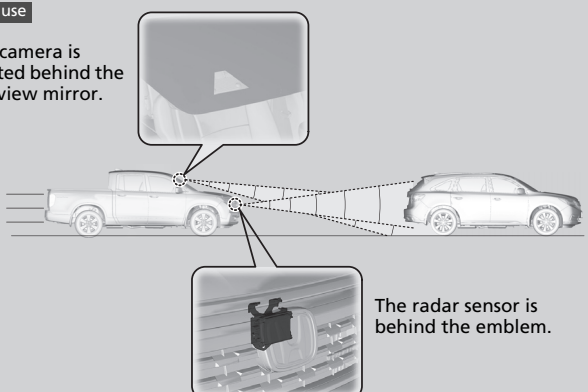
Collision Mitigation Braking System™ (CMBS™)

Can assist you when there is a possibility of your vehicle colliding with a vehicle or a pedestrian detected in front of yours. The CMBS™ is designed to alert you when a potential collision is determined, as well as to reduce your vehicle speed to help minimize collision severity when a collision is deemed unavoidable.

■ How the system works

When to use



The system starts monitoring the roadway ahead when your vehicle speed is about 3 mph (5 km/h) and there is a vehicle in front of you.

The CMBS™ activates when:

- The speed difference between your vehicle and a vehicle or pedestrian detected in front of you becomes about 3 mph (5 km/h) and over with a chance of a collision.
- Your vehicle speed is about 62 mph (100 km/h) or less and there is a chance of a collision with an oncoming detected vehicle or a pedestrian in front of you.

Collision Mitigation Braking System™ (CMBS™)

Important Safety Reminder

The CMBS™ is designed to reduce the severity of an unavoidable collision. It does not prevent a collision nor stop the vehicle automatically. It is still your responsibility to operate the brake pedal and steering wheel appropriately according to the driving conditions.

The CMBS™ may not activate or may not detect a vehicle in front of your vehicle under certain conditions.

How the system works

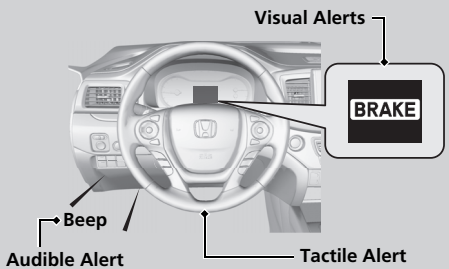
Rapid vibrations on the steering wheel alert you when the your vehicle speed is between 19 and 62 mph (30 and 100 km/h) with an oncoming vehicle detected in front of you.

When the CMBS™ activates, it may automatically apply the brake. It will be canceled when your vehicle stops or a potential collision is not determined.

■ When the system activates

The system provides visual, audible and tactile alerts of a possible collision, and stops if the collision is avoided.

► Take appropriate action to prevent a collision (apply the brakes, change lanes, etc.)



At system's earliest collision alert stage, you can change the distance (**Long/Normal/Short**) between vehicles at which alerts will come on through the audio/information screen setting options.

When the system activates

The camera in the CMBS™ is also designed to detect pedestrians.
However, this pedestrian detection feature may not activate or may not detect a pedestrian in front of your vehicle under certain conditions.
Refer to the ones indicating the pedestrian detection limitations from the list.

■ Vibration alert on the steering wheel

When a potential collision to an oncoming detected vehicle is determined, the system alerts you with rapid vibration on the steering wheel, in addition to visual and audible alerts.

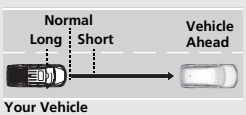
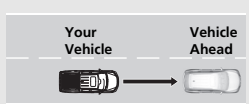
► Take appropriate action to prevent a collision (apply the brakes, operate the steering wheel, etc.).

Vibration alert on the steering wheel

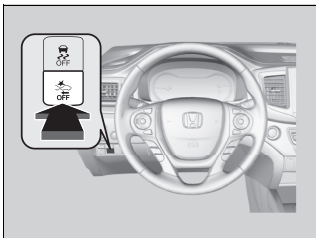
Vibration alert function is disabled when the electric power steering (EPS) system indicator comes on.

Collision Alert Stages

The system has three alert stages for a possible collision. However, depending on circumstances, the CMBS™ may not go through all of the stages before initiating the last stage.

Distance between vehicles		CMBS™			
		The sensors detect a vehicle	Audible & Visual WARNINGS	Steering Wheel	Braking
Stage one		There is a risk of a collision with the vehicle ahead of you.	When in **Long**, visual and audible alerts come on at a longer distance from a vehicle ahead than in **Normal** setting, and in **Short**, at a shorter distance than in **Normal**.	In case of an oncoming vehicle detected, rapid vibration is provided.	—
Stage two		The risk of a collision has increased, time to respond is reduced.	Visual and audible alerts.	—	Lightly applied
Stage three		The CMBS™ determines that a collision is unavoidable.		—	Forcefully applied

CMBS™ On and Off



Press and hold the button until the beeper sounds to switch the system on or off.

When the CMBS™ is off:

- The CMBS™ indicator in the instrument panel comes on.
- A message on the multi-information display reminds you that the system is off.

The CMBS™ is turned on every time you start the engine, even if you turned it off the last time you drove the vehicle.

Collision Mitigation Braking System™ (CMBS™)

The CMBS™ may automatically shut off, and the CMBS™ indicator will come and stay on under certain conditions.

Have your vehicle checked by a dealer if you find any unusual behavior of the system (e.g., the warning message appears too frequently).

■ CMBS™ Conditions and Limitations

The system may automatically shut off and the CMBS™ indicator will come on under certain conditions. Some examples of these conditions are listed below. Other conditions may reduce some of the CMBS™ functions.

■ Environmental conditions

- Driving in bad weather (rain, fog, snow, etc.).
- Sudden changes between light and dark, such as an entrance or exit of a tunnel.
- There is little contrast between objects and the background.
- Driving into low sunlight (e.g., at dawn or dusk).
- Strong light is reflected onto the roadway.
- Driving in the shadows of trees, buildings, etc.
- Roadway objects or structures are misinterpreted as vehicles and pedestrians.
- Reflections on the interior of the windshield.
- Driving at night or in a dark condition such as a tunnel.

■ Roadway conditions

- Driving on a snowy or wet roadway (obscured lane marking, vehicle tracks, reflected lights, road spray, high contrast).
- Driving on curvy, winding, or undulating roads.
- The road is hilly or the vehicle is approaching the crest of a hill.

■ **Vehicle conditions**

- Headlight lenses are dirty or the headlights are not properly adjusted.
- The outside of the windshield is blocked by dirt, mud, leaves, wet snow, etc.
- The inside of the windshield is fogged.
- An abnormal tire or wheel condition (wrong sized, varied size or construction, improperly inflated, compact spare tire, etc.).
- When tire chains are installed.
- The vehicle is tilted due to a heavy load or suspension modifications.
- The camera temperature gets too high.
- Driving with the parking brake applied.
- When the radar sensor behind the emblem gets dirty.
- The vehicle is towing a trailer.

■ **Detection limitations**

- A vehicle or pedestrian suddenly crosses in front of you.
- The distance between your vehicle and the vehicle or pedestrian ahead of you is too short.
- A vehicle cuts in front of you at a slow speed, and it brakes suddenly.
- When you accelerate rapidly and approach the vehicle or pedestrian ahead of you at high speed.
- The vehicle ahead of you is a motorcycle, bicycle, mobility scooter or other small vehicle.
- When there are animals in front of your vehicle.
- When you drive on a curved, winding or undulating road that makes it difficult for the sensor to properly detect a vehicle in front of you.
- The speed difference between your vehicle and a vehicle or pedestrian in front of you is significantly large.
- An oncoming vehicle suddenly comes in front of you.
- Another vehicle suddenly comes in front of you at an intersection, etc.
- Your vehicle abruptly crosses over in front of an oncoming vehicle.
- When driving through a narrow iron bridge.
- When the lead vehicle suddenly slows down.

Limitations applicable to pedestrian detection only

- When there is a group of people in front of your vehicle walking together side by side.
- Surrounding conditions or belongings of the pedestrian alter the pedestrian's shape, preventing the system from recognizing that the person is a pedestrian.
- When the pedestrian is shorter than about 3.3 feet (1 meter) or taller than about 6.6 feet (2 meters) in height.
- When a pedestrian blends in with the background.
- When a pedestrian is bent over or squatting, or when their hands are raised or they are running.
- When several pedestrians are walking ahead in a group.
- When the camera cannot correctly identify that a pedestrian is present due to an unusual shape (holding luggage, body position, size).

■ **Automatic shutoff**

CMBS™ may automatically shut itself off and the CMBS™ indicator comes and stays on when:

- The temperature inside the system is high.
- You drive off-road or on a mountain road, or curved and winding road for an extended period.
- An abnormal tire condition is detected (wrong tire size, flat tire, etc.).
- The camera behind the rearview mirror, or the area around the camera, including the windshield, gets dirty.

Once the conditions that caused the CMBS™ to shut off improve or are addressed (e.g., cleaning), the system comes back on.

■ With Little Chance of a Collision

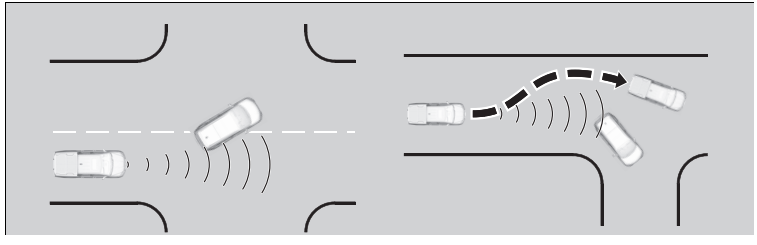
The CMBS™ may activate even when you are aware of a vehicle ahead of you, or when there is no vehicle ahead. Some examples of this are:

■ When Passing

Your vehicle approaches another vehicle ahead of you and you change lanes to pass.

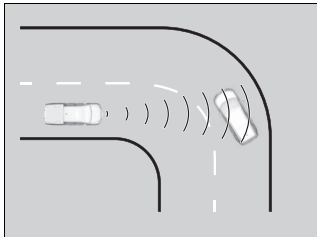
■ At an intersection

Your vehicle approaches or passes another vehicle that is making a left or right turn.



■ **On a curve**

When driving through curves, your vehicle comes to a point where an oncoming vehicle is right in front of you.



■ **Through a low bridge at high speed**

You drive under a low or narrow bridge at high speed.

■ **Speed bumps, road work sites, train tracks, roadside objects, etc.**

You drive over speed bumps, steel road plates, etc., or your vehicle approaches train tracks or roadside objects [such as a traffic sign and guard rail] on a curve or, when parking, stationary vehicles and walls.