

## Exterior Lighting

**NOTE:** The Smart Junction Box (SJB) is also known as the Generic Electronic Module (GEM).

### Lamp Assembly Condensation

Exterior lamps are vented to accommodate normal changes in pressure. Condensation can be a natural by-product of this design. When moist air enters the lamp assembly through the vents, there is a possibility that condensation can occur if the temperature is cold. When normal condensation occurs, a thin film of mist can form on the interior of the lens. The thin mist eventually clears and exits through the vents during normal operation. Time to clear the lens of acceptable mist varies with ambient humidity and lamp types. Normal condensation clears from any lamp in 48 hours under dry weather conditions.

Do **not** replace a lamp assembly with acceptable levels of condensation, such as:

- presence of thin mist (no streaks, drip marks or droplets present)
- fine mist covers less than 50% of the lens

Examples of unacceptable moisture (usually caused by a lamp housing leak):

- water puddling inside the lamp
- large water droplets, drip marks or streaks present on the interior of the lens

### Headlamps

The headlamps are controlled by the [SJB](#). The headlamp and multifunction switches are constantly monitored by the [SJB](#). The [SJB](#) processes information (such as low beam, high beam or flash-to-pass requests) from the switch inputs, and then outputs voltage to the headlamps accordingly. In the event the [SJB](#) detects a fault with any of the headlamp switch inputs, all the exterior lamps are illuminated. There is also a headlamp battery saver feature. This feature turns off the headlamps 10 minutes after the ignition switch is turned off.

#### Headlamp Functionality — Halogen

When the low beams are requested (based on inputs to the [SJB](#)), the low beams are illuminated.

When the high beams are requested, the high beams are illuminated and the low beams turn off.

When the flash-to-pass feature is requested, the high beams are illuminated as long as the multifunction switch is held in the FLASH-TO-PASS position.

#### Headlamp Functionality — High Intensity Discharge (HID)

Vehicles equipped with High Intensity Discharge (HID) headlamps utilize relays to control the voltage to the [HID](#) ballasts. The ballasts are located on the side of each headlamp assembly.

When the low beams are requested (based on inputs to the [SJB](#)), the [HID](#) relays are energized and the low beams are illuminated.

When the high beams are requested, the [HID](#) relays stay energized and a shutter within each headlamp is activated. This changes the headlamp beam pattern to illuminate a greater distance.

The flash-to-pass feature is unique for [HID](#)-equipped vehicles. If the low beams are off when the flash-to-pass is requested, the [HID](#) relays and the shutters within the headlamps are activated for less than 0.5 second. If the low beams are on when the flash-to-pass is requested, the shutters within the headlamps are activated as long as the multifunction switch is held in the FLASH-TO-PASS position.

### Stoplamps

The stoplamp outputs are controlled by the [SJB](#). The stoplamp switch is monitored by the [SJB](#). When the [SJB](#) detects the brake pedal is applied, the [SJB](#) processes this information and outputs voltage to the stoplamps.

### **Turn Signal and Hazard Lamps**

All turn signal outputs are controlled by the [SJB](#). The multifunction switch and the hazard switch are monitored by the [SJB](#). When the multifunction switch is in the LH or RH TURN POSITION, or the hazard switch is engaged, the [SJB](#) processes this information and outputs on/off voltage to the appropriate turn signal and hazard lamps. All turn signal lamps provide a lamp outage indication.

### **Parking, Rear and License Plate Lamps**

The parking, rear, license plate and side marker lamps are controlled by the [SJB](#). The headlamp switch is monitored by the [SJB](#). When the headlamp switch is in the HEADLAMPS ON or PARKING LAMPS ON position, the [SJB](#) processes this information and outputs voltage to the parking, rear, licence plate and side marker lamps.

The battery saver feature does not turn the parking lamps off when the headlamp switch is in the PARKING LAMPS ON position.

### **Fog Lamps**

The fog lamps are controlled by the [SJB](#). The [SJB](#) monitors inputs from the headlamp switch and the multifunction switch. The [SJB](#) can only turn the fog lamps on when the ignition switch is in the RUN position, the parking lamps are on and the high beams are off. When the fog lamp switch is engaged, the [SJB](#) then activates the fog lamp relay, providing power to the fog lamps.

### **Reversing Lamps**

The reversing lamps are controlled by the [SJB](#). The PCM sends a message through the communication network indicating the transmission is in REVERSE (R). The [SJB](#) processes this information and outputs voltage to the reversing lamps.

### **Daytime Running Lamps (DRL)**

For vehicles with halogen headlamps, this feature illuminates the low beam headlamps at a reduced intensity when the Daytime Running Lamps (DRL) are requested on.

For vehicles with [HID](#) headlamps, this feature illuminates the fog lamps at full intensity when the [DRL](#) are requested on.

The [DRL](#) are requested on when the following conditions exist:

- The ignition switch is in the RUN position.
- The headlamp switch is in the OFF position.
- The parking brake is not engaged.

The [DRL](#) are not a programmable parameter for this vehicle.

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