

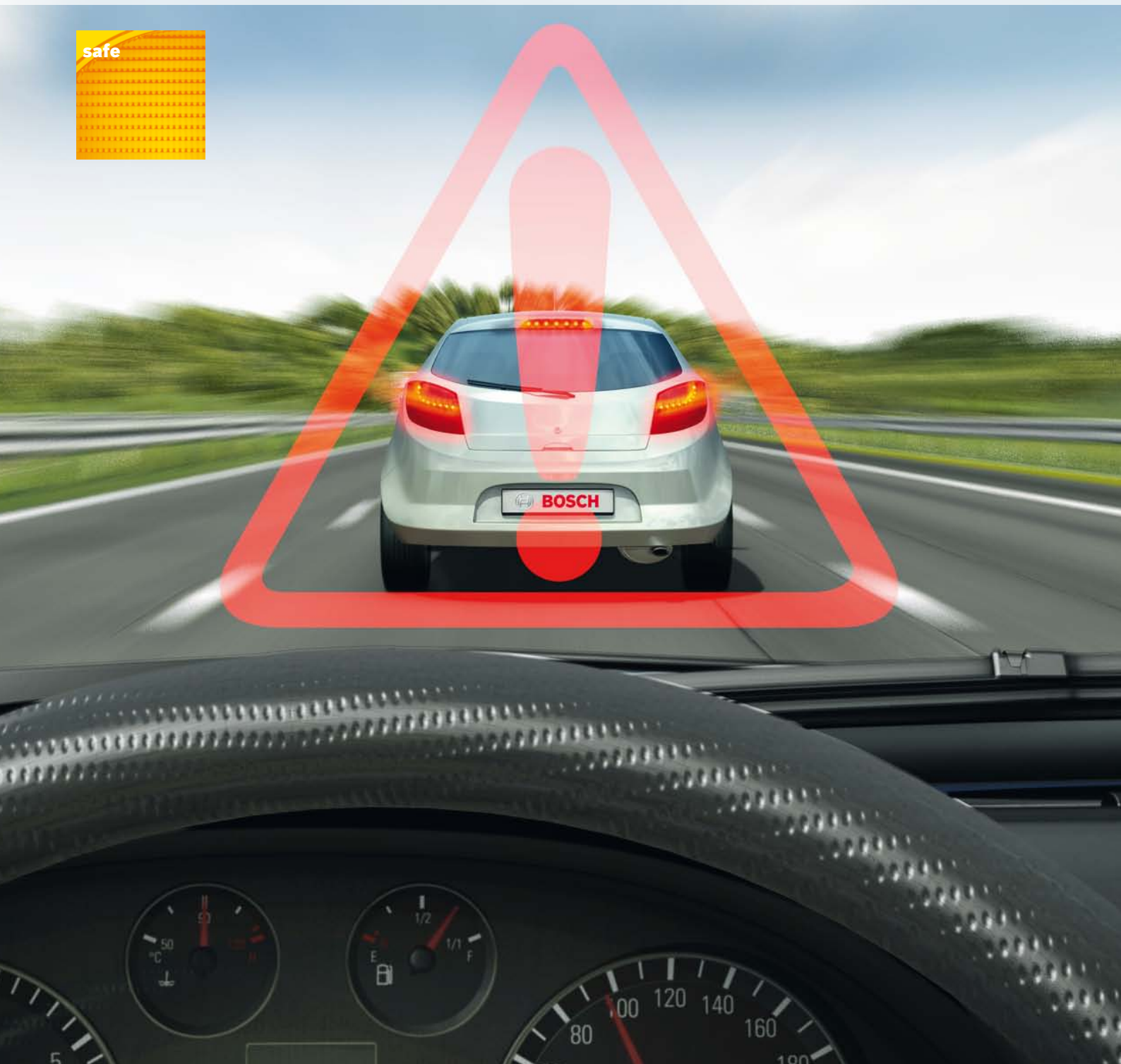
Chassis Systems Control

Predictive Emergency Braking System: Assistance in avoiding rear-end collisions and mitigating the consequences



BOSCH

Invented for life



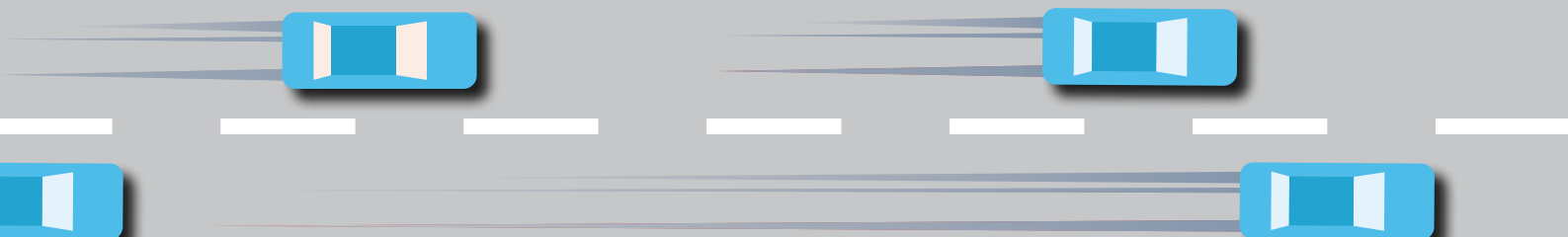
The Predictive Emergency Braking System **makes driving safer**



You might be fumbling for something in the glove compartment, having an animated discussion with a passenger or simply not paying attention for a moment – when driving in traffic, this could have serious consequences.

In order to reduce the risk of a rear-end collision or mitigate the consequences of such a collision, Bosch has developed the Predictive Emergency Braking System. The system, which is based on the networking of a radar sensor with the Electronic Stability Program (ESP®) or Electronic Stability Control (ESC), continuously analyzes the traffic ahead.

The Predictive Emergency Braking System becomes active as soon as the vehicle is started, and supports the driver at all speeds – both by day and by night. Nevertheless, the driver still has a responsibility to pay attention and drive carefully at all times.



The Predictive Emergency Braking System at speeds over 30 km/h (18 mph)

At speeds over 30 km/h (18 mph), the Predictive Emergency Braking System warns the driver at an early stage if there is a risk of collision and, if necessary, provides active braking support. If the collision is unavoidable, the system reduces impact speed and is therefore able to mitigate the consequences of the crash.

Prepares the braking system and warns the driver when the situation is critical

When the Predictive Emergency Braking System detects that the distance to the preceding vehicle is becoming critically short at a vehicle speed above 30 km/h (18 mph), it prepares the braking system for potential emergency braking. Thus, full braking power is available to the driver valuable hundredths of seconds earlier.

If the driver fails to react to the critical situation and the Predictive Emergency Braking System detects that the vehicle is continuing to approach the vehicle ahead, the system warns the driver by means of a visual and/or audi-

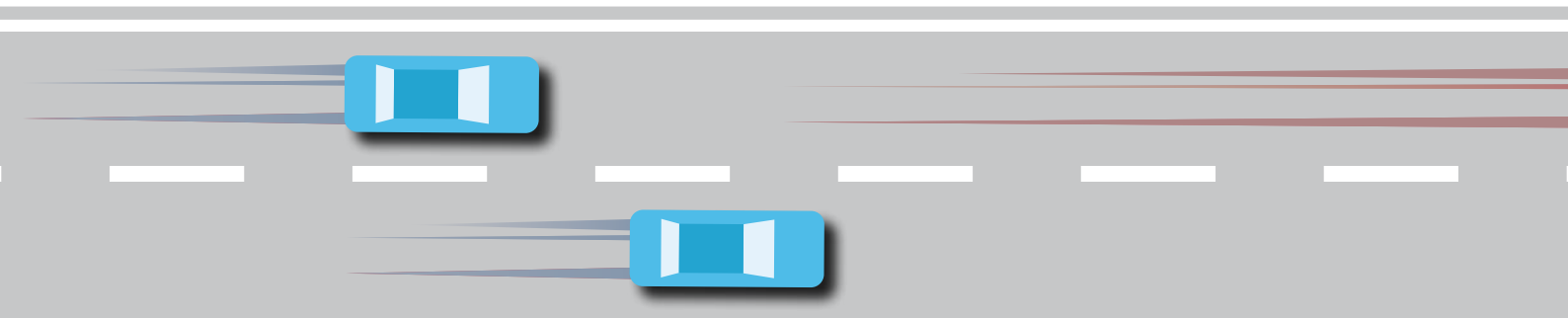
ble signal followed by a brief but clearly perceptible brake jerk. The driver is made aware of the immediate risk of a collision and can react earlier to potentially avoid the rear-end collision by braking or by an avoidance maneuver.

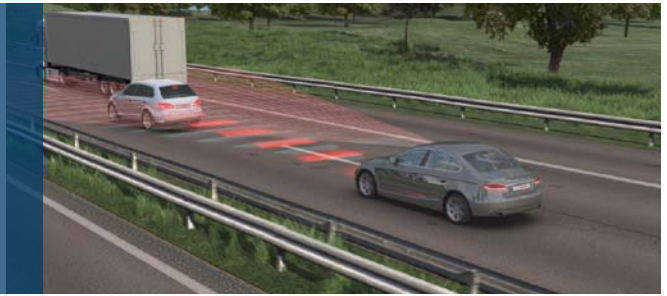
The time at which the warning is given is based on the required stopping distance and average motorist reaction time. When making the calculation, the system can also take into account whether the driver is active or inactive and must therefore be warned earlier.

Reduces speed and supports the driver when braking

Valuable time can pass before a driver reacts to a critical situation. The Predictive Emergency Braking System can use this time effectively: Following the collision warning, it can initiate partial braking in the detected rear-end collision situation. This intervention decelerates the vehicle and gives the driver more time to react.

As soon as the driver presses the brake pedal, the system provides braking support. To do this, the system continuously calculates the degree of vehicle deceleration needed to avoid the collision. When the Predictive Emergency Braking System detects that the driver is not braking hard enough, it increases the braking pressure to the required level so that the driver can attempt to bring the vehicle to a standstill before a collision occurs.





Brakes when the driver does not react

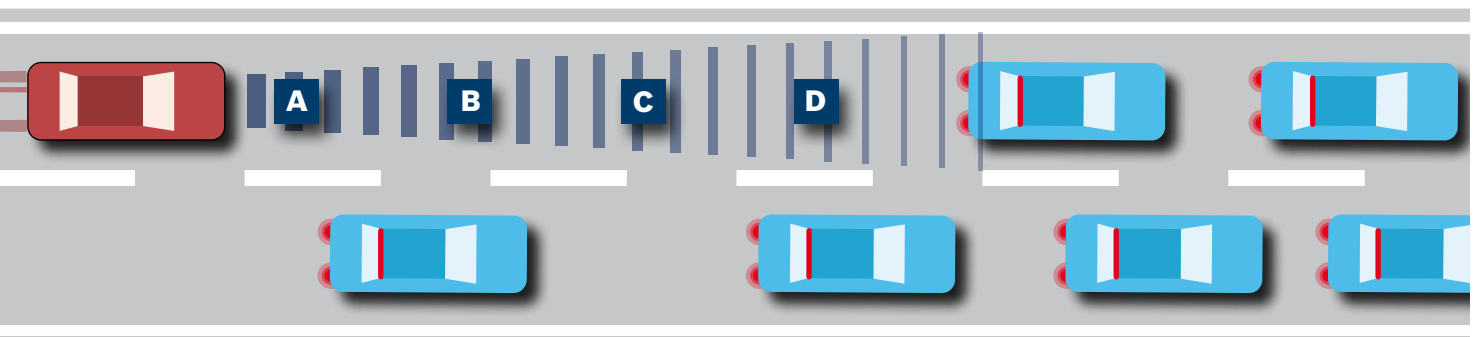
Should the driver fail to react at all to the immediate risk of collision and the Predictive Emergency Braking System detects that a rear-end collision is unavoidable, it can automatically initiate full braking. As a result, the vehicle is traveling considerably slower when the collision occurs, reducing the severity of the crash for the passengers of both vehicles.

The initiation of full braking calls for superior object recognition and collision risk assessment capabilities. For this reason, the radar sensor is supplemented by an additional surround sensor, such as a video camera.

Intelligent driver support at speeds over 30 km/h (18 mph)

- A** If the system detects a critical approach to the vehicle ahead and the driver does not react, it prepares the braking system for emergency braking and warns the driver.
- B** Following the collision warning, the system initiates partial braking to reduce the speed and give the driver valuable time to react.
- C** If the driver presses the brake pedal, braking support is provided as necessary.
- D** If the driver does not react and the system assesses the collision to be unavoidable, it initiates full braking in order to mitigate the consequences of the crash.

The design of the Predictive Emergency Braking System may vary depending on the vehicle manufacturer and model.



The Predictive Emergency Braking System at speeds below 30 km/h (18 mph)

Many road traffic crashes occur at speeds below 30 km/h (18 mph), such as driving in city centers or in slow-moving traffic. Fortunately, the consequences of such crashes are usually limited to bodywork damage, but in some cases, expensive repairs still may be required.

At speeds below 30 km/h (18 mph), the Predictive Emergency Braking System works to avoid a collision with the vehicle ahead by initiating full braking. If the rear-end collision is unavoidable, the system reduces the impact speed and is therefore able to mitigate the consequences of the crash.

Prepares the braking system when the situation is critical

When, at a vehicle speed below 30 km/h (18 mph), the Predictive Emergency Braking System detects a critical proximity to a moving or stationary vehicle ahead,

it prepares the braking system for potential emergency braking. Thus, full braking power is available valuable hundredths of seconds earlier.

Brakes when the driver fails to react

If the driver fails to react to the critical situation, the system can automatically initiate full braking to potentially avoid the collision. Should the rear-end collision

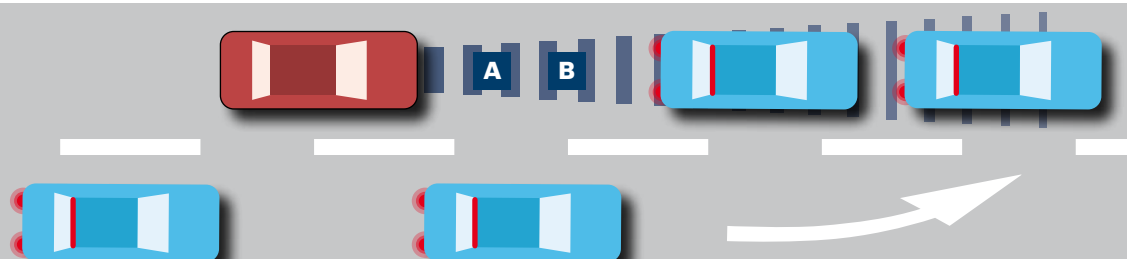
be unavoidable, this action can at least minimize the severity of the collision, reducing the risk of injury to the passengers of both vehicles.

Intelligent driver support at speeds below 30 km/h (18 mph)

A When the system detects a critical approach to a moving or stationary vehicle ahead and the driver does not react, it prepares the braking system for emergency braking.

B If the driver fails to react to the critical situation, the emergency braking system automatically initiates full braking in order to prevent the collision or mitigate the consequences.

The design of the Predictive Emergency Braking System may vary depending on the vehicle manufacturer and model.



Robert Bosch GmbH
Chassis Systems Control

Postfach 13 55
74003 Heilbronn
Germany

www.bosch-automotivetechonology.com

Printed in Germany
292000POPX-C/CCA-201108-En



DECADE OF ACTION FOR ROAD SAFETY 2011-2020

Supported by **Bosch**

Road traffic crashes take the lives of nearly 1.3 million people every year, and injure millions more. The goal of the Decade of Action for Road Safety is to stabilize and reduce the number of lives lost by 2020, ensuring that the vision of a world in which mobility is safe for all who use the world's roads becomes a reality.

www.decadeofaction.org

The information provided is for information purposes only and does not constitute or create any legal obligation or agreement between Robert Bosch GmbH (or any of its affiliates or subsidiaries) and any person or entity. The information is not a warranty, express or implied, concerning quality, merchantability, marketability, or suitability for a specific purpose. The designs incorporated in vehicles and the performance of the designs may vary depending on the vehicle manufacturer's specifications and requirements for the product and their vehicles. We reserve the right to make product changes, adaptations and modifications without prior notice. All rights reserved.

