

Exterior Lighting Systems Description and Operation

Exterior Lamps

The exterior lighting system consists of the following lamps if equipped:

- Headlamps
- Daytime Running Lamps (DRL)
- Front fog lamps
- Rear fog lamps
- Park, tail and license lamps
- Turn signal lamps
- Hazard warning lamps
- Repeater lamps
- Stop lamps
- Backup lamps

Low Beam Headlamps RPO T83

The headlamps consist of 1 single bulb which provides low and high beam.

The headlamps may be turned ON in 3 different ways:

- When the headlamp switch is placed in the ON position, for normal operation
- When the headlamp switch is placed in the AUTOMATIC LIGHT position, for automatic lamp control
- When the headlamp switch is placed in the AUTOMATIC LIGHT position, with the windshield wipers ON in daylight conditions, after a 6 s delay

The body control module (BCM) controls the headlamps based on the inputs explained above. When a low beam request is received, the BCM supplies an B+ to the low beam headlamps, illuminating the low beam headlamps. When a high beam request is received, the BCM grounds the headlamp high beam relay control circuit.

Automatic Lamp Control RPO T83

Automatic Light is switched ON as default. It can be switched OFF by turning the light switch to OFF position. It will be switched on again by doing so again. The rain/light sensor module will send the actual ambient light state (day/night) to the BCM. If Automatic Light is enabled, BCM will react on the message received from rain/light sensor module by switching ON/OFF low beams.

Flash to Pass

When the low beam headlamps are on and the turn signal/multi-function switch is momentarily placed in the flash to pass position, ground is applied to the turn signal/multi-function switch. The turn signal/multifunction switch applies ground to the BCM through the flash to pass switch signal circuit. The BCM then applies ground to the high beam relay control circuit. This energizes the high beam relay, closing the switch side contacts of the high beam relay, applying battery voltage to the left and right high beam fuses. Battery voltage is applied from the high beam fuses through the high beam voltage supply circuit to the high beam headlamp assemblies. This causes the high beam headlamps to illuminate at full brightness momentarily or until the flash to pass switch is released.

Daytime Running Lamps RPO T3X

The daytime running lamps (DRL) function activates the low beam lamps. The DRL will operate when the following conditions are met:

1. Engine is running.
2. Headlamp switch in AUTOMATIC LIGHT position.

By turning the headlamp switch in the OFF position the automatic light function and the DRL will be deactivated.

The ambient light sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2-4.9 V depending on outside lighting conditions. The HVAC control module provides a low reference ground and 5 V reference signals to the ambient light sensor. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either DRL or low beam when the headlamp switch is in the AUTOMATIC LIGHT position. In daylight conditions, the BCM will command the DRL ON by applying battery voltage to the left and right DRL lamps (low beams). Any function or condition that turns ON the headlamps will cancel DRL operation.

When the DRL function is activated by the BCM the continuously high beam functionality is disabled, the possibility to use the flash to pass function stays active.

Front Fog Lamps

The front fog lamp switch signal circuit is grounded momentarily by pressing the front fog lamp switch. The body control module (BCM) energizes the front fog lamp relay by applying ground to the front fog lamp relay control circuit. When the front fog lamp relay is energized, the relay switch contacts close and battery voltage is applied through the front fog lamp fuse to the front fog lamp supply voltage circuit which illuminates the front fog lamps.

Rear Fog Lamps RPO T79

The rear fog lamp switch signal circuit is grounded through a resistor momentarily by pressing the rear fog lamp switch. The body control module (BCM) energizes the rear fog lamp supply voltage circuit which illuminates the rear fog lamp. With the rear fog lamp switch activated the BCM sends a message via serial data to the instrument cluster requesting the instrument cluster to illuminate the rear fog indicator.

Park, Tail and License Lamps

The park lamps, tail lamps and license plate lights are turned ON when the headlamp switch is placed in the PARK LIGHT or LOW BEAM position or anytime the headlights are requested. When the BCM receives a request from the headlamp switch to turn ON the park lamps the BCM sends out a PWM signal, which illuminates the park lamps, tail lamps and license plate lights.