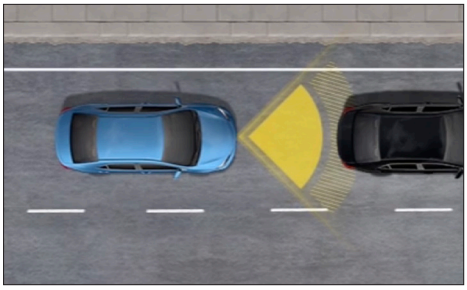
TOYOTA SAFETY SENSE™ P

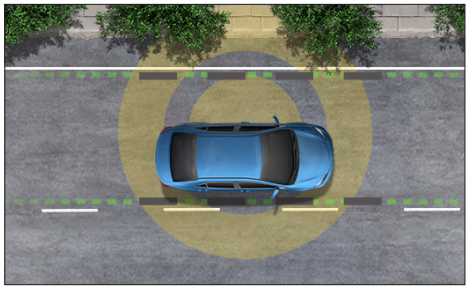
AN ADVANCED ACTIVE SAFETY PACKAGE FOR MID-SIZE AND LARGE VEHICLES

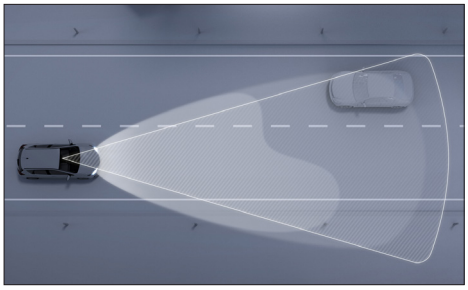
Crash protection starts with crash prevention. Collisions that result in injury may be caused by the delay in a driver's recognition of the situation and their ability to react accordingly. According to NHTSA, there were over 7.2 million reported crashes in 2016 – many of which were avoidable.

Toyota Safety Sense™ (TSS)[1] is designed to help protect drivers, passengers, people in other vehicles on the road, and pedestrians from harm. TSS represents a major milestone in Toyota's long history of creating advancements and innovations in safety that help prevent crashes and protect people.

TSS ADDRESSES THE THREE MOST COMMON ACCIDENT TYPES


Frontal Collisions


Unintended Lane Departures

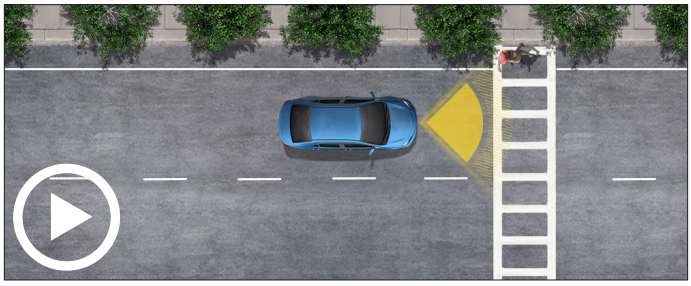

Nighttime Accidents

Under certain conditions, TSS[1] is designed to support driver awareness, decision making and vehicle operation over a wide range of speeds. Packaged together in an integrated system, TSS features help address three key areas of accident protection: preventing or mitigating **frontal collisions**[2], keeping drivers **within their lane**[3], and enhancing road safety during **nighttime driving**[4]. However, drivers are responsible for their own safety, and must always drive safely, obey traffic speed limits and laws and focus on the road while driving.

TSS-P[1] consists of four active safety and driver assistance systems:

- **Pre-Collision System (PCS)**[2] with Vehicle and Pedestrian Detection[5]
- **Dynamic Radar Cruise Control (DRCC)**[6]
- **Lane Departure Alert (LDA)**[3]
- **Automatic High Beams (AHB)**[4]

PRE-COLLISION SYSTEM (PCS)



PCS[2] uses an integrated forward-facing camera and grille-mounted radar system designed to help mitigate or avoid a potential collision with another vehicle or pedestrian*.

Vehicle Detection

When PCS[2] determines that the possibility of a frontal collision with another vehicle is high, it prompts the driver to take evasive action and brake by using an **audio and visual alert**. If the driver notices the hazard and brakes, PCS may use Brake Assist[7] to provide **additional braking force**.

If the driver does not brake in a set time and the system determines that the possibility of a frontal collision with another vehicle is likely, the system may **automatically apply the brakes,** reducing speed to help mitigate the impact or avoid the collision entirely if possible.

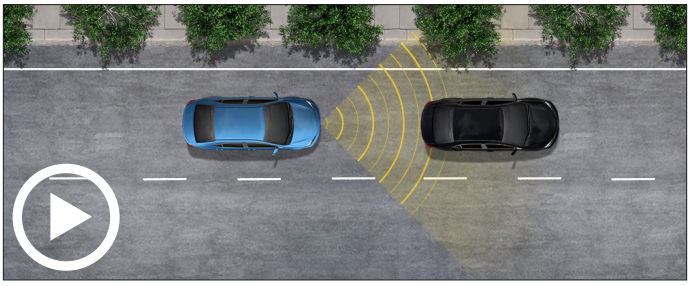
Pedestrian Detection

Under certain daytime conditions, if the Pre-Collision System[2] determines that the possibility of a frontal collision with a pedestrian is likely, it prompts the driver to take evasive action and brake by using an **audio and visual alert[5].** If the driver notices the hazard and brakes, the system may use Brake Assist[7] to provide **additional braking force.**

If the driver does not brake in a set time and the system determines that the risk of collision with a pedestrian is extremely high, the system may **automatically apply the brakes**, reducing speed to help mitigate the impact or avoid the collision entirely if possible.

	Operation Speed Range (Alert)	Operation Speed Range (Automatic Braking)	Potential Speed Reduction (Automatic Braking)
Vehicle Detection	7-110 mph	7-110 mph	25 mph
Pedestrian Detection	7-50 mph	7-50 mph	19 mph[8]

DYNAMIC RADAR CRUISE CONTROL (DRCC)



DRCC[6] is a high-tech cruise control system that uses a front grille-mounted radar and a forward-facing camera that is designed to detect a vehicle in front of you and automatically adjust the vehicle's speed to help maintain a pre-set distance behind a vehicle ahead.

Intended for highways and similar to "constant speed" cruise control, DRCC[6] lets drivers maintain a set speed without constant throttle input from the driver. DRCC goes a step further, however, by including a vehicle-to-vehicle distance control system, which adjusts the vehicle speed to help maintain a pre-set distance from vehicles in front.

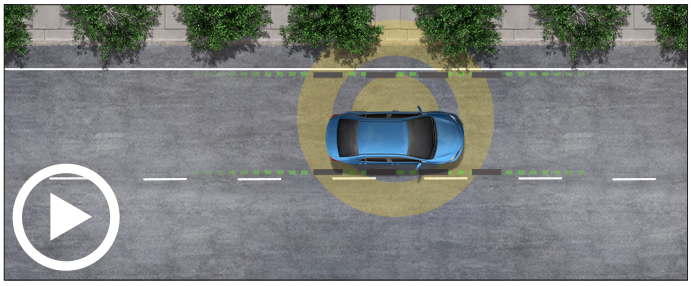
This means that if the vehicle ahead is detected traveling at a slower speed than your pre-set range, DRCC[6] will **automatically slow the vehicle** to maintain a pre-set following distance without deactivating cruise control. If DRCC determines the vehicle needs to slow down even more, an **audio and visual alert** occurs and **brakes are applied.** When there's no longer a preceding vehicle driving slower than your set speed, DRCC will **accelerate back to your set speed.**

Select TSS-P vehicles feature **Full-Speed Range Dynamic Radar Cruise Control[6]**, which is designed to allow low-speed following, speed matching, stopping, and acceleration/deceleration to a preceding vehicle.

	Minimum Initialization Speed	Operation Speed Range
DRCC	28 mph	25-110 mph
Full-Speed Range DRCC	28 mph	0-110 mph

* To ensure proper system function, Toyota does not recommend vehicle ride height modification which may adversely affect the operation of the Pre-Collision System (PCS) and Automatic Emergency Braking (AEB), Dynamic Radar Cruise Control (DRCC), Lane Departure Alert (LDA) and Automatic High Beams (AHB) systems.

LANE DEPARTURE ALERT (LDA)



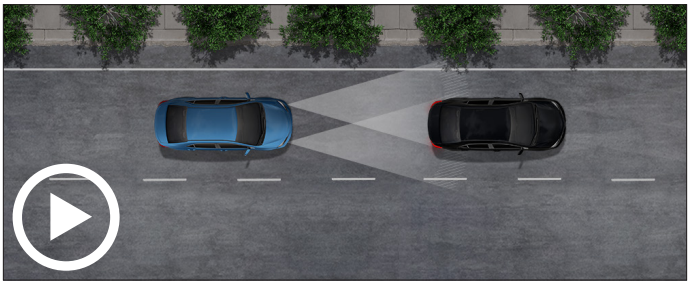
LDA[3] is designed to use an in-vehicle camera to detect lane departure when traveling on **relatively straight roads with clear lane markings**. The system's current operating status is indicated through colored lane marking illustrations on the vehicle's Multi-Information Display (MID). If LDA determines that the vehicle is starting to unintentionally deviate from its visibly marked lane, the system alerts the driver with an **audio and visual alert**. When this alert occurs, drivers must carefully check the surrounding road before safely directing the vehicle back to the center of the lane.

Steering Assist

In addition to the alert function, TSS-P vehicles equipped with Electronic Power Steering (EPS) also include Steering Assist[3]. When this functionality is enabled and LDA senses that the vehicle is unintentionally drifting from its lane, the system may **automatically make small corrective steering inputs** to help the driver keep the vehicle in its lane.

	Minimum Operation Speed
Lane Departure Alert (LDA)	32 mph

AUTOMATIC HIGH BEAMS (AHB)



AHB[4] is a safety system designed to help the driver have better visibility at night – while reducing glare for other drivers. By using high beams more frequently, the system may allow earlier detection of pedestrians and obstacles. This convenient safety feature also allows the driver to keep both hands on the wheel at all times by eliminating the need to frequently adjust the headlights.

When activated, AHB[4] is designed to rely on an in-vehicle camera to help detect the headlights of oncoming vehicles and taillights of preceding vehicles, then **automatically toggle between high and low beams**.

	Minimum Operation Speed
Automatic High Beams (AHB)	25 mph[4]

ADDITIONAL RESOURCES

Refer to Toyota.com/Safety-Sense, the TSS Precautions companion document or a Toyota Owner's Manual for additional information on TSS operation, setting adjustments, limitations and precautions.

DISCLOSURES

1. Drivers are responsible for their own safe driving. Always pay attention to your surroundings and drive safely. System effectiveness is dependent on many factors including road, weather and vehicle conditions. See Owner's Manual for additional limitations and details. **2.** The TSS Pre-Collision System is designed to help avoid or reduce the crash speed and damage in certain frontal collisions only. It is not a substitute for safe and attentive driving. System effectiveness is dependent on many factors including road, weather and vehicle conditions. See Owner's Manual for additional limitations and details. **3.** Lane Departure Alert with Steering Assist is designed to read visible lane markers under certain conditions. It provides a visual and audible alert and slight steering force when lane departure is detected. It is not a collision-avoidance system or a substitute for safe and attentive driving. Effectiveness is dependent on many factors including road, weather and vehicle conditions. See Owner's Manual for additional limitations and details. **4.** Automatic High Beams operate at speeds above 25 mph. Factors such as a dirty windshield, weather, lighting and terrain limit effectiveness requiring driver to manually operate the high beams. See Owner's Manual for additional limitations and details. **5.** The Pedestrian Detection System is designed to detect a pedestrian ahead of the vehicle, determine if impact is imminent and help reduce impact speed. It is not a substitute for safe and attentive driving. System effectiveness depends on many factors, such as speed, size and position of pedestrian and weather, light and road conditions. See Owner's Manual for additional limitations and details. **6.** Dynamic Radar Cruise Control is designed to assist the driver and is not a substitute for safe and attentive driving practices. System effectiveness is dependent on many factors including road, weather and traffic conditions. See Owner's Manual for additional limitations and details. **7.** Brake Assist (BA) is designed to help the driver take full advantage of the benefits of ABS. It is not a substitute for safe driving practices. Braking effectiveness also depends on proper vehicle maintenance, tire and road conditions. See Owner's Manual for additional limitations and details. **8.** Results achieved during testing using a vehicle traveling at 19 mph and a stationary vehicle/pedestrian; system operation depends on driving environment (including road and weather) and vehicle circumstances.