



The New Volvo XC90: Holistic Approach to Retain Top Ratings for Safety

- Real World Safety Innovation
- Standard for SUV Safety
- Highest safety ratings by independent analysis
- Safety for all occupants, including the third row of seats
- Transversely mounted engines for Safety
- Advanced functions for increased driver control

The award-winning Volvo XC90 has become a favorite with large families since it was introduced in 2002. The popularity of Volvo Cars' first SUV goes beyond the roomy cabin and comfortable seating for seven people. One of the most compelling arguments for the XC90 is its high level of safety – innovative designs and systems that were unique for an SUV at the time the vehicle was launched.

Maintaining Volvo Cars' world-wide reputation for safety leadership was a high priority in the development of the company's first SUV. The company relied heavily on its extensive research gained from real world traffic accidents, the world's most advanced testing facility and a holistic approach to safety to create the active and passive safety systems that would immediately distinguish XC90 as a breakthrough in the SUV category.

Volvo Cars' ambition was to create an SUV that could be compared with the best passenger cars with respect to both driving stability and the capacity to provide effective protection in various types of accidents. By any measure, the company has succeeded.

"We would go so far as to say that we redrew the safety map for SUVs when we designed the Volvo XC90," says Ingrid Skogsmo, head of Volvo Cars Safety Center. "Our ambition was to achieve a very high level of safety for everyone in the car, and test results indicate that we have succeeded."

The Volvo XC90 receives consistently high ratings and positive assessments in surveys conducted by independent organisations. The five stars earned in Euro NCAP testing are based to a great extent on the comprehensive protection for the occupants of the car, including highly effective protection for children. The IIHS (Insurance Institute for Highway Safety) reports similar results. That organization gives the XC90 the highest ratings for both frontal offset and rear-end collisions. The Volvo XC90 is also one of the few models among SUVs to receive the highest rating for protection against whiplash injuries.

Another measure of safety in the XC90 comes from the sister organization of the IIHS - the Highway Loss Data Institute. That agency compared different car models with respect to the costs incurred by insurance companies. Results showed the Volvo XC90 is the leader among mid-sized SUVs with regard to minimizing the costs incurred by insurance companies.

Built like a passenger car

The high degree of safety in the Volvo XC90 begins with its passenger car-style construction with a unitized body, effective deformation zones, a low centre of gravity, and advanced systems to minimize the risk of injury, regardless of the type of accident.

Among other features, the XC90 was fitted with an innovative system to reduce roll-overs, a type of accident that was often associated with earlier SUV models. This system, Roll Stability Control (RSC), is an active, stability-enhancing system that uses a gyroscope with a sophisticated computer program to determine the risk of a roll-over. If the system determines that the risk is high, engine torque is cut and a strategic amount of brake force is applied to one or more wheels to stabilize the vehicle.

If a roll-over cannot be avoided, the occupants are protected by the interior safety system that includes

safety belt tensioners for all seats and Inflatable Curtains (IC). In addition, the safety cage around the occupants helps reduce the risk of injury.

Safety for the third row of seats

A great deal of attention went into safety for passengers in the third row of seats. The area was designed so that children and adults up to a height of approximately 5' 3"/160 cm can sit comfortably, without compromising safety. The two seats in the third row have an extremely robust design and are positioned above the rear axle, which contributes to reducing the risk of injury in side impact collisions. Third row passengers are also protected by an enhanced inflatable curtain, the first of its kind in the industry.

Third row passenger safety is further enhanced by maximizing the space between the seating positions and the vehicle's exterior. This is partly accomplished by providing a third row of seats that are somewhat smaller than the other seats. Volvo Intelligent Vehicle Architecture (VIVA) accounts for the ample space behind the rear seats. The efficiently compact way in which the engine is mounted (transversely), allows for a proportionately long cabin – resulting in ample space for luggage compartment as well as crumple zone.

Smaller children are best seated on the integrated booster cushion in the center position of the second row of seats. This world's first can also be moved forward approximately 12 inches to create closer child/parent contact.

The XC90 also exemplifies the Volvo Cars emphasis considering other road-users such as pedestrians and cyclists. The smoothly rounded front and the ample space between the engine and hood contribute to reducing the risk of injury to road-users in a collision. The frontal structure is also designed to help reduce the risk of damage, in the event of a collision, to smaller vehicles.

Only transverse engines

All engines in the Volvo XC90 are transversely mounted, which contributes to both a roomy cabin and protective safety. A transversely mounted engine takes minimal space away from the length of the car, thereby providing a more effective deformation zone.

Volvo's newly developed and highly efficient six-cylinder in-line engine - now available in the XC90 – is also transversely mounted thanks to its extremely compact format. The complete engine unit, including the six-speed automatic gearbox, is only 1/10th of an inch longer than the Volvo predecessor, its five-cylinder equivalent. Its total length is 24.6 inches.

By placing the auxiliary components, such as the steering servo pump and air conditioning compressor, behind the engine, in the space above the gearbox, Volvo has achieved an impressively compact engine. Utilizing a creative solution known as READ – Rear End Ancillary Drive, power generation is provided via gears on the rear end of the crankshaft. The alternator is driven directly and is mounted on the engine block. The vibration damper, which compensates for vibrations in the six-cylinder engine's relatively long crankshaft, has been built into the engine block.

Preventive safety

In addition to comprehensive collision protection, the XC90 was fitted from the start with a number of advanced systems to prevent accidents. Among these are numerous Volvo innovations, such as: RSC (Roll Stability Control), which acts to stabilize the vehicle at the threat of a roll-over; and, Volvo's stability system DSTC (Dynamic Stability and Traction Control), which contributes to the reduction of skidding - by reducing engine torque and applying well balanced brake force when necessary.

"The system contributes to safer driving in most situations," says Skogsmo. "And with the introduction of the new Volvo XC90, we will also present several systems that further enhance preventive safety. We have put particular focus on driver control," she concludes.

Active Bi-Xenon Light – turning headlamps

In order to provide the best possible vision when driving in darkness on winding roads, Volvo Cars is introducing Active Bi-Xenon Lights – moving headlamps that follow the bends in the road. A mini-processor is used to measure and analyze a number of parameters and optimizes the beam of light to the situation. The headlamps can turn up to 15 degrees in both directions - a total of 30 degrees - thereby enabling them to illuminate a longer stretch of road in curves. To prolong the system's service life, the function is automatically disengaged in

daylight.

BLIS offers better driver control

The new Volvo XC90 is also available with BLIS (Blind Spot Information System). BLIS uses cameras mounted in the door mirrors to register if another vehicle is in the blind spot at the side of the car. If this is the case, an indicator lamp illuminates near the mirror to warn the driver, thus increasing the possibility for the driver to make the correct decision. In this way, BLIS helps give the driver better control of the driving situation.

Park Assist Camera – an extra eye to the rear

In the new XC90, Volvo Cars is now introducing the Park Assist Camera as an accessory. The mechanism alerts the driver to anyone who might be behind the vehicle, as well as provides information that makes parking easier. This advanced function not only provides the driver with an extra eye towards the rear but also shows the vehicle's intended path prior to rearward motion. A wide-angle camera monitors the area behind the XC90.

The image is displayed on the navigation system's screen, located on the dashboard. The camera angle is set to show the entire area without excessively distorting the perspective. The screen provides guide line markers projecting the path of the vehicle while moving in reverse. The guiding lines follow the turn of the steering wheel to help the driver steer properly. The Park Assist Camera is a fully-integrated function in the car, and is expected to be available to customers in the autumn of 2006.

"The Volvo XC90 has become a benchmark for safety in an SUV," says Skogsmo. "But the fact that safety was uniquely high when the vehicle was launched does not mean that we have become complacent. All of the changes and new features that we are introducing have been evaluated from a safety perspective. This means that the XC90 is still one of the absolutely safest SUVs on the market."

The descriptions and data in this press information pertain to the Volvo Car Corporation's international model range. The cars' specifications may vary from country to country, and may be changed without prior notice.