

CHASSIS ELECTRICAL

CONTENTS

5410900037

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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: 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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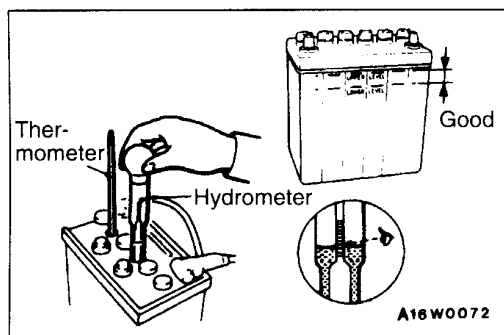
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BATTERY

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

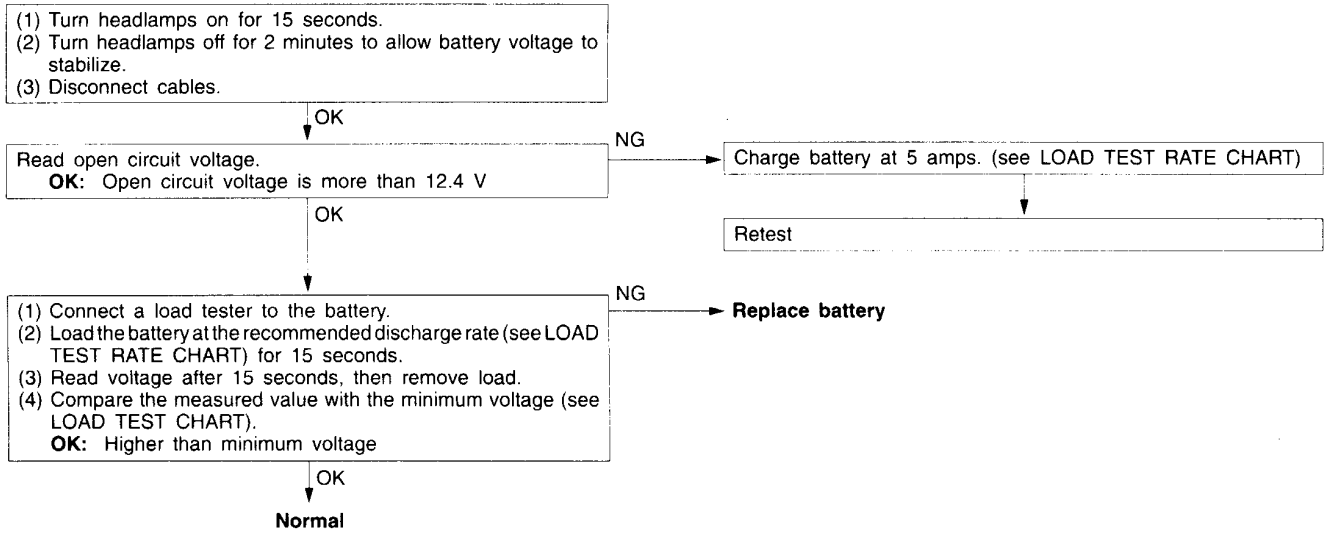
1. When charging a battery while still installed in the vehicle, disconnect the battery cables to prevent damage to electrical parts.
2. The current normally used for charging a battery should be approximately 1/10th of the battery capacity.
3. When performing a quick-charging due to lack of time, etc.,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

TEST STEP



LOAD TEST RATE CHART

Battery type	55530 or 55559	56216 or 56219	56332 or 56638
Charging time when fully discharged h [5-amp rated current charging]	10	11	11
Load test (Amps)	170	210	210

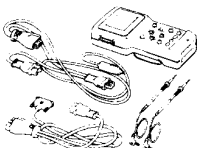
LOAD TEST CHART

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

5430060092

SPECIAL TOOL

Tool	Number	Name	Use
	MB991502	MUT-II sub assembly	<ul style="list-style-type: none"> • Immobilizer system check (Diagnosis display using the MUT-II) • Registration of the ID code

TROUBLESHOOTING

5430070057

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**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

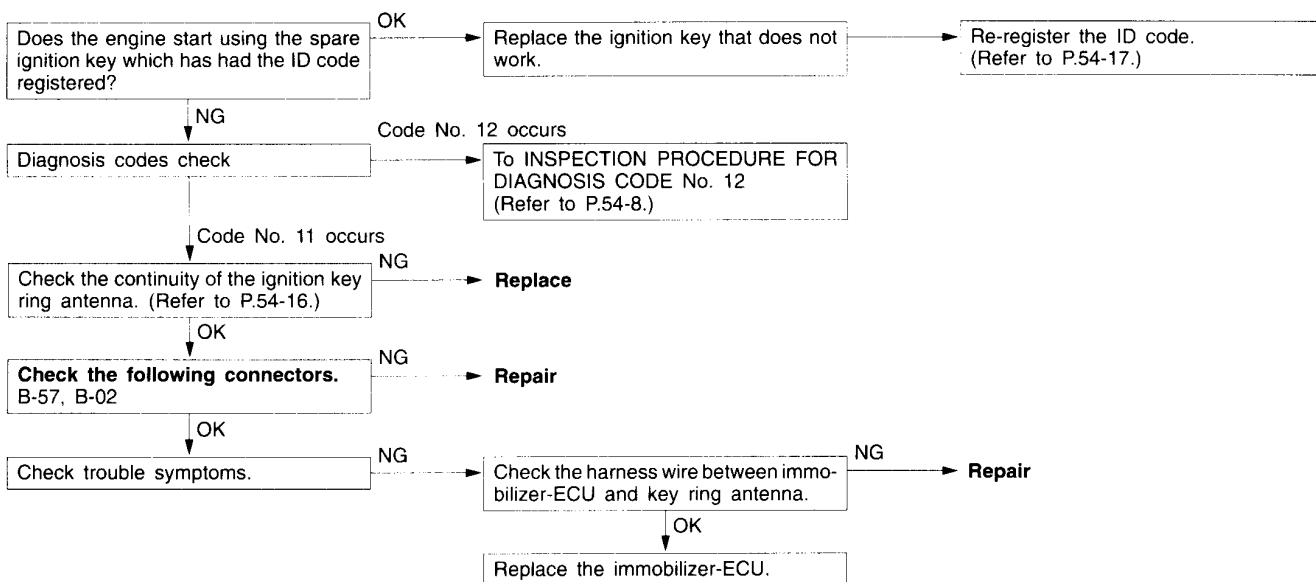
Diagnosis code No.	Inspection items	Reference page
11	Transponder communication system	54-8
12*	ID code are not the same or are not registered	54-8
21	Communication system between MUT-II and engine-ECU	54-9
31	EEPROM abnormality inside immobilizer-ECU	54-9
32	Ignition switch IG signal circuit system	54-10

NOTE

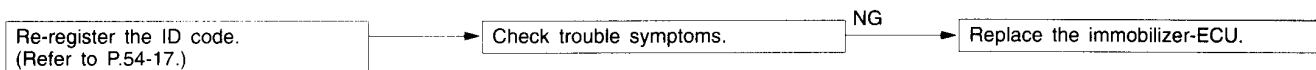
*: Diagnosis code No. 12 is not recorded.

INSPECTION PROCEDURE FOR DIAGNOSIS CODES

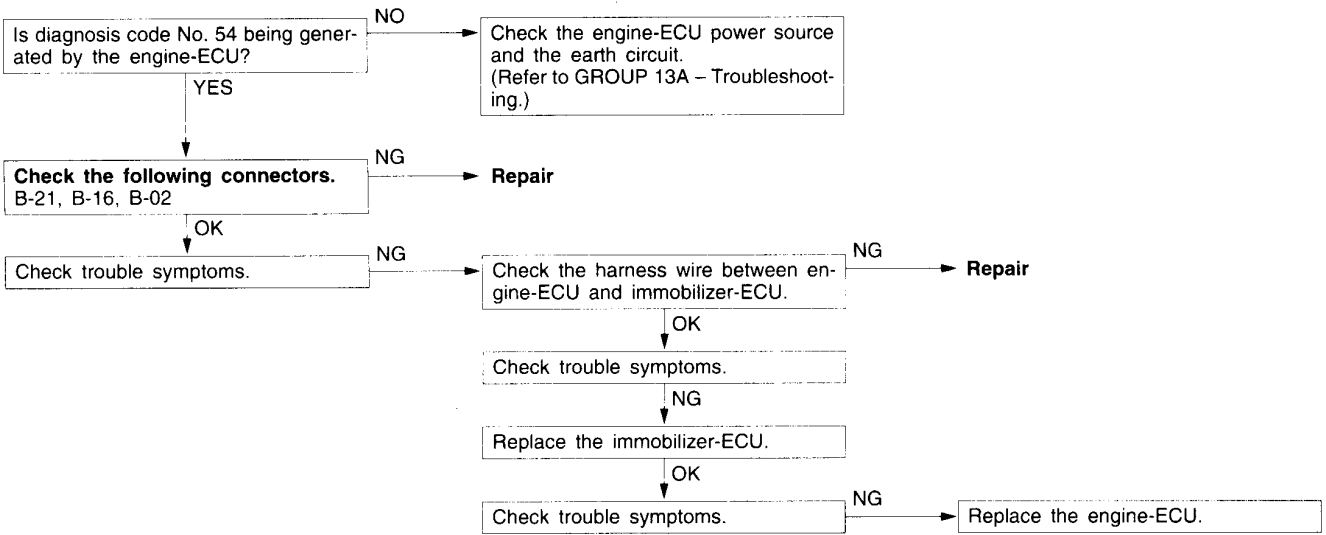
Code No. 11 Transponder communication system	Probable cause
The ID code of the transponder is not sent to the immobilizer-ECU immediately after the ignition switch is turned to the ON position.	<ul style="list-style-type: none"> ● Malfunction of the transponder ● Malfunction of the ignition key ring antenna ● Malfunction of harness or connector ● Malfunction of the immobilizer-ECU



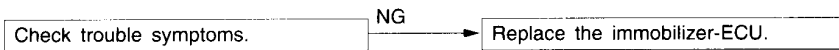
Code No. 12 ID code are not the same or are not registered	Probable cause
The ID code which is sent from the transponder is not the same as the ID code which is registered in the immobilizer-ECU.	<ul style="list-style-type: none"> ● The ID code in the ignition key being used has not been properly registered. ● 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.	<ul style="list-style-type: none"> ● Malfunction of harness or connector ● Malfunction of the engine-ECU ● Malfunction of the immobilizer-ECU

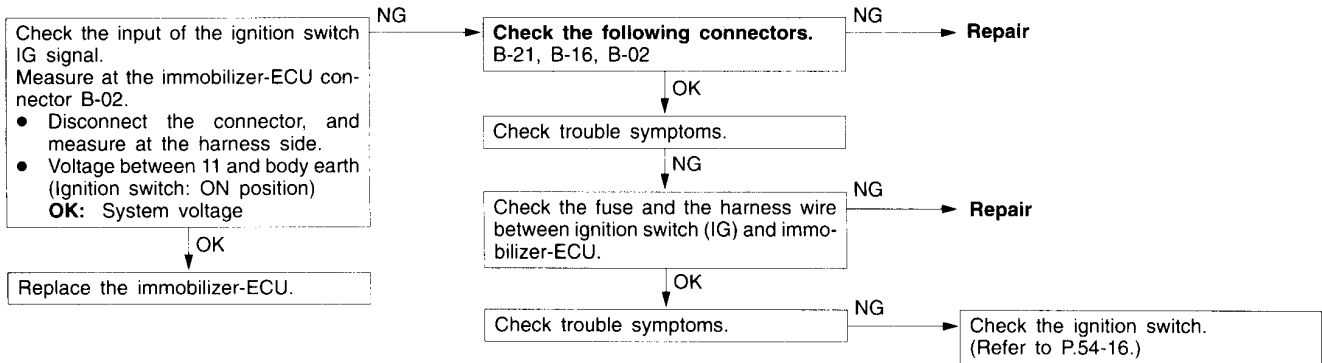


Code No. 31 EEPROM abnormality inside immobilizer-ECU	Probable cause
No data has been written to the EEPROM inside the immobilizer-ECU.	<ul style="list-style-type: none"> ● Malfunction of the immobilizer-ECU



54-10 CHASSIS ELECTRICAL – Ignition Switch and Immobilizer System

Code No. 32 Ignition switch IG signal circuit system	Probable cause
The ignition switch signal is not being input to the immobilizer-ECU.	<ul style="list-style-type: none"> • Malfunction of harness or connector • Malfunction of the ignition switch • Malfunction of the immobilizer-ECU



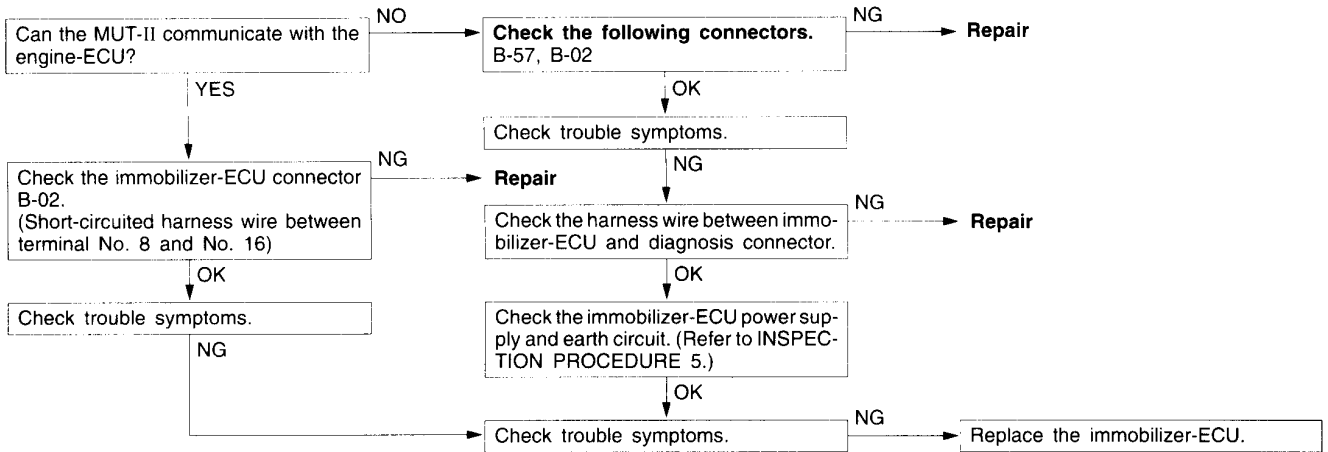
INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure No.	Reference page
Communication with MUT-II is impossible.	1	54-11
Diagnosis code No. 54 has been generated by the engine-ECU.	2	54-12
ID code cannot be registered using the MUT-II.	3	54-12
Engine does not start (Cranking but no initial combustion).	4	54-13
Malfunction of the immobilizer-ECU power source and earth circuit	5	54-14

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

Inspection Procedure 1

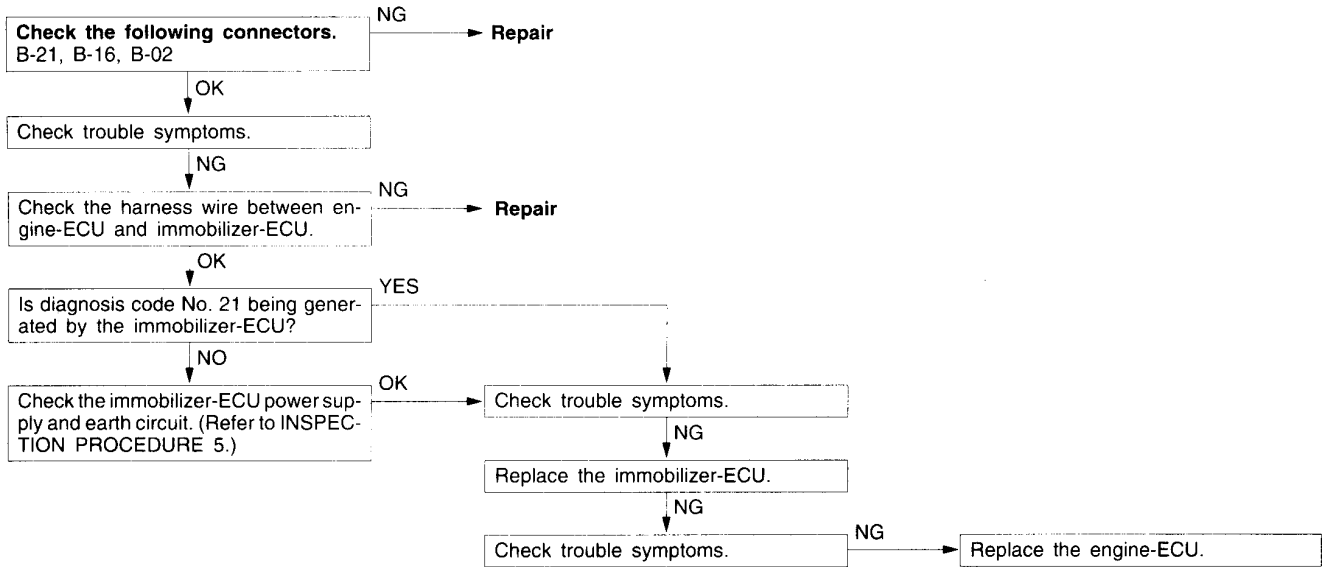
Communication with MUT-II is impossible.	Probable cause
The cause is probably that a malfunction of the diagnosis line or the immobilizer-ECU is not functioning.	<ul style="list-style-type: none"> ● Malfunction of the diagnosis line ● Malfunction of harness or connector ● Malfunction of the immobilizer



54-12 CHASSIS ELECTRICAL – Ignition Switch and Immobilizer System

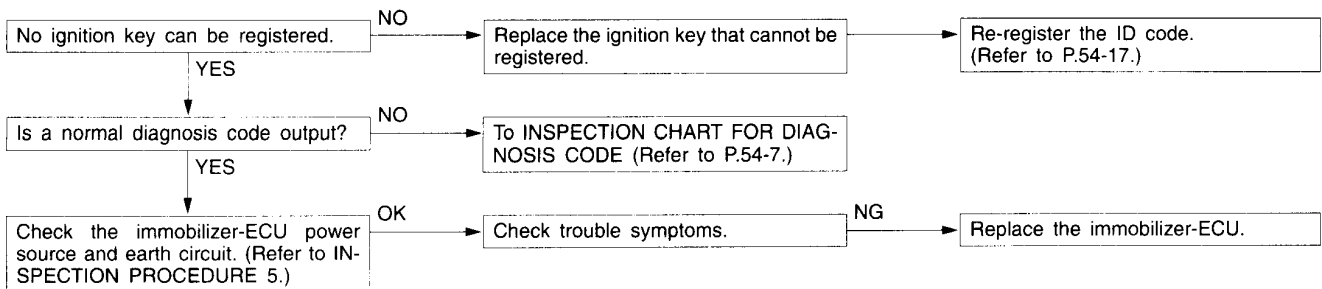
Inspection Procedure 2

Diagnosis code No. 54 has been generated by the engine-ECU.	Probable cause
There is a problem with communication between the engine-ECU and the immobilizer-ECU.	<ul style="list-style-type: none"> ● Malfunction of harness or connector ● Malfunction of the immobilizer-ECU ● Malfunction of the engine-ECU



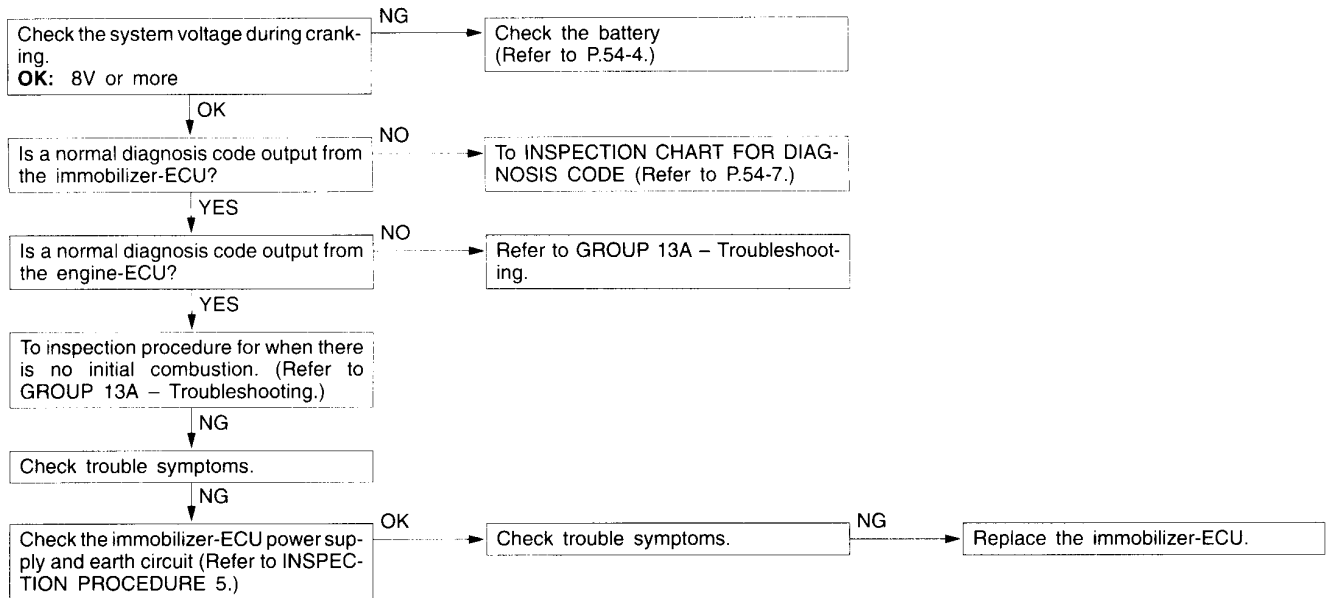
Inspection Procedure 3

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.	<ul style="list-style-type: none"> ● Malfunction of the transponder ● Malfunction of the ignition key ring antenna ● Malfunction of harness or connector ● Malfunction of the immobilizer-ECU



Inspection Procedure 4

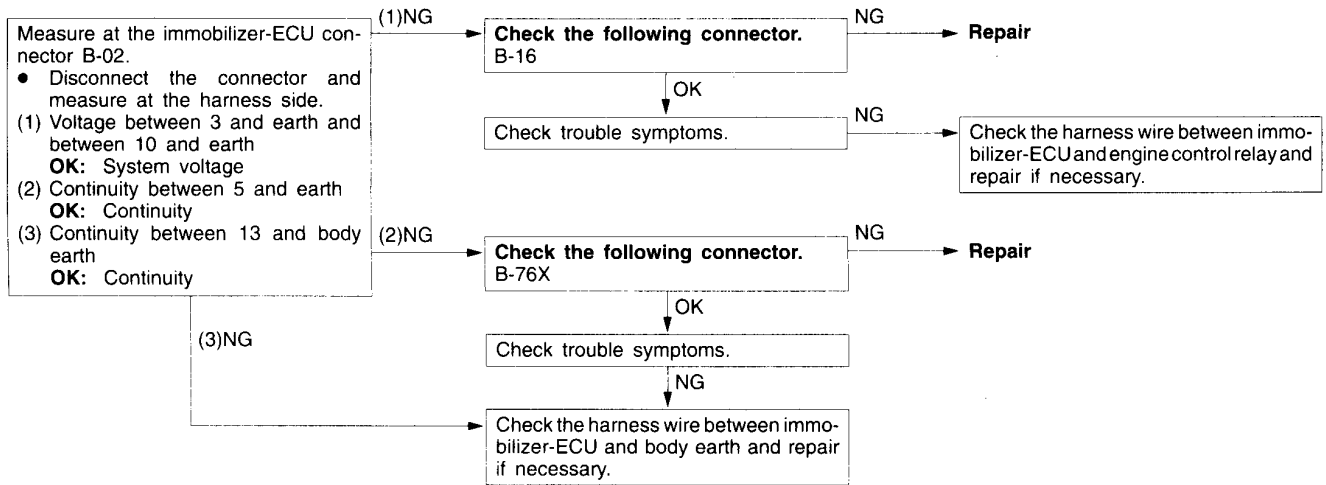
Engine does not start (cranking but no initial combustion).	Probable cause
If the fuel injectors are not operating, there might be a problem with the MPI system in addition to a malfunction of the immobilizer system. It is normal for this to occur if an attempt is made to start the engine using a key that has not been properly registered.	<ul style="list-style-type: none"> ● Malfunction of the MPI system ● Malfunction of the immobilizer-ECU



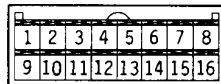
54-14 CHASSIS ELECTRICAL – Ignition Switch and Immobilizer System

Inspection Procedure 5

Malfunction of the immobilizer-ECU power supply and earth circuit



CHECK AT IMMOBILIZER-ECU TERMINAL VOLTAGE CHECK CHART



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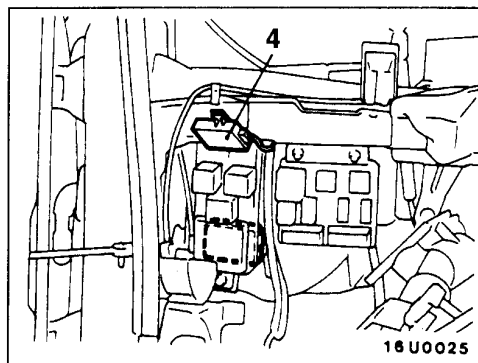
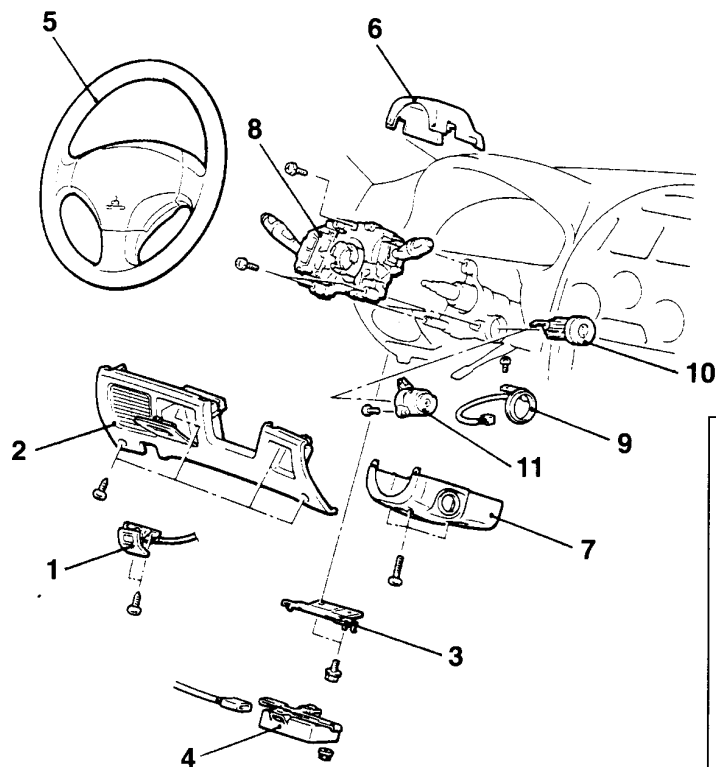
Terminal No.	Signal	Checking requirements	Terminal voltage
3	Immobilizer-ECU power supply	Ignition switch: ON	System voltage
5	Immobilizer-ECU earth	Always	0V
10	Immobilizer-ECU power supply	Ignition switch: ON	System voltage
11	Ignition switch-IG	Ignition switch: OFF	0V
		Ignition switch: ON	System voltage
13	Immobilizer-ECU earth	Always	0V

IGNITION SWITCH AND IMMOBILIZER SYSTEM

54300210039

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.



16U0116

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Immobilizer-ECU removal steps

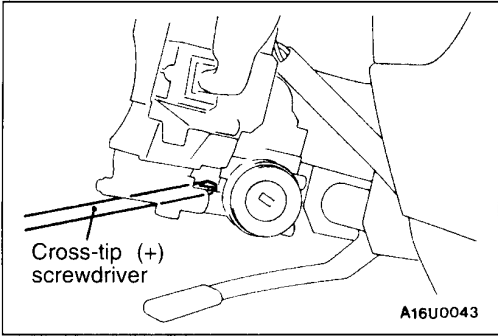
1. Hood lock release handle
2. Instrument under cover (Refer to GROUP 52A – Instrument Panel.)
3. Bracket
4. Immobilizer-ECU

Ignition switch and ignition key ring antenna removal steps

1. Hood lock release handle
2. Instrument under cover (Refer to GROUP 52A – Instrument Panel.)
3. Bracket
4. Immobilizer-ECU
5. Steering wheel (Refer to GROUP 37A.)
6. Column cover, upper
7. Column cover, lower
8. Column switch (Refer to GROUP 37A – Steering Wheel and Shaft.)
9. Ignition key ring antenna
10. Steering lock cylinder
11. Ignition switch



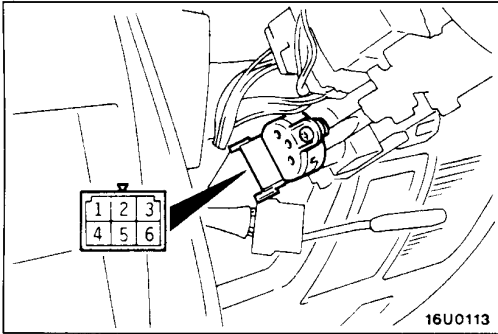
54-16 CHASSIS ELECTRICAL – Ignition Switch and Immobilizer System



REMOVAL SERVICE POINTS

◀▶ 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.



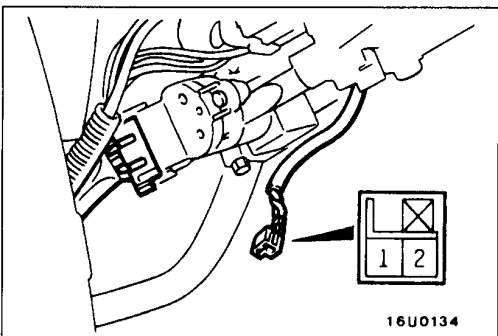
INSPECTION

54300220032

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	4	5	6
LOCK						
ACC	○					○
ON	○	○		○		○
START	○	○	○		○	



IGNITION KEY RING ANTENNA CONTINUITY CHECK

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

ID CODE REGISTRATION METHOD

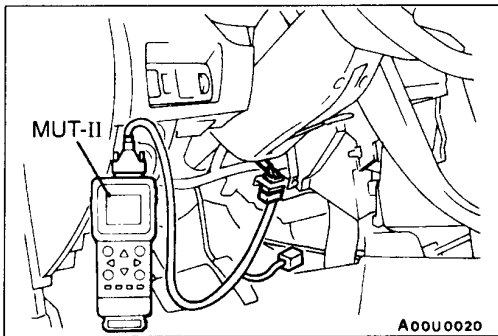
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If using an ignition key that has just been newly purchased, or if the immobilizer-ECU has been replaced, you will need to register the ID codes for each ignition key being used into the immobilizer-ECU. (A maximum of eight different ID codes can be registered.)

Moreover, when the immobilizer-ECU has been replaced, you will need to use the MUT-II to register the ID number 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

Connection and disconnection of the MUT-II should always be carried out with the ignition switch in the OFF position.

- (2) Use the ignition key that is to be registered to turn the ignition switch to the ON position.
- (3) 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.
- (4) Disconnect the MUT-II. This completes the registration operation.

COMBINATION METERS

54300030031

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	Vehicles with SOHC engine	700	±100
		3,000	±150
		5,000	±250
		6,000	±300
	Vehicles with DOHC engine	700	±100
		3,000	+225, –100
		5,000	+325, –125
		7,000	+400, –100
Fuel gauge unit resistance Ω	Float point F	7.9–14.6	
	Float point E	107.9–118.9	
Fuel gauge unit float height mm	A (Float point F)	142.4	
	B (Float point E)	28	
Fuel gauge resistance Ω	Power supply and earth	122–153	
	Power supply and fuel gauge	27–35	
	Fuel gauge and earth	95–119	
Engine coolant temperature gauge resistance Ω	Power supply and earth	185–227	
	Power supply and engine coolant temperature gauge	54–58	
	Engine coolant temperature gauge and earth	239–285	
Engine coolant temperature gauge unit resistance (at 70°C) Ω		104±13.5	

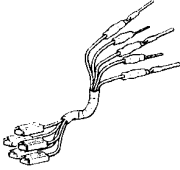



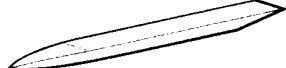
SEALANT

54300050037

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

SPECIAL TOOLS

54300060108

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"> ● Fuel gauge simple check A: Connector pin contact pressure check B, C: Power circuit check D: Commercial tester connection
	<p>MB990784</p>	<p>Ornament remover</p>	<p>Removal of meter hood</p>

TROUBLESHOOTING

54300070064

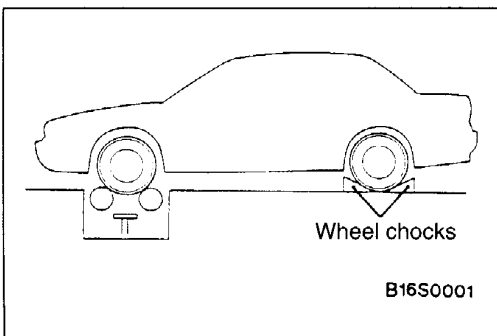
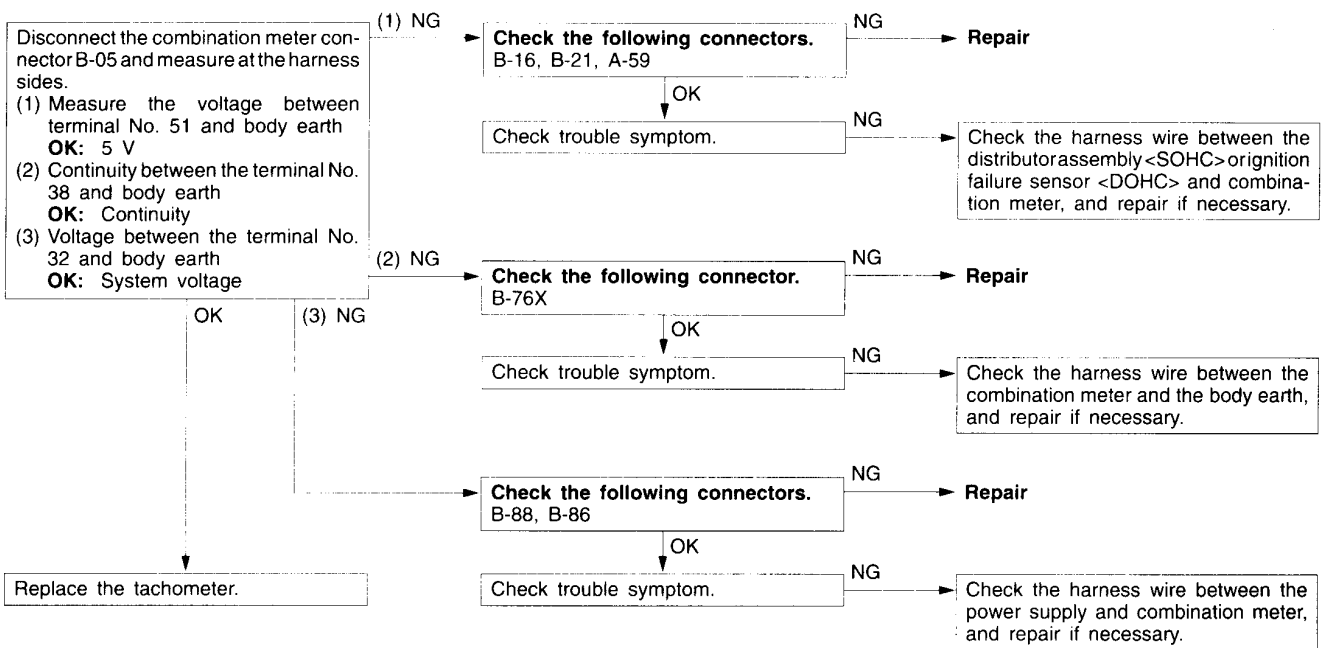
INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure	Reference page
Tachometer does not operate.	1	54-20

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

Inspection Procedure 1

Tachometer does not operate.	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.	<ul style="list-style-type: none"> Malfunction of tachometer Malfunction of harness or connector



ON-VEHICLE SERVICE

54300090039

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.

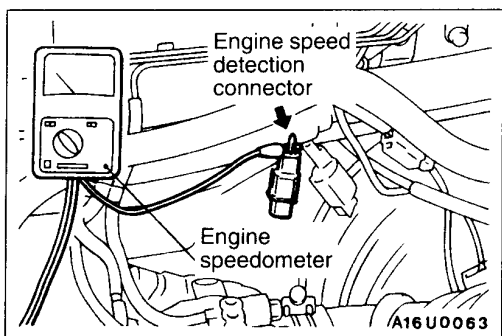
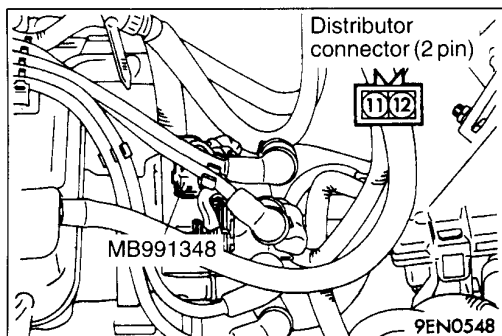
3. Check if the speedometer indicator range is within the standard values.

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

54300100039

<SOHC>

1. Disconnect the distributor connector (2-pin), and connect the special tool in between. All terminals should be connected.
2. Connect a primary voltage-detection type of tachometer to terminal (12) of the distributor connector.
3. 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

<DOHC>

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

NOTE

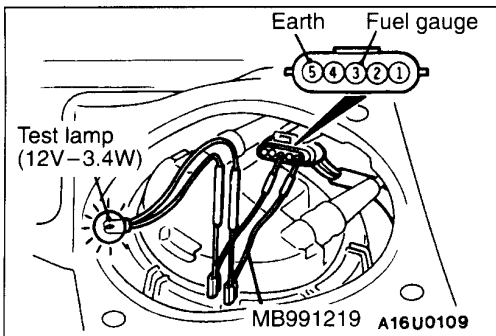
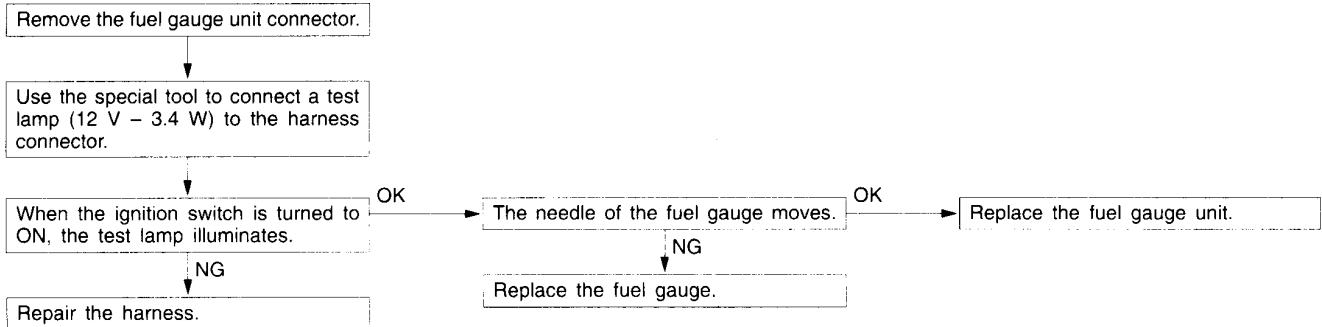
For tachometer check, use of a fluxmeter-type engine speedometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)

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 : +225 r/min, –100 r/min
- 5,000 r/min : +325 r/min, –125 r/min
- 7,000 r/min : +400 r/min, –100 r/min

FUEL GAUGE SIMPLE CHECK



FUEL GAUGE UNIT CHECK

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

FUEL GAUGE UNIT RESISTANCE

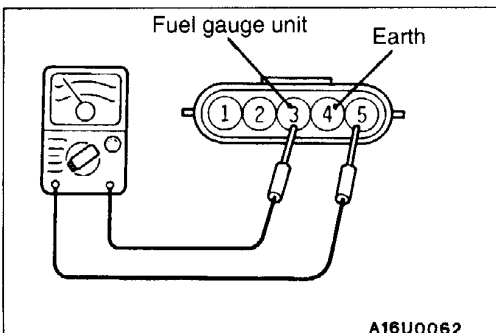
1. Check that resistance value between the fuel gauge terminal and earth terminal is at standard value when fuel gauge unit float is at point F (highest) and point E (lowest).

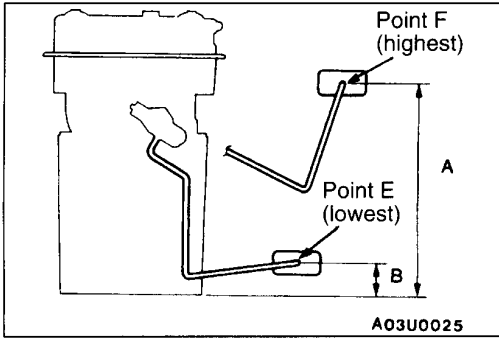
Standard value:

Point F: 7.9–14.6 Ω

Point E: 107.9–118.9 Ω

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





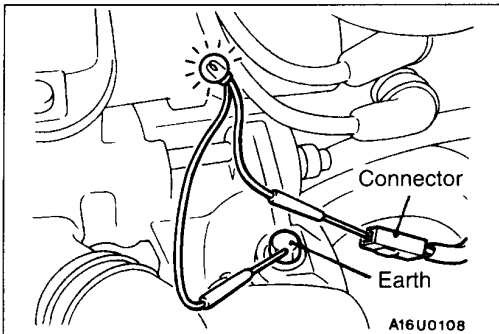
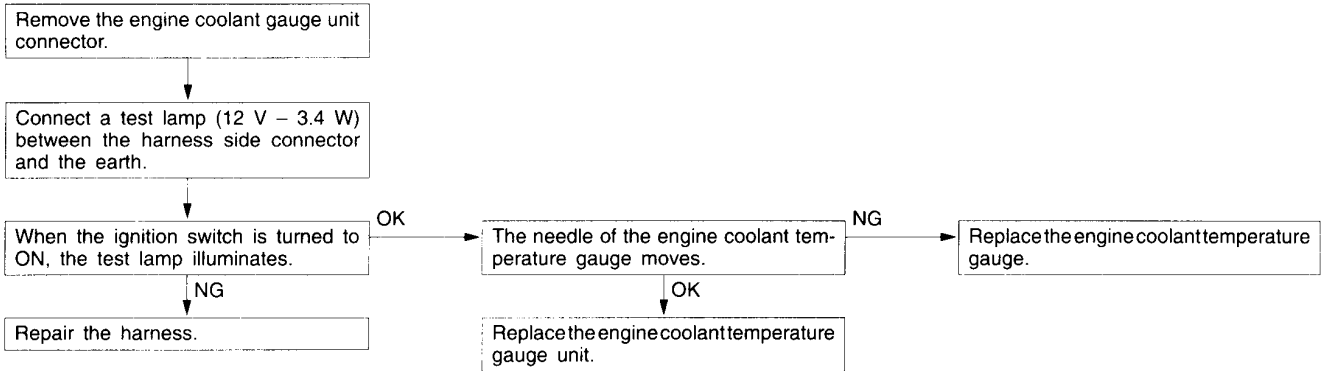
FUEL GAUGE UNIT FLOAT HEIGHT

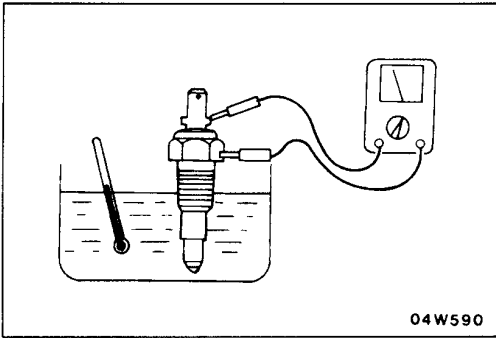
Move float and measure the height A at point F (highest) and B at point E (lowest) with float arm touching stopper.

Standard value:
A: 142.4 mm
B: 28 mm

ENGINE COOLANT TEMPERATURE GAUGE SIMPLE CHECK

54300140048



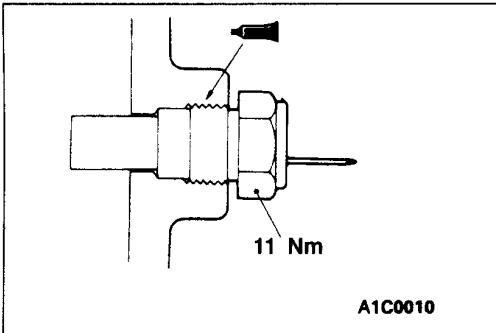


ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

54300150041

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:

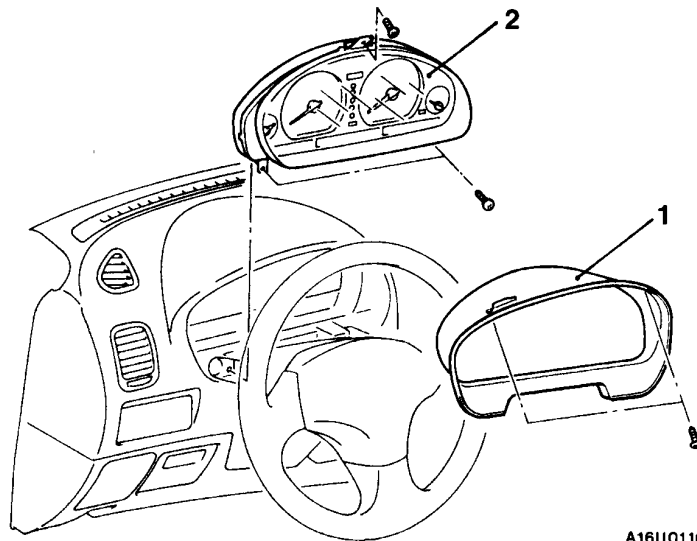
3M Adhesive Nut Locking No. 4171 or equivalent

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

COMBINATION METERS

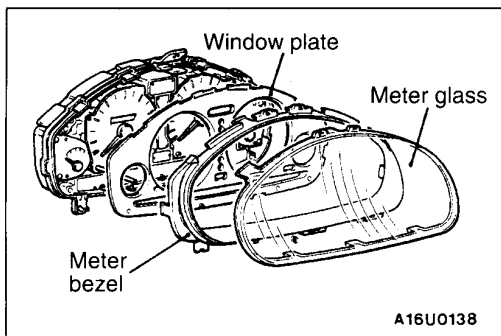
54300290033

REMOVAL AND INSTALLATION



Removal steps

1. Meter hood
2. Combination meter

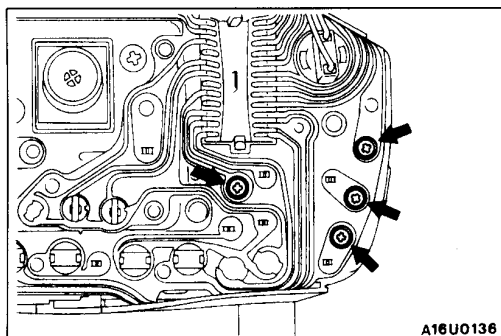


INSPECTION

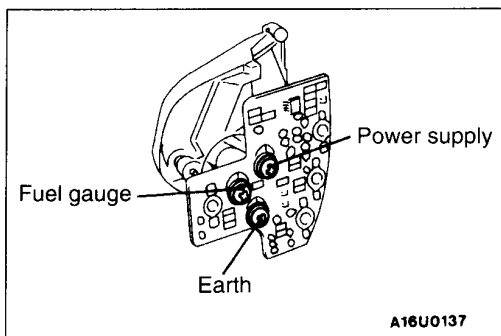
54300300019

FUEL GAUGE RESISTANCE CHECK

(1) Remove the meter glass, meter bezel and window plate.



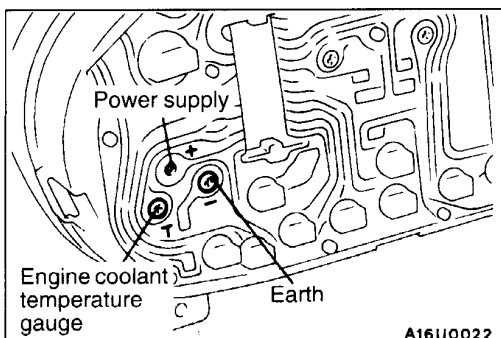
(2) Remove the fuel gauge mounting screws, and then remove the fuel gauge from the meter case.



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

Standard value:

- Power supply – Earth: 122–153 Ω
- Power supply – Fuel gauge: 27–35 Ω
- Fuel gauge – Earth: 95–119 Ω



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.

NOTE

The terminal positions are indicated by T, (-) and (+).

Standard value:

- Power supply (+)–Earth (-): 185–227 Ω
- Power supply (+)–Engine coolant temperature gauge (T): 54–58 Ω
- Engine coolant temperature gauge(T) –Earth (-): 239–285 Ω

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

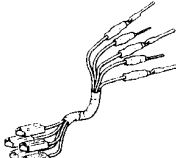




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SERVICE SPECIFICATIONS

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

54200060099

Tool	Number	Name	Use
<p>A</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"> Making voltage and resistance measurements during troubleshooting <p>A: Connector pin contact pressure inspection</p> <p>B, C: Power circuit inspection</p> <p>D: Commercial tester connection</p>
<p>B</p> 			
<p>C</p> 			
<p>D</p> 			
	MB990784	Ornament remover	Removal of switch garnish

TROUBLESHOOTING

54200070054

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

INSPECTION CHART FOR TROUBLE SYMPTOMS

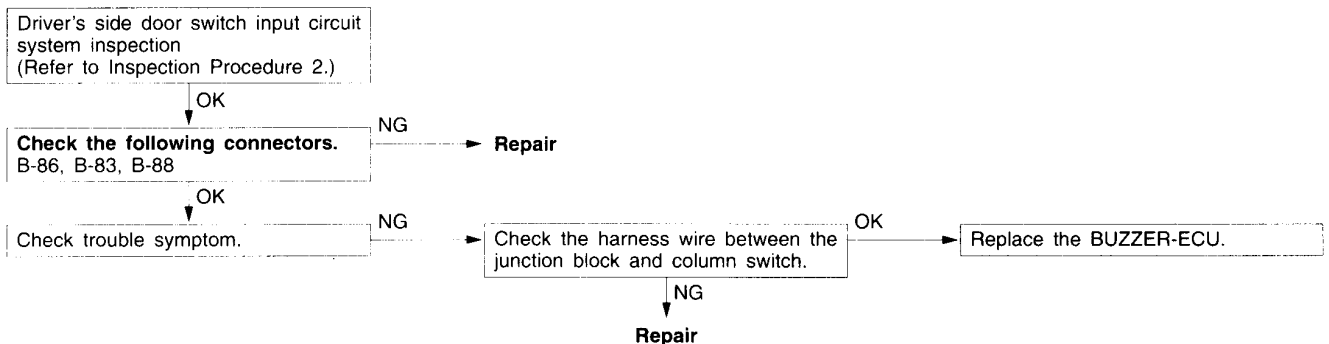
Trouble symptoms	Inspection procedure	Reference page
<p>The lighting monitor buzzer doesn't sound under the following conditions while tail lamps or headlamps illuminate.</p> <ul style="list-style-type: none"> When the ignition switch is turned to OFF and the driver's side door is open. 	1	54-27
Headlamp leveling does not occur when the headlamp leveling switch is operated.	3	54-28

Trouble symptoms	Inspection procedure	Reference page
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> <ul style="list-style-type: none"> Lighting switch: OFF Passing switch: OFF 	4	54-29
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> <ul style="list-style-type: none"> Ignition switch: OFF Passing switch: OFF 	5	54-30

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

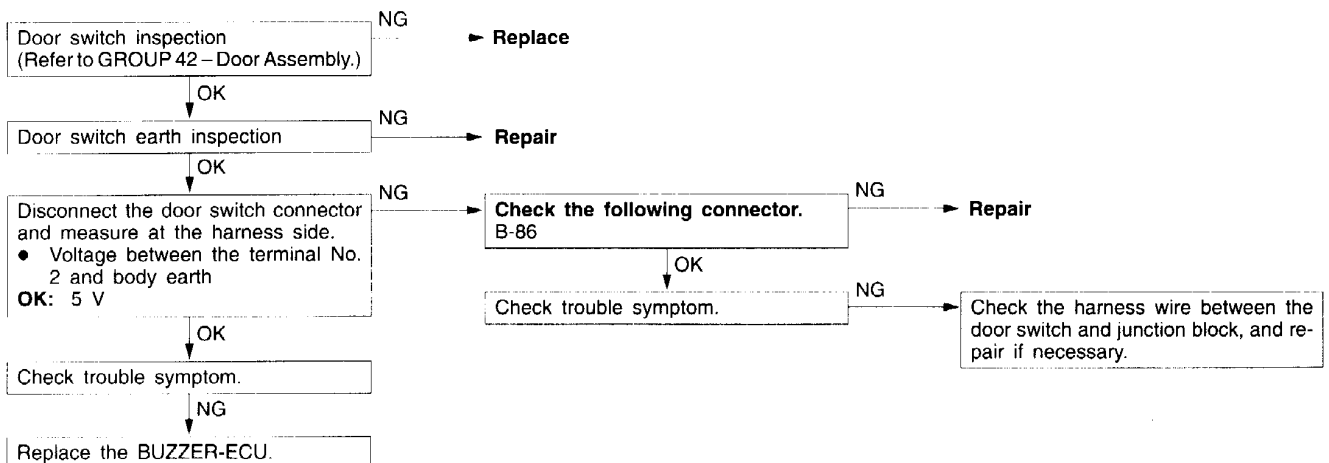
Inspection Procedure 1

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.	<ul style="list-style-type: none"> Malfunction of driver's side door switch Malfunction of harness or connector Malfunction of BUZZER-ECU



Inspection Procedure 2

Driver's side door switch input circuit system inspection



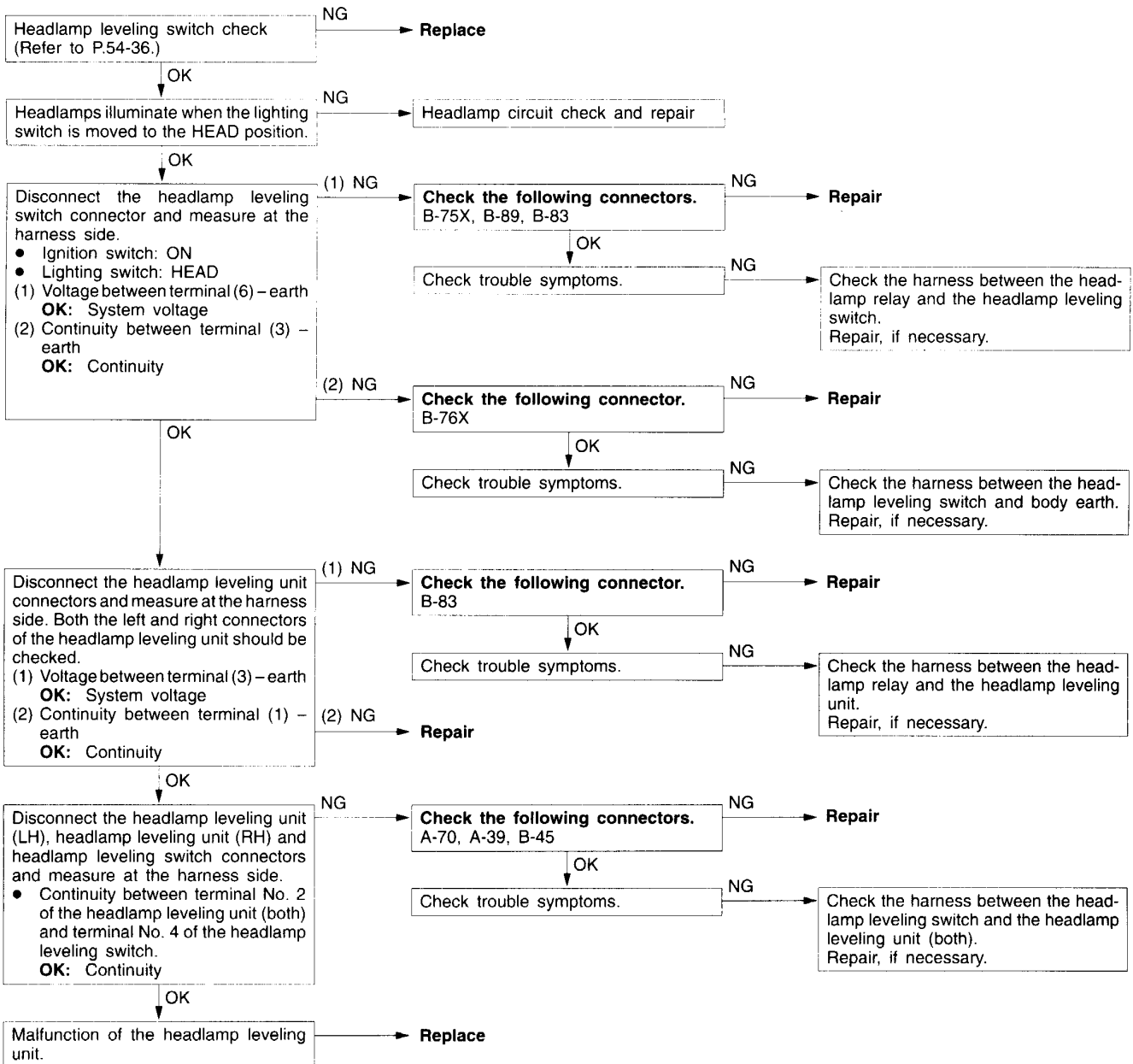
54-28 CHASSIS ELECTRICAL – Headlamp and Front Turn-signal Lamp

Inspection procedure 3

Headlamp leveling does not occur when the headlamp leveling switch is operated. Probable cause

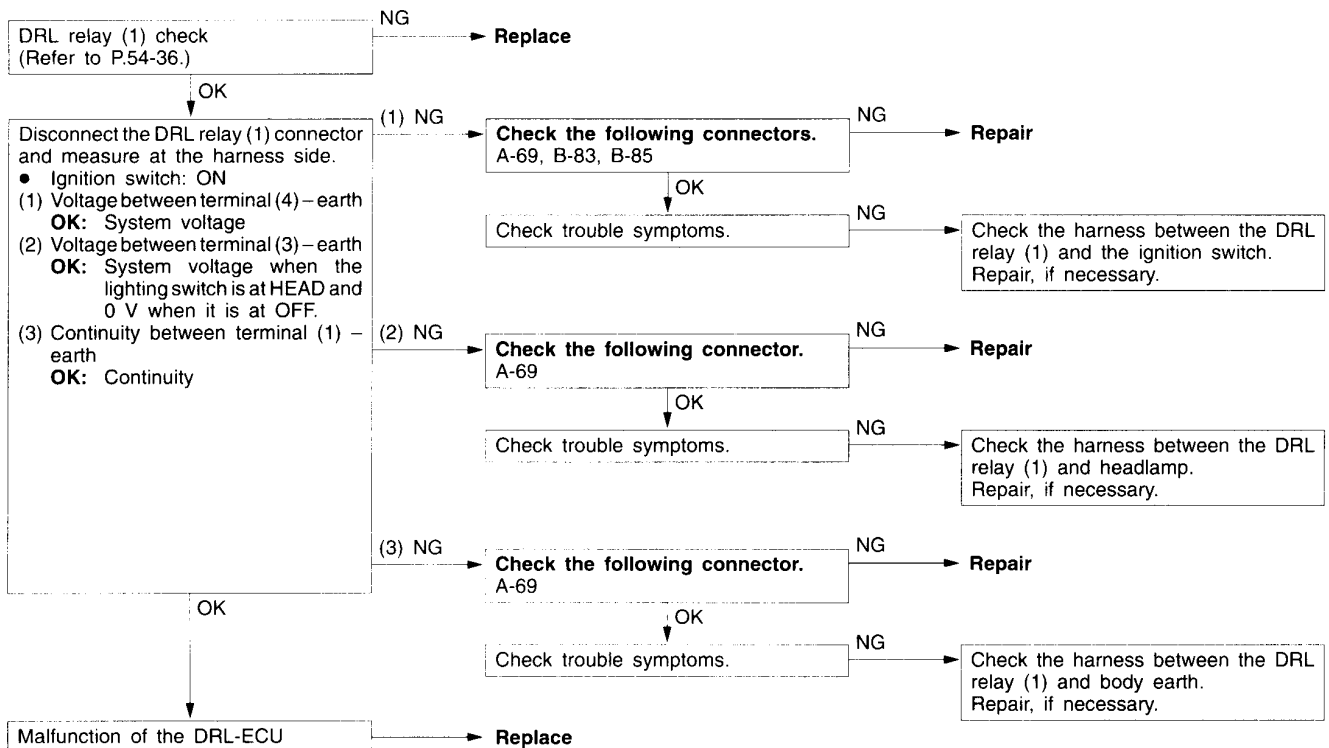
The cause is probably a malfunction of the headlamp leveling switch circuit system or a malfunction of the headlamp leveling unit circuit system.
If there is a blown fuse, there may also be a short-circuit in a harness.

- Malfunction of fuse
- Malfunction the headlamp leveling switch
- Malfunction of connector
- Malfunction of harness
- Malfunction of the headlamp leveling unit



Inspection procedure 4

<p>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></p> <ul style="list-style-type: none"> ● Lighting switch: OFF ● Passing switch: OFF 	<p>Probable cause</p>
<p>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.</p>	<ul style="list-style-type: none"> ● Malfunction of fuse ● Malfunction of connector ● Malfunction of harness ● Malfunction of the DRL relay (1) ● Malfunction of the DRL-ECU



54-30 CHASSIS ELECTRICAL – Headlamp and Front Turn-signal Lamp

Inspection procedure 5

The headlamps do not switch off when the vehicle is in the following condition and the lighting switch is moved to the TAIL position.

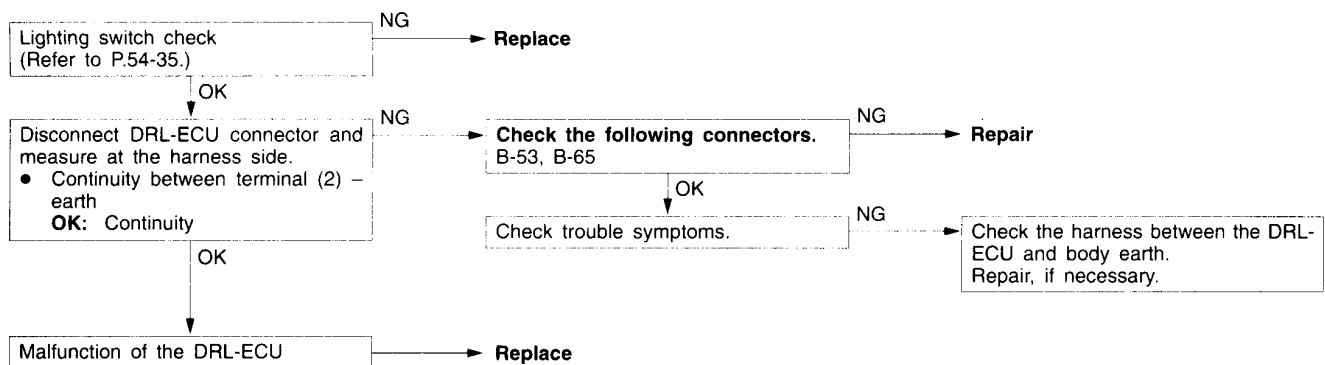
<Vehicles with daytime running lamp>

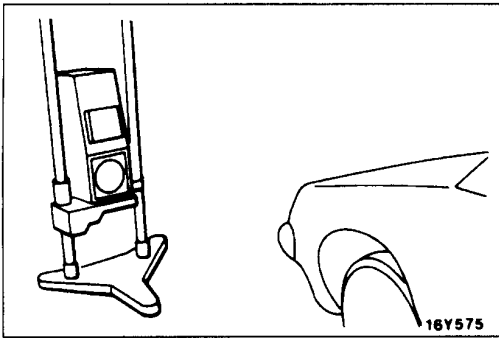
- Ignition switch: OFF
- Passing switch: OFF

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

54200090036

HEADLAMP AIMING

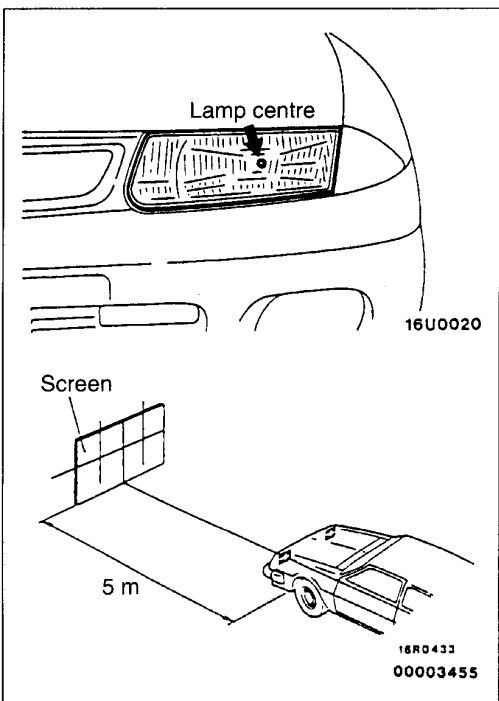
<USING A BEAMSETTING EQUIPMENT>

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

NOTE

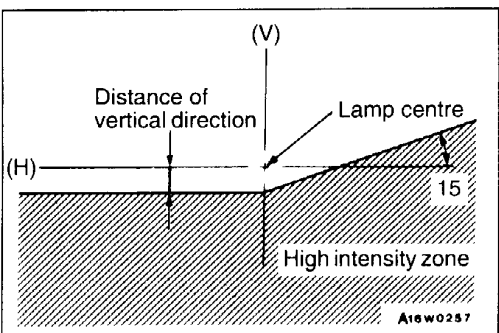
If there are any regulations pertinent to the aiming of headlamps in the area where the vehicle is to be used, adjust so as to meet those requirements.

2. Alternately turn the adjusting screw to adjust the headlamp aiming. (Refer to P.54-32.)



<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:

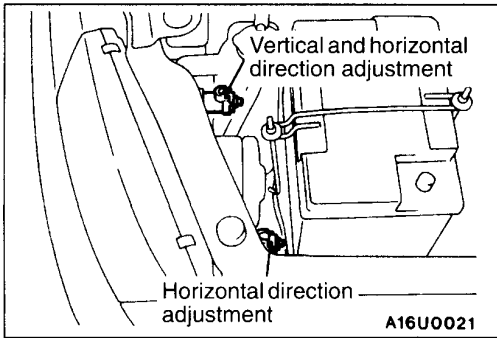
(Vertical direction)

60 mm below horizontal (H)

(Horizontal direction)

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

54-32 CHASSIS ELECTRICAL – Headlamp and Front Turn-signal Lamp



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

54200100036

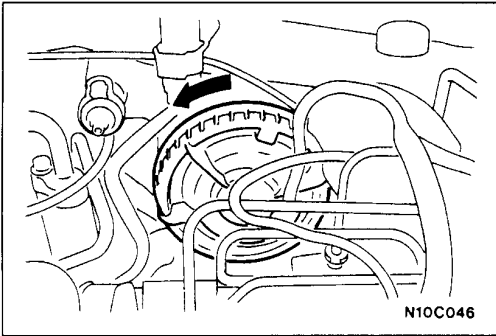
Using a photometer, and following its manufacture's instruction manual, measure the headlamp intensity and check to be sure that the limit value is satisfied.

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.

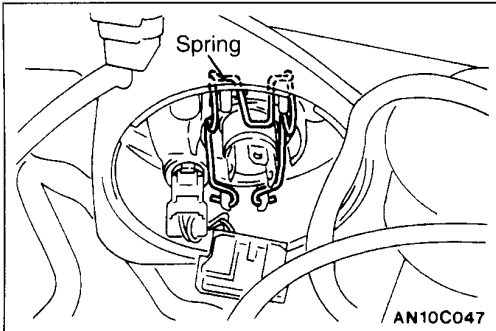
$I = Er^2$ Where: I = intensity (cd)
 E = illumination (lux)
 r = distance (m) from headlamps to illuminometer

**BULB REPLACEMENT**

54200130035

<Headlamp Bulb>

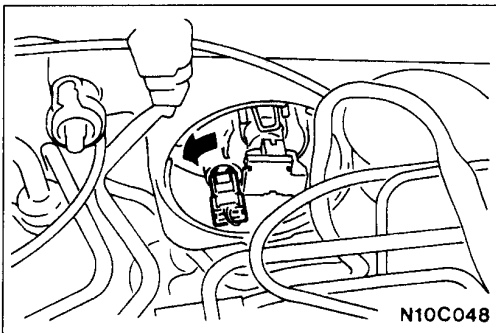
1. Remove the sealing cover by turning it anti-clockwise and disconnect the connector.



2. 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. Remove the sealing cover by turning it anti-clockwise.
2. Remove the lamp socket by turning it anti-clockwise, then pull out the bulb from the socket.