

# CHASSIS ELECTRICAL

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120002078

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

#### WARNING!

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

#### NOTE

The SRS includes the following components: impact sensors, SRS diagnosis unit, SRS warning lamp, air bag module, clock spring and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (\*).

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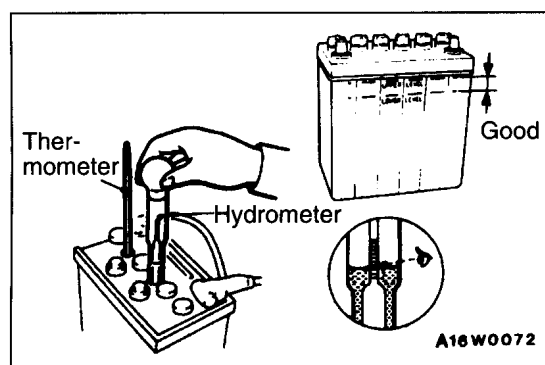
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## BATTERY

120000276

## SERVICE SPECIFICATION

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



## SERVICE ADJUSTMENT PROCEDURES

## FLUID LEVEL AND SPECIFIC GRAVITY INSPECTION

120000277

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.

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

**D<sub>20</sub>: Specific gravity of the battery fluid calculated for 20°C.**

**D<sub>t</sub>: Actually measured specific gravity**

**t: Actually measured temperature**

## VISUAL INSPECTION

120000278

Inspect after removing the battery.

**Caution**

**If battery fluid has leaked from the battery, use rubber gloves to protect your hands when removing the battery.**

1. If there is corrosion of the battery stays or battery brackets from the battery fluid, clean by washing in warm or cold water.
2. If there is a leak from a crack in the battery case, replace the battery.
3. Clean the battery terminals with a wire brush, and replace any parts that are damaged.

**CHARGING**

120000279

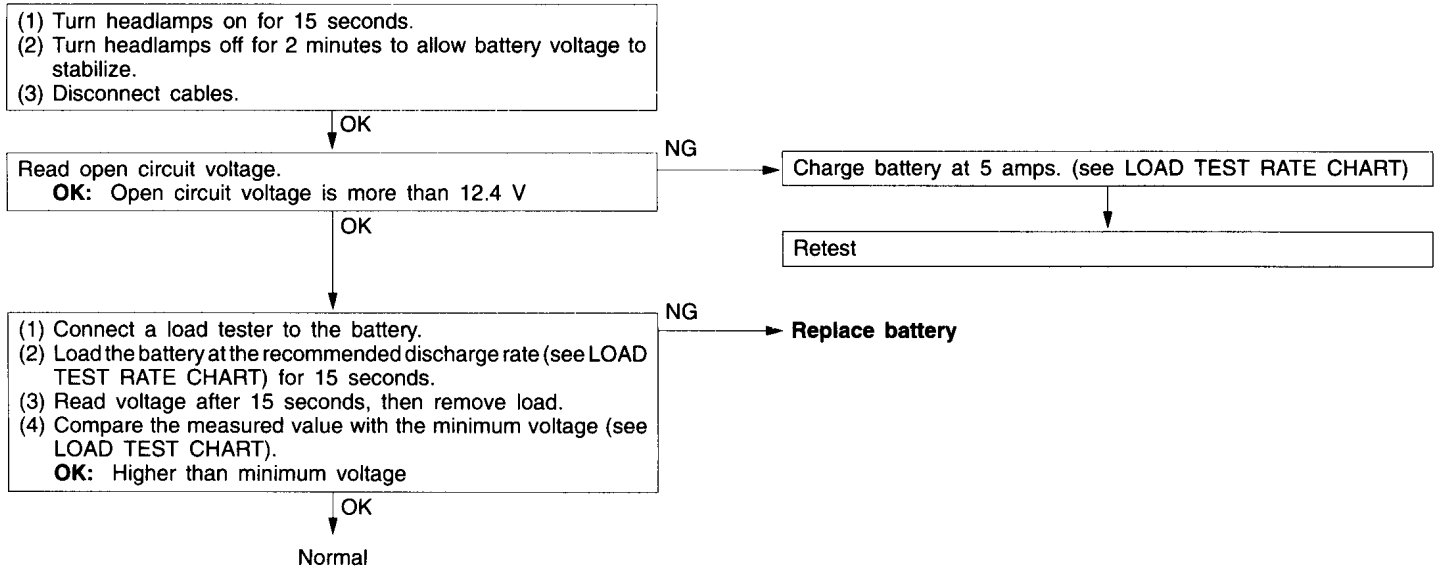
1. When charging a battery while still installed in the vehicle, disconnect the battery cables to prevent damage to electrical parts.
2. The current normally used for charging a battery should be approximately 1/10th of the battery capacity.
3. When performing a quick-charging due to lack of time, etc., 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**

120002079

**TEST STEP****LOAD TEST RATE CHART**

Battery type	75D23R	65D23R	80D26R	95D31R
Charging time when fully discharged h [5-amp rated current charging]	11	11	12	14
Load test (Amps)	260	210	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

120002080

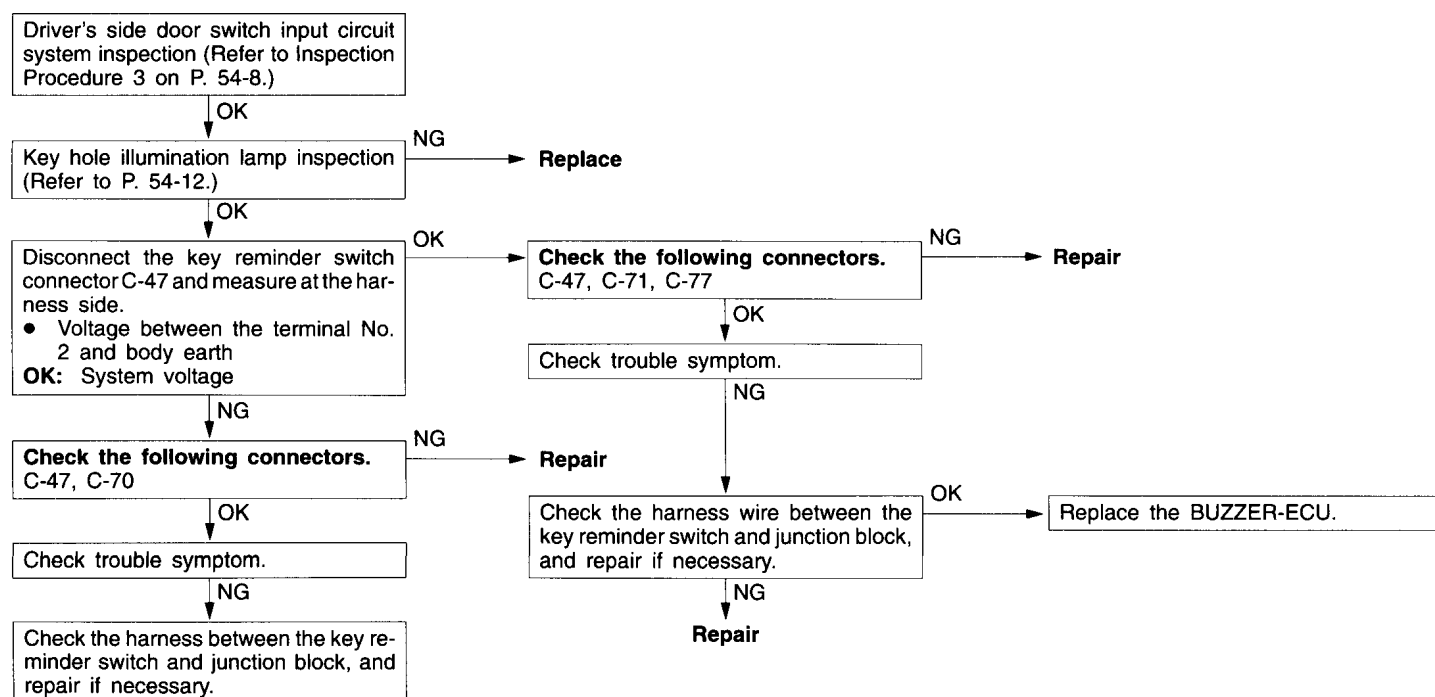
## TROUBLESHOOTING

### INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure	Reference page
Even if the driver's side door is opened, the key hole illumination lamp does not illuminate.	1	P. 54-7
The key hole illumination lamp remains illuminated.	2	P. 54-8

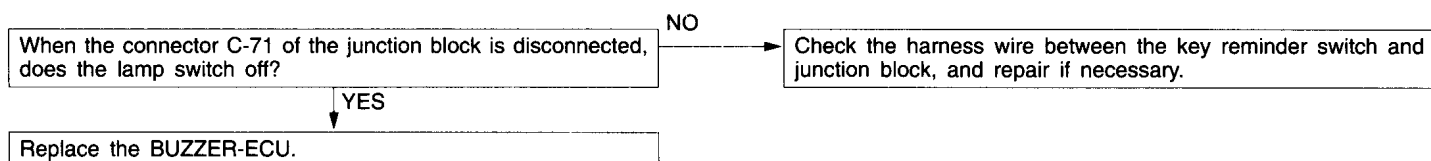
#### Inspection Procedure 1

Even if driver's side door is opened, key hole illumination lamp does not illuminate.	Probable cause
<p>[Comment] The cause is probably a defective key hole illumination lamp circuit system or a defective driver's side door switch input circuit system.</p>	<ul style="list-style-type: none"> <li>• Malfunction of driver's side door switch</li> <li>• Malfunction of key hole illumination lamp</li> <li>• Malfunction of harness or connector</li> <li>• Malfunction of BUZZER-ECU</li> </ul>



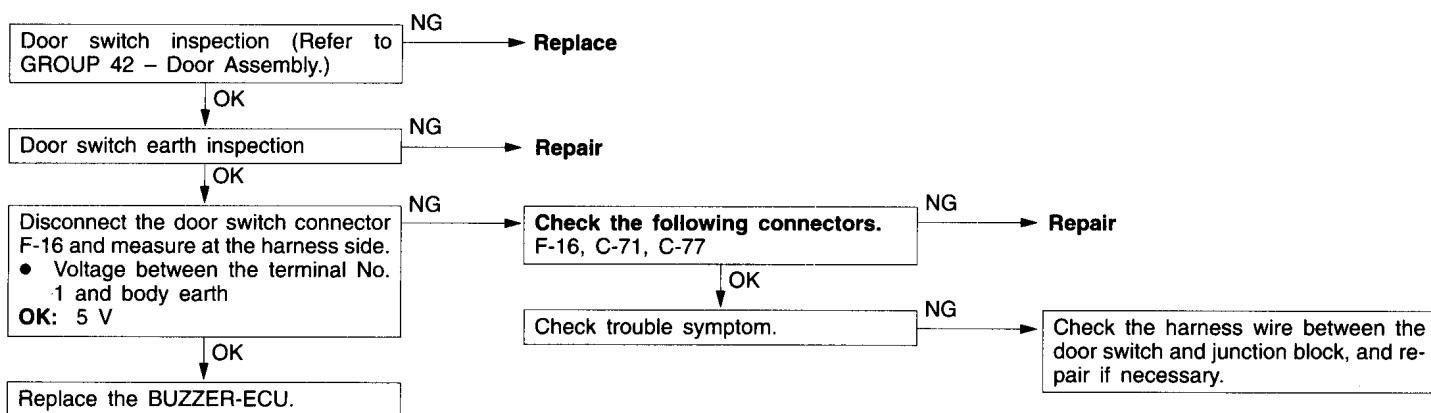
## Inspection Procedure 2

Key hole illumination lamp remains illuminated.	Probable cause
[Comment] The cause is probably a harness short or a defective BUZZER-ECU.	<ul style="list-style-type: none"> <li>• Malfunction of harness</li> <li>• Malfunction of BUZZER-ECU</li> </ul>



## Inspection Procedure 3

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





## IGNITION SWITCH

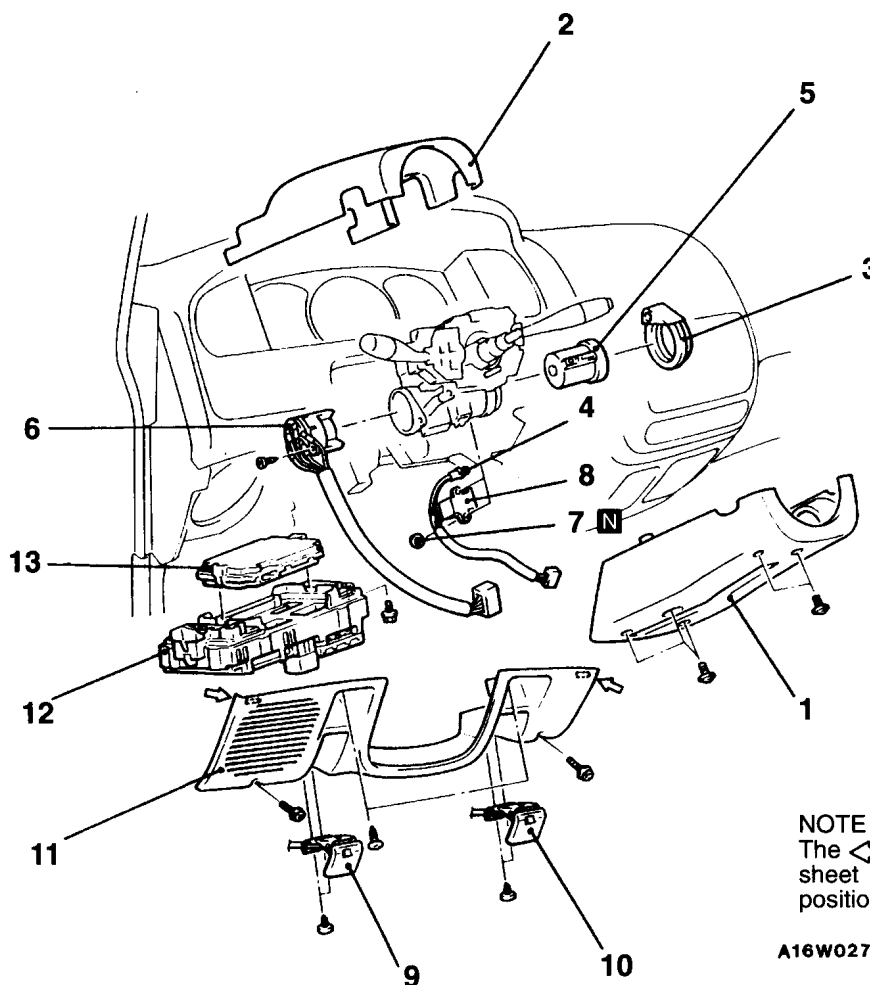
120002081

## REMOVAL AND INSTALLATION

&lt;L.H. drive vehicles&gt;

**CAUTION: SRS**

Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

**NOTE**

The ← marks indicate the sheet metal clip installation positions.

A16W0271

**Steering lock cylinder removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 3. Ignition key cylinder illumination ring
- 5. Steering lock cylinder

**Key reminder switch or key hole illumination lamp removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 3. Ignition key cylinder illumination ring
- 4. Key hole illumination lamp
- 7. Push nut
- 8. Key reminder switch

**Ignition switch removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 6. Ignition switch

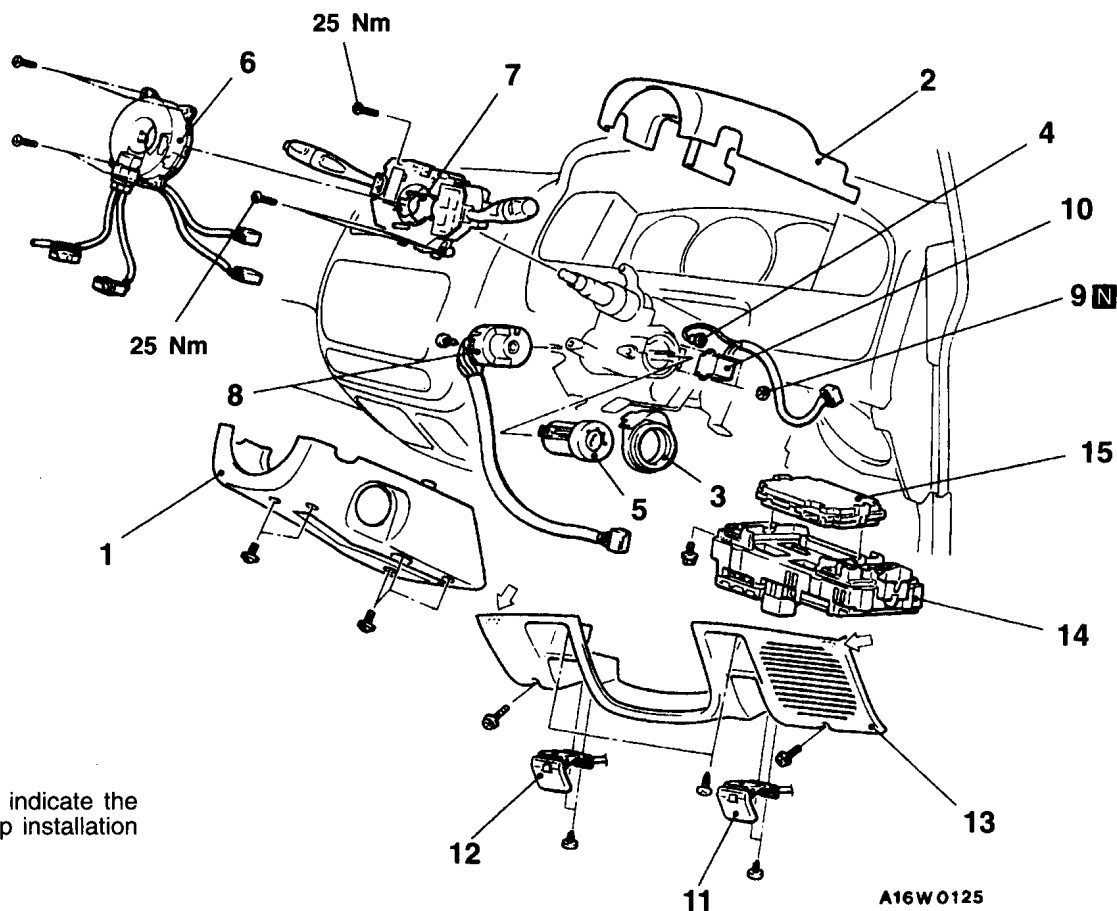
**BUZZER-ECU removal steps**

- 9. Hood lock release handle
- 10. Fuel lid lock release handle
- 11. Under cover
- 12. Junction block
- 13. BUZZER-ECU

&lt;R.H. drive vehicles&gt;

**CAUTION: SRS**

Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

**NOTE**

The ➞ marks indicate the sheet metal clip installation positions.

**Steering lock cylinder removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 3. Ignition key cylinder illumination ring
- 5. Steering lock cylinder

**Key reminder switch or key hole illumination lamp removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 3. Ignition key cylinder illumination ring
- 4. Key hole illumination lamp
- 9. Push nut
- 10. Key reminder switch

**Ignition switch removal steps**

- Steering wheel (Refer to GROUP 37A – Steering Wheel and Shaft.)
- 1. Column cover, lower
- 2. Column cover, upper
- 6. Clock spring <Vehicles with SRS>
- 7. Column switch
- 8. Ignition switch

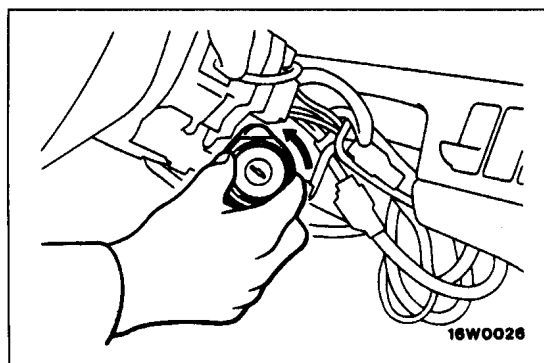
**BUZZER-ECU removal steps**

- 11. Hood lock release handle
- 12. Fuel lid lock release handle
- 13. Under cover
- 14. Junction block
- 15. BUZZER-ECU

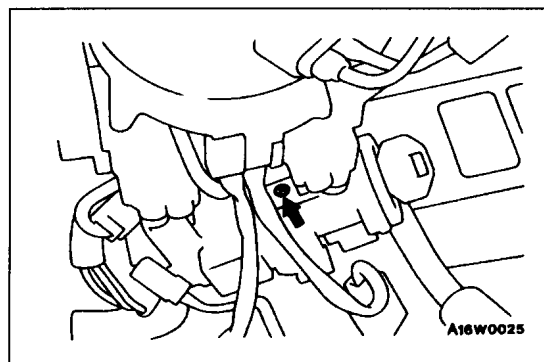
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**REMOVAL SERVICE POINTS****◀A▶ IGNITION KEY CYLINDER ILLUMINATION RING REMOVAL**

Turn the ignition key cylinder illumination ring to the left and remove it.

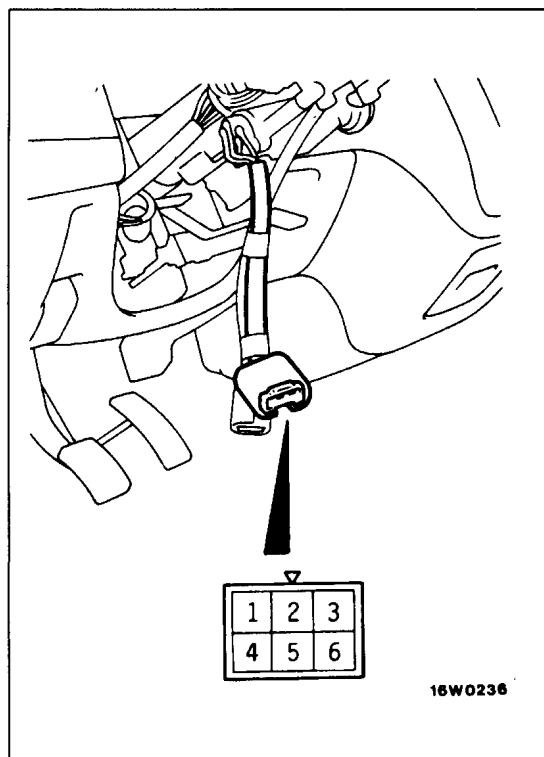
**◀B▶ STEERING LOCK CYLINDER REMOVAL**

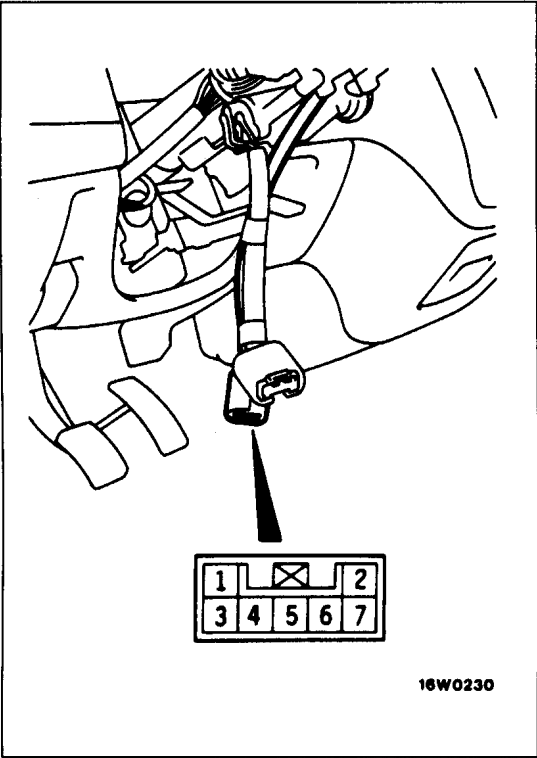
- (1) Insert the key in the steering lock cylinder and turn it to the "ACC" position.
- (2) Using a cross-tip (+) screwdriver (small) or a similar tool, push the lock pin of the steering lock cylinder inward and then pull the steering lock cylinder toward you.

**INSPECTION****IGNITION SWITCH CONTINUITY INSPECTION**

- (1) Remove the under cover.
- (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	3	4	5	6
LOCK						
ACC	○					○
ON	○	○		○		○
START	○	○	○		○	





**KEY REMINDER SWITCH CONTINUITY INSPECTION**

- (1) Remove the under cover.
- (2) Remove the column cover lower and upper.
- (3) Disconnect the wiring connector from the key reminder switch.
- (4) Check the continuity between the terminals when the ignition key is pulled out of and inserted into the steering lock cylinder.

Ignition key	Terminal No.					
	1	2	3	4	6	7
Pulled out	○ — (⊙)* — ○			○ — ○		
Inserted	○ — (⊙)* — ○					

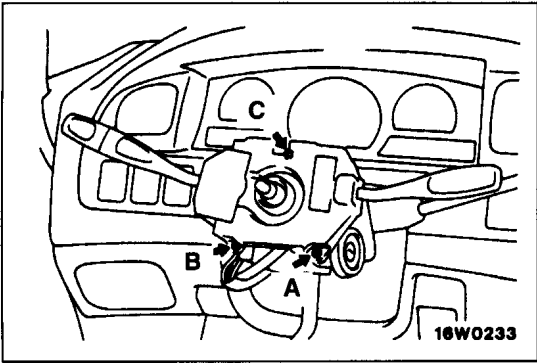
NOTE  
\*: indicates key hole illumination lamp continuity.

**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**



## COMBINATION METERS

120000284

## 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	Petrol-powered vehicles	700	±117	
		3,000	+150	
		5,000	+250	
		6,000	+300	
	Diesel-powered vehicles	1,000	+100	
		3,000	+150	
		4,750	+160	
Fuel gauge unit resistance   Ω		Float point F	3±0.6	
		Float point E	110±2.5	
Fuel gauge unit float height   mm		A (Float point F)	254.9	
		B (Float point E)	209.6	
Fuel gauge resistance   Ω	Vehicles without tachometer	Power supply and earth	105–120	
		Power supply and fuel gauge	50–60	
		Fuel gauge and earth	160–175	
	Vehicles with tachometer	Power supply and earth	230–271	
		Power supply and fuel gauge	94–107	
		Fuel gauge and earth	135–165	
Engine coolant temperature gauge resistance   Ω	Vehicles without tachometer	Power supply and engine coolant temperature gauge	50–60	
	Vehicles with tachometer	Power supply and earth	192–233	
		Power supply and engine coolant temperature gauge	53–59	
		Engine coolant temperature gauge and earth	245–292	
Engine coolant temperature gauge unit resistance (at 70°C)   Ω			104±13.5	

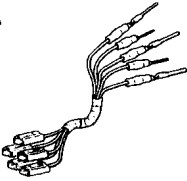



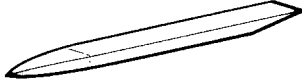
## SEALANT

120000285

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

## SPECIAL TOOLS

120000286

Tool	Number	Name	Use
<p>A</p>  <p>B</p>  <p>C</p>  <p>D</p> 	<p>MB991223</p> <p>A: MB991219</p> <p>B: MB991220</p> <p>C: MB991221</p> <p>D: MB991222</p>	<p>Harness set</p> <p>A: Test harness</p> <p>B: LED harness</p> <p>C: LED harness adapter</p> <p>D: Probe</p>	<ul style="list-style-type: none"> <li>Fuel gauge simple inspection</li> <li>Engine coolant temperature gauge simple inspection &lt;Diesel-powered vehicles&gt;</li> </ul> <p>A: Connector pin contact pressure inspection</p> <p>B, C: Power circuit inspection</p> <p>D: Commercial tester connection</p>
	MB990784	Ornament remover	Removal of meter hood

## TROUBLESHOOTING

120002093

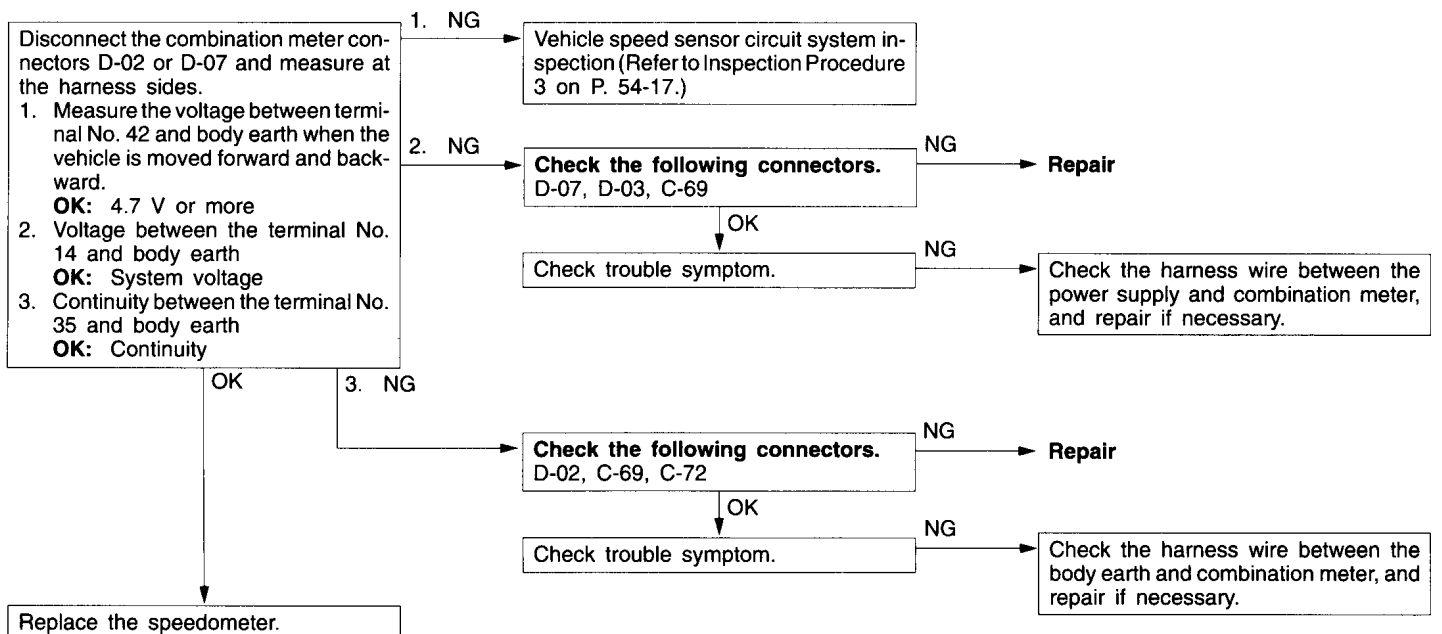
## INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure	Reference page
Speedometer does not operate.	1	P. 54-15
Tachometer does not operate.	2	P. 54-16

## INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

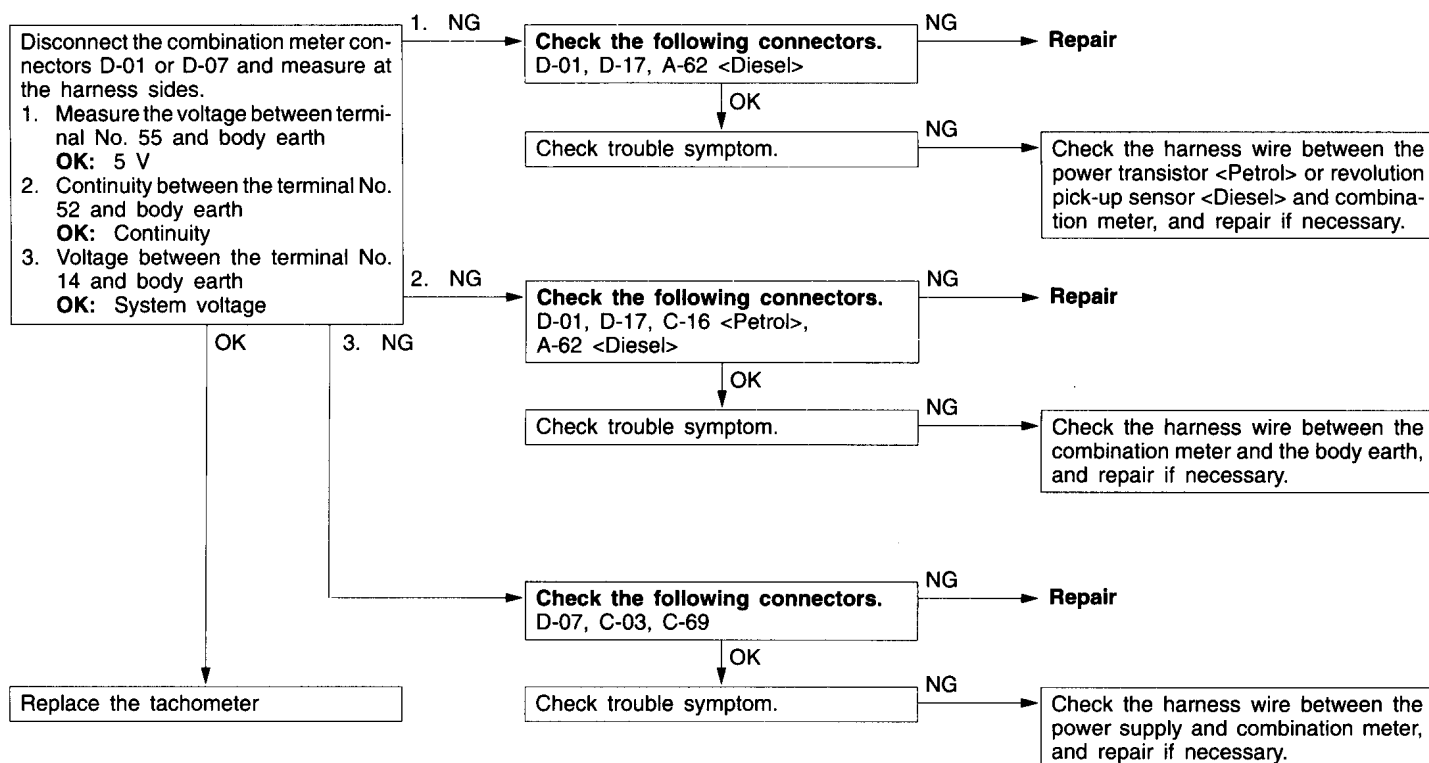
## Inspection Procedure 1

Speedometer does not operate.	Probable cause
<p>[Comment]</p> <p>The cause is probably 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.</p>	<ul style="list-style-type: none"> <li>• Malfunction of vehicle speed sensor</li> <li>• Malfunction of speedometer</li> <li>• Malfunction of harness or connector</li> </ul>



## Inspection Procedure 2

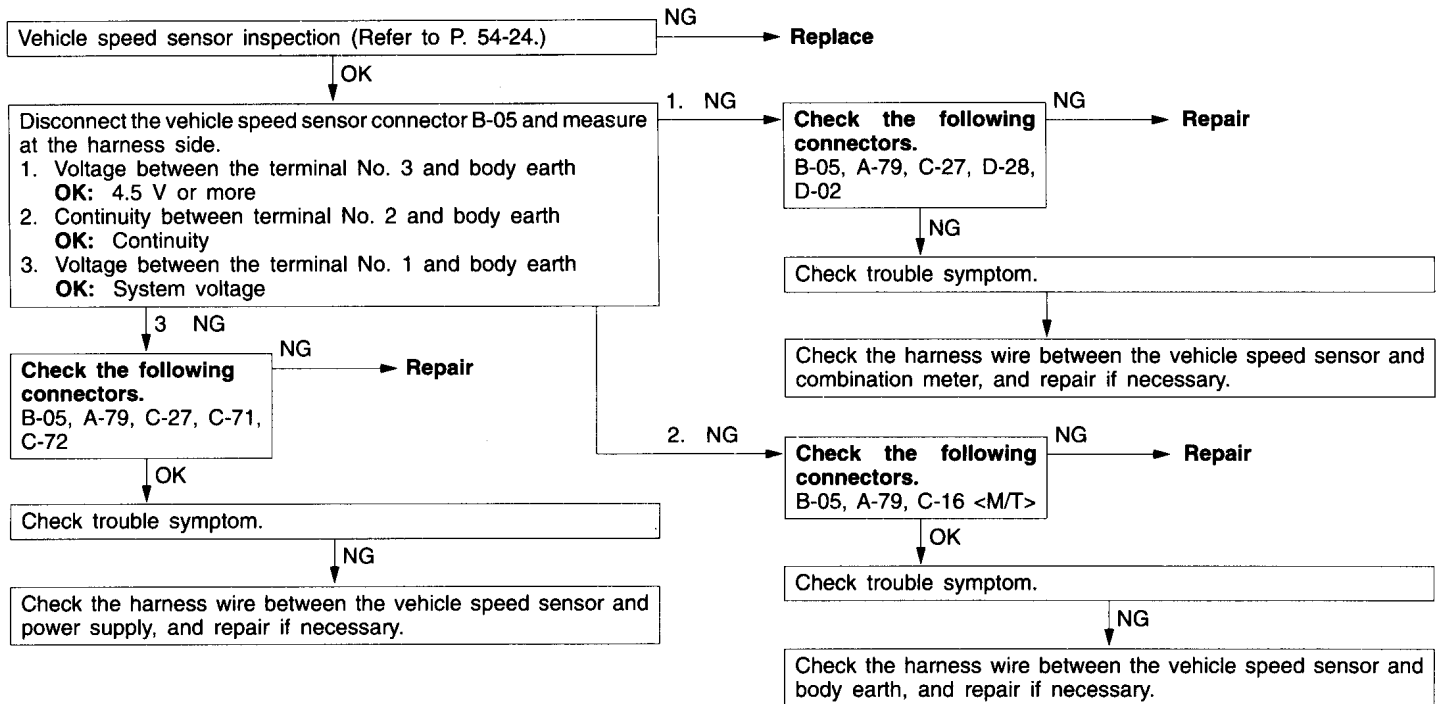
Tachometer does not operate.	Probable cause
[Comment] The ignition signal may not be input from the engine, or there may be a malfunction in the power supply or earth circuit.	<ul style="list-style-type: none"> <li>● Malfunction of tachometer</li> <li>● Malfunction of harness or connector</li> </ul>

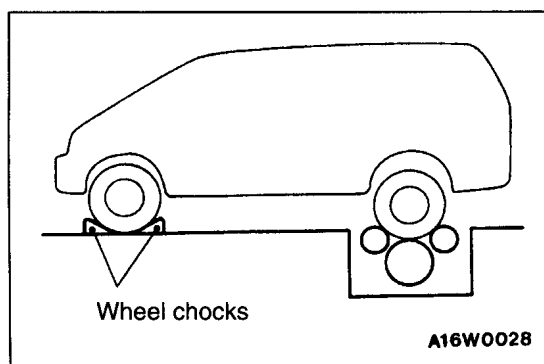




## Inspection Procedure 3

## Vehicle speed sensor circuit system inspection





## SERVICE ADJUSTMENT PROCEDURES

120000288

### SPEEDOMETER INSPECTION

1. Adjust the pressure of the tyres to the specified level. (Refer to GROUP 31 – Service Specifications.)
2. Set the vehicle onto a speedometer tester and use wheel chocks to hold the front wheels.

#### Caution

**Place the transfer shift lever in the 2H position. <4WD>**

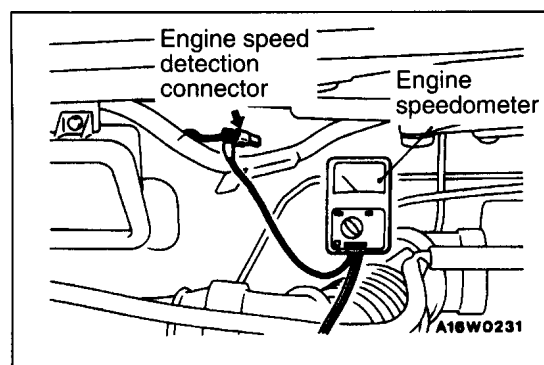
3. Check if the speedometer indicator range is within the standard values.

#### Caution

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

#### Standard values:

Standard indication km/h (mph)	Allowable 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 INSPECTION

120000289

#### <Petrol-powered vehicles>

1. Insert a paper clip in the engine speed detection connector from the harness side, and attach the engine speedometer.

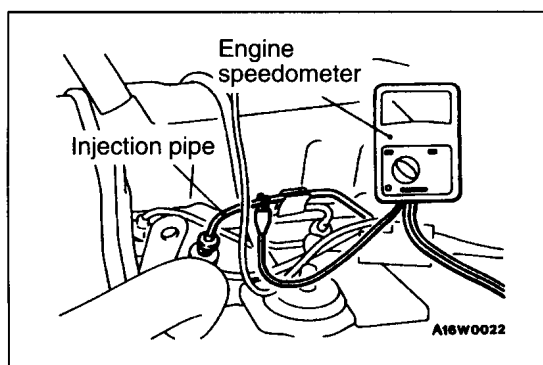
#### NOTE

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.)

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

#### Standard values:

- 1,000 r/min. :  $\pm 117$  r/min.
- 3,000 r/min. :  $\pm 150$  r/min.
- 5,000 r/min. :  $\pm 250$  r/min.
- 6,000 r/min. :  $\pm 300$  r/min.

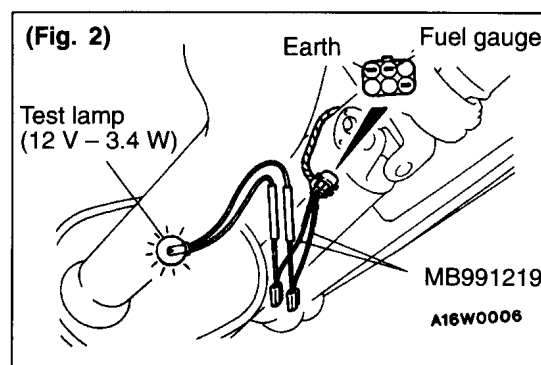
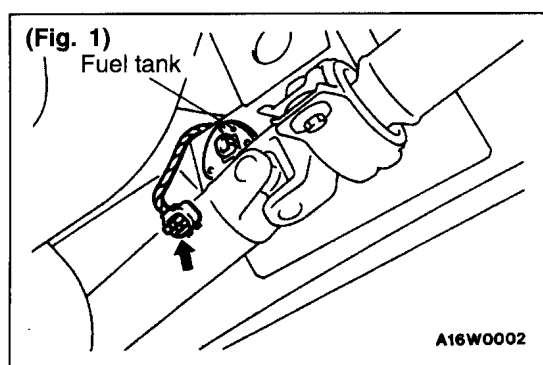
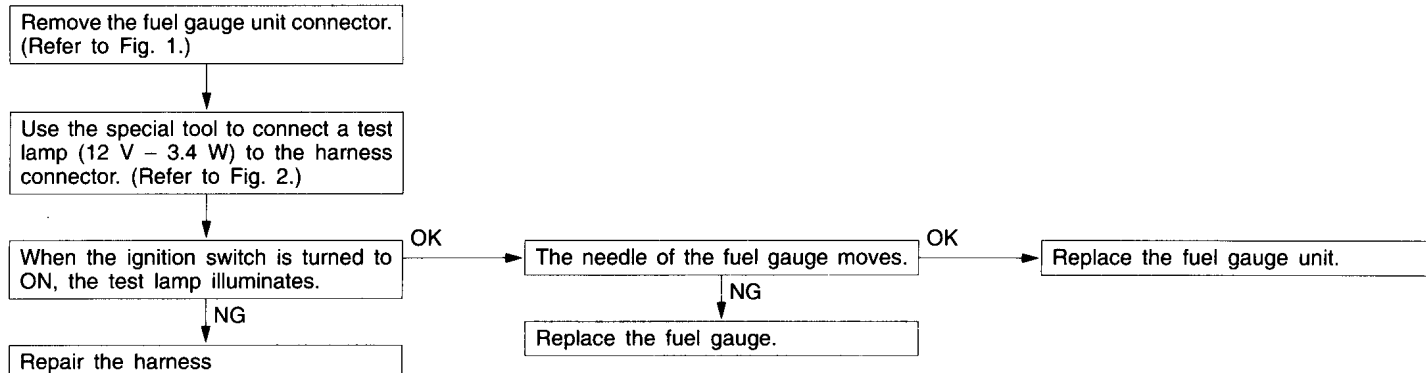


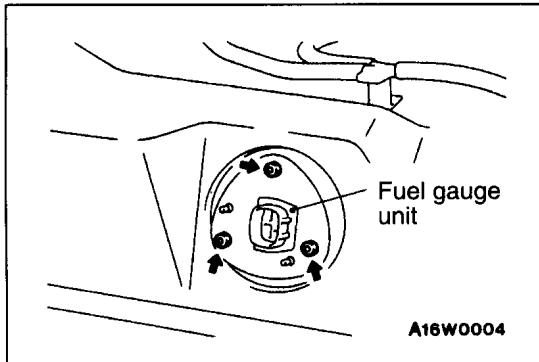
## &lt;Diesel-powered vehicles&gt;

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 variations are within the standard values.

**Standard values:**1,000 r/min. :  $\pm 100$  r/min.3,000 r/min. :  $\pm 150$  r/min.4,750 r/min. :  $\pm 160$  r/min.**FUEL GAUGE SIMPLE INSPECTION**

120000290

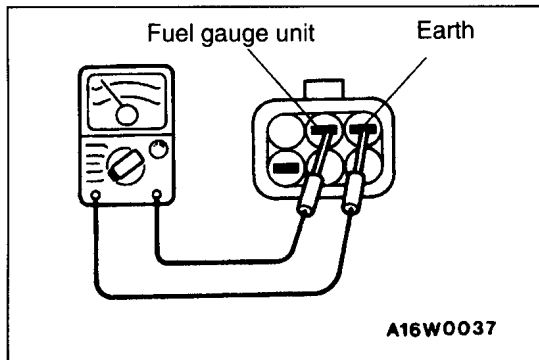




## FUEL GAUGE UNIT INSPECTION

120000291

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:**  $3 \pm 0.6 \Omega$

**Point E:**  $110 \pm 2.5 \Omega$

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

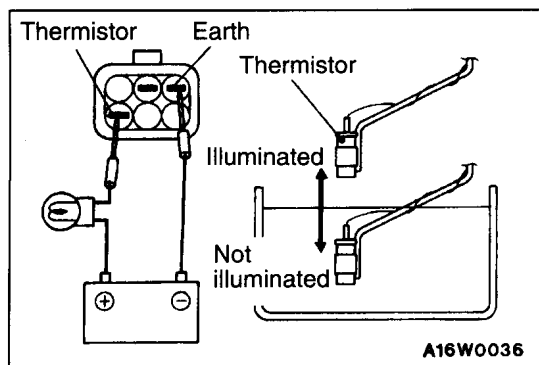
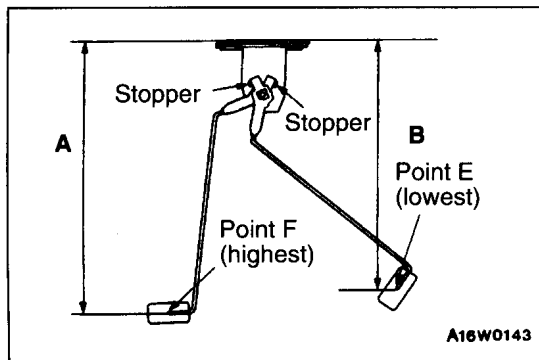
## FUEL GAUGE UNIT FLOAT HEIGHT

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:** 254.9 mm

**B:** 209.6 mm



## THERMISTOR

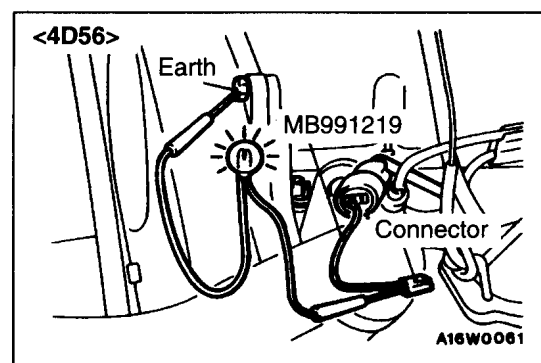
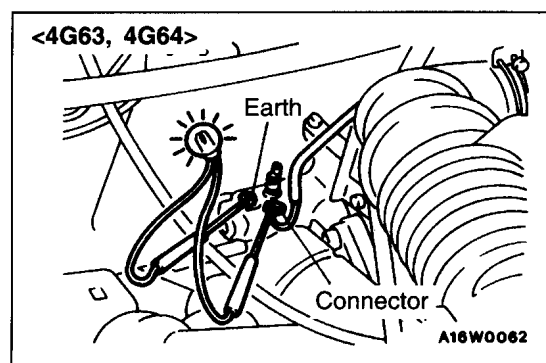
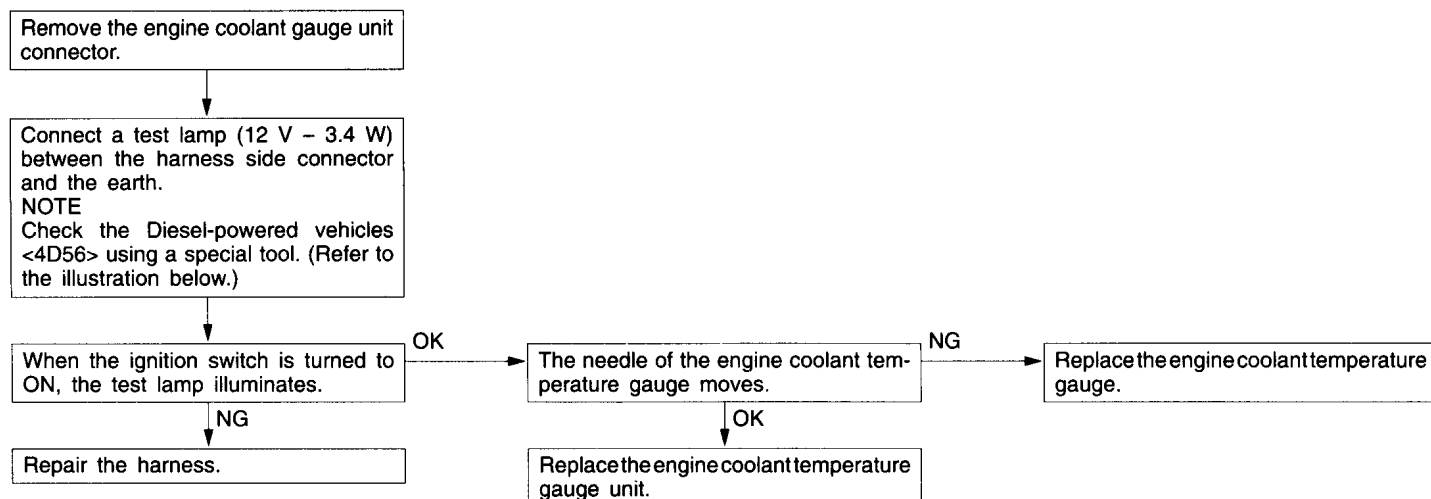
1. Connect fuel gauge unit (thermistor) to battery via test lamp (12 V – 3.4W). Immerse in water.
2. Condition is good if lamp goes off when the thermistor or level switch is immersed in water and goes on when it is took out of water.

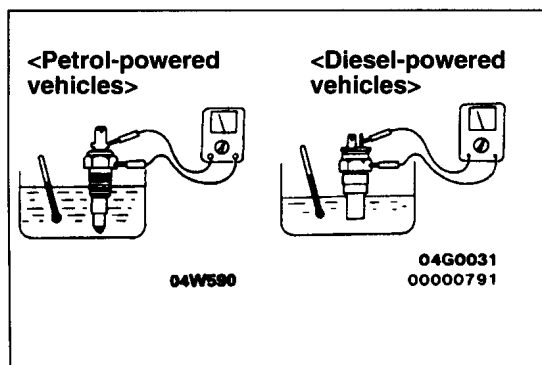
**Caution**

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

## ENGINE COOLANT TEMPERATURE GAUGE SIMPLE INSPECTION

120002082





## ENGINE COOLANT TEMPERATURE GAUGE UNIT INSPECTION

120000293

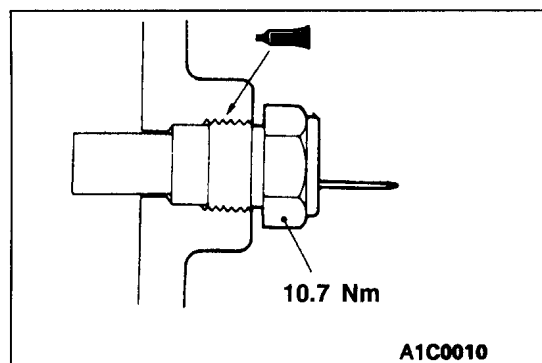
1. Bleed the engine coolant. (Refer to GROUP 14 – Service Adjustment Procedures.)
2. Remove the engine coolant temperature gauge unit.
3. Immerse the unit in 70°C water to measure the resistance.

**Standard value: 104±13.5 Ω**

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

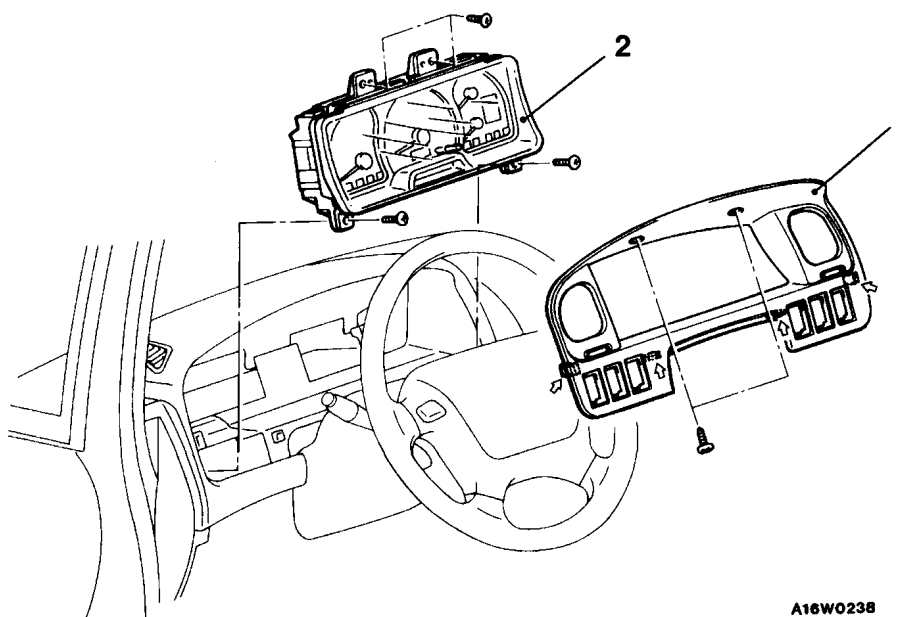
**Specified sealant: 3M Adhesive Nut Locking No. 4171 or equivalent**

5. Add engine coolant. (Refer to GROUP 14 – Service Adjustment Procedures.)



## COMBINATION METERS REMOVAL AND INSTALLATION

120000294

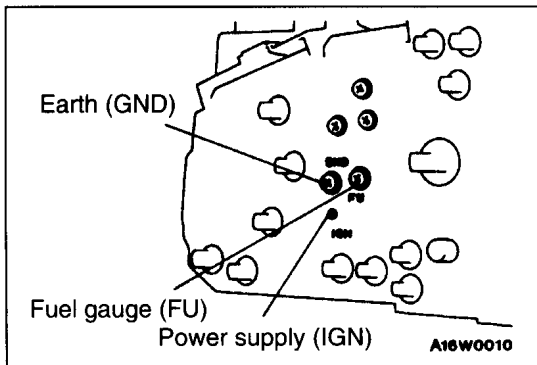


### NOTE

The ⇐ marks indicate the sheet metal clip installation positions.

### Removal steps

1. Meter hood
2. Combination meter

**INSPECTION****FUEL GAUGE RESISTANCE****<Vehicles with Tachometer>**

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

**NOTE**

The terminal positions are indicated by FU, GND and IGN.

**Standard value:**

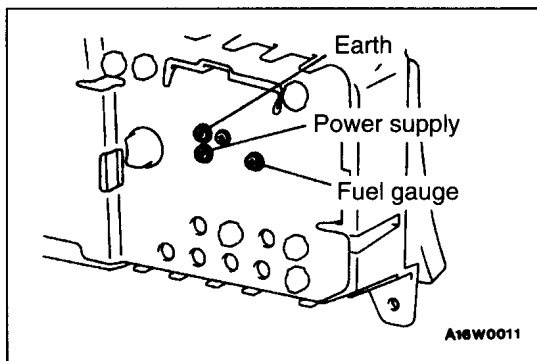
Power supply (IGN)–Earth (GND): 230–271  $\Omega$

Power supply (IGN)–Fuel gauge: 94–107  $\Omega$

Fuel gauge (FU)–Earth (GND): 135–165  $\Omega$

**Caution**

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

**<Vehicles without Tachometer>**

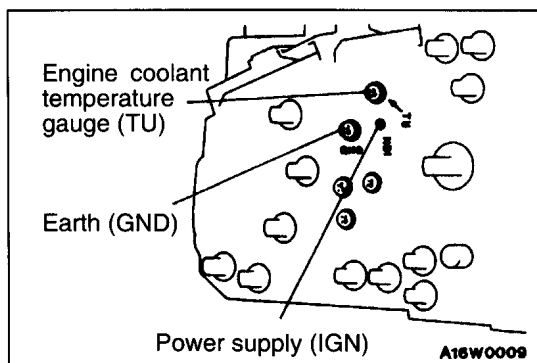
Use a circuit tester to measure the resistance value between the terminals.

**Standard value:**

Power supply–Earth: 105–120  $\Omega$

Power supply–Fuel gauge: 50–60  $\Omega$

Fuel gauge–Earth: 160–175  $\Omega$

**ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE****<Vehicles with Tachometer>**

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

**NOTE**

The terminal positions are indicated by FU, GND and IGN.

**Standard value:**

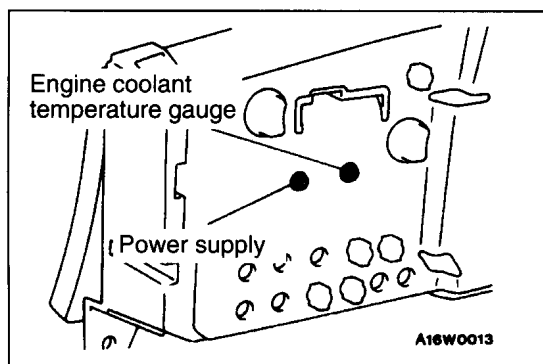
Power supply (IGN)–Earth: 192–233  $\Omega$

Power supply (IGN)–Engine coolant temperature gauge (TU): 53–59  $\Omega$

Engine coolant temperature gauge (TU)–Earth (GND): 245–292  $\Omega$

**Caution**

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

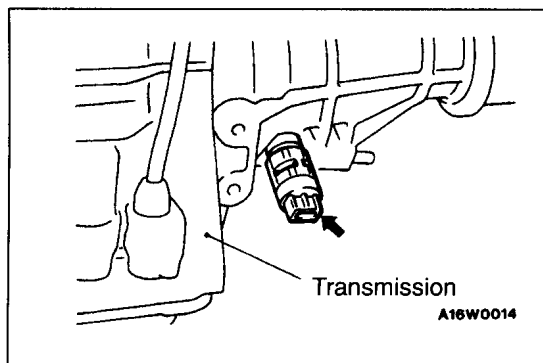


### <Vehicles without Tachometer>

Use a circuit tester to measure the resistance value between the terminals.

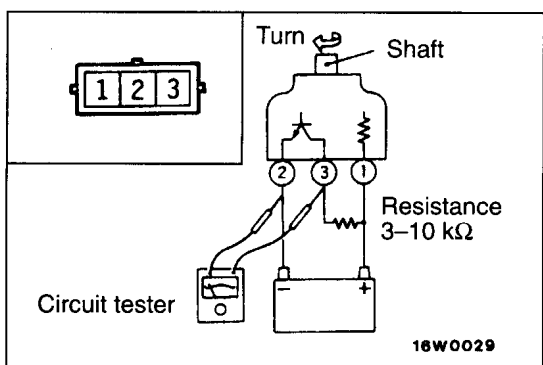
**Standard value:**

**Power supply–Engine coolant temperature gauge:  
50–60  $\Omega$**



### VEHICLE SPEED SENSOR

1. Remove the vehicle speed sensor.



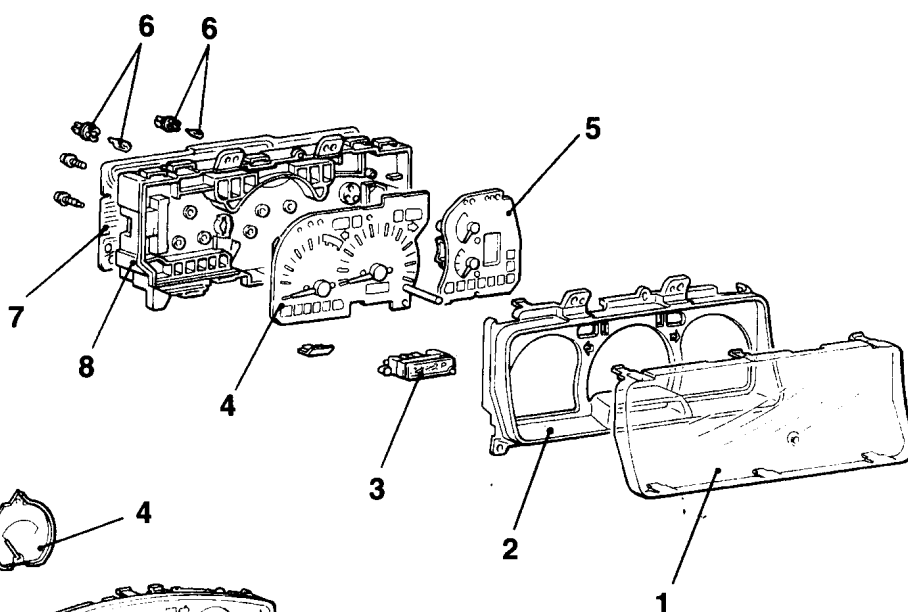
2. Connect a 3–10 k $\Omega$  resistance as shown in the illustration.
3. Turn the shaft of the vehicle speed sensor and check to be sure that there is voltage between terminals 2–3. (1 turn=4 pulses)



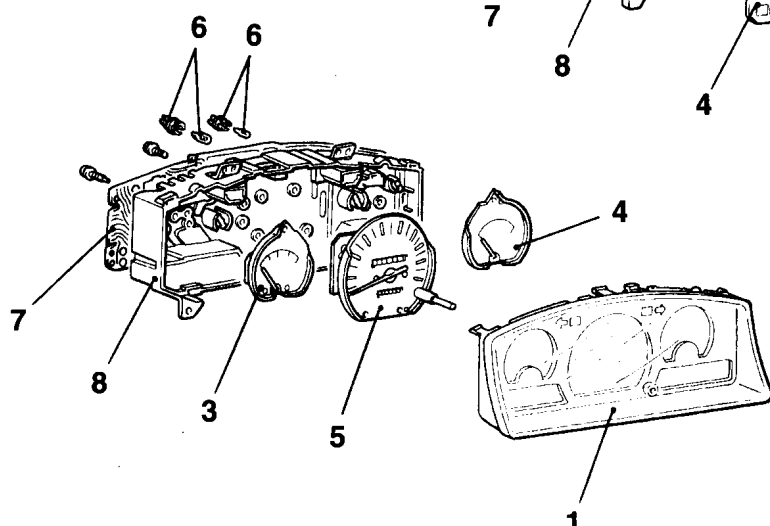
## DISASSEMBLY AND REASSEMBLY

120002123

## &lt;Vehicles with tachometer&gt;



## &lt;Vehicles without tachometer&gt;



A16W0335

**Disassembly steps**

## &lt;Vehicles without tachometer&gt;

1. Meter glass, window plate
3. Fuel gauge
4. Engine coolant temperature gauge
5. Speedometer
6. Bulb, socket
7. Printed-circuit board
8. Meter case

## &lt;Vehicles with tachometer&gt;

1. Meter glass
2. Window plate
3. Automatic transmission indication lamp assembly
4. Speedometer, tachometer
5. Engine coolant temperature gauge, Fuel gauge
6. Bulb, socket
7. Printed-circuit board
8. Meter case

# MULTI-METER

120002094

## TROUBLESHOOTING

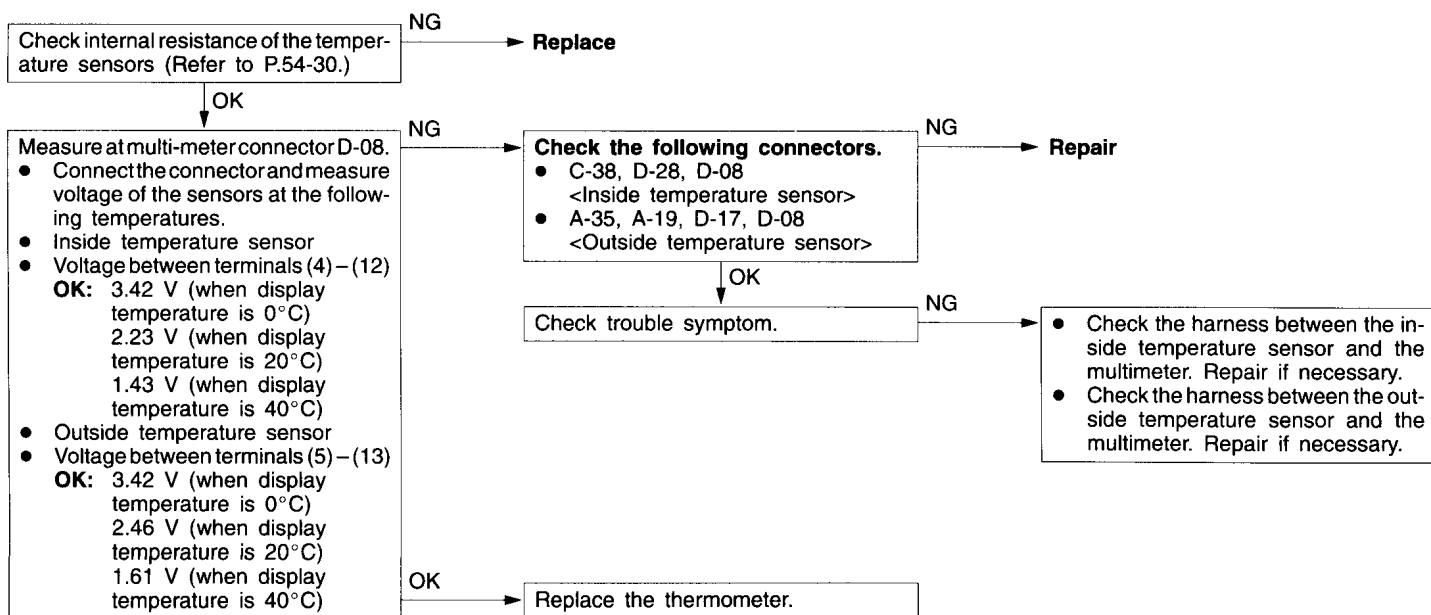
### INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure No.	Reference page
Actual inside temperature or outside temperature is different from those on the temperature gauge.	1	P. 54-26
One or both of the inside temperature or outside temperature is not displayed.	2	P. 54-27

### INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

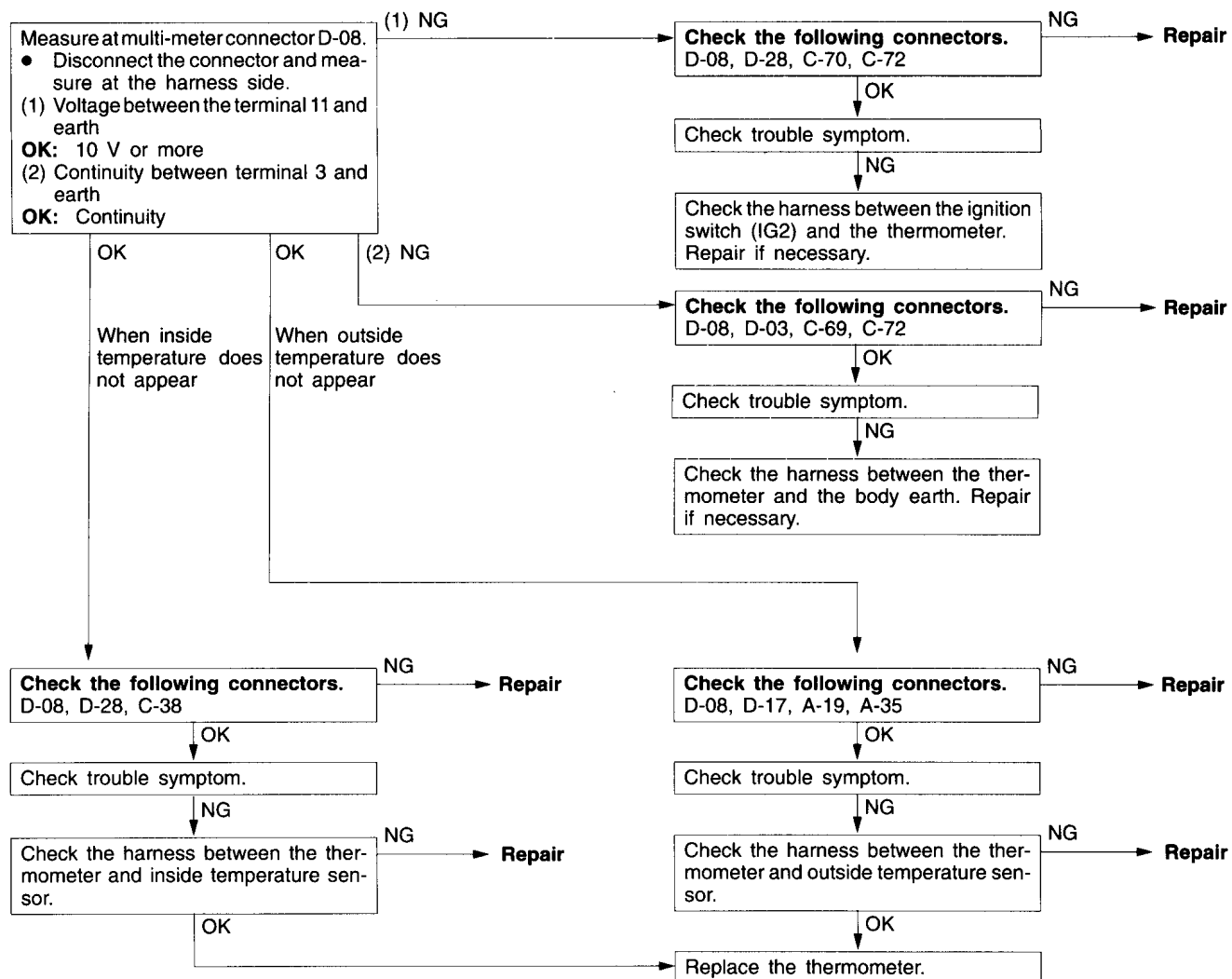
#### Inspection Procedure 1

Actual inside temperature or outside temperature is different from those on the temperature gauge.	Probable cause
[Comment] The defective internal resistance of the temperature sensors or thermometer may be present.	<ul style="list-style-type: none"> <li>• Malfunction of inside temperature sensor</li> <li>• Malfunction of outside temperature sensor</li> <li>• Malfunction of harness or connector</li> <li>• Malfunction of thermometer</li> </ul>



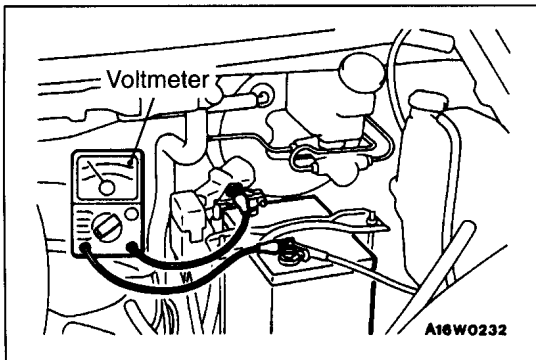
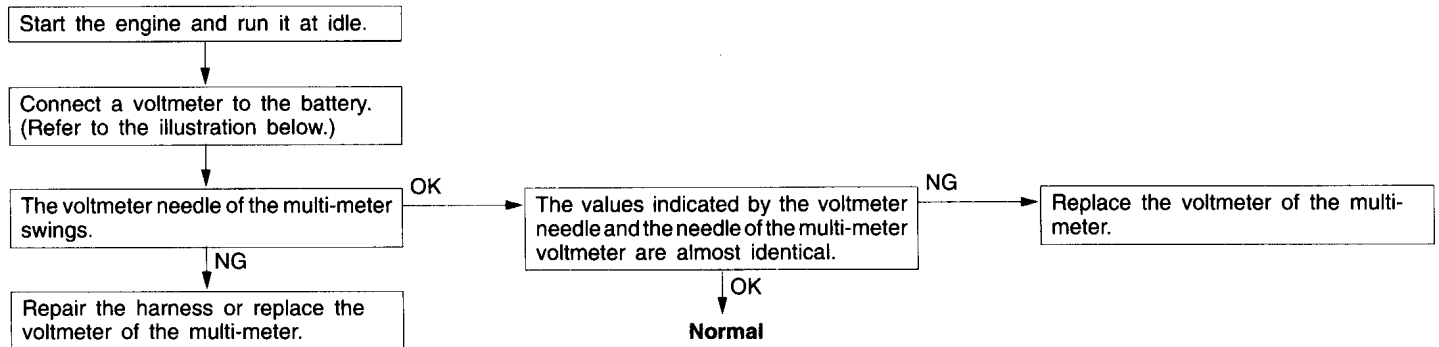
## Inspection Procedure 2

One or both of the inside temperature or outside temperature is not displayed.	Probable cause
[Comment] A harness or connector, or the thermometer may be defective.	<ul style="list-style-type: none"> <li>• Malfunction of harness or connector</li> <li>• Malfunction of thermometer</li> </ul>



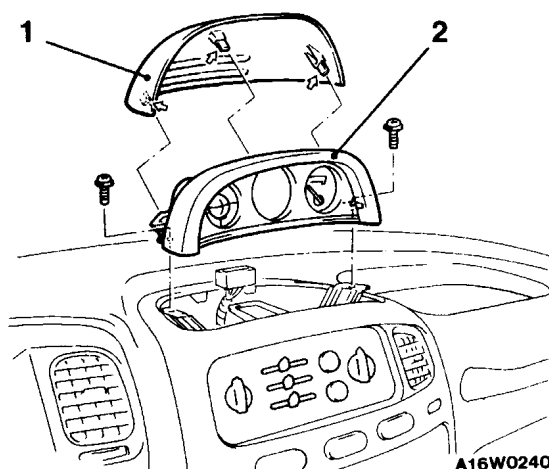
**SERVICE ADJUSTMENT PROCEDURE**

120000296

**VOLTMETER SIMPLE INSPECTION**


**MULTI-METER**

120000297

**REMOVAL AND INSTALLATION**

A16W0240

**NOTE**

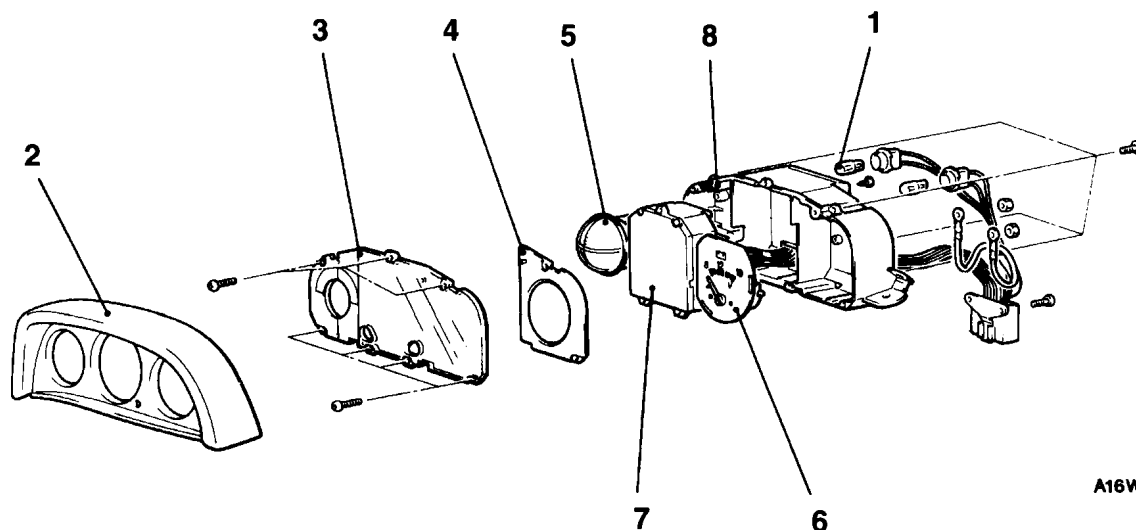
The  marks indicate the sheet metal clip installation positions.

**Removal steps**

1. Multi-meter panel
2. Multi-meter

**DISASSEMBLY AND REASSEMBLY**

120002119



A16W0269

**Disassembly steps**

- |                  |                 |
|------------------|-----------------|
| 1. Bulb          | 5. Inclinometer |
| 2. Meter garnish | 6. Voltmeter    |
| 3. Meter glass   | 7. Thermometer  |
| 4. Window plate  | 8. Meter case   |

# OUTSIDE TEMPERATURE SENSOR, INSIDE TEMPERATURE SENSOR

120000298

## SERVICE SPECIFICATIONS

Item		Standard value
Internal resistance of inside temperature sensor and outside temperature sensor Ω	At 20°C	Approx. 1,200
	At 40°C	Approx. 500

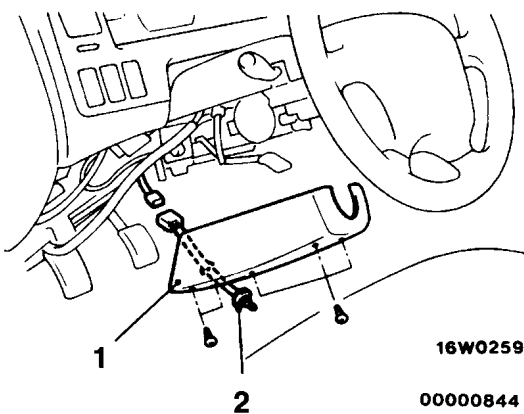
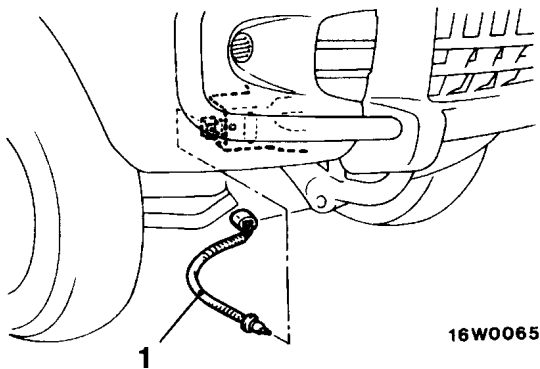
# OUTSIDE TEMPERATURE SENSOR, INSIDE TEMPERATURE SENSOR

120000299

## REMOVAL AND INSTALLATION

<Outside temperature sensor>

<Inside temperature sensor>

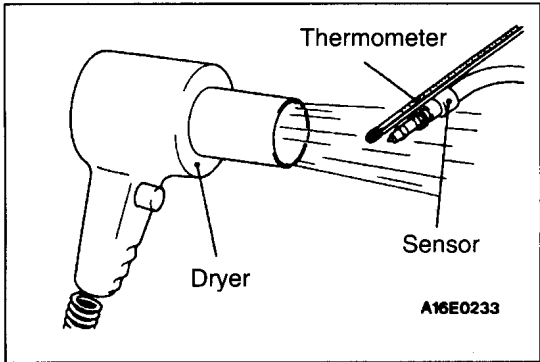


### Outside temperature sensor removal steps

- Under cover side panel (R.H.) (Refer to GROUP 42 – Under Cover.)
1. Outside temperature sensor

### Inside temperature sensor removal steps

1. Column cover, lower
2. Inside temperature sensor



## INSPECTION

### INSIDE TEMPERATURE SENSOR AND OUTSIDE TEMPERATURE SENSOR INTERNAL RESISTANCE INSPECTION

Check that the internal resistances of the inside temperature sensor and outside temperature 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

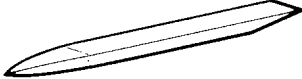
120002247

## 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
Resistor resistance $\Omega$ <R.H. drive vehicles>		Approx. 1	–

## SPECIAL TOOL

120002084

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of headlamp leveling switch

## TROUBLESHOOTING

120002085

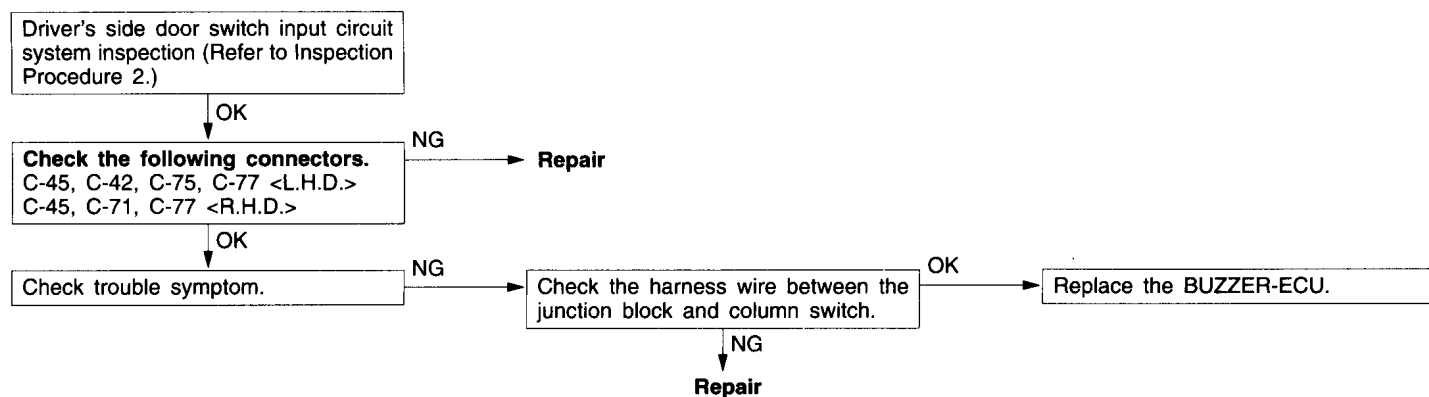
## INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure	Reference page
While the tail lamps or headlamps are illuminated, driver's side door is opened but the light reminder warning buzzer does not sound.	1	P. 54-32

## INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

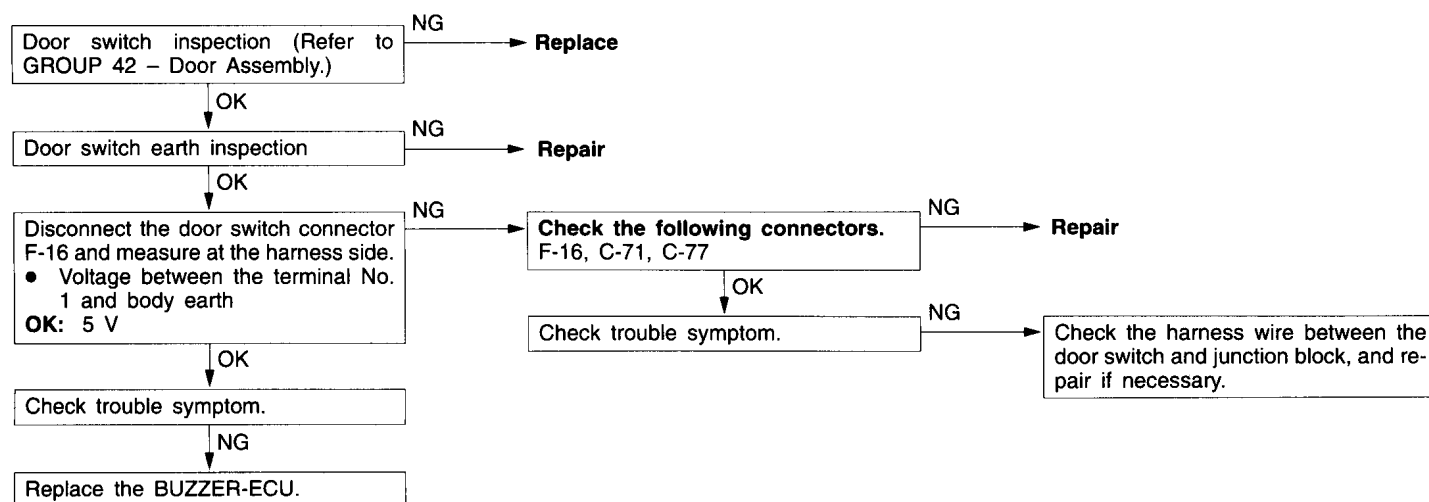
## Inspection Procedure 1

<b>While the tail lamps or headlamps are illuminated, driver's side door is opened but the light reminder warning buzzer does not sound.</b>	<b>Probable cause</b>
[Comment] The cause is probably a defective lighting switch input circuit system or a defective driver's side door switch input circuit system.	<ul style="list-style-type: none"> <li>• Malfunction of driver's side door switch</li> <li>• Malfunction of harness or connector</li> <li>• Malfunction of BUZZER-ECU</li> </ul>



## Inspection Procedure 2

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





## SERVICE ADJUSTMENT PROCEDURES

120002511

## HEADLAMP AIMING

## &lt;USING A BEAMSETTING EQUIPMENT&gt;

1. The headlamps should be aimed with the proper beamsetting equipment, and in accordance with the equipment manufacturer'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 regulations.

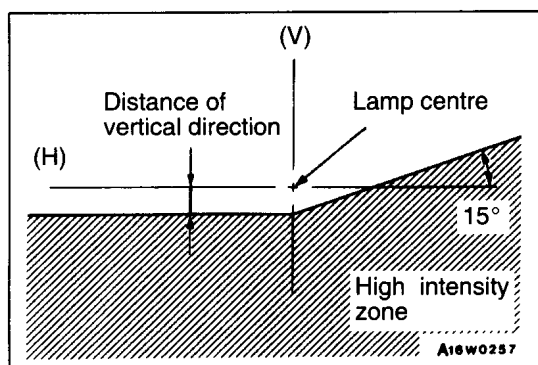
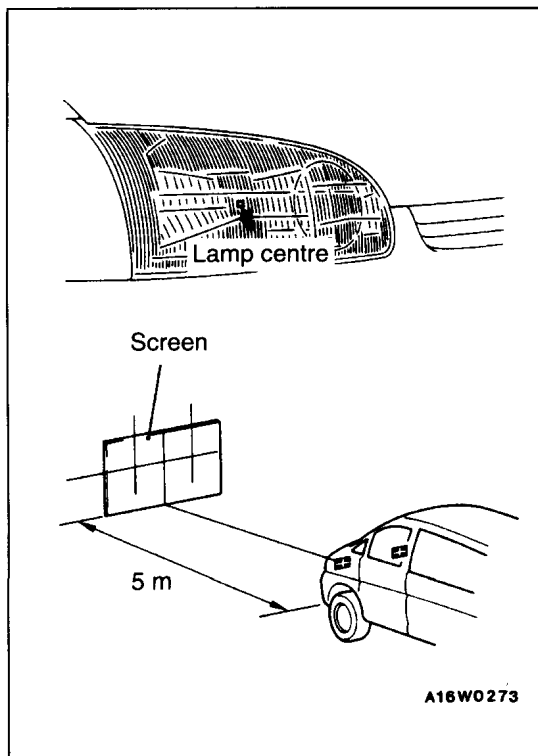
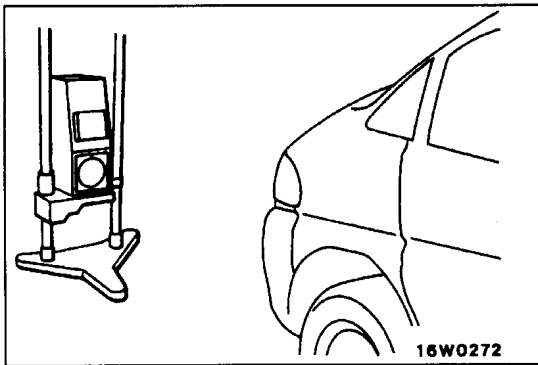
2. Alternately turn the adjusting screw to adjust the headlamp aiming. (Refer to P. 54-34.)

## &lt;USING A SCREEN&gt;

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. Set the distance between the screen and the lamp centre mark of the headlamps as shown in the illustration.

## NOTE

The lamp centre mark (□ mark) is engraved on the outer lens.



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

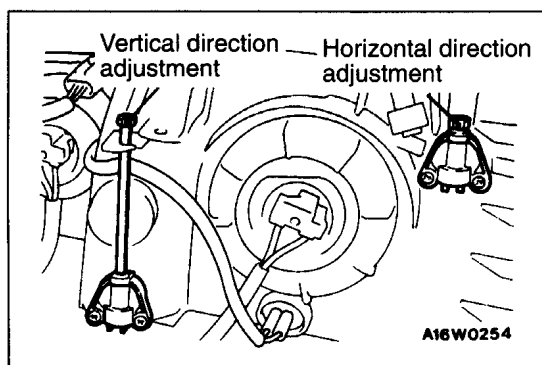
## Standard value: &lt;For low beam adjustment&gt;

## (Vertical direction)

60 mm below horizontal (H)

## (Horizontal direction)

Position where the 15° sloping section intersects the vertical line (V)



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

#### Caution

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

#### NOTE

The reflectors for low beam and high beam have been combined into a single part, so if the low beam adjustment is made, high beam adjustment is not necessary.

## INTENSITY MEASUREMENT

120002512

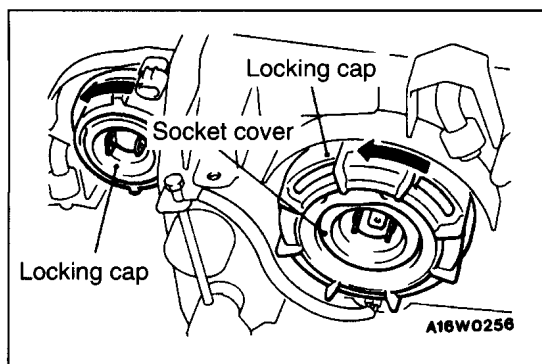
Using a photometer, and following its manufacturer's instruction manual, measure the headlamp intensity and check to be sure that the limit value is satisfied.

**Limit: 30,000 cd or more**

#### NOTE

1. When measuring the intensity, maintain the engine speed at 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.

$$I = E r^2 \text{ Where: } I = \text{intensity (cd)} \\ E = \text{illumination (lux)} \\ r = \text{distance (m) from headlamps to illuminometer}$$

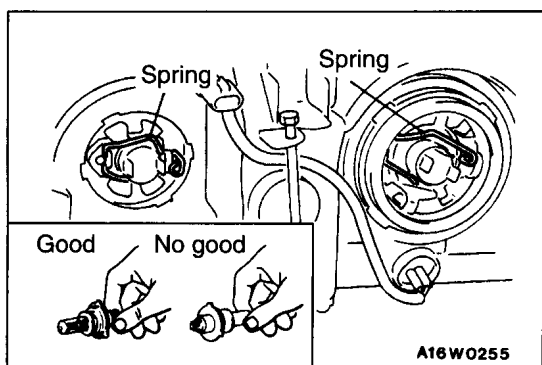


## BULB REPLACEMENT

120000304

### <Headlamp Bulb>

1. Remove the connector lock and disconnect the headlamp connector.
2. Turn the locking cap to the left to remove it. (High beam only)
3. Turn the locking cap to the left, and then remove the socket cover. (Low beam only)



4. Remove the bulb attachment spring and pull out the bulb.

#### Caution

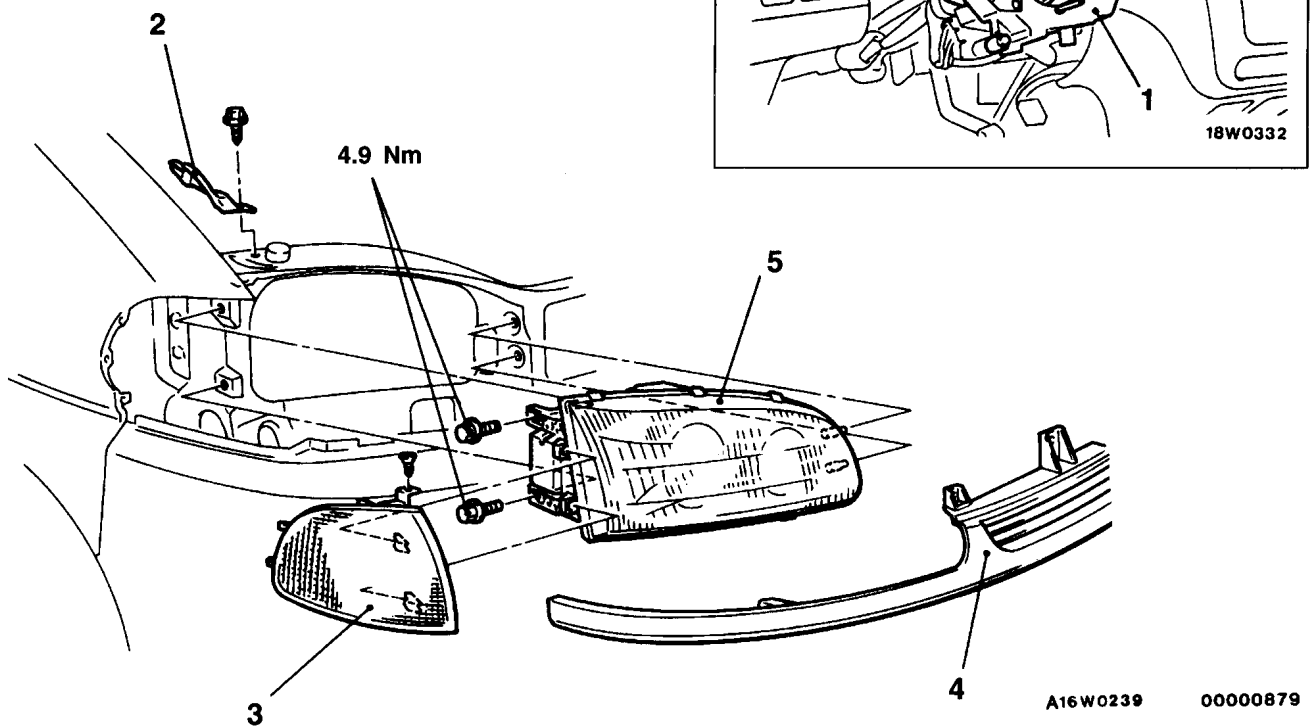
**Do not touch the surface of the bulb with bare fingers or gloves. If the surface is dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.**

**HEADLAMP**

120002086

**REMOVAL AND INSTALLATION****CAUTION: SRS**

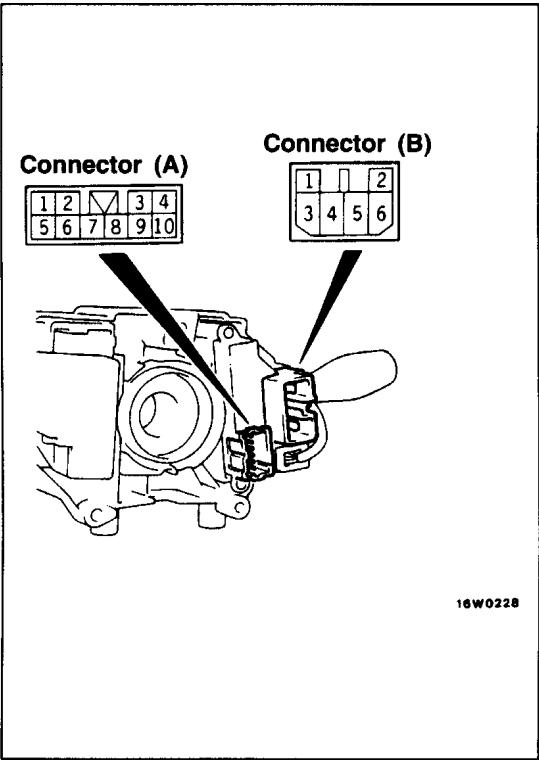
Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

**Column switch removal**

1. Column switch (Refer to GROUP 51 – Windshield Wiper and Washer.)

**Headlamp removal steps**

2. Cover (R.H. only)
3. Front turn-signal lamp
4. Radiator grille (Refer to GROUP 51 – Garnish-Moulding.)
5. Headlamp



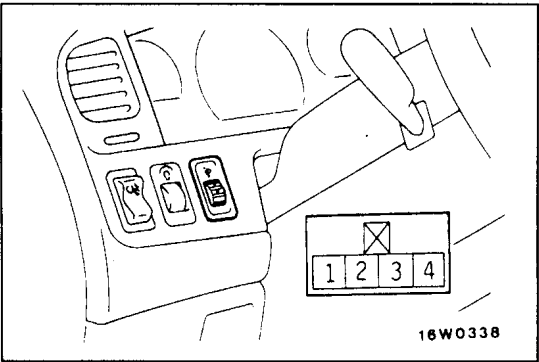
INSPECTION

LIGHTING SWITCH AND DIMMER/PASSING SWITCH CONTINUITY INSPECTION

Switch position		Connector (A) terminal No.			Connector (B) terminal No.				
		5	6	7	1	2	3	4	6
LIGHTING SWITCH	OFF								
	TAILLAMP	○	—	○					
	HEADLAMP		○	—	○				
DIMMER SWITCH	LOW BEAM						○	○	
	HIGH BEAM							○	○
PASSING SWITCH					○	○		○	○

NOTE

○-○ indicates continuity of R.H. drive vehicles.

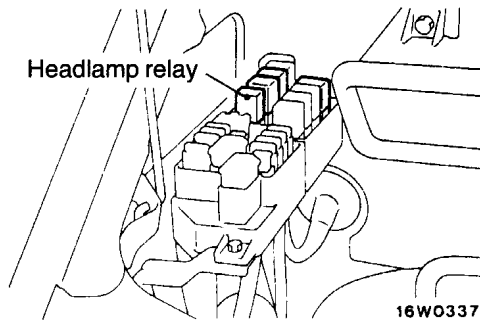


HEADLAMP LEVELING SWITCH RESISTANCE INSPECTION

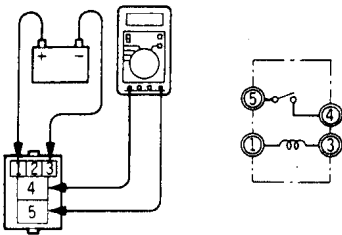
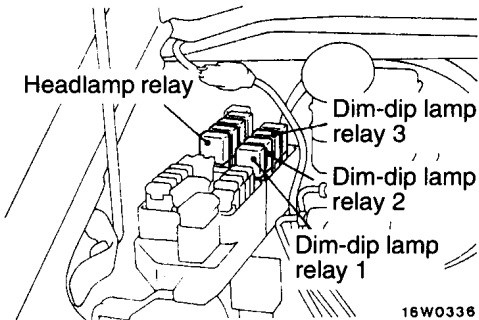
- (1) Remove the headlamp leveling switch.
- (2) Operate the switch, and check the resistance between the terminal No. 3 and No. 4.

Switch position	0	1	2	3	4
Resistance Ω	120	300	620	1,100	2,000

## &lt;L.H.drive vehicles&gt;



## &lt;R.H.drive vehicles&gt;

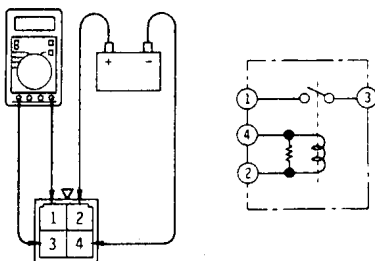
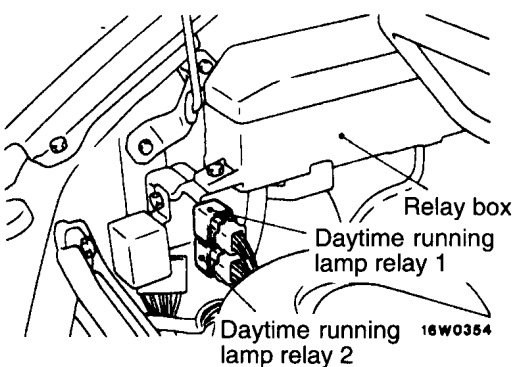
16W0350  
00002651

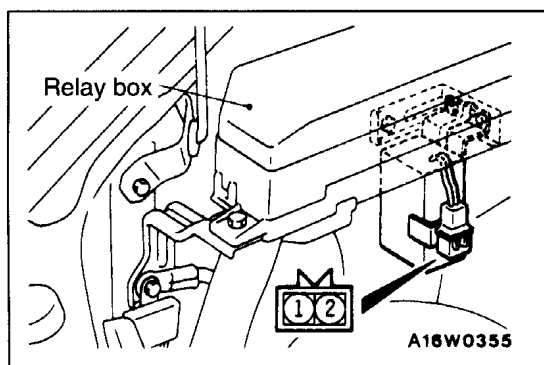
## HEADLAMP RELAY, DIM-DIP LAMP RELAY 1, 2 AND 3 CONTINUITY INSPECTION

Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

## DAYTIME RUNNING LAMP RELAY 1, 2 CONTINUITY INSPECTION

Battery voltage	Terminal No.			
	1	2	3	4
Power is supplied	○		○	
Power is not supplied		⊕	⊖	

20W0206  
00002652

**RESISTOR RESISTANCE INSPECTION****<R.H. drive vehicles>**

Disconnect the resistor's connector, and then measure the resistance between the terminal No.1 and No. 2.

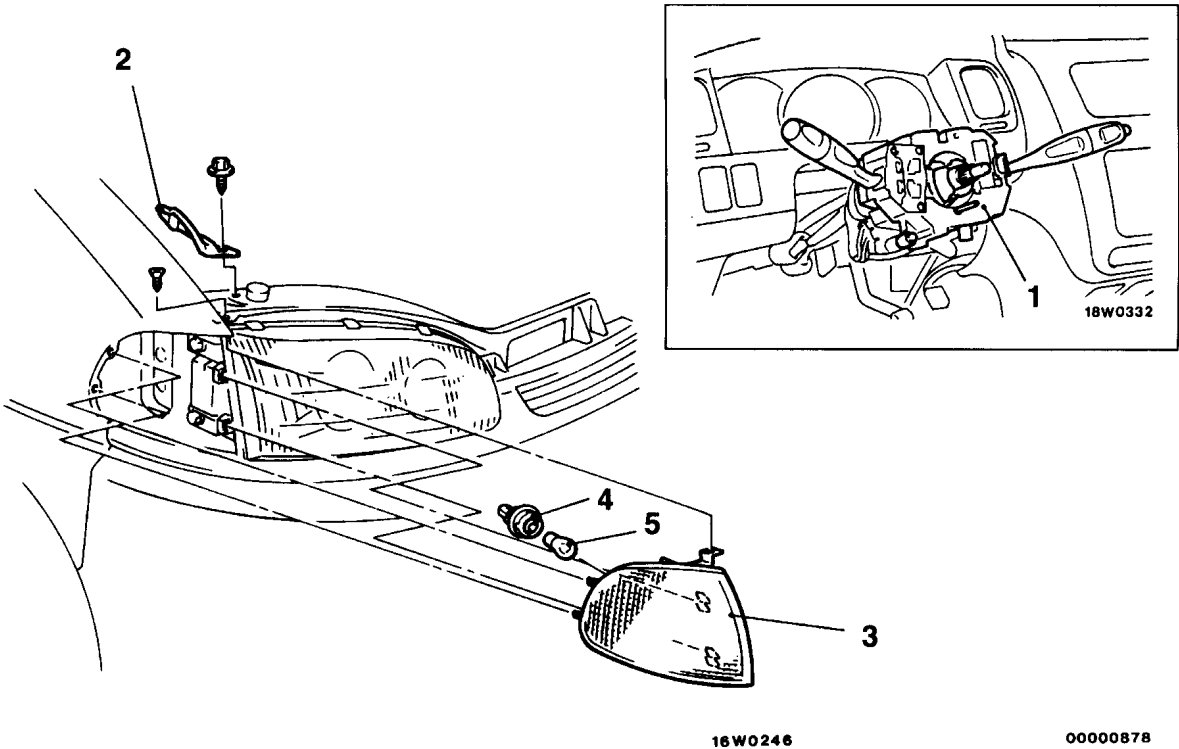
**Standard value: Approx. 1  $\Omega$**

FRONT TURN-SIGNAL LAMP

120000306

REMOVAL AND INSTALLATION

**CAUTION: SRS**  
Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

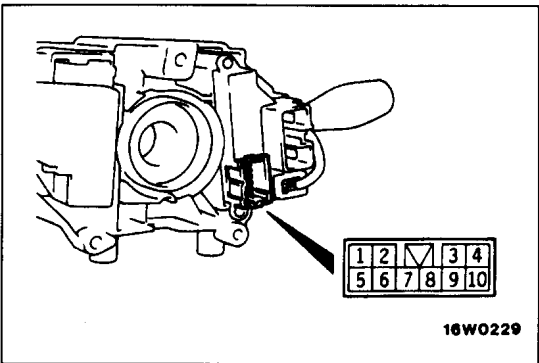


Column switch removal

- 1. Column switch (Refer to GROUP 51 – Windshield Wiper and Washer.)

Front turn-signal lamp removal steps

- 2. Cover (R.H. only)
- 3. Front turn-signal lamp
- 4. Bulb socket
- 5. Bulb



INSPECTION

TURN-SIGNAL LAMP SWITCH CONTINUITY INSPECTION

Switch position	Terminal No.		
	3	8	9
R.H.		<input type="radio"/>	<input type="radio"/>
OFF			
L.H.	<input type="radio"/>	<input type="radio"/>	

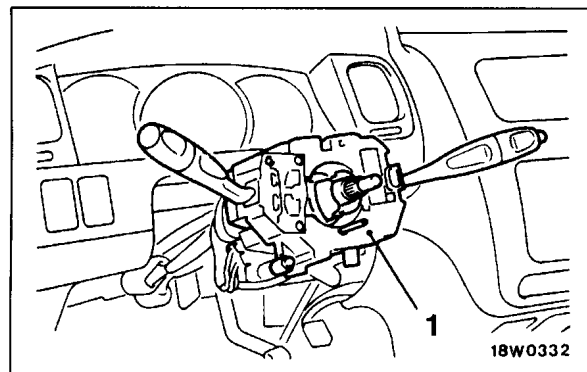
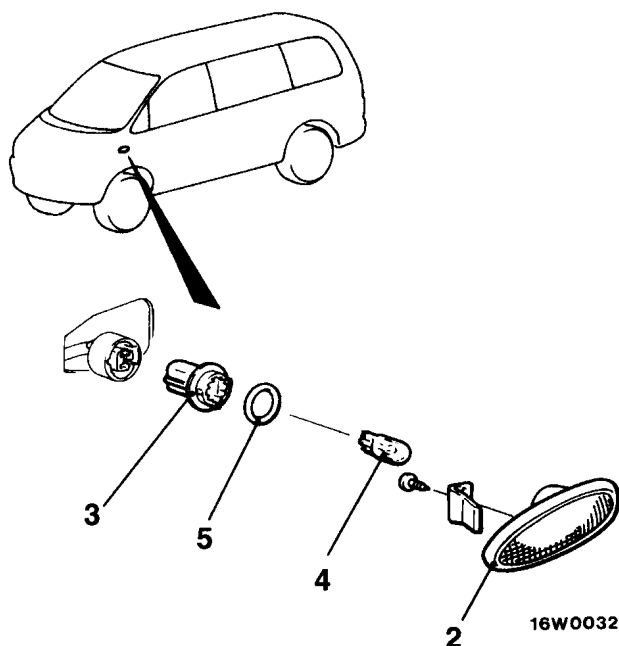
# SIDE TURN-SIGNAL LAMP

120000307

## REMOVAL AND INSTALLATION

**CAUTION: SRS**

Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.



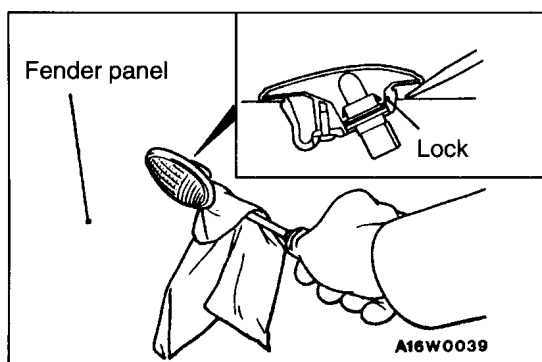
00000790

**Column switch removal**

1. Column switch (Refer to GROUP 51 – Windshield Wiper and Washer.)

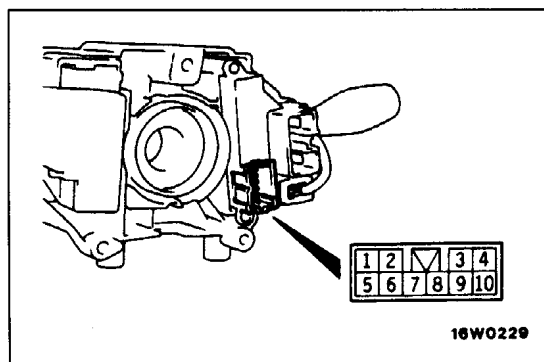
**Side turn-signal lamp removal steps**

- ◀A▶ ▶A◀
2. Side turn-signal lamp
  3. Bulb socket
  4. Bulb
  5. Packing


**REMOVAL SERVICE POINT**
**◀A▶ SIDE TURN-SIGNAL LAMP REMOVAL**

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

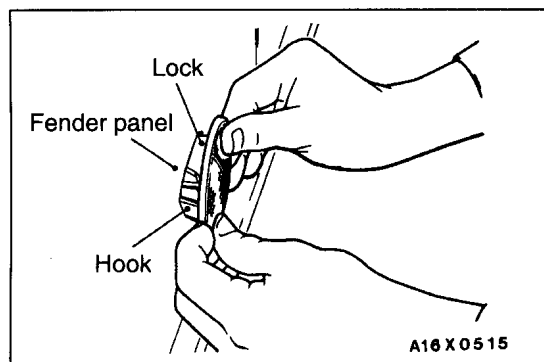


**INSPECTION****TURN-SIGNAL LAMP SWITCH CONTINUITY INSPECTION**

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

**INSTALLATION SERVICE POINT****►A◄SIDE TURN-SIGNAL LAMP INSTALLATION**

- (1) Fit the lock into the fender panel.
- (2) Push the side turn-signal lamp into the fender panel, and secure it with the hook.



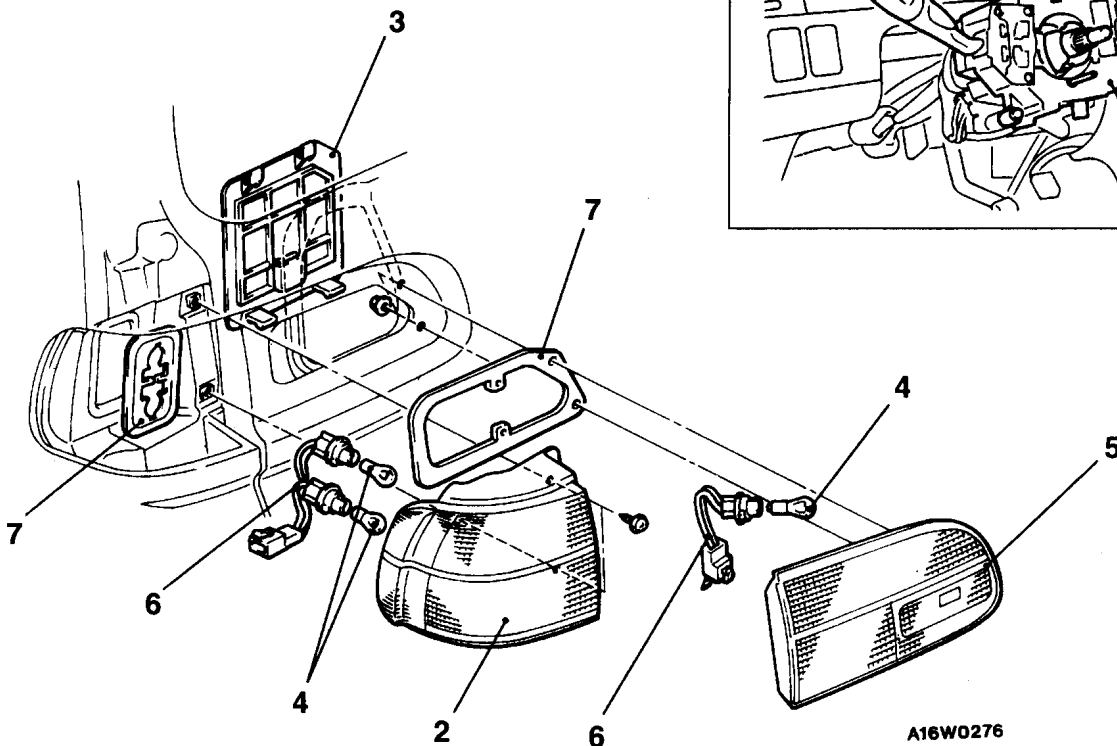
# REAR COMBINATION LAMP, TAILGATE LAMP

1200002087

## REMOVAL AND INSTALLATION

### CAUTION: SRS

Before removal of air bag module and clock spring, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.



A16W0276

00000877

### Column switch removal

1. Column switch (Refer to GROUP 51 – Windshield Wiper and Washer.)

### Rear combination lamp removal steps

2. Rear combination lamp
4. Bulb
6. Bulb socket assembly
7. Gasket

### Tailgate lamp removal steps

- Tailgate lower trim <Semi-trim type> (Refer to GROUP 42 – Tailgate Trim and Waterproof Film.)
- 3. Cover <Full-trim type>
- 4. Bulb
- 5. Tailgate lamp
- 6. Bulb socket assembly
- 7. Gasket

**INSPECTION****LIGHTING SWITCH AND TURN-SIGNAL LAMP SWITCH CONTINUITY INSPECTION**

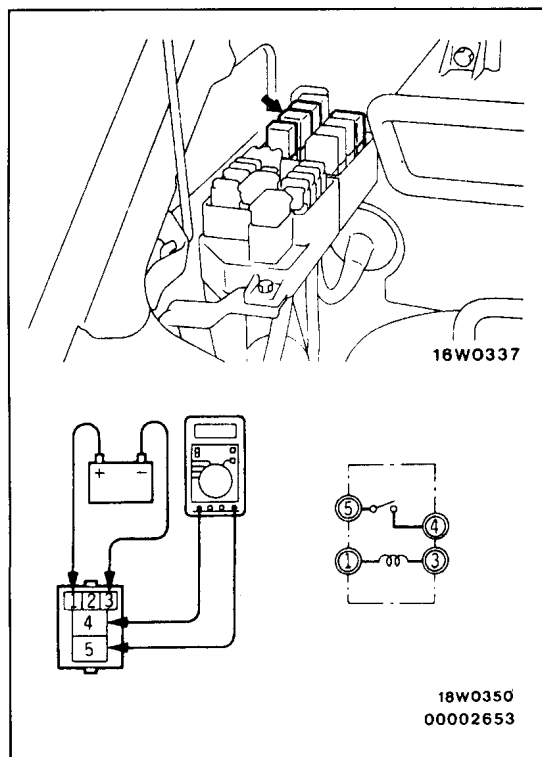
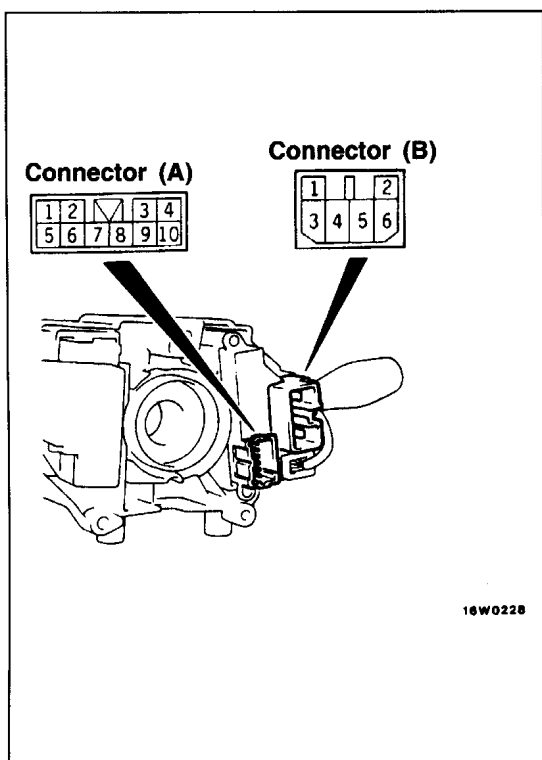
Switch position		Connector (A) terminal No.					Connector (B) termi- nal No.
		3	5	7	8	9	1
LIGHTING SWITCH	OFF						
	TAILLAMP	○	—	○			○
TURN-SIG- NAL LAMP SWITCH	R.H.				○	○	
	OFF						
	L.H.	○	—	○			

**NOTE**

○—○ indicates continuity of R.H. drive vehicles.

**TAILLAMP RELAY CONTINUITY INSPECTION**

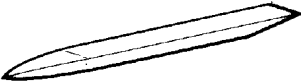
Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	—	○	
Power is supplied	⊕	—	⊖	○



REAR FOG LAMP

120002088

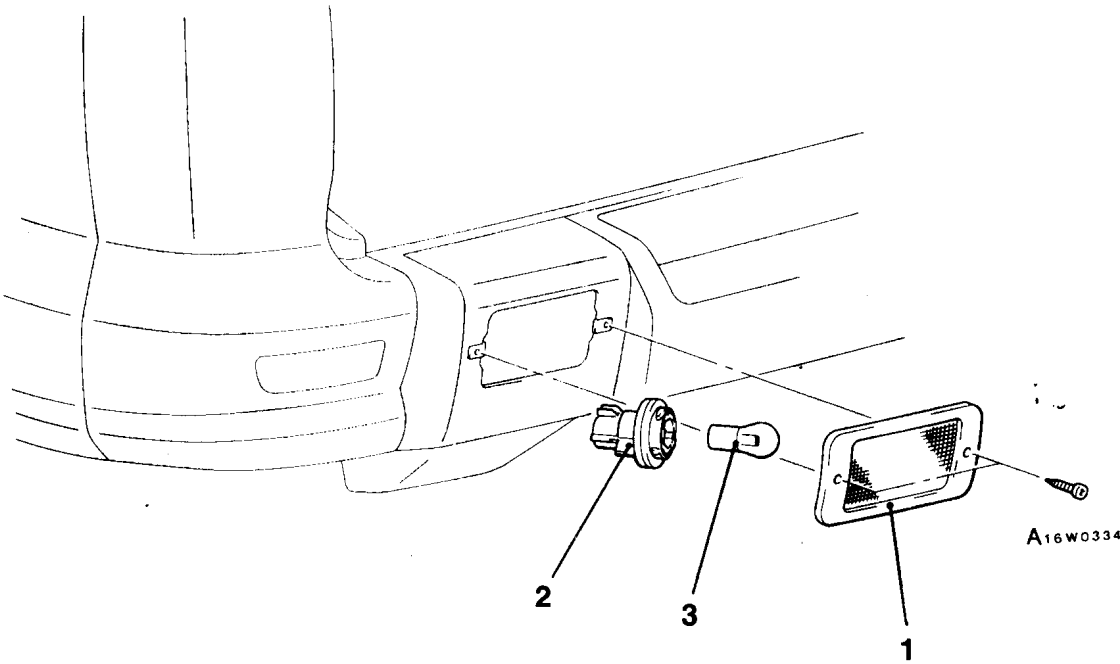
SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of rear fog lamp switch

REAR FOG LAMP

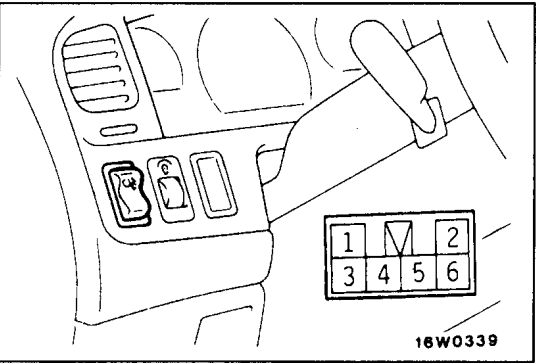
120002089

REMOVAL AND INSTALLATION











NOTE  
The rear fog lamp is only installed at driver's side.

- Removal steps**
- 1. Rear fog lamp
  - 2. Bulb socket
  - 3. Bulb



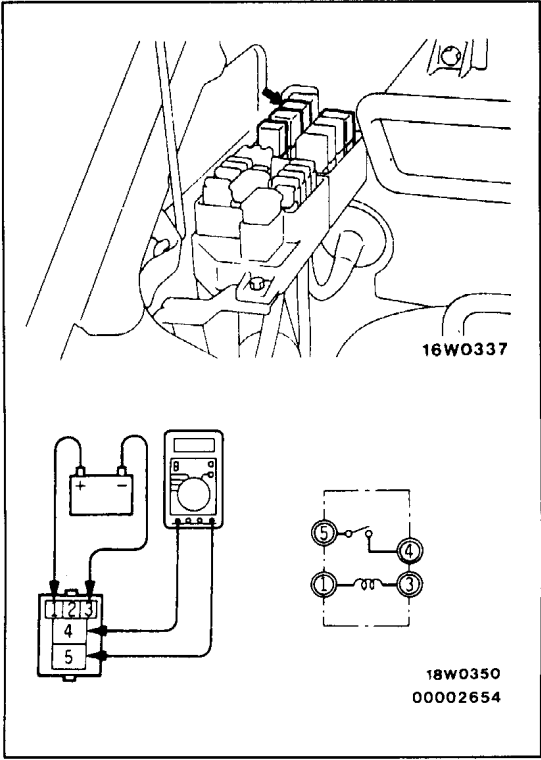
INSPECTION

REAR FOG LAMP SWITCH CONTINUITY INSPECTION

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

REAR FOG LAMP RELAY CONTINUITY INSPECTION

Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

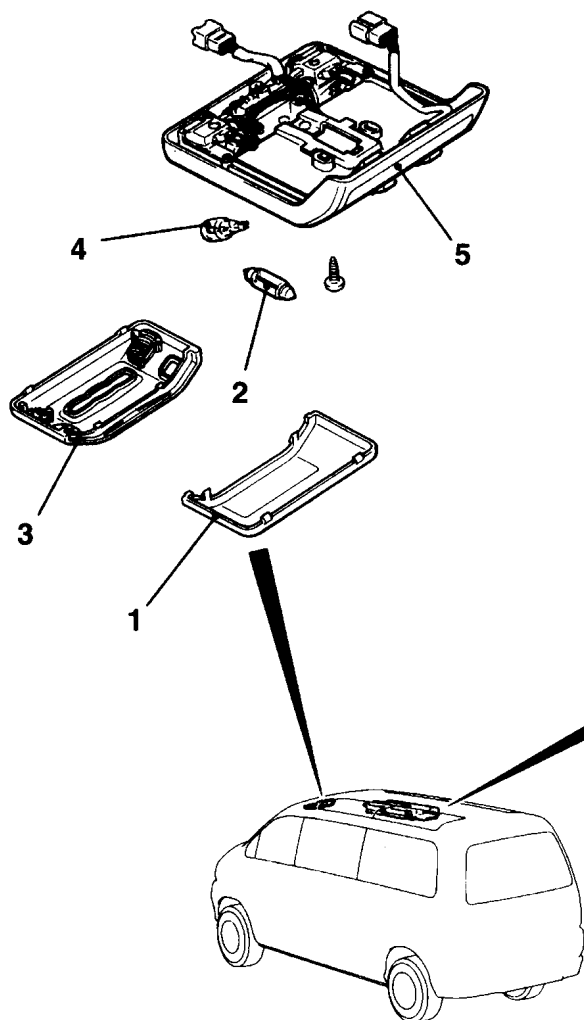


# INTERIOR LAMP

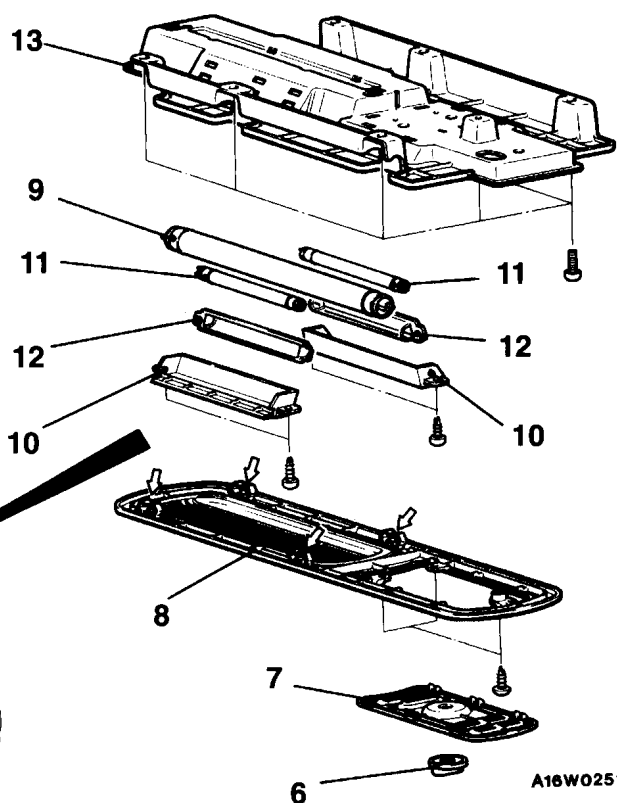
120000314

## REMOVAL AND INSTALLATION

<Vehicles with sunroof>




<Vehicles with luxury - type room lamp>



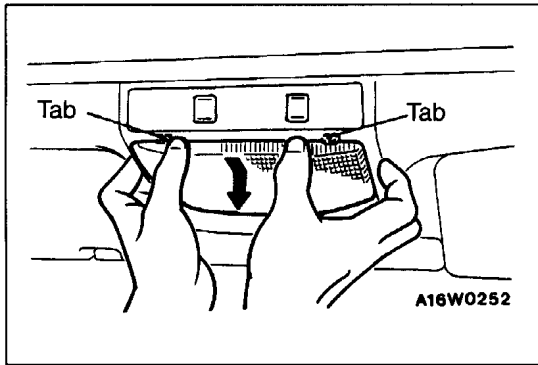
A16W0251

### NOTE

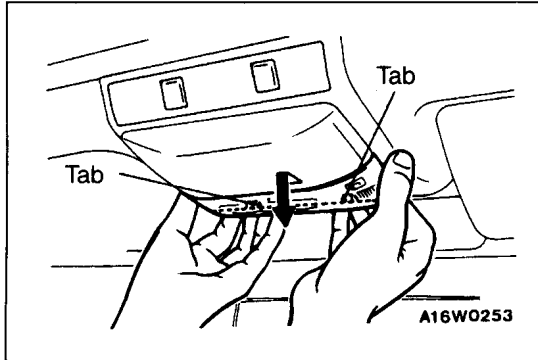
The  mark indicates the sheet metal clip position.

### Removal steps

- |                       |  |  |
|-----------------------|--|--|
| <p>◀A▶</p> <p>◀B▶</p> | <ol style="list-style-type: none"> <li>1. Room lamp lens</li> <li>2. Room lamp bulb</li> <li>3. Room lamp switch cover</li> <li>4. Map lamp bulb</li> <li>5. Room lamp and sunroof switch body</li> <li>6. Light adjustment switch knob</li> <li>7. Switch panel</li> <li>8. Centre garnish</li> </ol> | <ol style="list-style-type: none"> <li>9. Fluorescent light (15 W)</li> <li>10. Cover</li> <li>11. Fluorescent light (6 W)</li> <li>12. Lens tube               <ul style="list-style-type: none"> <li>● Headlining (Refer to GROUP 52A – Headlining.)</li> </ul> </li> <li>13. Lamp body</li> </ol> |
|-----------------------|--|--|

**REMOVAL SERVICE POINTS****◀A▶ ROOM LAMP LENS REMOVAL**

To remove, press the room lamp tab while pulling downwards.


**◀B▶ ROOM LAMP SWITCH COVER REMOVAL**

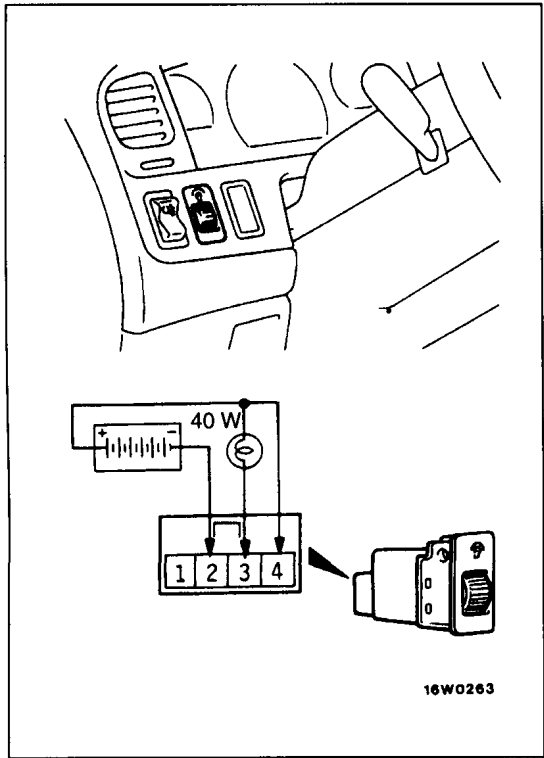
To remove, press the room lamp switch cover tab while pulling downwards.

RHEOSTAT

120000315

SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of rheostat



RHEOSTAT

120000316

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 LAMP SWITCH

120000317

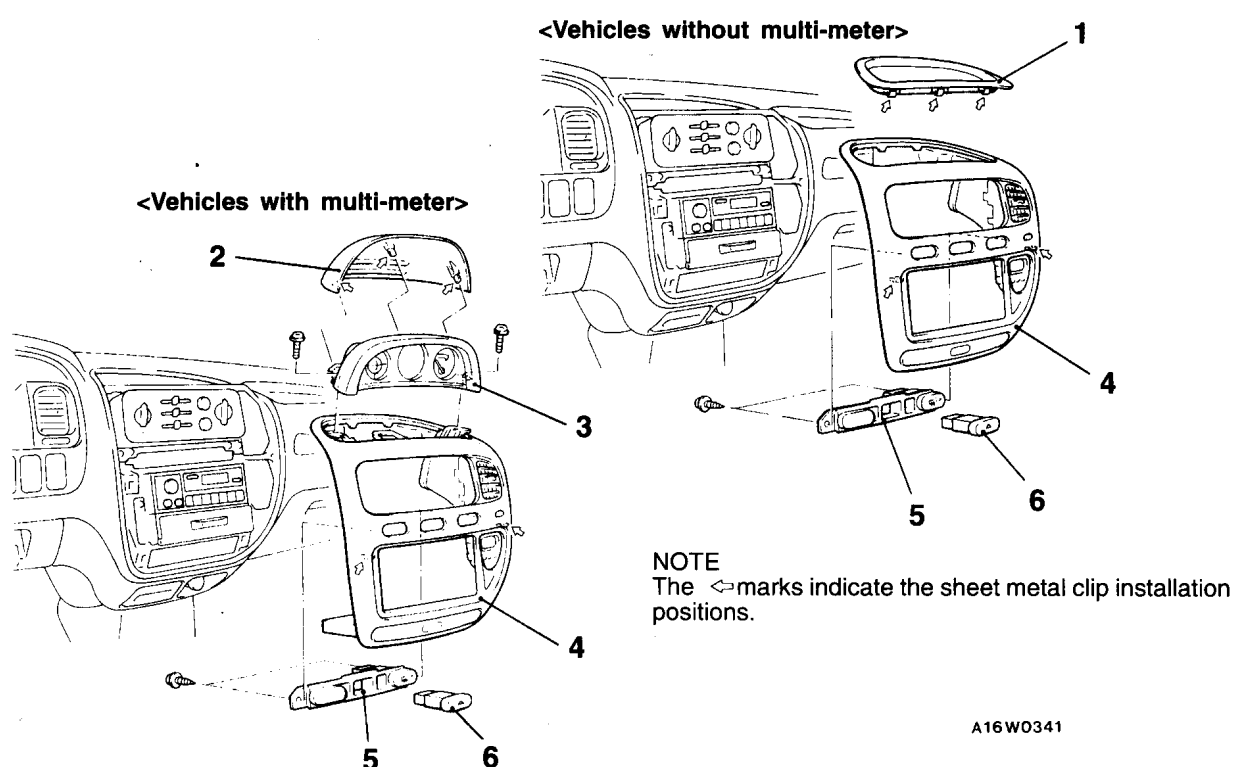
## SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	<ul style="list-style-type: none"> <li>Removal of centre panel</li> <li>Removal of multi-meter panel</li> <li>Removal of tray</li> </ul>

## HAZARD LAMP SWITCH

120002124

## REMOVAL AND INSTALLATION



A16W0341

## Removal steps

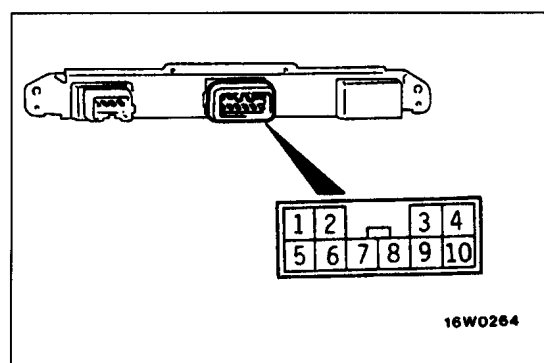
1. Tray
2. Multi-meter panel
3. Multi-meter

4. Centre panel (Refer to GROUP 52A – Instrument Panel.)
5. Switch holder
6. Hazard lamp switch

## INSPECTION

## HAZARD LAMP SWITCH CONTINUITY INSPECTION

Switch position	Terminal No.									
	1	2	3	4	5	6	7	8	9	10
OFF					○	—	○	○	○	ILL
ON	○	○	○	○	○	○			○	ILL

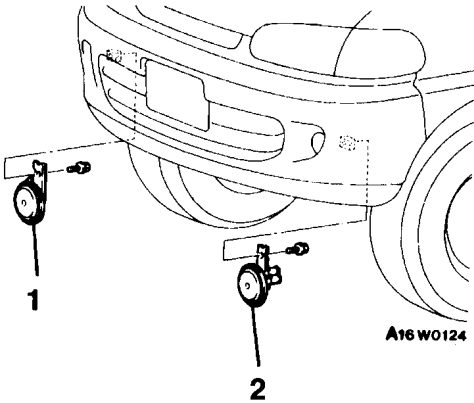


16W0264

HORN

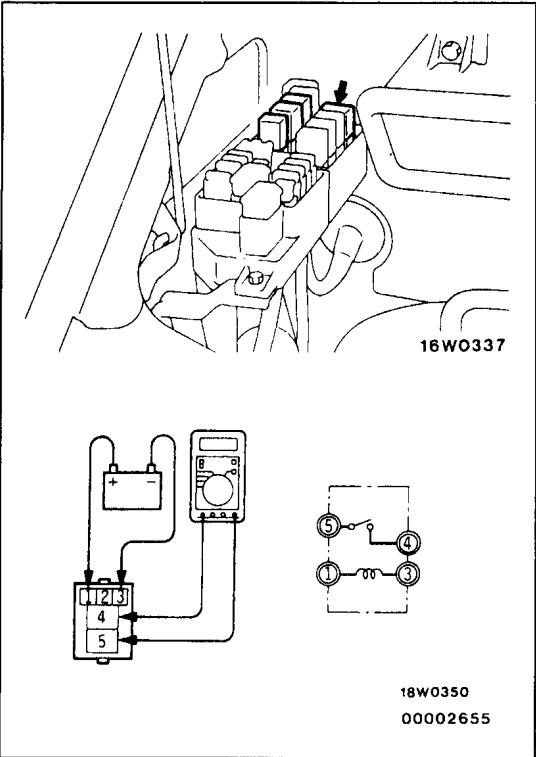
120002090

REMOVAL AND INSTALLATION



Removal steps

- Under cover side panel  
(Refer to GROUP 42 – Under Cover.)
- 1. Horn (High sound) <Vehicles with dual horn>
- 2. Horn (Low sound)



INSPECTION


HORN RELAY CONTINUITY INSPECTION  
<Vehicles with SRS>

Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	---	⊖	○

# CIGARETTE LIGHTER

**120000320**

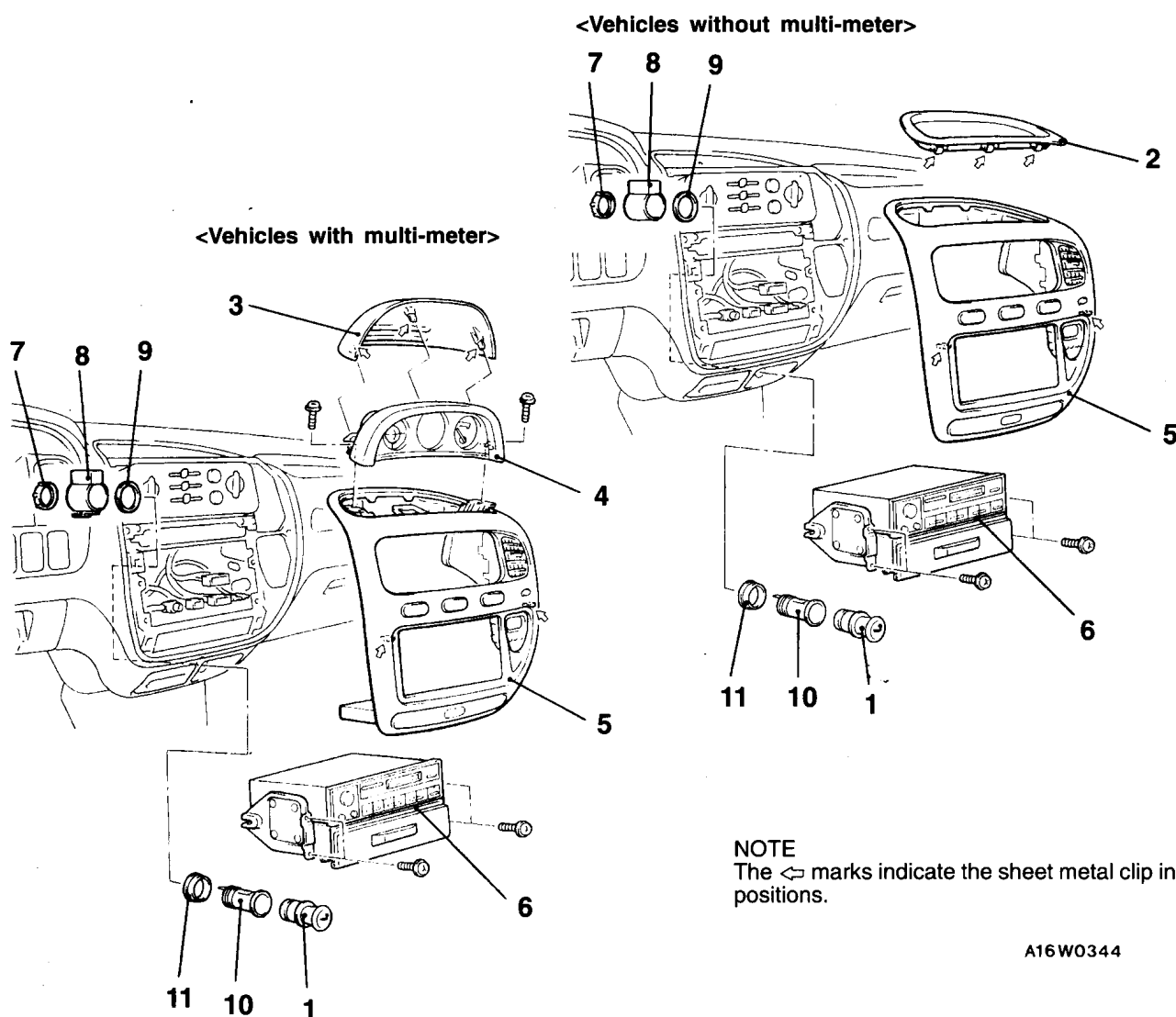
## SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	<ul style="list-style-type: none"> <li>• Removal of centre panel</li> <li>• Removal of multi-meter panel</li> <li>• Removal of tray</li> </ul>

## CIGARETTE LIGHTER

120002125

## REMOVAL AND INSTALLATION



**NOTE**

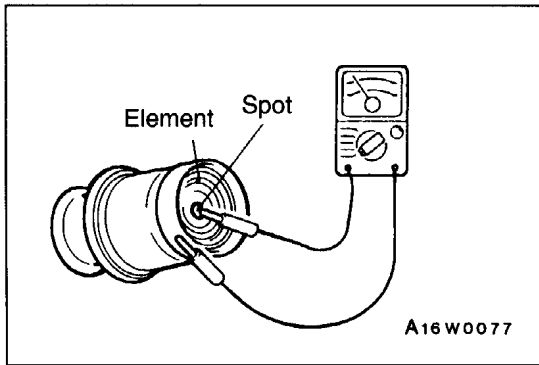
**NOTE**  
The ⇐ marks indicate the sheet metal clip installation positions.

**A16W0344**

## Removal steps

1. Plug
2. Tray
3. Multi-meter panel
4. Multi-meter
5. Centre panel (Refer to GROUP 52 A – Instrument Panel.)
6. Radio and tape player

7. Fixing ring
8. Socket case
9. Socket washer
10. Socket
11. Protector

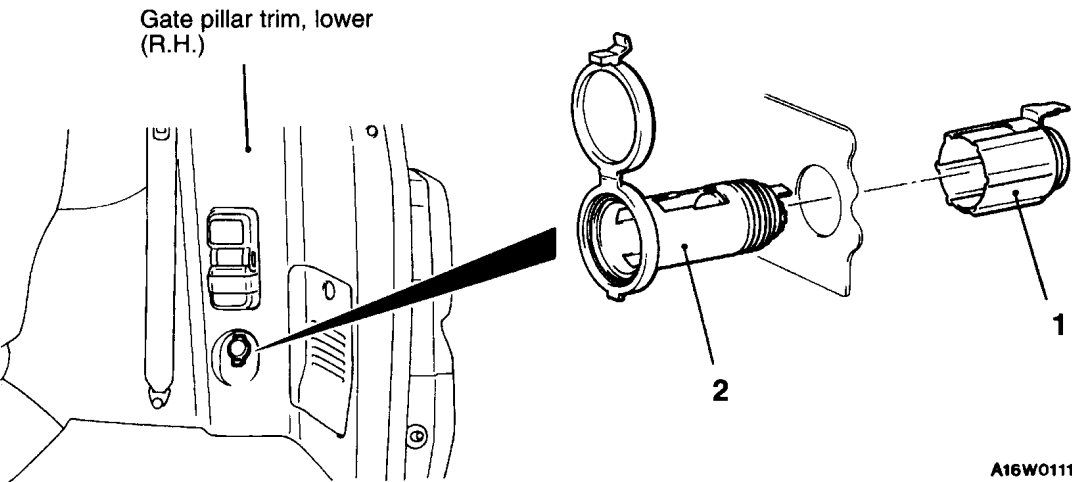
**INSPECTION**

- 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

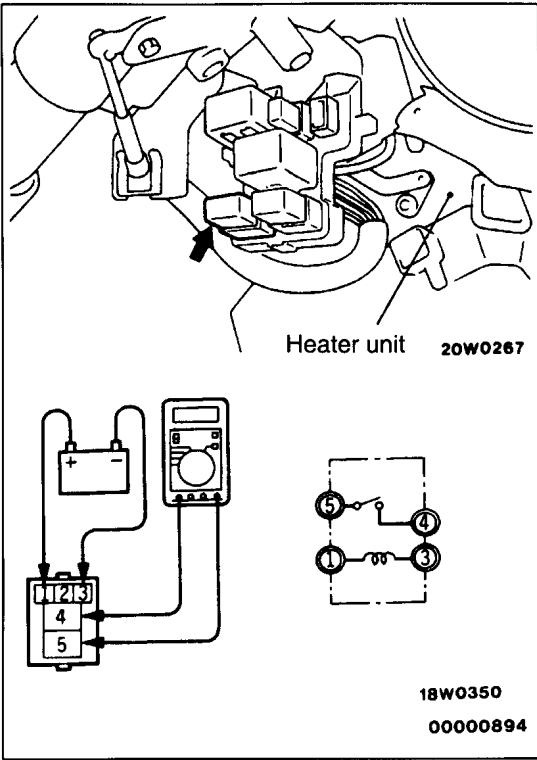
120000322

## REMOVAL AND INSTALLATION



### Removal steps

- Gate pillar trim, lower (R.H.)  
(Refer to GROUP 52A – Trim.)
- 1. Socket
- 2. Outer case



### INSPECTION


#### ACCESSORY SOCKET RELAY CONTINUITY INSPECTION

Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

CLOCK

120000323

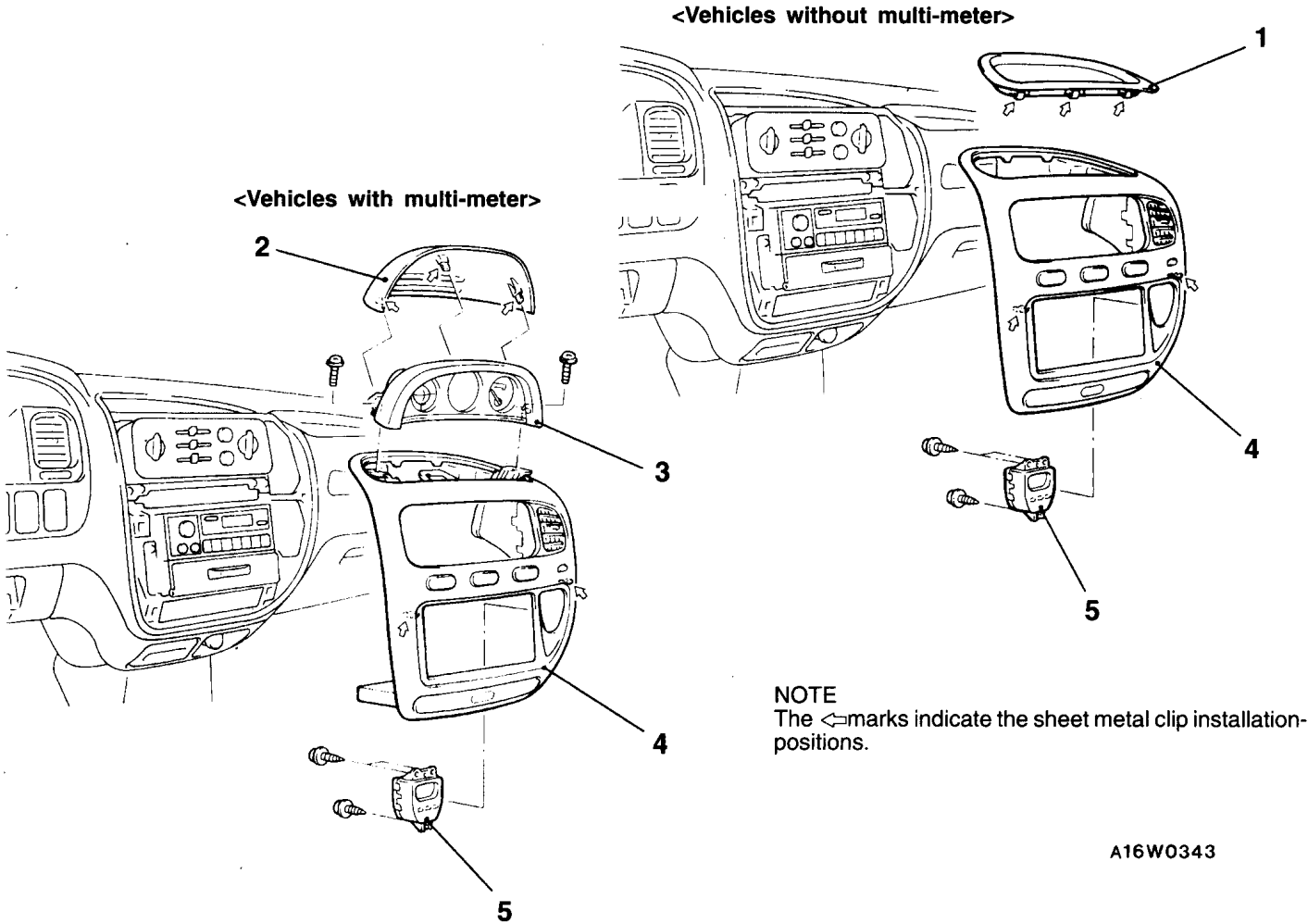
SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	<ul style="list-style-type: none"><li>• Removal of centre panel</li><li>• Removal of multi-meter</li><li>• Removal of tray</li></ul>

CLOCK

120002126

REMOVAL AND INSTALLATION



A16W0343


Removal steps

1. Tray
2. Multi-meter panel
3. Multi-meter
4. Centre panel (Refer to GROUP 52A – Instrument Panel.)
5. Clock

# RADIO AND TAPE PLAYER

120000325

## SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of centre panel

## TROUBLESHOOTING

120002091

### 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

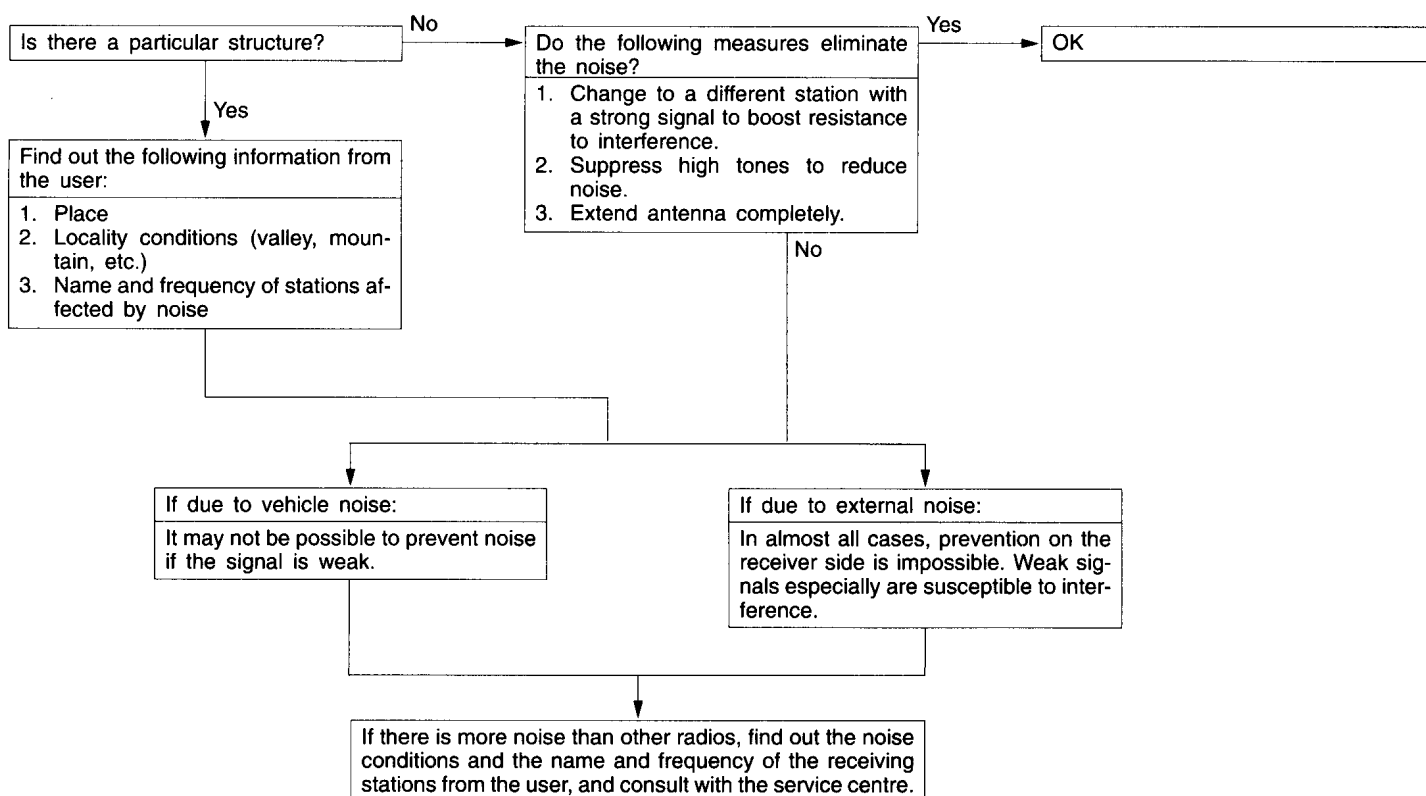
#### NOTE

Refer to problem symptoms of AM radio for LW 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

## 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?

Yes

OK

- Change to a different station with a strong signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Extend antenna completely.

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**

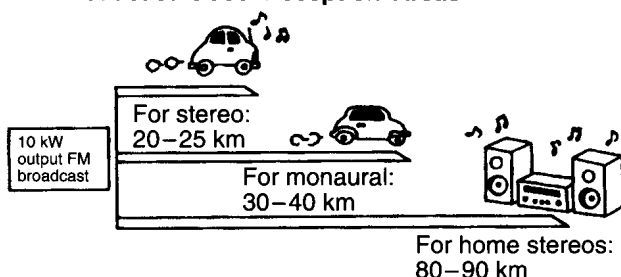
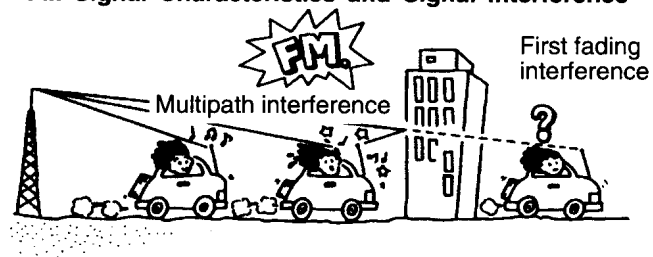
About FM waves:

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).**

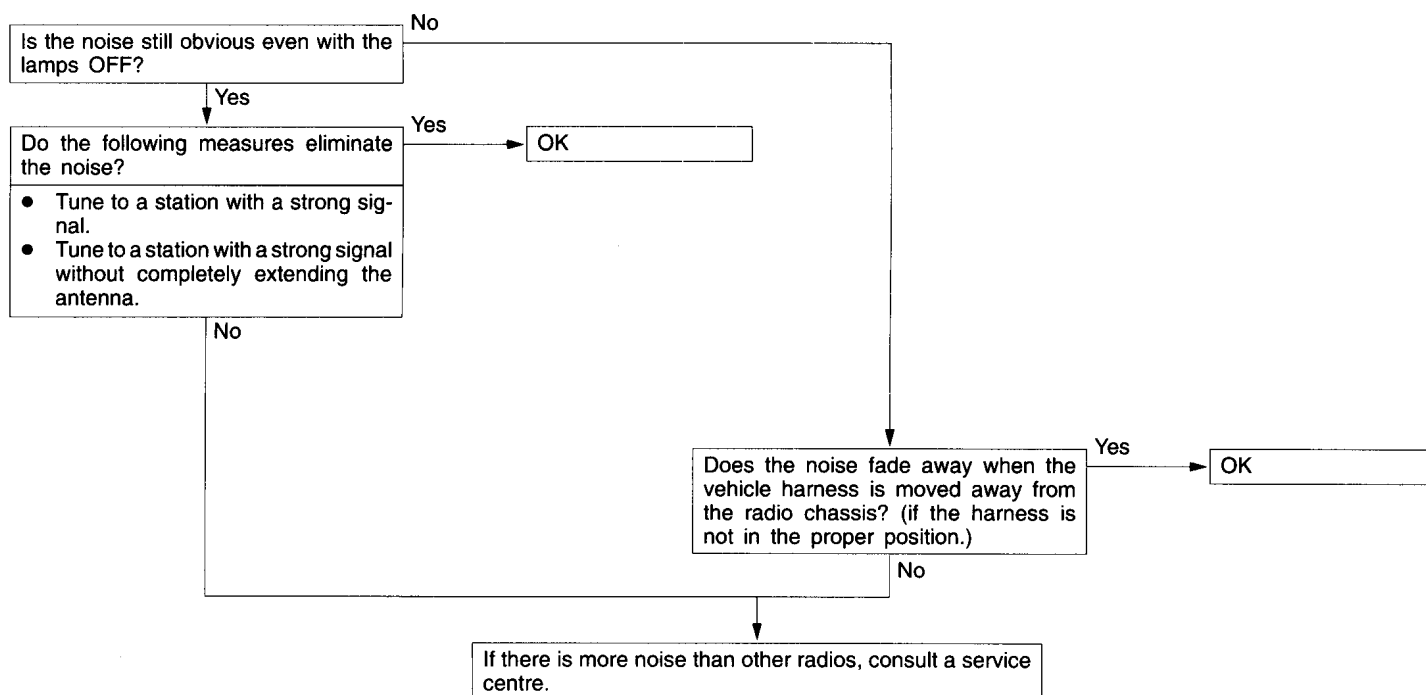
The following factors can be considered as possible causes of noise appearing at night.

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.**

(1)

Noise occurs when the engine is stopped.

Yes

Do the following measures eliminate the noise?

- Tune to a station with a strong signal.
- Extend the antenna completely.
- Adjust the sound quality to suppress high tones.

Yes

OK

No

Is the radio body earth mounted securely?

No

Securely tighten the nuts for the body earth.

Yes

Is the antenna plug properly connected to the radio?

No

Correctly attach the antenna plug.

Yes

Is the antenna itself in good condition or is it properly mounted?

No

Clean the antenna plug and earth wire mounting area. Mount the antenna securely.

Yes

Is the noise eliminated?

Yes

OK

No

If there is more noise than other radios, consult a service centre.

(2)

Noise occurs when the engine is running.

Inspect the vehicle's noise suppressor. (Refer to A-6.)

**NOTE**

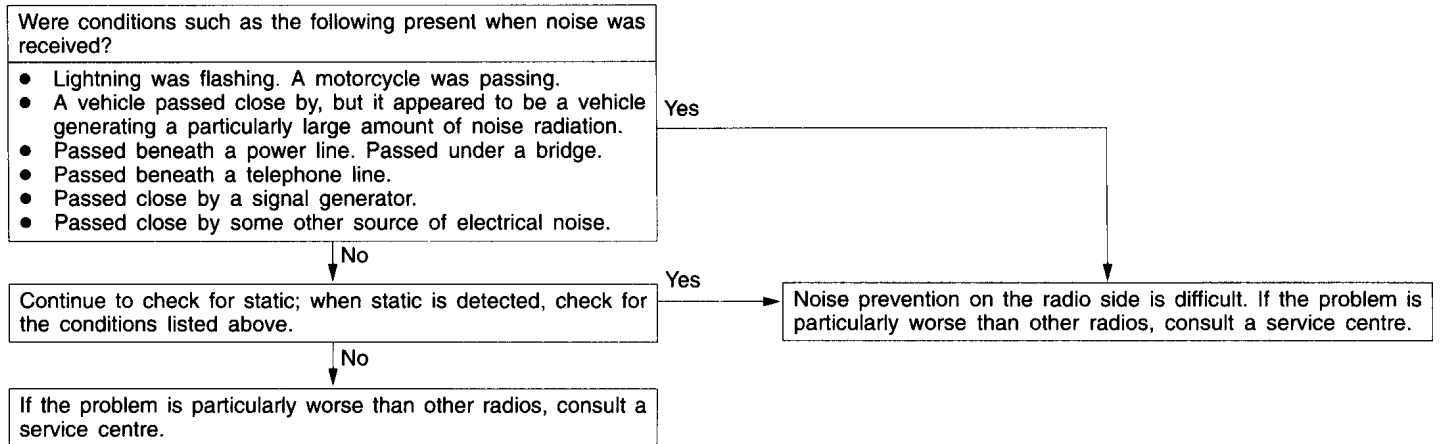
About noise encountered during FM reception only. Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM

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)	<ul style="list-style-type: none"> <li>Increasing the engine speed causing the popping sound to speed up, and volume decreases.</li> <li>Disappears when the ignition switch is turned to ACC.</li> </ul>	<ul style="list-style-type: none"> <li>Mainly due to the spark plugs.</li> <li>Due to the engine noise.</li> </ul>	<ul style="list-style-type: none"> <li>Check or replace the earth cable. (Refer to Fig. 1 and 2 on P.54-62.)</li> <li>Check or replace the noise capacitor. (Refer to Fig. 3 on P.54-62.)</li> </ul>
Other electrical components	–	Noise may appear as electrical components become older.	Repair or replace electrical components.
Static electricity (Cracking, crinkling)	<ul style="list-style-type: none"> <li>Disappears when the vehicle is completely stopped.</li> <li>Severe when the clutch is engaged.</li> </ul>	Occurs when parts or wiring move for some reason and contact metal parts of the body.	Return parts or wiring to their proper position.
	<ul style="list-style-type: none"> <li>Various noises are produced depending on the body part of the vehicle.</li> </ul>	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**

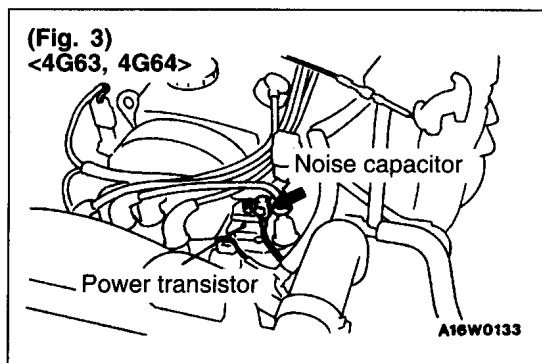
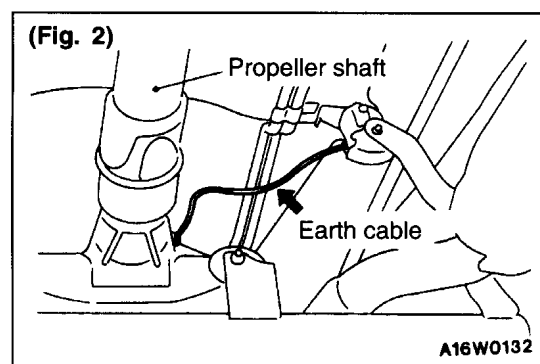
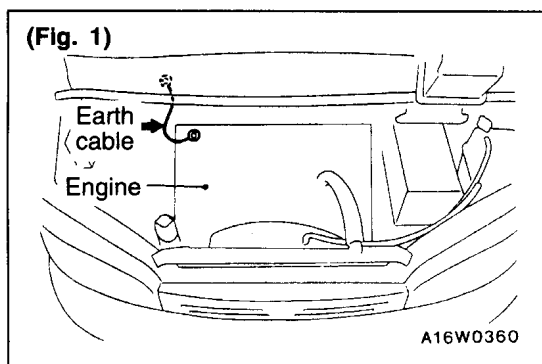
1. **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
2. **Check that there is no external noise. Since failure caused by this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.**
3. **Noise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

**NOTE**

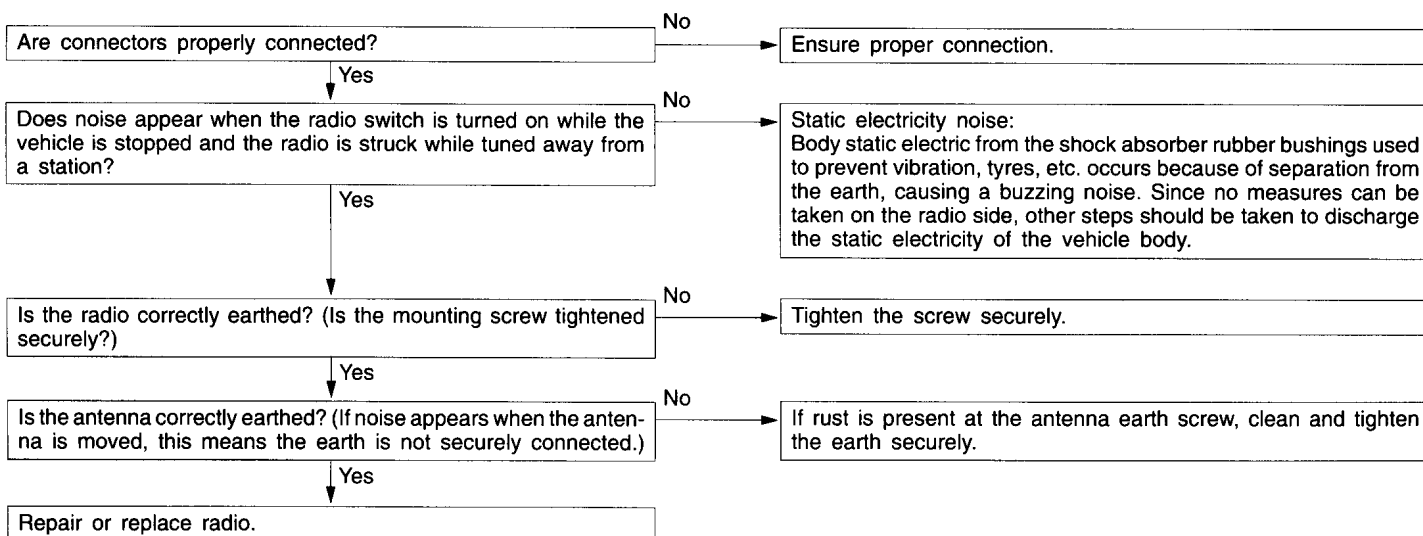
1. **Capacitor**  
The capacitor does not pass D.C. current, but as the number of waves increases when it passes A.C. current, impedance (resistance

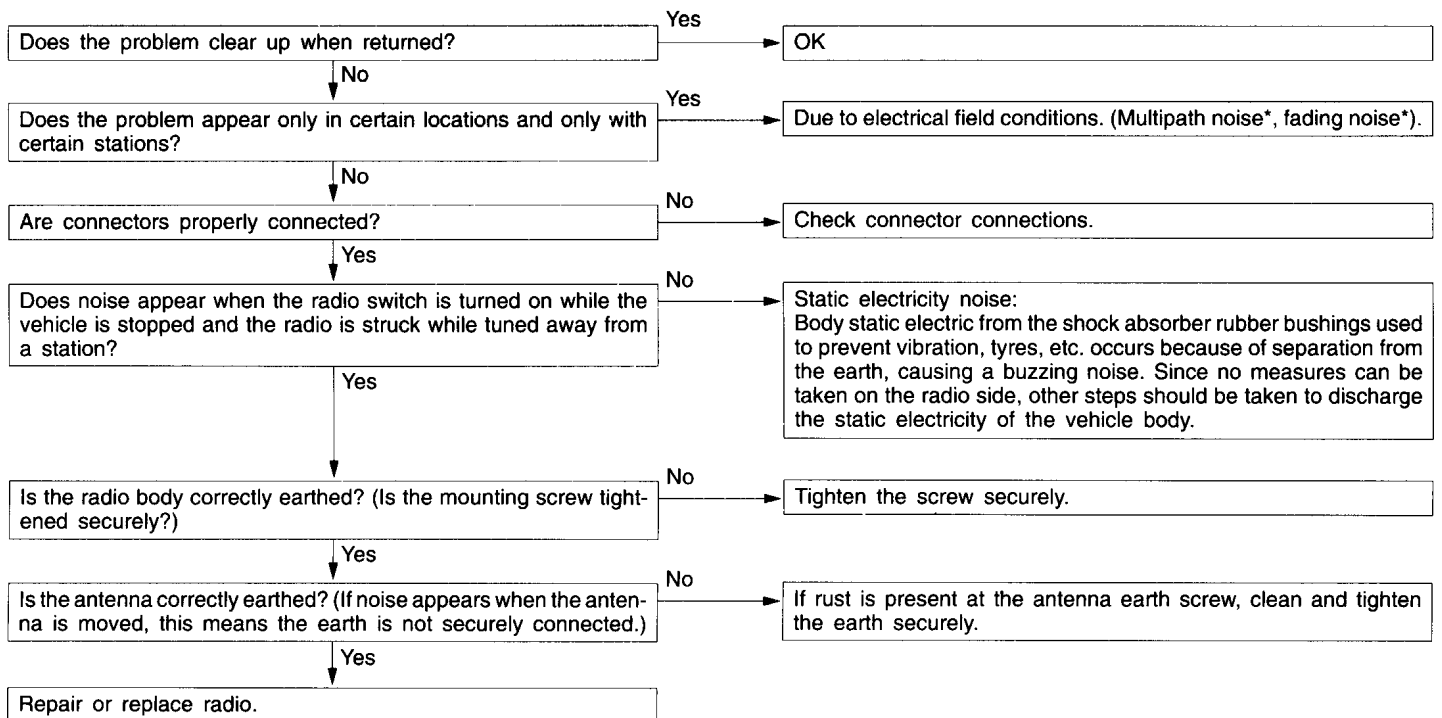
against A.C.) decreases, and current flow is facilitated. A noise suppressing condenser which takes advantage of this property is inserted between the power line for the noise source and the earth. This suppresses noise by earthing the noise component (A.C. or pulse signal) to the body of the vehicle.

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.



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



**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).

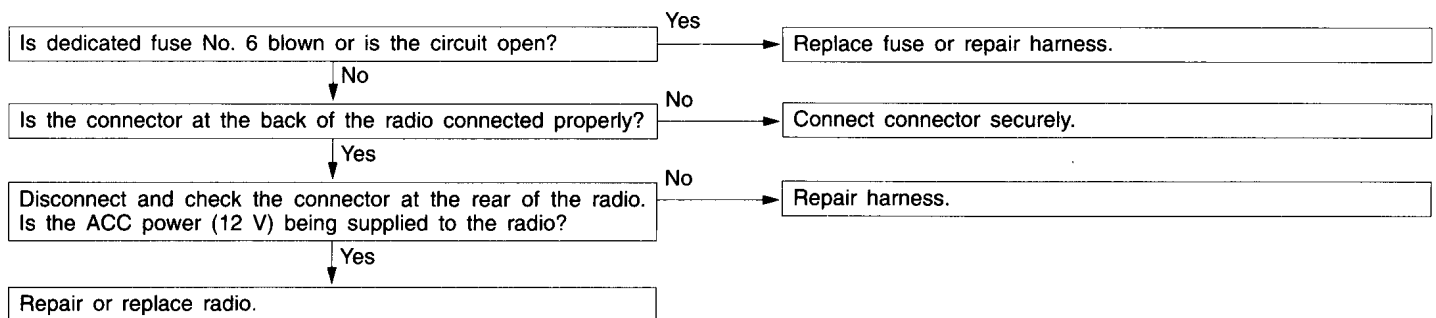
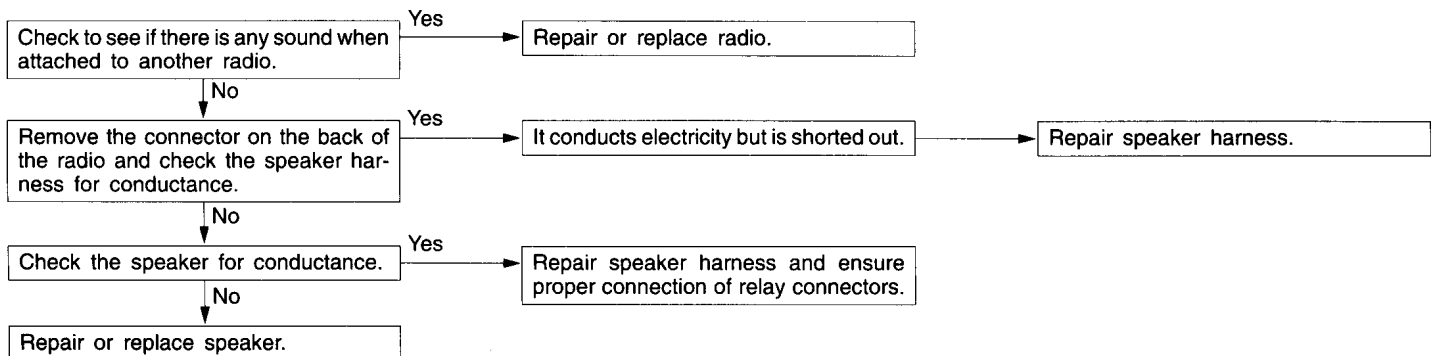
- **Fading noise**  
This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

**A-9 Ever-present noise.**

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

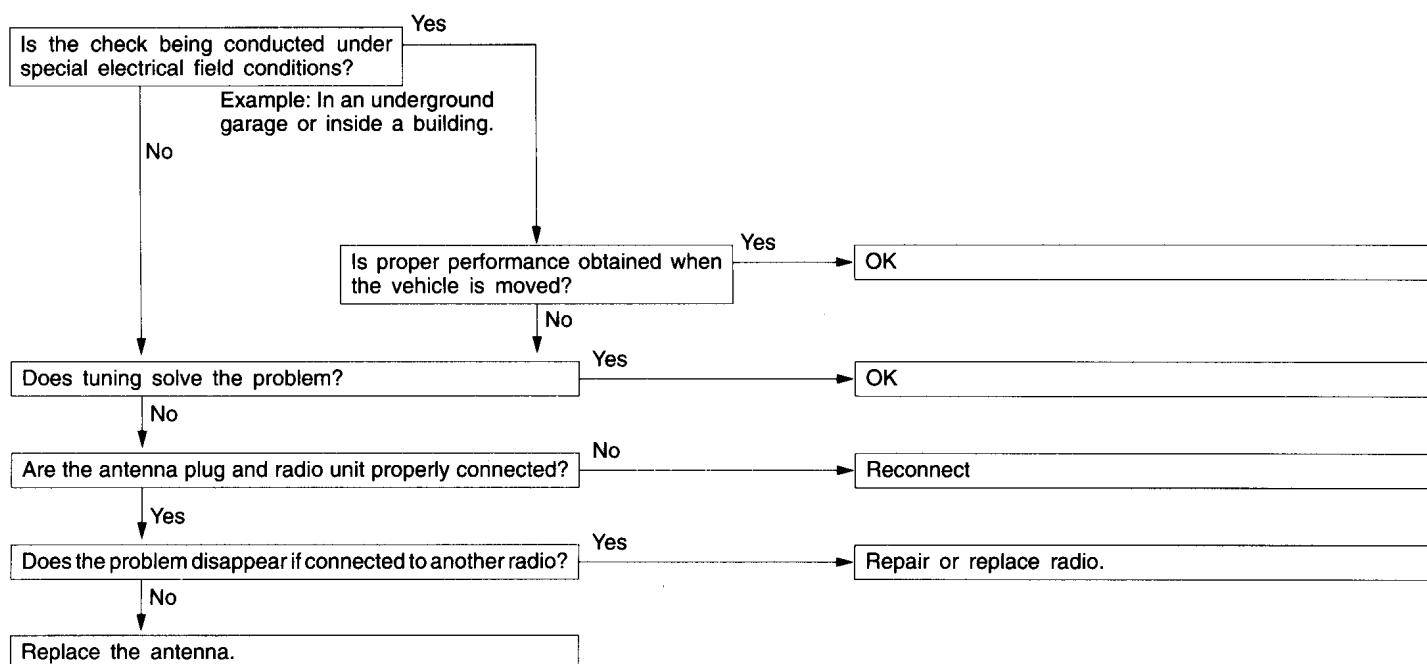
- Travelling conditions of the vehicle
- Terrain of area travelled through
- Surrounding buildings
- Signal conditions
- Time period

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.

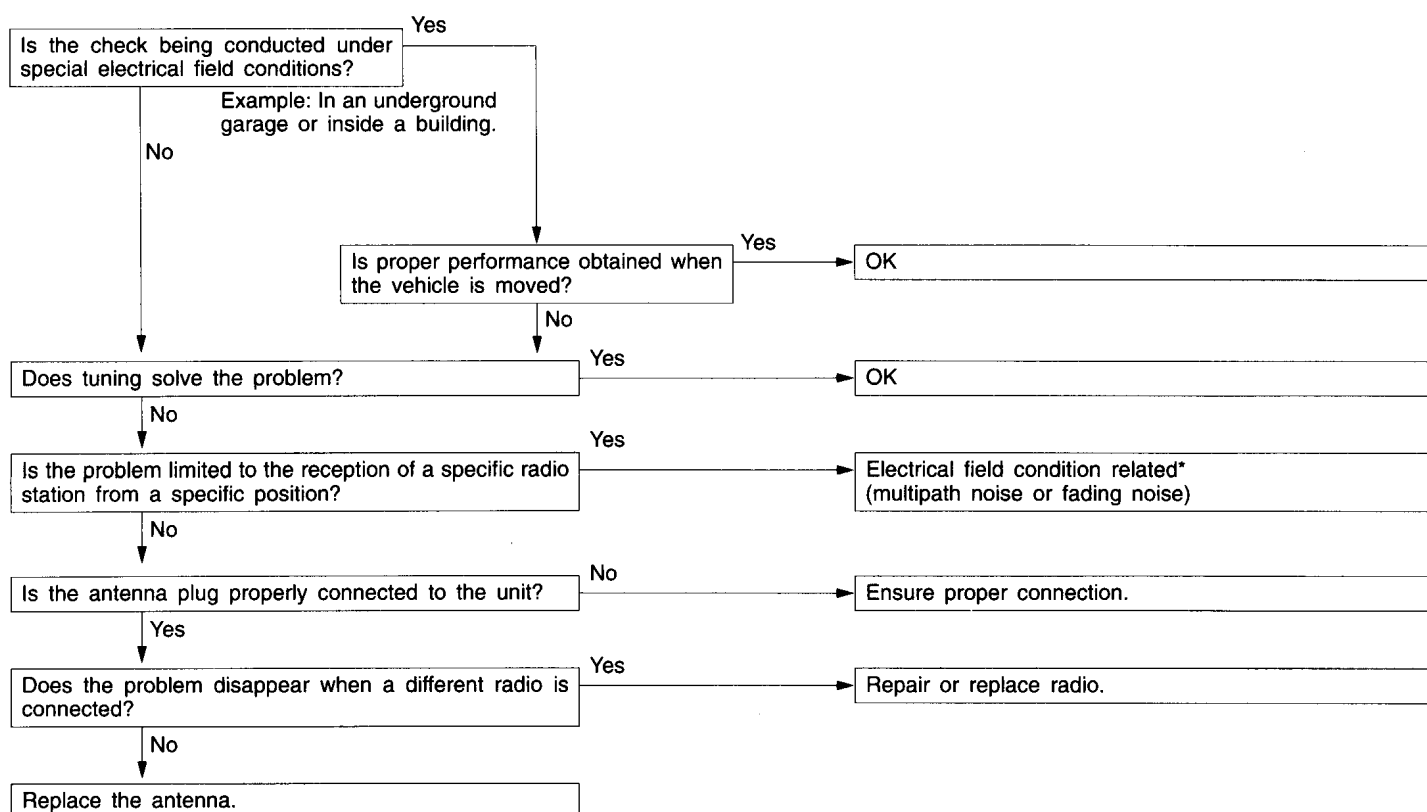
**B. RADIO****B-1 No power is supplied when the switch is set to ON.****B-2 No sound from one speaker.**



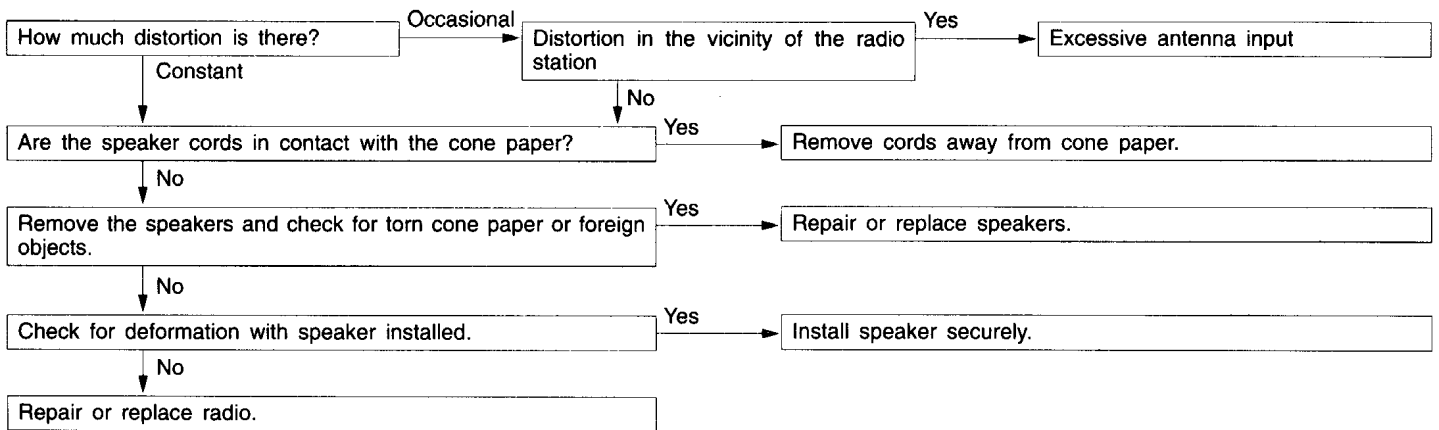
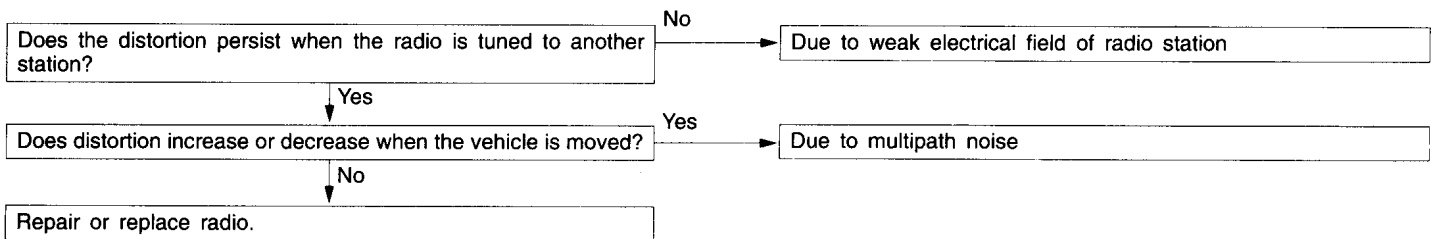
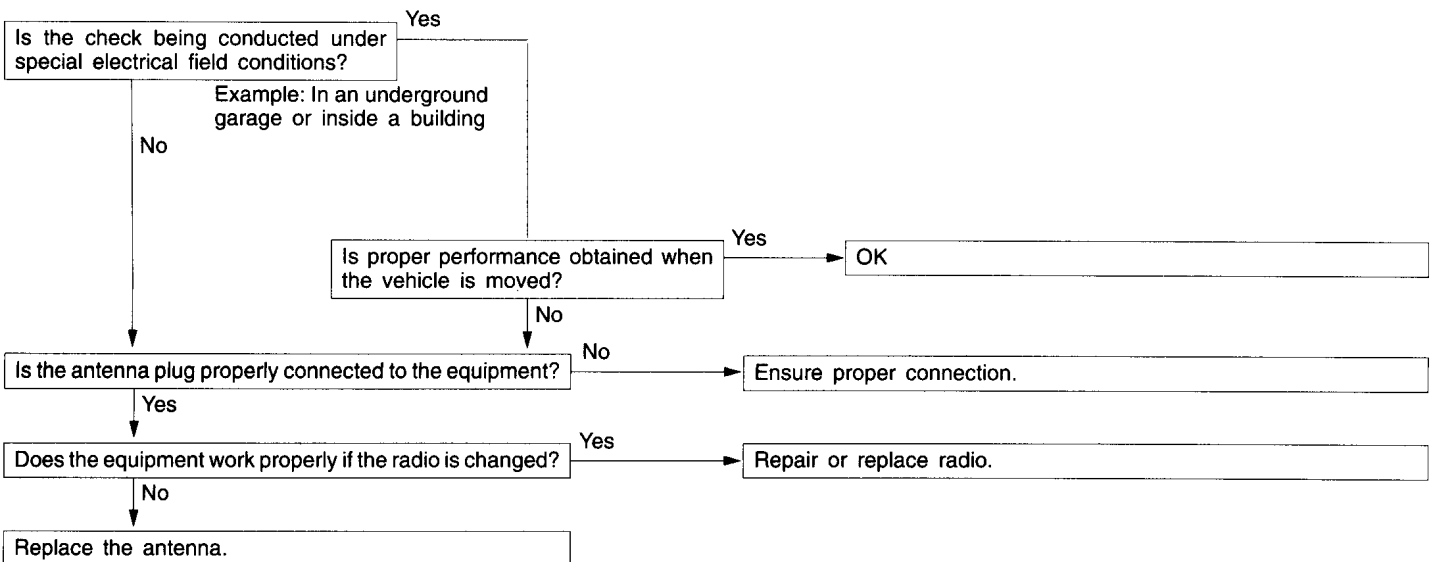
### B-3 There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.

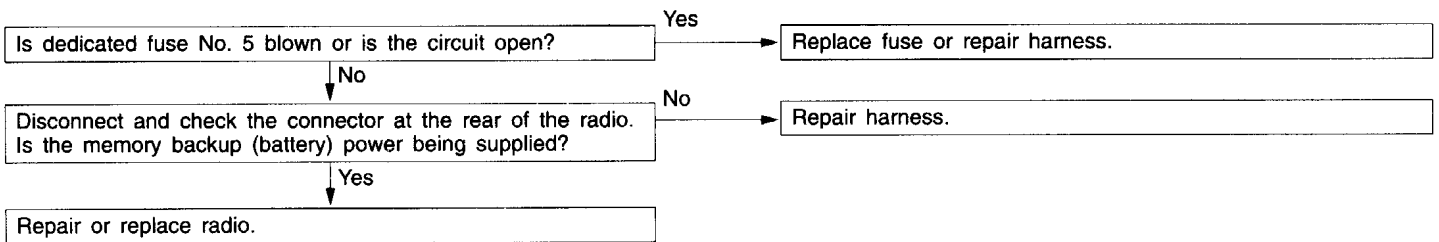
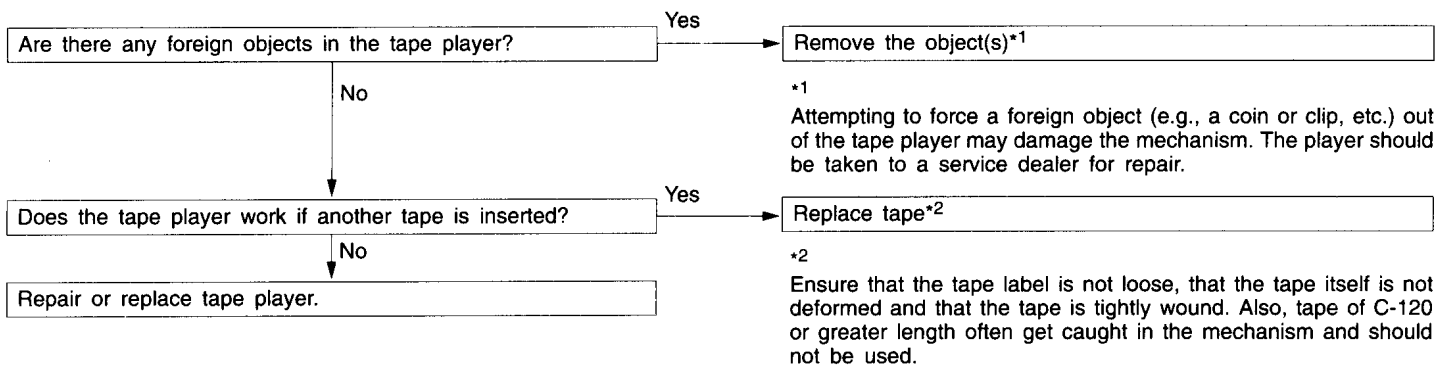
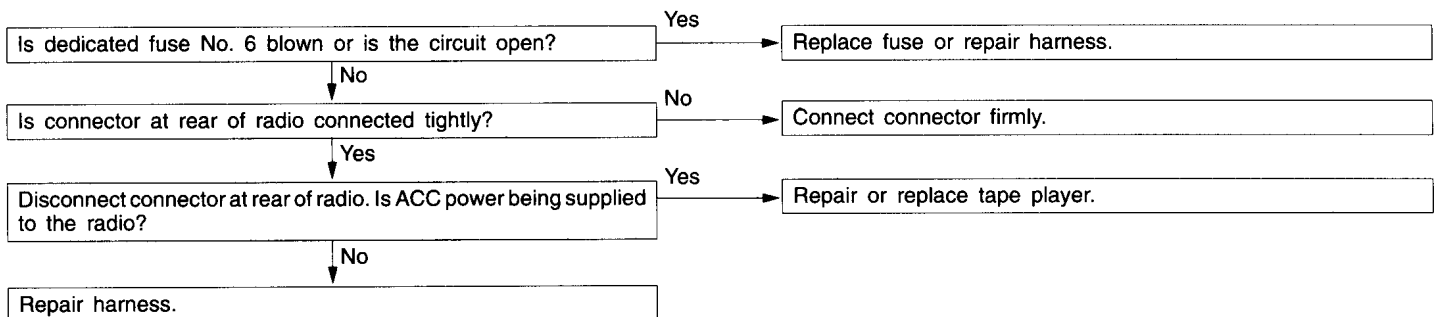


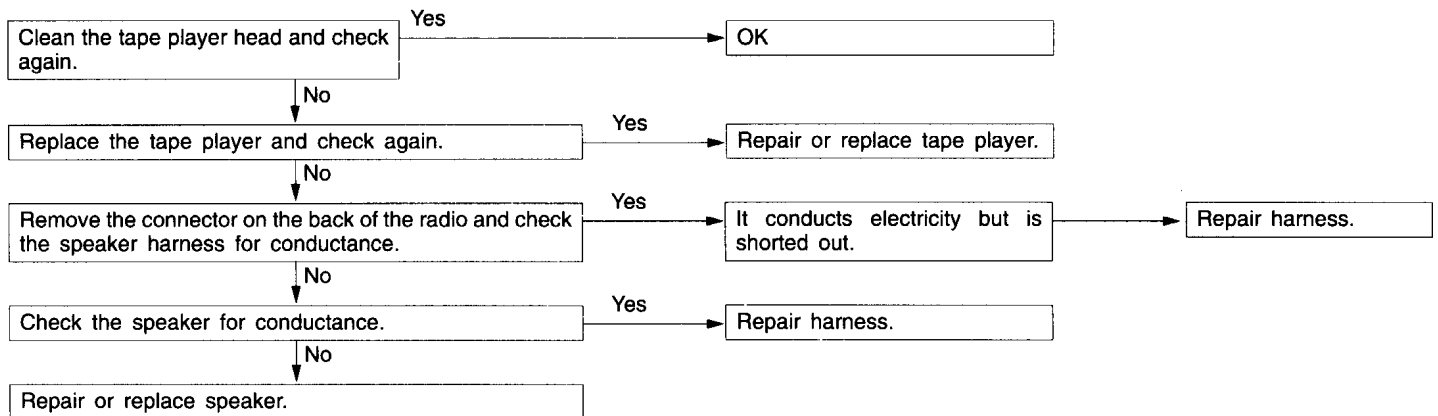
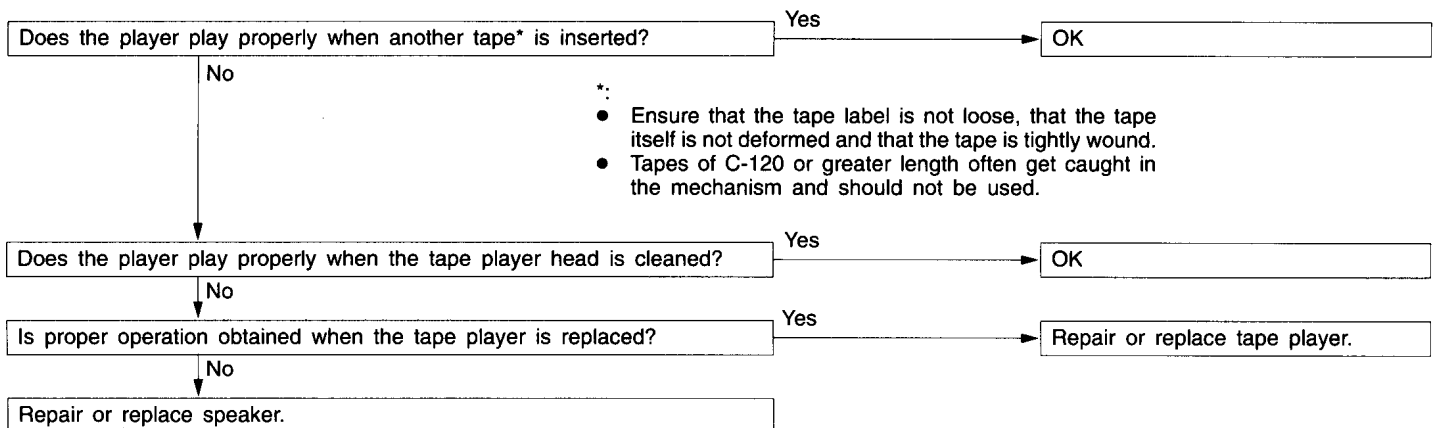
### B-4 Insufficient sensitivity.



\* For multipath noise and fading noise problems, refer to P. 54-63.

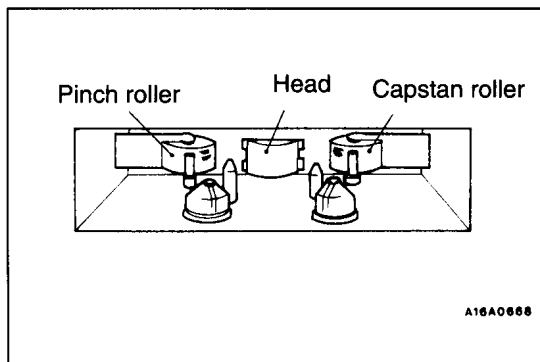
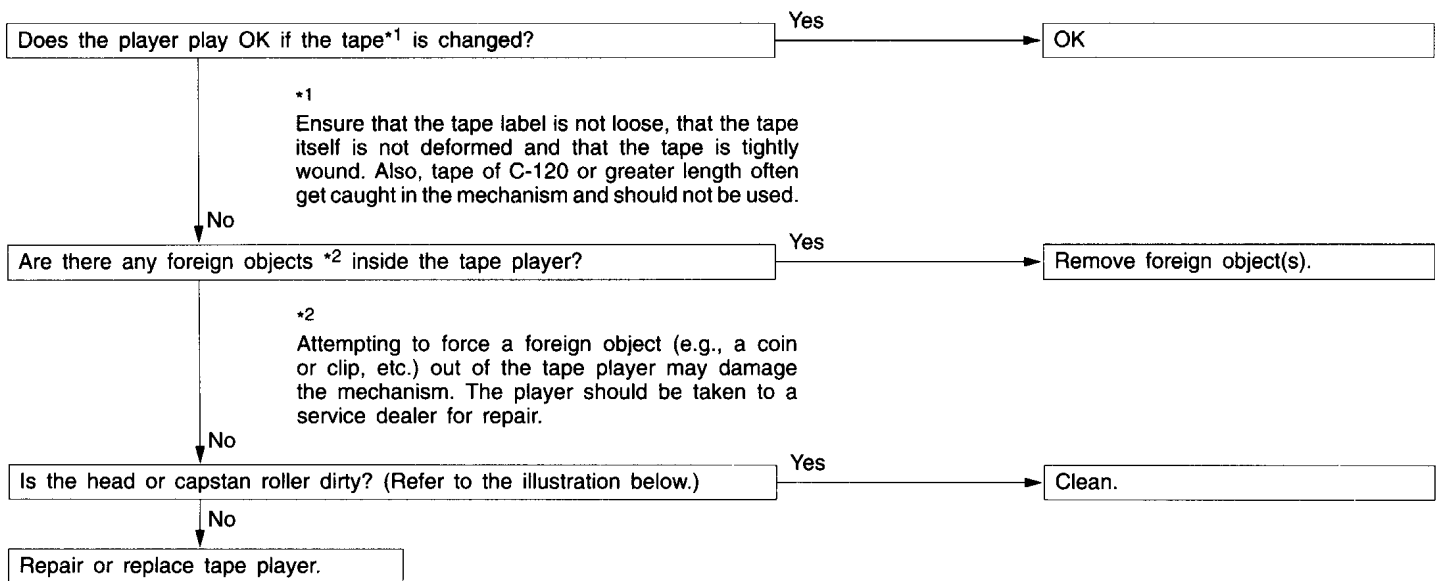
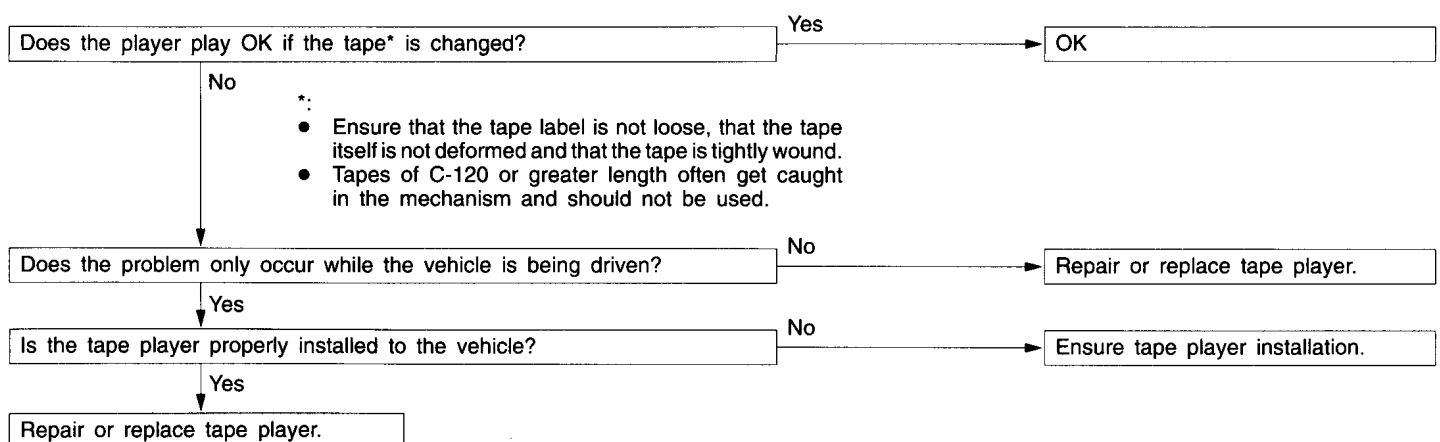
**B-5 Distortion on AM or on both AM and FM.****B-6 Distortion on FM only****B-7 Too few automatic select stations.**

**B-8 Insufficient memory (preset stations are erased).****C. TAPE PLAYER****C-1 Cassette tape will not be inserted.****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

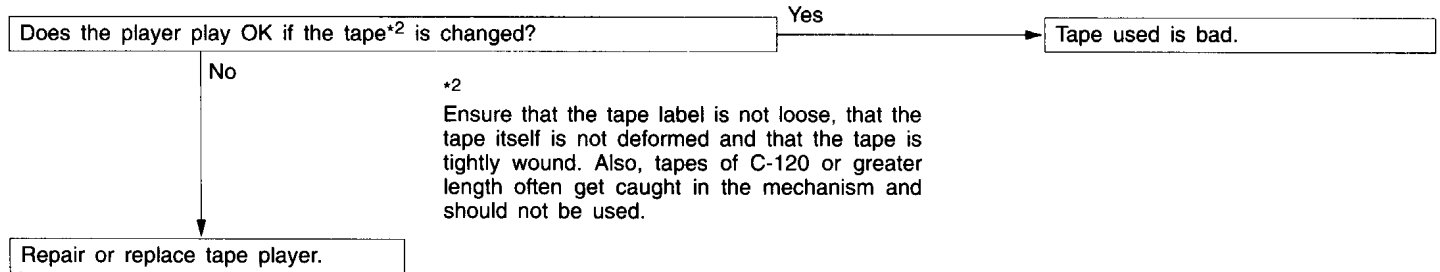
also possible, and attempting to force the tape out of the player can cause damage to the mechanism. The player should be taken to a service dealer for repair.

**C-6 Uneven revolution. Tape speed is fast or slow.****C-7 Faulty auto reverse.**

**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.

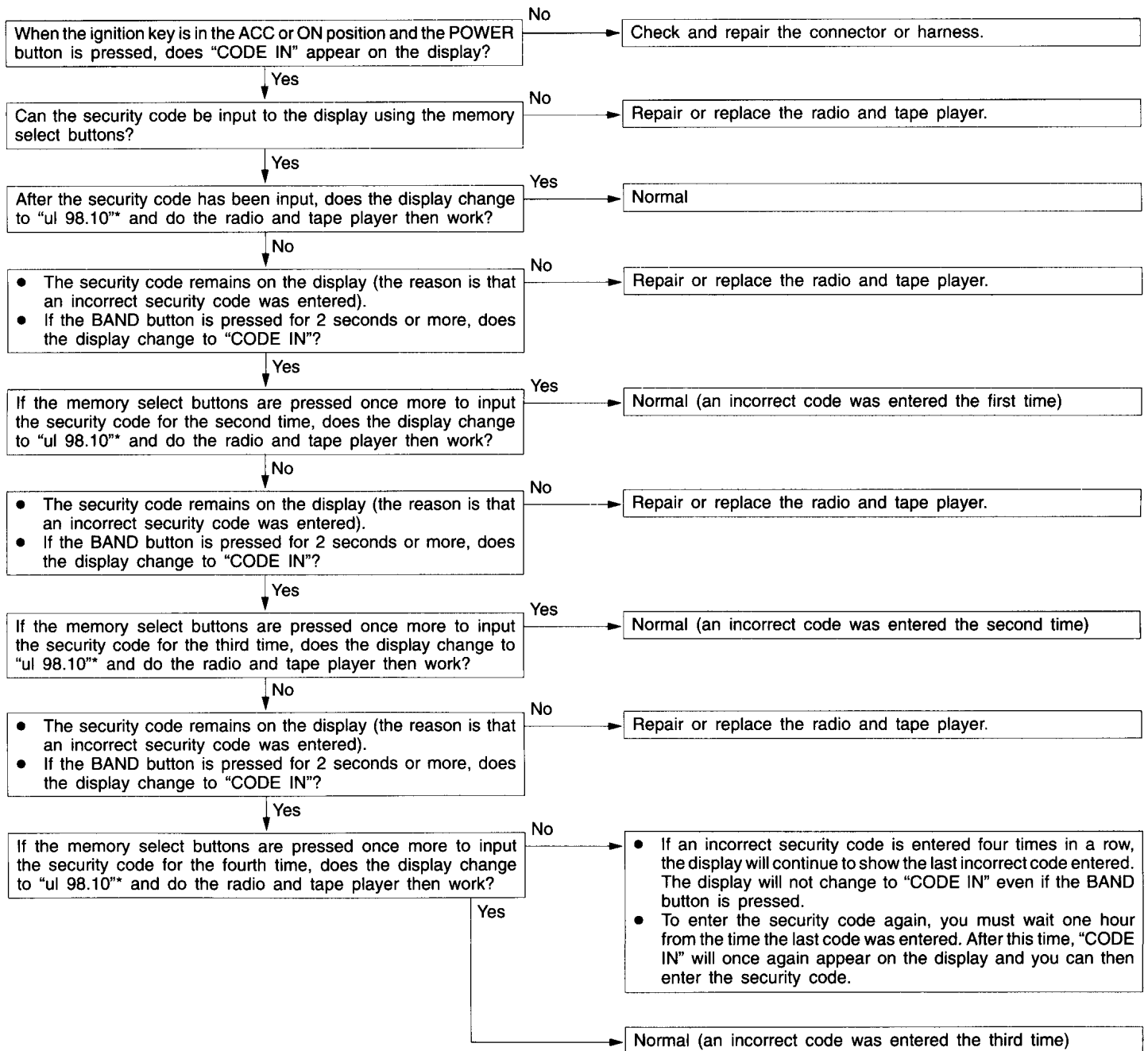


## RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

120002307

- After the power supply to the radio and tape player has been interrupted for 5 seconds or more, the anti-theft system will prevent the radio

and tape player from working, even if the power supply is restored. Problems with the anti-theft system can be found using the flow chart below.



## NOTE

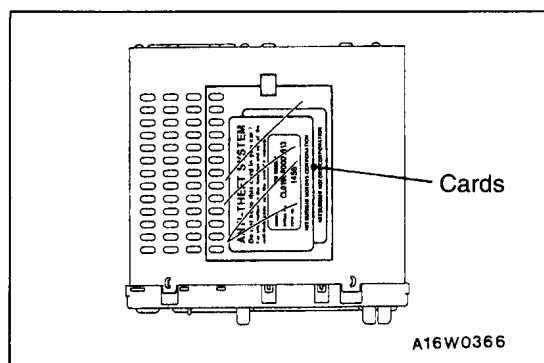
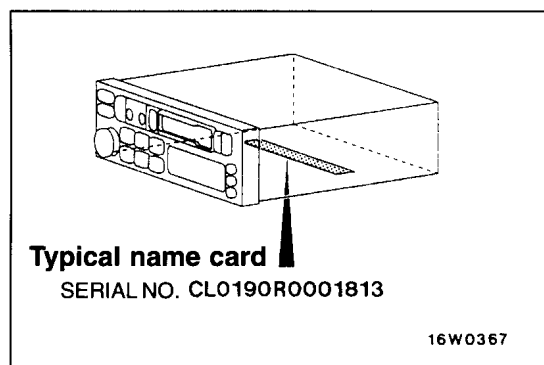
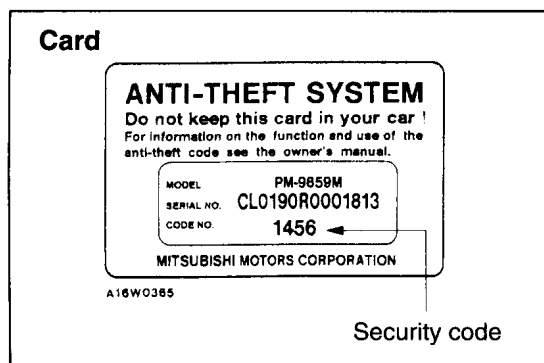
- \*: If approximately 4 – 5 hours have not yet passed since the power supply was interrupted, the radio and tape player display will show the last display which was recorded.

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

120002321

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

- (1) Power supply to the radio and tape player has been suspended for more than 5 seconds continuously by removing the cable from the battery terminal or disconnecting the harness connectors.
  - (2) The power supply to the radio and tape player has been suspended for more than 5 seconds owing to blown fuse or discharged battery.
  - (3) The radio and tape player has been replaced.  
If the radio and tape player does not operate for these causes, input the security code by the following procedure to operate it.
1. Using any of the following methods, confirm the security code.
    - (1) Read the security code indicated on the cards retained by the car.

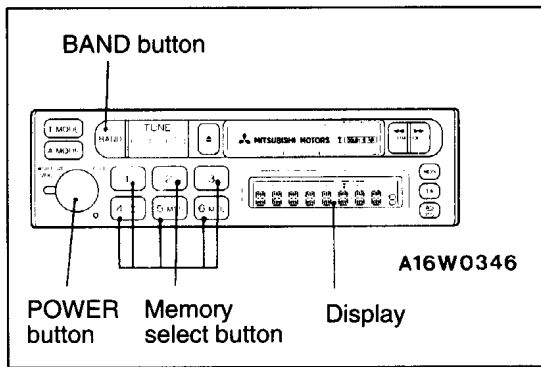


- (2) If the security code is unknown owing to the user's loss of the cards.
  1. Remove the radio and tape player, refer to P.54-74.
  2. Read the serial No. stamped on the radio and tape player.
  3. Look up the security code (anti-theft code table) corresponding to the serial number and make inquiries to the authorized Mitsubishi dealer.
- (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.

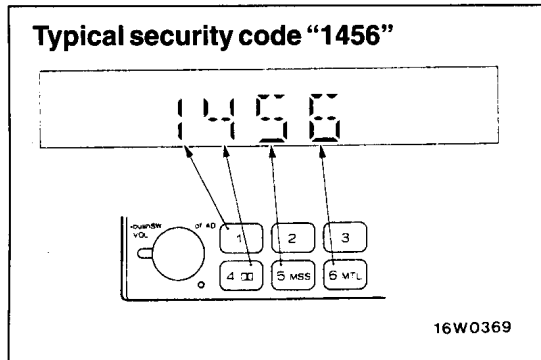
## NOTE

Deliver the cards (two) to the user.





2. Return power supply for the radio and player to the normal state.
3. Turn the ignition key to the "ACC" or "ON" position.
4. Press the POWER button, and "CODE IN" will be displayed on the display.



5. Press No. 1 through No. 6 memory select buttons and set the 4-digit security code indicated on the card.
6. If the entered code number is correct, the radio and tape player will operate and "ul 98.10" will be displayed in display.

#### NOTE

If approximately 4 – 5 hours have not yet passed since the power supply was interrupted, the radio and tape player display will show the last display which was recorded.

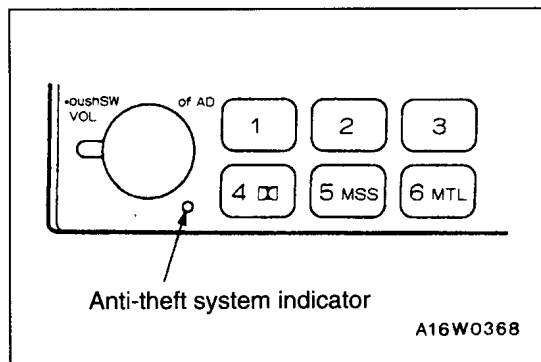
7. If the entered code is wrong, the radio and tape player will not operate and the display will remain unchanged.
8. When you will try to enter the security code again, press BAND button for more than 2 seconds. Then "CODE IN" will reappear in display. Repeat the steps 5 and 6 to enter the code number.

#### NOTE

- (1) If a mistake is made in entry procedure of the security code, you can try the procedure four more times.
- (2) After the setting has been attempted four times, "CODE IN" will appear on the display after approximately one hour has passed with the ignition key in the ACC or ON position. Repeat steps 5 and 6 to enter the security code.

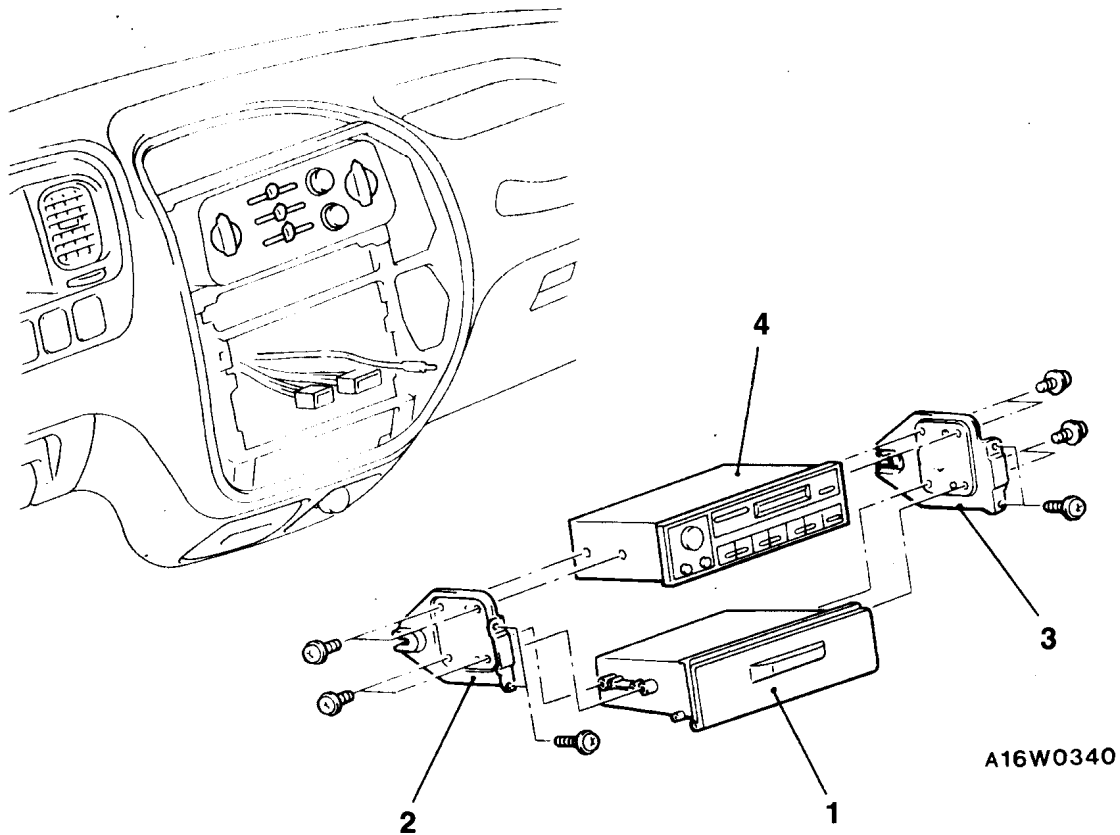
#### Anti-theft System Indicator

1. When the ignition key is turned to the "LOCK" position, the anti-theft system indicator blinks to indicate that the anti-theft system is active.
2. If you want to turn off this indicator, turn the ignition key to the "LOCK" position and press the BAND button for more than 2 seconds.
3. To let the indicator blink again, repeat the above procedure.



**RADIO AND TAPE PLAYER**

120002092

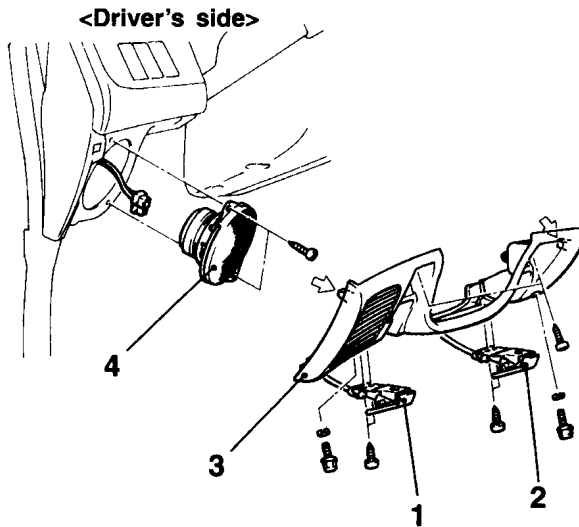
**REMOVAL AND INSTALLATION****Removal steps**

- Centre panel (Refer to GROUP 52A – Instrument Panel.)
- 1. Box
- 2. Radio bracket (LH)
- 3. Radio bracket (RH)
- 4. Radio and tape player

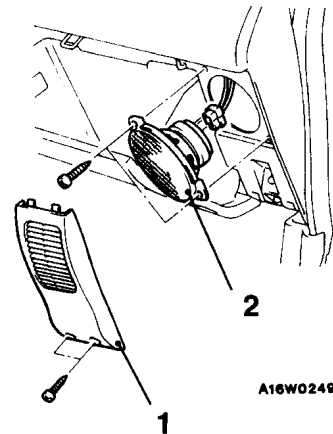
# SPEAKER

120000328

## REMOVAL AND INSTALLATION



<Front Passenger's side>



### NOTE

The ↗ marks indicate the sheet metal clip installation positions.

### Removal steps

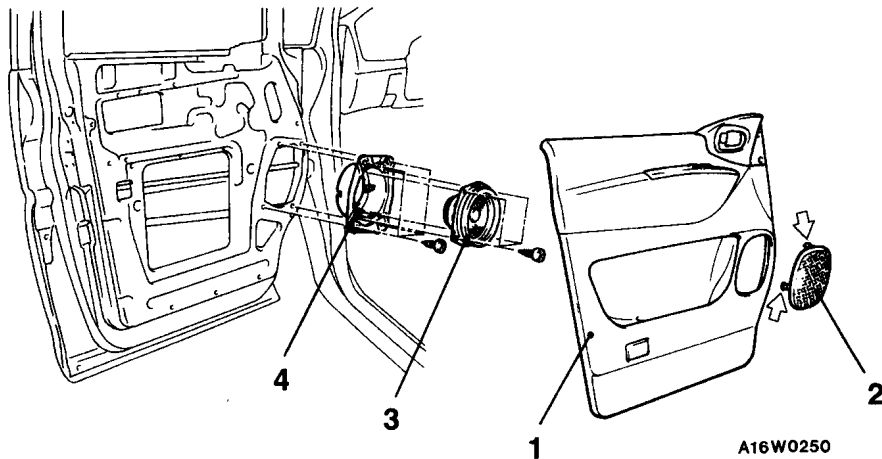
#### <Driver's side>

1. Hood lock release handle
2. Fuel lid lock release handle
3. Under cover
4. Speaker

#### <Front passenger's side>

- Cowl side trim (L.H.) (Refer to GROUP 52A – Trim.)
- 1. Speaker garnish
- 2. Speaker

#### <Door Side>

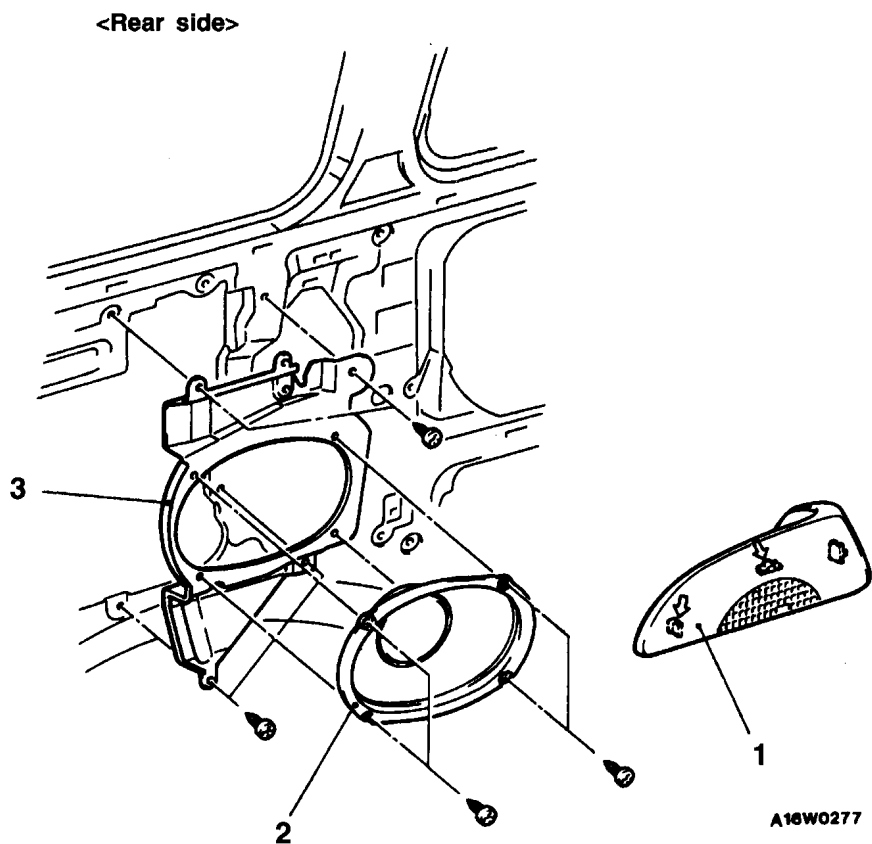


### NOTE

The ↗ marks indicate the sheet metal clip installation positions.

### Removal steps

1. Door trim (Refer to GROUP 42 – Door Trim and Waterproof Film.)
2. Speaker garnish
3. Speaker
4. Speaker cover



## NOTE

The <=> marks indicate the sheet metal clip installation positions.


**Removal steps**

1. Speaker garnish
  - Quarter trim, upper (Refer to GROUP 52A – Trim.)
2. Speaker
3. Speaker bracket

# ANTENNA

120000329

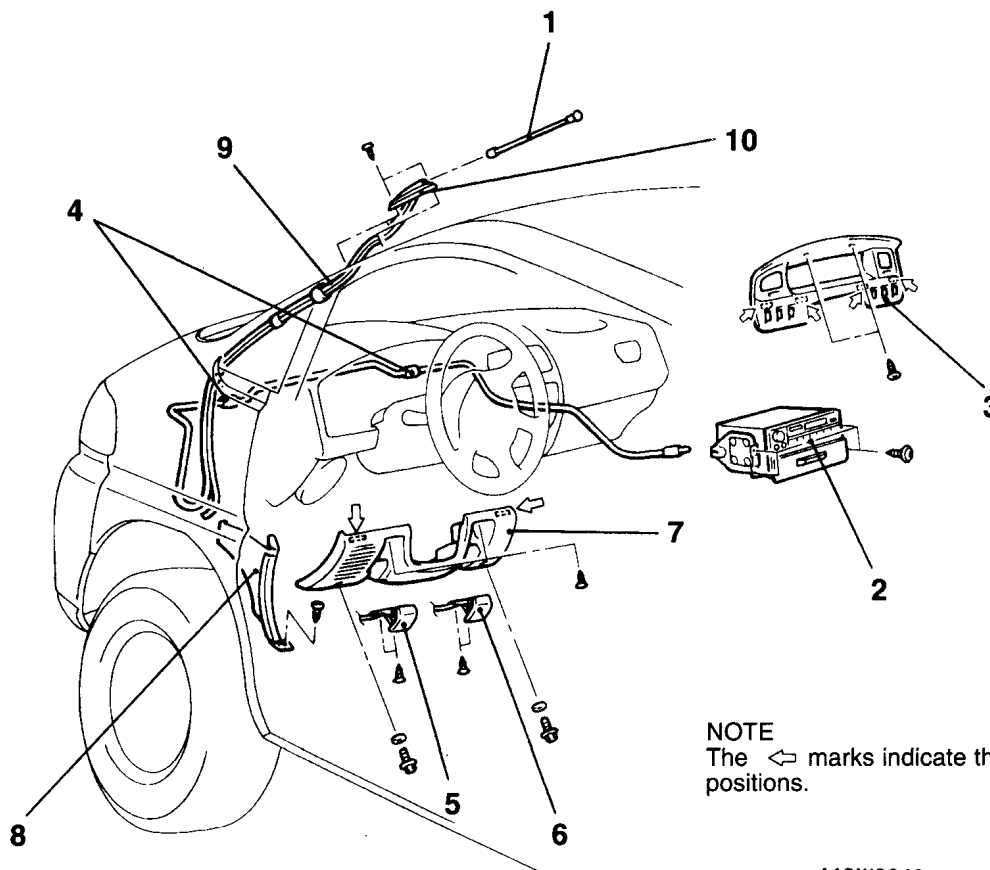
## SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of meter hood

# ANTENNA

120002083

## REMOVAL AND INSTALLATION



A16W0342

### Removal steps

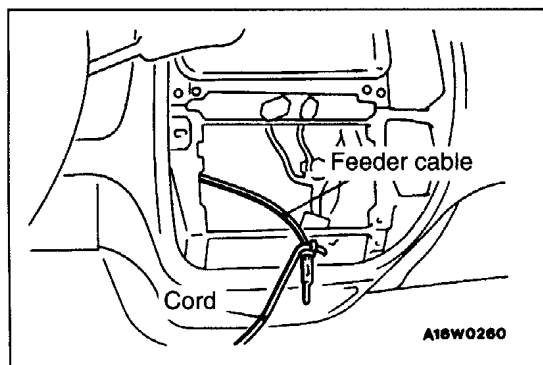
1. Pole
2. Radio and tape player
3. Meter hood
4. Clip
5. Hood lock release handle
6. Fuel lid lock release handle



7. Under cover
8. Cowl side trim (Refer to GROUP 52A – Trim.)
9. Antenna base
10. Base

**REMOVAL SERVICE POINT****◀▶ ANTENNA BASE REMOVAL**

- (1) Tie a cord to the end of the feeder cable.

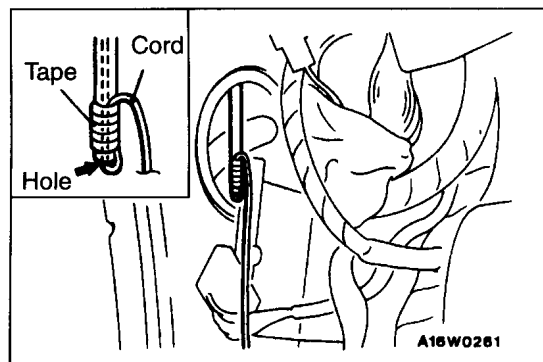


- (2) Pull out the antenna base until the end of the drain pipe can be seen.  
(3) Pass the cord through the hole in the end of the drain pipe and wrap it with vinyl tape.

**Caution**

**Wrap it securely so that the cord will not come off.**


- (4) Pull out the antenna base little by little to remove it.

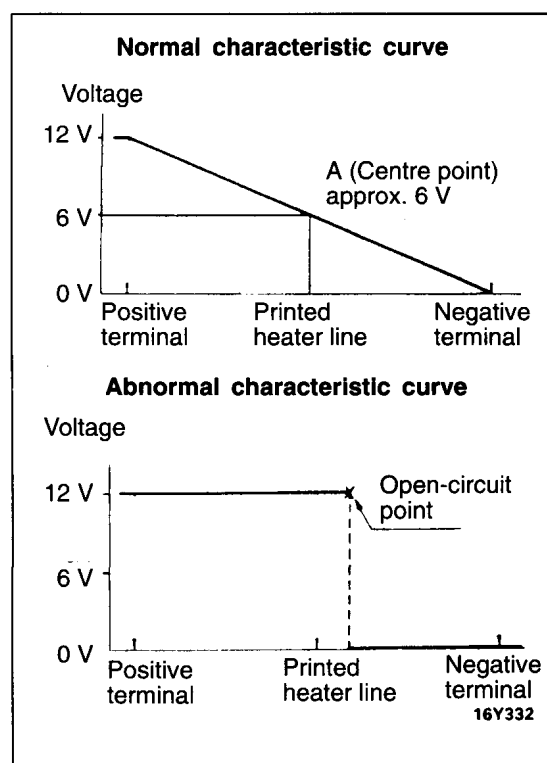


# REAR WINDOW DEFOGGER

120000331

## SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	<ul style="list-style-type: none"> <li>• Removal of centre panel</li> <li>• Removal of multi-meter panel</li> <li>• Removal of tray</li> </ul>



## SERVICE ADJUSTMENT PROCEDURE

120000332

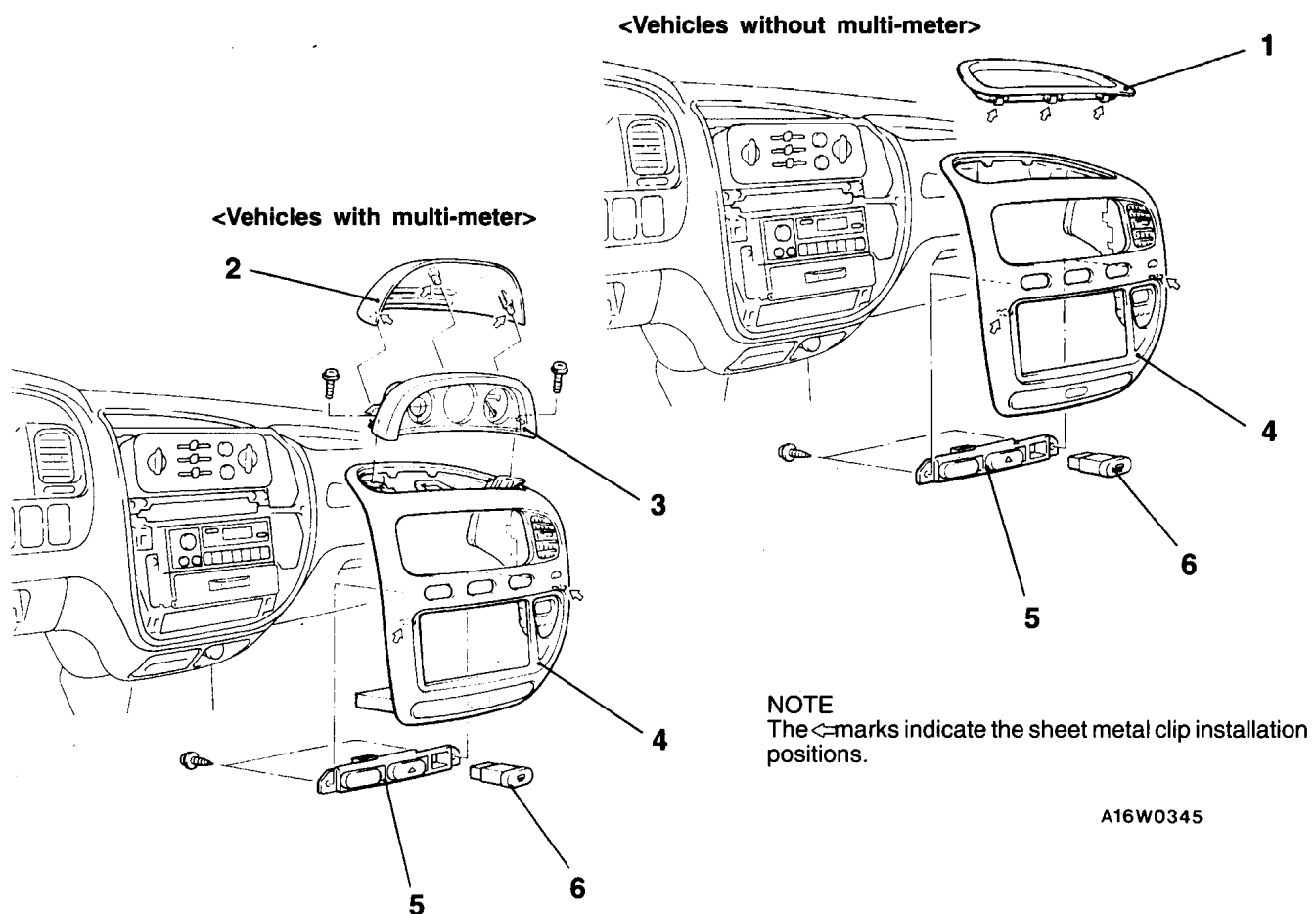
### PRINTED-HEATER LINE INSPECTION

- (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

120002128

## REMOVAL AND INSTALLATION



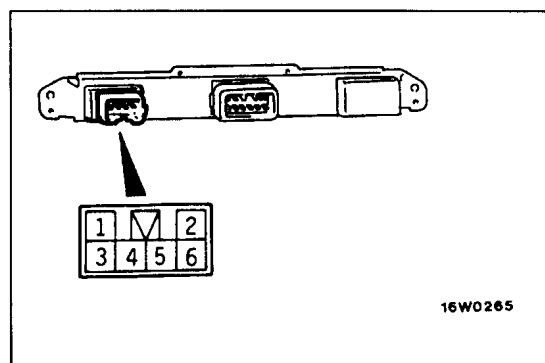
## Removal steps

1. Tray
2. Multi-meter panel
3. Multi-meter
4. Centre panel (Refer to GROUP 52A-Instrument Panel.)
5. Switch holder
6. Rear window defogger switch

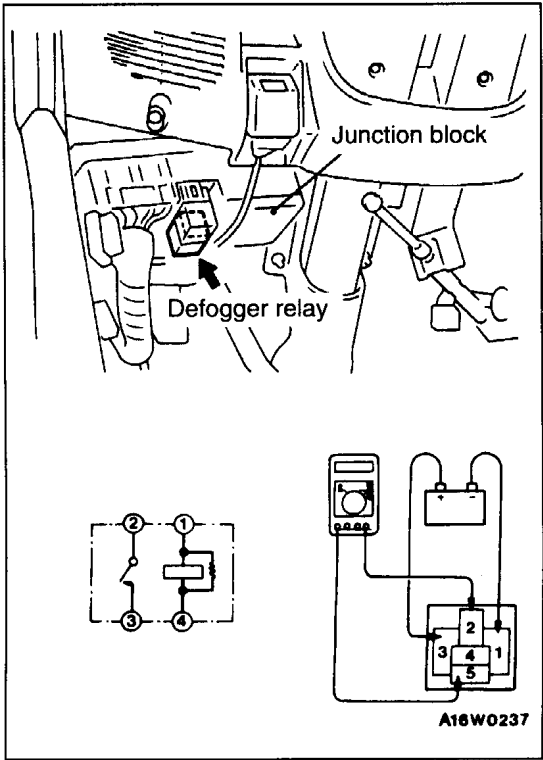
## INSPECTION

## DEFOGGER SWITCH CONTINUITY INSPECTION

Switch position	Terminal No.					
	1		3	2	4	6
OFF	○	ILL	○			
ON	○	ILL	○	○		IND







REAR WINDOW DEFOGGER RELAY CONTINUITY INSPECTION

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