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GROUP 54A

# CHASSIS ELECTRICAL

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# GENERAL INFORMATION

The adoption of new accessories and functions has enhanced a lineup of equipment.

## FEATURES

### ENHANCED RELIABILITY

1. Adoption of waterproof connector in the engine compartment
2. Installation of fuse box and relay box

### ENHANCED VISIBILITY AND SAFETY

### ENHANCED EASE-OF-USE AND CONVENIENCE

1. Equipped with two bulb type headlamp.
2. A high mount stop lamp is assembled on the tailgate spoiler
3. The combination meters feature a round speedometer and tachometer with large needle movement angle.

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### IMPROVEMENTS IN SERVICEABILITY

1. Installation of diagnostic connectors (two) for M.U.T.-II/III inspection
2. Addition of ignition timing inspection function to the M.U.T.-II/III
3. Adoption of Smart Wiring System (SWS) to reduce weight and complexity of harnesses

### IMPROVEMENTS IN COMMERCIAL VALUE

1. Installation of an engine immobiliser system
2. Addition of map lamp and front room lamp

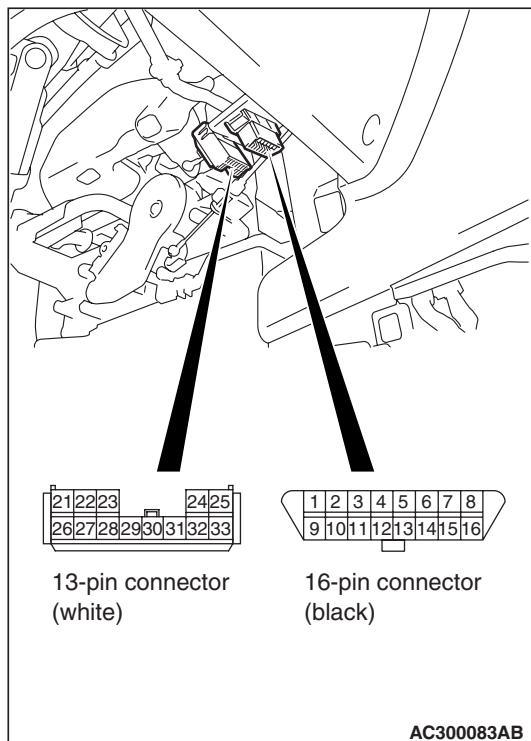
# DIAGNOSTIC SYSTEM

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Service quality has been improved by fitting diagnosis connectors for the M.U.T.-II/III inspection near the left knee area of the driver's seat on the instrument panel.

Diagnostic function	MPI	ABS	A/T	Immobilizer	SRS	ETACS
Diagnosis code set	×	×	×	×	×	×
Diagnosis code output by voltmeter	—	—	—	—	—	×
Output of service data	×	×	×	—	×	—
Actuator test	×	×	×	—	—	—
Diagnostic code reading by warning lamp and indicator lamp	—	×	—	—	—	—
Diagnostic code storage (EEPROM)	×	×	×	×	×	—
Erasure of diagnosis code by the M.U.T.-II/III	×	×	×	×	×	—
Pulse check by M.U.T.-II/III	—	—	—	—	—	×

## DIAGNOSIS CONNECTORS



Diagnosis connector (Black)	
1	Diagnosis control
2,3	–
4	Earth

## Diagnosis connector (Black)

5	Earth
6	–
7	MPI, ABS, A/T, Immobilizer, SRS
8	–
9	ETACS-ECU
10	–
11	–
12	–
13	–
14	Simulated vehicle speed signal
15	–
16	Battery

## Diagnosis connector (White)

21 – 23	–
24	MPI
25 – 30	–
31	SWS communication line
32	–
33	–

## BATTERY

M2540002000196

Light and compact batteries have been adopted.

Item	75D23L
Voltage V	12
Capacity (5-hour rate) Ah	53
Electrolytic fluid specific gravity (fully charged state at 20°C)	1.280

## IMMOBILIZER SYSTEM

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The engine immobilizer system prevents the engine from starting and immobilizes the vehicle if a key other than the key registered for that vehicle is used in an attempt to start the engine after forced entry. The engine immobilizer system consists of the ignition key with a transponder, the immobilizer-ECU, and the engine-ECU <M/T> or engine-A/T-ECU <A/T>. It works in the following way and has these functions:

1. When the immobilizer-ECU receives the control signal from the engine-ECU <M/T> or engine-A/T-ECU <A/T>, the immobilizer-ECU supplies a current and sends random number data to the transponder in the ignition key.
2. The transponder uses the random number data to derive an encrypted code, which is sent to the immobilizer-ECU.
3. The immobilizer-ECU compares the encrypted code that was sent with pre-registered encrypted codes, and if it matches, a control signal approving ignition is sent to the engine-ECU <M/T> or engine-A/T-ECU <A/T>. If the encrypted code

does not match (in the case of counterfeit ignition keys, for example), the immobilizer-ECU sends a control signal denying ignition to the engine-ECU <M/T> or engine-A/T-ECU <A/T>, preventing the engine from starting.

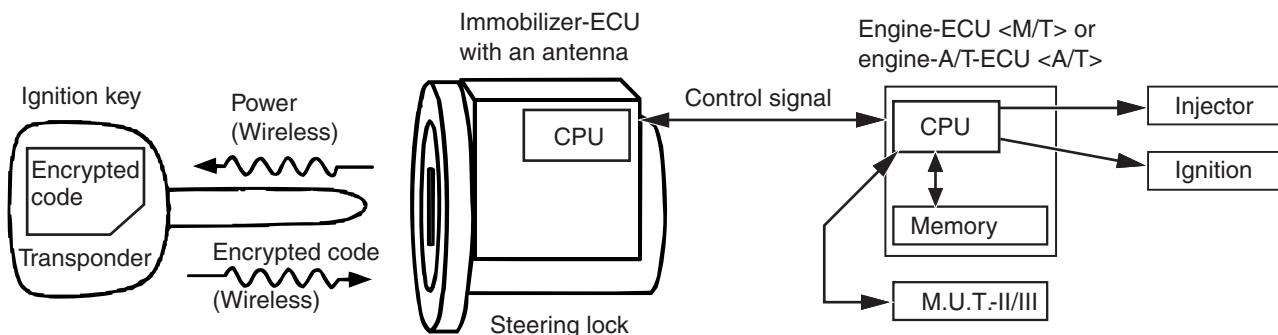
4. The system is designed to be maintenance-free because the power source for the transponder is supplied by the immobilizer-ECU. Two ignition keys are provided, and up to eight keys can be registered to one vehicle (one receiver) as needed. There are 4 billion possible combinations for the registered encrypted codes, and in addition, one part of the code is changed each time the key is switched on, which improves security by preventing theft using a copied encrypted code.

*NOTE: If the immobilizer-ECU is replaced or if the ignition key is lost or additional keys are requested, the M.U.T.-II/III must be used to reset all transponder encrypted codes. During the resetting process, all transponders must be re-registered because the registered encrypted codes will be erased.*

## DIAGNOSIS CODE TABLE

Diagnosis code No.	Diagnosis item
11	Transponder communication system or radio interference of encrypted code
12	Encrypted codes are not the same or are not registered

## CONSTRUCTION DIAGRAM



AC206892AF

**MAIN COMPONENTS**

Component part name	Outline of function
Immobilizer-ECU with an antenna	<ul style="list-style-type: none"> <li>Supplies electrical power to the transponder integrated in the ignition key, and transmits random number data.</li> <li>Verifies the encrypted code which is sent from the transponder. If the code is correct, it sends an engine mobilization signal to the engine-ECU &lt;M/T&gt; or engine-A/T-ECU &lt;A/T&gt;.</li> </ul>
Transponder	Is power-supplied by the immobilizer-ECU. When the transponder receives random number data, it processes it and the encrypted code. Then it transmits the process result to the immobilizer-ECU.
Engine-ECU <M/T>, Engine-A/T-ECU <A/T>	Starts the engine, and then continues the engine running if an engine mobilization signal is confirmed. If an engine immobilization signal is confirmed, the ECU cancels the engine control and stops the engine.

**Encrypted code registration criteria table**

The ignition key contains a transponder (small transmitter), which retains an unique encrypted code.

Under any of the conditions below, the encrypted code must be registered in the immobilizer-ECU again. The immobilizer-ECU can retain maximum eight different encrypted codes. This means that maximum eight ignition keys can be registered.

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

# LIGHTING

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## EXTERIOR LAMPS

- The four-bulb headlamps have been used. These headlamps contain the front turn-signal lamps and the position lamps, and create a more aggressive and refined look.

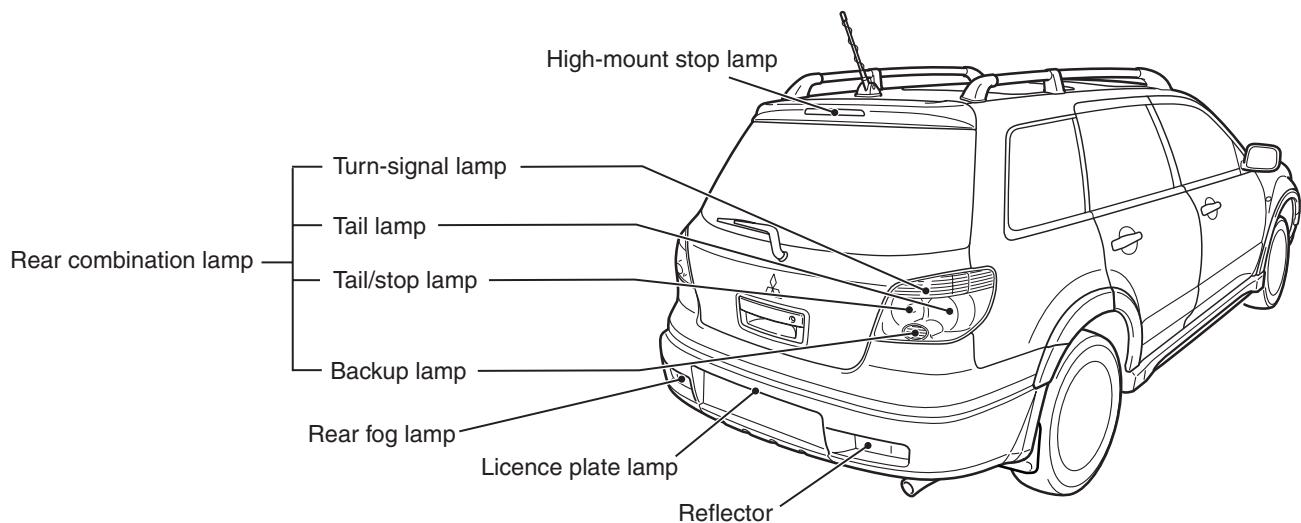
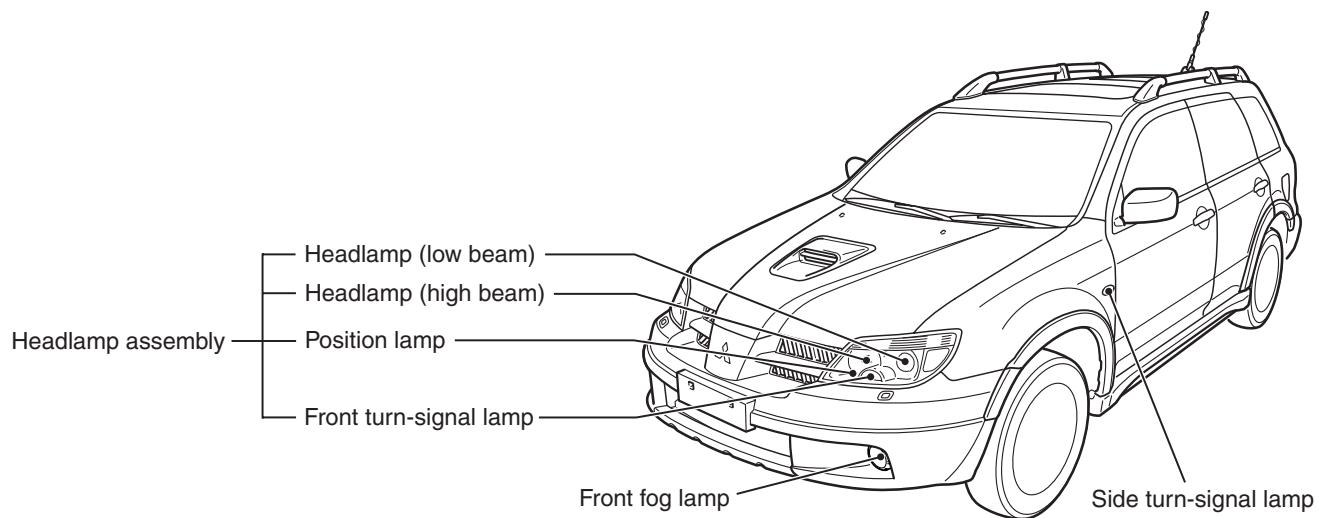
- The rear combination lamps create a clean-cut, stereoscopic and excellent-quality look. (red lens)  
<INVITE>
- The rear combination lamps create a sporty, stereoscopic and excellent-quality look. (clear lens)  
<2000-Turbo, INTENSE>

## SPECIFICATION

Item	Specification	
Headlamp assembly	Low beam W (Halogen bulb)	55 (H1)
	High beam W (Halogen bulb)	60 (HB3)
	Front turn-signal lamp W	21
	Position lamp W	5
Front fog lamp W		55 (H11)
Side turn-signal lamp W		5
Rear combination lamp	Tail/stop lamp W/W	5/21
	Tail lamp W	5
	Rear turn-signal lamp W	21
	Backup lamp W	16
Rear fog lamp W		21
High-mount stop lamp	Incorporated in tailgate spoiler	LED type
Licence plate lamp W × number		5 × 2

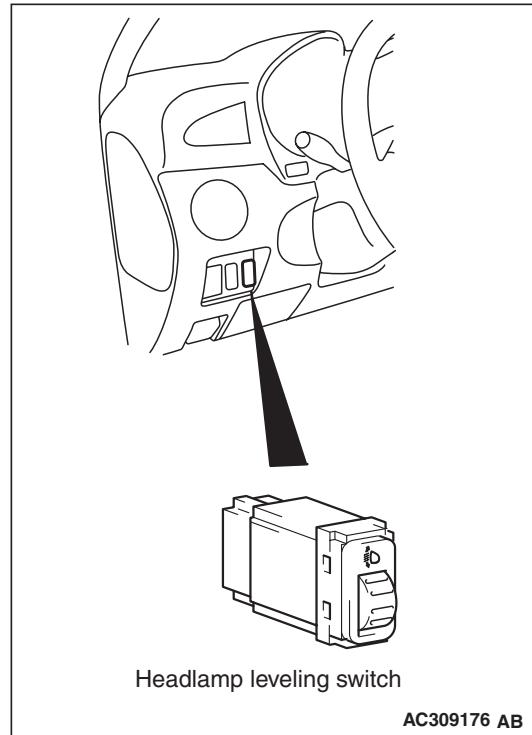
NOTE: The brackets ( ) show the bulb type.

## CONSTRUCTION DIAGRAM



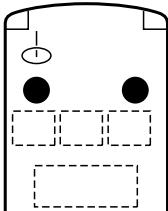
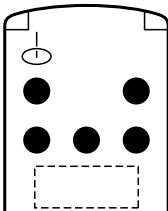
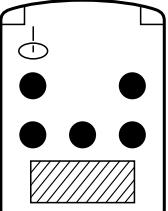
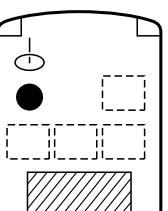
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## HEADLAMP LEVELING SYSTEM



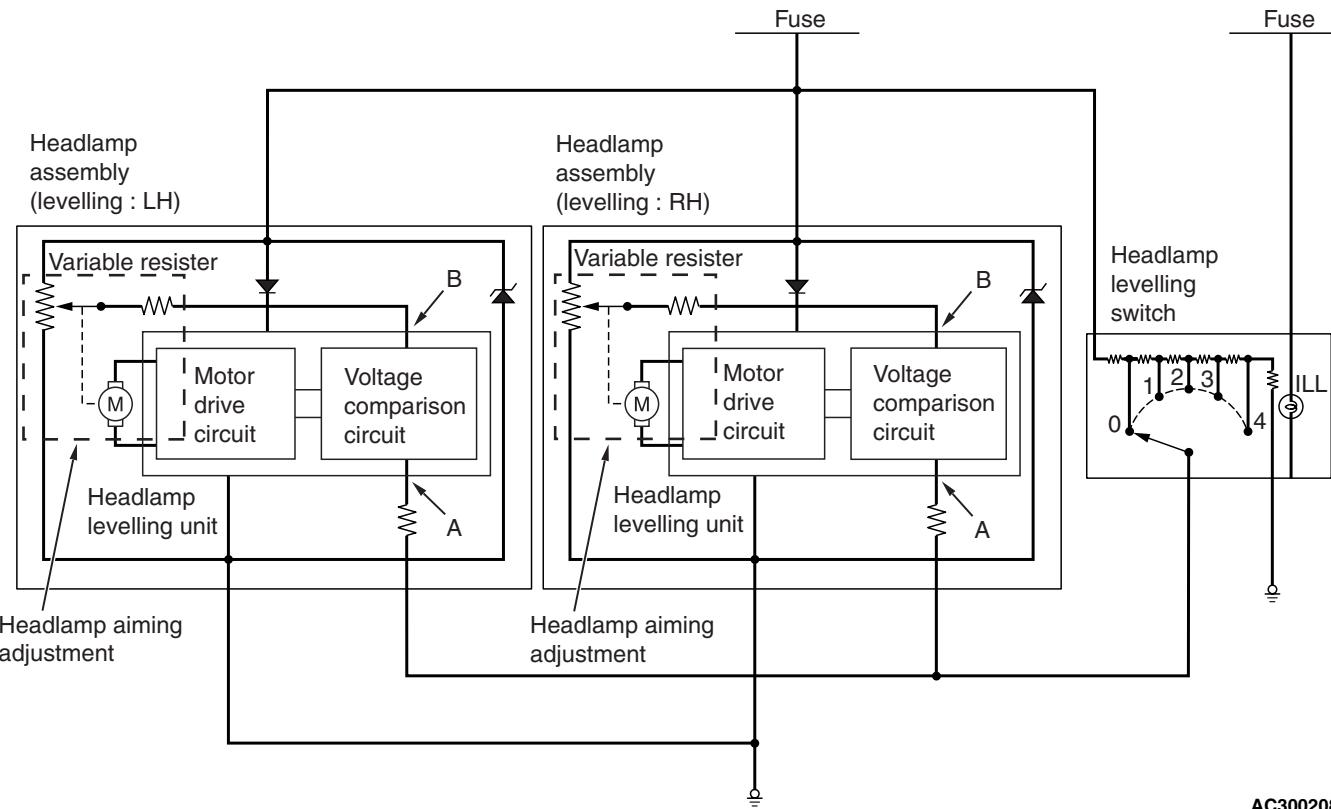
The beam direction of the headlamps changes according to the number of passengers and the amount of load. The headlamp levelling function is a system that allows the driver to change the direction of headlamp beam so that the drivers of oncoming cars are not dazzled by the headlamps. The headlamp levelling switch allows changing the direction in five steps: 0 to 4.

## Relationship between the switch positions and the number of passengers/loads

Switch position	0	1	2	3	4
Passenger and load	 Driver only or driver and one passenger AC301941AB	 Driver and four passenger AC301942AB	 Driver and four passenger, and loads AC301943AB	 Driver and heavy loads AC301944AB	When a more load than those to the left is on the vehicle

## OPERATION

1. The headlamp levelling switch increases the resistance as it is turned from 0 to 4. Turning the headlamp levelling switch changes the voltage at point A. When the headlamp levelling switch is turned from 0 to 4, the voltage at point A decreases. Upon detection of this voltage change, the headlamp levelling unit turns the motor to lower the beam direction. At this time, the resistance of the variable resistor in the headlamp assembly changes, and the voltage at point B decreases gradually. When the voltages at points A and B become equal, the headlamp levelling unit stops the motor.
2. Turning the headlamp levelling switch from 4 to 0 increases the voltage at point A, and then the headlamp levelling unit turns the motor in the direction opposite to that mentioned in Item 1, increasing the voltage at point B. When the voltages at points A and B become equal, the headlamp levelling unit stops the motor.
3. The headlamp levelling unit detects voltage changes caused by headlamp levelling switch operation, and turns the motor to change the directions of the headlamp deflectors for the adjustment of the headlamp beam direction.



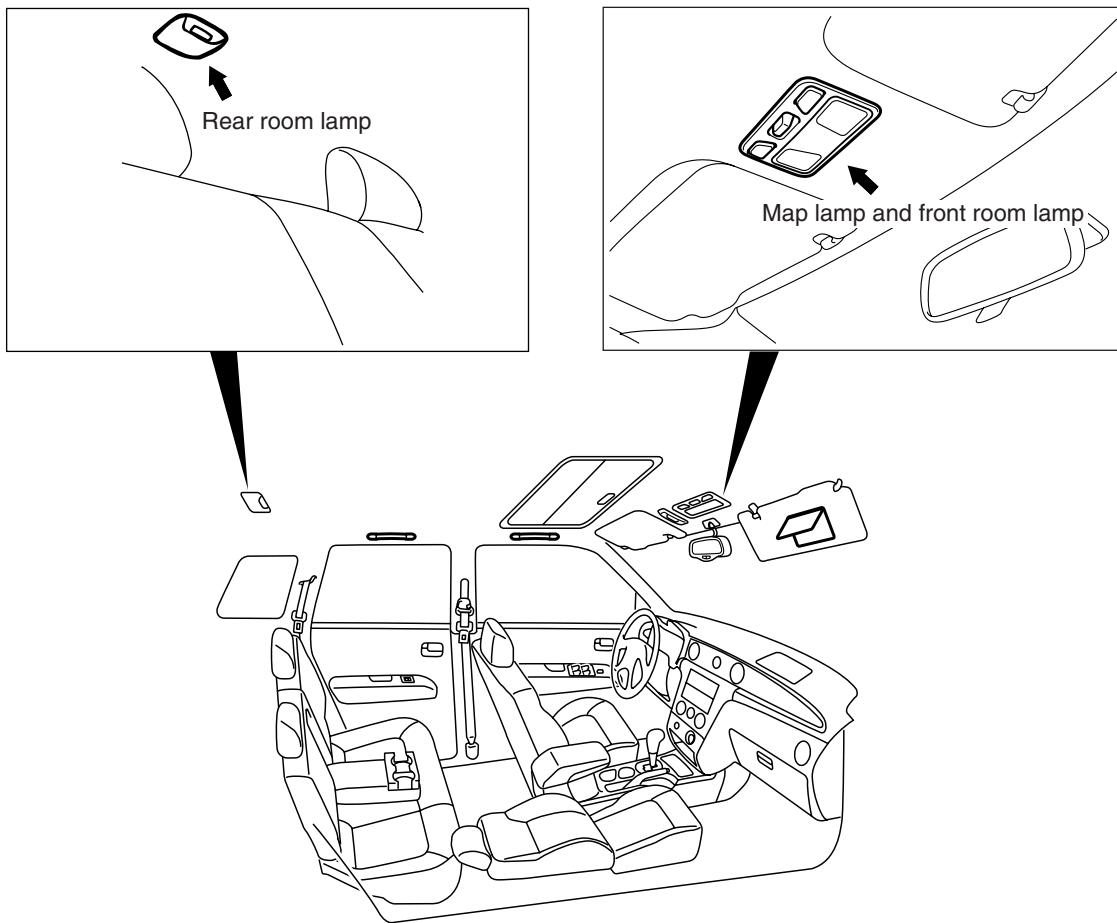
## INTERIOR LAMPS

- A map lamp serving also as front room lamp which can be used at both the driver's seat and passenger seat is provided.
- A rear room lamp to lamp the backseat and luggage room lamp to lamp the luggage room are provided.

## SPECIFICATIONS

Item	Specification	
Map lamp and front room lamp	Map lamp W × quantity	7.5 × 2
	Front room lamp W	7.5
Rear room lamp W		8

## CONSTRUCTION DIAGRAM



AC201039AC

## COMBINATION METER

The combination meter was designed to enhance the driver's view of the meters and feature an easy-viewing large needle-meter design. At the top centre is the fuel gauge and below it is the coolant temperature gauge. To the left is the speedometer and to the right is the tachometer.

- The speedometer is an electronic type speedometer which operates by the pulse signal generated by the vehicle speed sensor.
- A large and clear LCD\* type odo-trip meter is provided. The odometer continuously displays values while the trip meter adopts a twin-trip (trip A, trip B) function which is switched by a reset button.

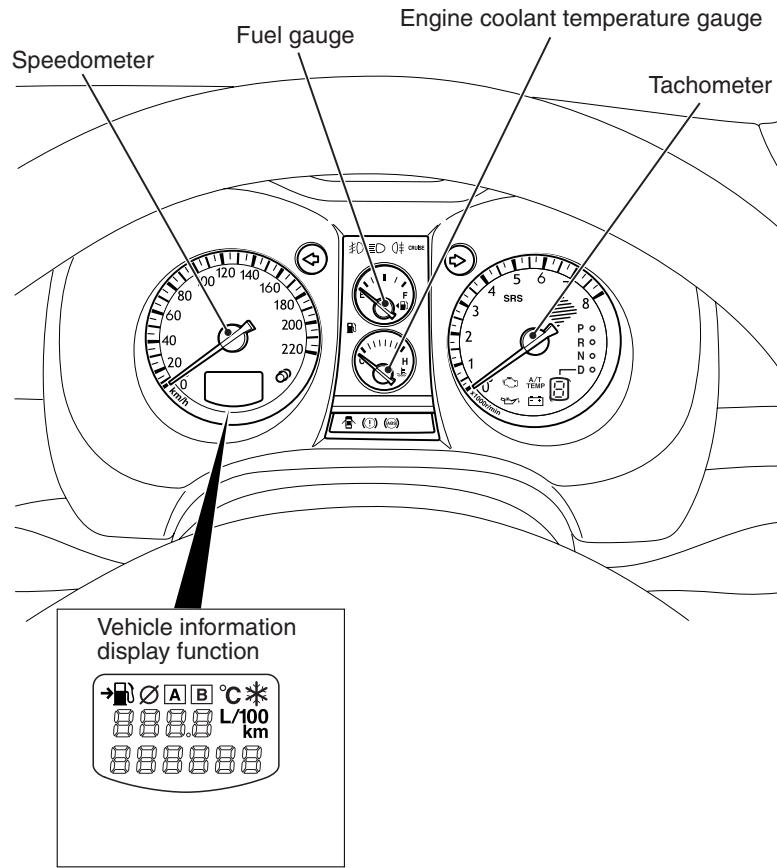
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- Fuel level and icy road surface alarms are adopted. Furthermore, the vehicle information display function (average fuel consumption, cruising range and ambient temperature) is adopted. The fuel level alarm will sound if the cruising range is 50 km (30 miles), 25 km (15 miles) or 10 km (10 miles), or it is less than 50 km (30 miles) when the ignition switch is turned ON. The icy road surface alarm will sound if ambient temperature is less than 3°C, or it is -5°C to 3°C when the ignition switch is turned ON.
- Comes with a front and rear fog lamp indication lamps to let the driver know that the fog lamp is on.

- The fuel gauge is provided with a triangular mark indicating the location of the fuel filler door to clearly that the fuel filler door is on the left side of the car.
- The meters of white colour on which pearl white is painted is adopted so that patterns appear at certain view angles.
- The circumferences of the speedometer, tachometer, fuel gauge, and temperature gauge are painted silver for improved appearance.
- The needle caps are painted silver for improved appearance.

NOTE: LCD\*: *liquid crystal display*

## CONSTRUCTION DIAGRAM



## SPEAKER, ANTENNA

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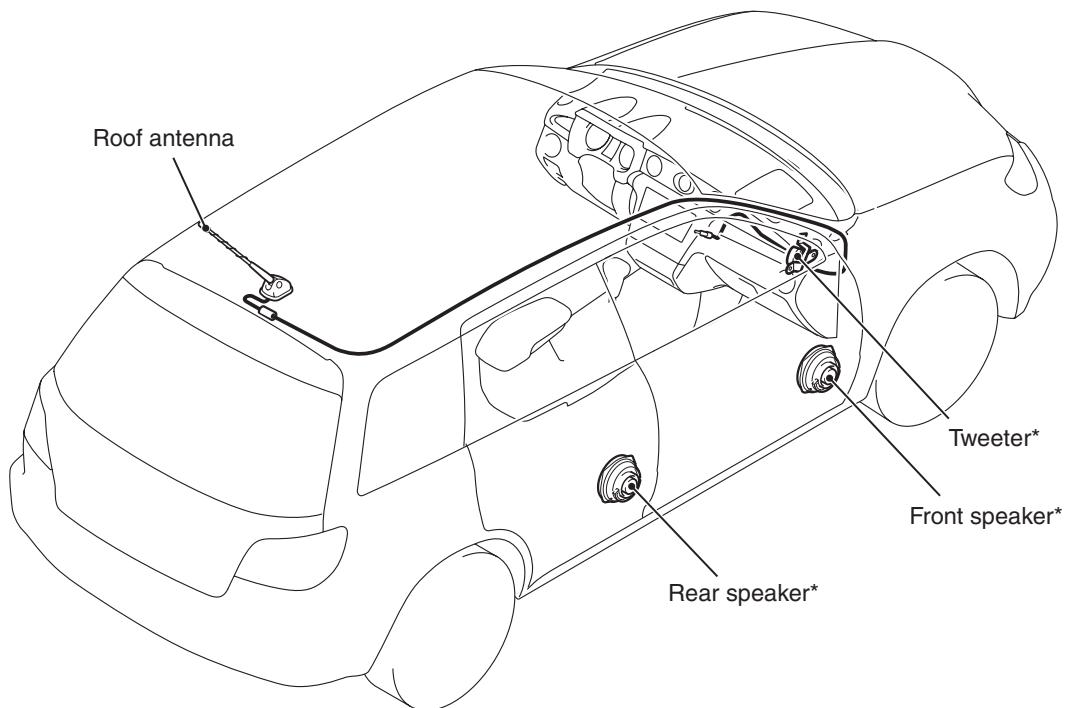
## SPEAKER

Location	Four speakers <INVITE>	Six speakers <INTENSE>
Front door	–	Equipped (tweeter – 3.5 cm)
	Equipped (dual cone full range – 16 cm)	Equipped (full range – 16 cm)
Rear door	Equipped (dual cone full range – 16 cm)	Equipped (full range – 16 cm)

## ANTENNA

Featuring a roof antenna.

## CONSTRUCTION DIAGRAM



AC301111AB

NOTE: The \* indicates equipped on the left and right sides.