ACC
ADAPTIVE CRUISE CONTROL
A SMARTER CRUISE CONTROL

Rear-end collisions are the most common type of crash

How should you use ACC?

Accelerate to desired speed. Turn ACC on.

Tell ACC how close you want to be to the vehicle ahead of you.

Set a bigger gap in poor weather or bad driving conditions.

Should work well
Clear day driving
Clear night driving
Light weather conditions

May not work well...
or at all
Noisy open-air conditions
Heavy rain, fog or snow
Ice, snow or dirt on sensors

Will not work
Ice, snow or dirt covered sensors

How does it work?
ACC automatically speeds up and slows down your vehicle to keep a set distance between you and the vehicle ahead. Advanced versions work in heavy traffic. When traffic stops, you stop. When traffic goes, you go.

If ACC malfunctions or speeds up unexpectedly:
• Turn off or override ACC by gently braking
• If vehicle continues speeding up, steer to safety and apply brakes
Always turn off ACC when not in use

Common types of ACC sensors:
• Radar
• Ultrasonic
• Camera
• Laser

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org

Know More. Drive Safer.
FORWARD COLLISION PREVENTION
STAYING ONE STEP AHEAD

There were approximately 1.8 million rear-end crashes in 2013.

What are they?
Safety features like Forward Collision Warning and Automatic Emergency Braking can help prevent rear-end collisions and other types of crashes.

Why use?
THE PRIMARY BENEFIT...
Alerts you if an object in your path has suddenly stopped or slowed down, so you can react.

SAFETY FIRST:
These features may reduce your crash risk and severity.

How do they work?
Both features scan the road and detect how far and fast the vehicle in front of you may be moving. Then...

FORWARD COLLISION WARNING (FCW)...
Alerts you if your vehicle is about to collide with another vehicle. Warning alerts may vary between vehicles.

AUTOMATIC EMERGENCY BRAKING (AEB)...
Automatically applies the brakes if you don’t respond to the warning.

How are they different?
FORWARD COLLISION WARNING
• ONLY Warns the driver

AUTOMATIC EMERGENCY BRAKING
• WARNS the driver
• AND APPLIES THE BRAKES to slow or stop the vehicle if the driver does not

It is not working... Now what?
Because these features could be camera- or radar-based, they can be...
• OBSTRUCTED by build-ups of ice or snow • “BLURRED” by sunrise and sunset glare

Saving Lives....
The Insurance Institute for Highway Safety estimates that Forward Collision Mitigation systems such as Automatic Emergency Braking may help reduce crashes by up to 25% and prevent 66,000 serious crashes and eliminate 878 fatal crashes per year. Forward Collision Warning systems may help reduce rear-end collisions by about 19%.

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org.

Know More. Drive Safer.


ADAPTIVE HEADLIGHTS
HEADLIGHTS THAT FOLLOW THE ROAD WITH YOU

Drivers using adaptive headlights around curves are able to see objects sooner than drivers with fixed headlights.

What are Adaptive Headlights?
Adaptive headlights are designed to light up the roadway around curves and over hills when driving in low-light conditions, making driving safer.

How do they work?
Electronic sensors measure:
- speed
- steering angle
- yaw (degree of rotation around the vertical axis)
Small electric motors then turn the light source left or right lighting the road ahead.

Did you know...
Self-Adjusting Headlights will turn on the high beams when there are no oncoming cars and then dim with oncoming traffic.

Adaptive headlights are most useful when...
- Driving on winding roads at night, during twilight, or in other low-light conditions, even in slow speed areas and parking lots.

They can address potentially dangerous situations, including:
- An animal on the road just around a poorly lit curve
- An oncoming vehicle negotiating a turn drifts into your lane
- Cresting a hill on a narrow road and you are unable to see whether another motorist is coming
- As you round a curve, your headlights temporarily blind oncoming traffic

Be Cautious
When approaching a curve, reduce your speed

Be Alert
Scan the road ahead, look for potential obstacles or road hazards

Take Action
If you spot a hazard, react by braking or steering - don’t overreact or you may lose control. Always stay focused and alert.

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org
Know More. Drive Safer.
BACKING ASSIST
AN EXTRA SET OF EYES

Back-up cameras will be standard in new cars sold in the United States by 2018

What should you do?
1. Check around the vehicle before getting in
2. Look over both shoulders before backing
3. Check mirrors
4. Shift into reverse to activate rear-view camera and/or rear sensors
5. Turn and check to be sure it is safe before backing
6. Be aware that the system may beep, vibrate or light up if there are objects in the way or if a vehicle approaches from the rear sides

How does it work?
BACK-UP CAMERA
The back-up camera shows what is happening behind you.
A display screen can be found on the center console or rear-view mirror

BACK-UP WARNING
When the vehicle is in reverse, sensors mounted on the rear bumper detect objects in its path.
If an object is in the way, the system may beep, vibrate or instruct the driver to brake.

REAR CROSS TRAFFIC ALERT
Radar sensors on the rear bumper detect vehicles approaching from the left and right.
A warning tone and flashing light on the mirrors or dashboard alert the driver to stop.

It is not working... Now what?
Grime, weather and time of day can affect how well the camera and sensors function:
• CLEAN the sensors and the camera lens
• Cameras MAY NOT WORK when sunlight shines directly into the lens
• CHECK if the rear bumper is damaged
• DO NOT attach items to the bumper

Saving Lives...
Back-up cameras help prevent unintentional back-over crashes which account for approximately 292 fatalities and 18,000 injuries each year, according to NHTSA.

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org - Know More. Drive Safer.
AUTOMATIC PARALLEL PARKING & PARKING SENSORS
Takes the worry out of Parallel Parking

When used properly, vehicle parking assist technologies could potentially reduce driver stress.∗

How does it work?
1. When looking to park, push the Auto Park button to activate. Sensors will measure and identify a parallel parking space and will alert you with audible tones when a spot is found. Some features prompt you to accept assistance to park.
2. The driver pulls up in front of the space, shifts into reverse and takes hands off the steering wheel.
3. The steering system takes over and the car steers itself in the parking space.

ALWAYS KEEP IN MIND...
Although hands-free…you control shifting the gears and braking. To override automatic steering, grab the steering wheel.

PARKING SENSORS
What do they do?
Front, rear and side parking sensors help you park your vehicle by indicating, with the help of ultrasonic sensors, how close you are to an obstacle while parking.

How do they work?
1. The sensors are on the front, side and rear bumpers to detect objects.
2. When the system detects an object it provides audible warnings.
   • Tones of varying pitches or frequencies will sound as you get closer.
   • In general, the interval between the beeps becomes shorter as objects get closer.

SAFETY TIPS:
This feature WILL NOT detect objects located below bumper, or too close or too far from the car.

BEST PRACTICES...
KEEP the sensors CLEAN AND FREE from snow, rain or dirt. Before moving, CHECK AROUND the vehicle, CHECK ALL MIRRORS and CHECK the BACK-UP CAMERA DISPLAY screen (if you have one).
Drivers drift out of lanes for various reasons. Lane Departure Warning and Lane Keeping Assist can…
- Alert us
- Guide us back into our lane
- And possibly prevent a crash!

How do they work?
Cameras read lane markings on the road. ‘Depart’ from your lane unintentionally and…
- A warning sounds
- Dash light flashes
- Steering wheel vibrates
…alerting you to get back in your lane!

What happens if you ignore the warnings?
Lane Keeping Assist (if your car is equipped) will kick in and gently steer your car back toward the center of the lane.

These features aren’t perfect
They may not work if…
- Lane markers are blocked by snow, leaves, fog or other debris.
- Lane markers are faded, in disrepair or overly complicated

What happens if you want to change lanes?
Activating the turn signal cancels Lane Departure Warning and turning the wheel disables Lane Keeping Assist.

Keep in mind…
Lane Departure Warning and Lane Keeping Assist are designed more for highway driving. Always stay focused and alert.
Blind Spot Monitor and Lane/Side-view cameras could help prevent 395,000 crashes a year in the U.S.¹

**Know what’s in your blind spot**

**Blind Spot Monitor (BSM)**

- Sensors alert the driver if another car or object is on the right or left side.
- The driver is alerted by symbols on side mirrors, the dash or other areas.
- There may be a warning chime or the driver’s seat may vibrate.

**When would you use BSM?**

- When you are passing, being passed or preparing to make a lane change.

**Does BSM always work?**

- No. Exterior sensors can be obscured by moisture, snow, dirt, darkness, and other elements.

**Can I turn it off?**

- Yes. Although, most systems turn on automatically when the car is started.

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**Sideview Camera**

- Shows you an image on a monitor of what is coming up alongside your car.

**The Benefit...**

- Improves passenger-side visibility and in some cases offers the driver a 360° view of the surrounding area of the car.
- Protects bumpers, trim and wheel rims from damage at slow speeds.

**When do you use a sideview camera?**

- Backing down complicated driveways.
- Pulling into parking spaces.
- Will usually turn on when backing at 3-7 mph.
- You can opt to have the camera on at all times by pressing a button on the turn signal lever.

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**Safety Check...**

- While these two safety features will help you SEE your blind spots... You should still check your mirrors and always look over both shoulders before changing lanes, parallel parking, making right turns, etc.

¹May 26, 2017 10 Years of Progress – AAA Traffic Safety Index for Highway Safety

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org.
DROWSINESS ALERT
DON'T DRIVE DROWSY

More than 100,000 crashes each year are caused primarily by drowsy driving.

How it works
Drowsiness alert detects when you veer in your lane.
A system reads the lane markings and monitors your lane position and if it senses that you're drifting out of the lane, it alerts you.

A coffee cup and message appear on the dashboard

DROWSINESS ALERT FEATURES
MAY ONE DAY...
Use a voice alarm... “I am talking to you... Wake up”
If a driver is nodding off, the car announces:
“You are tired”
“You are dangerously tired! STOP as soon as it is safe to do so!”
The driver's seat may also vibrate.

Learned Behavior...
A more advanced version uses software to “learn” what your normal driving patterns are when you’re fully alert.
If it senses that your driving reactions are slower or erratic, a drowsy alert is activated.

Facial Recognition
Another uses an onboard computer with facial recognition software to determine if you’re drowsy...
- tiny sensors or night vision cameras are trained on the driver's face,
- measures eyelid droop, blinking patterns and head bobs to tell if you are starting to fall asleep.

Directions Please...
Some cars use GPS to help drivers find the nearest rest stop.

KEEP IN MIND: The drowsiness alert features should make you more aware of your state of mind... But if you are tired, REST and DON'T DRIVE DROWSY.

http://drowsydriving.org/about-tech-and-data/
For more information about your safety systems, check your owner's manual or visit MyCarDoesWhat.org
Know More. Drive Safer.
How does it work?

TO START ENGINE...
1. Make sure the key fob is inside the vehicle and the gear shift is in park
2. Apply the brake. Push and hold the engine start/stop button until the engine turns on

TO SHUT OFF ENGINE...
1. Apply the brake and shift to park
2. Press the engine start/stop button until the engine shuts off completely

It's also a good idea to set the parking brake

Always remember...

Turn engine completely off before you get out of the car. Reduce the risk of carbon monoxide poisoning in an enclosed area.

Shift into park to prevent vehicle rollaway.

Setting standards...

NHTSA* PROPOSES ...
Standardizing the length of time needed to push a control button to stop the vehicle engine in an emergency
Requiring audible warnings if a driver tries to shut off the engine or exit the vehicle without first shifting into “Park”

*National Highway Traffic Safety Administration

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org

Know More. Drive Safer.
4-WHEEL ANTI-LOCK BRAKING SYSTEM

BRAKES THAT HELP YOU STEER

You travel 88' in one second when driving 60 mph – that’s more than one football field in four seconds

What should you do?
A Hold brake pressure
B Steer to safety

How does it work?
1. ABS sensors on wheels detect impending skid
2. ABS controller reacts to prevent wheel lock-up
3. Brake fluid pressure changes to each wheel
4. ABS pumps brakes so driver can focus on steering

4-wheel ABS can stop quicker on dry and wet roads

Without ABS it could add 25% more stopping distance

Should brake well
Dry or wet pavement
Ice, black ice or snow
Dirt or packed gravel

May not brake well... or at all
Loose gravel or sand
Lightly packed snow

ABS is speed-sensitive and may only activate above 10 mph

In lightly packed snow, loose gravel or sand, ABS may INCREASE stopping distance by 25% or more – but will still help you steer to safety

Does your vehicle have ABS?
Read your vehicle’s owners manual, or ask a service technician or rental car agent if unsure. ABS has been common for decades and all new U.S. cars and minivans made in 2012 and after must have 4-wheel ABS

Look for this light when you start your vehicle.

Pump the brake if your vehicle isn’t equipped with ABS or your ABS fails

If you feel the brakes thumping, your ABS is working. That’s when you steer to safety.

For more information about your safety systems, check your owner’s manual or visit MyCarDoesWhat.org Know More. Drive Safer.
ESC helps keep you on your desired path

What is it?
Electronic Stability Control (ESC) is designed to automatically stabilize your vehicle when it senses you may be slipping. ESC controls each wheel to maintain stability.

Getting a handle on extreme maneuvers
ESC will help you steer:
- You turn too fast and the front or rear wheels begin skidding
- Your vehicle loses traction on a slippery roadway, and other emergency situations

Making sharp emergency turns | Turning on slippery roads | Driving with heavy loads
---|---|---
Helps prevent: Oversteering | Understeering | Rollovers

According to the National Highway Traffic Safety Administration, ESC is one of the most effective active safety systems for preventing certain types of rollovers as well as reducing the risk of injury or death in the event of a rollover.

How does it work?
ESC technology senses when a driver may lose control and applies braking to individual wheels to stabilize the vehicle.

Helpful Tips...
- ESC can be less effective on loose gravel and lightly packed snow
- If your vehicle does not have ESC, practice safe driving techniques by taking turns slowly and increasing your following distance in bad weather
- Your vehicle is required to have ESC if model year 2012 or newer

For more information about your safety systems, check your owner's manual or visit MyCarDoesWhat.org
**TPMS TIRE PRESSURE MONITORING SYSTEM HELPS YOU PREVENT A BLOW OUT**

<table>
<thead>
<tr>
<th>What should you do?</th>
<th>How does it work?</th>
</tr>
</thead>
</table>
| If your TPMS dashboard light comes on: **Do not pullover immediately.** Wait for a safe break in traffic to inspect your tires. | **Two types of TPMS**

**Direct Sensor**
Small wireless device inside each tire reports to your dashboard.

**Indirect Sensor**
Measures wheel spin and can tell if tire is low. Only effective when car is moving. |

### Can save you

<table>
<thead>
<tr>
<th>50% under inflation</th>
<th>25% under inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard to see if a tire is low on air until it reaches half empty.</td>
<td>TPMS light comes on when tire is a quarter low.</td>
</tr>
</tbody>
</table>

### Helps prevent crashes and save lives

<table>
<thead>
<tr>
<th>11,000 tire-related crashes every year</th>
<th>200 tire-related deaths every year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-in-4 vehicles on the road have at least one under-inflated tire.</td>
<td>Federal mandate: TPMS required on all vehicle models year 2008+</td>
</tr>
</tbody>
</table>

**For more information about your safety systems, check your owner’s manual or visit**

[MyCarDoesWhat.org](http://MyCarDoesWhat.org)