CHASSIS ELECTRICAL

CONTENTS

54109000099

CONTINUED ON NEXT PAGE

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: SRS-ECU, 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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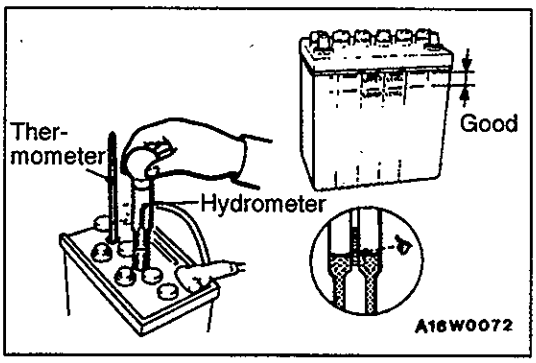
BATTERY

54100030028

SERVICE SPECIFICATION

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



ON-VEHICLE SERVICE

54100090026

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.

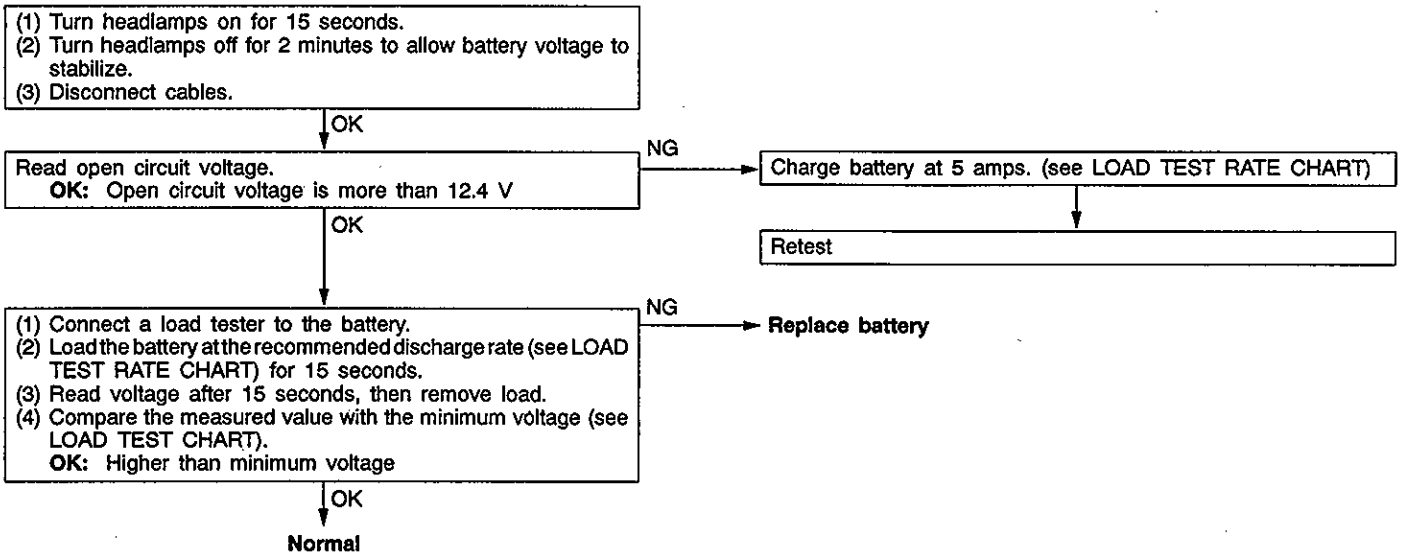
Caution

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

54100120077

TEST STEP



LOAD TEST RATE CHART

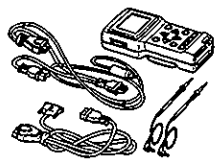
Battery type	55D23L	65D23L
Charging time when fully discharged h [5-amp rated current charging]	10	11
Load test (Amps)	178	210

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 54300060092

SPECIAL TOOL

Tool	Number	Name	Use
	MB991502	MUT-II sub assembly	• Immobilizer system check (Diagnosis display using the MUT-II) • Registration of the ID code

TROUBLESHOOTING 54300690017

Caution
The ID code should always be re-registered when replacing the immobilizer-ECU.

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

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

DIAGNOSIS FUNCTION 54300700079

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.

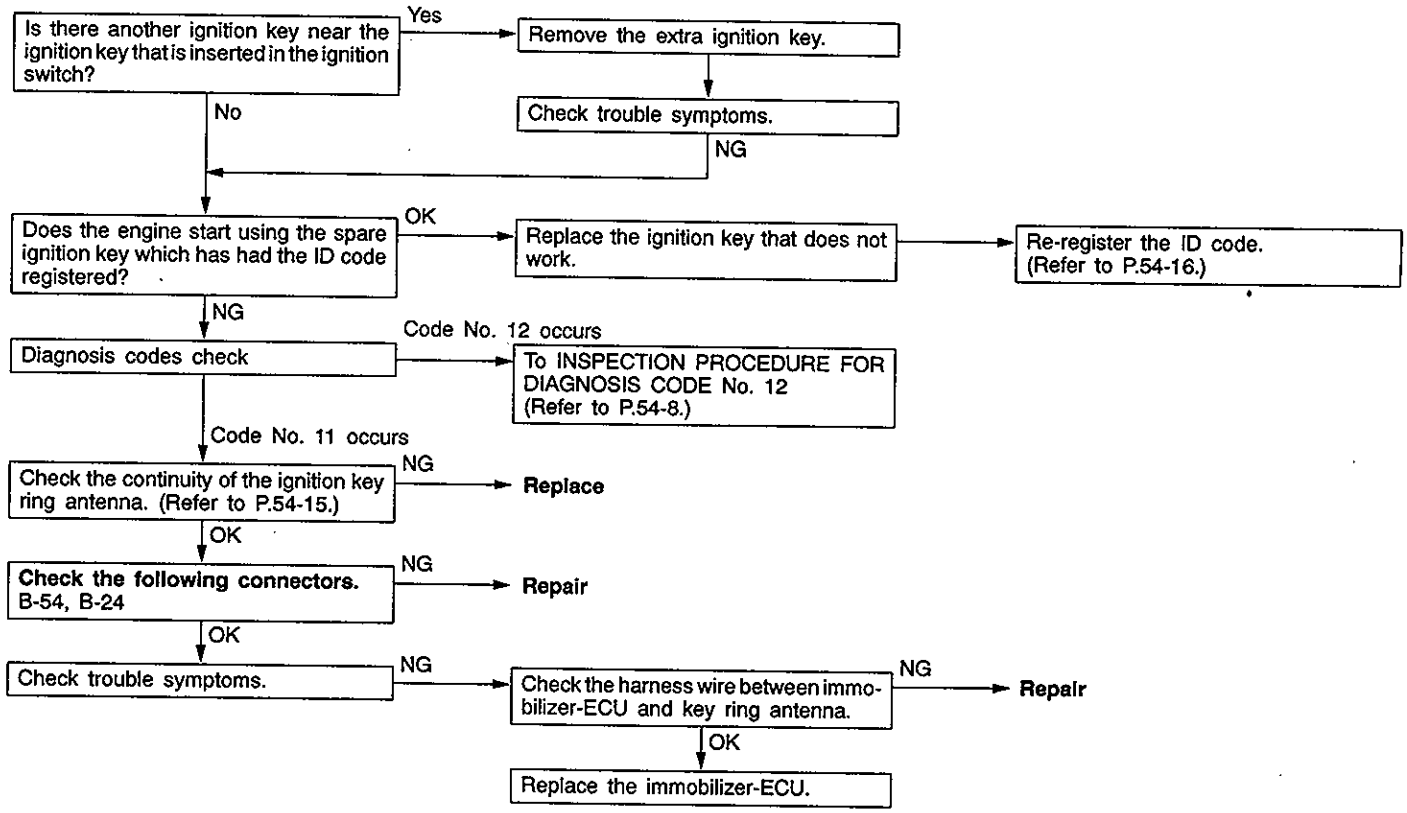
INSPECTION CHART FOR DIAGNOSIS CODES 54300710010

Diagnosis code No.	Inspection items	Reference page
11	Transponder communication system	54-8
12*	ID code are not the same or are not registered	54-8
21	Communication system between MUT-II and engine-ECU	54-9
31	EEPROM abnormality inside immobilizer-ECU	54-9

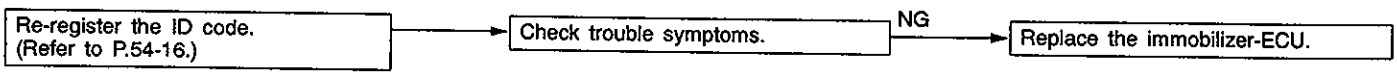
NOTE
*: Diagnosis code No. 12 is not recorded.

INSPECTION PROCEDURE FOR DIAGNOSIS CODES

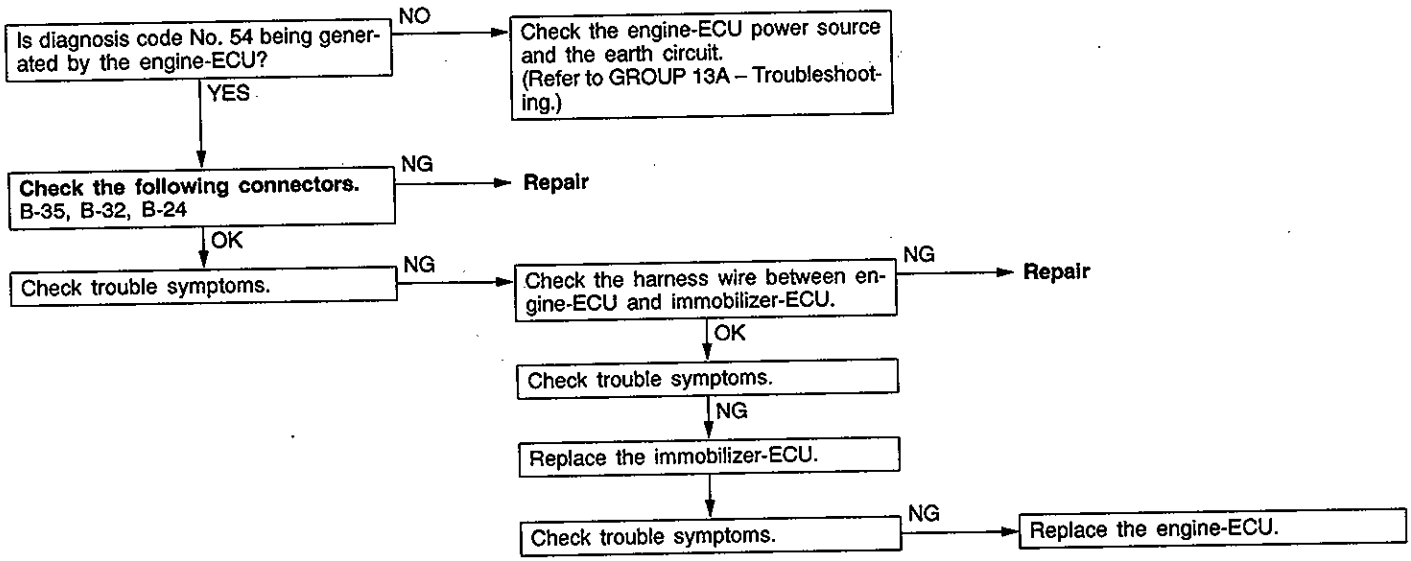
Code No. 11 Transponder communication system	Probable cause
• The ID code of the transponder is not sent to the immobilizer-ECU immediately after the ignition switch is turned to the ON position. • When starting the engine, one ignition key's ID code interferes with another ignition key's code.	• Radio interference of ID codes • Malfunction of the transponder • Malfunction of the ignition key ring antenna • Malfunction of harness or connector • Malfunction of the immobilizer-ECU



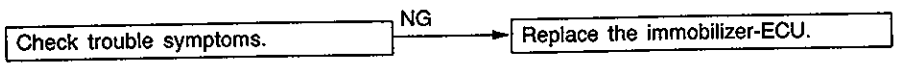
Code No. 12 ID code are not the same or are not registered	Probable cause
The ID code which is sent from the transponder is not the same as the ID code which is registered in the immobilizer-ECU.	• The ID code in the ignition key being used has not been properly registered. • Malfunction of the immobilizer-ECU



Code No. 21 Communication system between MUT-II and engine-ECU	Probable cause
After the ignition switch is turned to the ON position, the confirmation code is not received from the engine-ECU within the allowable time, or an abnormal code is received.	• Malfunction of harness or connector • Malfunction of the engine-ECU • Malfunction of the immobilizer-ECU



Code No. 31 EEPROM abnormality inside immobilizer-ECU	Probable cause
No data has been written to the EEPROM inside the immobilizer-ECU.	• Malfunction of the immobilizer-ECU



INSPECTION CHART FOR TROUBLE SYMPTOMS

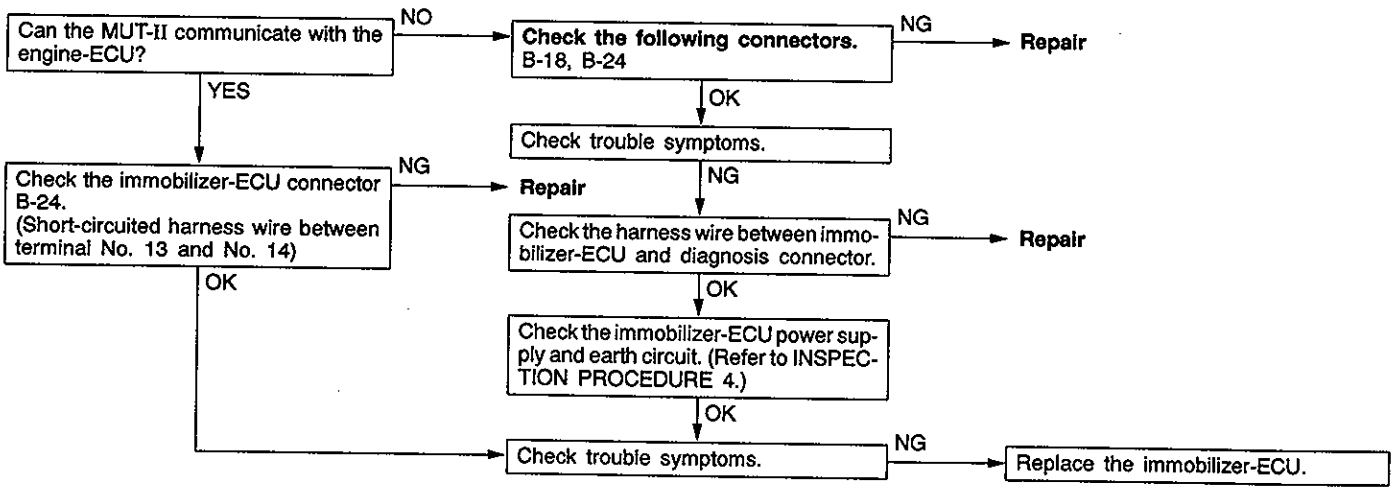
54300720174

Trouble symptom	Inspection procedure No.	Reference page
Communication with MUT-II is impossible.	1	54-10
ID code cannot be registered using the MUT-II.	2	54-11
Engine does not start (Cranking but no initial combustion).	3	54-11
Malfunction of the immobilizer-ECU power source and earth circuit	4	54-12

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

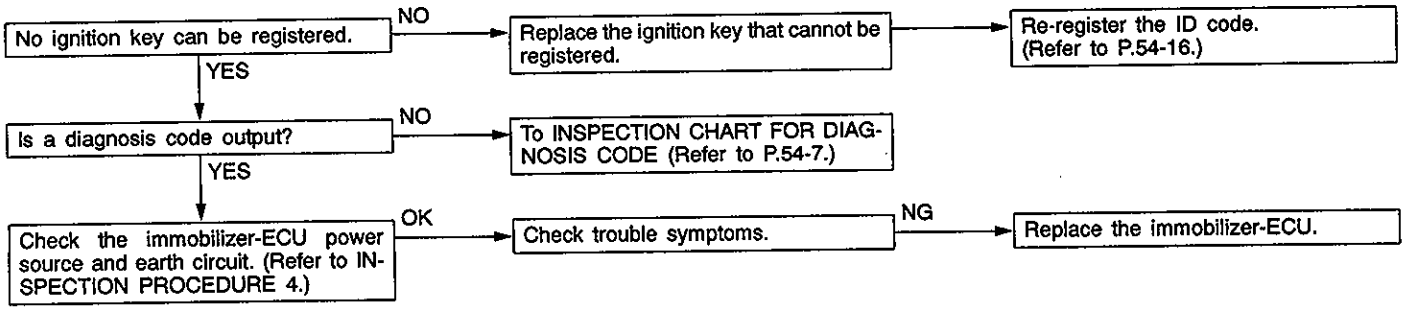
Inspection Procedure 1

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



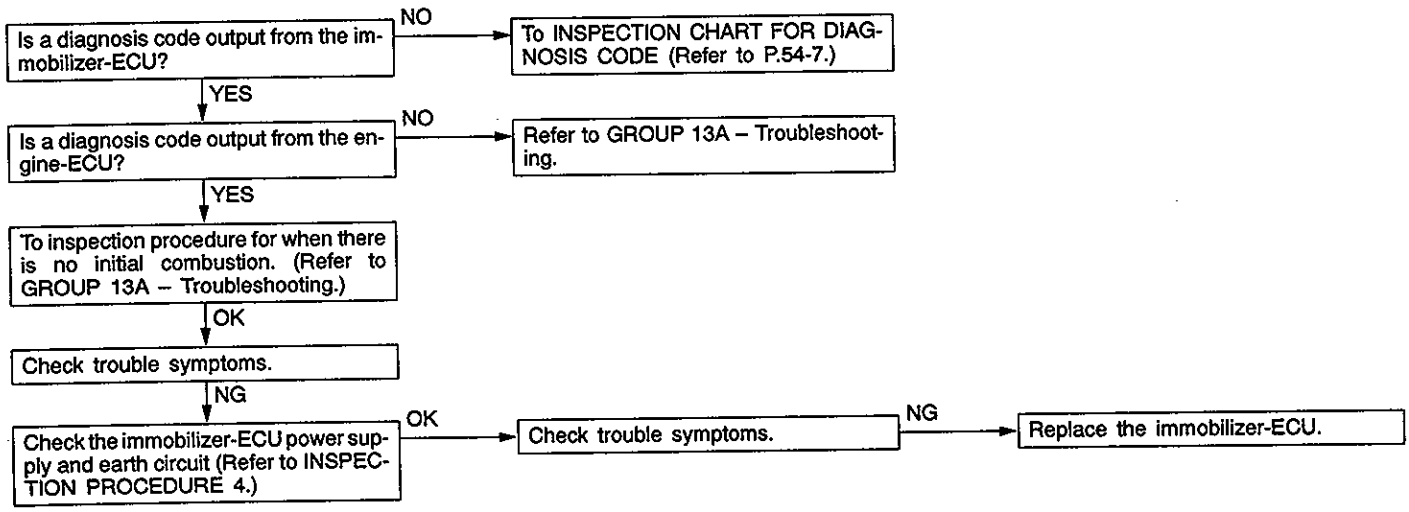
Inspection Procedure 2

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



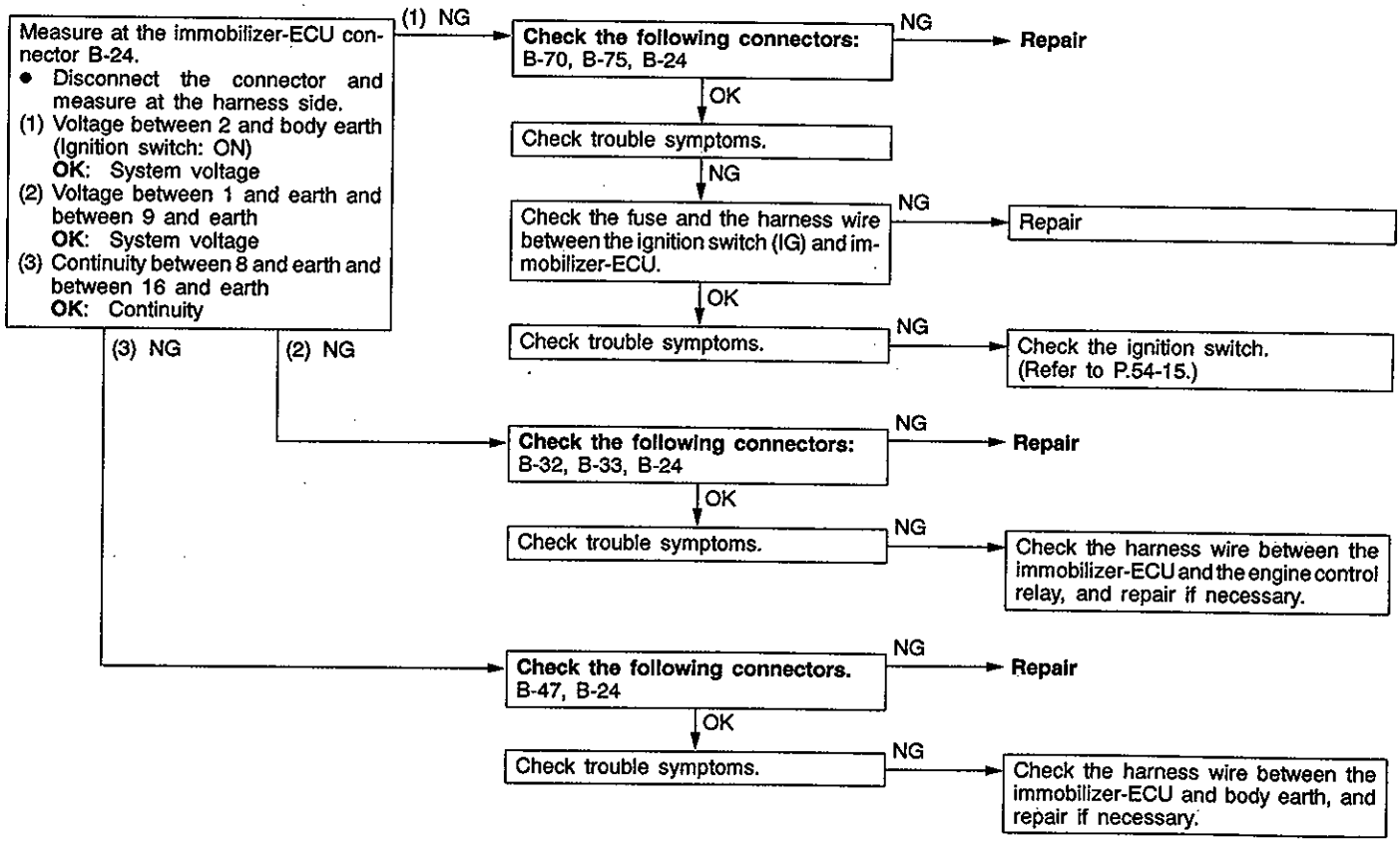
Inspection Procedure 3

Engine does not start (cranking but no initial combustion).	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. 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 the MPI system • Malfunction of the immobilizer-ECU



Inspection Procedure 4

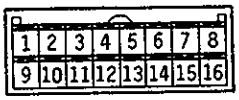
Malfunction of the immobilizer-ECU power supply and earth circuit



CHECK AT IMMOBILIZER-ECU

54300760015

TERMINAL VOLTAGE CHECK CHART



16W0390

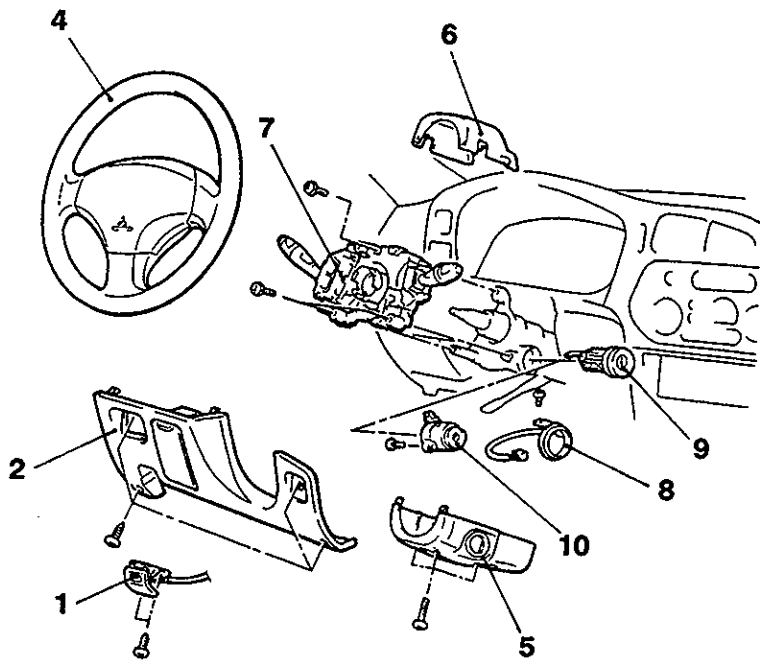
Terminal No.	Signal	Checking requirements	Terminal voltage
1	Immobilizer-ECU power supply	Ignition switch: ON	System voltage
2	Ignition switch-IG	Ignition switch: OFF	0V
		Ignition switch: ON	System voltage
8	Immobilizer-ECU earth	Always	0V
9	Immobilizer-ECU power supply	Ignition switch: ON	System voltage
16	Immobilizer-ECU earth	Always	0V

IGNITION SWITCH AND IMMOBILIZER SYSTEM

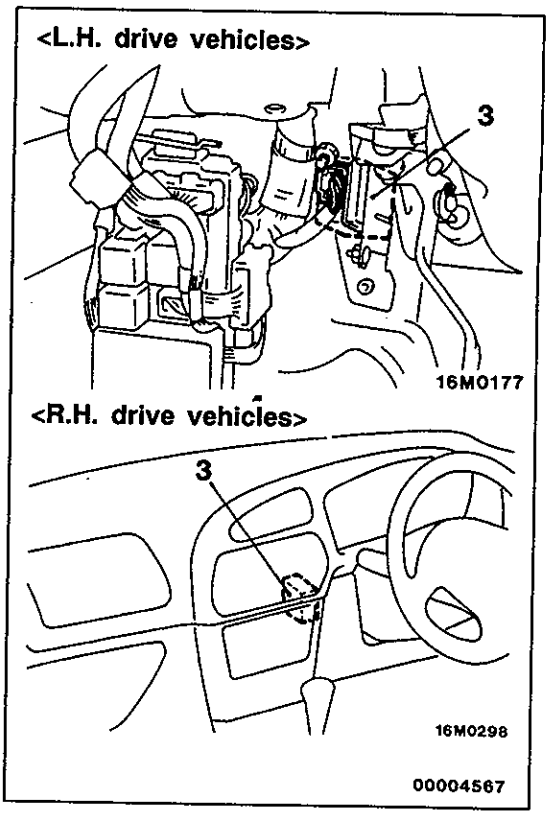
54300210107

REMOVAL AND INSTALLATION

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



16M0283



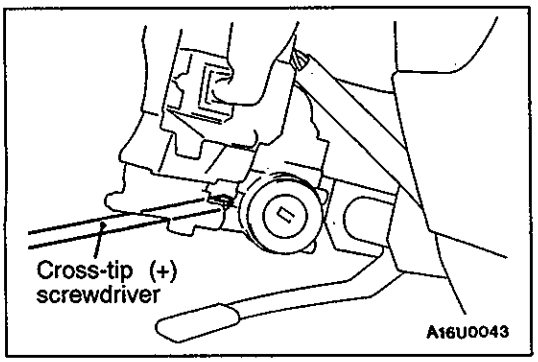
Immobilizer-ECU removal steps

1. Hood lock release handle
2. Driver's side lower cover
   - Radio and tape player <R.H drive vehicles> (Refer to P.54-73.)
   - Heater control assembly <R.H. drive vehicles> (Refer to GROUP 55.)
3. Immobilizer-ECU

◀A▶

Ignition switch and ignition key ring antenna removal steps

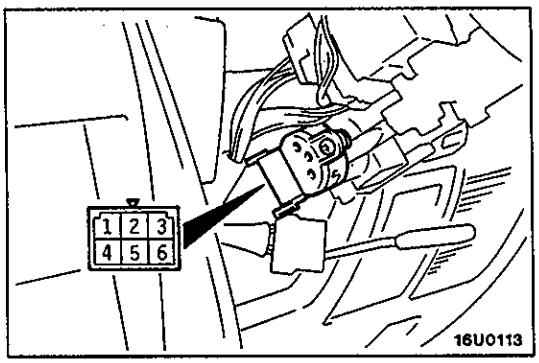
1. Hood lock release handle
2. Driver's side lower cover
4. Steering wheel (Refer to GROUP 37A.)
5. Column cover, lower
6. Column cover, upper
7. Column switch (Refer to GROUP 37A – Steering Wheel and Shaft.)
8. Ignition key ring antenna
9. Steering lock cylinder
10. Ignition switch



REMOVAL SERVICE POINTS

◀A▶ STEERING LOCK CYLINDER REMOVAL

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



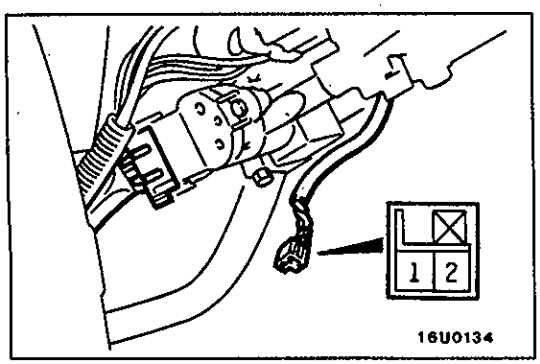
INSPECTION

54300220100

IGNITION SWITCH CONTINUITY CHECK

1. Remove the column cover lower and upper.
2. Disconnect the wiring connector from the ignition switch.
3. Operate the switch, and check the continuity between the terminals.

Ignition key position	Terminal No.				
	1	2	3	5	6
LOCK					
ACC		○		○	
ON	○	○	○	○	
START		○	○		○



IGNITION KEY RING ANTENNA CONTINUITY CHECK

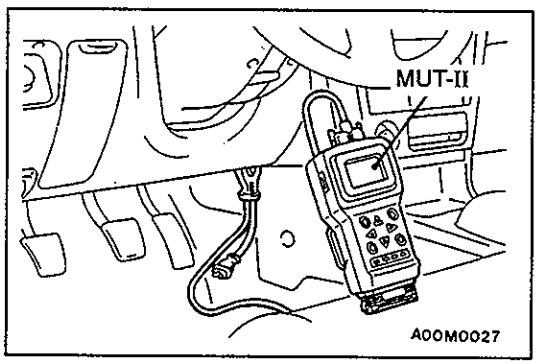
54300930010

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

ID CODE REGISTRATION METHOD 54300810031

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 ID codes for each ignition key being used into the immobilizer-ECU. (A maximum of eight different ID codes can be registered.)
Moreover, when the immobilizer-ECU has been replaced, you will need to use the MUT-II to register the password that the user specifies into the immobilizer-ECU. (Refer to the MUT-II instruction manual for instructions on using the MUT-II.)

Caution
If registering of the ID codes is carried out all previously-registered codes will be erased. Accordingly, 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 the ignition switch off before connecting or disconnecting the MUT-II.
2. Check that the diagnosis code No.54 is not displayed for MPI system. If the code is displayed, carry out troubleshooting before proceeding to the next step. (Refer to GROUP 13A – Troubleshooting).
3. Use the ignition key that is to be registered to turn the ignition switch to the ON position.
4. Use the MUT-II to register the ID code. If you are registering two or more codes, use the next key to be registered to turn the ignition switch to the ON position without disconnecting the MUT-II.
5. Disconnect the MUT-II. This completes the registration operation.
6. Check that the engine can be started by each one of the ignition keys.
7. Check that the diagnosis code No.54 is not displayed for MPI system. If the code is displayed, erase it. (Refer to GROUP 13A – Troubleshooting).

COMBINATION METERS

54300030093

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	700	±100
	3,000	±150
	5,000	±200
	6,000	±250
Fuel gauge unit resistance Ω	Float point F	0.9 – 5.1
	Float point E	102.3 – 117.7
Fuel gauge unit float height mm	A (Float point F)	17.4
	B (Float point E)	130.2
Fuel gauge resistance Ω	Power supply and earth	192±19.2
	Power supply and fuel gauge	89±8.9
	Fuel gauge and earth	103±10.3
Engine coolant temperature gauge resistance Ω	Power supply and earth	187±18.7
	Power supply and engine coolant temperature gauge	90±4.5
	Engine coolant temperature gauge and earth	247±24.7
Engine coolant temperature gauge unit resistance (at 70 °C) Ω		104 ± 13.5

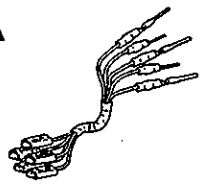
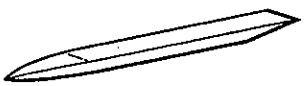
SEALANT

54300050037

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

SPECIAL TOOLS

54300060191

Tool	Number	Name	Use
A  B  C  D 	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Fuel gauge simple check A: Connector pin contact pressure check B, C: Power circuit check D: Commercial tester connection
	MB990784	Ornament remover	Removal of meter bezel

TROUBLESHOOTING

54300720181

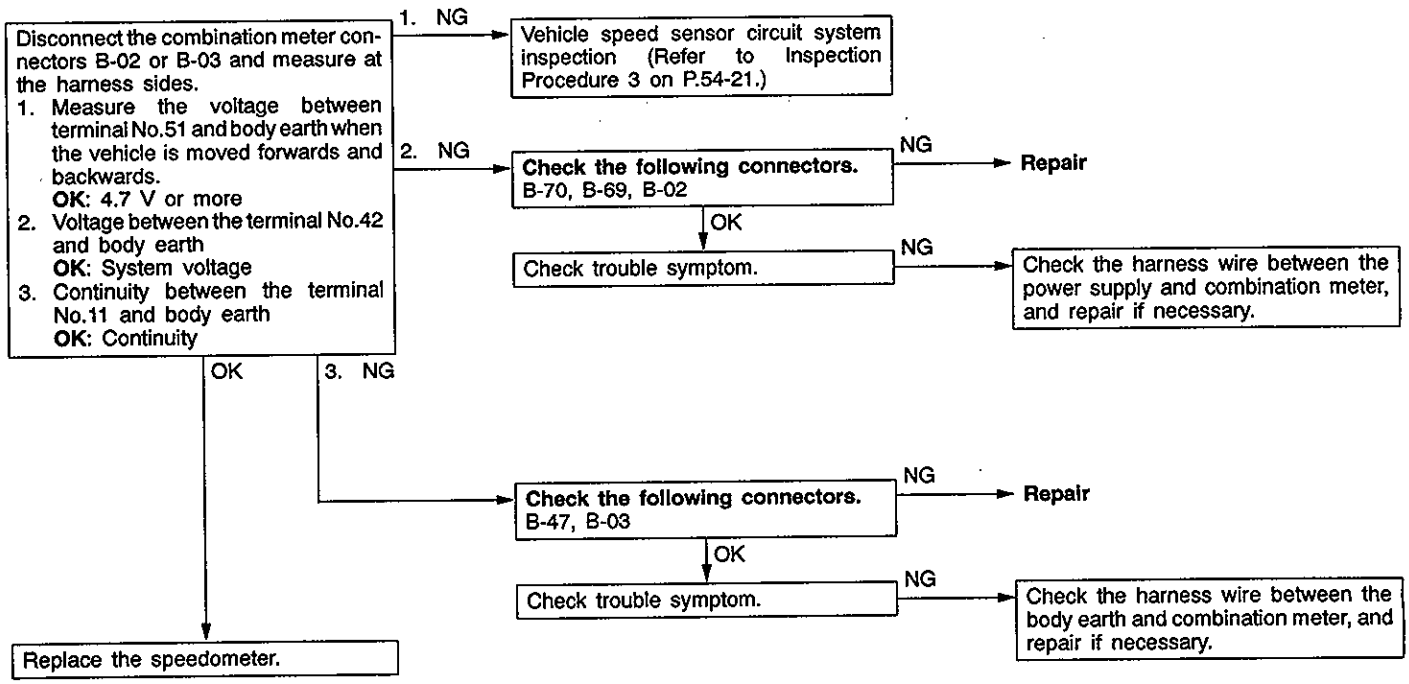
INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure	Reference page
Speedometer does not work.	1	54-19
Tachometer does not work.	2	54-20

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

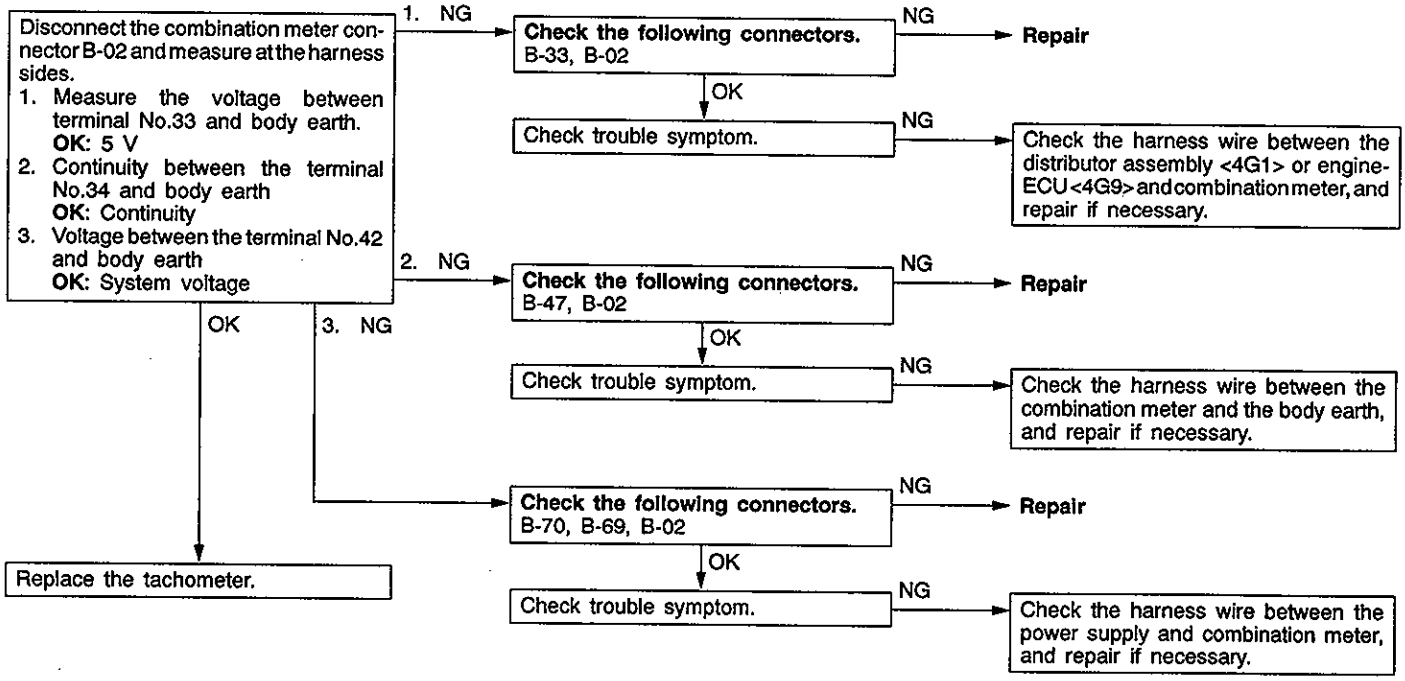
Inspection Procedure 1

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 • Malfunction of speedometer • Malfunction of harness or connector



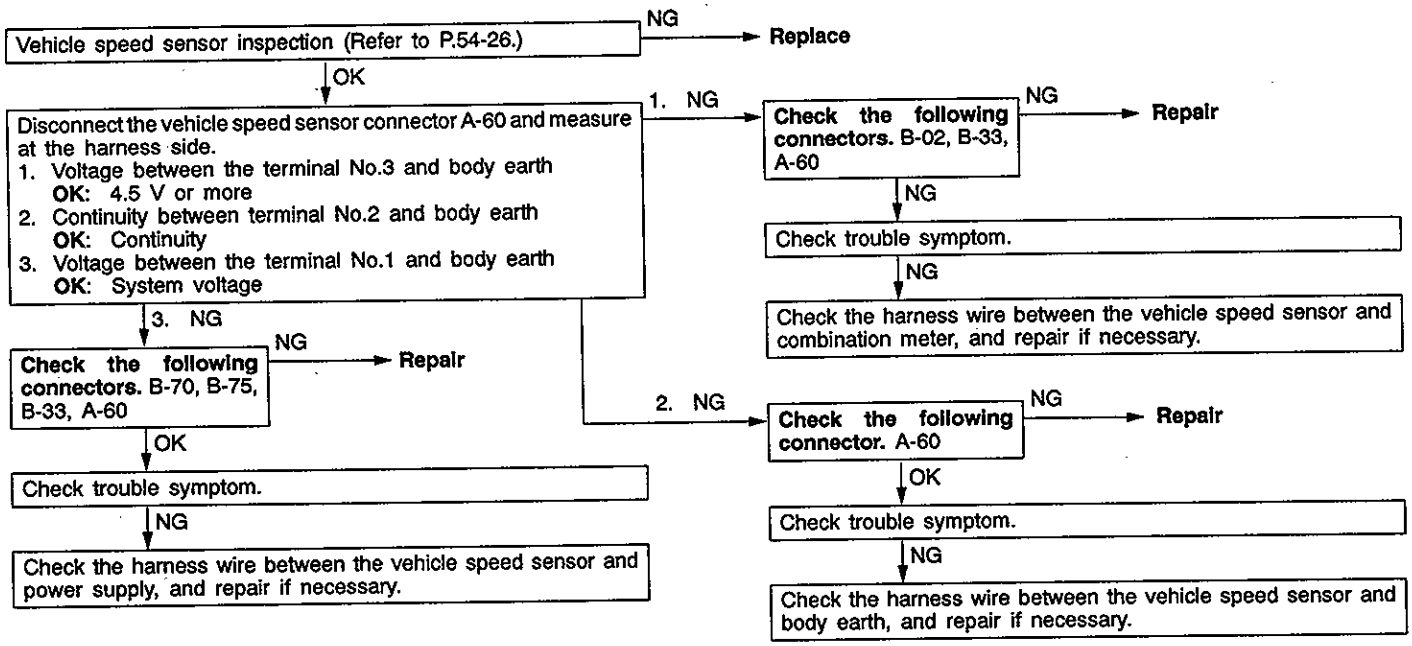
Inspection Procedure 2

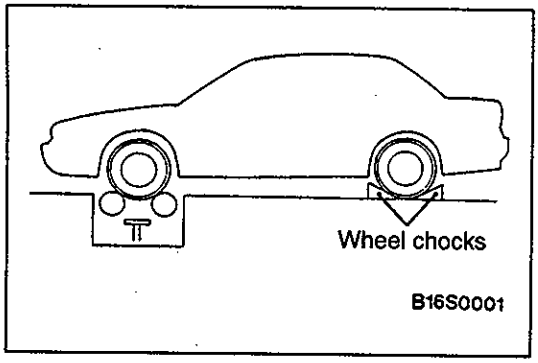
Tachometer does not work.	Probable cause
The ignition signal may not be input from the engine, or there may be a malfunction in the power supply or earth circuit.	• Malfunction of tachometer • Malfunction of harness or connector



Inspection Procedure 3

Vehicle speed sensor circuit system inspection



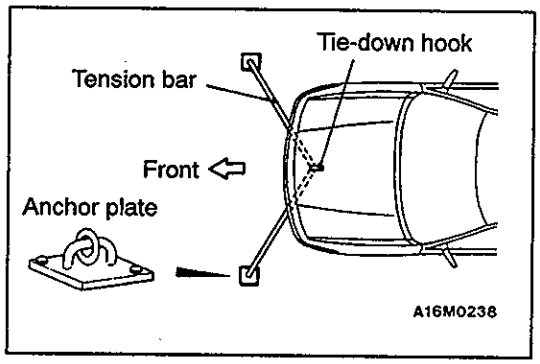


ON-VEHICLE SERVICE

54300090077

SPEEDOMETER CHECK

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 rear wheels.

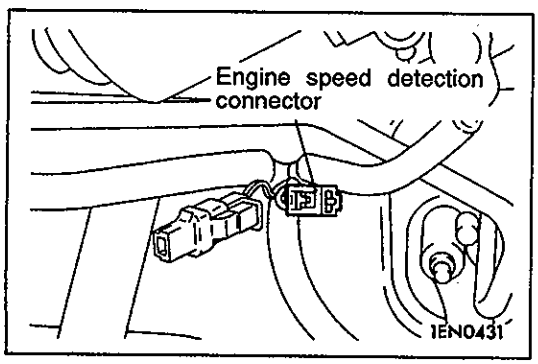


3. To prevent the front wheel from moving from side to side, attach tension bars to the tie-down hook, and secure both ends to anchor plates.
4. Toe prevent the vehicles from starting, attach a chain or wire to the rear retraction hook, and make sure the end of the chain or wire is secured firmly.
5. 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 CHECK

54300100084

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

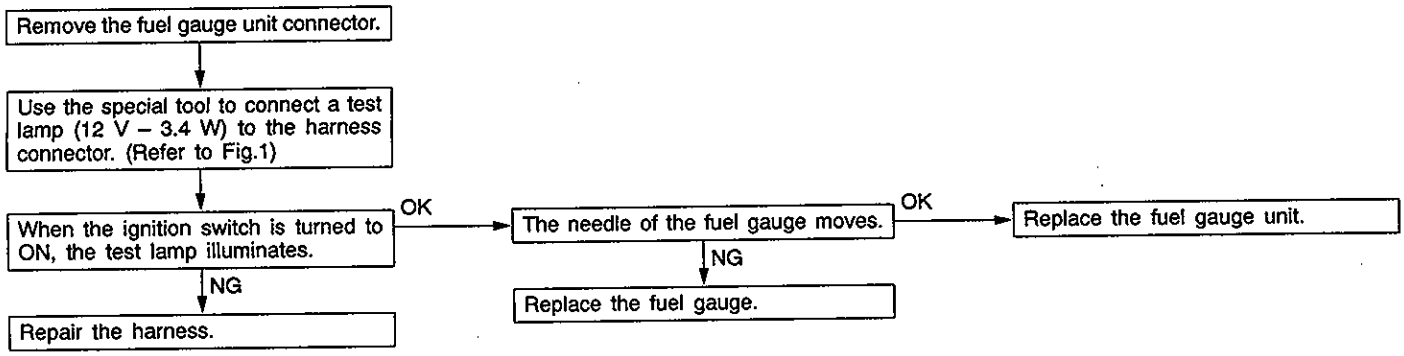
   NOTE
   For tachometer check, use of a fluxmeter-type engine speedometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)

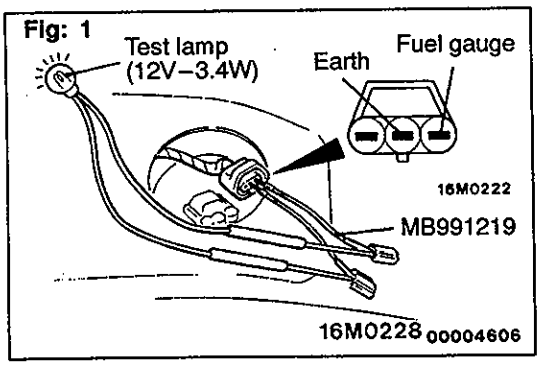
2. Compare the readings of the engine speedometer and the tachometer at every engine speed, and check if the variations are within the standard values.

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

FUEL GAUGE SIMPLE CHECK

54300110094





FUEL GAUGE UNIT CHECK

54300120134

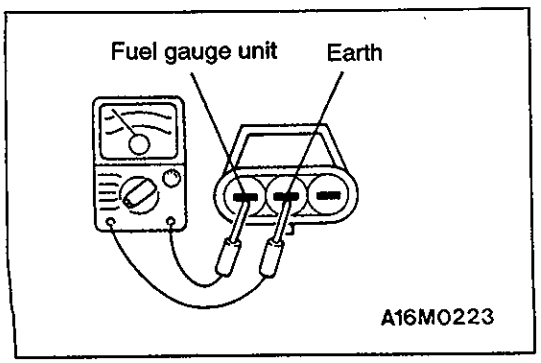
Remove the fuel gauge unit from the fuel tank. (Refer to GROUP 13F.)

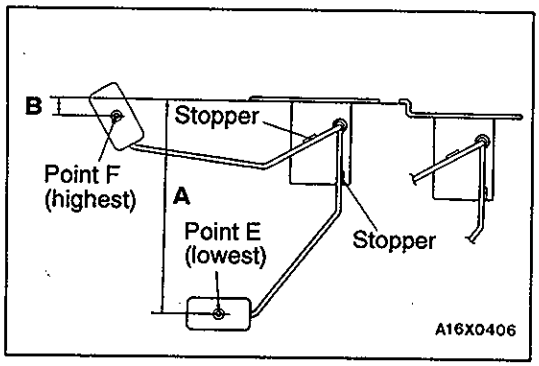
FUEL GAUGE UNIT RESISTANCE

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: 0.9 – 5.1 Ω
   Point E: 102.3 – 117.7 Ω

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

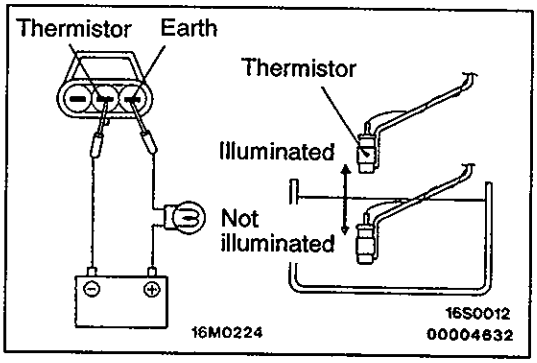




FUEL GAUGE UNIT FLOAT HEIGHT

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: 17.4 mm
B: 130.2 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 SIMPLE CHECK

54300140109

Remove the engine coolant gauge unit connector.

↓

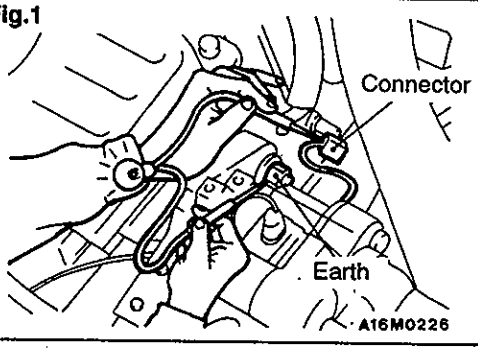
Connect a test lamp (12 V – 3.4 W) between the harness side connector and the earth. (Refer to Fig.1)

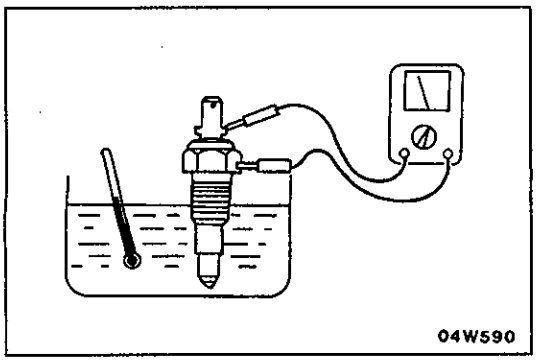
↓

When the ignition switch is turned to ON, the test lamp illuminates.

- OK → The needle of the engine coolant temperature gauge moves.
  - NG → Replace the engine coolant temperature gauge.
  - OK → Replace the engine coolant temperature gauge unit.
- NG → Repair the harness.

Fig.1



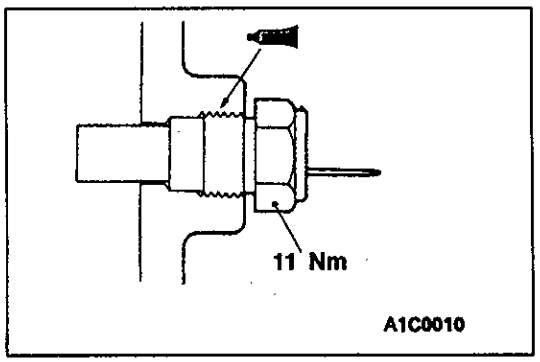


ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

54300150133

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



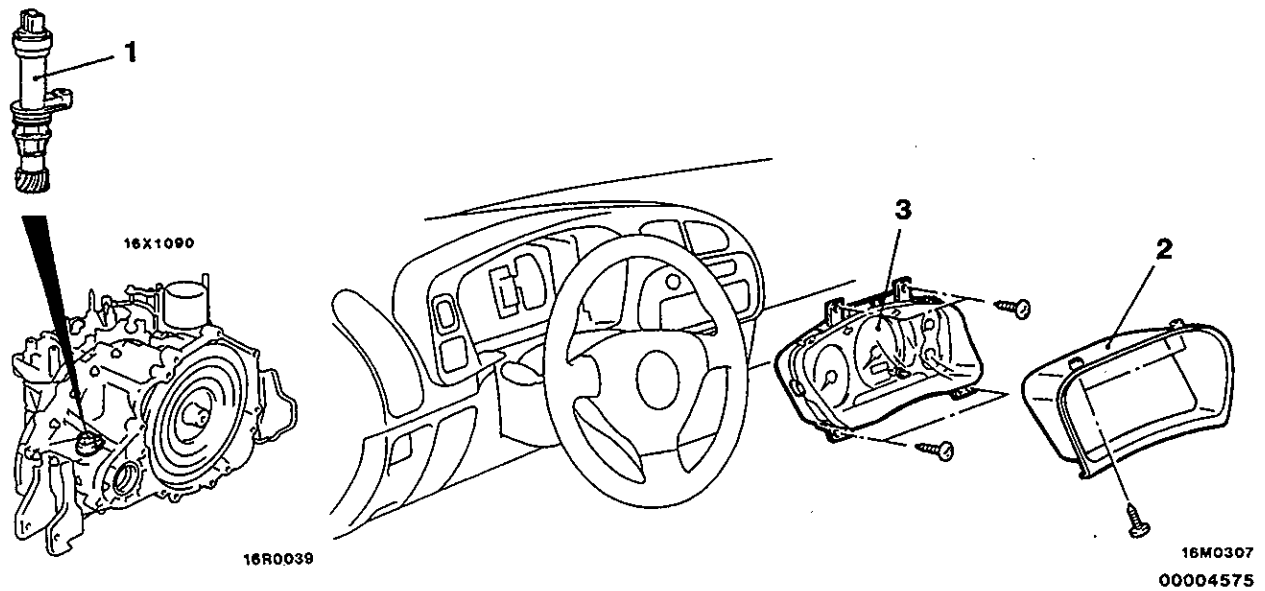
4. After checking, apply the specified adhesive around the thread of engine coolant temperature gauge unit.

   Specified sealant:
   3M Adhesive Nut Locking No. 4171 or equivalent
5. Add engine coolant. (Refer to GROUP 14 – On-vehicle Service.)

COMBINATION METERS

54300290101

REMOVAL AND INSTALLATION

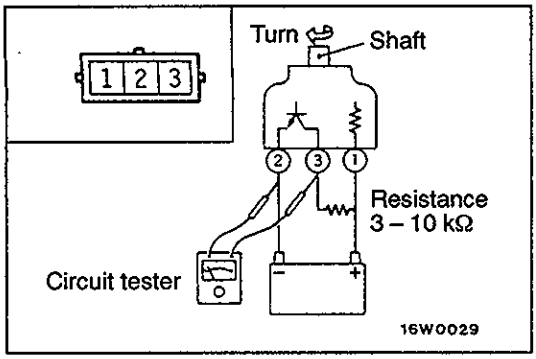


Vehicle speed sensor removal steps

- Air Cleaner, Air Intake Hose
1. Vehicle speed sensor

Combination meter removal steps

2. Meter bezel
3. Combination meter

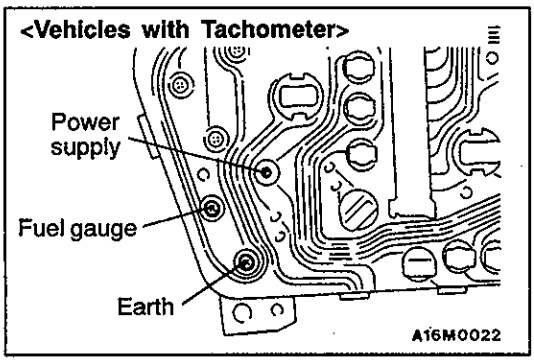


INSPECTION

54300640067

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)



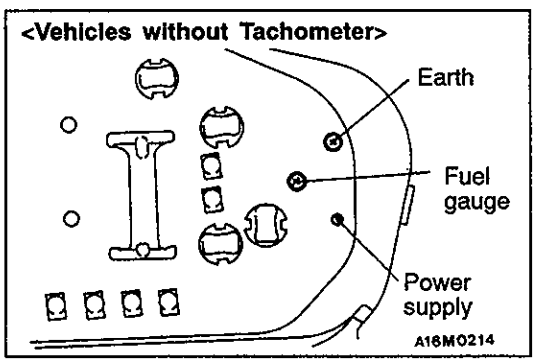
FUEL GAUGE RESISTANCE CHECK

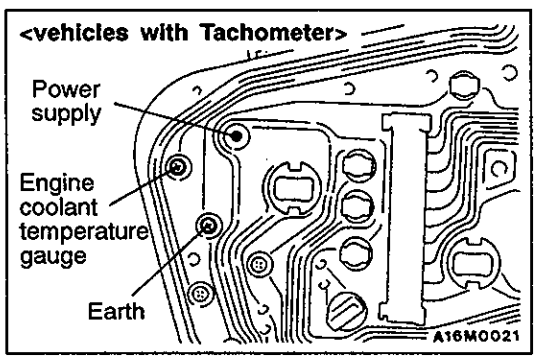
54300300071

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: 192±19.2
Power supply – Fuel gauge: 89±8.9
Fuel gauge – Earth: 103±10.3

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



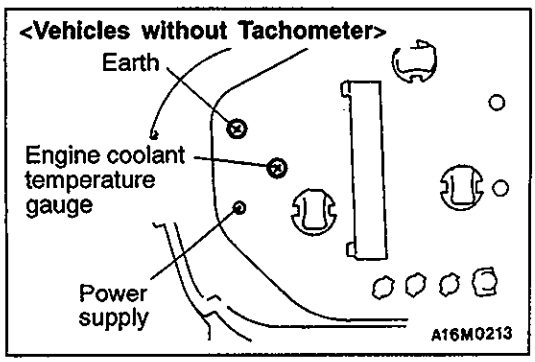


ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE CHECK

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: 187±18.7
Power supply – Engine coolant temperature gauge: 90±4.5
Engine coolant temperature gauge – Earth: 247±24.7

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

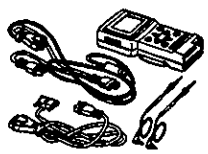
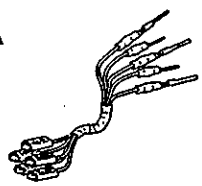


HEADLAMP AND FRONT TURN-SIGNAL LAMP 54200030052

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

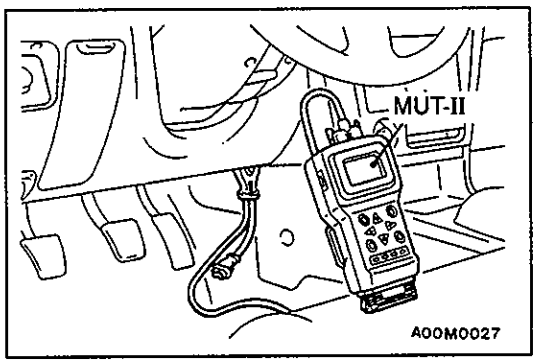
SPECIAL TOOLS 54200060204

Tool	Number	Name	Use
	MB991502	MUT-II sub assembly	ETACS-ECU input signal checking
A  B  C  D 	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Making voltage and resistance measurements during troubleshooting A: Connector pin contact pressure inspection B, C: Power circuit inspection D: Commercial tester connection
	MB990784	Ornament remover	Removal of switch garnish

TROUBLESHOOTING

54200900018

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



DIAGNOSIS FUNCTION

INPUT SIGNAL INSPECTION POINTS <VEHICLES WITH ETACS-ECU>

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

54200910011

Trouble symptoms		Inspection procedure	Reference page
Communication with MUT-II is impossible. <Vehicles with ETACS-ECU>	Communication with all systems is impossible.	1	54-29
	Communication with one-shot pulse input signal only is impossible.	2	54-29
The lighting monitor buzzer doesn't sound under the following conditions while tail lamps or headlamps illuminate. • When the ignition switch is turned to OFF and the driver's side door is open.		3	54-29
Headlamp leveling does not occur when the headlamp leveling switch is operated.		5	54-31
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. <Vehicles with daytime running lamp system> • Lighting switch: OFF • Passing switch: OFF		6	54-33
The headlamps do not switch off when the vehicle is in the following condition and the lighting switch is moved to the TAIL position. <Vehicles with daytime running lamp system> • Ignition switch: OFF • Passing switch: OFF		7	54-34

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

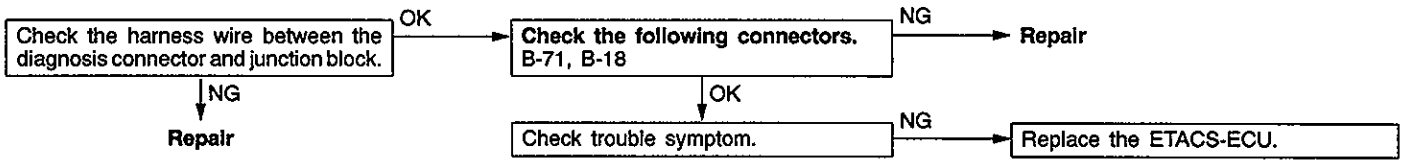
Inspection Procedure 1

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 • Malfunction of harness wire

Refer to GROUP 13A – Troubleshooting.

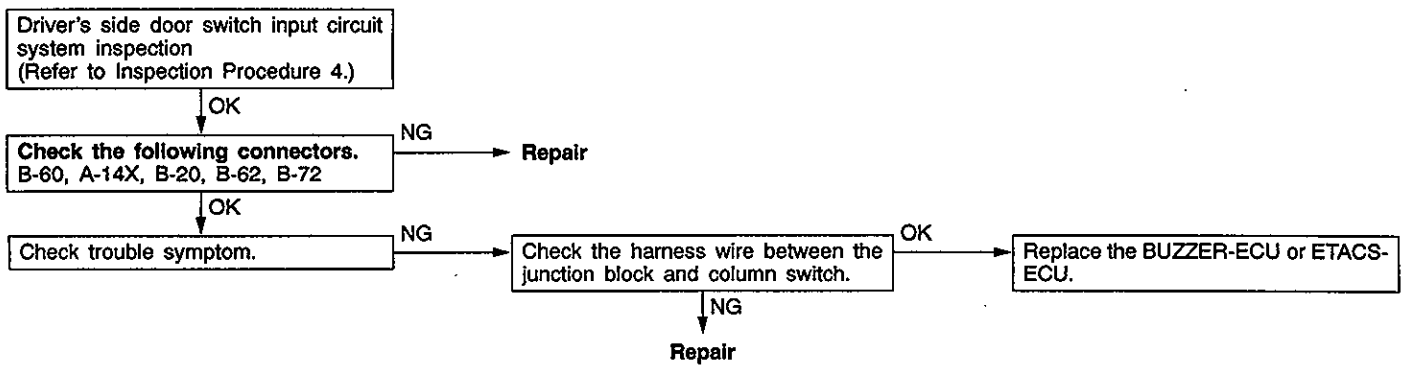
Inspection Procedure 2

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 • Malfunction of harness wire • Malfunction of ETACS-ECU



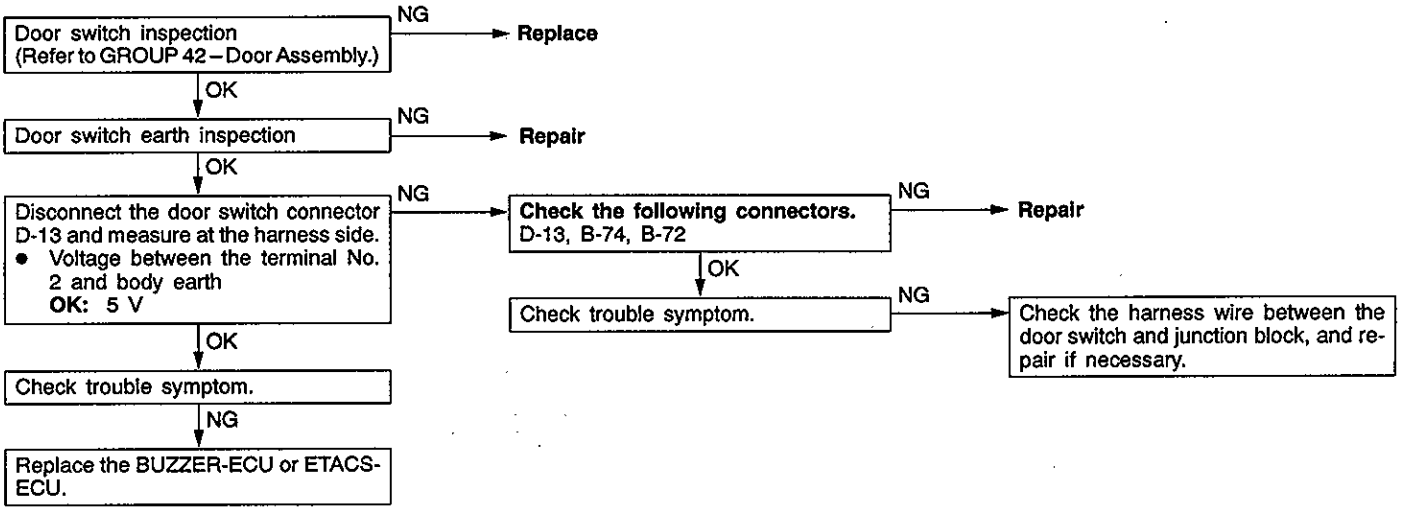
Inspection Procedure 3

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 • Malfunction of harness or connector • Malfunction of BUZZER-ECU or ETACS-ECU



Inspection Procedure 4

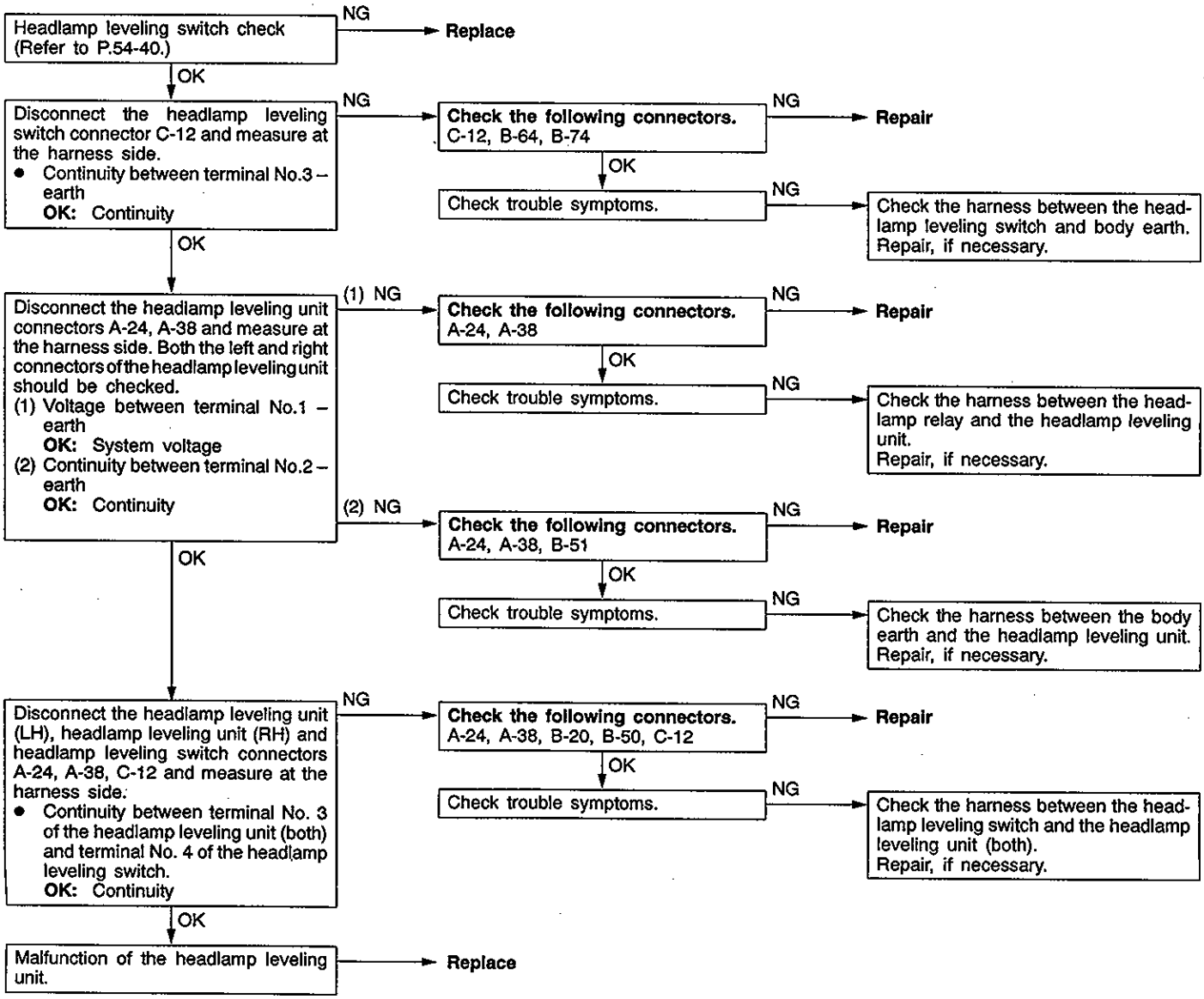
Driver's side door switch input circuit system inspection



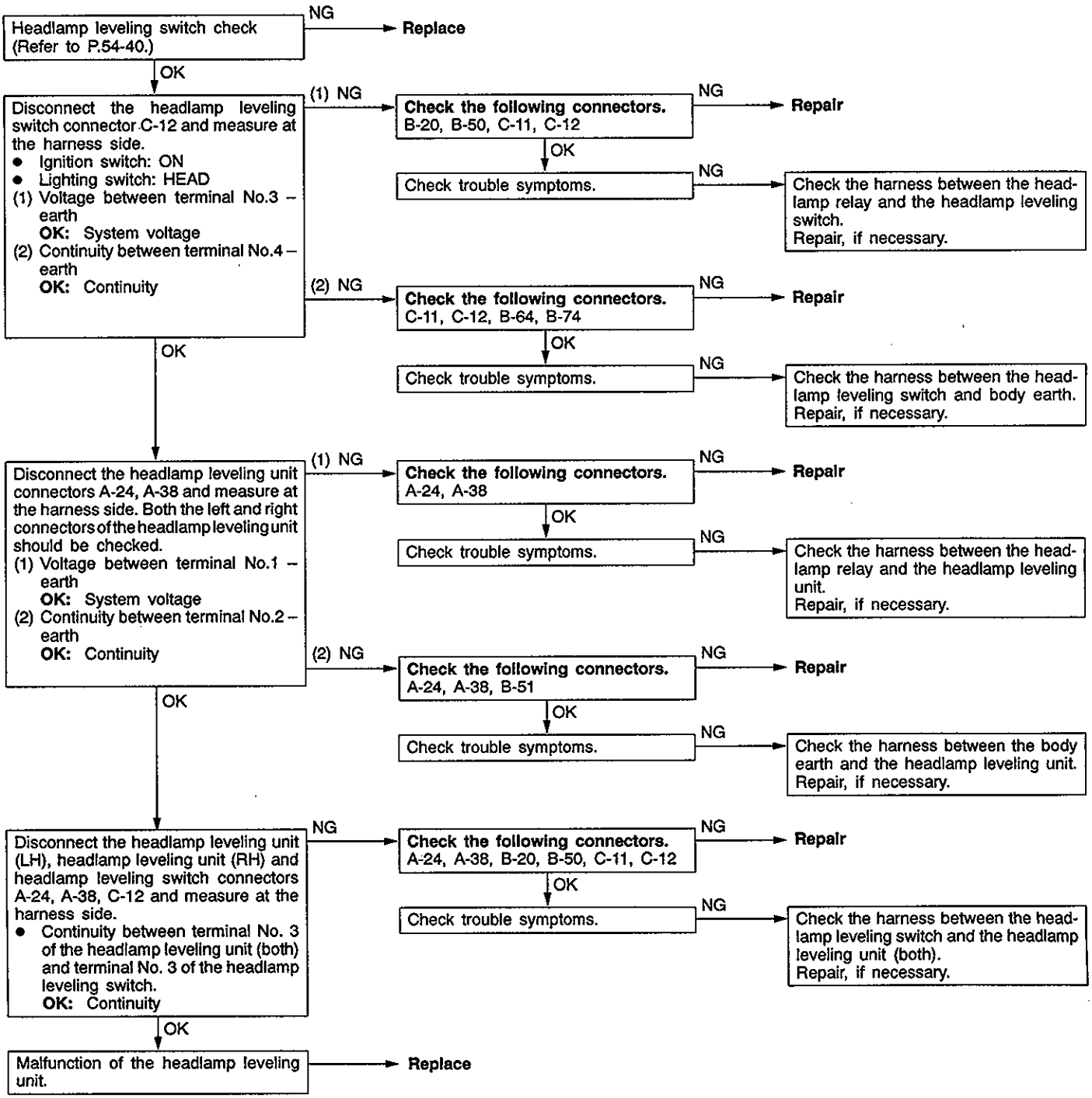
Inspection procedure 5

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. If there is a blown fuse, there may also be a short-circuit in a harness.	• Malfunction of fuse • Malfunction the headlamp leveling switch • Malfunction of connector • Malfunction of harness • Malfunction of the headlamp leveling unit

<Hatchback>

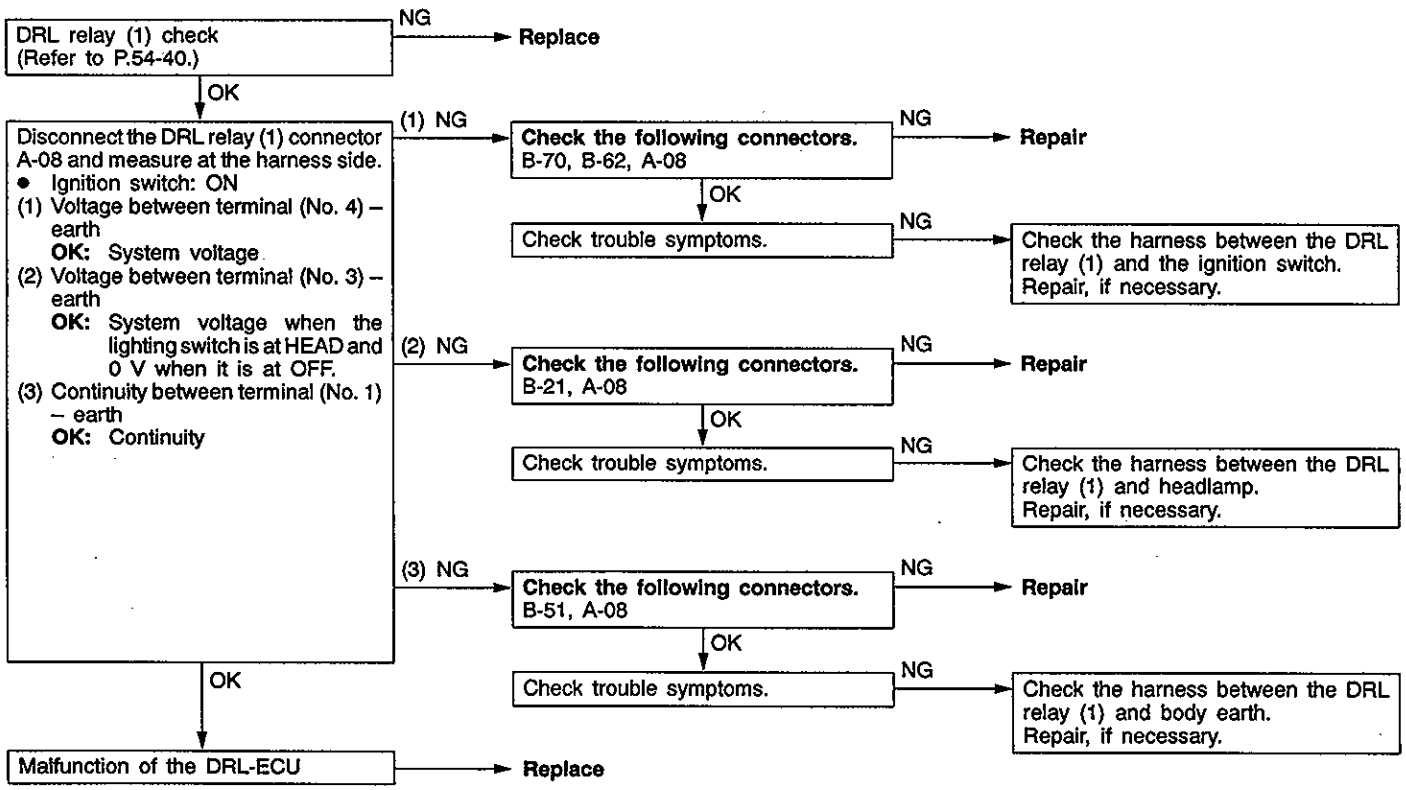


<Sedan>


Headlamp leveling switch check (Refer to P.54-40.)
NG
Replace
OK
Disconnect the headlamp leveling switch connector C-12 and measure at the harness side.
● Ignition switch: ON
● Lighting switch: HEAD
(1) Voltage between terminal No.3 – earth
OK: System voltage
(2) Continuity between terminal No.4 – earth
OK: Continuity
(1) NG
Check the following connectors.
B-20, B-50, C-11, C-12
NG
Repair
OK
Check trouble symptoms.
NG
Check the harness between the headlamp relay and the headlamp leveling switch.
Repair, if necessary.
(2) NG
Check the following connectors.
C-11, C-12, B-64, B-74
NG
Repair
OK
Check trouble symptoms.
NG
Check the harness between the headlamp leveling switch and body earth.
Repair, if necessary.
OK
Disconnect the headlamp leveling unit connectors A-24, A-38 and measure at the harness side. Both the left and right connectors of the headlamp leveling unit should be checked.
(1) Voltage between terminal No.1 – earth
OK: System voltage
(2) Continuity between terminal No.2 – earth
OK: Continuity
(1) NG
Check the following connectors.
A-24, A-38
NG
Repair
OK
Check trouble symptoms.
NG
Check the harness between the headlamp relay and the headlamp leveling unit.
Repair, if necessary.
(2) NG
Check the following connectors.
A-24, A-38, B-51
NG
Repair
OK
Check trouble symptoms.
NG
Check the harness between the body earth and the headlamp leveling unit.
Repair, if necessary.
OK
Disconnect the headlamp leveling unit (LH), headlamp leveling unit (RH) and headlamp leveling switch connectors A-24, A-38, C-12 and measure at the harness side.
● Continuity between terminal No. 3 of the headlamp leveling unit (both) and terminal No. 3 of the headlamp leveling switch.
OK: Continuity
NG
Check the following connectors.
A-24, A-38, B-20, B-50, C-11, C-12
NG
Repair
OK
Check trouble symptoms.
NG
Check the harness between the headlamp leveling switch and the headlamp leveling unit (both).
Repair, if necessary.
OK
Malfunction of the headlamp leveling unit.
Replace

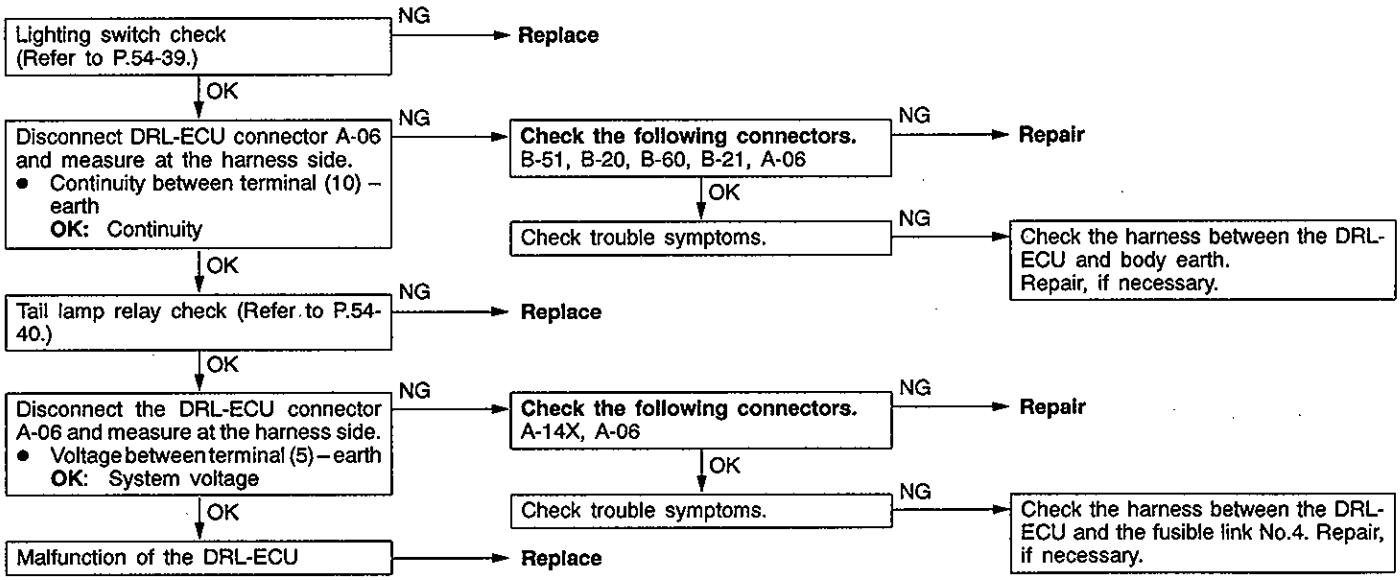
Inspection procedure 6

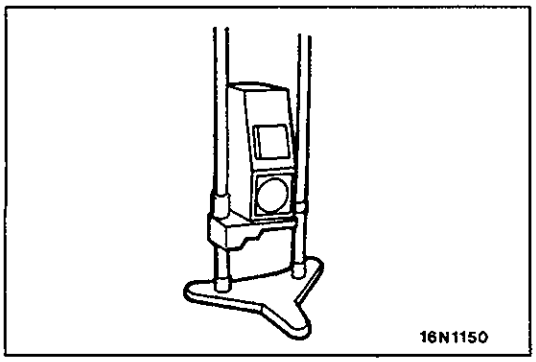
The headlamps do not illuminate when the vehicle is in the following condition and the ignition switch is moved to the ON position. However, they illuminate when the lighting switch is moved to the HEAD position. **<Vehicles with daytime running lamp>** • **Lighting switch: OFF** • **Passing switch: 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 • Malfunction of connector • Malfunction of harness • Malfunction of the DRL relay (1) • Malfunction of the DRL-ECU

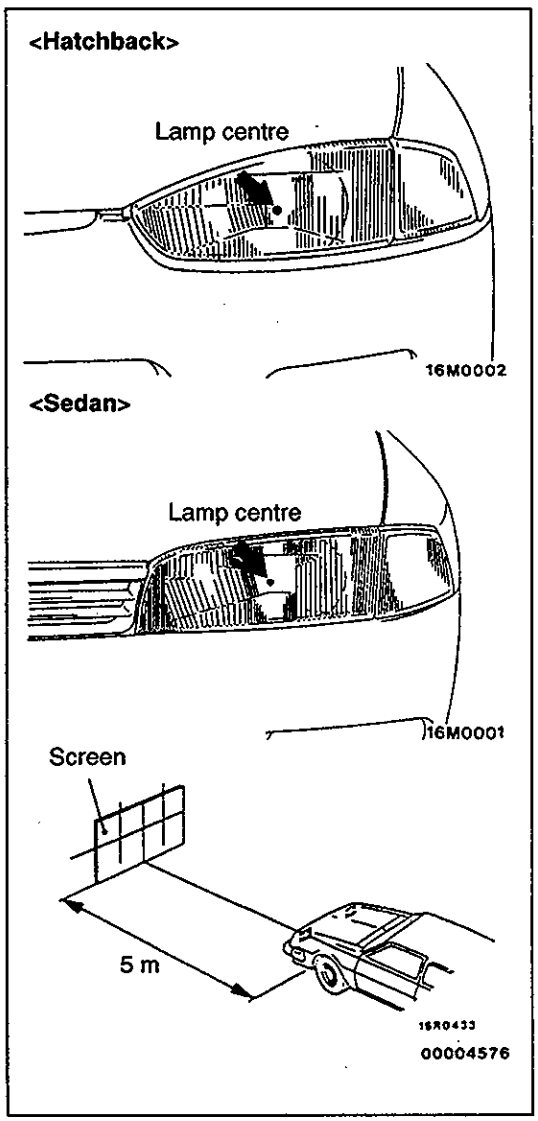


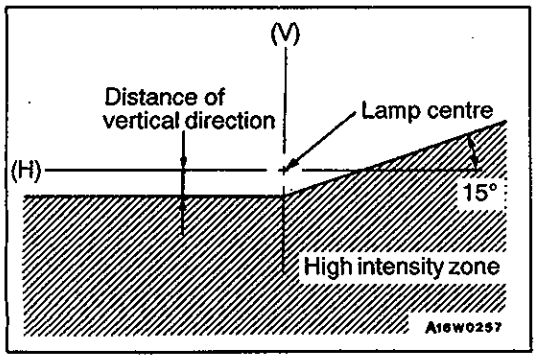
Inspection procedure 7

The headlamps do not switch off when the vehicle is in the following condition and the lighting switch is moved to the TAIL position. **<Vehicles with daytime running lamp>** • **Ignition switch: OFF** • **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 • Malfunction of connector • Malfunction of harness • Malfunction of the tail lamp relay • Malfunction of the DRL-ECU









ON-VEHICLE SERVICE

54200090081

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.

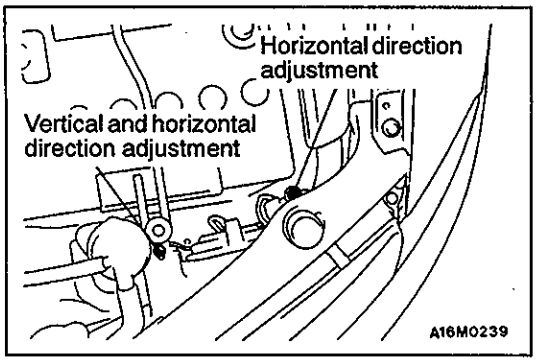
   NOTE
   If there are any regulations pertinent to the aiming of headlamps in the area where the vehicle is to be used, adjust so as to meet those requirements.

2. Alternately turn the adjusting screw to adjust the headlamp aiming. (Refer to P.54-36.)

<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. Set the distance between the screen and the centre marks of the headlamps as shown in the illustration.
3. 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)



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

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

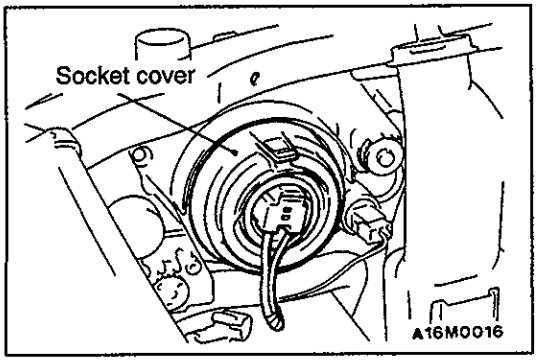
INTENSITY MEASUREMENT 54200100067

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

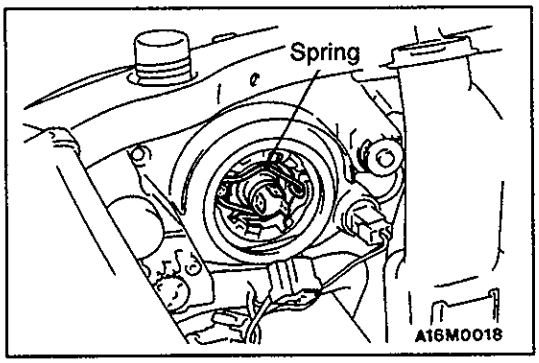


BULB REPLACEMENT

54200130103

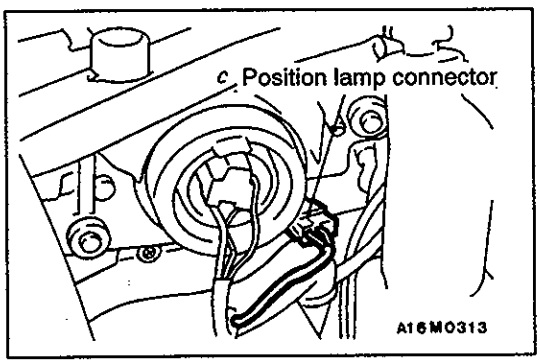
<Headlamp Bulb>

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.



<Position Lamp Bulb>

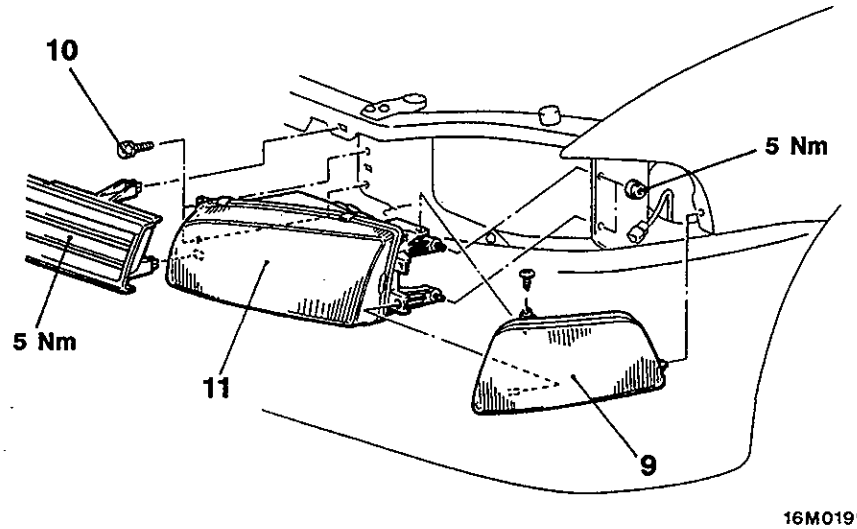
1. Disconnect the connector.
2. Remove the lamp socket by turning it anti-clockwise, then pull out the bulb from the socket.

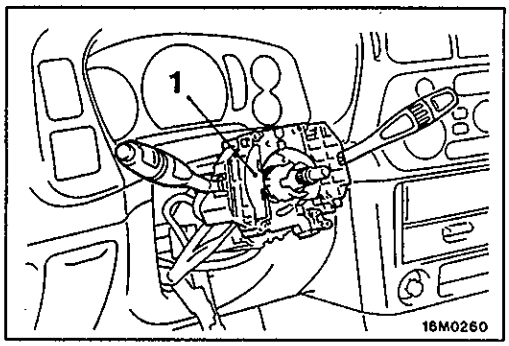
HEADLAMP AND FRONT TURN-SIGNAL LAMP

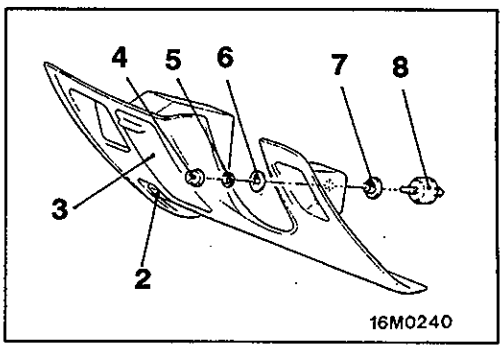
54200240073

REMOVAL AND INSTALLATION

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







00004577

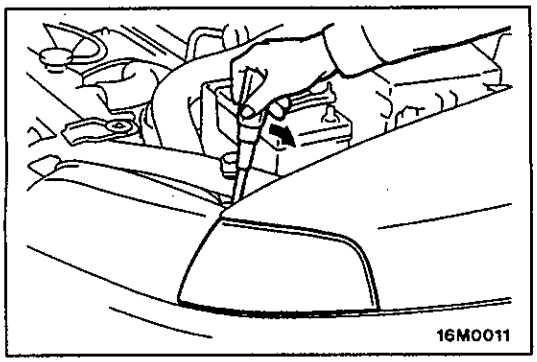
1. Column switch <Lighting switch and dimmer/passing switch> (Refer to GROUP 37A – Steering Wheel and Shaft.)

Headlamp leveling switch removal steps

2. Hood lock release handle
3. Driver's side lower trim
4. Knob
5. Nut
6. Plate
7. Spacer
8. Headlamp leveling switch

Headlamp removal steps

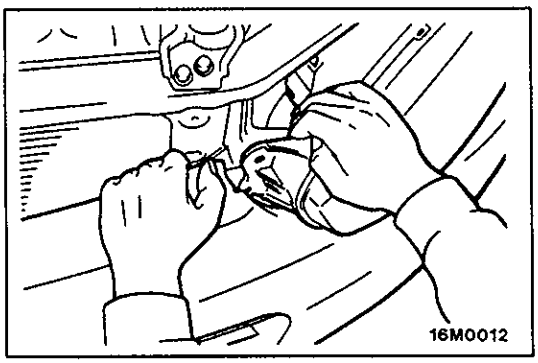
◀A▶ 9. Front turn-signal lamp
10. Radiator grille <Sedan> (Refer to GROUP 51.)
◀B▶ 11. Headlamp



REMOVAL SERVICE POINT

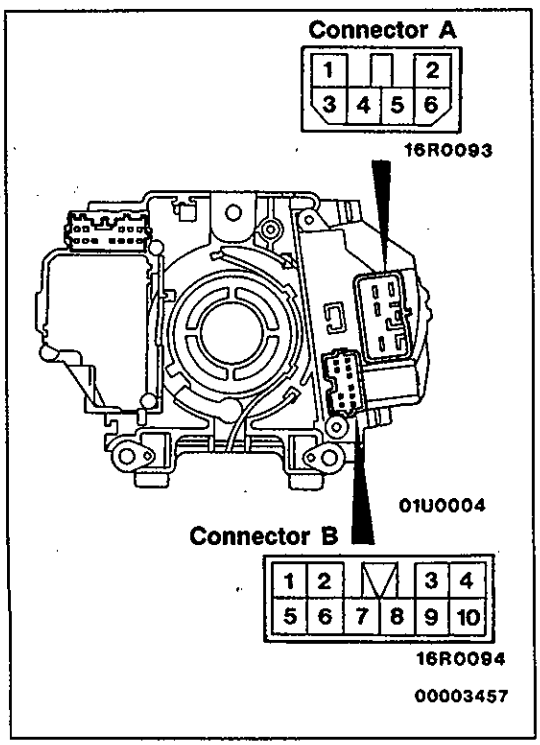
◀A▶ FRONT TURN-SIGNAL LAMP REMOVAL

Pry a screwdriver into the shown direction to remove the front turn-signal lamp forwards.



◀B▶ HEADLAMP REMOVAL <HATCHBACK>

After removing the inside of the headlamp while pulling the bumper towards you as shown in the illustration, remove the outside, and then remove the headlamp.



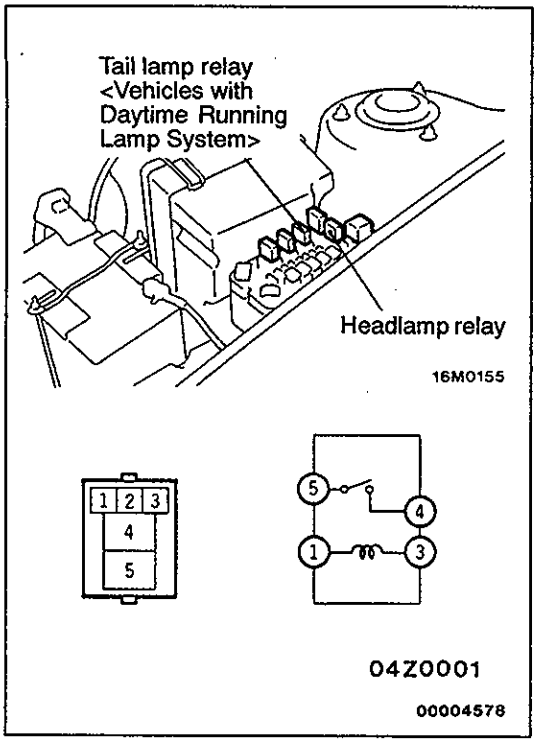
INSPECTION

54200800042

LIGHTING SWITCH, DIMMER/PASSING SWITCH AND TURN-SIGNAL LAMP SWITCH CHECK

Switch position		Connector A–terminal No.					Connector B–terminal No.					
		1	2	3	4	6	3	5	6	7	8	9
LIGHTING SWITCH	OFF											
	TAIL							○		○		
	HEAD	○						○	○	○		
DIMMER/ PASSING SWITCH	LOWER			○	○							
	UPPER				○	○						
	PASSING	○	○	○	○ *1	○						
					○	○ *2						
TURN-SIGNAL LAMP SWITCH	RH										○	○
	OFF											
	LH						○				○	

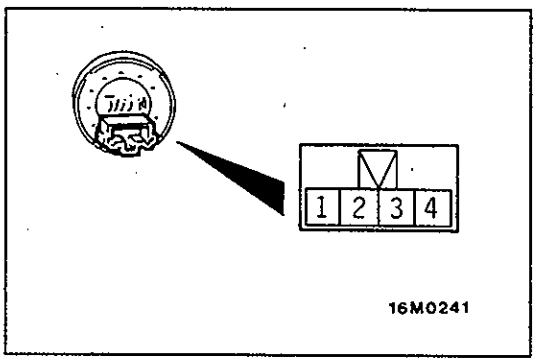
NOTE
1. *1 indicates continuity when the dimmer switch in the lower beam position.
2. *2 indicates continuity when the dimmer switch in the upper beam position.



HEADLAMP RELAY AND TAIL LAMP RELAY CHECK

54200820086

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

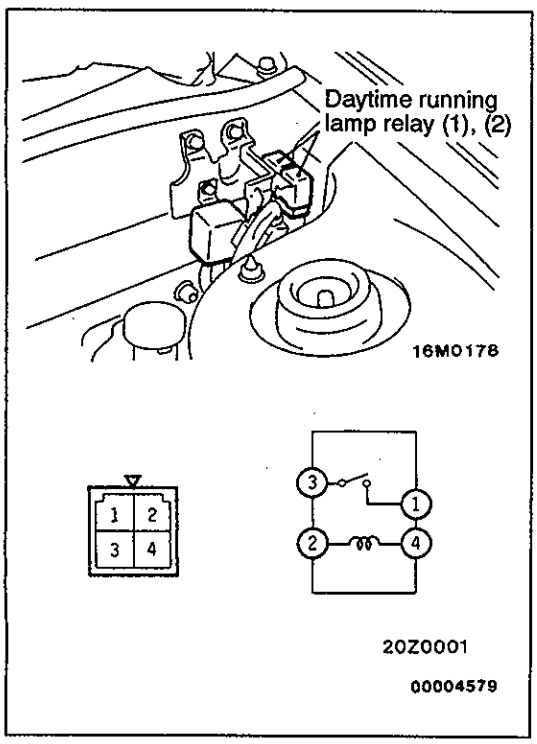


HEADLAMP LEVELING SWITCH CHECK

54200810021

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



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

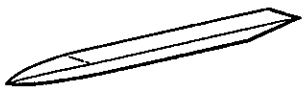
54200830027

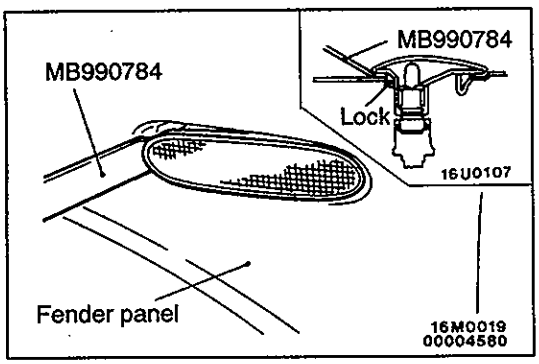
Battery voltage	Terminal No.			
	1	2	3	4
Supplied	○	⊕	○	⊖
Not supplied		○		○

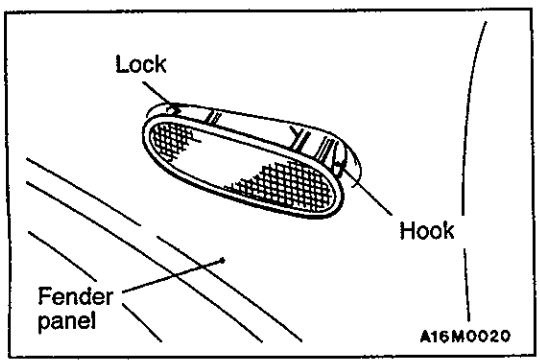
SIDE TURN-SIGNAL LAMP

54200060105

SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of side turn-signal lamp





SIDE TURN-SIGNAL LAMP

54200330046

REMOVAL

Use a special tool to remove the lock from the fender panel, and then remove the side turn-signal lamp.

INSTALLATION

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

FRONT FOG LAMP

54200030069

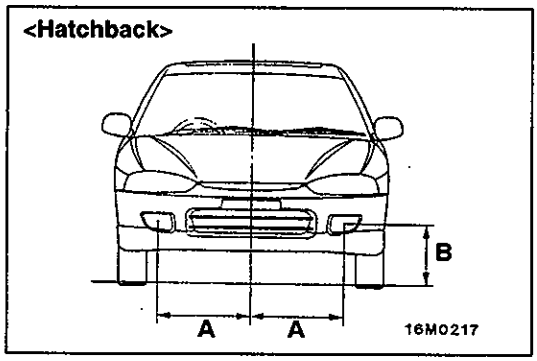
SERVICE SPECIFICATIONS

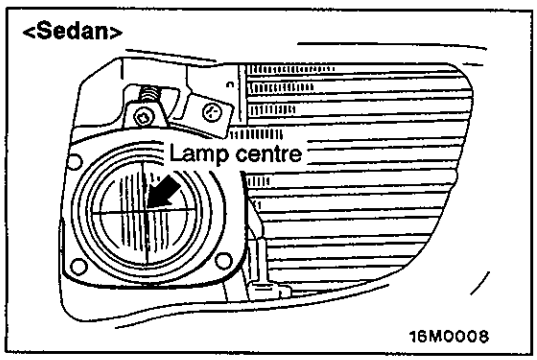
Items		Standard value
Front fog lamp aiming	Vertical direction	100 mm below horizontal (H)
	Horizontal direction	Parallel to direction of vehicle travel

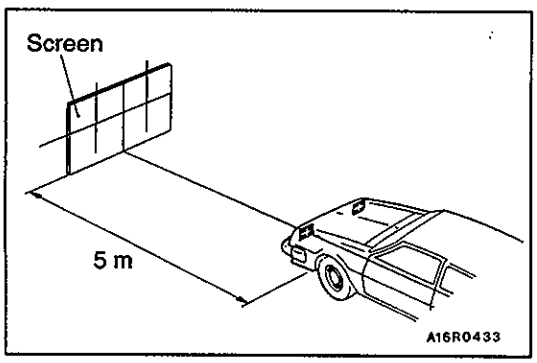
SPECIAL TOOL

54200060211

Tool	Number	Name	Use
	MB990784	Ornament remover	Fog lamp switch removal







ON-VEHICLE SERVICE

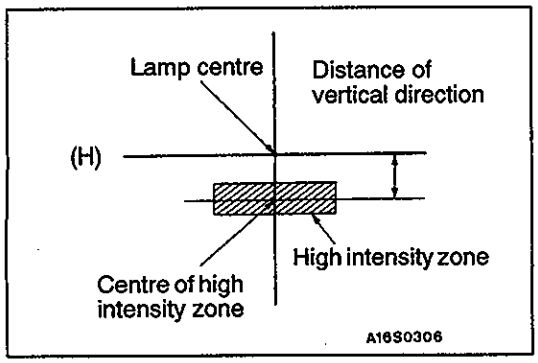
54200110060

FRONT FOG LAMP AIMING

1. Remove the fog lamp bezel.
2. Measure the centre of the fog lamps, as shown in the illustration.

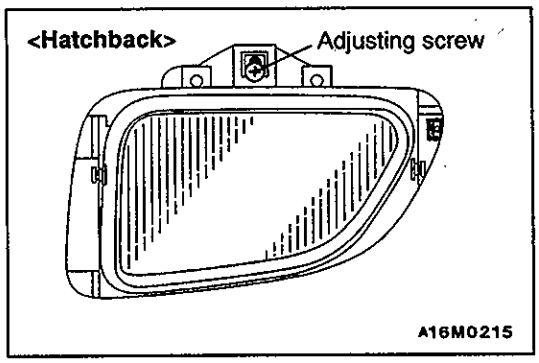
   NOTE
   Measure the centre of the fog lamp as shown.
   <Hatchback>
   A: 572.5 mm (from the centre of the vehicle body)
   B: 360 mm

3. Set the distance between the screen and the centre of the fog lamps as shown in the illustration.
4. 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.
5. With the engine running at 2,000 r/min, aim the fog lamp.



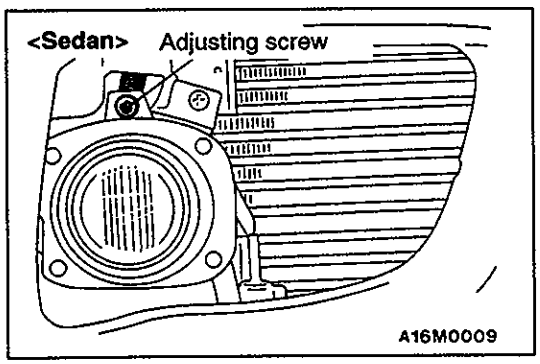
6. Check if the beam shining onto the screen is at the standard value.

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 the deviation of the light beam axis exceeds the standard value, check to be sure that the mounting location or some other point is not defective.

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



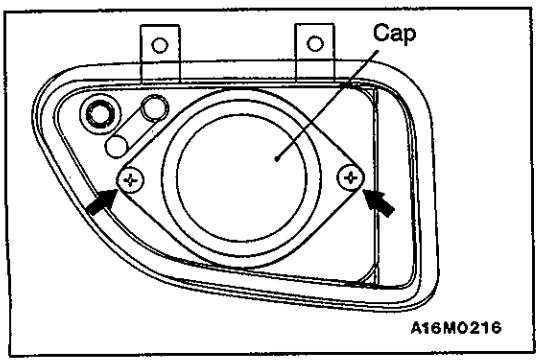
BULB REPLACEMENT

54200130110

<Hatchback>

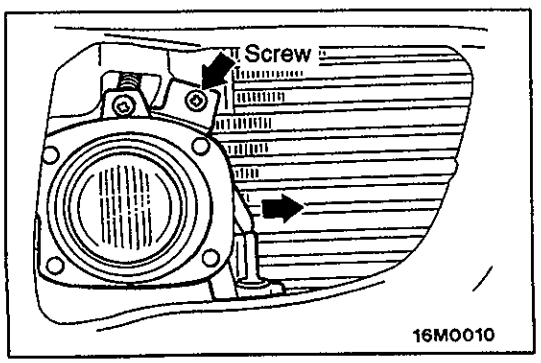
1. Remove the fog lamp. (Refer to P.54-45.)
2. Remove the cap and pull out the bulb.

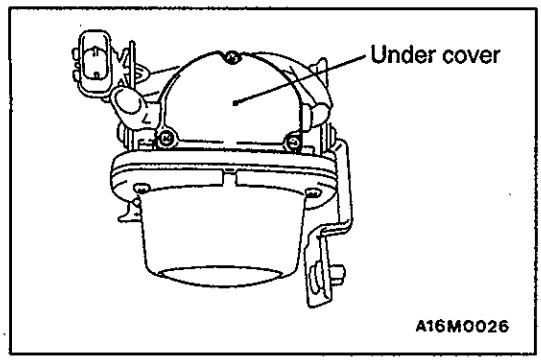
Caution
Do not touch the surface of the bulb with hands or dirty gloves. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.



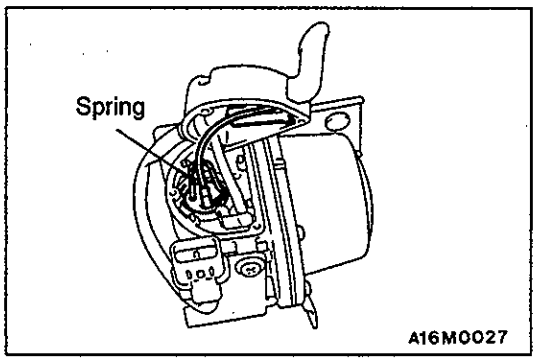
<Sedan>

1. Remove the fog lamp bezel.
2. Remove the fog lamp unit fixing screw, and push the lamp unit in the shown direction to remove it.





3. Remove the fog lamp under cover.



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

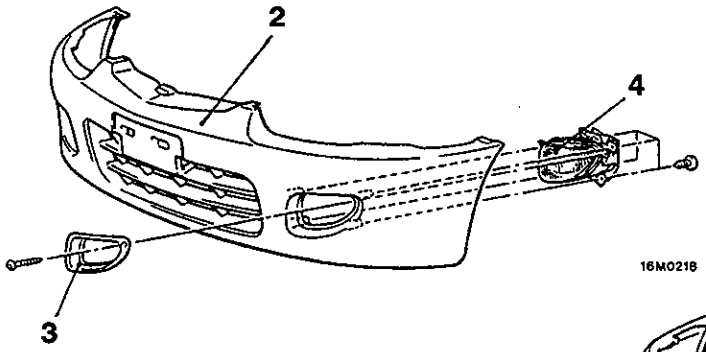
Caution
Do not touch the surface of the bulb with hands or dirty gloves. If the surface does become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.

FRONT FOG LAMP

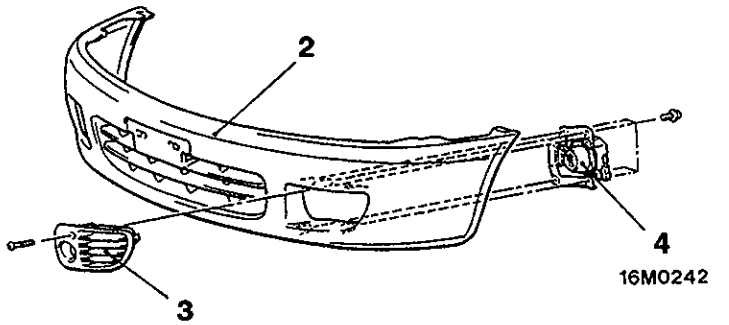
54200150079

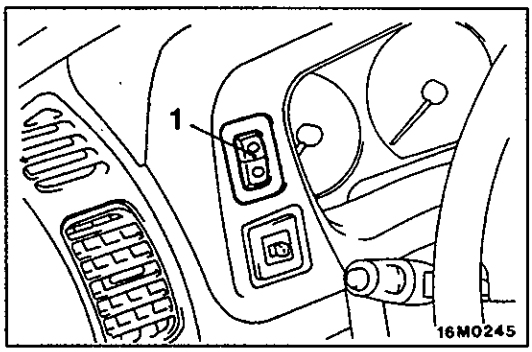
REMOVAL AND INSTALLATION

<Hatchback>



<Sedan>



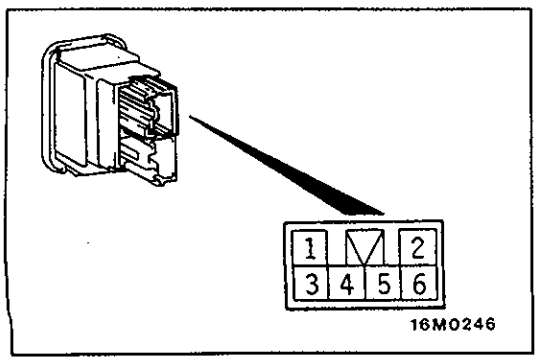


00004581

1. Front fog lamp switch

Front fog lamp removal steps

2. Front bumper
   (Refer to GROUP 51.)
3. Fog lamp bezel
4. Front fog lamp assembly



INSPECTION

54200740047

FRONT FOG LAMP SWITCH CONTINUITY CHECK

Switch position	Terminal No.						
	1		2	3	4	5	6
OFF	○	ILL ⊗	○				
ON	○	ILL ⊗	○	○	○	○	○

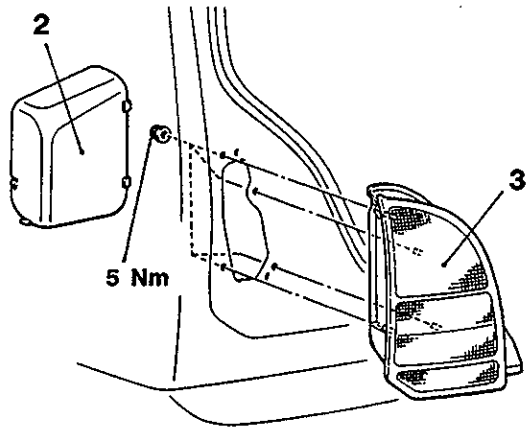
REAR COMBINATION LAMP

54200390051

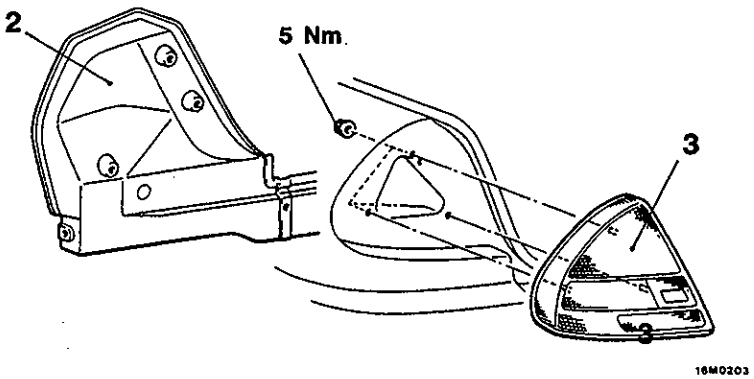
REMOVAL AND INSTALLATION

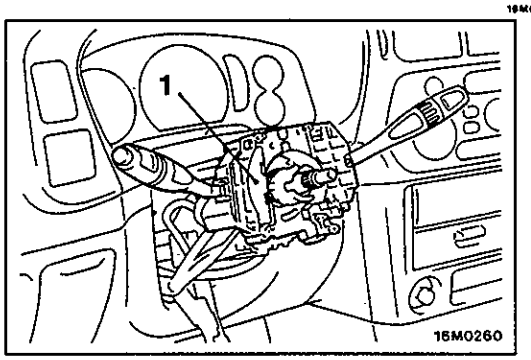
Caution: SRS
Before removal of air bag module and clock spring, refer to GROUP 52B – SRS Service Precautions and Air Bag Module and Clock Spring.

<Hatchback>



<Sedan>





00004582

1. Column switch <Lighting switch and turn-signal lamp switch> (Refer to GROUP 37A – Steering Wheel and Shaft.)

Rear combination lamp removal steps

2. Lamp lid <Hatchback> or Rear end trim <Sedan> (Refer to GROUP 52A – Trim.)
3. Rear combination lamp

INSPECTION

54200760050

LIGHTING SWITCH AND TURN-SIGNAL LAMP SWITCH CHECK

Refer to P.54-39.

TAIL LAMP RELAY CHECK <Vehicles with Daytime Running Lamp System>

54200780087

Refer to P.54-40.

REAR FOG LAMP

54200060228

SPECIAL TOOL

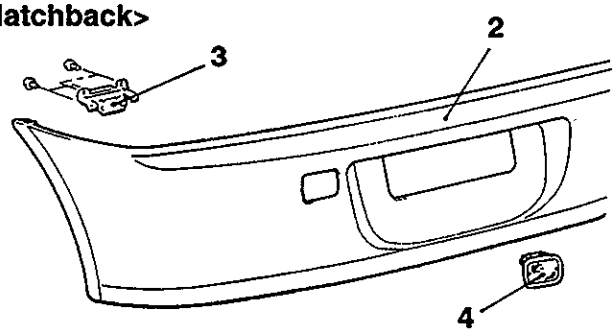
Tool	Number	Name	Use
	MB990784	Ornament remover	Fog lamp switch removal

REAR FOG LAMP

54200150086

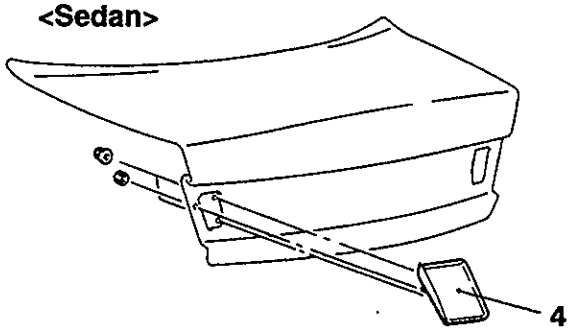
REMOVAL AND INSTALLATION

<Hatchback>



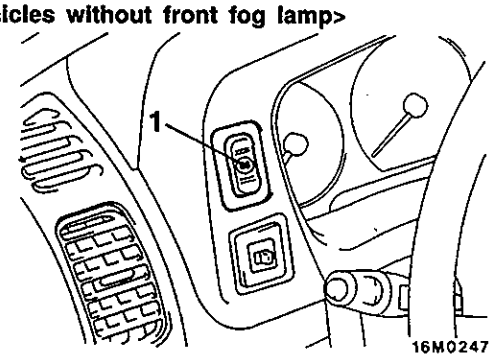
16M0256

<Sedan>



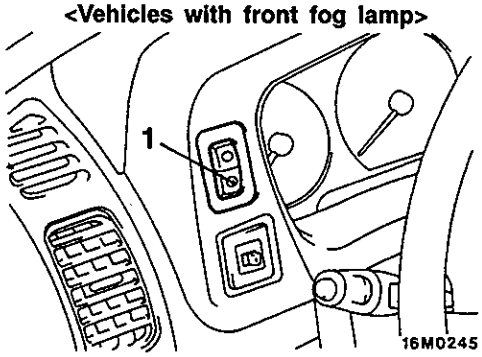
16M0257

<Vehicles without front fog lamp>



16M0247

<Vehicles with front fog lamp>



16M0245

00004583

1. Rear fog lamp switch

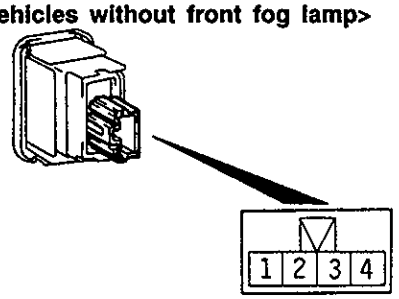
Rear fog lamp removal steps
<Hatchback>

2. Rear bumper (Refer to GROUP 51.)
3. Fog lamp bracket
4. Rear fog lamp

<Sedan>

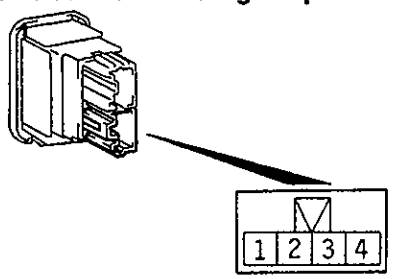
4. Rear fog lamp

<Vehicles without front fog lamp>

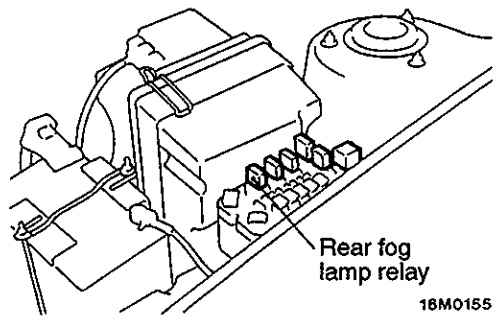


16M0248

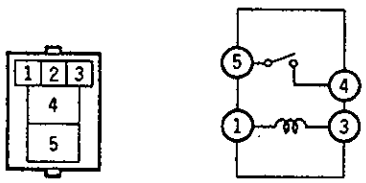
<Vehicles with front fog lamp>



16M0249



16M0155



04Z0001

00004584

INSPECTION

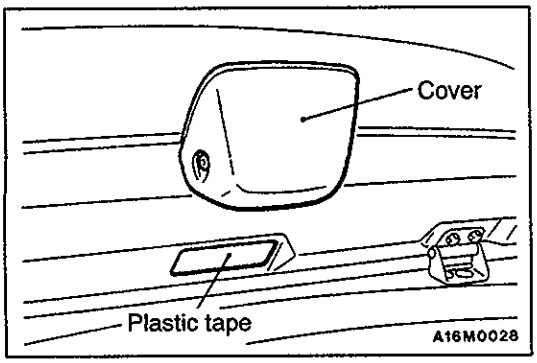
54200770022

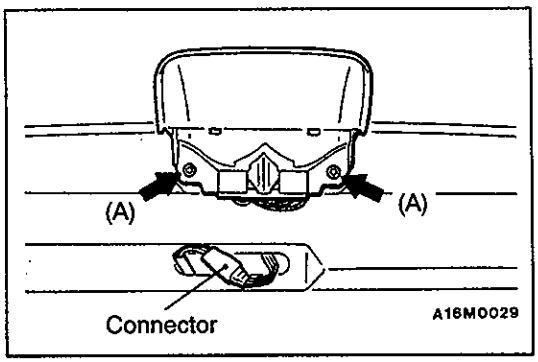
REAR FOG LAMP SWITCH CHECK

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

REAR FOG LAMP RELAY CHECK

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





HIGH-MOUNTED STOP LAMP

54200510099

REMOVAL SERVICE POINT

HIGH-MOUNTED STOP LAMP REMOVAL <Hatchback>

1. Remove the high-mounted stop lamp cover.
2. Remove the plastic tape.
3. Disconnect the high-mounted stop lamp connector.
4. Remove the two bolts (A) and then remove the high-mounted stop lamp.

RHEOSTAT

54200060235

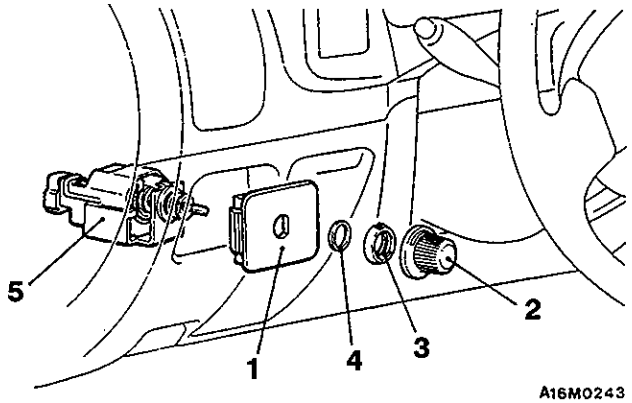
SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of switch garnish

RHEOSTAT

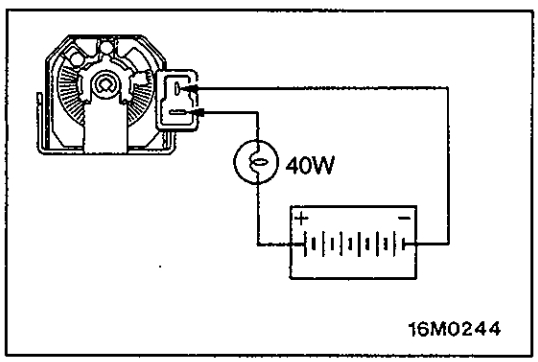
54200600062

REMOVAL AND INSTALLATION



Removal steps

1. Switch garnish
2. Knob
3. Ring nut
4. Plate
5. Rheostat



INSPECTION

54200610089

1. Connect the battery and the test bulb (40W) 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

54200060242

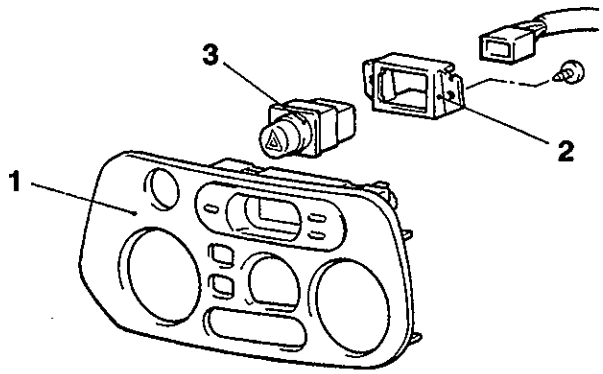
SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Heater control panel removal

HAZARD WARNING LAMP SWITCH

54200660060

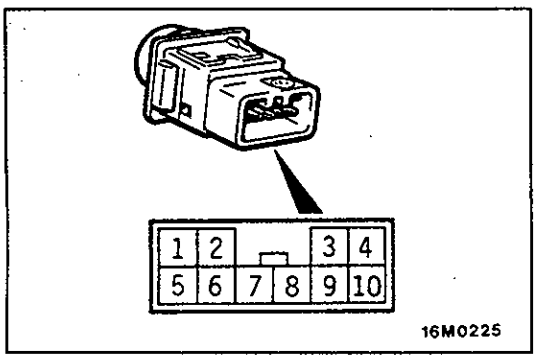
REMOVAL AND INSTALLATION



A16M0284

Removal steps

1. Heater control panel
2. Switch holder
3. Hazard warning lamp switch



16M0225

INSPECTION

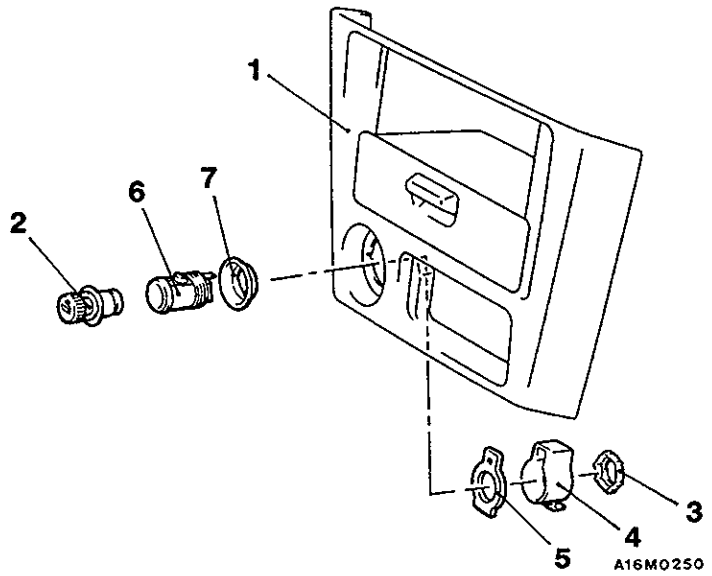
54200670087

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

CIGARETTE LIGHTER

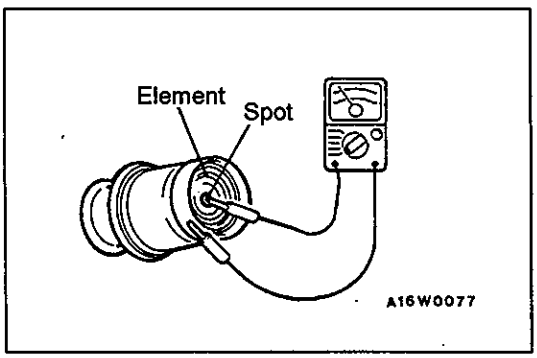
54300560073

REMOVAL AND INSTALLATION



Removal steps

1. Audio panel
2. Plug
3. Fixing ring
4. Socket case
5. Socket washer
6. Socket
7. Protector



INSPECTION

54300570083

- 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.

CLOCK

54300060184

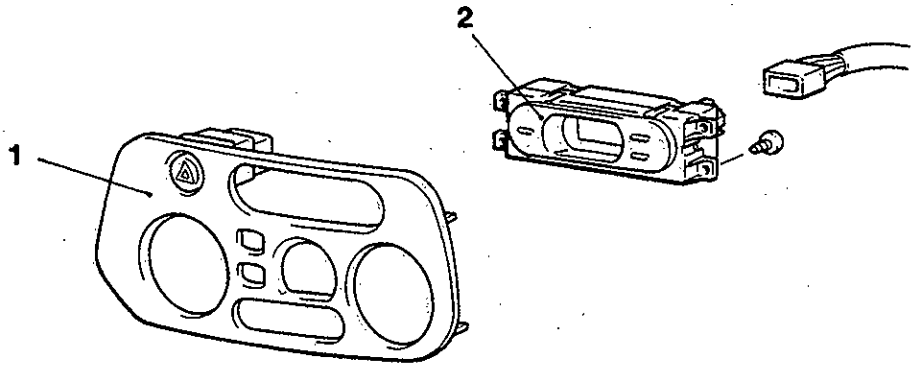
SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Heater control panel removal

CLOCK

54300590041

REMOVAL AND INSTALLATION



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Removal steps

1. Heater control panel
2. Clock

RADIO AND TAPE PLAYER

54400060033

SPECIAL TOOL

Tool	Number	Name	Use
	MB990784	Ornament remover	Audio panel removal

TROUBLESHOOTING

54400070128

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

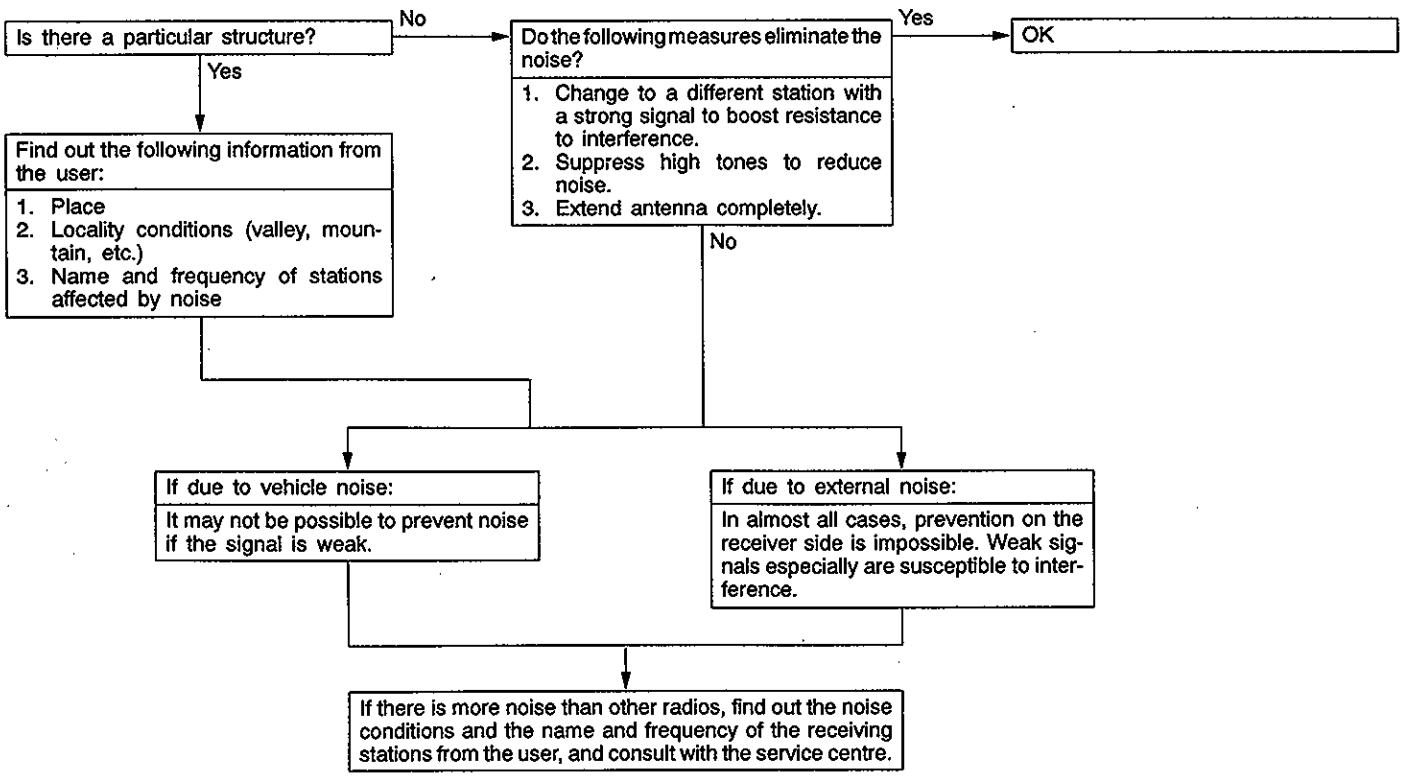
NOTE
Refer to problem symptoms of AM radio for MW radio.

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

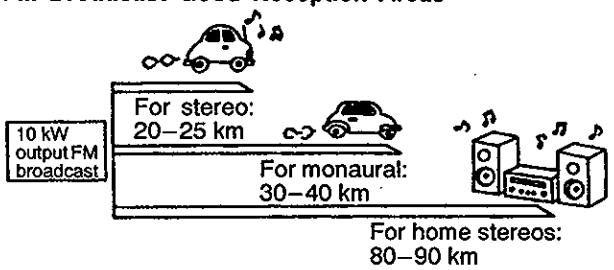
No ↓

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.

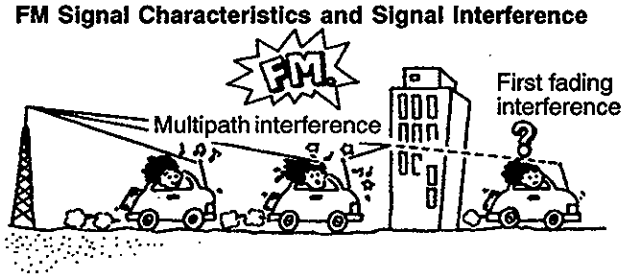
NOTE
About FM waves:
FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

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



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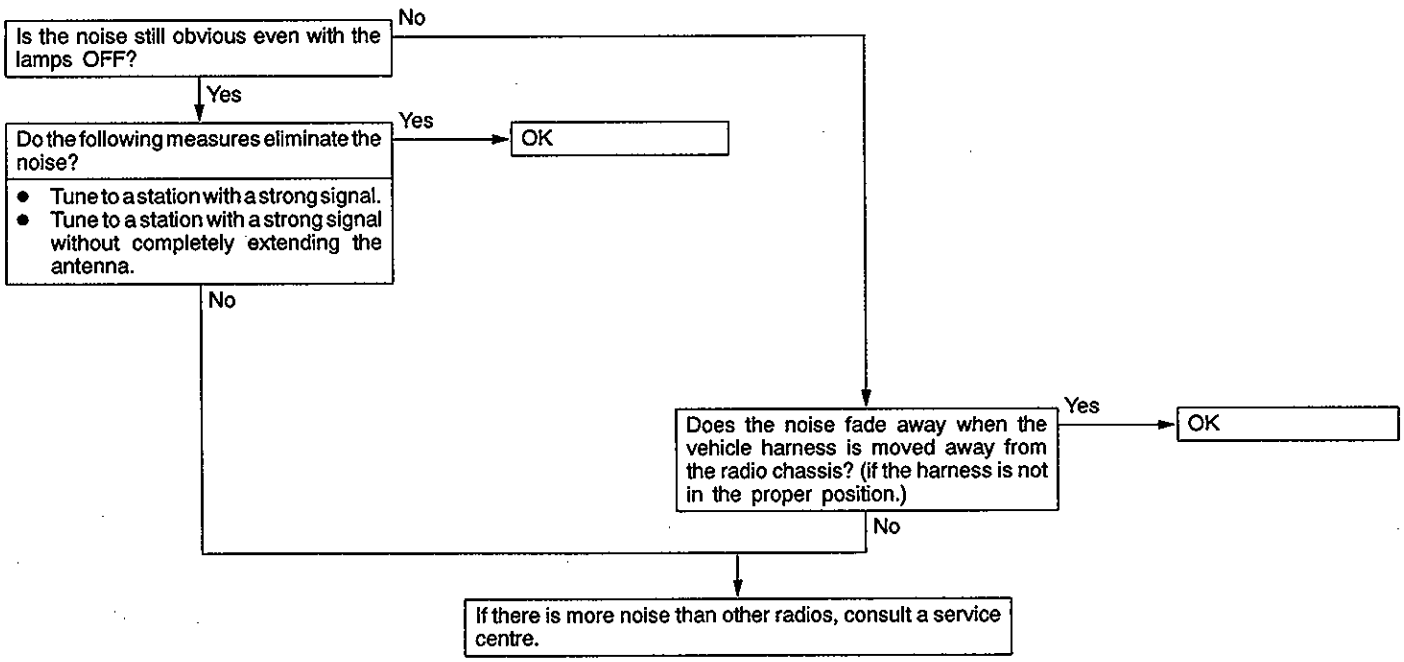
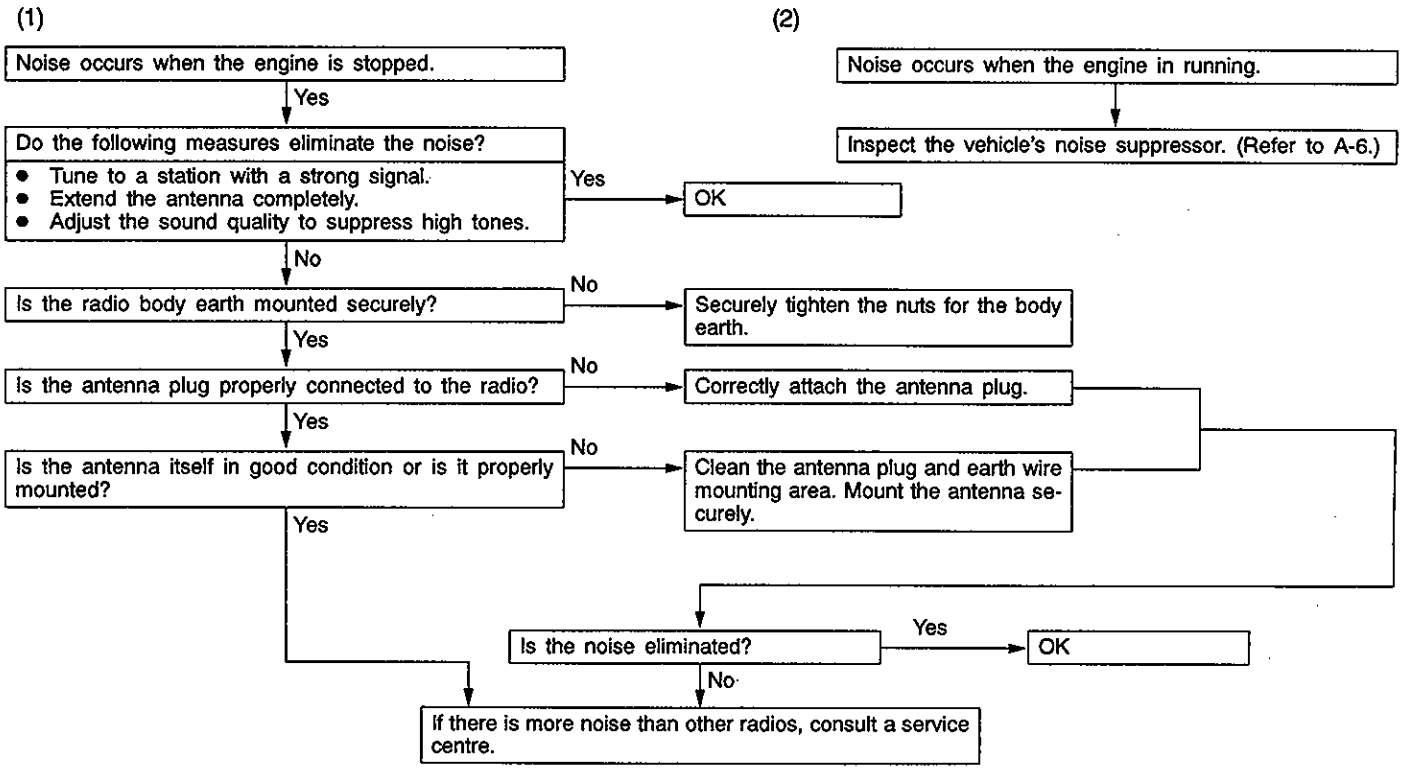
A–3 Mixed with noise, only at night (AM).

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.



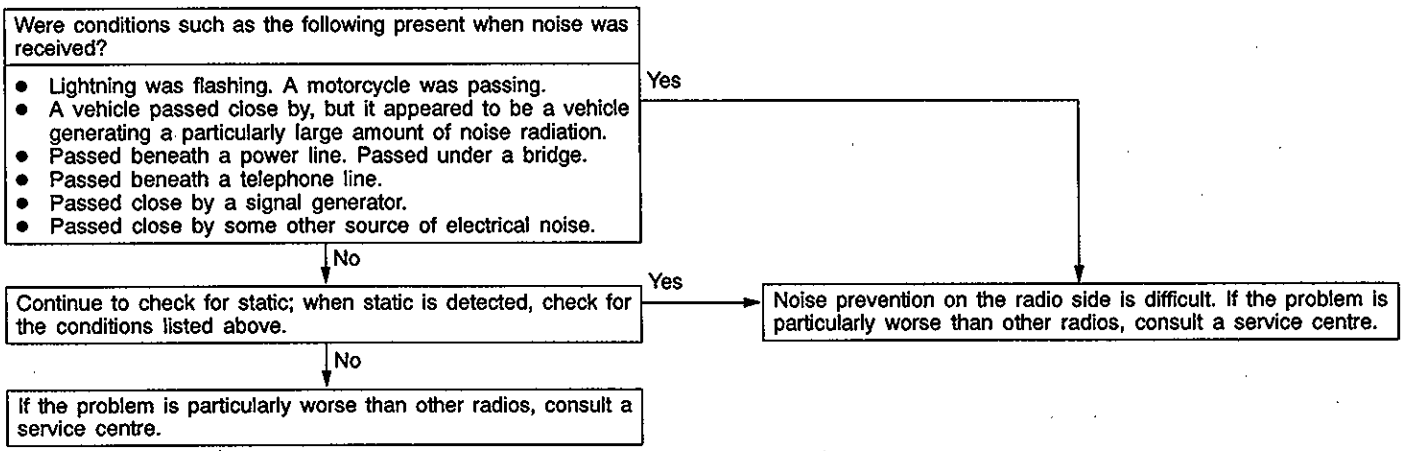
A-4 Broadcasts can be heard but both AM and FM have a lot of noise.



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. • Disappears when the ignition switch is turned to ACC.	• Mainly due to the spark plugs. • Due to the engine noise.	• Check or replace the earth cable. (Refer to Fig. 1 on P.54-61.) • Check or replace the noise capacitor.
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. • 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.

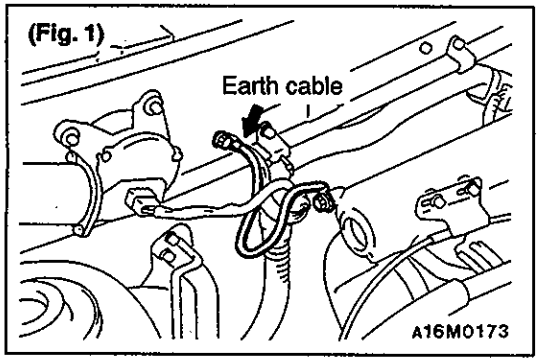
Caution

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)



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

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

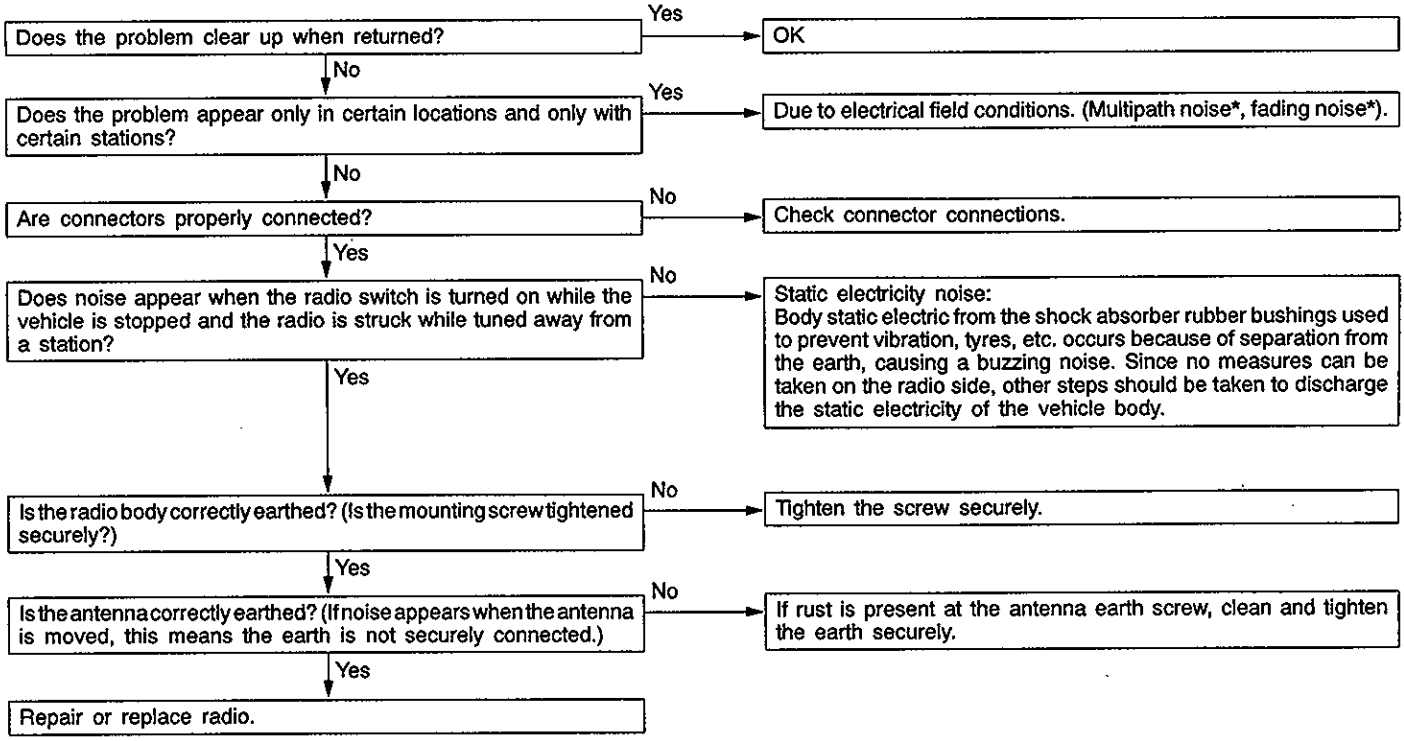
Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is struck while tuned away from a station?
- No → Static electricity noise: Body static electric from the shock absorber rubber bushings used to prevent vibration, tyres, etc. occurs because of separation 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.

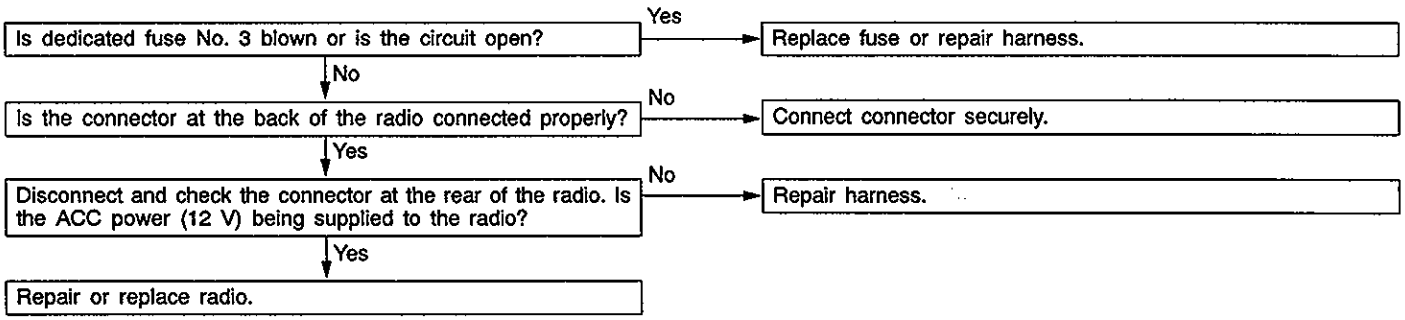
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

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

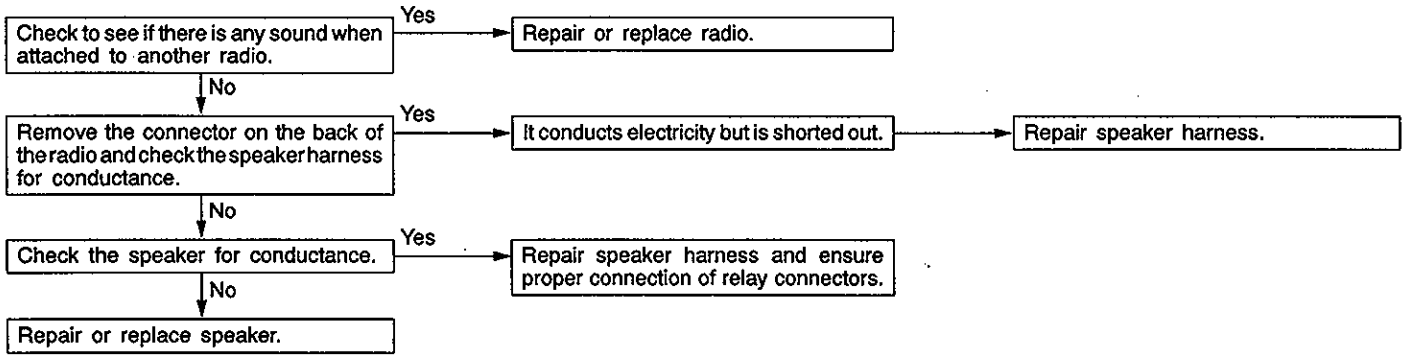
For this reason, if there are still problems with noise even after the measures described in steps A–1 to A–8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service centre.

B. RADIO

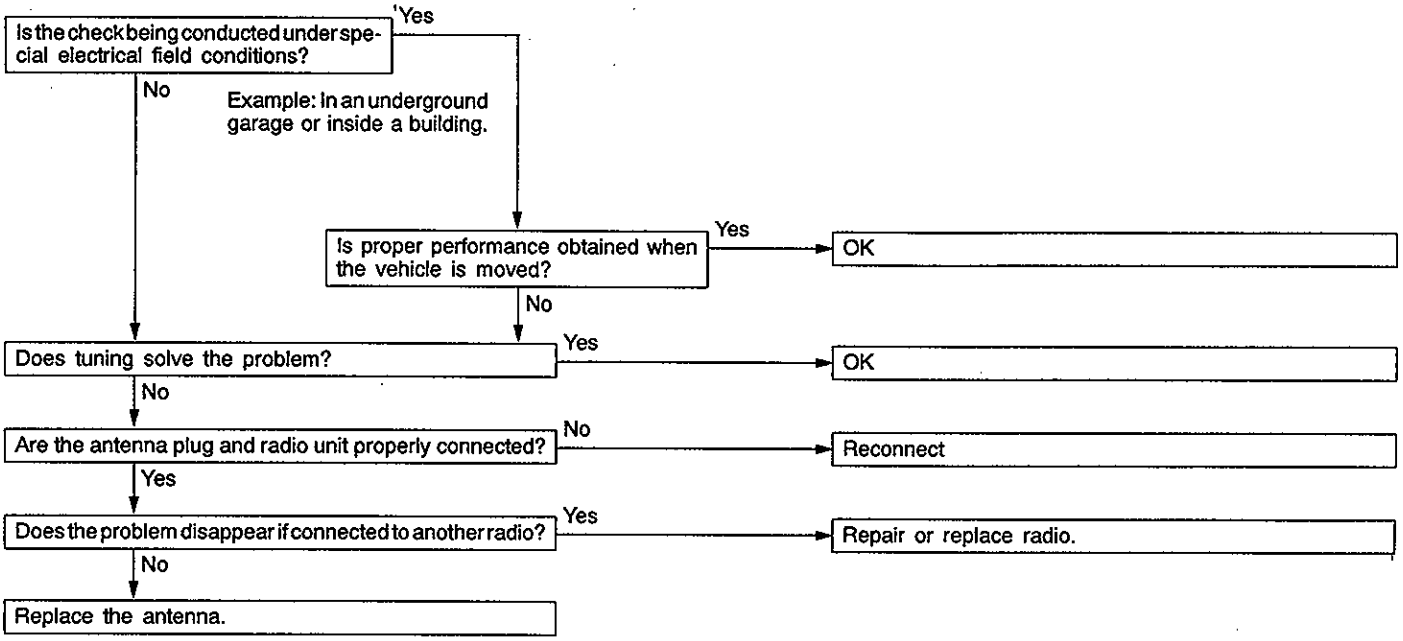
B–1 No power is supplied when the switch is set to ON.



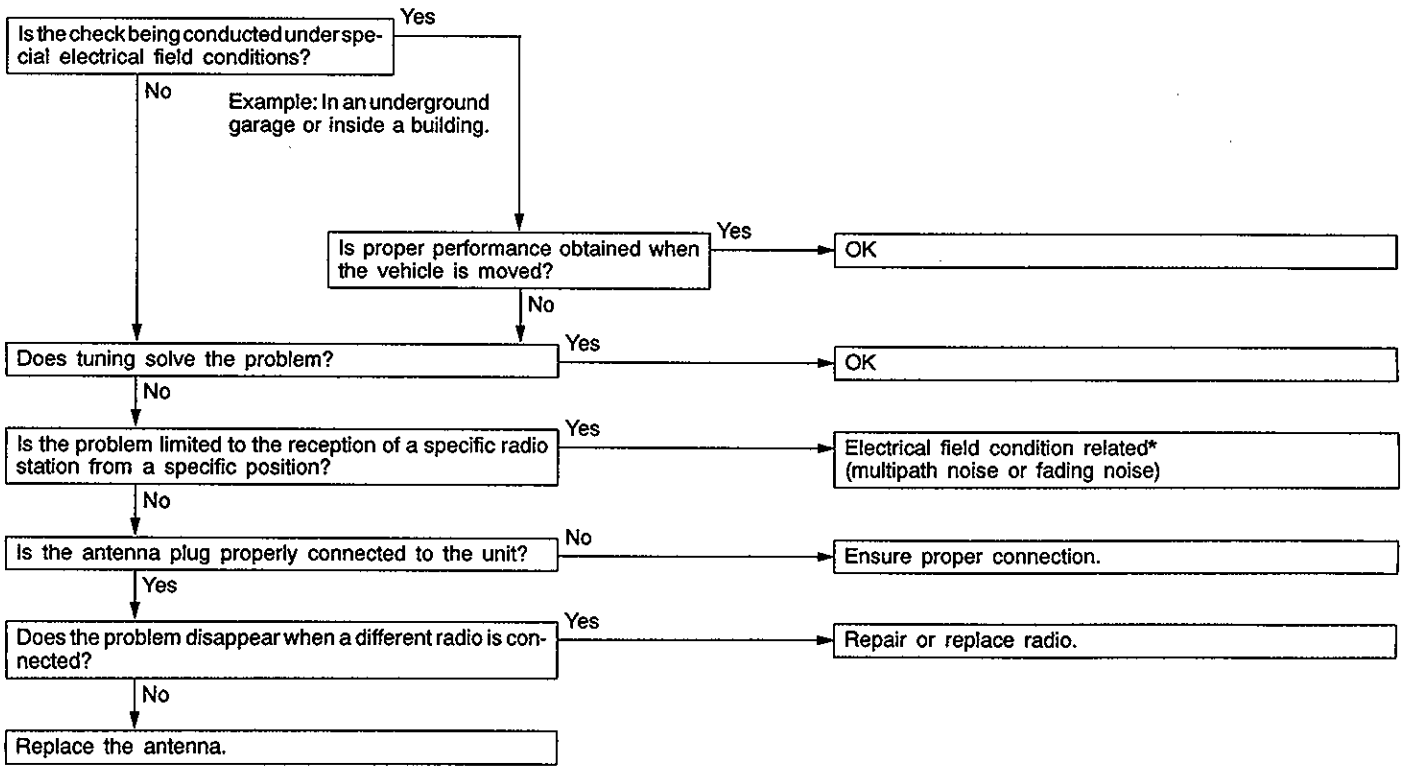
B–2 No sound from one speaker.



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

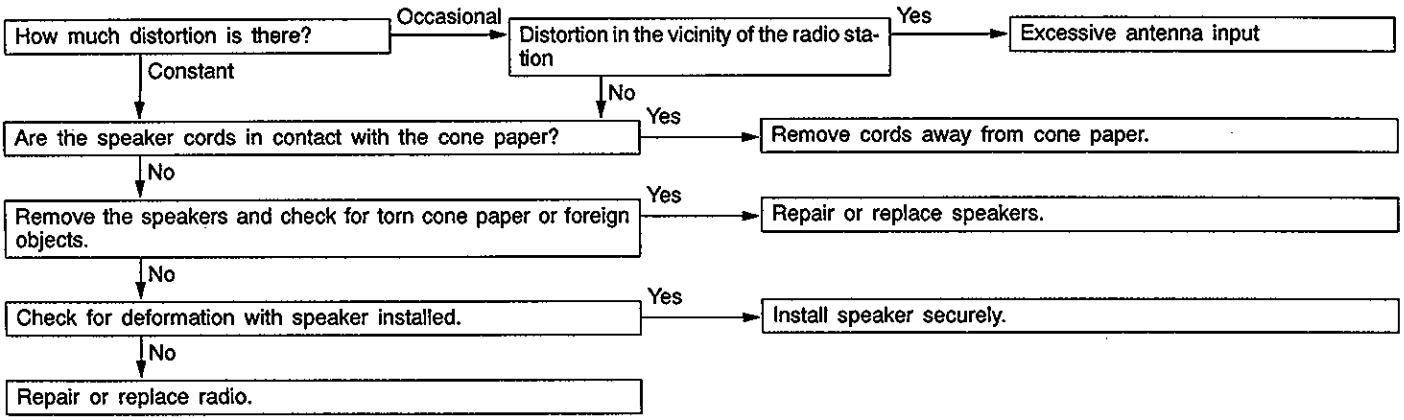


B–4 Insufficient sensitivity.

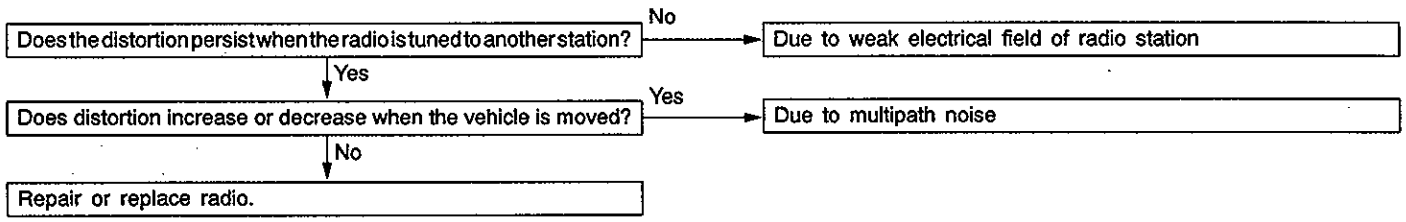


* For multipath noise and fading noise problems, refer to P. 54-55.

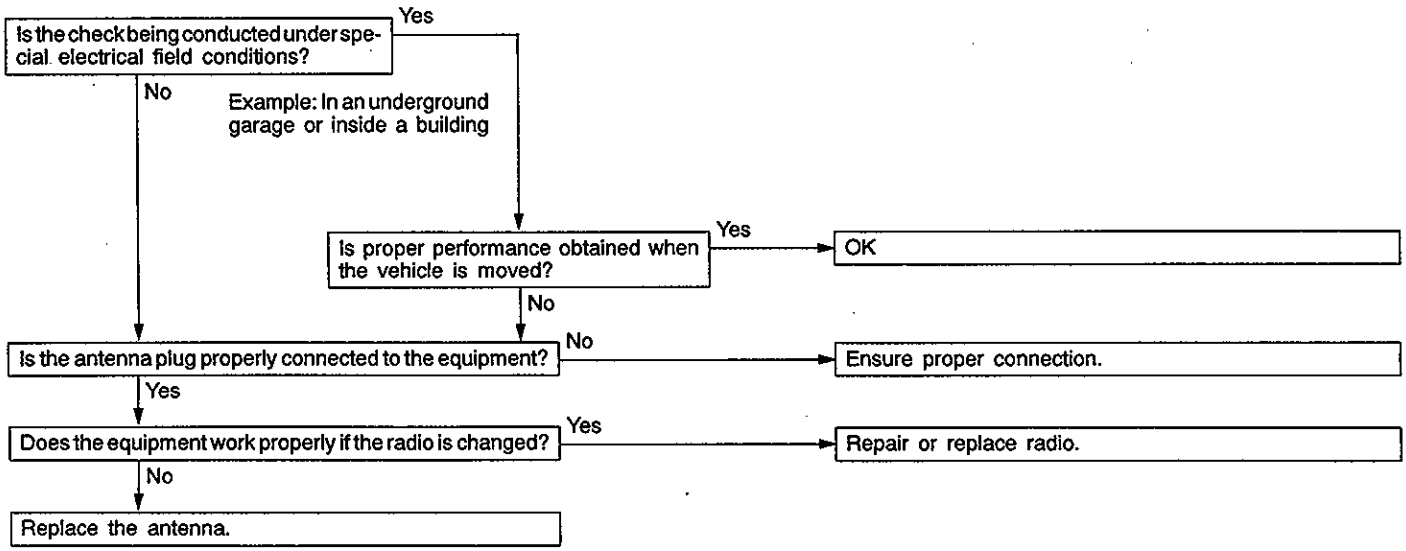
B–5 Distortion on AM or on both AM and FM.



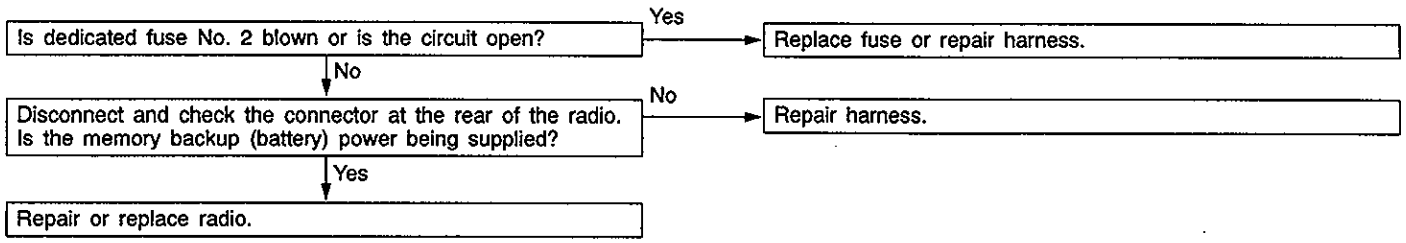
B–6 Distortion on FM only



B–7 Too few automatic select stations.

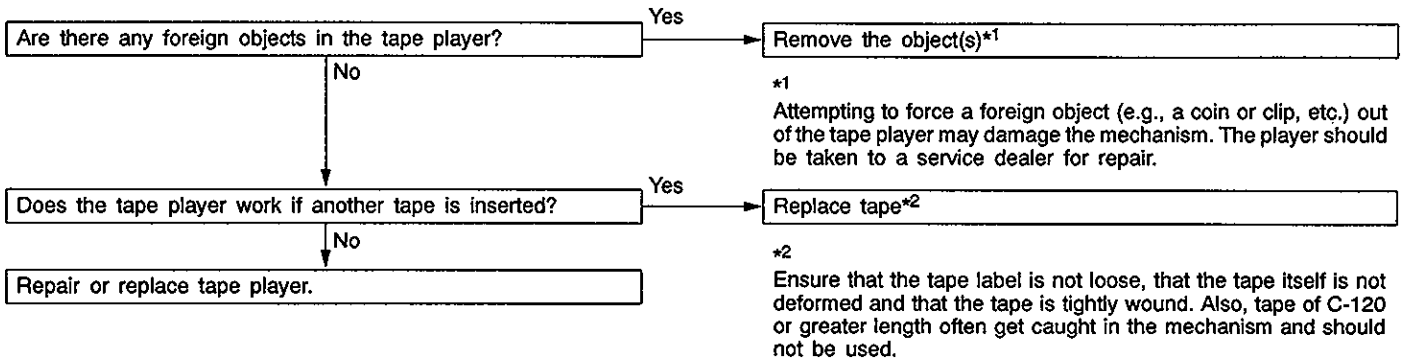


B–8 Insufficient memory (preset stations are erased).



C. TAPE PLAYER

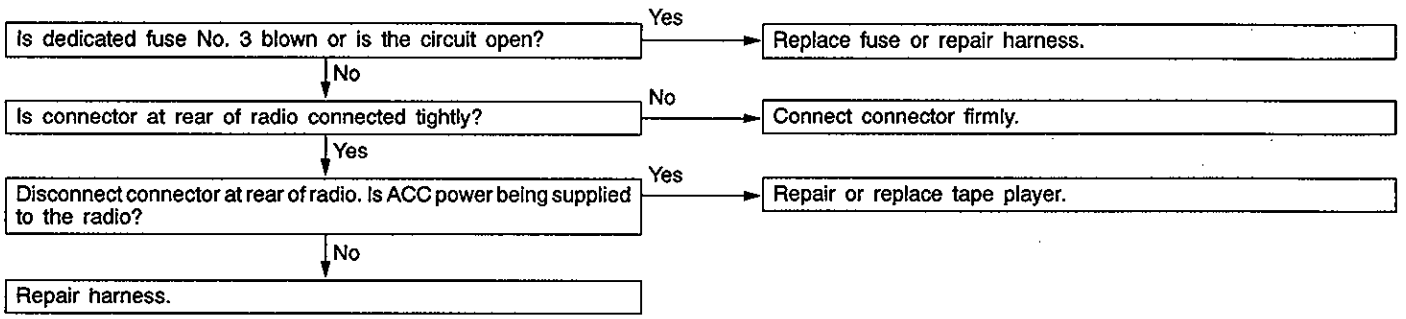
C–1 Cassette tape will not be inserted.



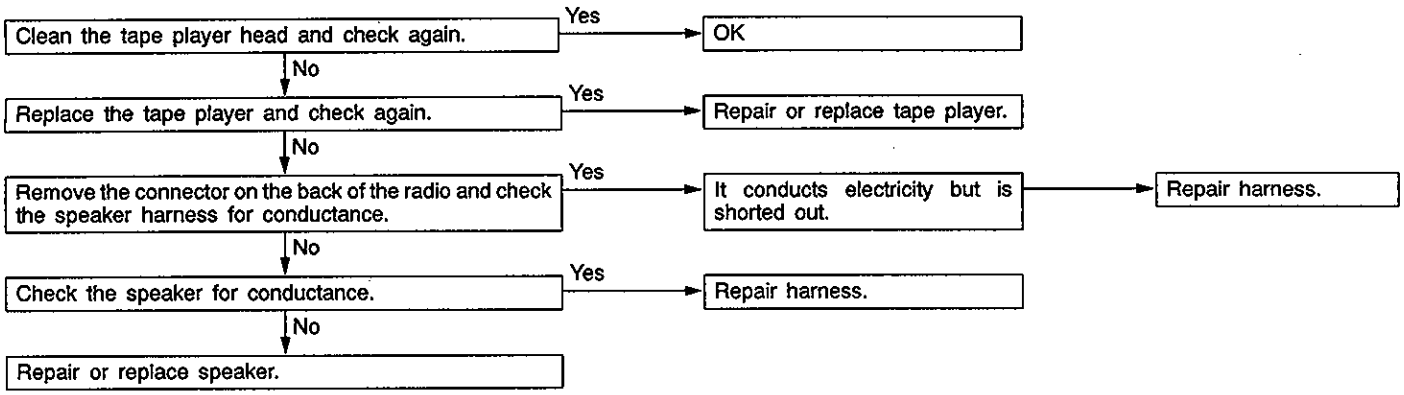
*1
Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the tape player may damage the mechanism. The player should be taken to a service dealer for repair.

*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.

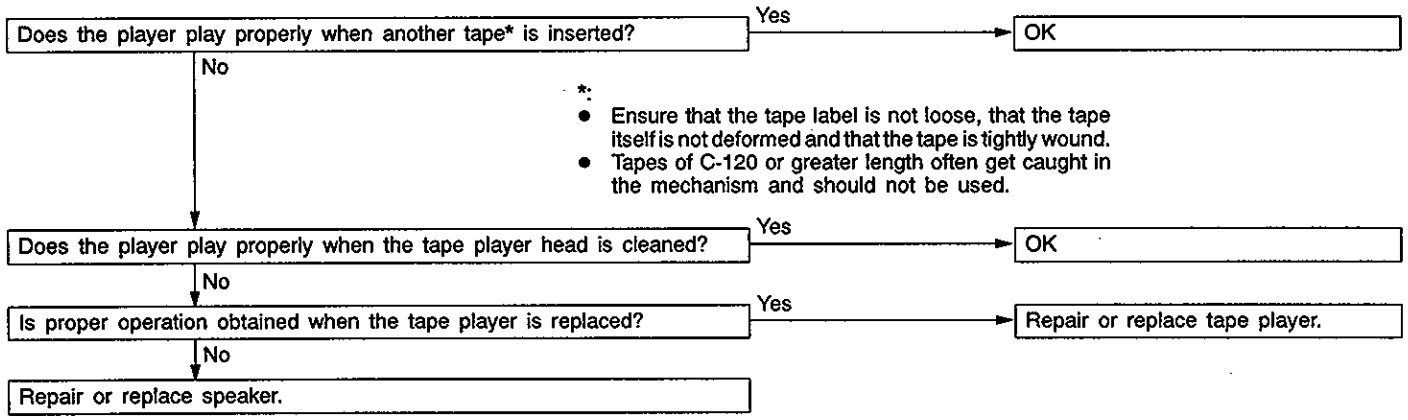
C–2 No sound (even after a tape has been inserted).



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

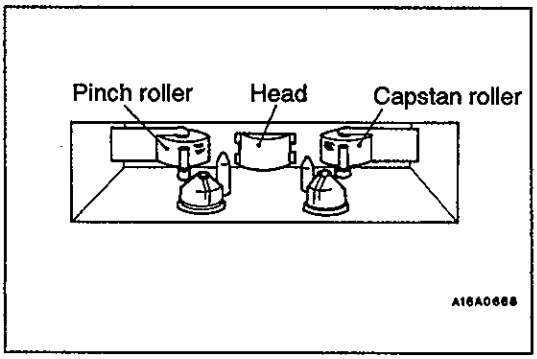
*1
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tape of C-120 or greater length often get caught in the mechanism and should not be used.

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.

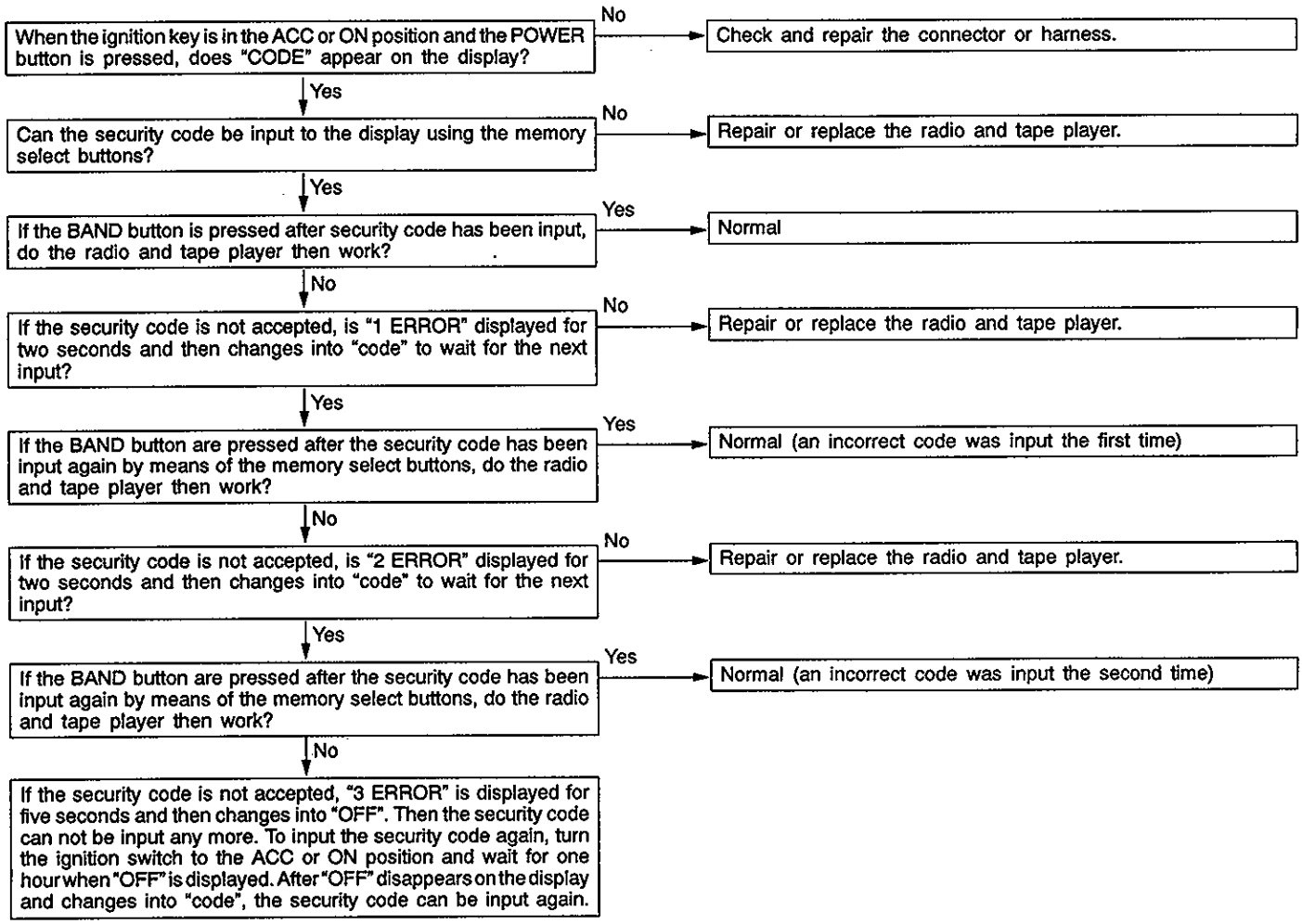
Does the player play OK if the tape*2 is changed?
- Yes → Tape used is bad.
- No → Repair or replace tape player.

*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.

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.



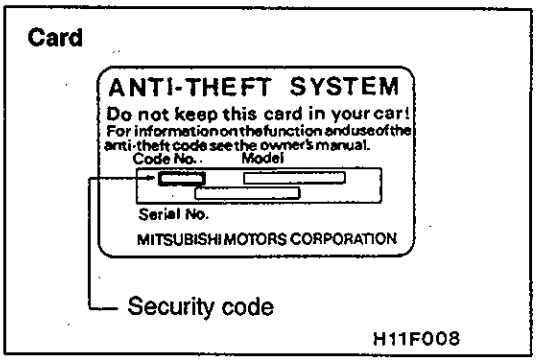
PROCEDURE FOR INPUT OF SECURITY CODE FOR RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

54400440035

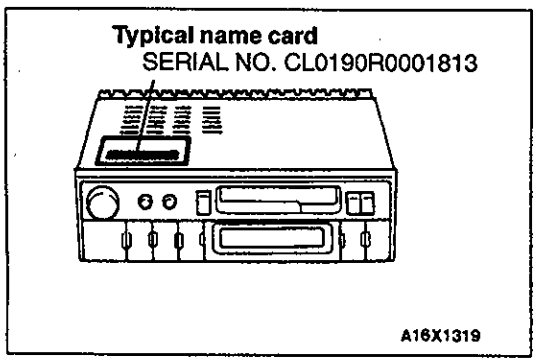
The radio and tape player does not work in the following states.

- 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.

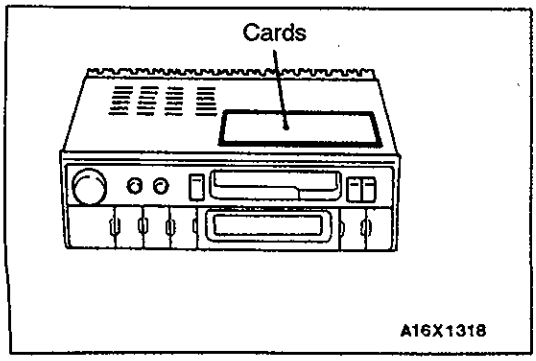
If the radio and tape player does not work for these causes, input the security code by the following procedure.



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

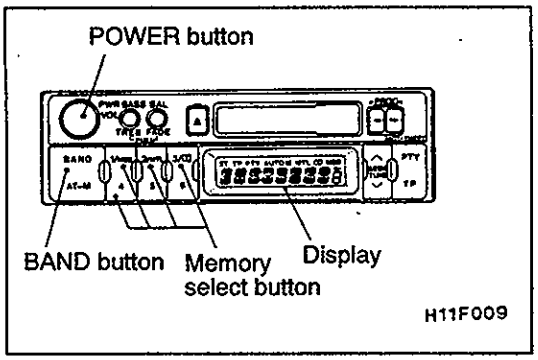


   (2) If the security code is unknown owing to the user's loss of the card:
      a. Remove the radio and tape player, referring to P.54-73.
      b. Read the serial No. stamped on the radio and tape player.
      c. Look up the security code (anti-theft code table) corresponding to the serial number, or ask the authorized Mitsubishi dealer.

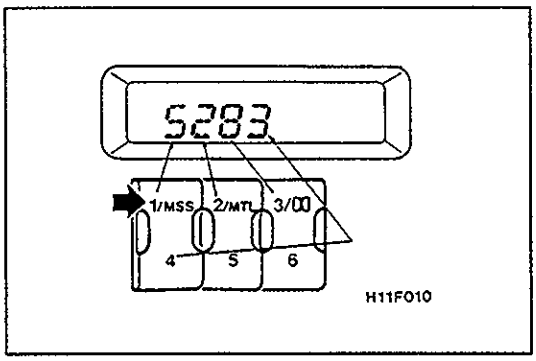


   (3) When the radio and tape player is replaced:
   Read the security code on the cards attached to the upper surface of the replacement radio and tape player.

NOTE
Deliver the two cards to the user.

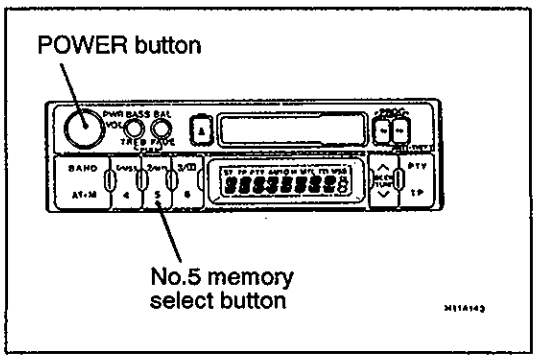


2. Return the power supply from the battery to the normal condition.
3. Turn the ignition key to the "ACC" or "ON" position.
4. Press the POWER button, and "CODE" will be displayed.



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

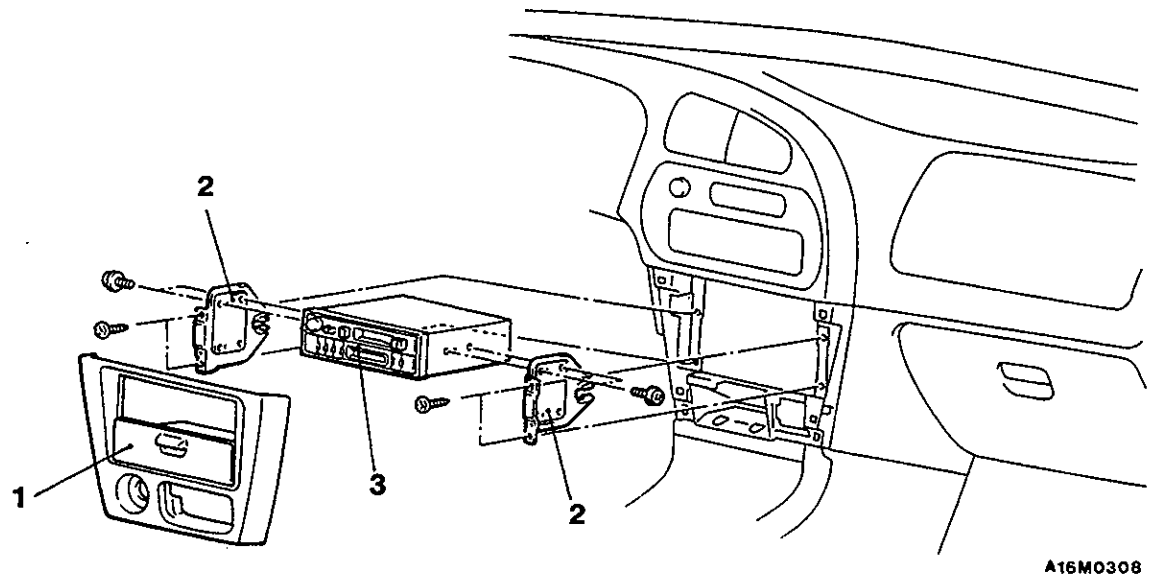
To facilitate replacement or check, the radio and tape player can be operated for five minutes without inputting the security code.

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

54400140041

REMOVAL AND INSTALLATION



Removal steps

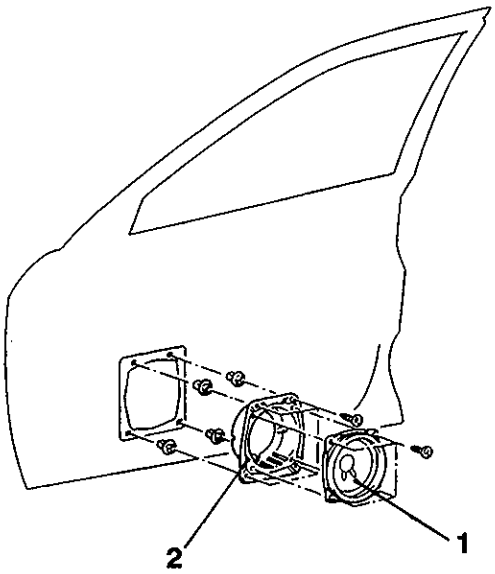
1. Audio panel
2. Radio bracket
3. Radio and tape player

SPEAKER

54400260143

REMOVAL AND INSTALLATION

<FRONT SPEAKER>



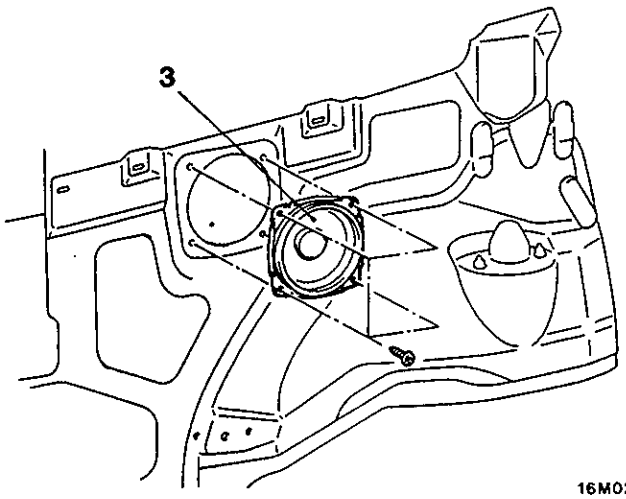
A16M0309

Removal steps

- Front door trim (Refer to GROUP 42.)

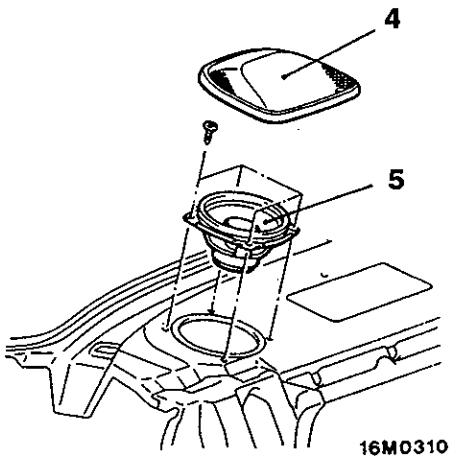
1. Front speaker
2. Speaker cover

<REAR SPEAKER – HATCHBACK>



16M0252

<REAR SPEAKER – SEDAN>



16M0310
00004585

Removal steps

<Hatchback>

- Quarter trim (Refer to GROUP 52A – Trims.)

3. Rear speaker

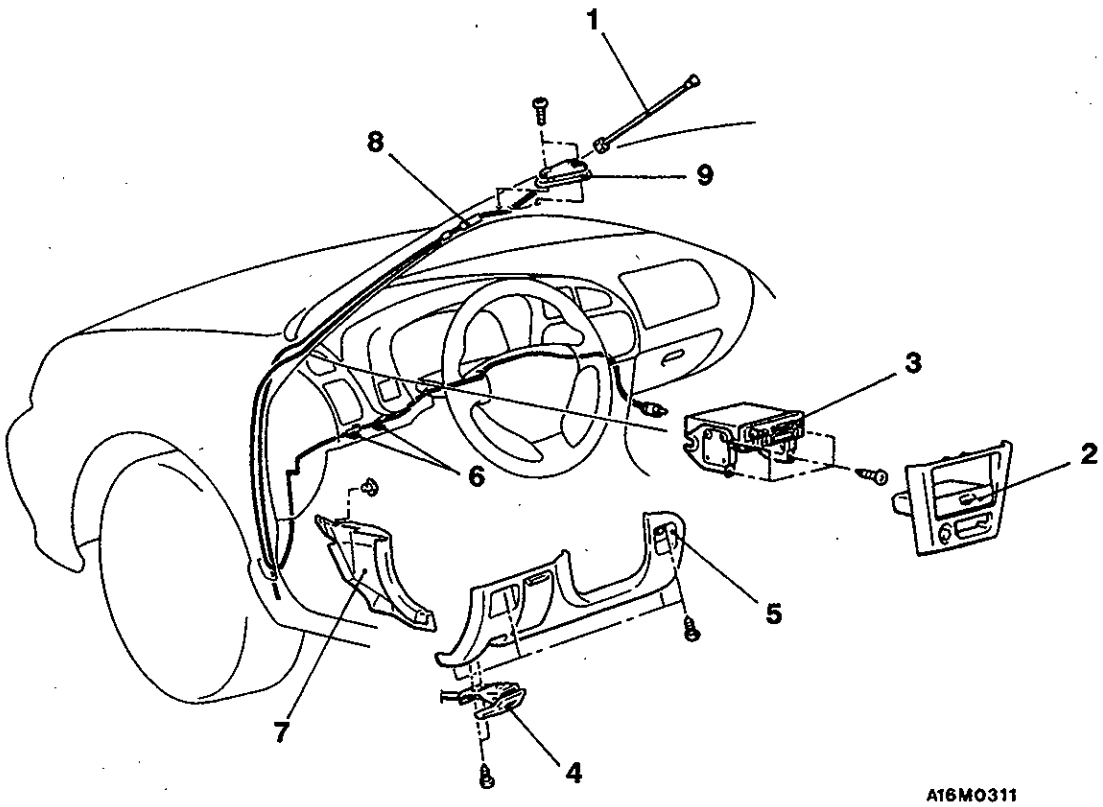
<Sedan>

4. Rear speaker garnish
5. Rear speaker

ANTENNA

54400290098

REMOVAL AND INSTALLATION

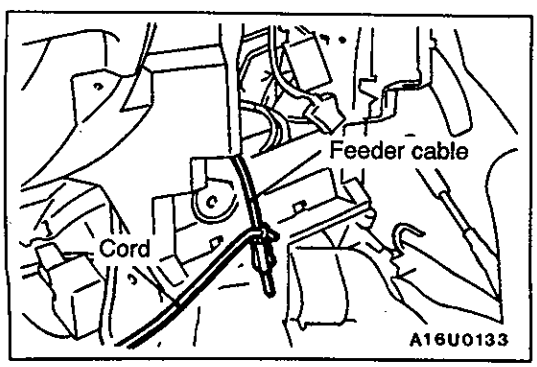


Removal steps

1. Antenna rod
2. Audio panel
3. Radio and tape player assembly
4. Hood lock release handle
5. Driver side lower cover
6. Clip
7. Cowl side trim

◀A▶ 8. Antenna assembly

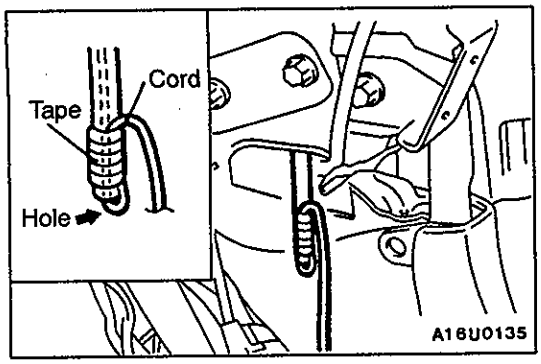
9. Antenna base gasket



REMOVAL SERVICE POINT

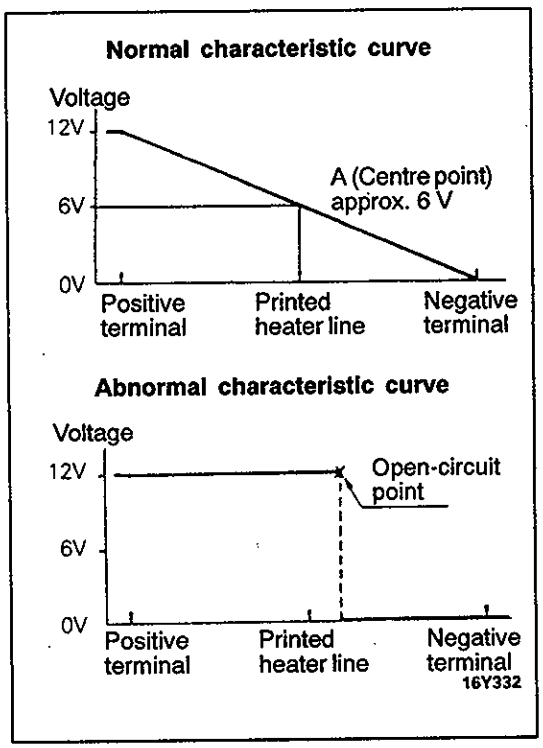
◀A▶ ANTENNA BASE REMOVAL

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

54300180033

ON-VEHICLE SERVICE

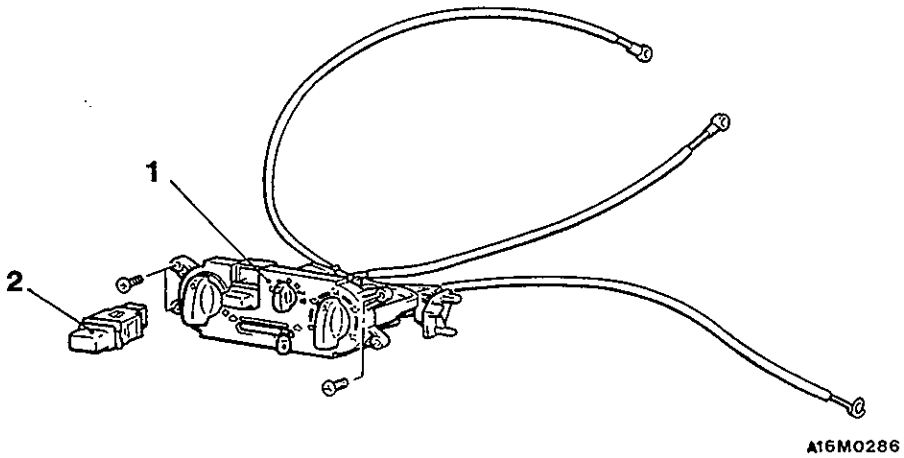
PRINTED-HEATER LINE CHECK

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

54300620061

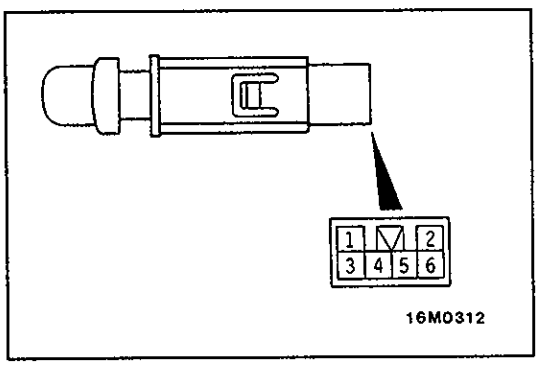
REMOVAL AND INSTALLATION



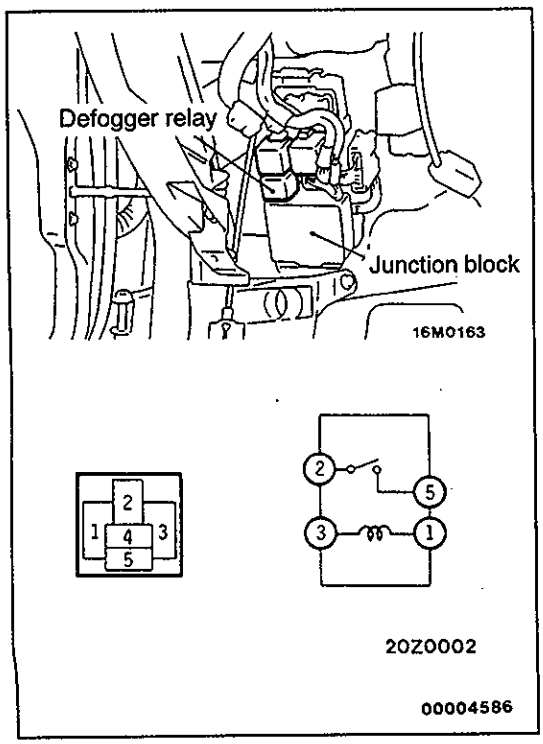
A16M0286

Removal steps

1. Heater control assembly (Refer to GROUP 55.)
2. Rear window defogger switch



16M0312



00004586

INSPECTION

54300670059

DEFOGGER SWITCH CONTINUITY CHECK

Switch position	Terminal No.						
	1		3	2	4		5
OFF		ILL					
ON		ILL				IND	

REAR WINDOW DEFOGGER RELAY CONTINUITY CHECK

54300680076

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

NOTES