

DYNAMIC LASER CRUISE CONTROL

Dynamic Laser Cruise Control (DLCC) is offered in select Toyota and Lexus models, taking cruise control systems to the next level. Using the latest Toyota technology, the DLCC system is designed to help control the distance between the vehicle and the traveling vehicle ahead based on the driving lanes, the vehicle traveling ahead, and vehicle speed.

DLCC has two cruise control modes: constant speed and vehicle-to-vehicle control. The cruise control switch is used for switching between the two modes. Cruise control in the constant speed mode is identical to a conventional type cruise control system. The DLCC starts in the vehicle-to-vehicle control mode, which immediately recognizes and determines the lane in which the driver and the vehicle ahead are traveling. This enables the system to help maintain the pre-set vehicle-to-vehicle distance in accordance with the speed of the vehicle ahead.

The vehicle-to-vehicle control mode consists of four main controls: constant speed, deceleration, following and acceleration. Similar to a conventional type cruise control system, the constant speed control mode is controlled by the Electronic Control Module (ECM), which sends signals to the solenoid valves, throttle control motor and other actuators.

The vehicle-to-vehicle distance control mode is controlled by a laser sensor and distance control Electronic Control Unit (ECU). The laser sensor is made up of the laser emitting component, laser receiving component, and the Central Processing Unit (CPU).

The laser emitting component radiates laser beams forward while the laser receiving component uses the reflected beams for detecting the presence of a preceding vehicle as well as measuring the vehicle-to-vehicle distance. The laser emits beams 16 degrees horizontally and four degrees vertically. The detection range of the sensor is approximately 400 feet ahead. The CPU will not react to non-moving objects.

The CPU calculates the vehicle-to-vehicle distance and the relative speed, transmitting this information to the distance control ECU. The signals are first sent to the ECM for data processing and then to the actuators.

In constant speed control mode, the ECM compares the actual vehicle speed and the set speed and regulates the throttle control to obtain the set vehicle speed. If

the vehicle speed is less than the set speed, ECM activates the throttle motor in the throttle open direction.

In deceleration control mode, the ECM slows the vehicle using throttle and brake control so the vehicle-to-vehicle distance with the preceding vehicle equals the set distance. The distance settings are: long (approximately 245 feet), medium (approximately 165 feet), and short (approximately 100 feet) while traveling at 55 miles per hour. If the deceleration rate is more than a predetermined value, the Vehicle's Stability Control (VSC) ECU will activate the rear brake lights to inform the driver behind of the vehicle's deceleration.

In the following-control mode, the ECM helps maintain the pre-set vehicle-to-vehicle distance by matching the speed of the vehicle ahead, and regulating the throttle.

The acceleration control accelerates the vehicle to the pre-set vehicle speed, if the vehicle ahead has changed lanes. Then the vehicle resumes fixed-speed cruising. Cruise control has a minimum speed of 25 miles per hour. In the constant speed mode, the cruise control is cancelled automatically if the vehicle speed drops below 25 miles per hour. It will cancel and clear the memory if the vehicle speed is more than ten miles per hour below the set vehicle speed.

In vehicle-to-vehicle mode, the cruise control is cancelled automatically if it falls below 25 miles per hour but the set vehicle speed is stored in the memory. If the laser sensor is dirty, the wipers are operating at Low, High or Auto mode or the laser receives a strong light (sun light) from the vehicle ahead, the cruise control will also cancel.

DLCC is not a collision-avoidance system and will not prevent accidents. DLCC is a vehicle speed control device that is intended for use only on freeways or roads where the traffic is light or moderate. Do not rely excessively on DLCC to control the vehicle's speed.

DLCC is standard on the Sienna XLE Limited van, and available on the Avalon Limited sedan and Sequoia Platinum sport utility vehicle (SUV).

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