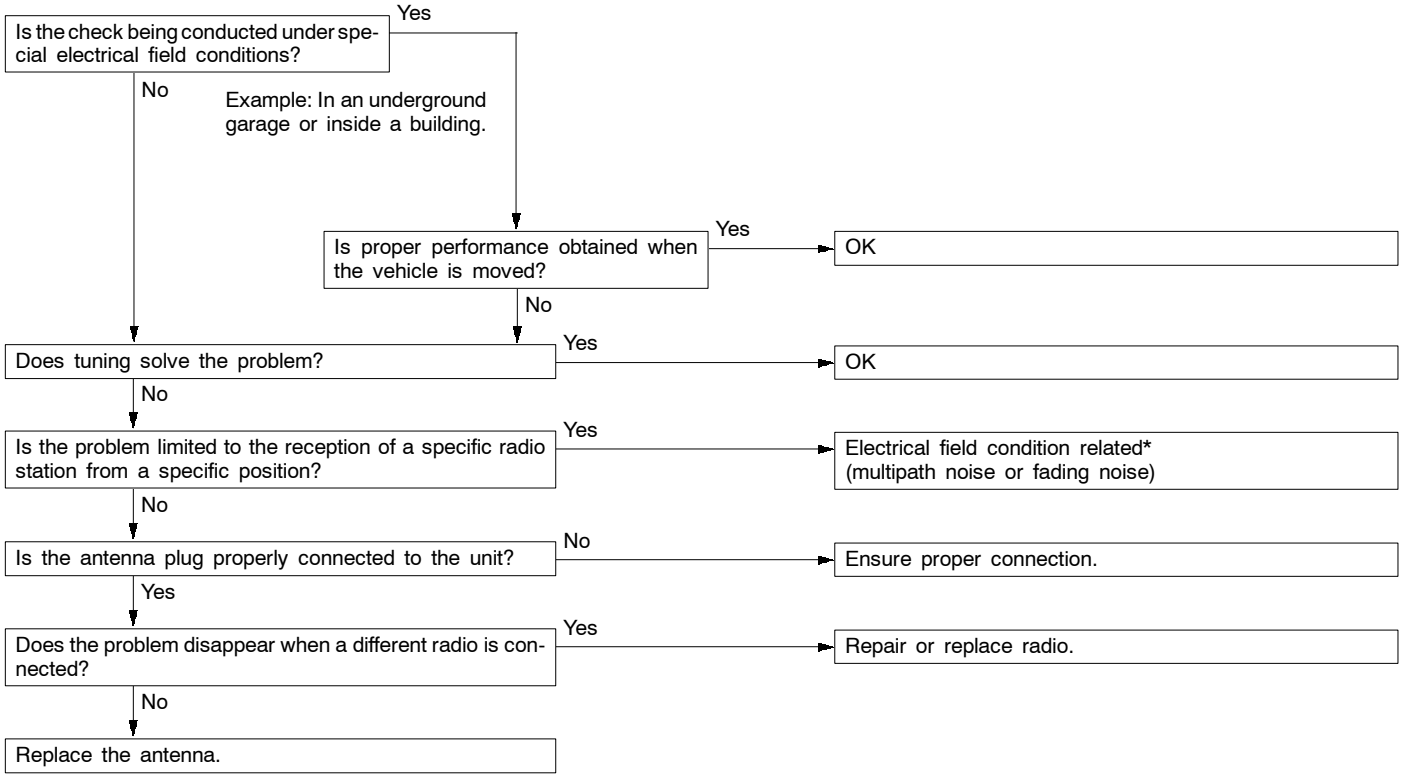

### B-2 No sound from one speaker.



## B-3 There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.

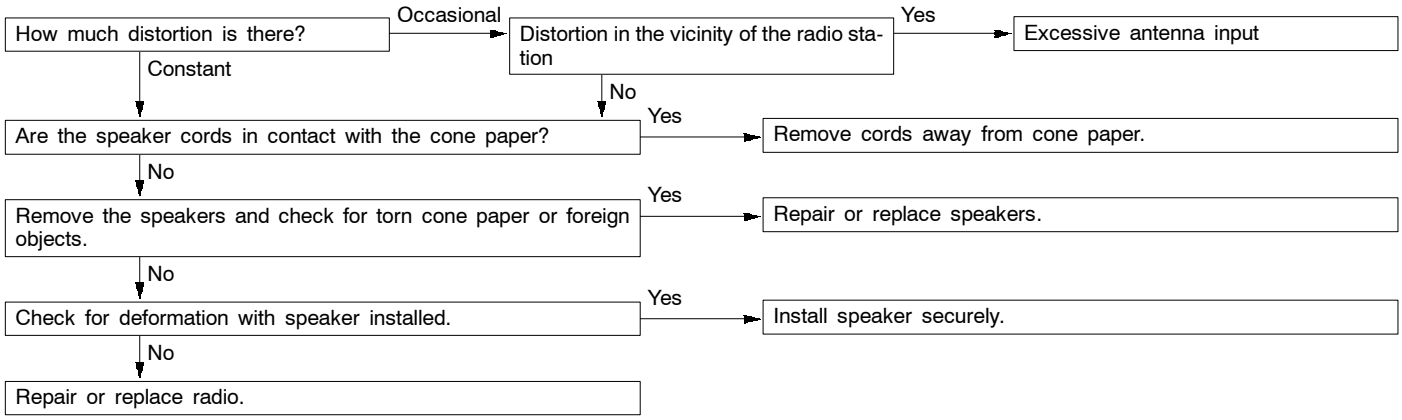



## B-4 Insufficient sensitivity.

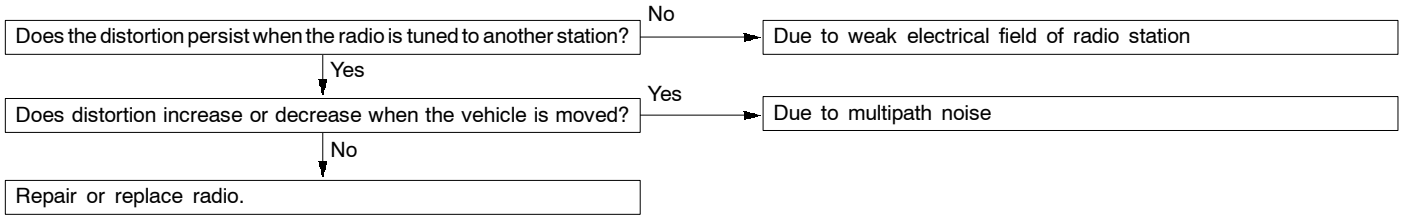



* For multipath noise and fading noise problems, refer to P. 54-72.

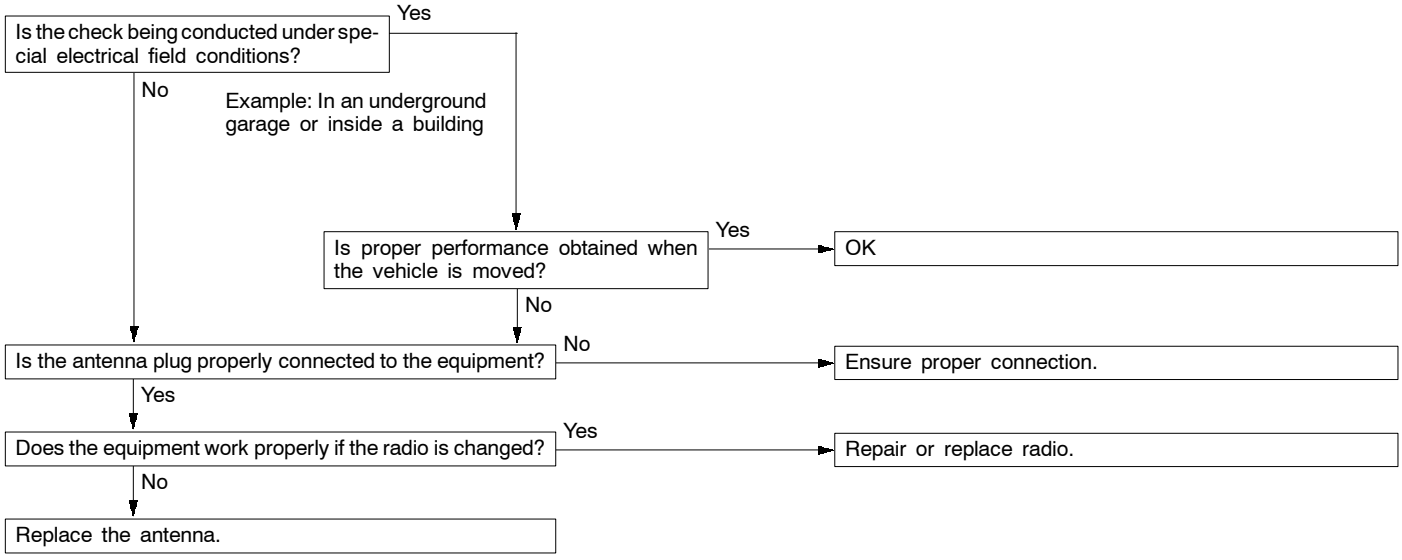
## B-5 Distortion on AM or on both AM and FM.



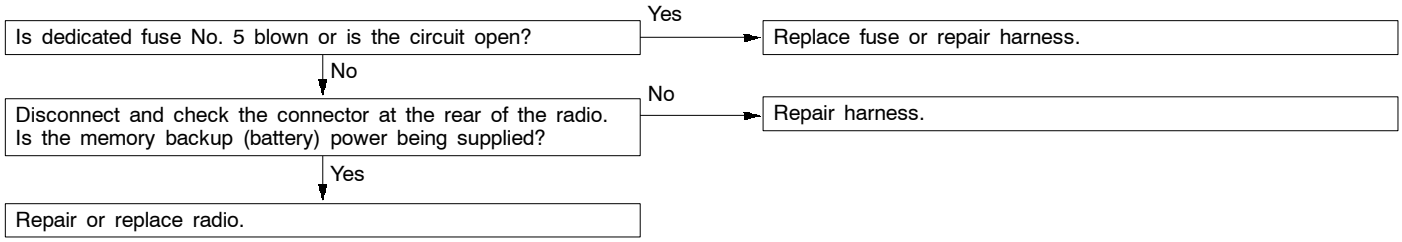

## B-6 Distortion on FM only




## B-7 Too few automatic select stations.

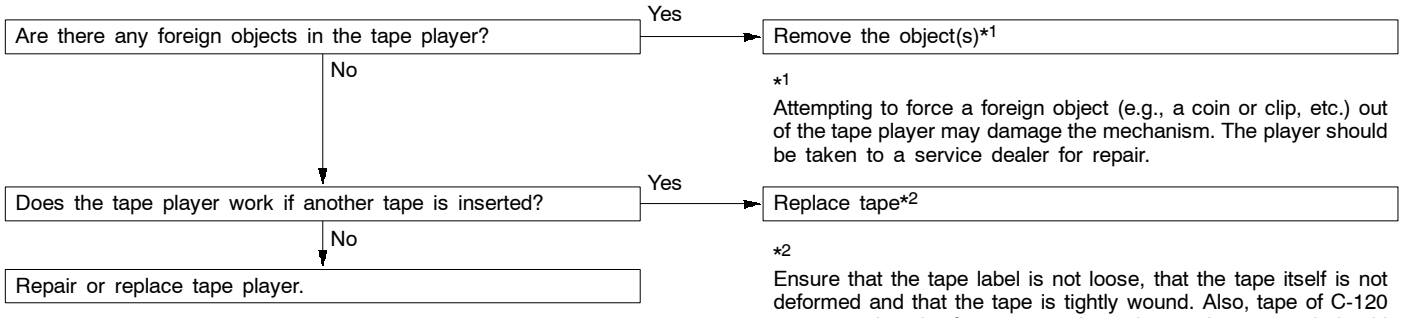


## B-8 Insufficient memory (preset stations are erased).




# C. TAPE PLAYER

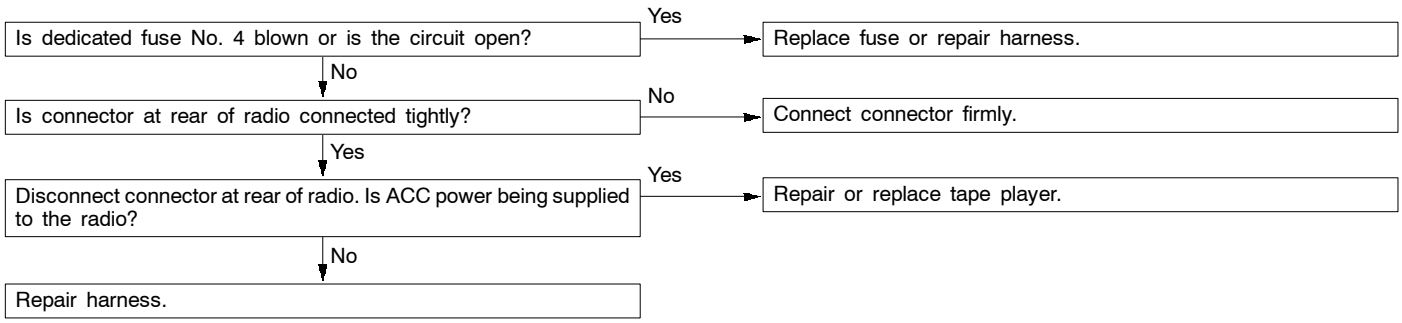
## C-1 Cassette tape will not be inserted.



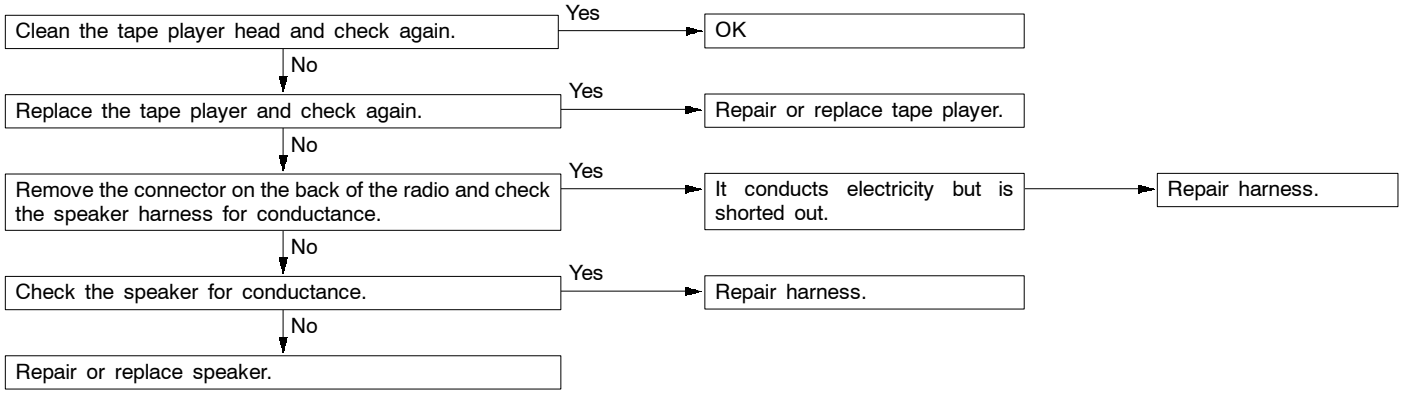

*1
Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the tape player may damage the mechanism. The player should be taken to a service dealer for repair.

*2
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tape of C-120 or greater length often get caught in the mechanism and should not be used.

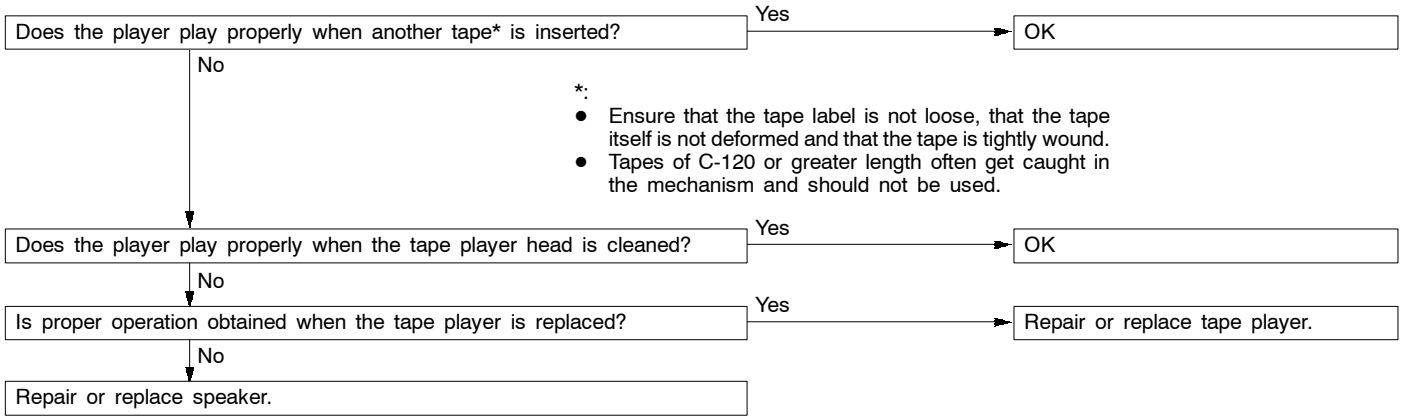
## C-2 No sound (even after a tape has been inserted).



## C-3 No sound from one speaker.




## C-4 Sound quality is poor, or sound is weak.




## C-5 Cassette tape will not be ejected.

The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the tape player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out of the player can cause damage to the mechanism. The player should be taken to a service dealer for repair.

## C-6 Uneven revolution. Tape speed is fast or slow.

Does the player play OK if the tape*1 is changed?
- Yes → OK
- No

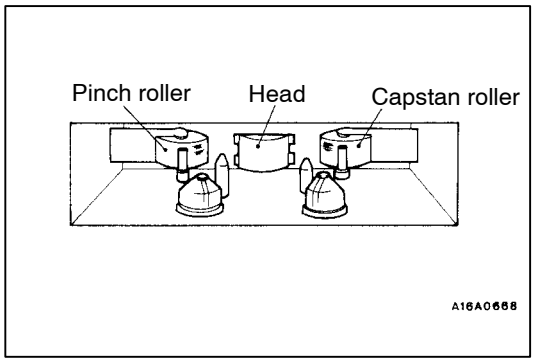
*1
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tape of C-120 or greater length often get caught in the mechanism and should not be used.

Are there any foreign objects *2 inside the tape player?
- Yes → Remove foreign object(s).
- No

*2
Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the tape player may damage the mechanism. The player should be taken to a service dealer for repair.

Is the head or capstan roller dirty? (Refer to the illustration below.)
- Yes → Clean.
- No

Repair or replace tape player.




## C-7 Faulty auto reverse.

Does the player play OK if the tape* is changed?
- Yes → OK
- No

*:
- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Does the problem only occur while the vehicle is being driven?
- No → Repair or replace tape player.
- Yes

Is the tape player properly installed to the vehicle?
- No → Ensure tape player installation.
- Yes

Repair or replace tape player.

## C-8 Tape gets caught in mechanism*1.

*1
When the tape is caught in the mechanism, the case may not eject. When this occurs, do not try to force the tape out as this may damage the tape player mechanism. Take the cassette to a service dealer for repair.

Does the player play OK if the tape*2 is changed?

Yes → Tape used is bad.

No

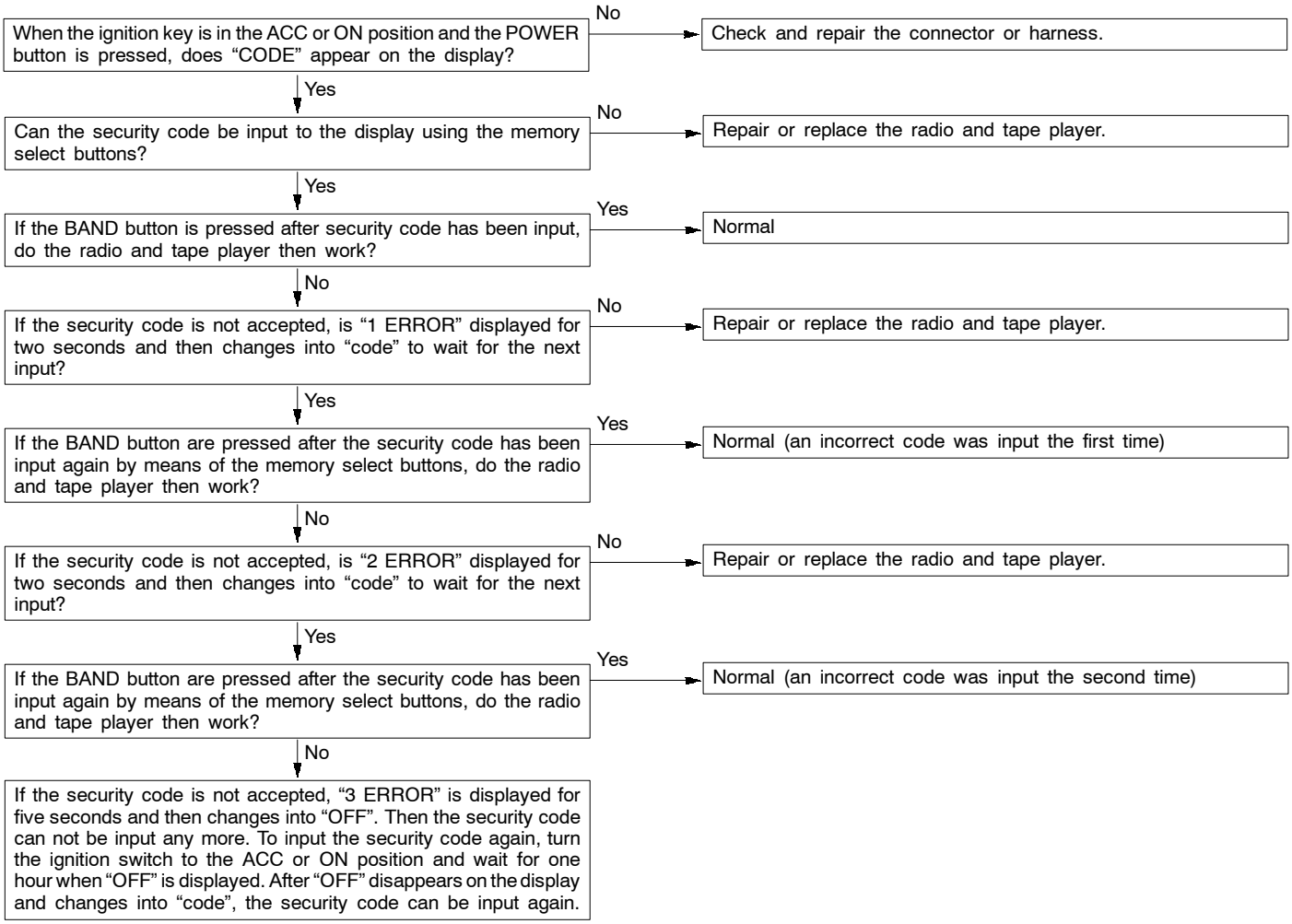
*2
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Repair or replace tape player.

## RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

54400430032

- After the power supply to the radio and tape player has been interrupted for an hour or more, the anti-theft system will prevent the radio and tape player from working, even if the power supply is restored. Problem with the anti-theft system can be found using the flow chart below.



## PROCEDURE FOR INPUT OF SECURITY CODE FOR RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

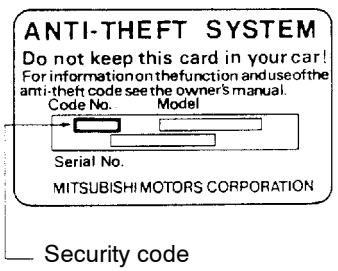
54400440158

The radio and tape player does not work in the following states.

- Power supply to the radio and tape player has been suspended for more than an hour continuously by removing the cable from the battery terminal for disconnecting the harness connectors.
- The power supply to the radio and tape player has been suspended for more than an hour owing to blown fuse or discharged battery.
- The radio and tape player has been replaced.

If the radio and tape player does not work for these causes, input the security code by the following procedure.

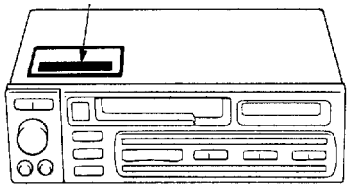
**Card**




H11F008

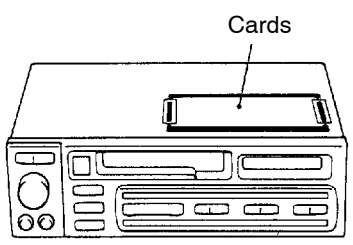
1. Using any of the following methods, confirm the security code.
   (1) Read the security code indicated on the cards retained by the car.

**Typical name card**




A16V0167

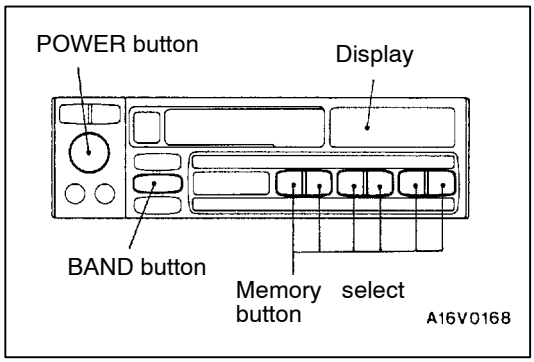
   (2) If the security code is unknown owing to the user's loss of the card:
      a. Remove the radio and tape player, referring to P.54-85.
      b. Read the serial No. stamped on the radio and tape player.
      c. Look up the security code (anti-theft code table) corresponding to the serial number, or ask the authorized Mitsubishi dealer.



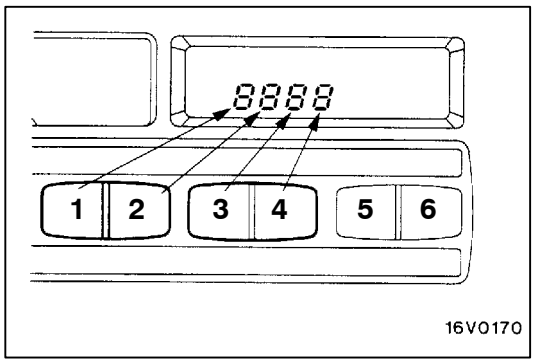

A16V0166

   (3) When the radio and tape player is replaced:
   Read the security code on the cards attached to the upper surface of the replacement radio and tape player.

NOTE
Deliver the two cards to the user.

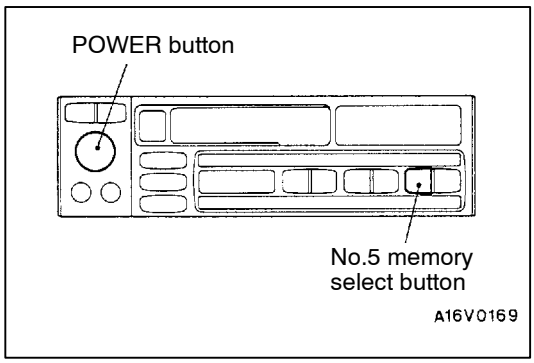



2. Return the power supply from the battery to the normal condition.
3. Turn the ignition key to the “ACC” or “ON” position.
4. Press the POWER button, and “CODE” will be displayed.




5. Press No.1 through No.4 memory select button to set the four-digit security code shown on the card.
   Every time each digit key is pressed, the figure changes as follows: 0→1→2.....9→0
6. Press the BAND button, and a beep will be heard and the radio and tape player will work.
7. If the security code is not accepted, “1 ERROR” is displayed. In a few minutes, it will change to “CODE”. Then repeat the steps 5 and 6.

   NOTE
   (1) If an incorrect security code is input, the anti-theft system will allow three attempts at most to input the correct code.
   (2) The second error is displayed as “2 ERROR”. When the third error is made, “3 ERROR” is displayed and then the display changes to “OFF”. If this should occur, the unit will not work any more.
   (3) To input the security code again, turn the ignition switch to the ACC or ON position and wait for one hour when “OFF” is displayed. After “OFF” disappears on the display and changes into “CODE”, the security code can be input again.




**5-minute operation mode**

To facilitate replacement or check, the radio and tape player can be operated for five minutes without inputting the security code.

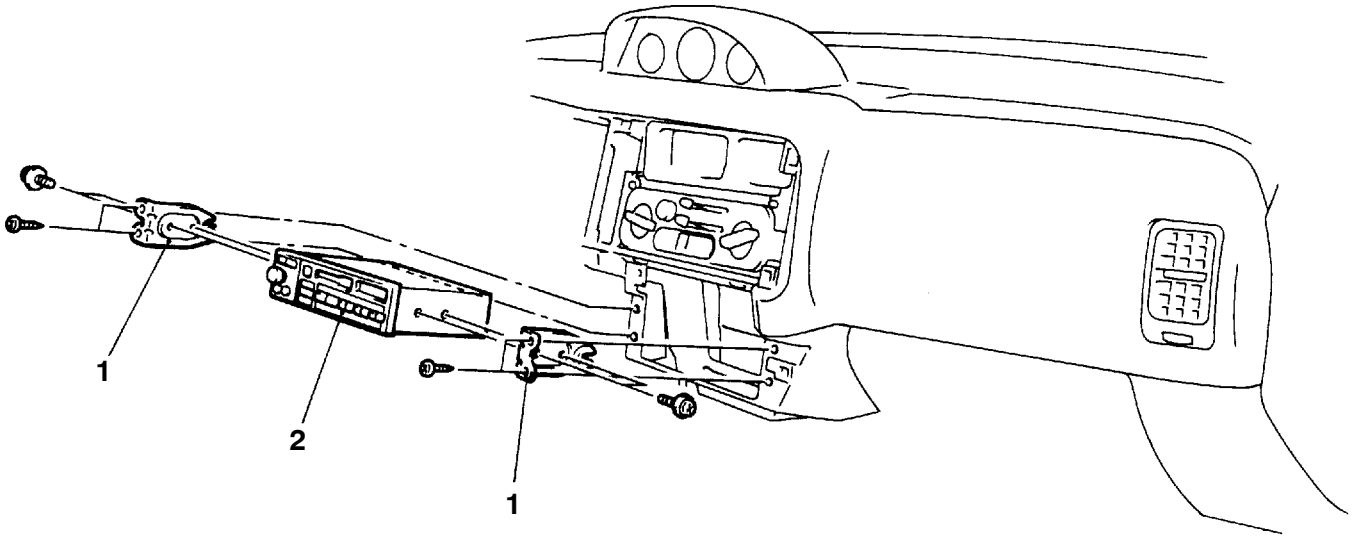
1. Press the POWER button and No.5 memory select button together to operate the radio and tape player.
2. In five minutes the unit will not be able to work, and “CODE” will be displayed to indicate that the security code can be input again.

# RADIO AND TAPE PLAYER

54400140164

## REMOVAL AND INSTALLATION

**Pre-removal and Post-installation Operation**
- Front Floor Console Assembly Removal and Installation (Refer to GROUP 52A.)
- Driver's Side Under Cover or Knee Protector Assembly, Meter Bezel Assembly, Glove Box Assembly, Center Under Cover Removal and Installation (Refer to GROUP 52A – Instrument Panel.)




A16V0134

**Removal steps**
1. Radio bracket
2. Radio and tape player

# SPEAKER

54400260358

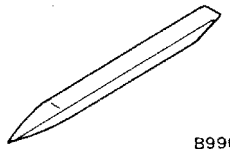
## REMOVAL AND INSTALLATION

Refer to GROUP 42 – Door.

# ANTENNA

54400060064

## SPECIAL TOOL

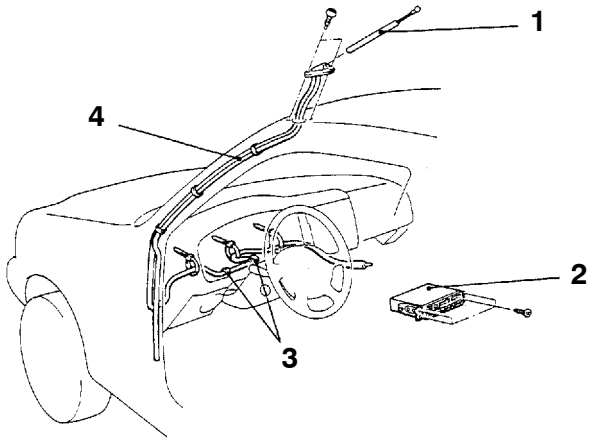
| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Meter bezel assembly removal |

# ANTENNA

54400290340

## REMOVAL AND INSTALLATION

**Pre-removal and Post-installation Operation**
- Front Floor Console Assembly Removal and Installation (Refer to GROUP 52A.)
- Driver's Side Under Cover, Meter Bezel Assembly, Glove Box Assembly, Center Under Cover Removal and Installation (Refer to GROUP 52A – Instrument Panel.)



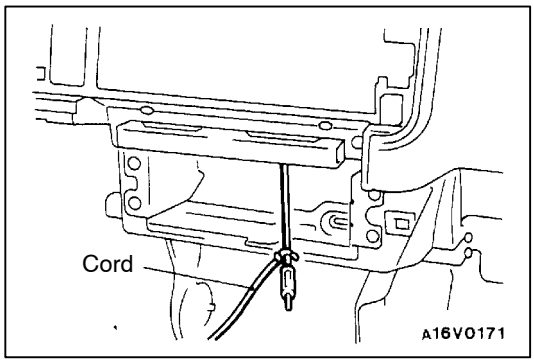

B16V0133

**Removal steps**

1. Pole
2. Radio and tape player
- Front scuff plate (driver's side), cowl side trim (driver's side) (Refer to GROUP 52A – Trim.)

◀A▶

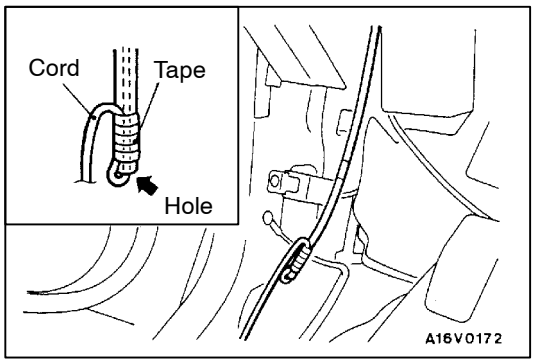
3. Cable clipped portion
4. Antenna base




### REMOVAL SERVICE POINT

#### ◀A▶ ANTENNA BASE REMOVAL

1. Tie a cord to the end of the feeder cable.



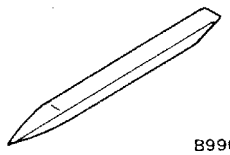

2. Pull out the antenna base until the end of the drain pipe can be seen.
3. Pass the cord through the hole in the end of the drain pipe and wrap it with vinyl tape.

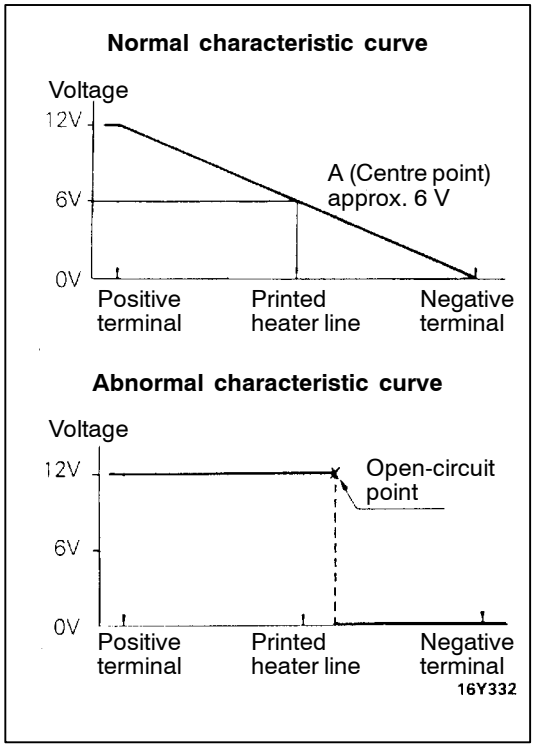
   **Caution**
   **Wrap it securely so that the cord will not come off.**
4. Pull out the antenna base little by little to remove it.

# REAR WINDOW DEFOGGER

54300060269

## SPECIAL TOOL

| Tool | Number | Name | Use |
|---|---|---|---|
|  B990784 | MB990784 | Ornament remover | Meter bezel assembly removal |




## ON-VEHICLE SERVICE

54300180033

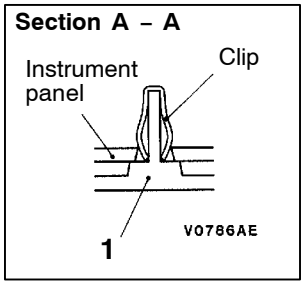
### PRINTED-HEATER LINE CHECK

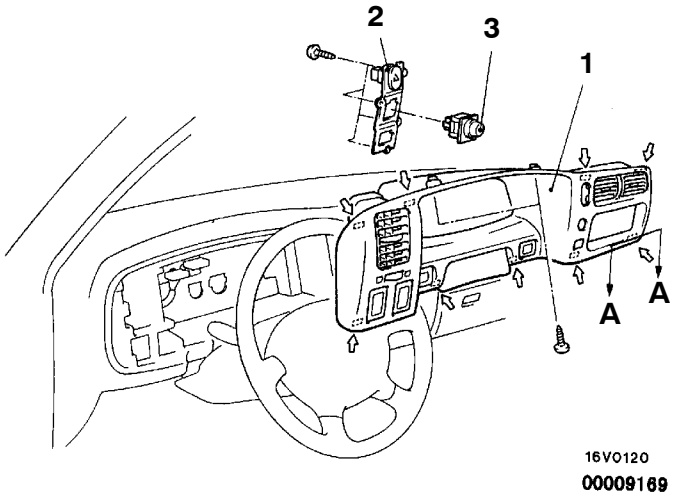
1. Run engine at 2,000 r/min. Check heater element with battery at full.
2. Turn ON rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass centre A.
   Condition is good if it indicates about 6V.
3. If 12 V is indicated at A, there is a break in the negative terminals from A.
   Move test bar slowly to negative terminal to detect where voltage changes suddenly (0V).
4. If 0 V is indicated at A, there is a break in the positive terminals from A. Defect where the voltage changes suddenly (12 V) in the same method described above.

# REAR WINDOW DEFOGGER SWITCH

54300620191

## REMOVAL AND INSTALLATION

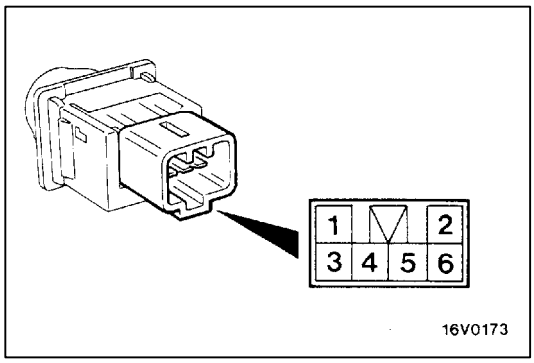


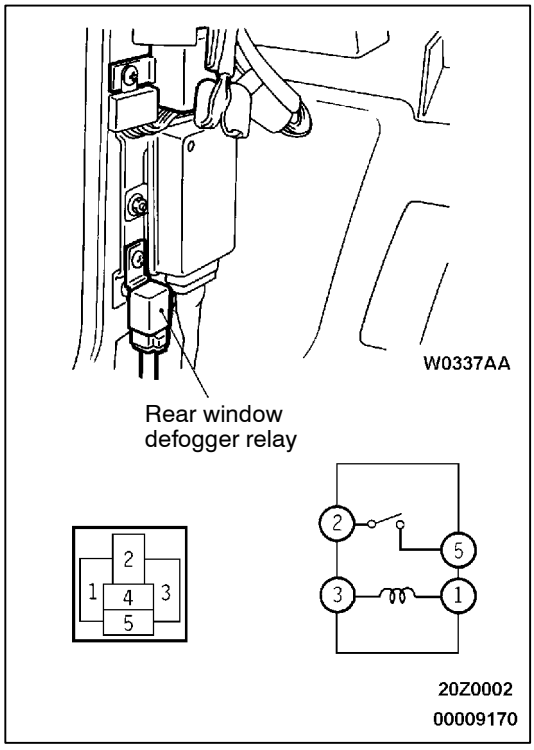




NOTE
⇦ : metal clip position

**Removal steps**

1. Meter bezel assembly
2. Switch holder
3. Rear window defogger switch




## INSPECTION

54300630033

### DEFOGGER SWITCH CONTINUITY CHECK

| Switch position | Terminal No. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | ILL | 5 | 2 | IND | 6 | 3 | 4 |
| OFF | ○ | ⌀ | ○ | ○ | ⌀ | ○ | | |
| ON | ○ | ⌀ | ○ | ○ | ⌀ | ○ | ○ | ○ |

### REAR WINDOW DEFOGGER RELAY CONTINUITY CHECK

54300680205

| Battery voltage | Terminal No. | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 5 |
| Power is not supplied | ○ | | ○ | |
| Power is supplied | ⊕ | | ⊖ | ○ |