

Press Release

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Pedestrian Detection with full auto brake - unique technology in the all-new Volvo S60

The all-new Volvo S60 is packed with high-tech solutions that actively help the driver avoid accidents.

The Pedestrian Detection with full auto brake is a world first. To Volvo Cars' knowledge there is no other car manufacturer that offers a feature that can avoid a collision with a pedestrian.

This radar- and camera-based system can detect pedestrians in front of the car, warn if anyone walks out into its path - and then automatically activate the car's full braking power if the driver fails to respond in time.

Pedestrian accidents occur every day in our increasingly intensive traffic environments. In Europe, 14 percent of all traffic fatalities are pedestrians. The corresponding figure for the USA is 11 percent and in China the proportion rises to a worrying 26 percent.

"Here at Volvo Cars we have always led the way when it comes to protecting the occupants in our cars. In recent years, we have adopted groundbreaking initiatives that help the driver avoid and mitigate accidents with other vehicles. Now we are taking a giant stride forward with technology that can contribute to increased safety for unprotected road users as well," says Thomas Broberg, Senior Safety Advisor at Volvo Cars. He adds:

"We are truly proud of our success in making our technology so reliable that we can offer a complete system that can avoid collision with a pedestrian, by detecting, alerting and full braking, a world first, to our knowledge. With this technology we increase the braking force in our system for automatic braking from fifty percent to full stopping power."

Safer detection with spearhead technology

Pedestrian Detection with full auto brake consists of a newly developed radar unit integrated into the car's grille, a camera fitted in front of the interior rear-view mirror, and a central control unit.

The radar's task is to detect any object in front of the car and to determine the distance to it. The camera determines what type of object it is.

The function is programmed to also respond to vehicles in front that are at a standstill or that are moving in the same direction as the car fitted with the system.

Thanks to the newly developed dual-mode radar's much wider field of vision, pedestrians about to step into the roadway can also be detected early on. The camera has higher resolution than the previous-generation unit. This makes it possible to detect the pedestrian's pattern of movement.

"The auto-brake system requires that the object is confirmed by both the radar and the camera.

Thanks to the advanced sensor technology used, it is now possible to increase to full braking power," explains Thomas Broberg. He adds:

"Detecting pedestrians with sufficiently high reliability has been a complex challenge. Our innovative technology is programmed to trace a pedestrian's pattern of movement and also to calculate whether he or she is likely to step into the road in front of the car. The system can detect pedestrians who are 80 cm tall and upwards, that is to say including children."

New technology permits full braking force

In an emergency situation the driver first receives an audible warning combined with a flashing light in the windscreen's head-up display. In order to generate an immediate, intuitive reaction this warning resembles a brake light. At the same time, the car's brakes are pre-charged. If the driver does not react to the warning and an accident is imminent, full braking power is automatically applied.

This technology has the same limitations as the human eye, and just like us it "sees" less well in the dark and in poor weather.

Volvo Cars has worked for five years on the development of Pedestrian Detection with full auto brake. Test cars have been in operation all over the world to cover all possible variations of traffic behaviour, road condition and climate.

"We've driven many test kilometres in real traffic to "train" the system to recognise pedestrians' patterns of movement and their appearance in different countries and cultures. What is more, we use the information obtained from these tests to conduct advanced computer simulations," explains Thomas Broberg.

Avoids impacts at speeds below 35 km/h

Half of all pedestrian accidents occur at speeds below 25 km/h.

Pedestrian Detection with Full Auto Brake can avoid a collision with a pedestrian at speeds up to 35 km/h if the driver does not react in time. At higher speeds, the focus is on reducing the car's speed as much as possible prior to the impact. The speed reduction is up to 25 km/h.

Statistics reveal that the car's speed has considerable importance for the outcome of the accident. A lower speed of impact means that the risk of serious injury is significantly reduced.

"The proportion of pedestrian fatalities is high today and our technology will play a major role in reducing it," says Thomas Broberg.

Also brakes for other cars

Up to 90 percent of all road accidents are caused by distraction. Half of all drivers hitting another vehicle from behind do not brake at all prior to the collision.

Pedestrian Detection is a further development of the Collision Warning with Auto Brake technology already introduced by Volvo Cars. Therefore, the new S60 will also detect, alert and automatically brake if the car risks hitting another vehicle from behind.

The aim of the initial warning is to alert the driver so that he or she can brake or avoid the danger. If the driver does not react to the warning, the car automatically brakes with full force moments before the collision is unavoidable. With automatic braking, the collision can be avoided if the speed difference between the two vehicles is up to 35km/h.

Alerts tired drivers

The all-new Volvo S60 can naturally also be equipped with a range of additional solutions that help the driver to drive more safely, such as:

- Driver Alert Control (DAC). A unique technology to alert tired and distracted drivers. This function monitors the car's progress between the lane markers and warns the driver if his or her driving pattern changes in a random or uncontrolled way.
- Blind Spot Information System (BLIS) helps detect vehicles in the offset rear blind spot on both sides of the car. A warning lamp beside the relevant door mirror comes on to alert the driver to the danger.
- Active Xenon Lights are articulated headlights that follow the curve of the road. For best possibility illumination when driving in the dark on twisting roads.
- Lane Departure Warning (LDW) alerts the driver if the car runs across the lane markers without the turn indicator being used.

City Safety - prevents low-speed impacts

The all-new Volvo S60 also features City Safety as standard. This system can lessen or even entirely avoid low-speed rear-end impacts at speeds up to 30 kilometres an hour.

Rear-end impacts are common in dense city traffic and when driving in traffic queues. About 75 percent of all these collisions occur at speeds below 30 kilometres an hour. What is more, investigations reveal that in 50 percent of cases, the driver has not braked at all prior to the collision.

With City Safety, the car automatically brakes if the driver fails to react in time when the vehicle in front slows down or stops - or if he or she is driving too fast towards a stationary object. If the relative speed difference between the two vehicles is below 15 km/h, the collision can be avoided. If the speed difference is between 15 and 30 km/h, the speed of impact is reduced to minimise the effects of the accident.

Rollover Protection System (ROPS) standard in the S60

The new S60 is equipped with Roll Over Protection System (ROPS) as standard. Using advanced sensor technology the pretensioners will tighten the safety belts and the Inflatable Curtains (IC) will deploy in case the car is involved in a rollover. This together with the safety cage will help to reduce the risk of injuries for belted occupants in such situations.

Collision safety including an improved Inflatable Curtain

In a frontal collision situation, the well-balanced combination of high-strength steel of various grades dissipates the impact energy and helps prevent intrusion into the passenger compartment. The front body structure of the all-new Volvo S60 is divided into four zones, each of which has a different task in such event. The transverse engine installation creates more space for deformation and helps reduce the risk of intrusion into the passenger compartment in frontal collision situations.

The all-new S60 has safety belt pre-tensioners in all seats. The Pre-Prepared Restraints (PRS) regulate the airbags and the safety belt load limiters to optimise protection depending on the force of the impact.

Among its various other safety systems, the all-new sedan model also has an advanced Side Impact Protection System, seat-mounted side airbags, Inflatable Curtains and Whiplash Protection System - one of the market's most effective systems to help reduce the risk of neck injuries in rear impacts.

The Side Impact Protection System (SIPS) has been further improved in the all-new S60 to address a wider span of real life situations, such as side impacts on either side of the passenger compartment. This has been made possible by combining information from accelerometers in the vehicle and a world unique use of a gyro measuring yaw rate for controlling the activation of the IC, SIPS airbag and seatbelt pretensioners in such situations.

"No previous Volvo model has ever had such advanced safety technology as the all-new Volvo S60 does. It is a worthy representative of our aim to build the world's safest cars - and it marks yet another step towards our vision of a crash free future and ambition of no fatalities or serious injuries in a new Volvo car by the year 2020," says Thomas Broberg.

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Descriptions and facts in this press material relate to Volvo Cars' international car range. Described features might be optional. Vehicle specifications may vary from one country to another and may be altered without prior notification.

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