



TOYOTA

Grand Highlander 2024

Owner's Manual Excerpt for Driving Support Systems

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This document contains excerpts from the vehicle's Owner's Manual for certain driving support systems.

Refer to the full Owner's Manual for detail on all vehicle systems.

All page numbers refer to the page of the Owner's Manual.

Toyota Safety Sense 3.0 software update

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

WARNING

■ For safe use

When the Toyota Safety Sense 3.0 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 Digital Owner's Manual which corresponds to the software version of the system, available at the Owner's Manual website, before using this system.

Content of the Toyota Safety Sense 3.0 Owner's Manual

This Owner's Manual contains information for Ver. 2. For the latest information about the controls, use, warnings/precautions, etc. of each function of Toyota Safety Sense 3.0, refer to the Digital Owner's Manual at the Owner's Manual website.

If the software of this system has been updated after initial purchase of the vehicle, before using this system, be sure to

read the Owner's Manual which corresponds to the software version of the system.

■ Precautions for use

- Be aware that some functions may temporarily be disabled if a legal or safety related issue occurs.
- If a connected services contract has not been entered or has expired, software updates will not be able to be performed wirelessly.

Checking your vehicle's Toyota Safety Sense 3.0 version

If the software of this system has been updated after initial purchase of the vehicle, to access the appropriate Owner's Manual, it is necessary to check the software version of the system and then visit the Owner's Manual website.

Checking the version using OneApp

The software version of the system can be checked using OneApp.

Selecting your vehicle's Toyota Safety Sense 3.0 version

- 1 Access the following URL using a computer or smartphone:

► For U.S.A. owners

<https://www.toyota.com/owners/resources/warranty-owners-manuals/manual?om=om0e126u.grandhighlander.2024.2306.cv.vh>



► For Canadian owners

<https://www.toyota.ca/toyota/owners/manual?om=om0e126u.grandhighlander.2024.2306.cv.vh>



- 2 Select the file which includes the previously checked system version.

Updating the software

If a software update is available, a notification will be displayed by OneApp. Follow the instructions displayed on the screen.

■ Software update precautions

- After a software update has been performed, it will not be possible to revert to a previous version.
- Depending on the communication environment and the content of an update, a software update may take several hours. Although an update will be suspended when the engine switch is turned off, it will resume when the engine switch is changed back to ON.
- Toyota Safety Sense 3.0 can still be used while a software update is being performed.

■ What can be checked using the OneApp

The following items can be checked or performed.

- Software version, update details, precautions, use methods, etc.
- Software update

Toyota Safety Sense 3.0

The Toyota Safety Sense 3.0 consists of the driving assist systems and contributes to a safe and comfortable driving experience:

WARNING

■ Toyota Safety Sense 3.0

The Toyota Safety Sense 3.0 operates under the assumption that the driver will drive safely, and is designed to help reduce the impact to the occupants in a collision and assist the driver under 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 solely responsible for paying attention to the vehicle's surroundings and driving safely.

■ For safe use

- Do not overly rely on this system. The driver is solely responsible for paying attention to the vehicle's surroundings and driving safely. This system may not operate in all situations and provided assistance is limited. Over-reliance on this system to drive the vehicle safely may lead to an accident resulting in death or serious injury.
- Do not attempt to test the operation of the system, as it may not operate properly, possibly leading to an accident.
- If attention is necessary while performing driving operations or a system malfunction occurs, a warning message or warning buzzer will be operated. If a warning message is displayed on the display, follow the instructions displayed.
- Depending on external noise, the volume of the audio system, etc. it may be difficult to hear the warning buzzer. Also, depending on the road conditions, it may be difficult to recognize the operation of the system.

■ When it is necessary to disable the system

In the following situations, make sure to disable the system.

Failure to do so may lead to the system not operating properly, possibly leading to an accident resulting in death or serious injury.

- When the vehicle is tilted due to being overloaded or having a flat tire
- When driving at extremely high speeds
- When towing another vehicle
- When the vehicle is being transported by a truck, ship, train, etc.
- When the vehicle is raised on a lift 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 the vehicle is driven in a sporty manner or off-road
- When using an automatic car wash

**WARNING**

- When a sensor is misaligned or deformed due to a strong impact being applied to the sensor or the area around the sensor
- When accessories which obstruct a sensor or light are temporarily installed to the vehicle
- When a compact spare tire or tire chains are installed to the vehicle or an emergency tire puncture repair kit has been used
- When the tires are excessively worn or the inflation pressure of the tires is low
- When tires other than the manufacturer specified size are installed
- When the vehicle cannot be driven stably, due to a collision, malfunction, etc.

Driving assist systems■ **AHB (Automatic High Beam)**

→P.220

■ **PCS (Pre-Collision System)**

→P.245

■ **LTA (Lane Tracing Assist)**

→P.257

■ **LDA (Lane Departure Alert)**

→P.265

■ **LCA (Lane Change Assist)***

→P.262

*: If equipped

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

→P.277

*: If equipped

■ **PDA (Proactive Driving Assist)**

→P.271

■ **RSA (Road Sign Assist)***

→P.280

*: If equipped

■ **Dynamic radar cruise control**

→P.282

■ **Cruise control**

→P.294

■ **Emergency Driving Stop System***

→P.298

*: If equipped

■ **Traffic Jam Assist***

→P.301

*: If equipped

■ **Driver monitor***

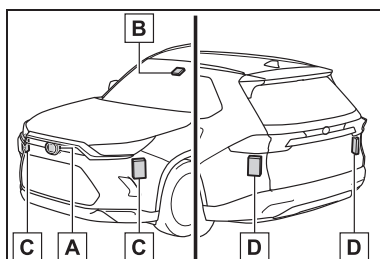
→P.243

*: If equipped

Sensors used by Toyota Safety Sense 3.0

Various sensors are used to obtain the necessary information for system operation.

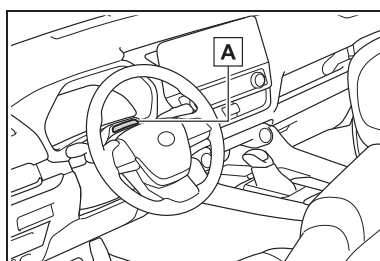
■ Sensors which detect the surrounding conditions



- A** Front radar sensor
- B** Front camera
- C** Front side radar sensors *
- D** Rear side radar sensors

*: If equipped

■ Sensors which detect the driver condition



- A** Driver monitor camera *

*: If equipped

⚠ WARNING

■ To prevent malfunction of the radar sensors

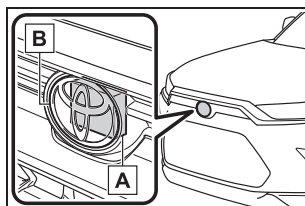
Observe the following precautions.

Failure to do so may lead to a radar sensor not operating properly, possibly leading to an accident resulting in death or serious injury.

- Keep the radar sensors and radar sensor covers clean at all times.

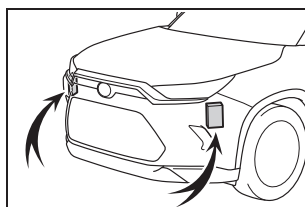
Clean the front of a radar sensor or the front or back of a radar sensor cover if it is dirty or covered with water droplets, snow, etc.

When cleaning the radar sensor and radar sensor cover, use a soft cloth to remove dirt so as to not damage them.



- A** Radar sensor
- B** Radar sensor cover

- Vehicles with front side radar sensors: Keep the surrounding area of the front side radar sensors on the front bumper clean at all times.



- Do not attach accessories, stickers (including transparent stickers), aluminum tape, etc. to a radar sensor or radar sensor cover and their surrounding area.

WARNING

- Do not subject a radar sensor or its surrounding area to impact. If a radar sensor, the front grille, or front bumper has been subjected to an impact, have the vehicle inspected by your Toyota dealer.
- Do not disassemble the radar sensors.
- Do not modify or paint the radar sensors or radar sensor cover, or replace them with anything other than Toyota genuine parts.
- In the following situations, recalibration of the radar sensors will be necessary. For details, contact your Toyota dealer.
 - When a radar sensor is removed and installed, or replaced
 - When the front bumper or the front grille has been replaced

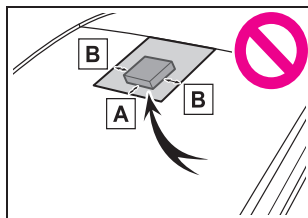
■ To prevent malfunction of the front camera

Observe the following precautions.

Failure to do so may lead to the front camera not operating properly, possibly leading to an accident resulting in death or serious injury.

- Always keep the windshield clean.
- If the windshield is dirty or covered with an oily film, water droplets, snow, etc., clean the windshield.
- Even 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 stickers (including transparent stickers) or other items to the area of the windshield in front of the front camera (shaded area in the illustration).



A Approximately 1.6 in. (4 cm)

B Approximately 1.6 in. (4 cm)

- 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.
- 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. If the windshield has been replaced, recalibration of the front camera will be necessary. For details, contact your Toyota dealer.
- Do not allow liquids to contact the front camera.
- Do not allow bright lights to shine into the front camera.

**WARNING**

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

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

- Do not change the position or orientation of the front camera or remove it.

- Do not disassemble the front camera.

- Do not modify any parts around the front camera, such as the inside rear view mirror or ceiling.

- Do not attach accessories which may obstruct the front camera to the hood, front grille, or front bumper. For details, contact your Toyota dealer.

- 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 or change the headlights and other lights.

■ Front camera installation area on the windshield

If the system determines that the windshield may be fogged up, it will automatically operate the heater to defog the part of the windshield around the front camera. When cleaning, etc., be careful not to touch the area around the front camera until the windshield has cooled sufficiently, as touching it may cause burns.

■ Precautions for the driver monitor camera (if equipped)

Observe the following precautions.

Failure to do so may lead to malfunction of the driver monitor camera and the systems not operating properly, possibly leading to an accident resulting in death or serious injury.

- Do not subject the driver monitor camera or its surrounding area to strong impact.

If subjected to a strong impact, the driver monitor camera may move out of alignment and the driver may no longer be detected correctly. In this case, have the vehicle inspected by your Toyota dealer.

- Do not disassemble or modify the driver monitor camera.

- Do not attach accessories, stickers (including transparent stickers), etc. to the driver monitor camera or its surrounding area.

- Do not allow the driver monitor camera or its surrounding area to get wet.

- Do not cover the driver monitor camera or place anything in front of it.

- Keep the lens of the driver monitor camera free from damage.

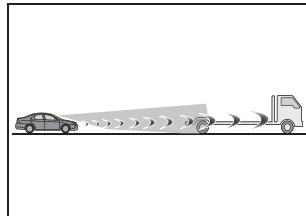
- Do not touch the lens of the driver monitor camera or allow it to become dirty.

When there is dirt or fingerprints on the camera lens, clean it with a dry, soft cloth so as to not mark or damage it.

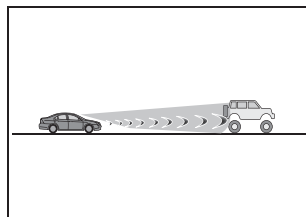
- When cleaning the lens, do not use detergents or organic solvents that may damage plastic.

■ Situations in which the sensors may not operate properly

- When the height or inclination of the vehicle has been changed due to modifications
- When the windshield is dirty, fogged up, cracked or damaged
- When the ambient temperature is high or low
- When mud, water, snow, dead insects, foreign matter, etc., is attached to the front of the sensor
- When in inclement weather such as heavy rain, fog, snow, or a sandstorm
- When water, snow, dust, etc. is thrown up in front of the vehicle, or when driving through mist or smoke
- When the headlights are not illuminated while driving in the dark, such as at night or when in a tunnel
- When the lens of a headlight is dirty and illumination is weak
- When the headlights are misaligned
- When a headlight is malfunctioning
- When the headlights of another vehicle, sunlight, or reflected light shines directly into the front camera
- When the brightness of the surrounding area changes suddenly
- 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 a wiper blade is blocking the front camera
- When in a location or near objects which strongly reflect radio waves, such as the following:
 - Truss bridges
 - Gravel roads
 - Rutted, snow-covered roads
 - Walls
 - Large trucks
 - Manhole covers
 - Guardrail
 - Metal plates
- When near a step or protrusion
- When a detectable vehicle is narrow, such as a small mobility vehicle
- When a detectable vehicle has a small front or rear end, such as an unloaded truck
- When a detectable vehicle has a low front or rear end, such as a low bed trailer



- When a detectable vehicle has extremely high ground clearance



- When a detectable vehicle is carrying a load which protrudes from its cargo area
- When a detectable vehicle has little exposed metal, such as a vehicle which is partially covered with cloth, etc.
- When a detectable vehicle is irregularly shaped, such as a tractor, sidecar, etc.
- When the distance between the vehicle and a detectable vehicle

has become extremely short

- When a detectable vehicle is at an angle
- When snow, mud, etc. is attached to a detectable vehicle
- When driving on the following kinds of roads:
 - Roads with sharp curves or winding roads
 - Roads with changes in grade, such as sudden inclines or declines
 - Roads which is sloped to the left or right
 - Roads with deep ruts
 - Roads which are rough and unmaintained
 - Roads which frequently undulate or are bumpy
- When the steering wheel is being operated frequently or suddenly
- When the vehicle is not in a constant position within a lane
- When parts related to this system, the brakes, etc. are cold or extremely hot, wet, etc.
- When the wheels are misaligned
- When driving on slick road surfaces, such as when it is covered with ice, snow, gravel, etc.
- When the course of the vehicle differs from the shape of a curve
- When the vehicle speed is excessively high when entering a curve
- When entering/exiting a parking lot, garage, car elevator, etc.
- When driving in a parking lot
- When driving through an area where there are obstructions which may contact your vehicle, such as tall grass, tree branches, a curtain, etc.
- When driving in strong wind

■ **Situations in which the lane may not be detected**

- When the lane is extremely wide or narrow

- Immediately after changing lanes or passing through an intersection
- When driving in a temporary lane or lane regulated by construction
- When there are structures, patterns, shadows which are similar to lane lines in the surrounding
- When there are multiple white lines for a lane line
- When the lane lines are not clear or driving on a wet road surface
- When a lane line is on a curb
- When driving on a bright, reflective road surface, such as concrete

■ **Situations in which some or all of the functions of the system cannot operate**

- When a malfunction is detected in this system or a related system, such as the brakes, steering, etc.
- When the VSC, TRAC, or other safety related system is operating
- When the VSC, TRAC, or other safety related system is off

■ **Changes in brake operation sound and pedal response**

- When the brakes have been operated, brake operation sounds may be heard and the brake pedal response may change, but this does not indicate a malfunction.
- When the system is operating, the brake pedal may feel stiffer than expected or sink. In either situation the brake pedal can be depressed further. Further depress the brake pedal as necessary.

■ **Situations in which the driver monitor may not operate properly (if equipped)**

In situations such as the following, the driver monitor camera may not be able to detect the driver's face, and the function may not operate properly.

- When the inside of the vehicle is hot, such as after the vehicle has been parked in the sun
- When a very bright light, such as the sun or the headlights of following vehicle, shines onto the driver monitor camera
- When the brightness inside the vehicle changes frequently due to the shadows of surrounding structures, etc.
- When a very bright light, such as the sun or the headlights of an oncoming vehicle, is shining onto the driver's face
- When light, either inside or outside of the vehicle, is being reflected from the lenses of eyeglasses or sunglasses
- When there are multiple faces in the detection range of the driver monitor camera, such as when a front or rear passenger is leaning toward the driver's seat
- When the driver's face is outside of the detection range of the driver monitor camera, such as when leaned forward or when their head is outside of the window
- When the driver monitor camera is being blocked by the steering wheel, a hand holding the steering wheel, an arm, etc.
- When the driver is wearing a hat
- When the driver is wearing an eyepatch
- When the driver is wearing eyeglasses or sunglasses that do not easily transmit infrared rays
- When the driver is wearing contact lenses
- When the driver is wearing a face mask
- When the driver is laughing or their eyes are only slightly open
- When the driver's eyes, nose, mouth, or shape of their face is blocked
- When the driver is wearing makeup which makes it difficult to detect their eyes, nose, mouth, or shape of their face
- When the driver's eyes are blocked by the frame of eyeglasses, sunglasses, hair, etc.
- When there is a device inside the vehicle that radiates near infrared rays, such as a non-genuine driver monitoring system.

LTA (Lane Tracing Assist)

LTA functions

- When driving on a road with clear lane lines with the dynamic radar cruise control operating, lane lines and preceding and surrounding vehicles are detected using the front camera and radar sensor, and the steering wheel is operated to maintain the vehicle's lane position.

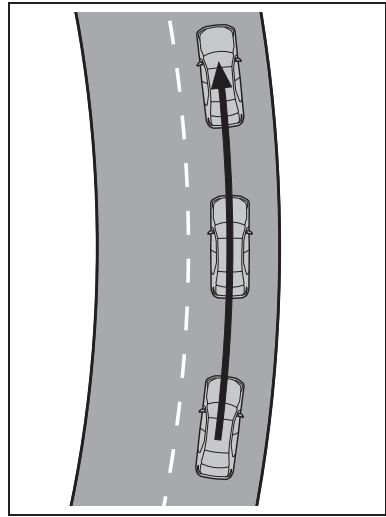
Use the this function only on high-ways and expressways.

If the dynamic radar cruise control is not operating, the function will not operate.

In situations where the lane lines are difficult to see or are not visible, such as when in a traffic jam, support will be provided using the path of preceding and surrounding vehicles.

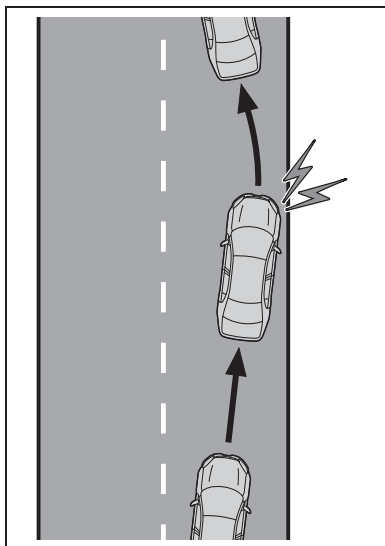
If the system determines that the steering wheel has not been operated for a certain amount of time or the steering wheel is not being firmly gripped, the driver will be alerted and this function will be temporarily canceled.

If the steering wheel is firmly gripped, the function will begin operating again.



- When the function is operating, if the vehicle is likely to depart from its lane, the driver will be alerted via a display and buzzer.

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



⚠ WARNING

■ Before using the LTA system

- Do not overly rely on the LTA system. The LTA system is not a system which provides automated assistance in driving and it is not a system which reduces the amount of attention necessary for safe driving. The driver is solely responsible for paying attention to their surroundings and operating the steering wheel as necessary to ensure safety. Also, the driver is responsible for taking adequate breaks when fatigued, such as when driving for a long time.
- Failure to perform appropriate driving operations and pay careful attention may lead to an accident.
- When not using the LTA system, turn it off using the LTA switch.

■ Operating conditions of function

This function is operable when all of

the following conditions are met:

- The LTA system detects lane lines or the path of preceding or surrounding vehicles.
- The dynamic radar cruise control is operating.
- The lane width is approximately 10 to 13 ft. (3 to 4 m).
- The turn signal lever is not being operated.
- The vehicle is not being driven around a sharp curve.
- The vehicle is not accelerating or decelerating more than a certain amount.
- The steering wheel is not being turned with a large force.
- The hands off steering wheel warning (→P.259) is not operating.
- The vehicle is being driven in the center of a lane.

■ Temporary cancelation of functions

- When the operating conditions are no longer met, a function may be temporarily canceled. However, when the operation conditions are met again, operation of the function will automatically be restored. (→P.258)
- If the operating conditions of a function are no longer met while the function is operating, a buzzer may sound to indicate that the function has been temporarily canceled.
- The steering assist operation of the function can be overridden by the steering wheel operation of the driver.

■ Lane departure warning function when the LTA is operating

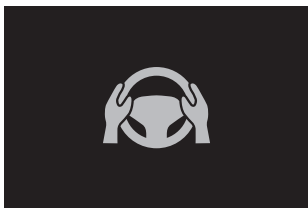
- Even if the LDA warning method is changed to vibration of the steering wheel, if the vehicle deviates from the lane while the LTA is operating, the warning buzzer will

sound to alert the driver.

- If steering wheel operation equivalent to that necessary for a lane change is detected, the system will determine the vehicle is not deviating from the lane and the warning will not operate.

■ Hands off steering wheel warning operation

- When the system determines the driver is not holding the steering wheel, a message urging the driver to grip the steering wheel and the icon shown in the illustration will be displayed on the multi-information display to warn the driver. If the system detects that the steering wheel is held, the warning will be canceled. When using the system, make sure to grip the steering wheel firmly, regardless of whether the warning is operating or not.



- If no operations are detected for a certain amount of time, the warning will operate and the function will be temporarily canceled. This warning may also operate if the driver only operates steering wheel a small amount continuously.

■ Situations in which the hands off steering wheel warning may not operate properly

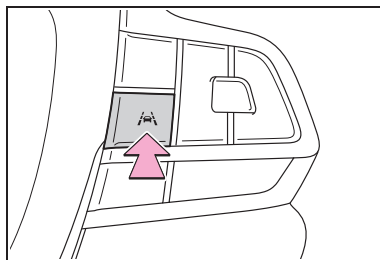
- Depending on the condition of the vehicle, handle control condition and road surface, the warning function may not operate.
- Vehicles with LCA: In the following situations, the system may not be able to detect when the driver's hands are off the steering wheel.

- When a steering wheel cover is installed
- When the driver is wearing gloves
- When foreign matter is attached to the steering wheel
- When the driver is gripping the wood trim, seam of the leather, spokes, or other part of the steering wheel that does not have sensors
- Vehicles with LCA: In the following situations, the hands off steering wheel warning may not operate and the LTA function may continue operating even though the driver's hands are off the steering wheel:
 - When something other than a hand is contacting the steering wheel
 - When a wide object or arms are held across the steering wheel

Enabling/disabling the system

The LTA will change between ON/OFF each time the LTA switch is pressed.

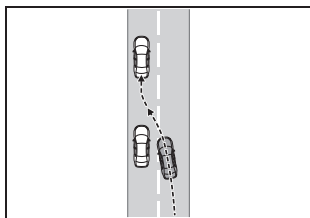
When the LTA is ON, the LTA indicator will illuminate.



**WARNING****■ Situations in which the functions may not operate properly**

In the following situations, the functions may not operate properly and the vehicle may depart from its lane. Do not overly rely on these functions. The driver is solely responsible for paying attention to their surroundings and operating the steering wheel as necessary to ensure safety.

- When a preceding or surrounding vehicle changes lanes (Your vehicle may follow the preceding or surrounding vehicle and also change lanes)



- When a preceding or surrounding vehicle is swaying (Your vehicle may sway accordingly and depart from the lane)
- When a preceding or surrounding vehicle departs from a lane (Your vehicle may follow the preceding or surrounding vehicle and also depart from the lane)
- When a preceding or surrounding vehicle is being driven extremely close to the left/right lane line (Your vehicle may follow the preceding or surrounding vehicle accordingly and depart from the lane)

- When there are moving objects or structures in the surrounding area (Depending on the position of the moving object or structure relative to your vehicle, your vehicle may sway)

- When the vehicle is struck by a crosswind or the turbulence of other nearby vehicles










- Situations in which the sensors may not operate properly: →P.240

- Situations in which the lane may not be detected: →P.241

- When it is necessary to disable the system: →P.235

Operation display of steering wheel operation support

The operating state of the LTA system is indicated.

Indicator	Lane display	Steering icon	Situation
 White	 Grey/White	 Grey	LTA is on standby
 Green	 Green	 Green	LTA is operating
 Yellow Flashing	 Yellow Flashing	 Green	The vehicle is departing the lane toward the side which the lane display is flashing

LCA (Lane Change Assist)*

*: If equipped

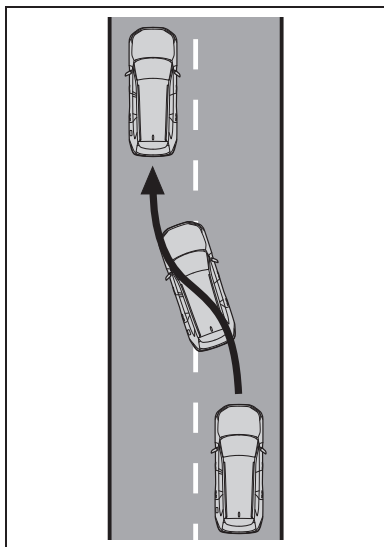
LCA functions

This function is linked to the LTA and provides assistance in performing lane changes through steering wheel operations.

Use this function only on highways and expressways.

The steering assist operation can be overridden by the steering wheel operation of the driver.

The lane change assist function is not designed to operate when changing lanes at a junction.



⚠ WARNING

■ Before using the LCA system

- Do not overly rely on the LCA system.

The LCA system is not a system which provides automated assistance in driving and it is not a system which reduces the need for checking an adjacent lane for other vehicles, approaching vehicles, etc. when changing lanes. The driver is solely responsible for paying attention to their surroundings and operating the steering wheel as necessary to ensure safety.

Also, do not use the LCA to change lanes into which a lane change should not be performed (oncoming lanes, road shoulders, etc.).

- Failure to perform appropriate driving operations and pay careful attention may lead to an accident.

■ Operating conditions of function

This function is operable when all of the following conditions are met:

- The LTA is operating.
- The lane change assist function is enabled by a customize setting.
- The vehicle speed is between approximately 55 and 85 mph (90 and 140 km/h).
- The system detects a broken white line on the side which the lane change is to be performed.
- A vehicle is not detected in the lane toward which the turn signal is operated.
- The steering wheel is not being turned with a large force.
- The hands off steering wheel warning (→P.259) is not operat-

ing.

■ Cancellation of functions

In the following situations, operation of the LCA may be canceled with the display and buzzer:

- When the operating conditions (→P.262) are no longer met
- When the system can no longer detect lane lines
- When the turn signal lever is operated to the second position (→P.263)
- When the turn signal lever is operated in the opposite direction of the lane change
- When the system detects operation of the steering wheel, brake pedal or accelerator pedal by the driver.

If the system detects that a vehicle is quickly approaching in the lane toward which the turn signal is operated a buzzer will sound and a message will be displayed to alert the driver. At the same time the steering wheel may be slightly operated to help keep the vehicle away from the approaching vehicle.

■ Hands off steering wheel warning operation

When the system determines the driver is not holding the steering wheel, a message urging the driver to grip the steering wheel and the icon shown in the illustration will be displayed on the multi-information display to warn the driver. If the system detects that the steering wheel is held, the warning will be canceled. When using the system, make sure to grip the steering wheel firmly, regardless of whether the warning is operating or not.



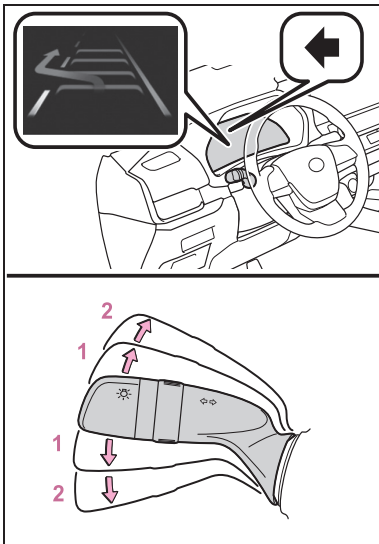
■ Situations in which the hands off steering wheel warning may not operate properly

- Depending on the condition of the vehicle, handle control condition and road surface, the warning function may not operate.
- In the following situations, the system may not be able to detect when the driver's hands are off the steering wheel.
 - When a steering wheel cover is installed
 - When the driver is wearing gloves
 - When foreign matter is attached to the steering wheel
 - When the driver is gripping the wood trim, seam of the leather, spokes, or other part of the steering wheel that does not have sensors
- In the following situations, the hands off steering wheel warning may not operate and the LCA function may continue operating even though the driver's hands are off the steering wheel:
 - When something other than a hand is contacting the steering wheel
 - When a wide object or arms are held across the steering wheel

Operating the LCA

If the turn signal lever is held in the first position, the lane change direction will be displayed and the function will operate.

To change lanes by holding the turn signal lever in the first position without using the LCA, turn the customize setting of the LCA off.



- 1 First position: LCA is operational
- 2 Second position: LCA is not operational

WARNING

Situations in which the LCA should not be used






- When driving on a one lane road
- When there is no broken white line between the current lane and the lane to be changed to

Enabling/disabling the system

LCA can be enabled/disabled through a customize setting. (→P.538)

Displays and system operation

The operating state of the LCA system is indicated.

LCA display	Steering icon	Condition
 Blue arrow and white line	 Green	LCA is operating
	 Grey	Approaching vehicle detected while LCA is operating
Not displayed	 Grey	Lane line no longer detected while LCA is operating

Emergency Driving Stop System *

* : If equipped

The emergency driving stop system is a system which automatically decelerates and stops the vehicle within its lane if the driver becomes unable to continue driving the vehicle, such as if they have suffered a medical emergency, etc.

During LTA (Lane Tracing Assist) control, if the system does not detect driving operations, such as if the driver is not holding the steering wheel, and determines the driver is not responsive, the vehicle will be decelerated and stopped within its current lane to help avoid a collision or reduce the impact of a collision.

The vehicle will also decelerate/stop during the Traffic Jam Assist (if equipped) controls, when no driver's response to the vehicle's warning to hold the steering wheel is detected.

WARNING

■ For safe use

- Driving safely is solely the responsibility of the driver. Pay careful attention to the surrounding conditions in order to ensure safe driving. The emergency driving stop system is designed to provide support in an emergency where it is difficult for the driver to continue driving, such as if they have had a medical emergency. It is not designed to support driving while drowsy or in poor physical health, or inattentive driving.
- Although the emergency driving stop system is designed to decelerate the vehicle within its lane to help avoid or help reduce the impact of a collision if the system determines that it is difficult for the driver to continue driving, its effectiveness may change according to various conditions. Therefore, it may not always be able to achieve the same level of performance. Also, if the operating conditions are not met, this function will not operate.
- After the emergency driving stop system operates, if driving becomes possible again, immediately begin driving again or, if necessary, park the vehicle on the shoulder of the road and set a warning reflector and flare to warn other drivers of your stopped vehicle.
- After this system operates, passengers should attend to the driver as necessary and take appropriate hazard prevention measures, such as moving to a place where safety can be ensured, such as the shoulder of the road or behind a guard-rail.

**WARNING**

- This system detects the condition of the driver through the operation of the steering wheel. This system may operate if the driver is aware but intentionally and continuously does not operate the vehicle. Also, the system may not operate if it cannot determine that the driver is not responsive, such as if they are leaning on the steering wheel.
- Situations in which the driver monitor may not operate properly (vehicles with a driver monitor): →P.241

Summary of the system

Operation of this system is separated into 4 control states. Through control state “Warning phase 1” and “Warning phase 2”, the system determines if the driver is aware and responsive while outputting a warning and controlling the vehicle speed. If the system determines the driver is not responsive, it will operate in control state “Deceleration stop phase” and “Stop hold phase” and decelerate and stop the vehicle. It will then operate continuously in “Stop hold phase”.

■ Operating conditions

This system operates when all of the following conditions are met:

- When the LTA is on
- Or during the Traffic Jam Assist controls (if equipped)
- When the vehicle speed is

approximately 30 mph (50 km/h) or more

During the Traffic Jam Assist (if equipped) controls, the system may operate at below 30 mph (50 km/h).

■ Operation cancelation conditions

In the following situations, system operation will be canceled:

- When LTA control has been canceled (the LTA switch has been pressed, etc.)
- When the dynamic radar cruise control has been canceled
- When driver operations are detected (the steering wheel is held, the brake pedal, accelerator pedal, parking brake, hazard light switch, or turn signal lever is operated)
- When the driving assist switch is pressed while in the stop and hold phase
- When the engine switch has been turned from ON to off
- Situations in which some or all of the functions of the system cannot operate: →P.241

■ LTA control when operation is canceled

When emergency driving stop system operation is canceled, LTA control may also be canceled.

Warning phase 1

If driving operations are not detected after the hands off steering wheel warning operates, a buzzer will sound intermittently and a message will be displayed to warn the driver, and the system will judge if the driver is responsive or not. If driving operations, such as holding the

steering wheel, are not performed within a certain amount of time, the system will enter warning phase 2.

Vehicles with a driver monitor camera: Depending on the type of detection of the driver's unresponsiveness, the system may skip warning phase 1 and start the control of warning phase 2.

Warning phase 2

After entering warning phase 2, a buzzer will sound in short intervals and a message will be displayed to warn the driver, and the vehicle will slowly decelerate. If driving operations, such as holding the steering wheel, are not performed within a certain amount of time, the system will determine that the driver is not responsive and enter the deceleration stop phase.

The audio system will be muted until the driver becomes responsive.

When the vehicle is decelerating, the brake lights may illuminate, depending on the road conditions, etc.

Deceleration stop phase

After entering the deceleration stop phase, a buzzer will sound continuously and a message will be displayed to warn the driver,

and the vehicle will slowly decelerate and stop. After the vehicle stops, the system will enter the stop and hold phase.

Stop hold phase

After the vehicle is stopped, the parking brake will be applied automatically. After entering the stop and hold phase, the buzzer will continue sounding continuously and the emergency flashers (hazard lights) will flash to warn other drivers of the emergency.

■ Restricted functions after the operation is canceled

After shifting to the deceleration stop phase, the following functions will not be available until the engine is re-started even though the emergency driving stop system is canceled:

- LTA
- LCA (if equipped)
- Traffic Jam Assist (if equipped)

Traffic Jam Assist*

*: If equipped

Function Outline

Traffic Jam Assist is a system which, through confirmation of the conditions by the driver, provides lane keeping, accelerating/decelerating, stopping, and starting off support on some highways and expressways. Also, in an emergency, the system can decelerate and stop, to help avoid a collision or help reduce the impact of a collision.

Sensors that support the Traffic Jam Assist

- Sensors which detect the surrounding conditions (→P.237)
- Sensors which detect the driver condition (→P.237)

Situations in which some or all of the functions of the system cannot operate

→P.241

Changes in brake operation sound and pedal response

→P.241

Situations in which the driver monitor may not operate properly

→P.241

Emergency Driving Stop System

→P.298

Extended resume time of Dynamic radar cruise control

→P.282

Traffic Jam Assist Function

The Traffic Jam Assist function, through confirmation of the conditions by the driver, provides lane keeping, accelerating/decelerating and stopping support on some highways and expressways.

This function is operable when all of the operation conditions are met.

When this function is operating, it is possible to take your hands off of the steering wheel.

(→P.304)

Before using the Traffic Jam Assist function, familiarize yourself with the content of the dynamic radar cruise control and the LTA (Lane Tracing Assist).

Make sure that the driver steers the vehicle when entering a service area/parking area or toll gate, or when changing lanes.

Driver monitor camera recording

When the operation of Traffic Jam Assist is started, the following message will be displayed:

- “Allow Driver Monitor Camera Recording?”

When recording is approved, the system records images of the area around the driver in certain crash or near crash-like situations, such as an SRS airbag being deployed or the vehicle hitting an object on the road. (→P.10)

WARNING

■ For safe use

- Driving safely is solely the 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 Traffic Jam Assist function is not an automated driving system. This function provides the driver with information and driving assistance according to the road shape and conditions, traffic conditions, and the condition of the driver themselves. 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, the Traffic Jam Assist function 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 the function carefully. Do not overly rely on this function and always drive carefully.
- As the recognition performance and control performance of the Traffic Jam Assist function are limited, driver operation is necessary to ensure safety while the system is operating. Also, the steering assist of this system is designed to operate only for slow steering operations during a traffic jam. While this function is operating, the lane deviation control function of the LDA will not operate. If, for some reason, the vehicle is about to deviate the lane, it is the driver's responsibility to drive properly.
- Even if Traffic Jam Assist 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.
- While the Traffic Jam Assist function is operating, as driver operation may become necessary, the driver must ensure they have clear visibility of their surroundings.

**WARNING**

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

● The Traffic Jam Assist function cannot detect the following objects. Operate the steering wheel, accelerator pedal, or brake pedal as necessary to avoid a collision. As the function will not be able to provide appropriate control, using it may lead to an accident resulting in death or serious injury.

- Objects on the road surface
- Vehicles outside of a lane (such as on the shoulder of the road)
- Potholes, cracks, ruts, or other road damage
- Road construction zones
- Vehicles running in parallel with your vehicle or nearby walls
- Animals

■ **Situations in which Traffic Jam Assist Function should not be used**

Do not use Traffic Jam Assist Function 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.

● When it is necessary to disable the system

→P.235

● Situations in which the sensors may not operate properly

→P.240

● Situations in which the lane may not be detected

→P.241

■ **Situations in which the function may not operate properly**

In situations such as the following, the Traffic Jam Assist function may not operate properly. Manually operate the vehicle as necessary.

● When a sensor is splashed by water

● When the ambient temperature is high or low

● When a vehicle cuts in front of your vehicle

● When another lane merges into the lane in the same traveling direction as your vehicle

● When driving in low visibility condition

● When the vehicle posture is changing

● When the traction on the road surface differs greatly between the left and right side tires

● When driving on an expressway with no median strips or when driving on an expressway equipped with temporary median markers, such as poles.

● When there is a significant difference in speed between your vehicle and the other vehicle

● The map data has not been updated properly.

WARNING

■ To prevent malfunction of the radar sensors

→P.237

■ To prevent malfunction of the front camera

→P.238

■ Front camera installation area on the windshield

→P.239

■ Operating conditions of the function

This function is operable when all of the following conditions are met:

- The system detects lane lines and the path of preceding or surrounding vehicles.
- The dynamic radar cruise control and the lane tracing assist are operating.
- The turn signal lever is not being operated.
- The vehicle is not being driven around a sharp curve.
- The vehicle is being driven in the center of a lane.
- The driver monitor camera is detecting that the driver is facing front of the vehicle.
- The vehicle is driving in traffic jam on a highway or expressway at approximately 25 mph (40 km/h) or less. (In some situations, such as when a traffic jam starts, this function may be operational at approximately 20 mph [30 km/h] or less.)
- Safety Connect is being subscribed to.
- The driver's door is closed.
- The driver's seat belt is fastened.
- Customized setting of the Traffic Jam Assist is not set to off.

● Functions and components composing the system are in proper condition.

● Customized setting of the PCS (Pre-Collision System) is not set to off.

● Customized setting of the dynamic radar cruise control (re-start time extension) is not set to off.

■ Temporary cancelation of the function

● When the operating conditions are no longer met, a function may be temporarily canceled. However, when the operation conditions are met again, operation of the function will automatically be restored.

● If the operating conditions of a function are no longer met while the function is operating, a buzzer may sound with a display to indicate that the function has been temporarily canceled. If no driver's responses to the indication are detected, the driver emergency stop assist function may operate. For types of display and action to be taken, see the page mentioned below. (→P.305)

■ Driving operations during controlled driving

● Accelerator pedal

As with normal driving, acceleration can be performed by depressing the accelerator pedal. In some situations, such as when driving at approximately 6 mph (10 km/h) or more and the accelerator pedal is depressed, this function will be canceled.

● 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.

■ When a warning message is displayed

- “TrafficJamAsst System Malfunction Visit Your Dealer”

The Traffic Jam Assist function may not be operating properly.

- “TrafficJamAsst Unavailable Stop Assist Activated”

The system temporarily cannot be used as the driver emergency stop





assist function has operated.



Changing Traffic Jam Assist settings

- The setting of Traffic Jam Assist can be enabled/disabled through a customize setting. (→P.538)
- The setting of driver monitor camera recording can be enabled/disabled through a customize setting. (→P.538)

Displays and system operation

The following displays indicate the operating status of the Traffic Jam Assist function:

Display	Status	Action to be taken
	Traffic Jam Assist function is operating	—
 (Grey)	Traffic Jam Assist function is about to end	Hold the steering wheel.
 (Orange)	Traffic Jam Assist function has ended	Hold the steering wheel.
 (Red)	Operation of either or both of dynamic radar cruise control /LTA (Lane Tracing Assist) ended	Manually operate the steering wheel immediately.

Display	Status	Action to be taken
 (Yellow)	Indicates that driving actions are necessary to cope with cut-in or other behavior of surrounding vehicles	The driver must operate the steering wheel, accelerator pedal and brake pedal in accordance with the surrounding environment.
	Indicates that the recording function of the driver monitor camera is operational (Blinking of this icon indicates that recording is undergoing, and constant illumination indicates ready for recording.)	—