

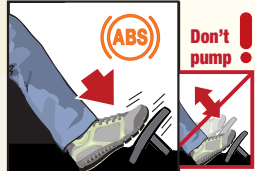



# 4-WHEEL ANTI-LOCK BRAKING SYSTEM BRAKES THAT HELP YOU STEER



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

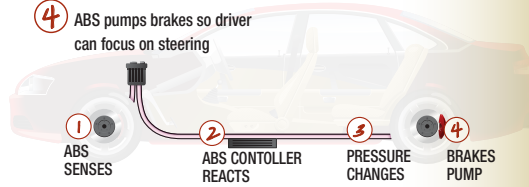
## What should you do?

**A**  **Hold brake pressure**

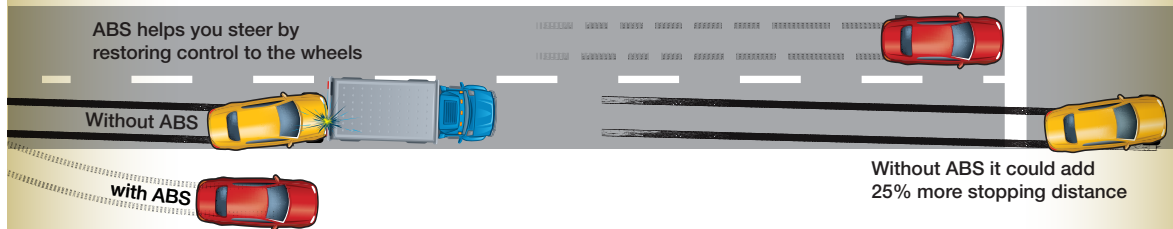
**B**  **Steer to safety**

## 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



### 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

**MyCar DoesWhat.org**  
Know More. Drive Safer.





# 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.

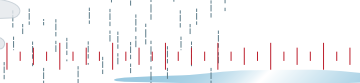


Tell ACC how close you want to be to the vehicle ahead of you.



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

Visibility issues • Weather • Road conditions • Traffic mix



#### 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



ACC system error

### 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

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# ADAPTIVE HEADLIGHTS

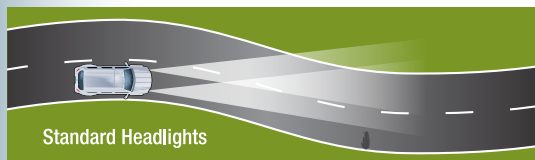
## HEADLIGHTS THAT FOLLOW THE ROAD WITH YOU



**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.



Standard Headlights

VS



Adaptive Headlights

### How do they work?

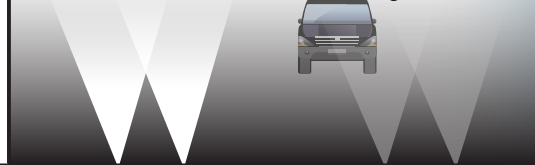
Electronic sensors measure:

- 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

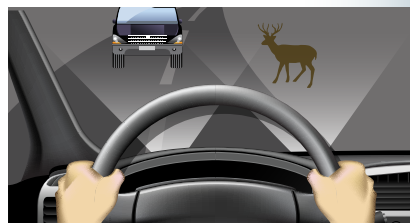


### Adaptive headlights are most useful when...

- 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 oversteer or you may lose control. Always stay focused and alert...

\*IIHS Report Vol. 49, No. 7-October 9, 2014

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

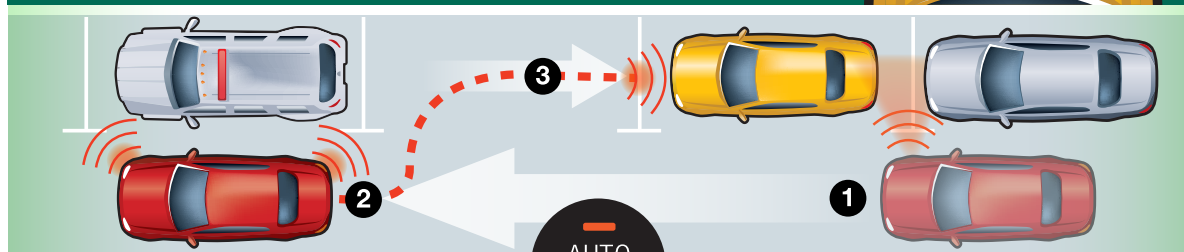




# AUTOMATIC PARALLEL PARKING & PARKING SENSORS

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.

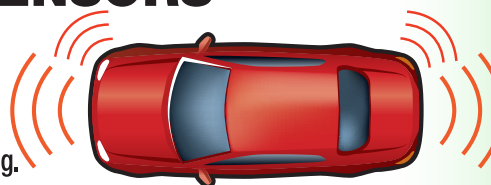
### ALWAYS KEEP IN MIND...

Although hands-free... You control shifting the gears and braking. To override automatic steering, grab the steering wheel.

## PARKING SENSORS

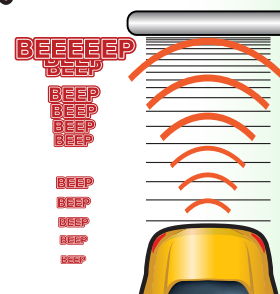
### What do they do?

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 become 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).

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

**MyCar DoesWhat.org**  
Know More. Drive Safer.

\*<http://ow.ly/TsnbB>





# BLIND SPOT MONITORING & SIDEVIEW CAMERA HELPS YOU 'SEE' WHAT'S IN YOUR BLIND SPOT

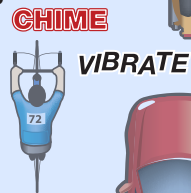
Blind Spot Monitoring and Lane/Side-view cameras could help prevent 395,000 crashes a year in the U.S.<sup>1</sup>

## Know what's in your blind spot

### Blind Spot Monitoring (BSM)

#### How does it work?

- 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?

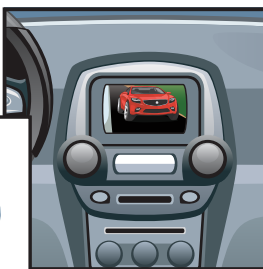
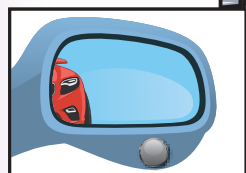
Yes. Although, most systems turn ON automatically when the car is started.

### Sideview Camera

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

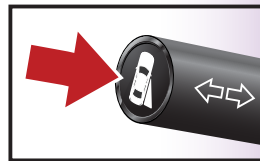
#### The Benefit...

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.



<sup>1</sup> May 24, 2011 50 Years of Progress - Adrian K. Lund, Ph.D. Insurance Institute for Highway Safety

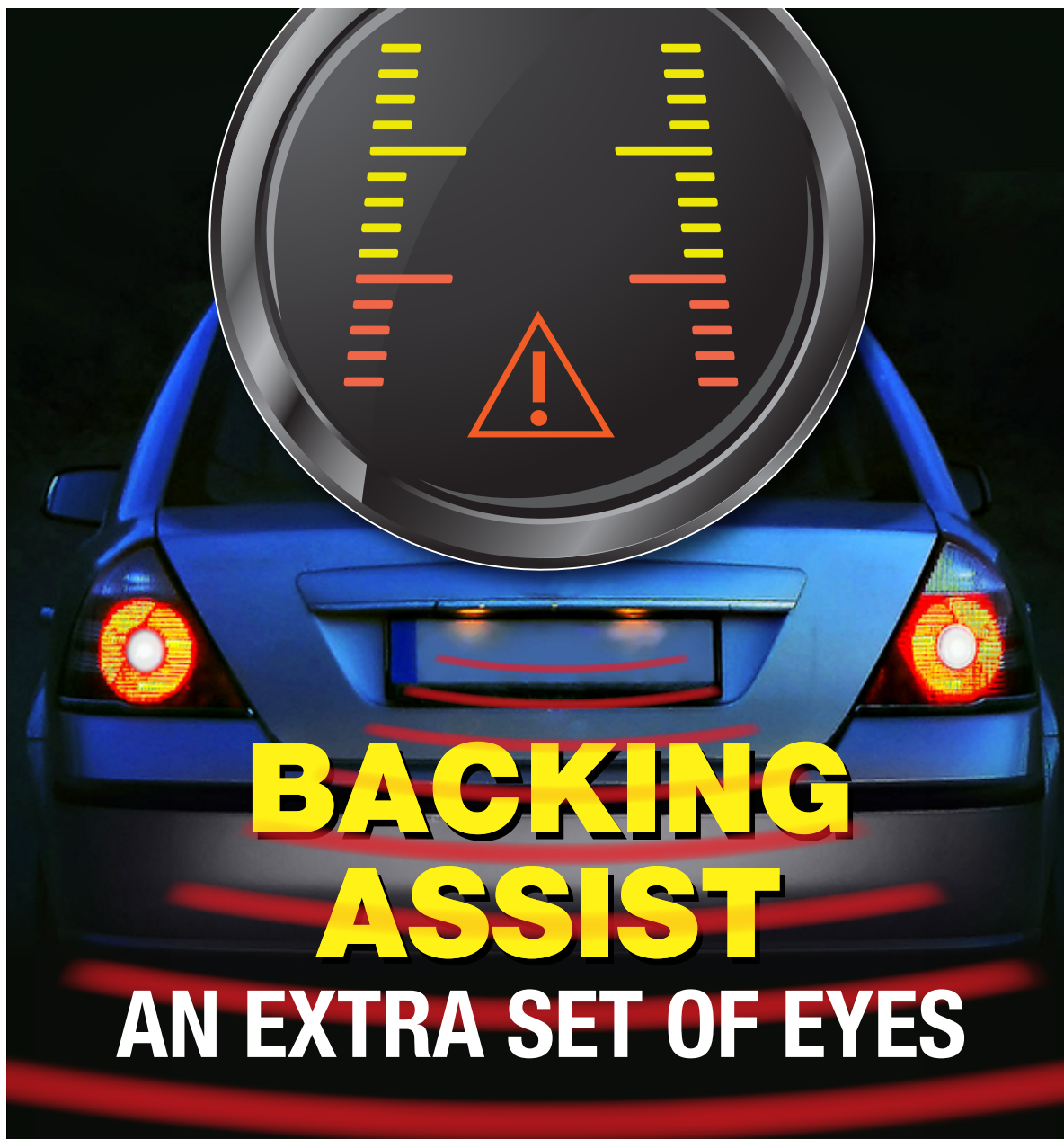
### Safety Check...

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.**

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

**MyCar  
DoesWhat.org**  
Know More. Drive Safer.





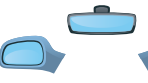





# BACKING ASSIST

## 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 

### 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

### How does it work?

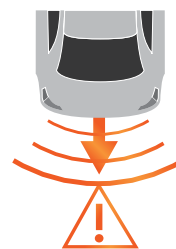
#### BACK-UP CAMERA

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 SYSTEM



When the vehicle is in reverse, sensors mounted on the rear bumper detect objects in its path

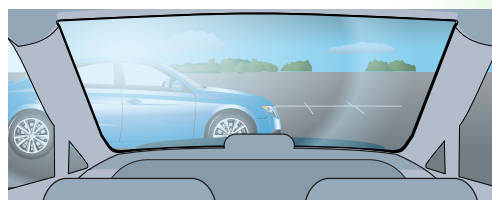
If an object is in the way, the system may beep, vibrate or instruct the driver to brake

#### 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.



### 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

**MyCar DoesWhat.org**  
Know More. Drive Safer.





# DROWSINESS ALERT DON'T DRIVE DROWSY

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

Drowsiness Alert features can detect if you are driving drowsy  
and send you a warning ...

## How it works

Drowsiness alert detects when you weave 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 frequently...

**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.

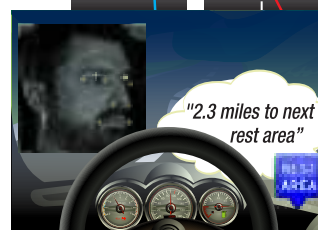
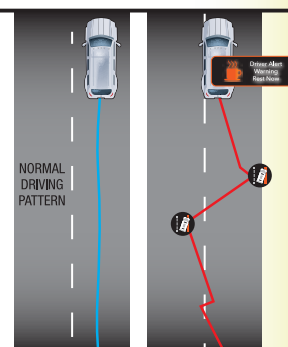
### Facial Recognition

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/facts-and-stats/>

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

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DoesWhat.org**  
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# ESC ELECTRONIC STABILITY CONTROL



HELPS KEEP YOU ON YOUR DESIRED PATH

More than 10,000 people a year are killed in rollover crashes\*

## What is it?

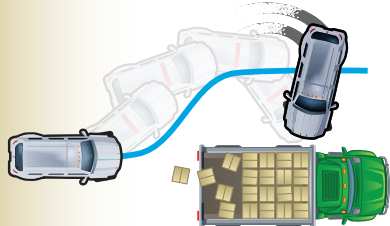
Electronic Stability Control (ESC) is designed to automatically stabilize your vehicle when it senses you may be slipping. ESC controls each wheel to maintain stability.

## Getting a handle on extreme maneuvers

ESC will help you steer if:

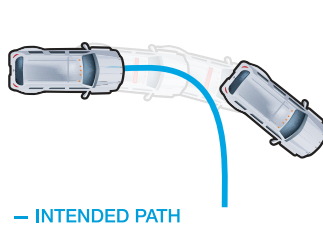
- You turn too fast and the front or rear wheels begin skidding
- Your vehicle loses traction on a slippery roadway, and other emergency situations

Making sharp emergency turns



Helps prevent: **Oversteering**

Turning on slippery roads



Helps prevent: **Understeering**

Driving with heavy loads

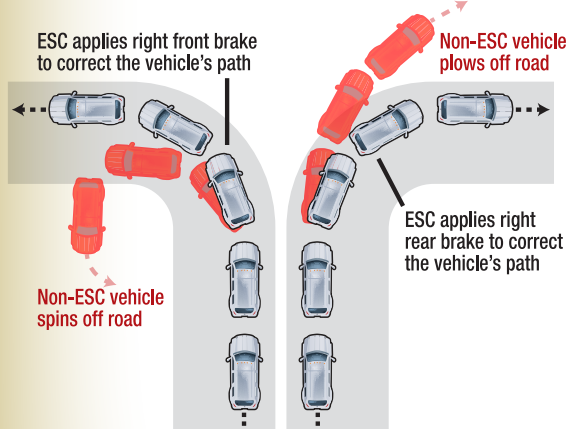


Helps prevent: **Rollovers**

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

**MANDATORY**

\* [www.safercar.gov/Rollover](http://www.safercar.gov/Rollover)

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

**MyCar  
DoesWhat.org**  
Know More. Drive Safer.







# FORWARD COLLISION PREVENTION

## STAYING ONE STEP AHEAD

There were approximately  
1.8 million rear-end crashes in 2013<sup>1</sup>

### What are they?

Safety features like **Forward Collision Warning** and **Automated Braking** can help prevent rear-end collisions and other types of crashes.

### Why use?

#### THE PRIMARY BENEFIT...

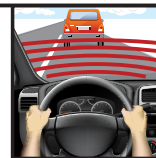
Alerts you if an object in your path has suddenly stopped or slowed down, so you can react.

#### 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.

#### AUTOMATED BRAKING...

Automatically applies the brakes if you don't respond to the warning.



**BEEP**  **VIBRATE**

### How are they different?

**FORWARD COLLISION WARNING**  
• ONLY WARNS the driver

**AUTOMATED 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 • "BLINDED" by sunrise and sunset glare

### Saving Lives....

The Insurance Institute for Highway Safety estimates that Forward Collision Mitigation systems such as **Automated Braking** may help **reduce crashes by up to 20%** and, **prevent 66,000 serious crashes** and **eliminate 879 fatal crashes** per year<sup>2</sup>. **Forward Collision Warning** systems may help **reduce rear-end collisions by about 10%**<sup>3</sup>

<sup>1</sup>NSC Analysis of NHTSA's General Estimate System—Data from 2013  
<sup>2</sup>[www.aaafoundation.org/forward-collision-mitigation-auto-braking-systems](http://www.aaafoundation.org/forward-collision-mitigation-auto-braking-systems)  
<sup>3</sup>[www.aaafoundation.org/forward-collision-warning-systems](http://www.aaafoundation.org/forward-collision-warning-systems)

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# LANE DEPARTURE WARNING & LANE KEEPING

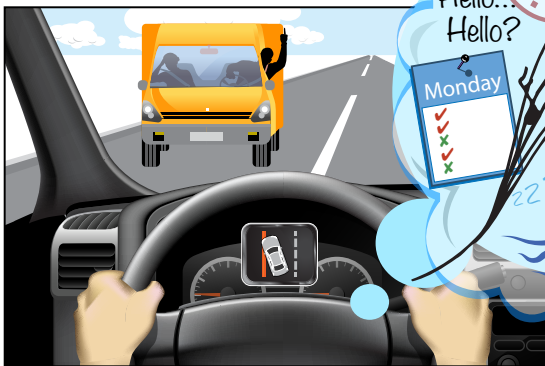
## KEEPING YOU IN LINE

Drifting out of the lane causes nearly 10% of all crashes<sup>1</sup>

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?

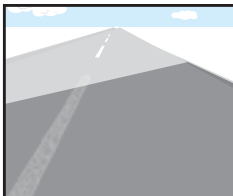
Lane Keeping Assist (if your car is equipped) will kick in and gently steer your car back toward the center of the lane



### 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.



<sup>1</sup>NTSB 2013

### Keep in mind...

Lane Departure Warning and Lane Keeping Assist are designed more for highway driving. Always stay focused and alert.

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

**MyCar DoesWhat.org**  
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# PUSH BUTTON START

## YOUR FINGER IS THE KEY

### 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

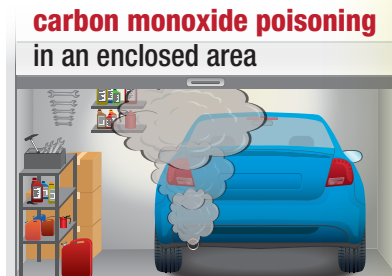


It's also a good idea to set the parking brake

### 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.



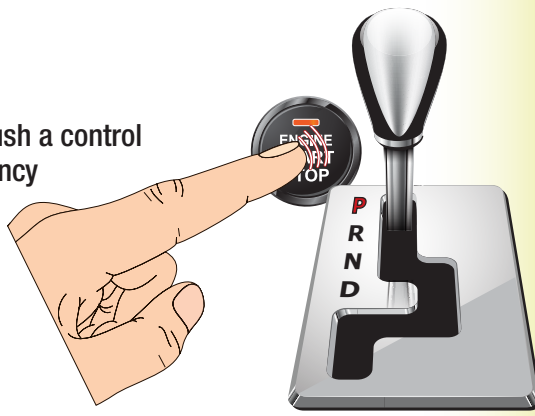
### Setting standards...

#### 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

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# TPMS

## TIRE PRESSURE MONITORING SYSTEM

### HELPS YOU PREVENT A BLOW OUT

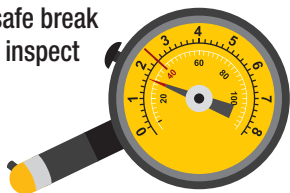
#### What should you do?

If your TPMS dashboard light comes on:



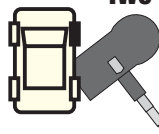
**Do not pullover immediately.**

Wait for a safe break in traffic to inspect your tires.



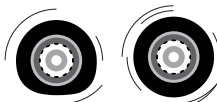
#### How does it work?

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.

# 50%



Hard to see if a tire is low on air until it reaches half empty.

under inflation

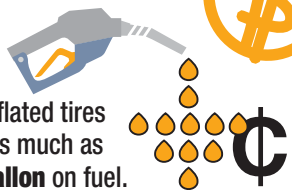
# 25%



TPMS light comes on when tire is a quarter low.

under inflation

#### Can save you



Properly inflated tires can **save** as much as **11¢ per gallon** on fuel.

AAA, May 2014



Proper tire maintenance can extend the life of tires by **up to 4700 miles.**

AAA & Safercar.gov, May 2014

#### Helps prevent crashes and save lives

11,000 tire-related crashes every year

200 tire-related deaths every year



1-in-4 vehicles on the road have at least **one** under-inflated tire.



Federal mandate: TPMS required on all vehicle models year 2008+

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

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