Details of this manual

This manual only includes a summary and the basic operating procedures of Advanced Drive.

For details about the controls, use, warnings/precautions, etc. of each function, refer to the Online Owner's Manual at Toyota.com

Before using this system, be sure to read the Owner's Manual which corresponds to the software version of the system. (→P.4)

https://www.toyota.com/owners/resources/warranty-owners-manuals/manual?om=om62u0301.mirai.22.2111.fcev.20TM

Booklet_USA_M62134_en

Reading this manual

Illustrations in this manual

Depending on the vehicle specifications or system software version, the content of the displays in this manual may differ from the actual vehicle.

Symbols in this manual

Symbols	Meanings
	Indicates the action (pushing, turning, etc.) used to operate switches and other devices.
1 2 3...	Indicates operating or working procedures. Follow the steps in numerical order.
	WARNING: Explains something that, if not obeyed, could cause death or serious injury to people.
	NOTICE: Explains something that, if not obeyed, could cause damage to or a malfunction in the vehicle or its equipment.

Symbols	Meanings
	Indicates the component or position being explained.
	Means **Do not**, **Do not do this**, or **Do not let this happen**.

Accessing an Owner's Manual which matches the system specifications

To access the appropriate Owner's Manual, it is necessary to check the software version of the system and then visit Toyota.com

1 Check the current software version by smartphone app.

The software version as of December 2023 is Ver. 05.01.

2 Access the following URL using a computer, smartphone, etc.:

https://www.toyota.com/owners/resources/warranty-owners-manuals/manual?om=om62u0301.mirai.22.2111.fcev.20TM

3 Select the file which includes the software version, as checked in step 1.

Toyota Teammate Advanced Drive

1

Before using Advanced Drive

In order to continuously use all functions of Advanced Drive, it is necessary to perform certain preparations and keep the software updated to the latest version.

Preparation before use

It is necessary to enter a subscription service contract, provided by Toyota, to use these functions. For details, contact your Toyota dealer.

■ Precautions for use

- Be aware that the system may temporarily be disabled if a regulatory or safety related issue occurs.
- If a subscription service contract has not been entered or the contract has not been renewed, Advanced Drive may not be used or some functions may not be available.

Software updates

Advanced Drive uses the Data Communication Module (DCM) to perform software updates when functions are changed/added or improvements are made to the system.

■ Software update procedure

Software updates are performed by smartphone app.

When there is a software update notification, follow the instructions displayed.

When the software is updated, the operating method of functions may change and functions may be added.

For details about changes or additions, check the Online Owner's Manual at Toyota.com.

(→P.4)

■ Software updates

- Once the software is updated, it cannot be reverted to a previous version.
- Depending on the communication environment and the content of an update, a software update may take several hours. Although an updates will be suspended when the power switch is turned off, it will resume when the power switch is changed back to ON mode.
- Advanced Drive can still be used while the software is being updated.
- When a message requesting that update be performed at a Toyota dealer is displayed, contact your

Toyota dealer.

● In the following situations, the software may be updated automatically:

- When a possible system issue or other safety related issue is corrected*1
- When a regulatory issue has is corrected*1
- When small corrections which do not affect system operation or performance are made*2

*1: All available updates may be installed and the software updated to the most current version.

*2: A notification screen will not be displayed.

WARNING

■For safe use

When the software is updated, the operating methods of functions may change. Using this system without knowing the correct operating methods may lead to an accident resulting in death or serious injury.

Make sure to read the Online Owner's Manual which corresponds to the software version of the system, available at Toyota.com, before using this system. (→P.4)

Data handling

The Advanced Drive mainly records certain data, such as the following.

▶ Recorded for several seconds at certain times after the hybrid system is started*

- Operation status of the system
- Sensor detection information
- Images from the cameras
- Location information

*: While driving, data is recorded for several seconds to approximately 1 minute before and after certain collision or collision-like situations.

▶ Constantly recorded while driving

- Distance driven
- Vehicle speed
- Accelerator status

Toyota uses the Data Communication Module (DCM) to obtain recorded data. Also, data can be obtained when your vehicle is brought to a Toyota dealer.

Collected data is used for research and development of autonomous driving, advanced safety systems, and map creation technology. Also, this data may be used for collision analysis or resolution, malfunction diagnosis, or to provide customer support.

■ **Recorded data**

- This system does not record conversations or other sounds.
- The system does not record personal information (example: name, gender, age, etc.).

■ **Data usage**

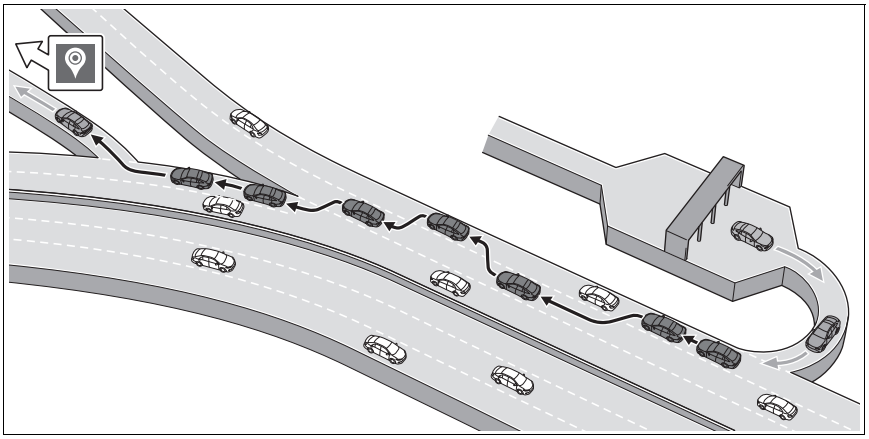
- Toyota will not disclose the recorded data to a third party except:
  - With the consent of the vehicle owner or with the consent of the lessee if the vehicle is leased
  - In response to an official request by the police, a court of law or a government agency
  - When the data can be used for research and development of autonomous driving, advanced safety systems, and map creation technology and has been processed so that it is not tied to a specific vehicle or vehicle owner
- Data recorded by this system may be used in combination with data collected through other means, which may identify a user, when performing collision analysis.

Advanced Drive

Description of functions

Advanced Drive is a system which uses high definition map data and detection information from various sensors to, through confirmation of the conditions by the driver, provide steering, acceleration, and deceleration support on highways and expressways.

Also, in an emergency, the system supports deceleration, moving to the shoulder of the road, and stopping, to help avoid a collision or help reduce the impact of a collision.



■ Functions

Refer to the Online Owner's Manual at Toyota.com. (→P.4)

Hands-free driving

Depending on local laws and regulations, driving without hands on the steering wheel may be prohibited.Use this system in accordance with applicable federal and state laws.

Possible impact of the LiDAR sensors

The LiDAR sensors may affect the operation of other equipment that uses infrared sensors. (For example, some automated parking systems may prevent the vehicle from being parked properly.)

For details, contact your Toyota dealer.

WARNING

For safe use

Driving safely is the sole responsibility of the driver. Do not overly rely on this system, and pay careful attention to the surrounding conditions in order to ensure safe driving.

- Advanced Drive is not an automated driving system.

This system provides the driver with information and driving assistance according to the road shape and conditions, traffic conditions, and the condition of the driver themself. Always pay careful attention to the surrounding conditions as use of the system is the responsibility of the driver.

- Depending on the condition of the surrounding area, the road, or the driver, Advanced Drive may not operate or operation may be suspended. Also, it may not always be able to achieve the same level of performance. Read the operating conditions of each function carefully. Do not overly rely on this system and always drive carefully.
- As the recognition performance and control performance of Advanced Drive are limited, driver operation is necessary to ensure safety while the system is operating.

It is the driver's responsibility to pay careful attention to their surroundings and be ready to take over driving at any moment.

- Even if Advanced Drive is operating properly, the surrounding conditions as recognized by the driver and detected by the system may differ. Therefore, it is necessary for the driver to pay attention, assess risks, and ensure safety. Over-reliance on this system to drive the vehicle safely may lead to an accident resulting in death or serious injury.
- As Advanced Drive system control uses map information, the system may not operate correctly if the actual road conditions differ from the map information, such as when there is road construction, etc. Do not overly rely on this system, and pay careful attention to the surrounding conditions as use of the system is the responsibility of the driver.

WARNING

●While Advanced Drive is operating, as driver operation may become necessary, the driver must ensure they have clear visibility of their surroundings.

Use the following to ensure visibility:

- Headlights
- Windshield wipers
- Windshield defogger, rear window defogger and outside rear view mirror defoggers

●In certain situations, a message urging the driver to hold the steering wheel may be displayed by Advanced Drive. In this case, hold the steering wheel and drive the vehicle manually to ensure safety.

●Always observe the legal speed limit when driving on public roads.

■Situations in which Advanced Drive should not be used

Do not use Advanced Drive in situations such as the following.

As the system will not be able to provide appropriate control, using it may lead to an accident resulting in death or serious injury.

●Vehicle conditions

- When the vehicle may be affected by the turbulence of other nearby vehicles
- When water, snow, dirt or other foreign matter is attached to the windshield
- When the windshield is fogged up, or covered with condensation or ice
- When the windshield is cracked or damaged
- When the lens of a camera is dirty or fogged
- When water, snow, dirt or other foreign matter is attached to a sensor or its surrounding area
- When the carried load has caused the vehicle height to change significantly or the vehicle to be tilted
- When driving in an emergency lane
- When driving in a flex lane
- When tire chains are installed
- When the tire inflation pressure is not correct
- When the installed tires are significantly worn
- When tires other than the manufacturer specified size are installed
- When a compact spare tire is installed to the vehicle or an emergency tire puncture repair kit has been used
- When the wheels are misaligned
- When the vehicle has been subjected to a strong impact, such as in a collision
- When the vehicle cannot be driven stably, due to a collision, malfunction, etc.
- When towing with the vehicle
- When the vehicle is being towed

●Road/traffic conditions

- When driving on a road with sharp curves
- When the road surface is slick, such as when it is covered with ice or snow

WARNING

- When driving on a steep slope
- When driving on a road with a steep grade that changes sharply
- When driving in heavy traffic
- When in traffic that is constantly accelerating/decelerating

● Weather

- When driving in strong wind
- When driving in inclement weather (rain, fog, snow, sandstorm, etc.)

Advanced driving support

The advanced driving support is a system which, through confirmation of the situation by the driver, provides support with lane maintenance, acceleration, deceleration, stopping, starting off, and lane changing while driving on a highway or expressway.

Also, when a destination has been set on the navigation system, support for some of the driving operations necessary to reach the destination will be provided.

Contents

WARNING

■For safe use

Driving safely is the sole responsibility of the driver. Do not overly rely on this system, and pay careful attention to the surrounding conditions in order to ensure safe driving.

- The advanced driving support is designed for use on roads such as highways and expressways. Do not use it in any other areas, as it may not operate correctly.

Also, do not use this system on roads which are shared with pedestrians and bicyclists.

- Advanced driving support is not a system which allows for inattentive driving or the driver to not watch the road.

Always pay careful attention to the surrounding conditions, as ensuring safety is the responsibility of the driver.

- As the advanced driving support cannot detect intersections, traffic lights, or stop lines, if any of these are encountered, the system will not be able to provide appropriate control, possibly leading to an accident resulting in death or serious injury.

Always pay careful attention to the surrounding conditions, as ensuring safety is the responsibility of the driver.

- While the advanced driving support is operating, various information, such as the system operating state, will be displayed. Maintain a driving posture which allows the entire display to be viewed.

Basic operations

■ Setting a destination on the navigation system

When using Dynamic Navigation*, it will be linked with route guidance and provide support for some of the driving operations necessary to reach the destination.

The advanced driving support can be used even if Dynamic Navigation is not being used. (The vehicle will continue along the current road.)

*: Refer to the “MULTIMEDIA OWNER’S MANUAL”.

■ Meeting the use conditions

→P.14

■ Operating the advanced driving support (controlled driving)

→P.15

■ Adjusting the set vehicle speed

→P.16

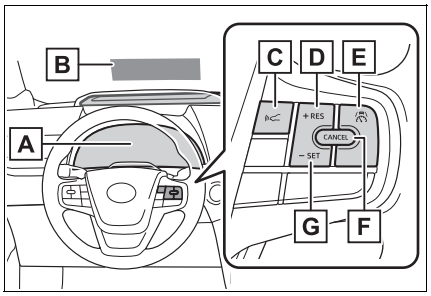
■ Changing the vehicle-to-vehicle distance

→P.17

■ Cancelling controlled driving

→P.18

System components



A Instrument cluster

B Head-up display

C Vehicle-to-vehicle distance switch

D "+RES" switch

E Advanced Drive main switch

F Cancel switch

G "-SET" switch

Advanced driving support use conditions

This system can be operated when in an area where use is possible and all of the operating conditions are met.

The Advanced Drive indicator ( ) is illuminated and "Advanced Drive READY" is displayed when the system can be operated.

■ Areas where use is possible

Highways or expressways where high definition map data is available

For details, refer to the following URL.

http://www.toyota.com/mirai/teammate

■ Operating conditions

- High definition map data is being received correctly.
- The vehicle position can be identified.
- White lane lines are detected on both the left and right side
- The D shift position is selected.
- The steering wheel is being held.

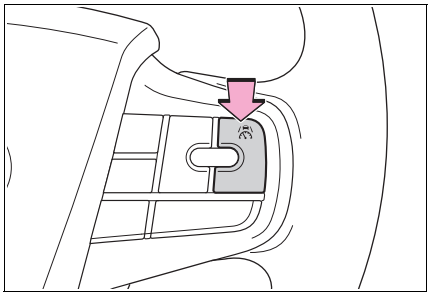
- The driver's seat belt is fastened.
- The driver's door is closed.

Operating the advanced driving support (controlled driving)

Press the Advanced Drive main switch.

If the use conditions are met, the system will be enabled and controlled driving will start. When the switch is pressed, the current vehicle speed will become the set vehicle speed and be displayed.

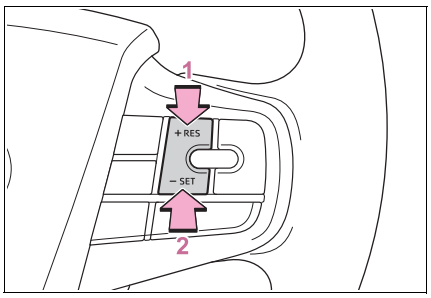
If the use conditions are not met, the LTA (Lane Tracing Assist) and dynamic radar cruise control with full-speed range will operate.



Adjusting the set vehicle speed

▶ Adjusting the set vehicle speed using the switches

Press the “+RES” or “-SET” switch until the desired speed is displayed.



1 Increase set vehicle speed

2 Decrease set vehicle speed

Fine adjustment: Press the switch. (The set vehicle speed changes by 1 mph [1.6 km/h][*1] or 1 km/h [0.6 mph][*2] each time the switch is pressed.)

Large adjustment: Press and hold the switch until the desired set vehicle speed is reached. (The set vehicle speed changes in 1 mph [1.6 km/h][*1] or 1 km/h [0.6 mph][*2] increments.)

[*1]: When the set vehicle speed is shown in “MPH”

[*2]: When the set vehicle speed is shown in “km/h”

▶ Increasing the set vehicle speed using the accelerator pedal

1 Depress the accelerator pedal to accelerate the vehicle to the desired vehicle speed.

2 Press the “-SET” switch.

WARNING

■ For safe use

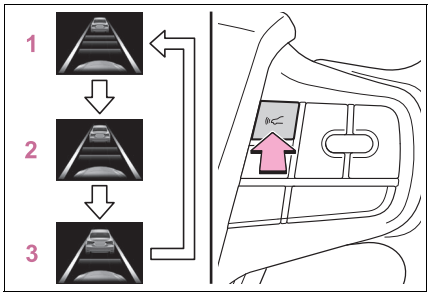
Set the speed appropriately according to the speed limit, traffic flow, road conditions, weather conditions, etc. The driver is responsible for confirming the set vehicle speed.

Changing the vehicle-to-vehicle distance

Press the vehicle-to-vehicle distance switch.

Pressing the switch changes the setting as follows.

Select a distance which is appropriate for the surrounding conditions.



1 Long
2 Medium
3 Short

Driving operations during controlled driving

The driver can perform certain operations even when the vehicle is being driven by advanced driving support controlled driving.

■ Accelerator pedal

As with normal driving, acceleration can be performed by depressing the accelerator pedal. The vehicle will return to the set vehicle speed when the accelerator pedal is released.

Hold the steering wheel when operating the accelerator pedal and until the vehicle returns to the set vehicle speed.

■ Brake pedal

As with normal driving, deceleration can be performed by depressing the brake pedal. However, controlled driving will be cancelled.

■ Steering wheel

- As with normal driving, the steering wheel can be operated.

If the steering wheel is operated more than a certain amount, controlled driving will be cancelled.

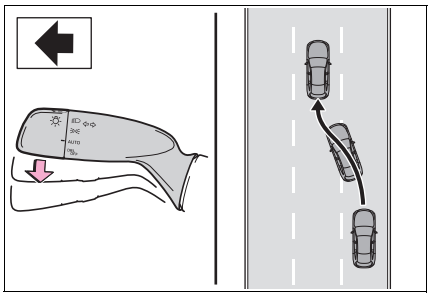
- The steering wheel can be operated to enter a rest area/service area.

When approaching the rest area/service area, controlled driving may be cancelled.

Turn signal lever

- If the turn signal lever is held in the lane change position for approximately 1 second or more and according to the traffic conditions, the lane can be changed into, the system will change lanes. (Lane change assist)

It is necessary for the driver to hold the steering wheel and check the safety of their surroundings when the lane change assist operates.



- If a lane change suggestion or passing suggestion is displayed and the turn signal lever is held in the lane change position toward an adjacent lane, the lane change assist will operate.

WARNING

For safe use

Driving safely is the sole responsibility of the driver. Even if the lane is being changed by system control, it is necessary for the driver to pay attention to their surroundings.

Cancelling controlled driving

While the advanced driving support is operating, if any of the following are performed, controlled driving will be cancelled:

- The Advanced Drive main switch is pressed.
- The cancel switch is pressed.
- The shift position is changed to a position other than D.
- The brake pedal is depressed while the vehicle is moving.

Changing Settings of Advanced Drive

Settings of Advanced Drive functions can be changed on the multi-information display.

To change settings

1 Stop the vehicle in a safe place, engage the parking brake, and change the shift position to P.

2 Press the 〈 or 〉 meter control switch to select ⚙.

Perform this procedure with the hybrid system operating.

3 Press the ∧ or ∨ meter control switch to select “Advanced Drive”.

4 Press the ∧ or ∨ meter control switch to select the setting to be changed.

5 According to the display, select the desired setting and then press OK.

⚠ NOTICE

■When changing settings

Ensure that the hybrid system is operating, otherwise the 12-volt battery may become discharged.

Toyota Safety Sense 2.5 + with Teammate

The Toyota Safety Sense 2.5 + with Teammate consists of the following drive assist systems and contributes to a safe and comfortable driving experience:

Driving assist system

- **PCS (Pre-Collision System)**

→P.28

- **FCTA (Front Cross Traffic Alert)**

→P.42

- **LTA (Lane Tracing Assist)**

→P.45

- **AHB (Automatic High Beam)***

*: Refer to “OWNER’S MANUAL”.

- **RSA (Road Sign Assist)**

→P.59

- **Dynamic radar cruise control with full-speed range**

→P.62

WARNING

■ Toyota Safety Sense 2.5 + with Teammate

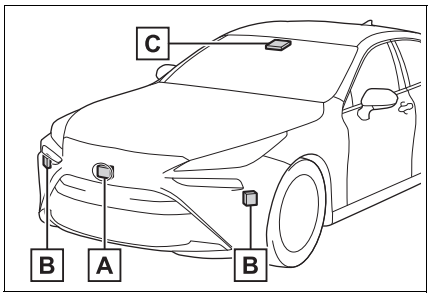
The Toyota Safety Sense 2.5 + with Teammate is designed to operate under the assumption that the driver will drive safely, and is designed to help reduce the impact to the occupants and the vehicle in the case of a collision or assist the driver in normal driving conditions.

As there is a limit to the degree of recognition accuracy and control performance that this system can provide, do not overly rely on this system. The driver is always responsible for paying attention to the vehicle’s surroundings and driving safely.

Sensors

Four types of sensors, located behind the front grille, front bumper, rear bumper and windshield, detect information necessary to operate the drive assist systems.

▶ Front



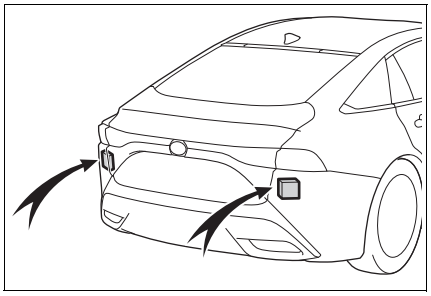
A Front radar sensor

B Front side radar sensors

C Front camera

▶ Rear

Rear side radar sensors



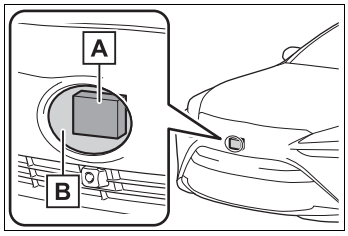
WARNING

■To avoid malfunction of the front radar sensor

Observe the following precautions.

Otherwise, the radar sensor may not operate properly, possibly leading to an accident resulting in death or serious injury.

●Keep the radar sensor and the radar sensor cover clean at all times.



A Radar sensor

B Radar sensor cover

If the front of the radar sensor or the front or back of the radar sensor cover is dirty or covered with water droplets, snow, etc., clean it.

Clean the radar sensor and radar sensor cover with a soft cloth to avoid damaging them.

●Do not attach accessories, stickers (including transparent stickers) or other items to the radar sensor, radar sensor cover or surrounding area.

●Do not subject the radar sensor or its surrounding area to a strong impact.

If the radar sensor is moved even slightly off position, the system may malfunction and objects may not be detected correctly.

If the radar sensor, front grille, or front bumper has been subjected to a strong impact, have the vehicle inspected by your Toyota dealer.

●Do not disassemble the radar sensor.

●Do not modify or paint the radar sensor or radar sensor cover.

●In the following cases, the radar sensor must be recalibrated. Contact your Toyota dealer for details.

- When the radar sensor or front grille are removed and installed, or replaced
- When the front bumper is replaced

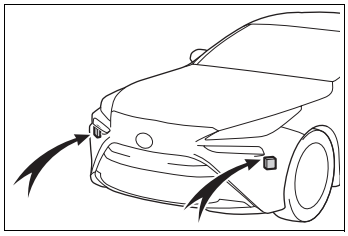
■To avoid malfunction of the front side radar sensors

Observe the following precautions.

Otherwise, the radar sensor may not operate properly, possibly leading to an accident resulting in death or serious injury.

WARNING

- Keep the radar sensors and their surrounding areas on the front bumper clean at all times.



If a radar sensor or its surrounding area on the front bumper is dirty or covered with snow, the system may not operate and a warning message* will be displayed.

*: Refer to “If a warning message is displayed” in the “OWNER’S MANUAL”.

If this occurs, clean off the dirt or snow and drive the vehicle for approximately 10 minutes.

If the warning message does not disappear, have your vehicle inspected by your Toyota dealer.

- Do not attach accessories, stickers (including transparent stickers), aluminum tape or other items to the radar sensors or their surrounding area.
- Do not subject a radar sensor or its surrounding area on the front bumper to a strong impact.

If a radar sensor is moved even slightly off position, the system may malfunction and vehicles may not be detected correctly.

In the following situations, have your vehicle inspected by your Toyota dealer.

- If a radar sensor or its surrounding area is subject to a strong impact
- If the area on the front bumper around a radar sensor is scratched or dented, or the front bumper has become partially disengaged

- Do not disassemble the radar sensors.
- Do not modify the radar sensors or their surrounding area on the front bumper.
- In the following cases, the radar sensor must be recalibrated. Contact your Toyota dealer for details.
  - When the radar sensor is removed and installed, or replaced
  - When the front bumper is replaced
- Do not paint the front bumper any color other than an official Toyota color.

■ To avoid malfunction of the front camera

Observe the following precautions.

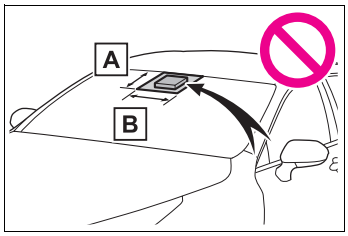
Otherwise, the front camera may not operate properly, possibly leading to an accident resulting in death or serious injury.

- Keep the windshield clean at all times.
  - If the windshield is dirty or covered with an oily film, water droplets, snow, etc., clean the windshield.
  - As some glass coating agents may affect the detection performance of the front camera, consult your Toyota dealer. When using a glass coating agent.

WARNING

- If a glass coating agent is applied to the windshield, it will still be necessary to use the windshield wipers to remove water droplets, etc., from the area of the windshield in front of the front camera.
- If the inner side of the windshield where the front camera is installed is dirty, contact your Toyota dealer.

● Do not attach objects, such as stickers, transparent stickers, etc., to the outer side of the windshield in front of the front camera (shaded area in the illustration).



A From the top of the windshield to approximately 0.4 in. (1 cm) below the bottom of the front camera

B Approximately 14.2 in. (36 cm) (Approximately 7.1 in. [18 cm] to the right and left from the center of the front camera)

● If the part of the windshield in front of the front camera is fogged up or covered with condensation or ice, use the windshield defogger to remove the fog, condensation or ice. (Refer to “Automatic air conditioning system” in the “OWNER’S MANUAL”.)

● If water droplets cannot be properly removed from the area of the windshield in front of the front camera by the windshield wipers, replace the wiper insert or wiper blade.

● Do not attach window tint to the windshield.

● Replace the windshield if it is damaged or cracked.
After replacing the windshield, the front camera must be recalibrated. Contact your Toyota dealer for details.

● Do not allow liquids to contact the front camera.

● Do not allow bright lights to shine into the front camera.

● Do not dirty or damage the front camera.
When cleaning the inside of the windshield, do not allow glass cleaner to contact the lens of the front camera. Also, do not touch the lens.
If the lens is dirty or damaged, contact your Toyota dealer.

● Do not subject the front camera to a strong impact.

● Do not change the installation position or direction of the front camera or remove it.

● Do not disassemble the front camera.

● Do not modify any components of the vehicle around the front camera (inside rear view mirror, etc.) or ceiling.

● Do not attach any accessories to the hood, front grille or front bumper that may obstruct the front camera. Contact your Toyota dealer for details.

WARNING

- If a surfboard or other long object is to be mounted on the roof, make sure that it will not obstruct the front camera.
- Do not modify the headlights or other lights.

■ Certification

Refer to “OWNER’S MANUAL”.

■ If a warning message is displayed on the multi-information display

A system may be temporarily unavailable or there may be a malfunction in the system.

- In the following situations, perform the actions specified in the table. When the normal operating conditions are detected, the message will disappear and the system will become operational.

If the message does not disappear, contact your Toyota dealer.

Situation	Actions
When the area around a camera is covered with dirt, moisture (fogged up, covered with condensation, ice, etc.), or other foreign matter	Using the wiper and A/C function, remove the dirt and other attached matter. (Refer to “Automatic air conditioning system” in the “OWNER’S MANUAL”.)
When the temperature around the front camera is outside of the operational range, such as when the vehicle is in the sun or in an extremely cold environment	If the front camera is hot, such as after the vehicle had been parked in the sun, use the air conditioning system to decrease the temperature around the front camera. If a sunshade was used when the vehicle was parked, depending on its type, the sunlight reflected from the surface of the sunshade may cause the temperature of the front camera to become excessively high.
	If the front camera is cold, such after the vehicle is parked in an extremely cold environment, use the air conditioning system to increase the temperature around the front camera.

Situation	Actions
The area in front of the front camera is obstructed, such as when the hood is open or a sticker is attached to the part of the windshield in front of the front camera.	Close the hood, remove the sticker, etc., to clear the obstruction.
When “Pre-Collision System Radar In Self Calibration Unavailable See Owner’s Manual” is displayed.	Check whether there is attached materials on the radar sensor and radar sensor cover, and if there is, remove it.

● In the following situations, if the situation has changed (or the vehicle has been driven for some time) and the normal operating conditions are detected, the message will disappear and the system will become operational.
If the message does not disappear, contact your Toyota dealer.

- When the temperature around the radar sensor is outside of the operational range, such as when the vehicle is in the sun or in an extremely cold environment
- When the front camera cannot detect objects in front of the vehicle, such as when driving in the dark, snow, or fog, or when bright lights are shining into the front camera
- Depending on the conditions in the vicinity of the vehicle, the radar may judge the surrounding environment can not be properly recognized. In that case, “Pre-Collision System Unavailable See Owner’s Manual” is displayed.

PCS (Pre-Collision System)

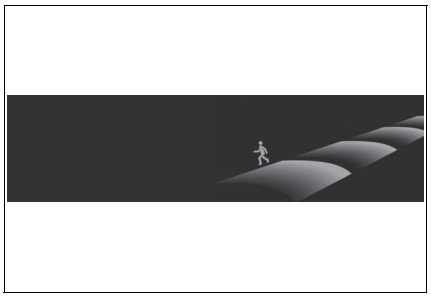
The pre-collision system uses a front radar sensor and front camera to detect vehicles and pedestrians/bicyclists in front of your vehicle and front side radar sensors to detect vehicles approaching from the front left or right side. When the system determines that the possibility of a frontal collision with a vehicle or pedestrian/bicyclist is high, a warning operates to urge the driver to take evasive action and the potential brake pressure is increased to help the driver avoid the collision. If the system determines that the possibility of a frontal collision with a vehicle or pedestrian/bicyclist is extremely high, the brakes are automatically applied to help avoid the collision or help reduce the impact of the collision.

The pre-collision system can be disabled/enabled and the warning timing can be changed. (→P.32)

System functions

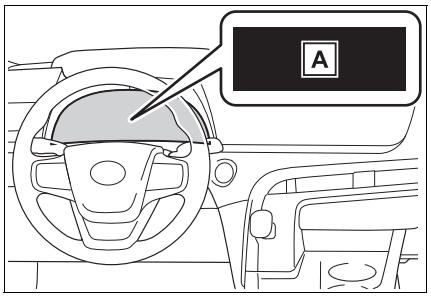
■ Pedestrian alert

When the system determines that there is a possibility of a frontal collision with a stationary or moving pedestrian in front of your vehicle, a message will be displayed on the head-up display to warn the driver.



■ Pre-collision warning

When the system determines that the possibility of a frontal collision is high, a buzzer will sound and a warning message will be displayed on the multi-information display to urge the driver to take evasive action.



A “BRAKE!”

■ Pre-collision brake assist

When the system determines that the possibility of a frontal collision is high, the system applies greater braking force in relation to how strongly the brake pedal is depressed.

■ Pre-collision braking

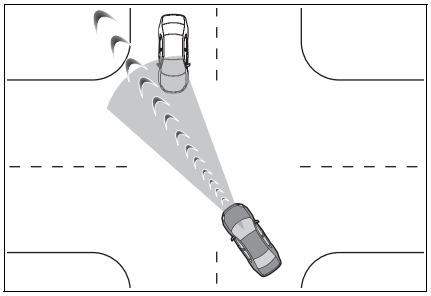
If the system determines that the possibility of a frontal collision is extremely high, the brakes are automatically applied to help avoid the collision or reduce the impact of the collision.

■ Intersection right/left turn assistance

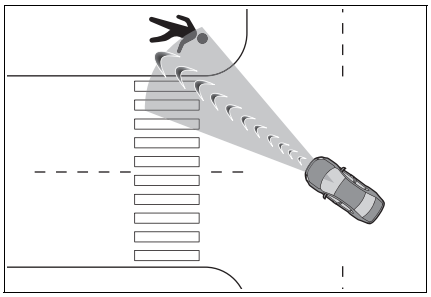
If the system determines that there is a high possibility of a collision in the following situations, it will assist with Pre-collision warning and, if necessary Pre-collision braking.

Depending on the configuration of the intersection, it may not be possible to support.

- When you turn right/left at an intersection and cross the path of an oncoming vehicle



- When you turn right/left, pedestrian is detected in the forward direction and estimated to enter your vehicle's path (bicyclists are not detected.)



■ Active steering assist

If the system determines that the possibility of a collision with an object, such as a guardrail, or pedestrian is high, even though the brakes are applied, and that the collision may be avoidable through steering control, the system will steer the vehicle automatically to help avoid the collision or help reduce the impact of the collision.

■ Active Assist for seat belts (front seats only)

If the system determines that the possibility of a frontal collision is high, the system will retract the seat belts. Additionally, the system may retract the seat belts if the brakes are applied suddenly or control of the vehicle is lost.

WARNING

■Limitations of the pre-collision system

- The driver is solely responsible for safe driving. Always drive safely, taking care to observe your surroundings.
  Do not use the pre-collision system instead of normal braking operations under any circumstances. This system will not prevent collisions or lessen collision damage or injury in every situation. Do not overly rely on this system. Failure to do so may lead to an accident, resulting in death or serious injury.
- Although this system is designed to help avoid a collision or help reduce the impact of the collision, its effectiveness may change according to various conditions, therefore the system may not always be able to achieve the same level of performance.
  Read the following conditions carefully. Do not overly rely on this system and always drive carefully.
  - Conditions under which the system may operate even if there is no possibility of a collision: →P.35
  - Conditions under which the system may not operate properly: →P.38
- Do not attempt to test the operation of the pre-collision system yourself.
  Depending on the objects used for testing (dummies, cardboard objects imitating detectable objects, etc.), the system may not operate properly, possibly leading to an accident.

■Pre-collision braking

- When the pre-collision braking function is operating, a large amount of braking force will be applied.
- If the vehicle is stopped by the operation of the pre-collision braking function, the pre-collision braking function operation will be canceled after approximately 2 seconds. Depress the brake pedal as necessary.
- The pre-collision braking function may not operate if certain operations are performed by the driver. If the accelerator pedal is being depressed strongly or the steering wheel is being turned, the system may determine that the driver is taking evasive action and possibly prevent the pre-collision braking function from operating.
- In some situations, while the pre-collision braking function is operating, operation of the function may be canceled if the accelerator pedal is depressed strongly or the steering wheel is turned and the system determines that the driver is taking evasive action.
- If the brake pedal is being depressed, the system may determine that the driver is taking evasive action and possibly delay the operation timing of the pre-collision braking function.

■Active steering assist

- The steering wheel may turn automatically when active steering assist is operating.
- As active steering assist operation will be canceled when the system determines that a collision has been avoided, operate the steering wheel as necessary.

WARNING

- In the following situations, the system may determine that the driver is taking evasive action. In this case, the active steering assist may not operate or may be canceled.

- If the accelerator pedal is being depressed strongly or the steering wheel is being operated. In this case the system may determine that the driver is taking evasive action and the pre-collision braking may not operate.

- In some situations, while the active steering assist is operating, operation of the function may be canceled if the accelerator pedal is depressed strongly or the steering wheel is turned and the system determines that the driver is taking evasive action.

- When the active steering assist is operating, if the steering wheel is held firmly or is operated in the opposite direction to that which the system is generating torque, the function may be canceled.

- If the brake pedal is depressed, the system may determine that the driver is taking evasive action and the active steering assist operation may be delayed.

■ Active Assist for seat belts

If the Active Assist has operated and the seat belts are locked in a retracted position, immediately stop the vehicle in a safe place, release and retract the seat belts to unlock them and then fasten them again.

Also, if a seat belt can be loosened, it can be unlocked by slightly retracting it without releasing it.

■ When to disable the pre-collision system

In the following situations, disable the system, as it may not operate properly, possibly leading to an accident resulting in death or serious injury:

- When the vehicle is being towed
- When your vehicle is towing another vehicle
- When transporting the vehicle via truck, boat, train or similar means of transportation
- When the vehicle is raised on a lift with the fuel cell system on and the tires are allowed to rotate freely
- When inspecting the vehicle using a drum tester such as a chassis dynamometer or speedometer tester, or when using an on vehicle wheel balancer
- When a strong impact has been applied to the front bumper or front grille, due to an accident or other reasons
- If the vehicle cannot be driven in a stable manner, such as when the vehicle has been in an accident or is malfunctioning
- When the vehicle is driven in a sporty manner or off-road
- When the tires are not properly inflated
- When the tires are very worn
- When tires of a size other than specified are installed
- When tire chains are installed

WARNING

- When a compact spare tire or an emergency tire puncture repair kit is used
- If equipment (snow plow, etc.) that may obstruct the radar sensor or front camera is temporarily installed to the vehicle

Changing settings of the pre-collision system

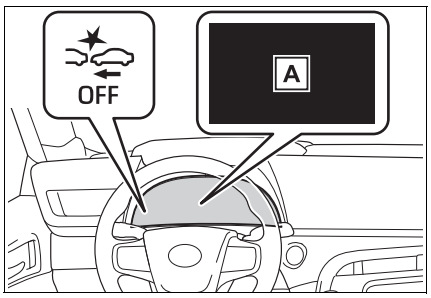
■ Enabling/disabling the pre-collision system

The pre-collision system can be enabled/disabled on ⚙ (→P.75) of the multi-information display.

The system is automatically enabled each time the power switch is turned to ON.

If the system is disabled, the PCS warning light will turn on and a message will be displayed on the multi-information display.

If the pre-collision system is disabled, the pedestrian alert system will also be disabled.



A "Pre-Collision System OFF"

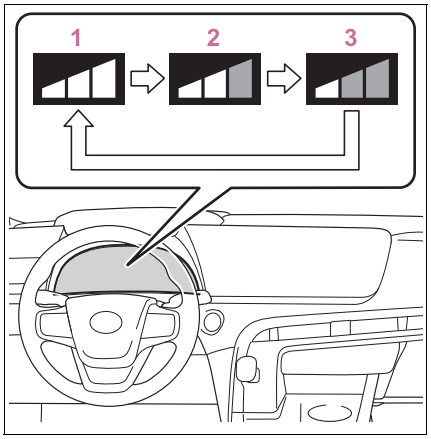
■ Enabling/Disabling the pedestrian alert system

The pedestrian alert can be enabled/disabled on ⚙ (→P.75) of the multi-information display.

■ Changing the pre-collision warning timing

The pre-collision warning timing can be changed on ⚙ (→P.75) of the multi-information display.

The warning timing setting is retained when the power switch is turned off. However, if the pre-collision system is disabled and re-enabled, the operation timing will return to the default setting (middle).



1 Early

2 Middle

This is the default setting.

3 Late

■ Changing the pedestrian alert timing

If the pre-collision warning timing is changed, the pedestrian alert timing will also be changed accordingly.

■ Operational conditions

The pre-collision system is enabled and the system determines that the possibility of a frontal collision with a vehicle, pedestrian/bicyclist, guardrail, etc. or a front side collision with a vehicle is high.

The system may not operate in the following situations:

- If a 12-volt battery terminal has been disconnected and reconnected and then the vehicle has not been driven for a certain amount of time
- If the shift position is in R
- When the VSC OFF indicator is illuminated (only the pedestrian alert and pre-collision warning function will be operational)
- When there is insufficient safe or unobstructed space for the vehicle to be steered into
- When an object is approaching the area the vehicle is to be steered into

The operation speeds and operation cancelation for each function is listed below.

- Pedestrian alert

Detectable objects	Vehicle speed
Pedestrians	Approx. 20 to 40 mph (30 to 65 km/h)

- Pre-collision warning

Detectable objects	Vehicle speed	Relative speed between your vehicle and object	Approaching vehicle speed
Preceding vehicles	Approx. 3 to 110 mph (5 to 180 km/h)	Approx. 3 to 110 mph (5 to 180 km/h)	-
Bicyclists and pedestrians	Approx. 3 to 50 mph (5 to 80 km/h)	Approx. 3 to 50 mph (5 to 80 km/h)	-
Vehicles approaching from the front left or right side	Approx. 7 to 37 mph (10 to 60 km/h)	-	Approx. 10 to 37 mph (15 to 60 km/h)

While the pre-collision warning function is operating, if the steering wheel is operated heavily or suddenly, the pre-collision warning may be canceled.

● Pre-collision brake assist

Detectable objects	Vehicle speed	Relative speed between your vehicle and object	Approaching vehicle speed
Preceding vehicles	Approx. 20 to 110 mph (30 to 180 km/h)	Approx. 20 to 110 mph (30 to 180 km/h)	-
Bicyclists and pedestrians	Approx. 20 to 50 mph (30 to 80 km/h)	Approx. 20 to 50 mph (30 to 80 km/h)	-
Vehicles approaching from the front left or right side	Approx. 19 to 37 mph (30 to 60 km/h)	-	Approx. 10 to 37 mph (15 to 60 km/h)

● Pre-collision braking

Detectable objects	Vehicle speed	Relative speed between your vehicle and object
Preceding vehicles	Approx. 3 to 110 mph (5 to 180 km/h)	Approx. 3 to 110 mph (5 to 180 km/h)
Bicyclists and pedestrians	Approx. 3 to 50 mph (5 to 80 km/h)	Approx. 3 to 50 mph (5 to 80 km/h)

If either of the following occur while the pre-collision braking function is operating, it will be canceled:

- The accelerator pedal is depressed strongly.
- The steering wheel is turned sharply or abruptly.

● Active steering assist

Detectable objects	Vehicle speed
Pedestrians	Approx. 25 to 40 mph (40 to 65 km/h)
Guardrail	Approx. 37 to 50 mph (60 to 80 km/h)

If either of the following occur while the active steering assist function is operating, it will be canceled:

- The accelerator pedal is depressed strongly.
- The steering wheel is turned sharply or abruptly.

● Intersection right/left turn assistance (pre-collision warning)

When the turn signal lights are not flashing, support for turning left or right at an intersection which targets oncoming vehicles does not work.

Detectable objects	Vehicle speed	Oncoming vehicle speed	Relative speed between your vehicle and object
Oncoming vehicles	Approx. 7 to 15 mph (10 to 25 km/h)	Approx. 20 to 35 mph (30 to 55 km/h)	Approx. 25 to 50 mph (40 to 80 km/h)
Pedestrians	Approx. 7 to 15 mph (10 to 25 km/h)	-	Approx. 7 to 15 mph (10 to 25 km/h)

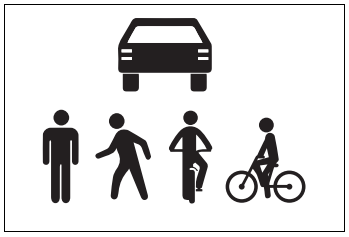
● Intersection right/left turn assistance (pre-collision braking)

When the turn signal lights are not flashing, support for turning left or right at an intersection which targets oncoming vehicles does not work.

Detectable objects	Vehicle speed	Oncoming vehicle speed	Relative speed between your vehicle and object
Oncoming vehicles	Approx. 10 to 15 mph (15 to 25 km/h)	Approx. 20 to 28 mph (30 to 45 km/h)	Approx. 28 to 43 mph (45 to 70 km/h)
Pedestrians	Approx. 7 to 15 mph (10 to 25 km/h)	-	Approx. 7 to 15 mph (10 to 25 km/h)

■ Vehicle, pedestrian or bicyclist detection function

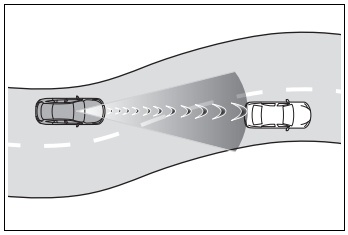
The pre-collision system detects vehicles, pedestrians and bicyclists based on the size, profile, and motion of the person. However, a vehicle, pedestrian or bicyclist may not be detected depending on the surrounding brightness and the motion, posture, and angle of the person, preventing the system from operating properly. (→P.38)
The illustration shows an image of vehicles, pedestrians and bicyclists.



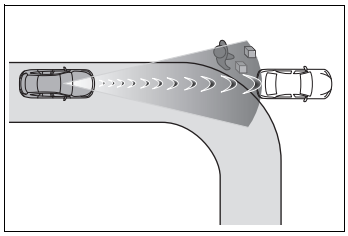
■ Conditions under which the system may operate even if there is no possibility of a collision

● In some situations such as the following, the system may determine that there is a possibility of a frontal collision and operate.

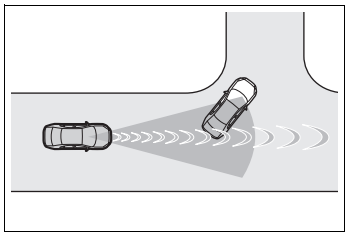
- When passing a vehicle, pedestrian or bicyclist
- When changing lanes while overtaking a vehicle, pedestrian or bicyclist
- When approaching a vehicle, pedestrian or bicyclist in an adjacent lane or on the roadside, such as when changing the course of travel or driving on a winding road



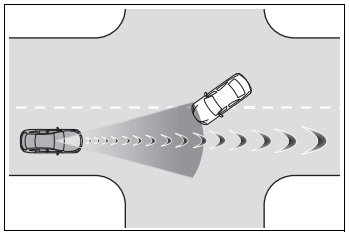
- When rapidly closing on a vehicle, pedestrian or bicyclist, etc.
- When approaching objects on the roadside, such as vehicle, pedestrian or bicyclist, guardrails, traffic signs, utility poles, street lights, trees, walls, etc.
- When there is a vehicle, pedestrian or bicyclist or other object by the roadside at the entrance of a curve



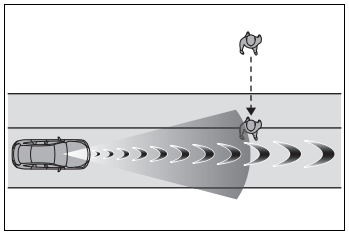
- When there are patterns or paint in front of your vehicle that may be mistaken for a vehicle, pedestrian or bicyclist
- When the front of your vehicle is hit by water, snow, dust, etc.
- When overtaking a vehicle, pedestrian or bicyclist that is changing lanes or making a right/left turn



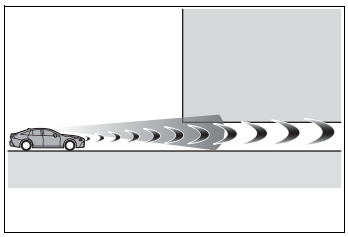
- When passing a vehicle, pedestrian or bicyclist in an oncoming lane that is stopped to make a right/left turn



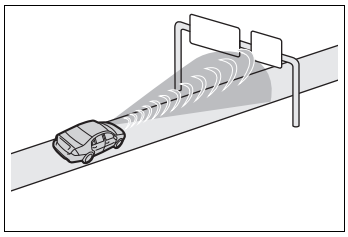
- When a vehicle, pedestrian or bicyclist approaches very close and then stops before entering the path of your vehicle
- If the front of your vehicle is raised or lowered, such as when on an uneven or undulating road surface
- When driving on a road surrounded by a structure, such as in a tunnel or on an iron bridge
- When there is a metal object (manhole cover, steel plate, etc.), steps, dips, or a protrusion on the road surface or roadside
- When a crossing pedestrian or bicyclist approaches very close to the vehicle



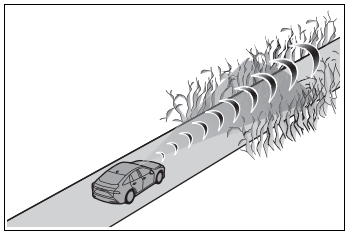
- When passing through a place with a low structure above the road such as a low ceiling, underpass, bridge girder, traffic sign, etc.



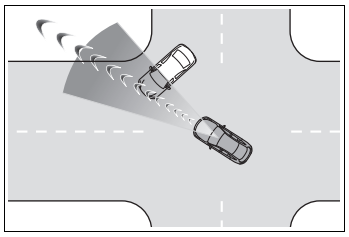
- When passing under an object (road sign, billboard, etc.)



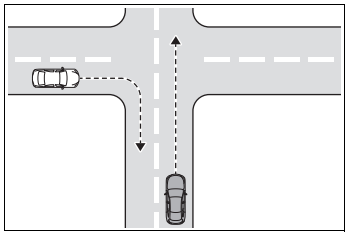
- When approaching an electric toll gate barrier, parking area barrier, or other barrier that opens and closes
- When using an automatic car wash
- When driving through or under objects that may contact your vehicle, such as thick grass, tree branches, or a banner



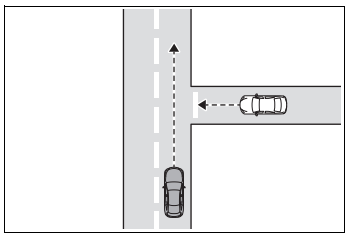
- When driving through steam or smoke
- When driving near an object that reflects radio waves, such as a large truck or guardrail
- When driving near a TV tower, broadcasting station, electric power plant, radar equipped vehicles, etc., or other location where strong radio waves or electrical noise may be present
- When there are many things which can reflect the radio waves of the radar in the vicinity (tunnels, truss bridges, gravel roads, snow covered road that have tracks, etc.)
- While making a right/left turn, when an oncoming vehicle or a crossing pedestrian has already exited the path of your vehicle
- While making a right/left turn, closely in front of an oncoming vehicle or a crossing pedestrian.
- While making a right/left turn, when an oncoming vehicle or a crossing pedestrian stops before entering the path of your vehicle
- While making a right/left turn, when an oncoming vehicle turns right/left in front of your vehicle



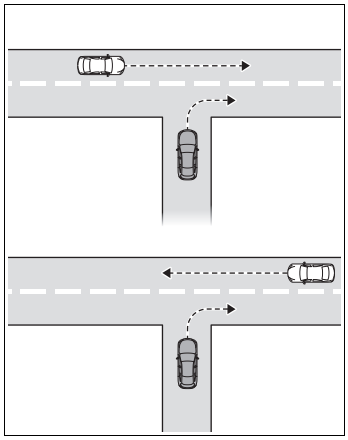
- While steering into the direction of oncoming traffic
- When passing an oncoming vehicle on a narrow road
- When driving close to objects such as walls or poles on a median
- When passing an oncoming vehicle around a sharp curve
- When passing a vehicle which is making a left/right turn



- When being passed by a vehicle approaching from the left or right side in front of your vehicle



- When making a left/right turn while a vehicle is approaching from the left or right side in front of your vehicle



- When passing an object on the side of the road, such as a parked vehicle
- When passing an oncoming vehicle on a S curve
- When there is an object that may be mistaken for a pedestrian, such as a utility pole, tree, or pole on the roadside or at the entrance of a curve
- When there is a bicycle or motorcycle on the roadside at the entrance of a curve
- If the preceding vehicle is a bicycle or motorcycle

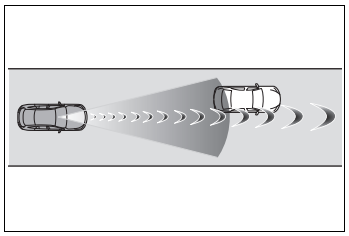
● The system may operate the pedestrian alert unnecessarily if it detects the following:

- Pedestrians on a sidewalk
- Bicycles and motorcycles
- Patterns or paint on the road, a wall, median, billboard, etc. that may be mistaken for a pedestrian or bicyclist

■ Situations in which the system may not operate properly

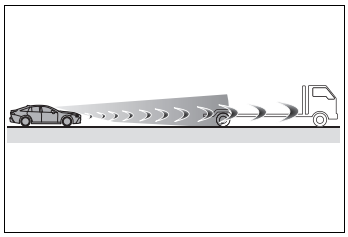
● In some situations, such as the following, a vehicle, pedestrian or bicyclist may not be detected by the sensors, preventing the system from operating properly:

- When a vehicle, pedestrian or bicyclist is approaching your vehicle
- When your vehicle or a vehicle, pedestrian or bicyclist is wobbling
- If a vehicle, pedestrian or bicyclist makes an abrupt maneuver (such as sudden swerving, acceleration or deceleration)
- When your vehicle approaches a vehicle, pedestrian or bicyclist rapidly
- When a vehicle, pedestrian or bicyclist is not directly in front of your vehicle

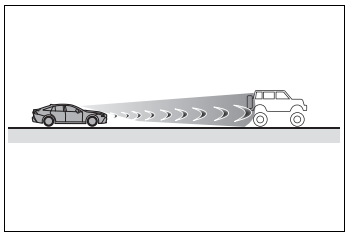


- When a vehicle, pedestrian or bicyclist is near a wall, fence, guardrail, manhole cover, vehicle, steel plate on the road, etc.
- When a vehicle, pedestrian or bicyclist is under a structure
- When part of a vehicle, pedestrian or bicyclist is hidden by an object, such as large baggage, an umbrella, or guardrail
- When there are many things which can reflect the radio waves of the radar in the vicinity (tunnels, truss bridges, gravel roads, snow covered road that have tracks, etc.)
- When there is an effect on the radio waves to the radar that is installed on another vehicle
- When multiple vehicle, pedestrian

or bicyclist are close together
- If the sun or other light is shining directly on a vehicle, pedestrian or bicyclist or guardrail ahead
- When a vehicle, pedestrian or bicyclist is a shade of white and looks extremely bright
- When a vehicle, pedestrian or bicyclist appears to be nearly the same color or brightness as its surroundings
- If a vehicle, pedestrian or bicyclist cuts or suddenly emerges in front of your vehicle
- When the front of your vehicle is hit by water, snow, dust, etc.
- When a very bright light ahead, such as the sun or the headlights of oncoming traffic, shines directly into the front camera
- When approaching the side or front of a vehicle ahead
- If a vehicle ahead is a motorcycle
- If a vehicle ahead is narrow, such as a personal mobility vehicle
- If a preceding vehicle has a small rear end, such as an unloaded truck
- If a preceding vehicle has a low rear end, such as a low bed trailer

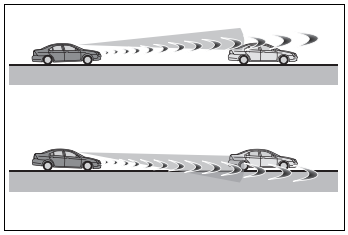


- If a vehicle ahead has extremely high ground clearance

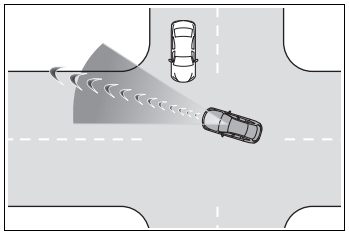


- If a vehicle ahead is carrying a load which protrudes past its rear bumper
- If a vehicle ahead is irregularly shaped, such as a tractor or side car
- If a vehicle ahead is a child sized bicycle, a bicycle that is carrying a large load, a bicycle ridden by more than one person, or a uniquely shaped bicycle (bicycle with a child seat, tandem bicycle, etc.)
- If a pedestrian/or the riding height of a bicyclist ahead is shorter than approximately 3.2 ft. (1 m) or taller than approximately 6.5 ft. (2 m)
- If a pedestrian/bicyclist is wearing oversized clothing (a rain coat, long skirt, etc.), making their silhouette obscure
- If a pedestrian is bending forward or squatting or bicyclist is bending forward
- If a pedestrian/bicyclist is moving fast
- If a pedestrian is pushing a stroller, wheelchair, bicycle or other vehicle
- When driving in inclement weather such as heavy rain, fog, snow or a sandstorm
- When driving through steam or smoke
- When the surrounding area is dim, such as at dawn or dusk, or while at night or in a tunnel, making a vehicle, pedestrian or bicyclist appear to be nearly the same color as its surroundings
- When driving in a place where the surrounding brightness changes suddenly, such as at the entrance or exit of a tunnel
- When driving in a location where there are many objects which reflect radar, such as a tunnel or parking garage
- After the fuel cell system has started the vehicle has not been driven for a certain amount of time
- While making a left/right turn and for a few seconds after making a left/right turn
- While driving on a curve and for a few seconds after driving on a curve

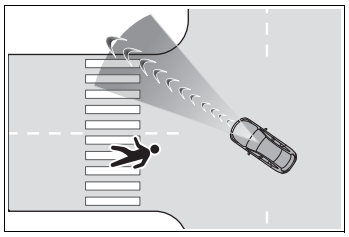
- If your vehicle is skidding
- If the front of the vehicle is raised or lowered



- If the wheels are misaligned
- If a wiper blade is blocking the front camera
- The vehicle is being driven at extremely high speeds
- When driving on a hill
- If the radar sensor or front camera is misaligned
- If the headlights are misaligned
- When approaching a guardrail at a wide or narrow angle
- When a vehicle approaches your vehicle from the front left or right side while your vehicle is entering an intersection with poor visibility
- When a vehicle approaches your vehicle from the rear left or right side
- When a vehicle approaches the side of your vehicle at a shallow angle
- When driving on a road with a grade that changes sharply (sharp incline/decline)
- Pedestrians and bicyclists which are not illuminated by the headlights at night, in a tunnel, etc.
- Pedestrians and bicyclists which change speed or direction abruptly
- Pedestrians and bicyclists which suddenly emerge from behind a vehicle or large object
- Pedestrians and bicyclists which are extremely close to the side of the vehicle (outside rear view mirror, etc.)
- When driving in a traffic lane separated by more than one lane where oncoming vehicles are driving while making a right/left turn
- When largely out of place with the opposite facing targeted oncoming vehicle during a right/left turn



- While making a right/left turn, when a pedestrian approaches from behind or side of your vehicle



- In some situations, such as the following, the sensors may not detect the lane lines or a safe space the vehicle can be steered into, preventing the active steering assist from operating properly:
- When the white (yellow) lane lines are difficult to see, such as when they are faint, diverging/merging, or a shadow is cast upon them
- When the lane is more wide or narrow than normal
- When there is a light and dark pattern on the road surface, such as due to road repairs
- If the system determines that a collision can be avoided by only using the brakes
- When a pedestrian is detected near the centerline of the vehicle

- In some situations such as the following, sufficient braking force or steering force may not be obtained, preventing the system from performing properly:
- If the braking functions cannot operate to their full extent, such as when the brake parts are

extremely cold, extremely hot, or wet
- If the vehicle is not properly maintained (brakes or tires are excessively worn, improper tire inflation pressure, etc.)
- When the vehicle is being driven on a gravel road or other slippery surface
- If there are deep ruts in the road
- When driving on a slope
- When driving on a horizontally slanted road

● Some guardrails, such as the following, may not be detected by the sensors, preventing the system from operating properly:
- Guardrails which are less than approximately 1.9 ft. (60 cm) tall
- Short guardrails
- Irregularly-shaped guardrails (wire cable guardrails, guardrails made of thin poles, etc.)
- Guardrails which are not illuminated by the headlights at night, in a tunnel, etc.
- Guardrails which appear to be nearly the same color or brightness as their surroundings
- Guardrails which appear to be nearly the same shape as their surroundings (walls, etc.)
- Guardrails which are over a metal object (manhole cover, steel plate, etc.)
- Guardrails which are hidden behind thick grass
- Guardrails which are extremely close to the side of the vehicle (outside rear view mirror, etc.)
- Curved guardrails or guardrails at the entrance of a curve

● In some situations such as the following, the system may detect a pedestrian and display a warning on the head-up display, even though no pedestrian exists:
- If the front of the vehicle is raised or lowered, such as when the road surface is uneven or undulating (due to ruts, etc.)
- When driving on a slope
- When driving on a horizontally slanted road
- If the driver's posture (driver seat position) is extreme, such as excessively reclined
- If the head-up display position is set extremely high

■ **If VSC is disabled**

● If VSC is disabled (Refer to "Driving assist systems" in the "OWNER'S MANUAL".), the pre-collision brake assist and pre-collision braking functions are also disabled.

● The PCS warning light will turn on and "VSC Turned OFF Pre-Collision Brake System Unavailable" will be displayed on the multi-information display.

FCTA (Front Cross Traffic Alert)

When approaching an intersection at low speed, the radar sensors on the front side of the vehicle can detect approaching vehicles to the left and right of the front of the vehicle. In this case, the head-up display is used to inform the driver of detected vehicles.

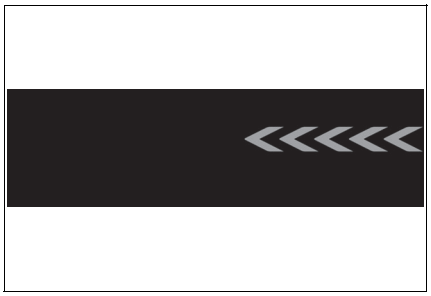
FCTA system functions

When the system detects a vehicle approaching from the left or right in front of your vehicle when approaching an intersection, a notification will be displayed on the head-up display and panoramic view monitor*.

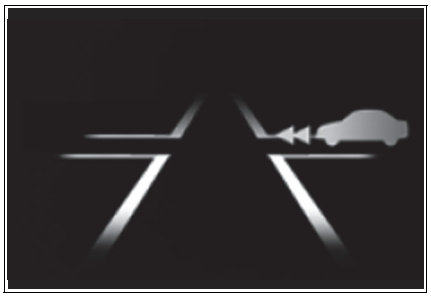
*: Refer to “MULTIMEDIA OWNER’S MANUAL”.

When the system determines that your vehicle may be about to enter an intersection even though a vehicle is approaching from the left or right in front of your vehicle, a buzzer will sound and a message will be displayed on the multi-information display to urge you to depress the brake pedal.

● Head-up display



● Multi-information display



WARNING

■ Cautions regarding the use of the function

The driver is solely responsible for safe driving. Always drive safely, taking care to observe your surroundings.

The FCTA system is a supplementary system that informs the driver of vehicles approaching from the left and right of the front of the vehicle.

Do not overly rely on the FCTA system. Over reliance on the system may lead to an accident, resulting in death or serious injury.

The details of the warning display may differ from the actual traffic conditions.

Although the warning display will stop being displayed after a certain amount of time, this does not indicate that vehicles or pedestrians are no longer around your vehicle.

Changing settings of the FCTA system

■ Enabling/disabling the FCTA system

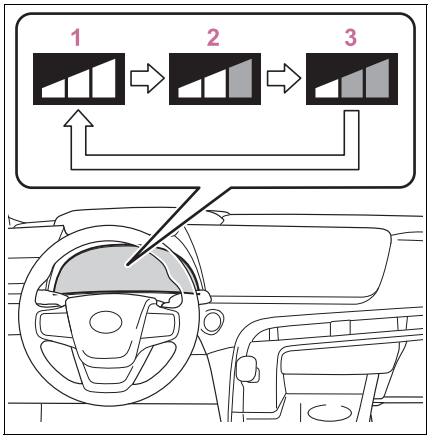
The FCTA system can be enabled/disabled on ⚙ (→P.75) of the multi-information display.

The system is automatically enabled each time the power switch is turned to ON.

■ Changing the alert timing

The FCTA (Front Cross Traffic Alert) timing can be changed on ⚙ (→P.75) of the multi-information display.

The set alert timing is retained when the power switch is turned off. However, if the FCTA system is disabled and re-enabled, the alert timing will return to the default setting (middle).



1 Early
2 Middle
This is the default setting.
3 Late

■ The FCTA function is operational when

The system operates when all of the following conditions are met.

- A shift position other than P or R is selected.
- Vehicle speed is approximately 9 mph (15 km/h) or lower.
- A vehicle is approaching from the left or right in front of your vehicle at a speed between approximately 6 mph (10 km/h) and 37 mph (60 km/h).
- There are no preceding vehicles ahead of your vehicle.
- The accelerator pedal is not strongly depressed.
- The brake pedal is not being strongly depressed.

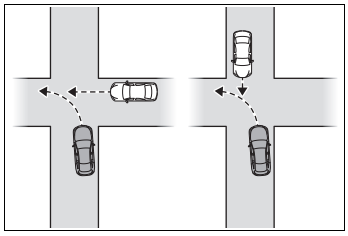
■ Situations in which the system may operate even though no vehicles are approaching

In certain situations, such as the following, the system may operate even though no vehicles are approaching:

- When approaching objects on the roadside, such as guardrails, traffic signs, utility poles, street lights, trees, or walls
- When driving near a TV tower, broadcasting station, electric power plant, or other location where strong radio waves or electrical noise may be present
- When passing an object on the side of the road, such as a parked vehicle
- When a vehicle or pedestrian is approaching from the left or right in front of your vehicle from far away
- When a vehicle or pedestrian is moving within a parking spot, etc.

next to the lane your vehicle is driving in

- When a pedestrian or bicyclist is moving on a sidewalk
- When a vehicle or pedestrian is moving away from your vehicle
- When a vehicle approaching from the left or right in front of your vehicle is decelerating or stops
- When a vehicle approaching from the left or right in front of your vehicle makes a left/right turn immediately in front of your vehicle
- When a pedestrian is approaching your vehicle
- When an oncoming vehicle makes a left/right turn
- When your vehicle enters an intersection before a vehicle approaching from the left or right in front of your vehicle
- When stopped at traffic light and a vehicle approaches from the left or right in front of your vehicle
- When driving in a location where there are objects which reflect radar, such as vehicles, guardrails, walls, traffic signs, etc.
- When making a left/right turn in front of an approaching vehicle



- When passing an oncoming vehicle
- When being overtaken by another vehicle
- When driving next to another vehicle or a pedestrian
- When a vehicle or pedestrian approaches the side of your vehicle

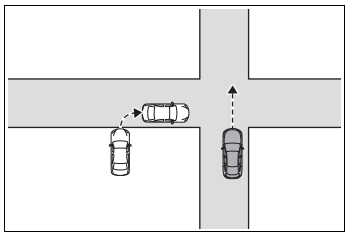
Some objects, such as the following, may be detected and cause the FCTA system to operate:

- Pedestrians

Situations in which the system may not operate properly

In some situations, such as the following, a vehicle may not be detected by a front side radar sensor, preventing the system from operating properly:

- If the front end or side of an approaching vehicle is small (sports cars, etc.)
- If the front end of an approaching vehicle is low (low-slung sports cars, etc.)
- If the ground clearance of an approaching vehicle is extremely high
- If the shape of an approaching vehicle is unusual (tractors, motorcycles with sidecars, etc.)
- If a vehicle suddenly enters the detection area on the left or right in front of your vehicle from a parking lot, etc.



- If an approaching vehicle moves suddenly (sudden steering, acceleration, deceleration, etc.)
- When driving in inclement weather such as heavy rain, fog, snow or a sandstorm
- After the fuel cell system has been started and the vehicle has not been driven for a certain amount of time

- When driving on a road with a grade that changes sharply (sharp incline/decline)
- When driving around a sharp curve or on an undulating road
- If a vehicle is approaching from the left or right of the front of your vehicle diagonally
- When a vehicle is approaching from the left or right in front of your vehicle from far away
- When there is an object between your vehicle and an approaching vehicle
- When driving in a location where there are objects which reflect radar, such as guardrails, walls, vehicles, etc.
- When a group of vehicles which are close together approach
- Immediately after the FCTA system has been enabled

■ **If the PCS warning light illuminates and a message is displayed on the multi-information display**

The system may be temporarily unavailable or may be malfunctioning.

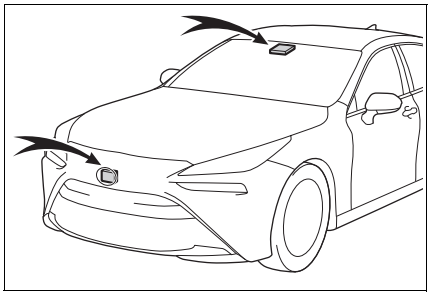
LTA (Lane Tracing Assist)

Summary of functions

While driving on a road with clear white (yellow) lane lines, the LTA system warns the driver if the vehicle may deviate from the current lane or course*, and also can slightly operate the steering wheel to help avoid deviation from the lane or course*. Also, while the dynamic radar cruise control with full-speed range is operating, this system will operate the steering wheel to maintain the vehicle's lane position and when changing lanes.

The LTA system recognizes white (yellow) lane lines or a course* using the front camera. Additionally, it detects preceding and surrounding vehicles using the front camera and radar.

*: Boundary between asphalt and the side of the road, such as grass, soil, or a curb



WARNING

■Before using LTA system

- Do not rely solely upon the LTA system. The LTA system does not automatically drive the vehicle or reduce the amount of attention that must be paid to the area in front of the vehicle. The driver must always assume full responsibility for driving safely by paying careful attention to the surrounding conditions and operating the steering wheel to correct the path of the vehicle. Also, the driver must take adequate breaks when fatigued, such as from driving for a long period of time.
- Failure to perform appropriate driving operations and pay careful attention may lead to an accident, resulting in death or serious injury.
- When not using the LTA system, use the LTA switch to turn the system off.

■Situations unsuitable for LTA system

In the following situations, use the LTA switch to turn the system off. Failure to do so may lead to an accident, resulting in death or serious injury.

- Vehicle is driven on a road surface which is slippery due to rainy weather, fallen snow, freezing, etc.
- Vehicle is driven on a snow-covered road.
- White (yellow) lines are difficult to see due to rain, snow, fog, dust, etc.
- Vehicle is driven in a temporary lane or restricted lane due to construction work.
- Vehicle is driven in a construction zone.
- A spare tire, tire chains, etc., are equipped.
- When the tires have been excessively worn, or when the tire inflation pressure is low.
- During emergency towing.

■Situations in which the lane change assist function should not be used

- When driving on a one lane road or road without lane markers
- When there is no broken white line between your vehicle and the lane toward which the turn signal is operated
- Vehicle is driven in traffic lanes other than that freeways and highways.

■Preventing LTA system malfunctions and operations performed by mistake

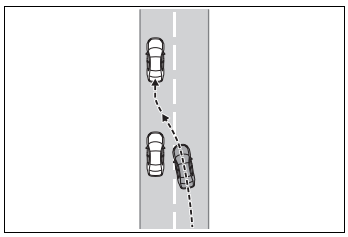
- Do not modify the headlights or place stickers, etc., on the surface of the lights.
- Do not modify the suspension, etc. If the suspension, etc., needs to be replaced, contact your Toyota dealer.
- Do not install or place anything on the hood or grille. Also, do not install a grille guard (bull bars, kangaroo bar, etc.).
- If your windshield needs repairs, contact your Toyota dealer.

WARNING

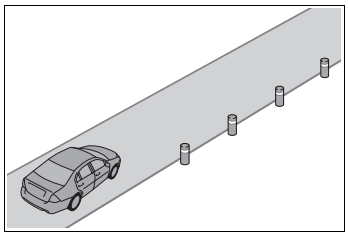
■ Conditions in which functions may not operate properly

In the following situations, the functions may not operate properly and the vehicle may depart from its lane. Drive safely by always paying careful attention to your surroundings and operate the steering wheel to correct the path of the vehicle without relying solely on the functions.

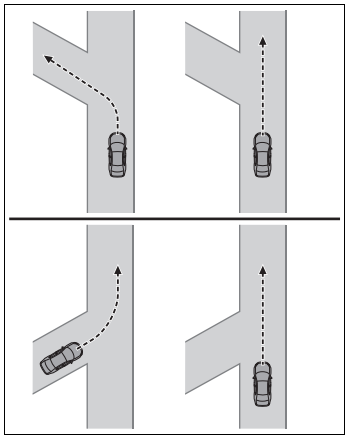
- When the follow-up cruising display is displayed (→P.52) and the preceding vehicle changes lanes. (Your vehicle may follow the preceding vehicle and also change lanes.)



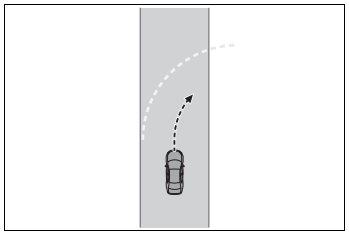
- When the follow-up cruising display is displayed (→P.52) and the preceding vehicle is swaying. (Your vehicle may sway accordingly and depart from the lane.)
- When the follow-up cruising display is displayed (→P.52) and the preceding vehicle departs from its lane. (Your vehicle may follow the preceding vehicle and depart from the lane.)
- When the follow-up cruising display is displayed (→P.52) and the preceding vehicle is being driven extremely close to the left/right lane line. (Your vehicle may follow the preceding vehicle and depart from the lane.)
- Vehicle is being driven around a sharp curve.
- Objects or patterns that could be mistaken for white (yellow) lines are present on the side of the road (guardrails, reflective poles, etc.).



- Vehicle is driven where the road diverges, merges, etc.



- Repair marks of asphalt, white (yellow) lines, etc., are present due to road repair.



- There are shadows on the road that run parallel with, or cover, the white (yellow) lines.

WARNING

- The vehicle is driven in an area without white (yellow) lines, such as in front of a tollgate or checkpoint, or at an intersection, etc.
- The white (yellow) lines are cracked, “Botts’ dots”, “Raised pavement marker” or stones are present.
- The white (yellow) lines cannot be seen or are difficult to see due to sand, etc.
- The vehicle is driven on a road surface that is wet due to rain, puddles, etc.
- The traffic lines are yellow (which may be more difficult to recognize than lines that are white).
- The white (yellow) lines cross over a curb, etc.
- The vehicle is driven on a bright surface, such as concrete.
- If the edge of the road is not clear or straight.
- The vehicle is driven on a surface that is bright due to reflected light, etc.
- The vehicle is driven in an area where the brightness changes suddenly, such as at the entrances and exits of tunnels, etc.
- Light from the headlights of an oncoming vehicle, the sun, etc., enters the camera.
- The vehicle is driven on a slope.
- The vehicle is driven on a road which tilts left or right, or a winding road.
- The vehicle is driven on an unpaved or rough road.
- The traffic lane is excessively narrow or wide.
- The vehicle is extremely tilted due to carrying heavy luggage or having improper tire pressure.
- The distance to the preceding vehicle is extremely short.
- The vehicle is moving up and down a large amount due to road conditions during driving (poor roads or road seams).
- When driving in a tunnel or at night with the headlights off or when a headlight is dim due to its lens being dirty or it being misaligned.
- The vehicle is struck by a crosswind.
- The vehicle is affected by wind from a vehicle driven in a nearby lane.
- The vehicle has just changed lanes or crossed an intersection.
- Tires which differ by structure, manufacturer, brand or tread pattern are used.
- When tires of a size other than specified are installed.
- Snow tires, etc., are equipped.
- The vehicle is being driven at extremely high speeds.

Functions included in LTA system

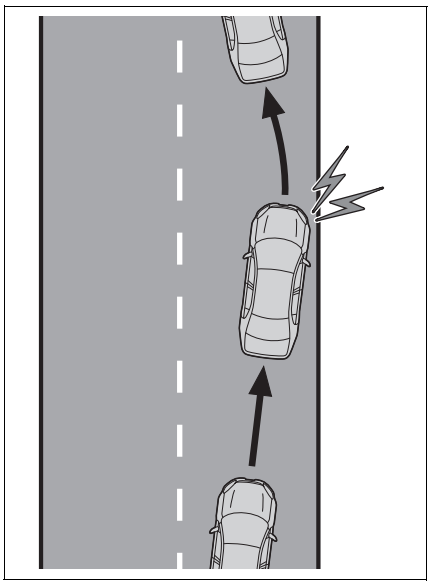
■ Lane departure alert function

When the system determines that the vehicle might depart from its lane or course*, a warning is displayed on the multi-information display, and either a warning buzzer will sound or the steering wheel will vibrate to alert the driver.

When the warning buzzer sounds or the steering wheel vibrates, check the area around your vehicle and carefully operate the steering wheel to move the vehicle back to the center of the lane.

When the system determines that the vehicle might depart from its lane and that the possibility of a collision with an overtaking vehicle in the adjacent lane is high, the lane departure alert will operate even if the turn signals are operating.

*: Boundary between asphalt and the side of the road, such as grass, soil, or a curb



■ Steering assist function

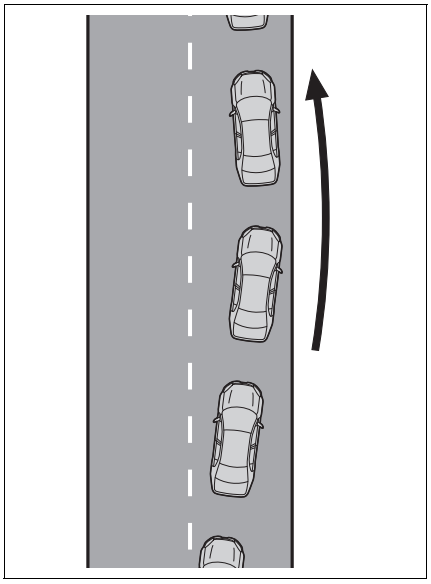
When the system determines that the vehicle might depart from its lane or course*, the system provides assistance as necessary by operating the steering wheel in small amounts for a short period of time to keep the vehicle in its lane.

If the system detects that the steering wheel has not been operated for a fixed amount of time or the steering wheel is not being firmly gripped, a warning is displayed on the multi-information display and the function is temporarily canceled.

When the system determines that the vehicle might depart from its lane and that the possibility of a collision with an overtaking vehicle in the adjacent lane is high, the steering assist function will operate even

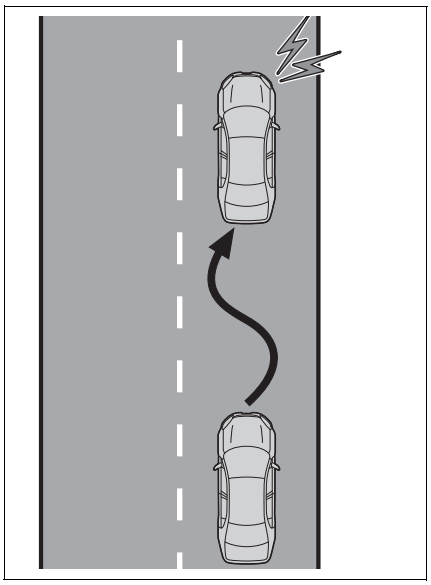
if the turn signals are operating.

*: Boundary between asphalt and the side of the road, such as grass, soil, or a curb



■ Vehicle sway warning function

When the vehicle is swaying within a lane, the warning buzzer will sound and a message will be displayed on the multi-information display to alert the driver.



■ Lane centering function

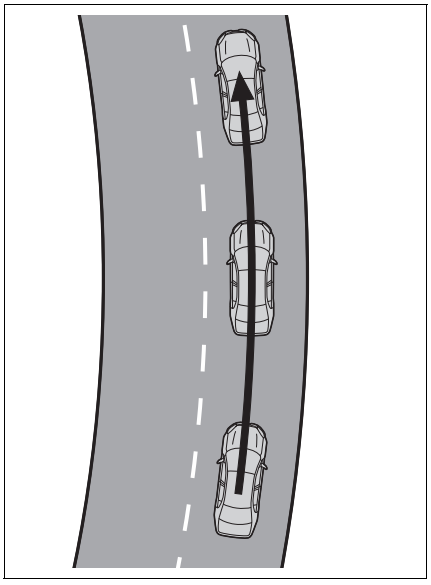
This function is linked with dynamic radar cruise control with full-speed range and provides the required assistance by operating the steering wheel to keep the vehicle in its current lane.

When dynamic radar cruise control with full-speed range is not operating, the lane centering function does not operate.

In situations where the white (yellow) lane lines are difficult to see or are not visible, such as when in a traffic jam, this function will operate to help follow a preceding vehicle by monitoring the position of the preceding vehicle.

If the system detects that the steering wheel has not been operated for a fixed amount of time or the steering wheel is not being firmly gripped, a warning is displayed on

the multi-information display and the function is temporarily canceled.



■ Lane change assist function

This function is linked to the dynamic radar cruise control with full-speed range and provides assistance for performing lane changes by operating the steering wheel when you hold the turn signal lever partway (lane change position).*

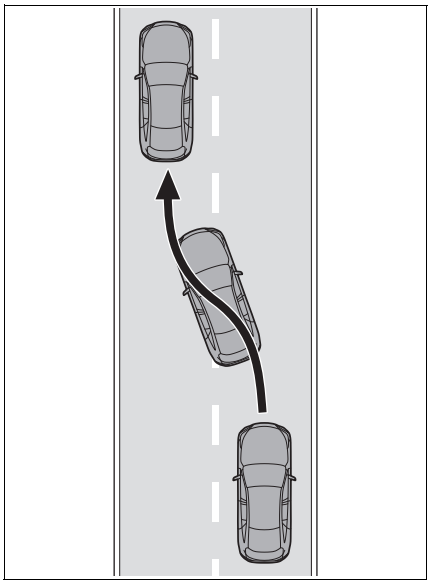
*: Refer to “Turn signal lever” in the “OWNER’S MANUAL”.

When lane change assist function is operating, the acceleration and deceleration of the vehicle is controlled while the preceding vehicle and vehicles driven in the lane toward which the turn signal is operated are monitored.

Use lane change assist function on freeways and highways.

When the lane centering function is not operating, the lane change assist function will not operate.

The lane change assist function should not be operated when changing lanes on a road that is diverging or merging.



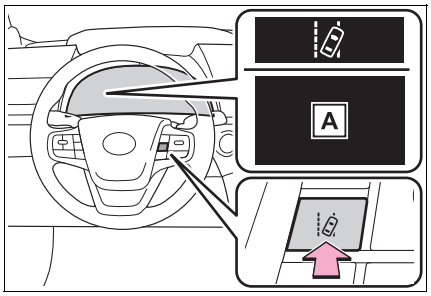
Turning LTA system on

Press the LTA switch to turn the LTA system on.

The LTA indicator illuminates and a message is displayed on the multi-information display.

Press the LTA switch again to turn the LTA system off.

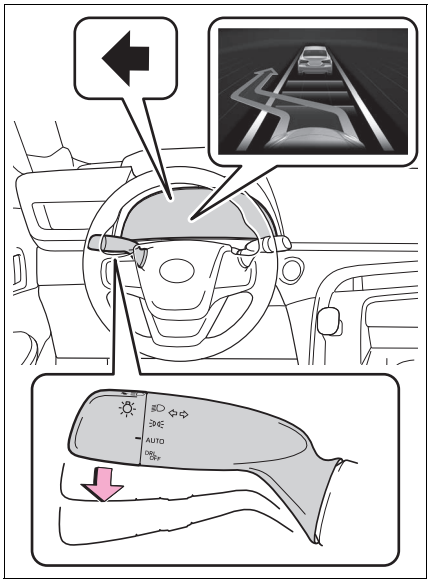
When the LTA system is turned on or off, operation of the LTA system continues in the same condition the next time the fuel cell system is started.



A "LTA Turned ON Steering Assist Active"

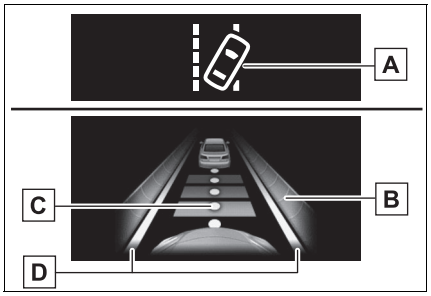
Operating the lane change assist function

Hold the turn signal lever partway (lane change position) for approximately 1 second.



The direction you are signaling will be displayed on the multi-information display.

Indications on multi-information display



A LTA indicator

The illumination condition of the indicator informs the driver of the system operation status.

Illuminated in white: LTA system is operating.

Illuminated in green: Steering wheel assistance of the steering assist function or lane centering function is operating.

Flashing in orange: Lane departure alert function is operating.

B Operation display of steering wheel operation support

Displayed when the multi-information display is switched to the driving support system information screen.

Indicates that steering wheel assistance of the steering assist function or lane centering function is operating.

Both outer sides of the lane are displayed: Indicates that steering wheel assist of the lane centering function is operating.

One outer side of the lane is displayed: Indicates that steering wheel assist of the steering assist

function is operating.

Both outer sides of the lane are flashing: Alerts the driver that their input is necessary to stay in the center of the lane (lane centering function).

C Follow-up cruising display

Displayed when the multi-information display is switched to the driving support system information screen.

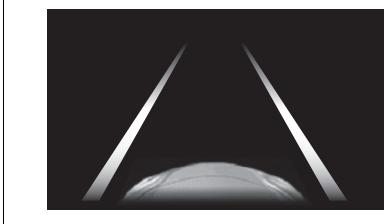
Indicates that steering assist of the lane centering function is operating by monitoring the position of a preceding vehicle.

When the follow-up cruising display is displayed, if the preceding vehicle moves, your vehicle may move in the same way. Always pay careful attention to your surroundings and operate the steering wheel as necessary to correct the path of the vehicle and ensure safety.

D Lane departure alert function display

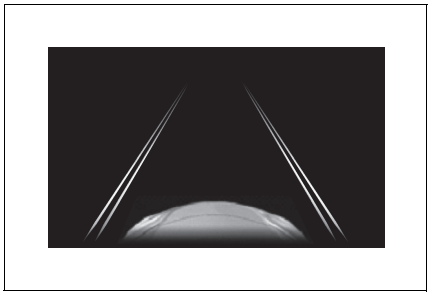
Displayed when the multi-information display is switched to the driving support system information screen.

▶ Inside of displayed lines is white



Indicates that the system is recognizing white (yellow) lines or a course*. When the vehicle departs from its lane, the white line displayed on the side the vehicle departs from flashes orange.

▶ Inside of displayed lines is black



Indicates that the system is not able to recognize white (yellow) lines or a course* or is temporarily canceled.

*: Boundary between asphalt and the side of the road, such as grass, soil, or a curb

■ Lane change assist function

● Lane change assist display

Indicates that steering wheel assist of the lane change assist function is operating.

● Approaching vehicle warning display

Indicates that an approaching vehicle is detected in the adjacent lane.

■ **Warning display**

When the lane centering function is operating and the system determines that the vehicle may depart from its lane due to a sharp curve, etc., a warning display urging the driver to operate the steering wheel, will be displayed.

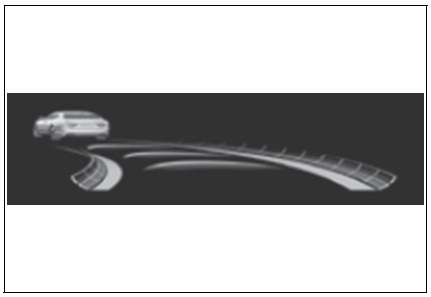
This display will also be displayed when operation of the lane change assist function is canceled.

In some situations a warning display may not be displayed.

Indications on head-up display

Some displays, which are the same as those displayed on the multi-information display, will be displayed.

■ **LTA system curve display on the head-up display**



The curve display on the head-up display changes according to the direction and curvature of the curve.

■ **Operation conditions of each function**

● Lane departure alert function

This function operates when all of the following conditions are met.

- LTA is turned on.
- Vehicle speed is approximately 32 mph (50 km/h) or more.*1
- System recognizes white (yellow) lane lines or a course*2. (When a white [yellow] line or course*2 is recognized on only one side, the system will operate only for the recognized side.)
- Width of traffic lane is approximately 9.8 ft. (3 m) or more.
- Turn signal lever is not operated. (Except when another vehicle is in the lane on the side where the turn signal was operated)
- Vehicle is not being driven around a sharp curve.
- No system malfunctions are detected. (→P.58)
- The Advanced Drive is not operating.

*1: The function operates even if the vehicle speed is less than approximately 32 mph (50 km/h) when the lane centering function

is operating.

*2: Boundary between asphalt and the side of the road, such as grass, soil, or a curb

● Steering assist function

This function operates when all of the following conditions are met in addition to the operation conditions for the lane departure alert function.

- Setting for “Steering Assist” in ⚙ of the multi-information display is set to “ON”. (→P.75)
- Vehicle is not accelerated or decelerated by a fixed amount or more.
- Steering wheel is not operated with a steering force level suitable for changing lanes.
- ABS, VSC, TRAC and PCS are not operating.
- TRAC or VSC is not turned off.
- Hands off steering wheel warning is not displayed. (→P.57)
- The Advanced Drive is not operating.

● Vehicle sway warning function

This function operates when all of the following conditions are met.

- Setting for “Sway Warning” in ⚙ of the multi-information display is set to “ON”. (→P.75)
- Vehicle speed is approximately 32 mph (50 km/h) or more.
- Width of traffic lane is approximately 9.8 ft. (3 m) or more.
- No system malfunctions are detected. (→P.58)
- The Advanced Drive is not operating.

● Lane centering function

This function operates when all of the following conditions are met.

- LTA is turned on.
- Setting for “Steering Assist” and “Lane Center” in ⚙ of the multi-information display are set to “ON”. (→P.75)
- This function recognizes white (yellow) lane lines or the position of a preceding vehicle (except when the preceding vehicle is small, such as a motorcycle).
- The dynamic radar cruise control with full-speed range is operating in vehicle-to-vehicle distance control mode.
- Width of traffic lane is approximately 10 to 13 ft. (3 to 4 m).
- Turn signal lever is not operated.
- Vehicle is not being driven around a sharp curve.
- No system malfunctions are detected. (→P.58)
- Vehicle does not accelerate or decelerate by a fixed amount or more.
- Steering wheel is not operated with a steering force level suitable for changing lanes.
- ABS, VSC, TRAC and PCS are not operating.
- TRAC or VSC is not turned off.
- Hands off steering wheel warning is not displayed. (→P.57)
- The driver has one or both hands on the steering wheel.
- The vehicle is being driven in the center of a lane.
- Steering assist function is not operating.
- The Advanced Drive is not operating.

● Lane change assist function

This function will operate when all of the following conditions are met:

- The lane centering function is operating.
- Setting for “Lane Change Assist” in ⚙ of the multi-information display is set to “ON”. (→P.75)
- The vehicle speed is between approximately 57 and 85 mph (90 and 140 km/h).
- White (yellow) lane lines are detected by the system.
- A broken white line is detected between your vehicle and the lane

toward which the turn signal is operated.
- The turn signal lever is held partway (lane change position) for approximately 1 second.
- A vehicle is not overtaking your vehicle or detected in the lane toward which the turn signal is operated.
- The vehicle is being driven straight or around a slight curve.
- The vehicle is not accelerating or decelerating more than a certain amount.
- The steering wheel is not being turned sufficiently to perform a lane change.
- ABS, VSC, TRAC and PCS are not operating.
- TRAC or VSC is not turned off.
- Hands off steering wheel warning is not displayed. (→P.57)
- The dynamic radar cruise control with full-speed range approach warning is not operating.
- The lane departure alert function is not operating.
- The curve speed reduction function (→P.70) is not operating.
- The Advanced Drive is not operating.

■ **Temporary cancelation of functions**

- When operation conditions are no longer met, a function may be temporarily canceled. However, when the operation conditions are met again, operation of the function is automatically restored. (→P.54)
- If the operation conditions (→P.54) are no longer met while the lane centering function is operating, the steering wheel may vibrate and the buzzer may sound to indicate that the function has been temporarily canceled. However, if the “Alert” customization setting is set to 《》, the system will notify the driver by vibrating the steering wheel instead of sounding the buzzer.
- If the operating conditions (→P.54) are no longer met, the buzzer may sound to indicate that the lane change assist function has been temporarily canceled.

■ **Steering assist function/lane centering function**

- Depending on the vehicle speed, lane departure situation, road conditions, etc., the driver may not feel the function is operating or the function may not operate at all.
- Even if the curve speed reduction function (→P.70) operates, the lane centering function may not be able to drive the vehicle around a curve successfully.
- The steering control of the function is overridden by the driver’s steering wheel operation.
- Do not attempt to test the operation of the steering assist function.

■ **Lane departure alert function**

- The warning buzzer may be difficult to hear due to external noise, audio playback, etc. Also, it may be difficult to feel steering wheel vibrations due to the road conditions, etc.
- If the edge of the course* is not clear or straight, the lane departure alert function may not operate.
- It may not be possible for the system to determine if there is a danger of a collision with a vehicle in an adjacent lane.
- Do not attempt to test the operation of the lane departure alert function.

*: Boundary between asphalt and the side of the road, such as grass, soil, or a curb

■ **Lane change assist function**

Depending on the vehicle speed,

vehicle condition, road conditions, or conditions of the area around the vehicle, the lane change assist function may not operate or it may be difficult to recognize that it has operated.

If steering control operation is excessive or insufficient, it can be corrected by the driver's operation of the steering wheel.

In situations such as the following, the lane change assist function may be canceled:

- When the system no longer detects white (yellow) lane lines
- When the turn signal lever is operated fully (right/left turn position)
- When the vehicle speed is outside of the operational range of the function
- When the system detects operation of the steering wheel, brake or accelerator pedal by the driver

While the lane change assist function is operating, if the system detects that a vehicle is quickly approaching in the lane toward which the turn signal is operated, the steering assist may slightly steer the vehicle away from the lane while a buzzer is sounding, the steering wheel is vibrating, and a warning display is displayed on the multi-information display, to help prevent the vehicle from entering the lane and alert the driver of the approaching vehicle.

Hands off steering wheel warning

In the following situations, a warning message urging the driver to hold the steering wheel and the symbol shown in the illustration are displayed on the multi-information display to warn the driver. The warning stops when the system determines that the driver holds the steering wheel. Always keep your hands on the steering wheel when using this system, regardless of warnings.

Depending on the vehicle condition and road conditions, the warning may not operate. Also, if the system determines that the vehicle is driving around a curve, warnings will occur earlier than during straight-lane driving.

- When the system determines that the driver is driving without holding the steering wheel while the system is operating.

If the driver continues to keep their hands off of the steering wheel, the buzzer sounds, the driver is warned and the function is temporarily canceled. This warning also operates in the same way when the driver continuously operates the steering wheel only a small amount.

The buzzer also sounds even if the alert type is set to .

- When the system determines that the driver is driving without holding the steering wheel while the steering wheel assist of the steering assist function is operating.

If the driver continues to keep their hands off of the steering wheel and the steering wheel assist is operating, the buzzer sounds and the driver is warned. Each time the buzzer sounds, the continuing time of the buzzer becomes longer.

The buzzer also sounds even if the alert type is set to .

In situations such as the following,

the system may not be able to detect when the driver's hands are on the steering wheel:

- If a steering wheel cover is installed.
- If the driver is wearing gloves.
- If something is attached to the steering wheel.
- If the driver is gripping the wood trim, stitched area, spokes, or other part of the steering wheel that does not have sensors.

In situations such as the following, the hands off steering wheel alert may not operate and the steering assist function and lane centering function may operate even if the driver's hands are off the steering wheel:

- If an object contacts the steering wheel.
- If a wide object or arms are held in front of the steering wheel.

■ Vehicle sway warning function

When the system determines that the vehicle is swaying while the vehicle sway warning function is operating, a buzzer sounds and a warning message urging the driver to rest and the symbol shown in the illustration are simultaneously displayed on the multi-information display.

Depending on the vehicle and road conditions, the warning may not operate.

■ Situations in which LTA will turn on automatically

When the dynamic radar cruise control with full-speed range operates in vehicle-to-vehicle distance control mode, LTA will turn on. (→P.67)

■ LTA (Lane Tracing Assist) warning messages

If the following warning message is displayed on the multi-information display and the LTA indicator illuminates in orange, follow the appropriate troubleshooting procedure. Also, if a different warning message is displayed, follow the instructions displayed on the screen.

- "LTA Malfunction Visit Your Dealer"

The system may not be operating properly. Have the vehicle inspected by your Toyota dealer.

- "LTA Unavailable"

The system is temporarily canceled due to a malfunction in a sensor other than the front camera. Turn the LTA system off, wait for a little while, and then turn the LTA system back on.

- "LTA Unavailable at Current Speed"

The function cannot be used as the vehicle speed exceeds the LTA operation range. Drive slower.

■ Lane change assist function warning messages

If the following warning message is displayed on the multi-information display, follow the appropriate troubleshooting procedure. Also, if a different warning message is displayed, follow the instructions displayed on the screen.

- "Lane Change Assist Malfunction Visit Your Dealer"

The system may not be operating properly. Have the vehicle inspected by your Toyota dealer.

- "Lane Change Assist Unavailable See Owner's Manual"

The system is temporarily canceled due to a malfunction in a sensor other than the front camera. Turn

the LTA system off, wait for a little while, and then turn the LTA system back on.

- "Unavailable Activation Condition not Satisfied See Owner's Manual"

The function cannot be used as the operating conditions have not been met. (→P.54) Operate the turn signal lever again after all of the operating conditions are met.

- "Unavailable at Current Speed"

The lane change assist function cannot be used as the vehicle speed is outside of the operable range. Operate the turn signal lever again while driving at a vehicle speed within the operable range. (→P.54)

- "Unavailable Surrounding Vehicle Detected"

The function cannot be used as a vehicle was detected in the lane toward which the turn signal was operated. Operate the turn signal lever again after checking that there are no other vehicles nearby.

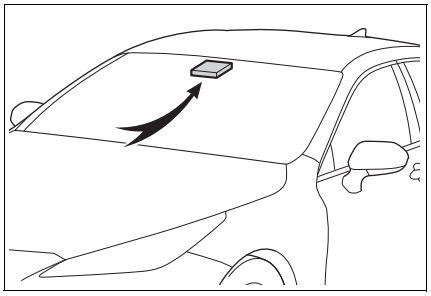
■ **Customization**

Function settings can be changed. (Customizable features:→P.75)

RSA (Road Sign Assist)

Summary of function

The RSA system recognizes specific road signs using the front camera and/or navigation system (when speed limit information is available) to provide information to the driver via the display.



If the system judges that the vehicle is being driven over the speed limit, performing prohibited actions, etc. according to the recognized road signs, it notifies the driver through a visual notification and notification buzzer.

⚠ WARNING

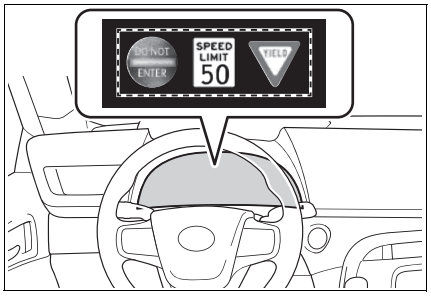
■ **Before using the RSA**

Do not rely solely upon the RSA system. RSA is a system which supports the driver by providing information, but it is not a replacement for a driver's own vision and awareness. Drive safely by always paying careful attention to the traffic rules.

Indication on the multi-information display

When the front camera recognizes a sign and/or information of a sign is available from the navigation system, the sign will be displayed on the multi-information display.

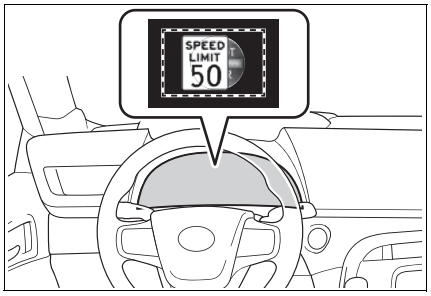
- When the driving support system information display is selected, a maximum of 3 signs can be displayed.



- When a tab other than the driving support system information display is selected, the following types of road signs will be displayed.

• Speed limit sign

• Do Not Enter sign (when notification is necessary)



If signs other than speed limit signs are recognized, they will be displayed in an overlapping stack under the current speed limit sign.

Supported types of road signs

The following types of road signs, including electronic signs and blinking signs, are recognized.

A non-official or a recently introduced traffic sign may not be recognized.

Speed limit

US Night speed limit

Do Not Enter

Stop

Yield

Notification function

In the following situations, the RSA system will notify the driver.

- When the vehicle speed exceeds the speed notification threshold of the speed limit sign displayed, the sign display will be emphasized and a buzzer will sound.

- When the RSA system recognizes a do not enter sign and determines that your vehicle has entered a no-entry area, the displayed sign will flash and a buzzer will sound.

Depending on the situation, a notification function may not operate properly.

■ Setting procedure

1 Press 〈 or 〉 of the meter control switches and select ⚙.

2 Press ∧ or ∨ of the meter control switches and select "RSA", then press **OK**.

■ Automatic turn-off of RSA sign display

In the following situations, a displayed speed limit sign and/or do not enter sign will stop being displayed automatically:

- No sign has been recognized for a certain distance.
- The road changes due to a left or right turn, etc.

In the following situations, stop and yield signs will stop being displayed automatically:

- The system determines that your vehicle has passed the sign.
- The road changes due to a left or right turn, etc.

■ Conditions in which the function may not operate or detect correctly

In the following situations, RSA does not operate normally and may not recognize signs, display the incorrect sign, etc. However, this does not indicate a malfunction.

- The front camera is misaligned due to a strong impact being applied to the sensor, etc.
- Dirt, snow, stickers, etc., are on the windshield near the front camera.
- In inclement weather such as heavy rain, fog, snow or sand storms
- Light from an oncoming vehicle, the sun, etc., enters the front camera.
- The sign is dirty, faded, tilted or bent.
- The contrast of electronic sign is low.
- All or part of the sign is hidden by the leaves of a tree, a pole, etc.
- The sign is only visible to the front camera for a short amount of time.
- The driving scene (turning, lane change, etc.) is judged incorrectly.
- If a sign not appropriate for the currently traveled lane, but the sign exists directly after a freeway branches, or in an adjacent lane just before merging.
- Stickers are attached to the rear of the preceding vehicle.
- A sign resembling a system compatible sign is recognized.
- Side road speed signs may be detected and displayed (if positioned in sight of the front camera) while the vehicle is traveling on the main road.
- Roundabout exit road speed signs may be detected and displayed (if positioned in sight of the front camera) while traveling on a roundabout.
- The front of the vehicle is raised or lowered due to the carried load.
- The surrounding brightness is not sufficient or changes suddenly.
- When a sign intended for trucks, etc., is recognized.

- The map data is outdated.
- The navigation system is not operating.
- When driving in an area where Advanced Drive operation is not possible.
- The speed information displayed on the meter and on the navigation system may be different due to the navigation system using map data.

■ **Speed limit sign display**

If the power switch was last turned off while a speed limit sign was displayed on the multi-information display, the same sign displays again when the power switch is turned to ON.

■ **If "RSA Malfunction Visit Your Dealer" is shown**

The system may be malfunctioning. Have the vehicle inspected by your Toyota dealer.

■ **Customization**

Some functions can be customized. (Customizable features: →P.75)

Dynamic radar cruise control with full-speed range

Summary of functions

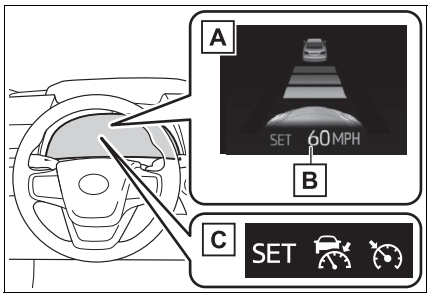
In vehicle-to-vehicle distance control mode, the vehicle automatically accelerates, decelerates and stops to match the speed changes of the preceding vehicle even if the accelerator pedal is not depressed. In constant speed control mode, the vehicle runs at a fixed speed.

Use the dynamic radar cruise control with full-speed range on freeways and highways.

- Vehicle-to-vehicle distance control mode (→P.65)
- Constant speed control mode (→P.71)

System Components

■ **Meter display**

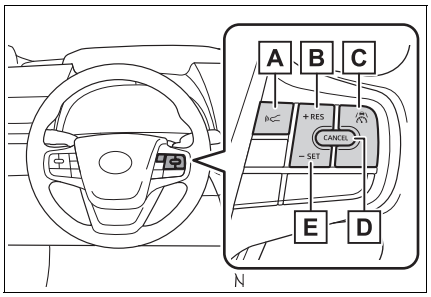


A Multi-information display

B Set speed

C Indicators

■ Operation switches



A Vehicle-to-vehicle distance switch

B “+RES” switch

C Advanced Drive main switch

D Cancel switch

E “-SET” switch

⚠ WARNING

■ Before using dynamic radar cruise control with full-speed range

- Driving safely is the sole responsibility of the driver. Do not rely solely on the system, and drive safely by always paying careful attention to your surroundings.
- The dynamic radar cruise control with full-speed range provides driving assistance to reduce the driver’s burden. However, there are limitations to the assistance provided. Read the following conditions carefully. Do not overly rely on this system and always drive carefully.
  - When the sensor may not be correctly detecting the vehicle ahead: →P.73
  - Conditions under which the vehicle-to-vehicle distance control mode may not function correctly: →P.74
- Set the speed appropriately depending on the speed limit, traffic flow, road conditions, weather conditions, etc. The driver is responsible for checking the set speed.
- Even when the system is functioning normally, the condition of the preceding vehicle as detected by the system may differ from the condition observed by the driver. Therefore, the driver must always remain alert, assess the danger of each situation and drive safely. Relying solely on this system or assuming the system ensures safety while driving can lead to an accident, resulting in death or serious injury.

■ Cautions regarding the driving assist systems

Observe the following precautions, as there are limitations to the assistance provided by the system. Failure to do so may cause an accident resulting in death or serious injury.

WARNING

- Assisting the driver to measure following distance

The dynamic radar cruise control with full-speed range is only intended to help the driver in determining the following distance between the driver's own vehicle and a designated vehicle traveling ahead. It is not a mechanism that allows careless or inattentive driving, and it is not a system that can assist the driver in low-visibility conditions.
It is still necessary for driver to pay close attention to the vehicle's surroundings.

- Assisting the driver to judge proper following distance

The dynamic radar cruise control with full-speed range determines whether the following distance between the driver's own vehicle and a designated vehicle traveling ahead is within a set range. It is not capable of making any other type of judgement. Therefore, it is absolutely necessary for the driver to remain vigilant and to determine whether or not there is a possibility of danger in any given situation.

- Assisting the driver to operate the vehicle

The dynamic radar cruise control with full-speed range does not include functions which will prevent or avoid collisions with vehicles ahead of your vehicle. Therefore, if there is ever any possibility of danger, the driver must take immediate and direct control of the vehicle and act appropriately in order to ensure the safety of all involved.

■ Situations unsuitable for dynamic radar cruise control with full-speed range

Do not use dynamic radar cruise control with full-speed range in any of the following situations. Doing so may result in inappropriate speed control and could cause an accident resulting in death or serious injury.

- Roads where there are pedestrians, cyclists, etc.
- In heavy traffic
- On roads with sharp bends
- On winding roads
- On slippery roads, such as those covered with rain, ice or snow
- On steep downhills, or where there are sudden changes between sharp up and down gradients
  Vehicle speed may exceed the set speed when driving down a steep hill.
- At entrances to freeways and highways

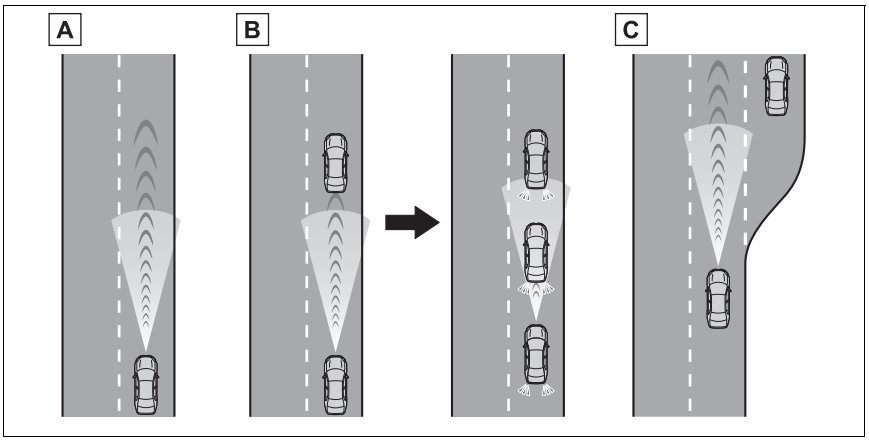
WARNING

- When weather conditions are bad enough that they may prevent the sensors from detecting correctly (fog, snow, sandstorm, heavy rain, etc.)
- When there is rain, snow, etc., on the front surface of the radar or front camera
- In traffic conditions that require frequent repeated acceleration and deceleration
- During emergency towing
- When an approach warning buzzer is heard often

Driving in vehicle-to-vehicle distance control mode

This mode employs a radar to detect the presence of vehicles up to approximately 328 ft. (100 m) ahead, determines the current vehicle-to-vehicle following distance, and operates to maintain a suitable following distance from the vehicle ahead. The desired vehicle-to-vehicle distance can also be set by operating the vehicle-to-vehicle distance switch.

When driving on downhill slopes, the vehicle-to-vehicle distance may become shorter.



A Example of constant speed cruising

When there are no vehicles ahead

The vehicle travels at the speed set by the driver.

B Example of deceleration cruising and follow-up cruising

When a preceding vehicle driving slower than the set speed appears

When a vehicle is detected running ahead of you, the system automatically decelerates your vehicle. When a greater reduction in vehicle speed is necessary, the system applies the brakes (the stop lights will come on at this time). The system will respond to changes in the speed of the vehicle ahead in order to maintain the vehicle-to-vehicle distance set by the driver. Approach warning warns you when the system cannot decelerate sufficiently to prevent your vehicle from closing in on the vehicle ahead.

When the vehicle ahead of you stops, your vehicle will also stop (vehicle is stopped by system control). After the vehicle ahead starts off, pressing the “+RES” switch or depressing the accelerator pedal (start-off operation) will resume follow-up cruising. If the start-off operation is not performed, system control continues to keep your vehicle stopped.

When the turn signal lever is operated and your vehicle moves to an overtaking lane while driving at 50 mph (80 km/h) or more, the vehicle will accelerate to help to overtake a passing vehicle.

The system’s identification of what is an overtaking lane may be determined solely based on the location of the steering wheel in the vehicle (left side driver position versus right side driver position.) If the vehicle is driven to a region where the overtaking lane is on a different side from where the vehicle is normally driven, the vehicle may accelerate when the turn signal lever is operated in the opposite direction to the overtaking lane (e.g., if the driver normally operates the vehicle in a region where the overtaking lane is to the right but then drives to a region where the overtaking lane is to the left, the vehicle may accelerate when the right turn signal is activated).

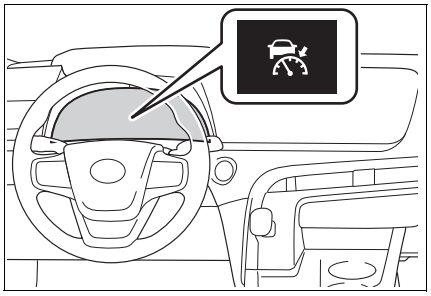
C Example of acceleration

When there are no longer any preceding vehicles driving slower than the set speed

The system accelerates until the set speed is reached. The system then returns to constant speed cruising.

Setting the vehicle speed (vehicle-to-vehicle distance control mode)

1 Check that the dynamic radar cruise control indicator is illuminated.

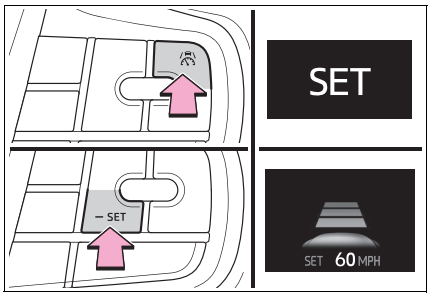


2 Accelerate or decelerate, with accelerator pedal operation, to the desired vehicle speed (at or above approximately 20 mph [30 km/h]) and press the “-SET” switch or Advanced Drive main switch to set the speed.

Cruise control “SET” indicator will come on.

The vehicle speed at the moment the switch is released becomes the set speed.

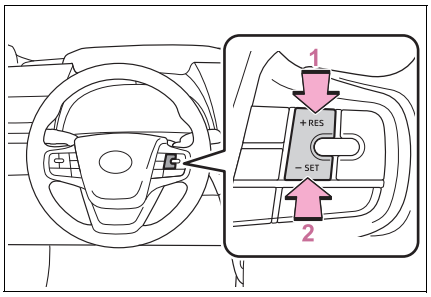
Also, LTA (Lane Tracing Assist) will turn on.
If the use conditions of the Advanced Drive are met, it will operate.



Adjusting the set speed

■ Adjusting the set speed by the switch

To change the set speed, press the “+RES” or “-SET” switch until the desired set speed is displayed.



1 Increases the speed (Except when the vehicle has been stopped by system control in vehicle-to-vehicle distance control mode)

2 Decreases the speed

Fine adjustment: Press the switch.

Large adjustment: Press and hold the switch to change the speed, and release when the desired speed is reached.

In the vehicle-to-vehicle distance control mode, the set

speed will be increased or decreased as follows:

Fine adjustment: By 1 mph (1.6 km/h)*1 or 1 km/h (0.6mph)*2 each time the switch is pressed
Large adjustment: Increases or decreases in 1mph (1.6 km/h)*1 or 1 km/h (0.6 mph)*2 increments for as long as the switch is held

*1: When the set speed is shown in "MPH"

*2: When the set speed is shown in "km/h"

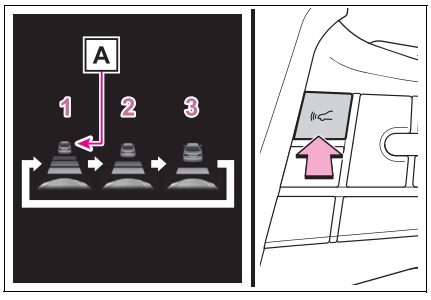
■ **Increasing the set speed by the accelerator pedal**

1 Accelerate with accelerator pedal operation to the desired vehicle speed

2 Press the "-SET" switch

Changing the vehicle-to-vehicle distance (vehicle-to-vehicle distance control mode)

Pressing the switch changes the vehicle-to-vehicle distance as follows:



1 Long

2 Medium

3 Short

If a vehicle is running ahead of you, the preceding vehicle mark A will also be displayed.

Vehicle-to-vehicle distance settings (vehicle-to-vehicle distance control mode)

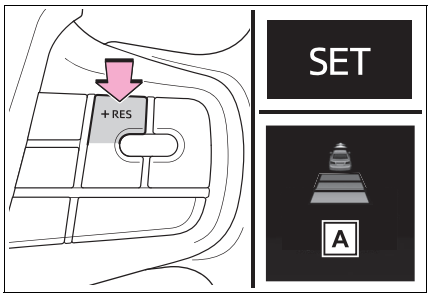
Select a distance from the table below. Note that the distances shown correspond to a vehicle speed of 50 mph (80 km/h). Vehicle-to-vehicle distance increases/decreases in accordance with vehicle speed. When the vehicle is stopped by system control, the vehicle stops at a certain vehicle-to-vehicle distance depending on the situation.

Distance options	Vehicle-to-vehicle distance
Long	Approximately 160 ft. (50 m)
Medium	Approximately 130 ft. (40 m)
Short	Approximately 100 ft. (30 m)

Resuming follow-up cruising when the vehicle has been stopped by system control (vehicle-to-vehicle distance control mode)

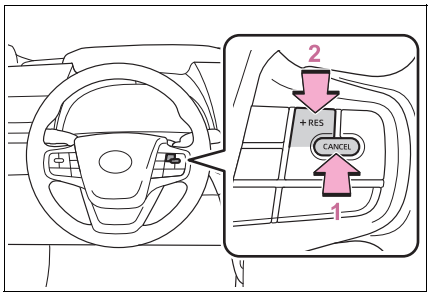
After the vehicle ahead of you starts off, press the “+RES” switch.

Your vehicle will also resume follow-up cruising if the accelerator pedal is depressed after the vehicle ahead of you starts off.



A “Push Cruise Control Switch or Press Accelerator to Resume”

Canceling and resuming the speed control



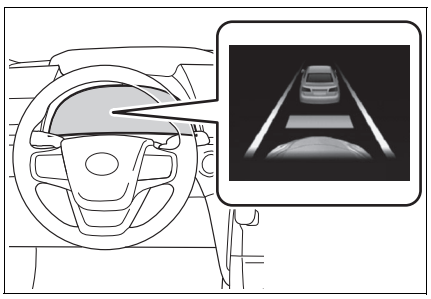
1 Pressing the cancel switch cancels the speed control.

The speed control is also canceled when the brake pedal is depressed. (When the vehicle has been stopped by system control, depressing the brake pedal does not cancel the setting.)

2 Pressing the “+RES” switch resumes the cruise control and returns vehicle speed to the set speed.

Approach warning (vehicle-to-vehicle distance control mode)

When your vehicle is too close to a vehicle ahead, and sufficient automatic deceleration via the cruise control is not possible, the display will flash and the buzzer will sound to alert the driver. An example of this would be if another driver cuts in front of you while you are following a vehicle. Depress the brake pedal to ensure an appropriate vehicle-to-vehicle distance.



■ Warnings may not occur when

In the following instances, warnings may not occur even when the vehicle-to-vehicle distance is small.

- When the speed of the preceding vehicle matches or exceeds your vehicle speed
- When the preceding vehicle is traveling at an extremely slow speed
- Immediately after the cruise control speed was set
- When depressing the accelerator pedal

Curve speed reduction function

While driving in vehicle-to-vehicle distance control mode, this function will reduce the vehicle speed, if it is determined to be necessary.

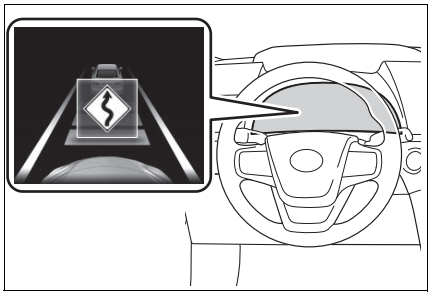
■ Function operation

When the steering wheel begins to be turned, the vehicle speed will begin being reduced. When the steering wheel is returned to the center position, the vehicle speed reduction will end.

Depending on the situation, the vehicle speed will then return to the vehicle-to-vehicle distance control mode set speed.

In situations where vehicle-to-vehicle distance control needs to operate, such as when a preceding vehicle cuts in front of your vehicle, the curve speed reduction function will be canceled.

■ Operation display



Displayed when the vehicle speed is being reduced.

When the vehicle speed reduction ends, the display will disappear.

■ Changing the settings of the curve speed reduction function

The curve speed reduction function can be enabled/disabled and the vehicle speed reduction strength can be adjusted.

1 Press 〈 or 〉 of the meter control switches and select ⚙.

2 Press ∧ or ∨ of the meter control switches and select “ DRCC”, then press and hold OK.

3 Press ∧ or ∨ of the meter control switches and select

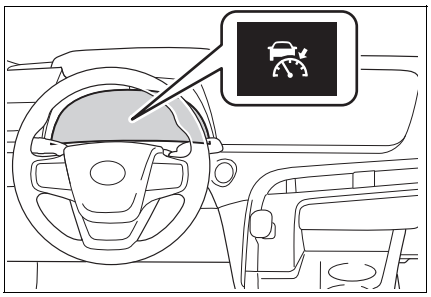
"Curve Spd. Reduction", then press OK.

The setting will change each time OK meter control switch is pressed.

Selecting constant speed control mode

When constant speed control mode is selected, your vehicle will maintain a set speed without controlling the vehicle-to-vehicle distance. Select this mode only when vehicle-to-vehicle distance control mode does not function correctly due to a dirty radar, etc.

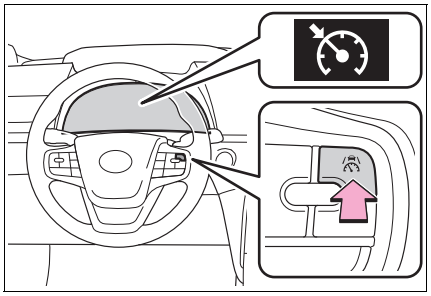
1 Check that the dynamic radar cruise control indicator is illuminated and the cruise control "SET" indicator is not illuminated.



2 Press and hold the cancel switch for 1.5 seconds or more.

The dynamic radar cruise control indicator will turn off and the cruise control indicator will illuminate.

If the cancel switch is pressed and held for 1.5 seconds or more again, the radar cruise control indicator will illuminate and the mode will change to vehicle-to-vehicle distance control mode.



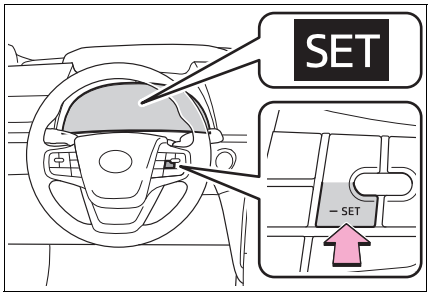
3 Accelerate or decelerate, with accelerator pedal operation, to the desired vehicle speed (at or above approximately 20 mph [30 km/h]) and press the "-SET" switch to set the speed.

Cruise control "SET" indicator will come on.

The vehicle speed at the moment the switch is released becomes the set speed.

Adjusting the speed setting: →P.67

Canceling and resuming the speed setting: →P.69



■ **Dynamic radar cruise control with full-speed range can be set when**

- The shift position is in D.
- The desired set speed can be set when the vehicle speed is approximately 20 mph (30 km/h) or more. (However, when the vehicle speed is set while driving at below approximately 20 mph [30 km/h], the set speed will be set to approximately 20 mph [30 km/h].)

■ **Accelerating after setting the vehicle speed**

The vehicle can accelerate by operating the accelerator pedal. After accelerating, the set speed resumes. However, during vehicle-to-vehicle distance control mode, the vehicle speed may decrease below the set speed in order to maintain the distance to the preceding vehicle.

■ **When the vehicle stops while follow-up cruising**

- Pressing the “+RES” switch while the vehicle ahead stops will resume follow-up cruising if the vehicle ahead starts off within approximately 3 seconds after the switch is pressed.
- If the vehicle ahead starts off within 3 seconds after your vehicle stops, follow-up cruising will be resumed.

■ **Automatic cancelation of vehicle-to-vehicle distance control mode**

Vehicle-to-vehicle distance control mode is automatically canceled in the following situations.

- VSC is activated.
- TRAC is activated for a period of time.
- When the VSC or TRAC system is turned off.
- The sensor cannot detect correctly because it is covered in some way.
- When the brake control or output restriction control of a driving support system operates. (For example: Pre-Collision System, Drive-Start Control)
- The parking brake is operated.
- The vehicle is stopped by system control on a steep incline.
- The following are detected when the vehicle has been stopped by system control:
  - The driver is not wearing a seat belt.
  - The driver’s door is opened.
  - The vehicle has been stopped for about 3 minutes.
- When the Br mode is selected.

If vehicle-to-vehicle distance control mode is automatically canceled for any reasons other than the above, there may be a malfunction in the system. Contact your Toyota dealer.

■ **Automatic cancelation of constant speed control mode**

Constant speed control mode is automatically canceled in the following situations:

- Actual vehicle speed is more than approximately 10 mph (16 km/h) below the set vehicle speed.
- Actual vehicle speed falls below approximately 20 mph (30 km/h).
- VSC is activated.
- TRAC is activated for a period of time.
- When the VSC or TRAC system is turned off.
- When the brake control or output restriction control of a driving support system operates. (For example: Pre-Collision System, Drive-Start Control)
- When the Br mode is selected.

If constant speed control mode is automatically canceled for any reasons other than the above, there

may be a malfunction in the system. Contact your Toyota dealer.

■ **Situations in which the curve speed reduction function may not operate**

In situations such as the following, the curve speed reduction function may not operate:

- When the vehicle is being driven around a gentle curve
- When the accelerator pedal is being depressed
- When the vehicle is being driven around an extremely short curve

■ **Brake operation**

A brake operation sound may be heard and the brake pedal response may change, but these are not malfunctions.

■ **Warning messages and buzzers for dynamic radar cruise control with full-speed range**

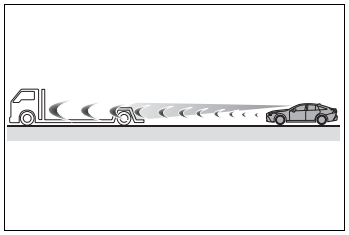
Warning messages and buzzers are used to indicate a system malfunction or to inform the driver of the need for caution while driving. If a warning message* is shown on the multi-information display, read the message and follow the instructions.(→P.26)

*: Refer to “If a warning message is displayed” in the “OWNER’S MANUAL”.

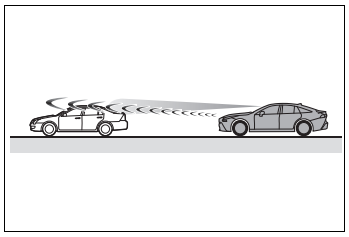
■ **When the sensor may not be correctly detecting the vehicle ahead**

In the case of the following and depending on the conditions, operate the brake pedal when deceleration of the system is insufficient or operate the accelerator pedal when acceleration is required.
As the sensor may not be able to correctly detect these types of vehicles, the approach warning (→P.69) may not be activated.

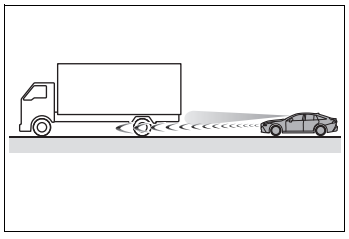
- Vehicles that cut in suddenly
- Vehicles traveling at low speeds
- Vehicles that are not moving in the same lane
- Vehicles with small rear ends (trailers with no load on board, etc.)



- Motorcycles traveling in the same lane
- When water or snow thrown up by the surrounding vehicles hinders the detecting of the sensor
- When your vehicle is pointing upwards (caused by a heavy load in the luggage compartment, etc.)



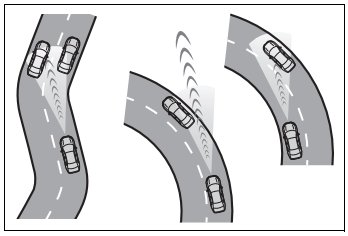
- Preceding vehicle has an extremely high ground clearance



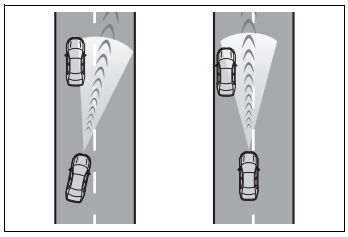
■ **Conditions under which the vehicle-to-vehicle distance control mode may not function correctly**

In the case of the following conditions, operate the brake pedal (or accelerator pedal, depending on the situation) as necessary.
As the sensor may not be able to correctly detect vehicles ahead, the system may not operate properly.

- When the road curves or when the lanes are narrow



- When steering wheel operation or your position in the lane is unstable



- When the vehicle ahead of you decelerates suddenly
- When driving on a road surrounded by a structure, such as in a tunnel or on a bridge

While the vehicle speed is decreasing to the set speed after the vehicle accelerates by depressing the accelerator pedal

■ **Situations in which the curve speed reduction function may not operate properly**

In situations such as the following, the curve speed reduction function may not operate properly:

- When the vehicle is being driven around a curve on an incline/decline
- When the course of the vehicle differs from the shape of the curve
- When the vehicle speed is excessively high when entering a curve
- When the steering wheel is suddenly operated

Customizable features

The settings of these features can be changed by using the multi-information display.

Customizing vehicle features

■ Changing by using the meter control switches

1 Press 〈 or 〉 to select ⚙.

2 Operate the meter control switches to select the desired item to be customized.

3 According to the display, select the desired setting and then press OK.

To go back to the previous screen or exit the customize mode, press ⮌.

NOTICE

■During customization

To prevent 12-volt battery discharge, ensure that the fuel cell system is operating while customizing features.

Customizable features

■ PCS (Pre-Collision System) (→P.28)

Function	Customized setting
PCS (Pre-Collision System)*	On/Off
Adjust alert timing	Early/Middle/Late
Pedestrian alert	On/Off

*: The system is automatically enabled each time the power switch is turned to ON.

■ FCTA (Front Cross Traffic Alert) (→P.42)

Function	Customized setting
FCTA function	On/Off
Adjust alert timing	Early/Middle/Late

■ LTA (Lane Tracing Assist) (→P.45)

Function	Customized setting
Lane centering function	On/Off
Steering assist function	On/Off

Function	Customized setting
Lane change assist function	On/Off
Alert type	Steering wheel vibration/Buzzer
Alert sensitivity	High/Standard
Vehicle sway warning function	On/Off
Vehicle sway warning sensitivity	High/Standard/Low

■ **RSA (Road Sign Assist)* (→P.59)**

Function	Customized setting
RSA (Road Sign Assist)	On/Off
Excess speed notification method	No notification/Display only/Display and buzzer
Excess speed notification level	1 mph (2 km/h)/3 mph (5 km/h)/5 mph (10 km/h)
Other notifications method (No-entry notification)	No notification/Display only/Display and buzzer

*: If equipped

■ **Dynamic radar cruise control with full-speed range (→P.62)**

Function	Customized setting
Curve speed reduction function	High/Low/Off