

Adaptive cruise control (ACC)

PRINCIPLE OF OPERATION

The Adaptive Cruise Control (ACC) system is designed to assist the driver in maintaining a gap from the vehicle ahead, or maintaining a set road speed, if there is no slower vehicle ahead. The system is intended to assist the driver, when following other vehicles which are in the same lane and travelling in the same direction.

WARNING

ACC is not a collision warning or avoidance system. Additionally, ACC will not react to:

Stationary vehicles or vehicles moving at less than 10 km/h (6 mph).

Pedestrians or objects in the roadway.

Oncoming vehicles in the same lane.

The ACC system is based on the use of a radar, which projects a beam directly forward of the vehicle, to detect objects ahead.

The radar is mounted below the grille, to provide a clear view forward for the radar beam.

USING ACC

WARNING

Only use ACC when driving on main roads, with free flowing traffic.

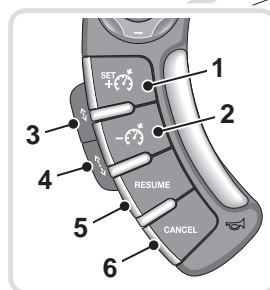
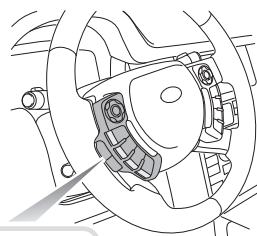
Do not use in poor visibility, specifically fog, heavy rain, spray or snow.

Do not use on icy or slippery roads.

It is the driver's responsibility to stay alert, drive safely and be in control of the vehicle at all times.

Keep the front of the vehicle free from dirt, metal badges or objects, including vehicle front protectors, which may interfere with radar operation.

Do not use ACC when entering or leaving a motorway.



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The system is operated by controls mounted on the steering wheel. The driver can also intervene at any time by use of the brake or accelerator pedal.

The steering wheel controls operate as follows:

1. Speed adjust control: Press to increase.
2. Press to decrease the set speed.
3. Gap decrease.
4. Gap increase.
5. **RESUME** - Resumes the set speed after it has been cancelled.
6. **CANCEL** - Cancels but retains the set speed in memory.

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Setting the speed

Accelerate as normal until the required speed is reached.

Press the speed adjust control (+), to store the speed in the memory and engage the system.

The set speed will be displayed on the message centre:

Changing the speed

There are three ways to change the set speed:

- Accelerate or brake to the desired speed then briefly press (+).
- Increase or decrease the speed by pressing the speed adjust buttons (+) or (-), until the required set speed is shown on the message centre. The vehicle speed will gradually change to the selected speed.
- Increase or decrease the speed in steps of 2 km/h (1 mph), by briefly pressing (+) or (-), until the desired speed is obtained.

ACC operates between approximately 30 km/h and 180 km/h (18 mph and 112 mph) dependent on the country specification.

Set speeds outside this range will not be captured.

The ACC may apply the brakes to slow down the vehicle to the new set speed. The new set speed will be displayed on the message centre until ACC is cancelled.

Follow mode gap settings

WARNING

When in follow mode, the vehicle will not decelerate automatically to a stop, nor will the vehicle always decelerate quickly enough to avoid a collision without driver intervention.

Once a set speed has been selected, the accelerator can be released and the set road speed will be maintained.

When a vehicle ahead enters the same lane or a slower vehicle is ahead in the same lane, the vehicle speed will be adjusted automatically until the gap to the vehicle ahead corresponds to the preset gap (Gap 3, identified by three chevrons is the default). The vehicle is now in follow mode.



The warning indicator in the instrument panel will be illuminated.

The message centre will display the gap set. The shortest (Gap 1), represented by one chevron and the longest (Gap 4), represented by four chevrons.

The vehicle will then maintain the time gap to the vehicle ahead, until:

- The vehicle ahead accelerates to a speed above the set speed.
- The vehicle ahead moves out of lane or out of view.
- The vehicle ahead slows so that low speed automatic switch off occurs.
- A new gap distance is set.

If necessary, the brakes will be automatically applied to slow the vehicle, to maintain the gap to the vehicle in front.

The maximum braking which is applied by the ACC system is limited and can be overridden by the driver applying the brakes, if required.

Note: Driver braking will cancel ACC.

If the ACC system predicts that its maximum braking level will not be sufficient, then an audible warning will sound while the ACC continues to brake. **DRIVER INTERVENE** will be displayed on the message centre. The driver should take immediate action.

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When in follow mode, the vehicle will automatically return to the set speed when the road ahead is clear, for instance when:

- The vehicle in front accelerates or changes lane.
- The driver changes lane to either side or enters an exit lane.

The driver should intervene if appropriate.

Changing the follow mode set gap

The gap to the vehicle ahead can be adjusted by pressing the gap increase/decrease controls on the steering wheel. Four gap settings are available and the selected gap is represented by the corresponding number of chevrons in front of the car icon displayed on the message centre (Gap 1 = 1 chevron, Gap 4 = 4 chevrons). After the ignition is switched on, the default gap setting (Gap 3), will be automatically selected ready for ACC operation.

Note: When the ignition is switched off, the gap setting will revert to the default setting (Gap 3) when switched on again.

Note: It is the driver's responsibility to select a gap appropriate to the driving conditions.

Overriding the speed and follow mode

WARNING

Whenever the driver overrides the ACC by pressing the accelerator pedal, the ACC will not automatically apply the brakes to maintain the gap to any vehicle ahead.

The set speed and gap can be overridden by pressing the accelerator pedal when cruising at constant speed or in follow mode. If the vehicle is in follow mode, the warning indicator will extinguish when the ACC is overridden and **CRUISE OVERRIDE** will be displayed in the message centre. When the accelerator is released, ACC will operate again and vehicle speed will decrease to the set speed, or a lower speed when appropriate if follow mode is active.

Automatic low speed switch off

If vehicle speed decreases below 30 km/h (18 mph), the ACC system automatically switches off and the warning indicator will extinguish.

If the brakes were being applied by the ACC system, they will be slowly released.

This will be accompanied by an audible warning and **DRIVER INTERVENE** will be displayed in the message centre. The driver must take control.

Automatic switch off

ACC will disengage, but not clear the memory, when:

- The **CANCEL** button is pressed.
- The brake pedal is pressed.
- Neutral, Park or Reverse gear positions are selected.
- Dynamic Stability Control activates.

ACC will disengage, and clear the memory, when:

- The ignition is switched off
- Maximum vehicle speed is reached
- A fault occurs in the ACC system.

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Resuming the speed and follow mode

Caution: RESUME should only be used if the driver is aware of the set speed and intends to return to it.

By pressing the **RESUME** button after ACC has been cancelled (e.g. after braking), the ACC will become active again, provided that the set speed memory has not been erased. The set speed will be displayed for four seconds and the original set speed will be resumed, unless a vehicle ahead causes follow mode to become active.

Hints on driving with ACC

The system acts by regulating the speed of the vehicle using engine control and the brakes. Gear changes may occur in response to deceleration or acceleration whilst in ACC.

ACC is not a collision avoidance system. However, during some situations, the system may provide the driver with an indication that intervention is required.

An audible alarm will sound, accompanied by the message **DRIVER INTERVENE**, if the ACC detects:

- A failure has occurred while the system is active.
- That using maximum ACC braking only is not sufficient.

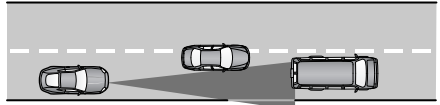
Note: Use of Sport Mode is not recommended when ACC is engaged.

Note: When engaged, the accelerator pedal rests in the raised position. Fully release the pedal to allow normal ACC operation.

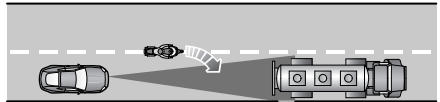
Note: When braking is applied by the ACC, the vehicle brake lamps will be switched on although the brake pedal will not move.

Detection beam issues

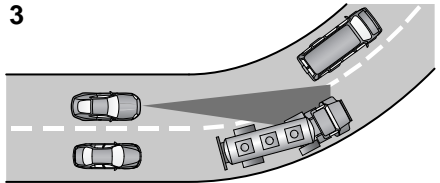
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Detection issues can occur:

1. When driving on a different line to the vehicle in front.
2. With vehicles that edge into your lane. They can only be detected once they have moved fully into your lane.
3. On bends in the road. There may be issues with the detection of vehicles in front, when going into and coming out of a bend.

Caution: In these cases, ACC may brake late or unexpectedly. The driver should stay alert and intervene if necessary.

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ACC malfunction

If a malfunction occurs during operation of the system in cruise or follow modes, the ACC system will switch off and cannot be used until the fault is cleared. The message **DRIVER INTERVENE** appears briefly, and is then replaced by the message **CRUISE NOT AVAILABLE**. If malfunction of the ACC, or any related system, occurs at any other time, the message **CRUISE NOT AVAILABLE** will be displayed. It will not be possible to activate the ACC system in any mode.

Accumulations of dirt, snow or ice on the radar or cover, may inhibit ACC operation. Fitting of a vehicle front protector, applying stone chip protection or fitting metallised badges, may also affect ACC operation.

The ACC system relies on its radar to detect objects and constantly scans ahead. If the radar detects no objects ahead in ACC or follow mode, then the ACC will be deactivated, the audible alarm sounds and the message **DRIVER INTERVENE** displays briefly. The message **ACC SENSOR BLOCKED** will then be displayed.

The same messages may also be displayed while driving on open roads with few roadside objects for the radar to detect or in heavy rain. Clearing the obstruction allows the system to return to normal operation. If the obstruction is present when ACC is inactive, e.g. on initial starting or with the ACC system switched off, the message **ACC SENSOR BLOCKED** will be displayed.

Tyres other than those recommended may have different sizes. This can affect the correct operation of the ACC.

Adverse weather conditions

WARNING

Do not use in poor visibility, specifically fog, heavy rain, spray or snow.

Do not use on icy or slippery roads.

During adverse weather conditions such as heavy rain or snowfall, the sensitivity of radar blockage detection is increased, so that it can correctly detect any reduced performance caused by a blocked sensor.

During these conditions, the warning message **ACC SENSOR BLOCKED** may be displayed more frequently, especially in areas where there are few roadside objects for the radar to detect.

FORWARD ALERT FUNCTION

Limited detection and warning of objects ahead is provided during ACC operation by the ACC **FORWARD ALERT** warning.

The enhanced Forward Alert feature additionally provides warnings whilst ACC is not engaged; if an object is detected close ahead, then the warning tone and message will be issued. The brakes will not be applied. The Forward Alert system does not initiate any action, the driver must take appropriate action when the **FORWARD ALERT** message is displayed. However, the system monitors driver actions (e.g. braking, steering or indicating) and may not initiate the warning display if the appropriate action has been taken early enough.

This Forward Alert feature may be switched on or off using the instrument panel menu. See **USING THE MENU** (page 68).



When this indicator in the message centre is on, Forward Alert is active.

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The sensitivity of the warning may be changed:

- Use the gap decrease button on the steering wheel when ACC is disengaged to display and then decrease the sensitivity of the alert.
- Use the gap increase button on the steering wheel to display and then increase the sensitivity of the alert.

Both of these alerts are accompanied by the message **FORWARD ALERT** in the message centre.

After an ignition cycle of Off and On, Forward Alert settings remain as previously set.

ADVANCED EMERGENCY BRAKE ASSIST

WARNING

Advanced Emergency Brake Assist, is an additional safety system and is not intended to relieve the driver of the responsibility for exercising due care and attention when driving.

On vehicles fitted with Advanced Emergency Brake Assist, brake response is improved during emergency braking when a moving vehicle is detected close ahead.

Advanced Emergency Brake Assist activates if the risk of collision increases after the **FORWARD ALERT** warning is displayed. The brakes are automatically applied gently in preparation for rapid braking (which may be noticeable). If the brake pedal is then pressed quickly, then braking is implemented fully, even if the pressure on the pedal is light.

See **Emergency Brake Assist (EBA)** (page 164).

Advanced Emergency Brake Assist is available at speeds above approximately 7 km/h (5 mph) and will function even if Forward Alert and Adaptive Cruise Control are switched off. A fault with the system will be indicated by the warning **FORWARD ALERT UNAVAILABLE** appearing in the message centre. Advanced Emergency Brake Assist will not be available until the fault is rectified.

Caution:

The system may not react to slow moving vehicles and will not react to stationary vehicles or vehicles not travelling in the same direction as your vehicle.

Caution:

Advanced Emergency Brake Assist can only improve braking performance if the driver applies the brakes.

Caution:

Warnings may not appear if the distance to the vehicle ahead is very small or if steering wheel and pedal movements are large (e.g. to avoid a collision).

Caution:

Advanced Emergency Brake Assist utilises the same radar sensor as Adaptive Cruise Control and Forward Alert - the same limitations of performance apply.