VOLVO

Press Release

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The new Volvo XC60 crowns Volvo's long safety tradition

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"The Volvo XC60 is the safest Volvo ever," says Volvo Car Corporation President and CEO Fredrik Arp. "It brings together all the safety knowledge we have built up over more than 80 years. In fact, the XC60 is perhaps even the safest car in all categories."

In addition to innovations such as City Safety, Trailer Stability Assist (TSA) and the next generation Dynamic Stability and Traction Control system (DSTC), the Volvo XC60 is available with all the collision avoidance and protective safety technologies that Volvo Cars offers today.

Holistic view is a cornerstone
Volvo vehicles have benefitted from a dedication to safety research since 1927 when the company's founders Assar Gabrielsson and Gustaf Larson stated "Cars are driven by people. Therefore the guiding principle behind everything we make at Volvo is - and must remain - safety."

Since then, Volvo Cars has introduced a number of ground-breaking technologies, including the single most effective safety device in automotive history: the three-point seat belt. Since 1927, Volvo vehicles have been equipped with an ever growing list of security, protective and preventative safety systems. But for Volvo Cars engineers, it's the interaction between the various safety systems -- not the number of individual components -- that determines just how safe a vehicle is. Volvo Cars' safety research is the result of a complete, integrated, holistic view of the subject and remains a cornerstone of the company's product development philosophy.

The driver is central
Volvo Cars' development of safety systems is based on three main areas of focus: the vehicle, the traffic environment and the human being. The company believes the driver must be alert and have the ability to make quick decisions in stressful situations.

"We focus on technologies that help the driver observe critical situations and avoid collisions," says Jonas Ekmark, manager of Preventive Safety at the Volvo Cars Safety Centre. "Traffic accidents should not be regarded as unavoidable. With the right technology, we can give the driver the support needed to help avoid accidents."

Analysis and development in five phases
With the aim of creating as sound a basis as possible for the continuous development of safety technologies, Volvo Cars is involved in a wide range of research on the subject of safety, including the study of real-world collisions. The Volvo Cars model and methodology for collision analysis demands a focus on the entire collision sequence, divided into five phases; from non-conflict to post-crash. Based on these phases, the company develops and enhances its safety systems. To illustrate the results of the company's safety research and development, elements of the new Volvo XC60 will be used as examples.

Phase 1: Non-Conflict
Volvo Cars' ultimate goal is for the driver to avoid any situation where a collision possible. Volvo vehicles are required to give the driver good visibility and the chassis, engine, brakes and steering

systems should give the driver the best possible control over the vehicle. The driver and passenger in-car environment is another important factor that affects well-being and attentiveness. In recent years, Volvo Cars has in developed a range of new technologies that help the driver maintain focus on the road. The following systems are optional on the XC60.

Driver Alert Control (DAC) is a technology to that monitors the vehicle's road manners between lane markings and sounds a gentle warning if the system determines the driver is tired or their attention is elsewhere.

Adaptive Cruise Control (ACC) utilises radar sensors to monitor and maintain a minimum distance from the vehicle in front.

Distance Alert (DA) will monitor and warn the driver to maintain a pre-determined gap from the vehicle in front even when the ACC is not activated.

Blind Spot Information System (BLIS) utilises digital cameras mounted under the side-view mirrors to monitor the vehicle's blind spots and warn the driver - via an amber light on the appropriate side -when a vehicle or motorcycle has entered the area.

Active Bi-Xenon Lights angle the headlight beams relative to the vehicle's speed and steering wheel position to illuminate more of the road during turns.

Park Assist Camera (PAC) utilises a camera to display the area behind the vehicle and the computed path of the vehicle based on steering wheel position.

Phase 2: Conflict
Should the Volvo vehicle enter a situation where a collision becomes likely - a skid, a stopped vehicle in the Volvo driver's path - preventive safety functions are designed to stabilize the vehicle or alert the driver in an effort to avoid a collision early.

DSTC helps reduce the risk of a skid by reducing engine power and applying one or more of the brakes in an attempt to keep the vehicle's intended path based on steering wheel and pedal position. In the XC60, DSTC is standard and has been improved to monitor the vehicle's body roll rate to help detect the potential for a skid earlier and assist with more precision.

Lane Departure Warning (LDW) is an optional system and can alert the driver with a gentle warning sound if the vehicle crosses one of the road markings without an obvious reason, such as use of the turn indicator. LDW is designed to help prevent the vehicle from leaving the road and head-on collisions caused by temporary distraction.

Standard equipment for all Volvo SUVs and crossovers, Roll Stability Control (RSC) utilises DSTC and a yaw sensor to determine the risk of a rollover. If the system assesses the risk as high, engine torque is reduced and some braking force is applied to one or more wheels to counteract the rollover tendency.

Collision Warning (CW) is paired with the optional ACC and will activate if the Volvo vehicle approaches another from the rear at a rate where a collision seems likely. If the driver does not respond, a red warning light is projected on the windscreen and a warning buzzer sounds.

Trailer Stability Assist (TSA) is optional for XC60 buyers who frequently tow. TSA helps dampen the snaking motion that can occur when towing a trailer or caravan. Stabilization is obtained by braking one or more of the vehicle's wheels and by decreasing engine torque.

Phase 3: Avoidance/Mitigation
A collision becomes imminent and severe braking or an emergency manoeuvre may be essential. At this point, Volvo Cars' preventive safety systems are designed to engage to help the driver avoid or mitigate the potential effects of a collision. The preventative safety systems are not designed to relieve the driver of the responsibility of driving safely.

City Safety will be on the standard equipment list on the XC60 and is a unique Volvo Cars preventative safety system that can help the driver avoid frontal collisions at low speeds. At speeds of up to 30 km/h, City Safety monitors the area in front of the XC60 to determine the maximum braking force required to avoid a collision. If a collision becomes imminent, a warning is activated. If the driver does not respond, the brakes are applied.

The optional Auto Brake function is paired with Phase Two's Collision Warning (CW) system. If the driver does not respond to the collision warning, the braking system is pre-charged in anticipation of a panic stop. If a collision becomes imminent and the driver does not respond, braking power is applied to avoid or reduce the effects of a collision with a moving or stationary vehicle.

Phase 4: Crash
A collision occurs. In this phase, Volvo Cars' protective safety systems are designed to help minimize injuries to the vehicle's occupants. It's the interaction of safety belts, pre-tensioners, airbags, inflatable curtains and a strong safety cage that come into play to protect the occupants. Unless otherwise stated, all protective safety systems are on the standard equipment list of all Volvo vehicles, including the XC60.

Crumple zones are designed to reduce the G-forces experienced by the occupants by slowing the impact in a progressive way. The outer edges of the vehicle deform the most, but as the impact approaches the passenger compartment, the less the material deforms. The ultimate goal is to limit as much as possible the effects on the passenger compartment.

The XC60 and XC90 include a lower front cross-member in the suspension subframe positioned at the height of the bumper beam in a conventional car. The lower cross-member strikes the oncoming car's protective structure, activating its crumple zone so the occupants can be given the maximum level of protection from their vehicle.

Should a collision occur with a pedestrian, the Volvo vehicle's soft front bumper structure is designed to absorb energy and reduce the risk of leg injuries. In addition, the hood has a raised profile to create crush space from the solid engine and incorporates a honeycomb structure to distribute impact energy.

All Volvo vehicles are equipped with compact, transversely installed engines to allow more free space in the engine bay for deformation and help reduce the risk of engine penetration into the passenger compartment in a frontal collision.

In 1959, Volvo engineer Nils Bohlin invented the three-point seat belt and has become an essential safety system in all vehicles around the world.

In a collision, pre-tensioners automatically tighten the seat belt across the body to reduce the seat occupant's movement and help provide maximum protection.

Pre-Prepared Restraints (PRS) is another new function in the Volvo XC60. A laser sensor monitoring the impending collision in front of the XC60 interacts with the airbags and adaptive seat belt load limiters to suit the severity of the collision. PRS aims to better align the protective safety systems with the severity of impact.

Volvo Cars has continuously refined airbag technology to improve protection in both frontal and side impacts. For instance, Volvo Cars was the first manufacturer in the world to offer a seat-mounted side airbag and an inflatable curtain (IC).

The company's Side Impact Protection System (SIPS) is a combination of high-strength steel of different grades that interact to minimize penetration into the passenger compartment. According to Volvo Cars' research and third-party statistics, the patented SIPS system and side-impact airbags will reduce severe chest injuries by more than 50 percent.

The Whiplash Protection System (WHIPS) is designed to reduce the risk of soft tissue injuries - notably, whiplash. In the event of a rear-end collision, the front seat backrest accompanies the passenger's initial body movement by moving the seat backwards and tilting to dampen the force.

The optional panoramic roof in the XC60 and all other windows can be equipped with laminated glass for comfort and security.

In the early 1970s, Volvo Cars was the first manufacturer to develop its own child seat. In 2007, the company unveiled another new development: the integrated two-stage child booster cushion. The booster cushion helps position the lap belt correctly over the pelvis and elevates the child, making it easier to see out the window. The cushion is supplemented by a belt that is suited to the child's weight as well as a taller IC to help protect the child's head.

Volvo Cars has been an integral player in the international project to develop the ISOFIX standard.

ISOFIX is an attachment system that makes it easier to fit a child seat correctly in all vehicles equipped with the system.

Phase 5: Post-Crash
Volvo Cars' Traffic Accident Research Team traces its roots to the 1960s. After Volvo engineer Nils Bohlin invented the three-point seat belt, a comprehensive survey was initiated in 1966 to study the seat belts' effect.

The survey encompassed all cases of injury in Sweden that involved a Volvo vehicle over a period of one year. The results indicated that the new seat belt reduced injury frequency by 50 percent. After fully analyzing the data obtained from the survey, it became apparent the benefits this type of information would deliver in the product development process. In 1970, the company established the Traffic Accident Research Team. To date, the team has studied more than 36,000 collisions in Sweden, Thailand, the US and China, the results of which can be found in the safety systems in Volvo vehicles today.

Volvo Cars Safety Centre
In order to offer vehicles with a world-class safety, Volvo Cars regards it as essential that the safety systems take into account every size of occupant, across a wide range of speeds and a broad spectrum of collision scenarios. For this reason up to 120 crash tests are performed with each new model at the Volvo Cars Safety Centre. However, before the vehicle even exists as a prototype, it has been crashed several thousand times in virtual simulators. This unique facility in Göteborg opened in 2000 and is among the most advanced centres of its kind. The tests form a highly effective complement to the experiences gained from real-world collision research.

Safety milestones
1944 Safety cage
1944 Laminated windscreen
1959 Three-point seat belts in the front
1960 Padded instrument panel
1964 Prototype of the first rear-facing child seat is tested in a Volvo
1966 Twin-circuit triangular (three-wheel) backup braking system
1966 Crumple zones
1967 Seat belts in the rear
1968 Head restraints front
1969 Three-point inertia-reel seat belts in the front
1970 Volvo Cars' Traffic Accident Research Team established
1972 Three-point seat belts in the rear
1972 Rear-facing child seat and child-proof door locks
1972 Volvo Experimental Safety Car (VESC)
1973 Energy-absorbing steering column
1974 Energy-absorbing bumpers
1974 Fuel tank relocated for enhanced safety
1978 Child booster cushion for children
1982 Under-run protection
1982 Door mirrors of wide-angle type
1984 ABS, anti-locking brakes
1986 Brake lights at eye level
1986 Three-point seat belt in the middle of the rear seat
1987 Seat belt pre-tensioner
1987 Driver's airbag
1990 Integrated booster cushion for children
1991 SIPS, side impact collision protection
1991 Automatic height adjustment of front seat belts
1993 Three-point inertia-reel seat belt in all the seats
1994 SIPS, side-impact airbags
1997 ROPS, Roll-Over Protection System for convertible models (C70)
1998 WHIPS, protection against whiplash injuries
1998 IC, inflatable curtain,
1998 DSTC, Dynamic Stability and Traction Control
2000 Volvo Cars Safety Centre inaugurated in Göteborg on 29 March
2000 ISOFIX attachments for child seats
2000 Two-stage airbag
2000 Volvo On Call safety system
2000 Volvo Cars Safety Centre's new crash laboratory inaugurated

2001 Volvo Safety Concept Car (SCC)
2002 RSC, Roll Stability Control
2002 ROPS, Roll-Over Protection System for SUVs (XC90)
2002 Lower cross-member at the front - protection system for oncoming cars
2002 Development of virtual "pregnant" crash-test dummy
2003 IDIS, intelligent system for driver information
2003 Patented new structure at the front reduces collision forces
2003 Bangkok's Traffic Accident Research Centre (TARC) is inaugurated
2004 BLIS, system for information about the offset rear blind spot
2004 DMIC, door-mounted side airbag for convertibles
2005 Volvo's co-driver-system
2005 Multi Lock, combined alcolock and lock for the seat belt and key for speed restriction (research project)
2006 ACC, Adaptive Cruise Control
2006 Personal Car Communicator (PCC)
2006 Collision warning with brake support
2006 Active Bi-Xenon headlamps
2007 Integrated two-stage child booster cushion
2007 CWAB, Collision Warning with Auto Brake
2007 Driver Alert
2007 Lane Departure Warning
2007 Alcoguard
2008 Pre-Prepared Restraints,
2008 City Safety, low-speed collision avoidance

Volvo Cars of Canada Corp. is part of the Volvo Car Corporation of Göteborg, Sweden. The company provides marketing, sales, parts, service, technology and training support to the 42 Volvo automobile retailers across the country. The company's product range includes the stylish and sporty C30, the elegant C70 hardtop convertible, the compact S40 sedan, the S60 sport sedan, the S80 flagship sedan, the versatile V50 wagon and the award-winning XC90 sport utility vehicle. For 2008, the company is introducing two all-new models: the redesigned V70 wagon and the capable and comfortable XC70.

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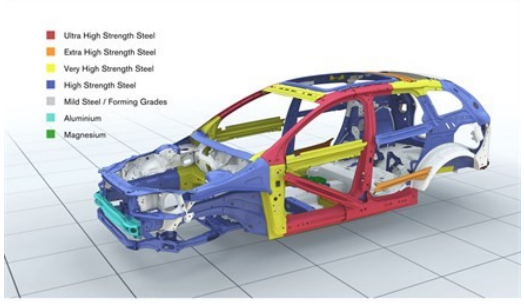
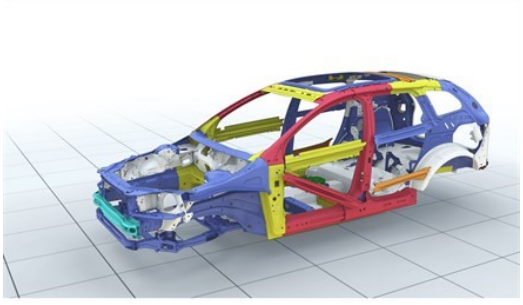


Safety Cage – steel grades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