LIGHTING

■HEADLIGHT

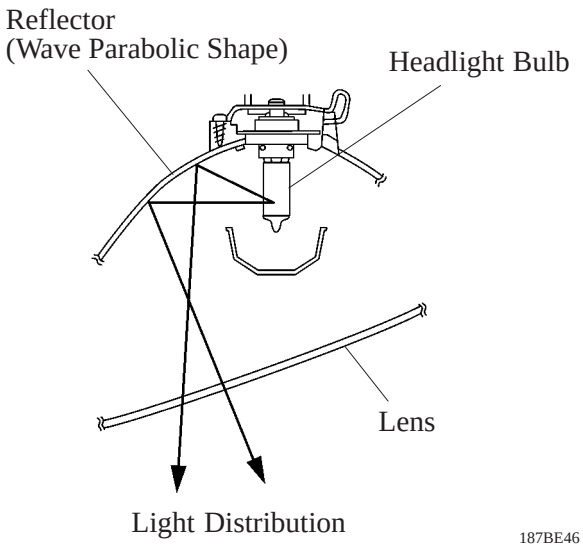
1. General

- A large headlight in which the high beam, low beam, clearance light, and turn signal light are integrated have been adopted on the new LS430. The lights are provided with wave reflectors to improve their appearance.
- HID (High Intensity Discharge) headlights that produce light with a longer reach and wider distribution have been adopted for the low beams of all models in order to improve visibility.

2. Wave-Reflector Type Headlight

With the wave-reflector type headlights, the light from the bulbs is dispersed and distributed through wave parabolic shaped reflectors. As a result, the lens cut pattern is no longer provided in the center of the lens, thus realizing a clear look.

▶ Light Distribution Imaginary Diagram ◀



Wave-Reflector Type Headlight

3. HID (High Intensity Discharge) Headlight System

General

The HID headlight system that has been adopted on the new LS430 applies high voltage to the electrodes on the light bulb to discharge arcs, causing the metal atoms that are enclosed in the bulb to emit light.

Construction and Operation

The HID headlight system consists of metal halide bulbs and a light control ECU. The basic operation and constrcution are the same as in the previous system.

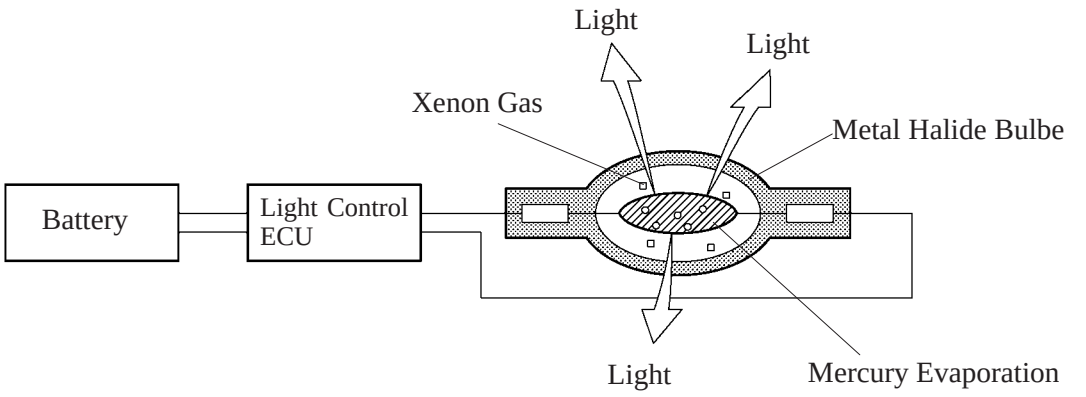
1) Metal Halide Bulbe

a. Construction

The metal halide bulb contains xenon gas, mercury, and metal halide.

b. Operation

- When high voltage (approximately 20,000 volts) is applied to the electrodes of the metal halide bulb, the xenon gas in the bulb emits light.
- As the temperature in the bulb rises, the mercury evaporates and causes arcs to be discharged.
- As the temperature in the bulb rises even further, the metal halide in the mercury arc separates into metal atoms and iodine atoms.
- The separated metal atoms discharge light, which causes the bulb to emit light.



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CAUTION

The replacement of an HID (High Intensity Discharge) must be performed only by a LEXUS dealer. Never touch the glass portion or the electrode portion of the bulb because high voltage that is generated at those areas is very dangerous.

2) Light Control ECU

a. General

The light control ECU is an electronic control unit which is necessary for illuminating the metal halide bulb. A light control ECU is located under each headlight unit. This ECU provides the functions listed below.

- Generates the high voltage (approximately 20,000 volts) which is applied to the electrodes of the bulbs to enable the HID headlights to start to illuminate.
- Optimally controls the amperage and voltage in order to quickly provide an optimal amount of light immediately after the bulbs have been turned ON and to enable the bulbs to continue to illuminate in a stable manner.
- A fail-safe function is provided as a countermeasure against the high voltage that is generated in case that a problem occurs in the headlight system.

b. Fail-Safe Function

The light control ECU executes the fail-safe actions listed below in accordance with the item that has been detected.

Item	Outline
Detection of Abnormal Input Voltage	If the voltage that is input to the light control ECU deviates from the operating voltage (9-16 volts), the ECU stops illuminating the headlights, and resumes illuminating the headlights once the voltage reverts to the operating voltage range. However, if the input voltage decreases after the headlights have illuminated, the headlights will remain illuminated until the bulbs are extinguished.
Detection of Abnormal Output (Open Circuit or Short Circuit) or Flashing Bulb	If an abnormal condition (open or short circuit) occurs in the voltage that is output by the light control ECU, or if the bulb flashes, the ECU stops illuminating the headlights and will maintain this state until the power is reinstated (by turning the headlight control switch from OFF to ON).
Detection of Bulb Open	If a bulb is not inserted in its socket, the ECU stops generating high voltage until the bulb is inserted correctly and the power is reinstated (by turning the headlight control switch from OFF to ON or turning the ignition switch from OFF to ON).