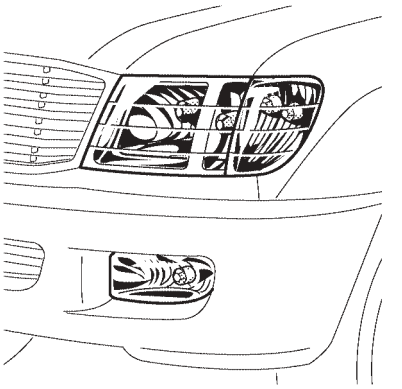
■ HEADLIGHTS

1. General

- A 4-light headlight system with vertically laid out low and high beams has been adopted.
- The multi-reflector type headlight system has been adopted on the VX grade models.
- Discharge headlights that realize a high level of visibility are optional equipment for the high beams on the VX grade model for the G.C.C. countries and Australia.



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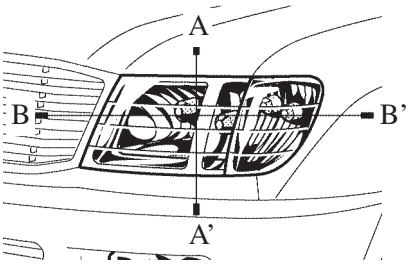
2. Construction

4-Light Headlight System

The low and high beam headlights and clearance light are integrated into one housing. The low-beam headlight bulb is located in the upper part of this housing, and the high-beam headlight bulb in the lower part. The parking light is enclosed in the outer side of the headlights.



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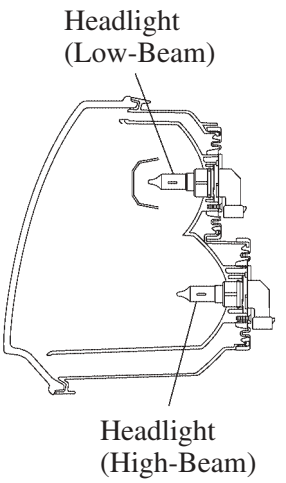

A – A' Cross Section

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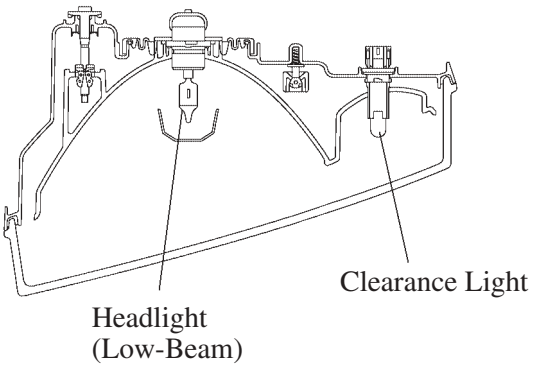

B – B' Cross Section

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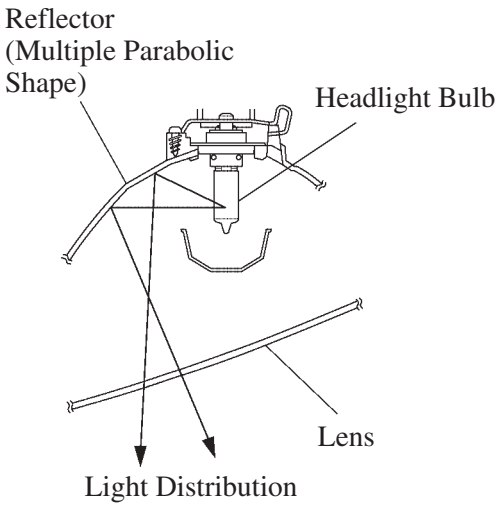
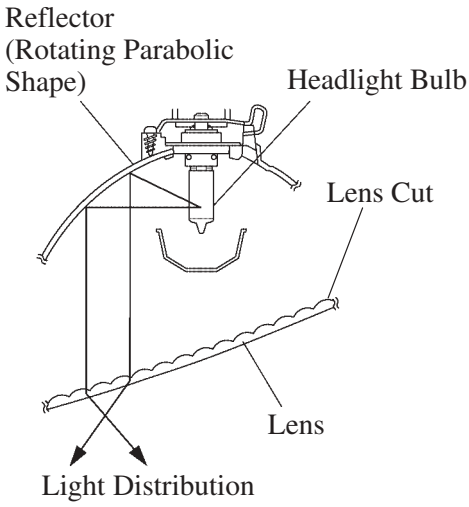
Multi-Reflector Type Headlight

Conventional headlights accomplish the dispersion and distribution of light which is emitted by the bulbs through the lens cut pattern. However, with the multi-reflector type headlights, the light from the bulbs is dispersed and distributed through multiple 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 Diagram ◀



Multi-Reflector Type Headlight



Conventional Headlight

Discharge Headlight

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1) General

The Discharge Headlight system 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.

2) Construction and Operation

The Discharge Headlight system consists of metal halide bulbs and a light control computer.

a. Metal Halide Bulb

i) Construction

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

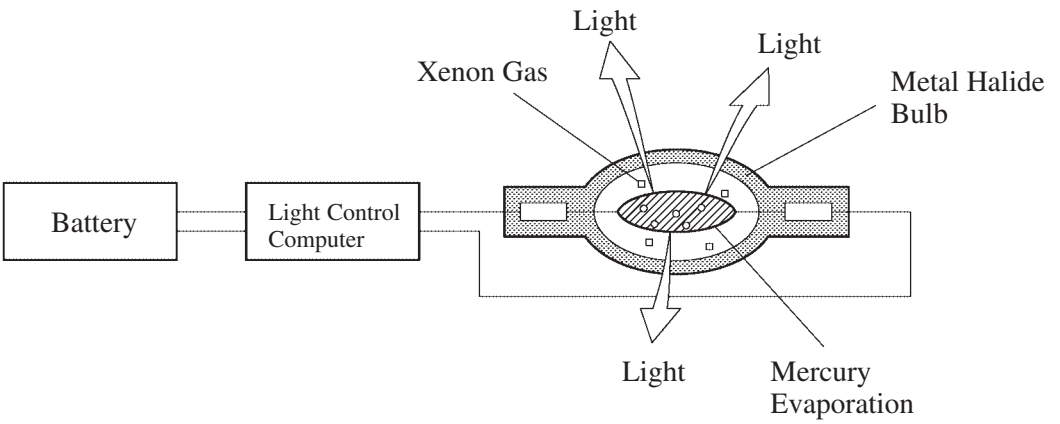
ii) Operation

① 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.

② As the temperature in the bulb rises, the mercury evaporates and causes arcs to be discharged.

③ As the temperature in the bulb rises even further, the metal halide in the mercury arc separates into metal atoms and iodine atoms.

④ The separated metal atoms discharge light, which causes the bulb to emit light.



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b. Light Control Computer

The light control computer is an electronic control unit which is necessary for illuminating the metal halide bulb. A light control computer is located under each headlight unit.
This computer 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 Discharge 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.

i) Fail-Safe Function

The light control computer 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 computer deviates from the operating voltage (9-16 volts), the computer 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 computer, or if the bulb flashes, the computer 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 computer stops generating high voltage until the power source switch (headlight control switch or ignition switch) turns from ON to OFF, 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).