

## Press Release

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# The Volvo XC90 retains the top position for safety

The Volvo XC90, the SUV from Volvo Cars that has won numerous awards, has been on the market since 2002 and has become very popular, not least among large families. The reasons for this are not only the roomy cabin and comfortable seating for seven people. One of the most compelling arguments is the high level of safety, which is based on a number of solutions and systems that were unique for an SUV at the time the car was launched.

- Safety development based on reality
- Volvo redrew the safety map for SUVs
- Highest safety ratings in objective surveys
- Unique safety, also in the third row of seats
- Transversely mounted engines contribute to safety
- Advanced functions for increased driver control

Volvo Cars has the world's most advanced testing facility for automotive safety. The possibilities provided by the facility, combined with the comprehensive research that Volvo has done in the field and a holistic view of safety, form the basis of Volvo's extensive knowledge about what happens in traffic accidents, and the way in which protective solutions function in actual traffic situations. Based on this knowledge, the different Volvo models can be developed as effectively as possible to help avoid accidents and to provide protection if something should happen. This broad view of safety and solid know-how were among the most important prerequisites for Volvo Cars for entering the SUV segment. Our 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.

"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 Centre. "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 in Euro NCAP are based to a great extent on the comprehensive protection for the occupants of the car, and the well functioning protection for children. The IIHS (Insurance Institute For Highway Safety) reports similar results. They give the XC90 the highest ratings for both frontal offset collisions and rear-end collisions. The Volvo XC90 is also one of the few models among SUVs and pickups to receive the highest rating for protection against whiplash injuries.

Another clear indication of the high degree of safety in the XC90 is the result that the IIHS's sister organisation, the Highway Loss Data Institute, arrived at when they compared different car models with respect to the costs incurred by insurance companies. In this respect, 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 Volvo XC90 is a modern SUV, built like a passenger car with a monocoque 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 things, the XC90 was fitted with a unique system to counteract roll-overs, a type of accident that was often associated with earlier SUV models. This system, Roll Stability Control (RSC), is an active, stability-promoting system that uses a gyroscope to determine the risk of a roll-over. If the system determines that the risk is imminent,

engine torque is cut and a certain amount of brake force is applied to one or more wheels to counteract the roll-over movement.

If a roll-over cannot be avoided, the occupants are protected by the interior safety system that includes safety belt tensioners and Inflatable Curtains (IC). In addition, the extremely robust safety cage around the occupants contributes to reducing the risk of the cabin being compressed.

### **High level of safety also in the third row of seats**

Since this type of vehicle is popular among large families, Volvo Cars has put a great deal of attention into developing the third row of seats. It is designed so that not only children, but also adults up to a height of approximately 160 cm can sit comfortably, without compromising on 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. Furthermore, the Volvo XC90 has been fitted with an enhanced inflatable curtain that also extends to the third row of seats, which was a unique solution when it was introduced.

In order to provide adequate space between the seats and the outside of the car, the third row's seats are somewhat smaller than the other seats in the car. The amount of space behind the seats is also generous, primarily due to the efficiently compact way in which the engine is mounted, which creates space for a proportionately long cabin.

Smaller children are best seated on the integrated booster cushion in the centre position of the second row of seats. This seat can also be moved forward approximately 300 millimetres to create closer contact between the child and its parents in the front seats.

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

### **Only transverse engines**

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

Thanks to its extremely compact format, it has also been possible to transversely mount Volvo's newly developed and highly efficient six-cylinder in-line engine, which is now available in the XC90. The complete engine unit, including the six-speed automatic gearbox, is only 3 mm longer than Volvo's five-cylinder equivalent. Its total length is 625 mm.

The engine's compact format has been achieved by placing the auxiliary components, such as the steering servo pump and air conditioning compressor, behind the engine, in the space above the gearbox. Drive is provided via gears on the rear end of the crankshaft. This solution is called READ – Rear End Ancillary Drive. The alternator is directly driven and 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 the previously mentioned RSC (Roll Stability Control), which acts to stabilise the car if there is a roll-over risk. The XC90 is also fitted with Volvo's stability system DSTC (Dynamic Stability and Traction Control), which by reducing engine torque and applying well balanced brake force when necessary, contributes to reducing the risk of skidding.

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

### **Active Bending Light – turning headlamps**

In order to provide the best possible vision when driving in darkness on winding roads, Volvo Cars is introducing Active Bending Lights – moving headlamps that follow the bends in the road. A mini-processor is used to measure and analyse a number of parameters and optimises the beam of light to the situation. The headlamps can be turned 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 Volvo XC90 is also fitted 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 and to increase

the possibility of making 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**

With anyone who might be behind the car in mind, and to make parking easier, Volvo Cars is now introducing the Park Assist Camera. It is an advanced function that not only provides the driver with an extra eye towards the rear but also shows the vehicle's intended path prior to reversing. A wide-angle camera monitors the area behind the car. The image is displayed on the navigation system's screen on the dashboard. The camera angle is set to show the entire area without excessive distortion of the perspective. The screen also provides guiding lines marked on the surface over which the car will move when reversing. 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 Ingrid Skogsmo. "But the fact that safety was uniquely high when the car 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."

### **Keywords:**

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