

## **SECTION 6-4**

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### **SERVICE PROCEDURES AND SPECIFICATIONS**

#### **Electrical components**

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## ELECTRICAL COMPONENTS

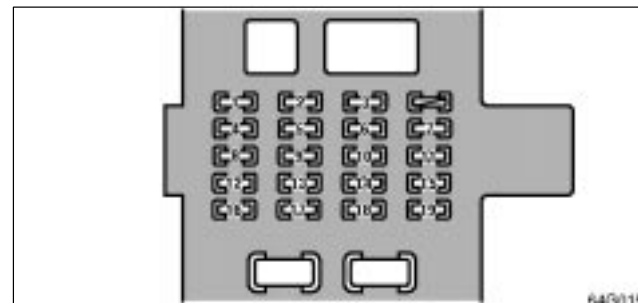
### SPECIFICATIONS

#### – FUSE LOCATION

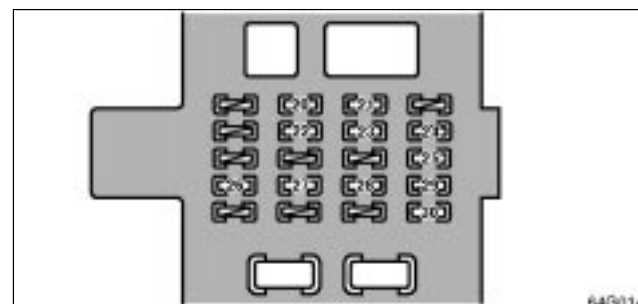


- ▶ **1** *Engine compartment*
- ▶ **2** *Passenger's side kick panel*
- ▶ **3** *Driver's side kick panel*
- ▶ **4** *Engine compartment*

#### – FUSES

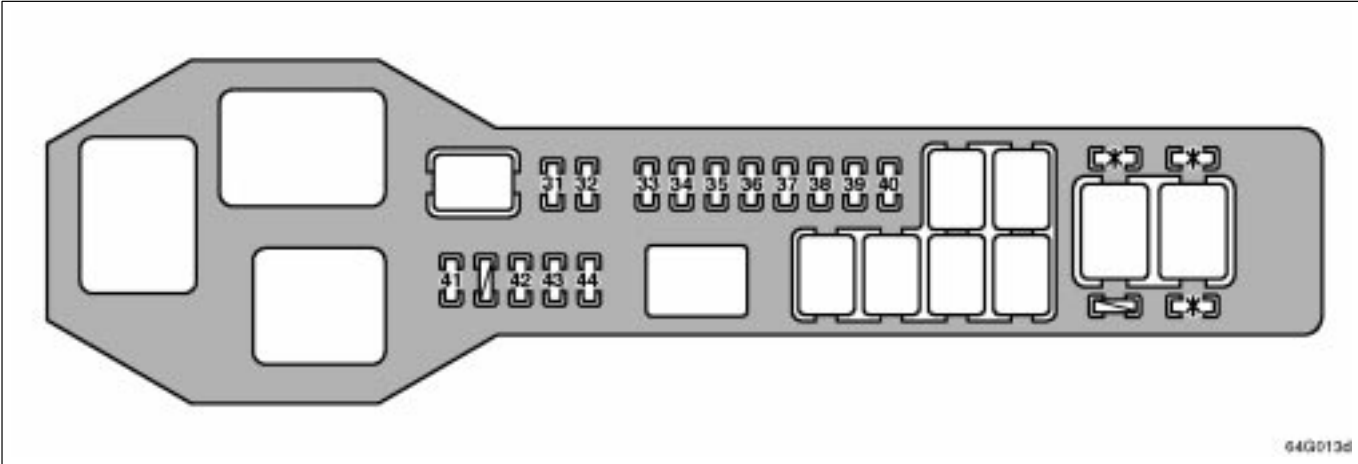


▶ *Driver's side kick panel*

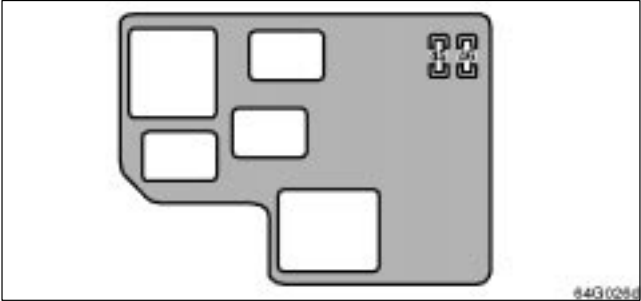


▶ *Passenger's side kick panel*

ELECTRICAL COMPONENTS



► *Engine compartment*



► *Engine compartment*

## ELECTRICAL COMPONENTS

No.	FUSE	AMPERE	CIRCUIT
1	WASHER	20	Windshield washer
2	FR FOG	15	Fog lights
3	TAIL	10	Tail lights, Side marker lights, License plate lights, Parking lights
4	GAUGE	10	Back-up lights, Gauges and meters, service reminder indicators and buzzers
5	FUEL OPN	10	Fuel filler door opener
6	D FR DOOR	20	Power window system, Door lock system, Wireless remote control
7	PANEL	7.5	Emergency flashers, Headlight cleaner
8	HEATER	10	Air conditioning
9	SRS-B	5	Gauges and meters, service reminder indicators and warning buzzers
10	D P/SEAT	30	Power seat system
11	RADIO NO.2	15	Audio, Shift lock system
12	WIPER	25	Windshield wipers
13	OBD	7.5	On-board diagnosis
14	STOP	15	Stop lights, Anti-lock brake system, Traction control system

No.	FUSE	AMPERE	CIRCUIT
15	CIG	15	Cigarette lighter, Power outlet
16	ECU-IG	15	Power window, Door lock system, Wireless remote control, Theft deterrent system
17	STARTER	5	Starting system
18	IGN	5	Multiport fuel injection system/sequential multiport fuel injection system, SRS, Anti-lock brake system, Vehicle skid control system, Cruise control system
19	D RR DOOR	20	Power window system, Door lock system, Wireless remote control
20	RR FOG	10	No circuit
21	MIR HTR	10	Outside rear view mirror
22	S/ROOF	25	Moon roof
23	P FR DOOR	20	Power window system, Door lock system, Wireless remote control
24	P P/SEAT	30	Power seat system, Tilt and telescopic steering
25	DOME	10	Interior lights, Personal lights, Vanity lights, Trunk light, Clock
26	SEAT HTR	20	Seat heater

## ELECTRICAL COMPONENTS

No.	FUSE	AMPERE	CIRCUIT
27	4WS	25	No circuit
28	TV	15	No circuit
29	ECU-B2	5	Power seat system
30	P RR DOOR	20	Power window system, Door lock system, Wireless remote control
31	ECU-B1	20	Power window system, Door lock system, Wireless remote control, Theft deterrent system, Trunk lid opener, Interior lights, Personal lights, Clock, Headlight cleaner
32	MPX-B	10	Power window system, Door lock system, Wireless remote control, Theft deterrent system, Trunk lid opener
33	HORN	10	Horn
34	ETCS	15	Electronic throttle control system
35	AM2	15	Starting system, Multiport fuel injection system/sequential multiport fuel injection system
36	TEL	15	No circuit
37	TURN-HAZ	10	Turn signal lights


No.	FUSE	AMPERE	CIRCUIT
38	EFI	25	Multiport fuel injection system/sequential multiport fuel injection system, Emission control system
39	ALT-S	5	Charging system
40	RADIO NO.1	30	Audio
41	DRL NO.2	30	Daytime running light system
42	DRL NO.1	30	Daytime running light system
43	H-LP L LWR	15	Left-hand headlight (low beam)
44	H-LP R LWR	15	Right-hand headlight (low beam)
45	H-LP R UPR	15	Right-hand headlight (high beam)
46	H-LP L UPR	15	Left-hand headlight (high beam)
*	SPARE		Spare fuse

## ELECTRICAL COMPONENTS

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### CHECKING BATTERY CONDITION

#### Precautions

 **CAUTION**

**BATTERY PRECAUTIONS**

The battery produces flammable and explosive hydrogen gas.

- Do not cause a spark by contacting the battery terminals with tools.
- Do not smoke or light a match near the battery.

The electrolyte contains poisonous and corrosive sulfuric acid.

- Avoid contact with eyes, skin or clothes.
- Never inhale or swallow electrolyte.
- Wear protective safety glasses when working near the battery.
- Keep children away from the battery.

**EMERGENCY MEASURES**

- If electrolyte gets in your eyes, flush your eyes with clean water for at least 15 minutes and get immediate medical attention. If possible, continue to apply water with a sponge or cloth while traveling to the medical office.

- If electrolyte gets on your skin, thoroughly wash the contacted area. If you feel a pain or burn, get medical attention immediately.
- If electrolyte gets on your clothes, there is a possibility of its soaking through to your skin, so immediately take off the exposed clothing and follow the procedure above, if necessary.
- If you accidentally swallow electrolyte, drink a large quantity of water or milk. Follow with milk of magnesia, beaten raw egg or vegetable oil. Then go immediately for emergency help.

### Checking battery exterior



► **1** Terminals **2** Hold-down clamp

**Check the battery for corroded or loose connections, cracks, or loose hold-down clamps.**

1. If the battery is corroded, wash it off with a solution of warm water and baking soda. Coat the terminals with grease to prevent further corrosion.
2. If the connections are loose, tighten the clamp bolts – but do not overtighten.
3. Tighten the hold-down clamp only enough to keep the battery firmly in place. Overtightening may damage the battery case.

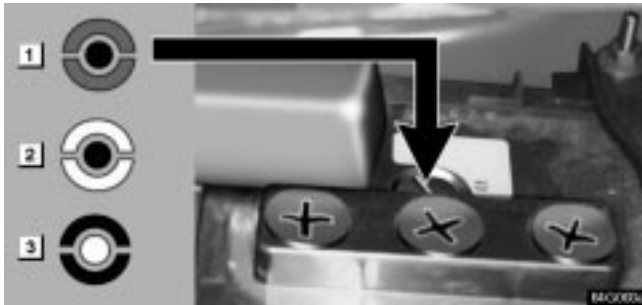
#### **NOTICE**

- *Make sure the engine and all accessories are turned off before performing maintenance.*
- *When checking the battery, remove the ground cable first and reinstall it last.*
- *Be careful not to cause a short circuit with tools.*
- *Take care no solution gets into the battery when washing it.*

## ELECTRICAL COMPONENTS

### Checking battery fluid

Checking by hydrometer



Check the battery condition by the hydrometer color.

- 1 BLUE – Good condition.
- 2 WHITE – Charging necessary. Have the battery checked by your Lexus dealer.
- 3 RED – Have the battery checked by your Lexus dealer.

#### **NOTICE**

*Do not refill the battery with water.*

## BATTERY RECHARGING PRECAUTIONS

During recharging, the battery is producing hydrogen gas.

Therefore, before recharging:

1. If recharging with the battery installed on the vehicle, be sure to disconnect the ground cable.
2. Make sure the power switch on the recharger is off when connecting the charger cables to the battery and when disconnecting them.

#### **CAUTION**

- Always charge the battery in an unconfined area. Do not charge the battery in a garage or closed room where there is not sufficient ventilation.
- Only do a slow charge (5 A or less). Charging at a quicker rate is dangerous. The battery may explode causing personal injuries.

#### **NOTICE**

*Never recharge the battery while the engine is running. Also, be sure all accessories are turned off.*



## CHECKING AND REPLACING THE BLADE TYPE FUSES



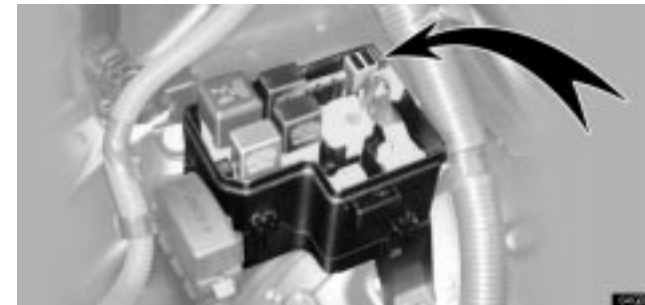
► *Driver's side kick panel*



► *Passenger's side kick panel*



► *Engine compartment* 1 Spare fuses 2 Pull-out tool



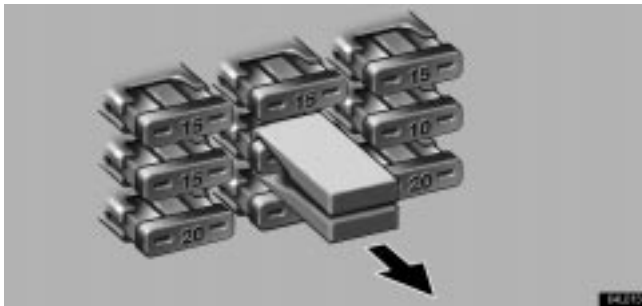
► *Engine compartment*

1. Turn the ignition switch off and open the fuse box lid.

Determine which fuse may be causing the problem. The lid of the fuse box shows the name of the circuit for each fuse.

## ELECTRICAL COMPONENTS

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**2. Make sure the inoperative component is turned off. Pull the suspected fuse straight out with the pull-out tool and check it. If it has blown, push a new fuse into the clips.**



► **Good**

► **Blown**

a. Look carefully at the fuse. If the thin wire is broken, the fuse has blown. If you are not sure or if it is too dark to see, try replacing the suspected fuse with one of the same value that you know is good.

b. Install only a fuse with the amperage rating designated on the fuse box lid.

If you do not have a spare fuse, in an emergency you can pull out the "CIG", "RAD NO.1" or "OBD" fuse, which may be dispensable for normal driving, and use it if its amperage rating is the same.

If you cannot use one of the same amperage, use one lower than, but as close as possible to, the amperage. If the amperage is lower than that specified, the fuse might blow out again but this does not indicate anything wrong. Be sure to get the correct fuse as soon as possible and return the substitute to its original clips.

It is a good idea to purchase a set of spare fuses and keep them in your vehicle for emergencies.

If the new fuse immediately blows out, there is a problem with the electrical system. Have your Lexus dealer correct it as soon as possible.

 **CAUTION**

Never use a fuse with a higher amperage rating, or any other object, in place of a fuse. This may cause extensive damage and possibly a fire.

## CHECKING THE CARTRIDGE TYPE FUSES



► **1** *Good* **2** *Melted*

If the headlights or other electrical components do not work and the blade type fuses are O.K., check the cartridge type fuses. If any of the cartridge type fuses are blown, they must be replaced.

If there is an overload in the circuits from the battery, the fuses are designed to blow before the entire wiring harness is damaged.

## ELECTRICAL COMPONENTS

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### CAUTION

Always use a genuine Lexus fuse or equivalent for replacement. Never install an ordinary wire – even for a temporary fix. This may cause extensive damage and possibly a fire.

### NOTICE

*Before replacing the fuses, have the cause of electrical overload determined and repaired by your Lexus dealer.*

## ADDING WASHER FLUID



**If the washer tank becomes nearly empty, add washer fluid.**

You may use plain water as washer fluid. However, in cold areas where temperatures range below the freezing point, use washer fluid containing antifreeze. This product is available at your Lexus dealer and most auto parts stores. Follow the manufacturer's directions for how much to mix with water.

### NOTICE

*Do not use engine antifreeze or any other substitute because it may damage your vehicle's paint.*

## CHECKING THE HEADLIGHT AIM



- ▶ **1** *Beam angle gauge (vertical movement)*
- ▶ **2** *Beam angle gauge (horizontal movement)*

Before checking the headlight aim:

1. Be sure that the body around the headlight is not deformed.
2. Park the vehicle on a level spot.
3. The driver gets into the driver's seat and puts the vehicle in a state readying for a driving (with a full tank).
4. Bounce the vehicle several times.

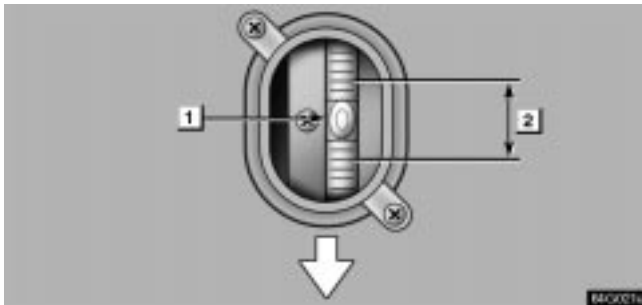
## Adjusting the headlight aiming



- ▶ **1** *Adjusting bolt A*
- ▶ **2** *Adjusting bolt B*

## ELECTRICAL COMPONENTS

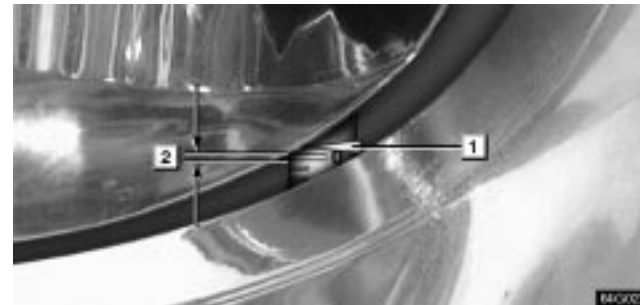
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► **1** Bubble **2** Acceptable range

**Vertical movement gauge:** The bubble of the gauge should not deviate from the center of the gauge by more than 2 marks to either side of the gauge.

If the bubble is out of the acceptable range of the beam angle gauge, adjust it using bolt A.



► **1** Mark **2** Acceptable range

**Horizontal movement gauge:** The mark should not deviate by more than one mark to either side of the gauge.

If the edge of the lens does not match "0" mark, adjust the lens using bolt B.

If the error is over the value specified above, take the vehicle to your Lexus dealer to adjust the headlight aim.

After adjusting the headlight in the vertical direction, check that the light has been shifted from the adjusted position in the horizontal direction.

## **REPLACING LIGHT BULBS**

The illustration on the following pages show the locations of light bulbs. If it is necessary to replace a bulb, take your vehicle to your Lexus dealer as soon as possible. Use bulbs with the bulb numbers and wattage ratings given in the table.

 **CAUTION**

- Do not disassemble, repair or take apart the low beam headlight bulbs, connector, power supply circuits and rotated components. Or you may be injured by electric shocks. Call your dealer when the headlights fail to work or have to be replaced or disposed of.
- Halogen bulbs have pressurized gas inside and require special handling. They can burst or shatter if scratched or dropped. Hold a bulb only by its plastic or metal case. Do not touch the glass part of a bulb with bare hands.

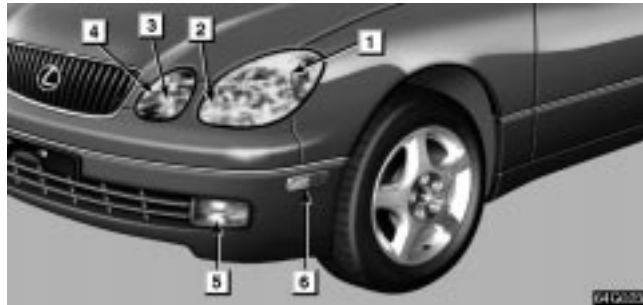
**NOTICE**

*Only use a bulb of the listed type.*

The inside of the lens of exterior lights such as headlights may temporarily fog up when the lense becomes wet in the rain or in a car wash. This is not a problem because the fogging is caused by the temperature difference between the outside and inside of the lens, just like the windshield fogged up in the rain. However, if there is a large drop of water on the inside of the lens, or if there is water pooled inside the light, contact your Lexus dealer.

## ELECTRICAL COMPONENTS

### LIGHT LOCATION



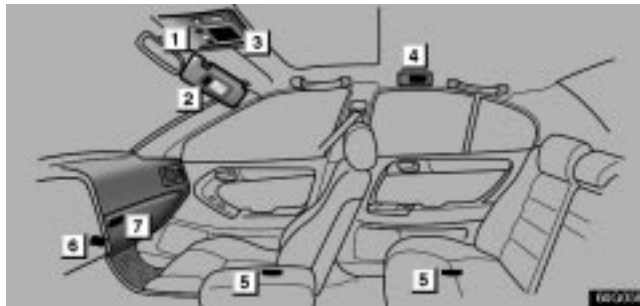
Light Bulbs	Bulb No.	W	Type
<b>1</b> Headlight (Low beam) Discharge bulb	D2R	35	B
Halogen bulb	HB4	51	C
<b>2</b> Front turn signal light	1156	21	D
<b>3</b> Headlight (High beam)	HB3	60	A
<b>4</b> Parking light	—	5	D
<b>5</b> Fog light	HB4	51	C
<b>6</b> Front side marker light	194	3.8	D



Light Bulbs	Bulb No.	W	Type
<b>1</b> Trunk light	194	3.8	D
<b>2</b> High mounted stoplight	—	5	D
<b>3</b> Tail/stop light	—	5/21	D
<b>4</b> Tail light	—	5	D
<b>5</b> Rear turn signal light	—	21	D
<b>6</b> Back-up light	921	16	D
<b>7</b> Tail/stop light	—	5/21	D
<b>8</b> License plate light	—	5	D



## ELECTRICAL COMPONENTS



Light Bulbs	Bulb No.	W	Type
<b>1</b> Front personal lights	—	8	F
<b>2</b> Vanity lights	—	3	E
<b>3</b> Front interior lights	—	8	E
<b>4</b> Rear personal lights	—	5	F
<b>5</b> Door courtesy lights	194	3.8	D
<b>6</b> Foot lights	—	1.4	D
<b>7</b> Glove box light	—	1.2	D

- A: HB3 halogen bulbs
- B: D2R discharge bulbs
- C: HB4 halogen bulbs
- D: Wedge base bulbs
- E: Double end bulbs
- F: Single end bulbs

