

Press Release

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Volvo XC70 Surf Rescue Safety - Concept to Reality, Safety Comes First

Las Vegas, NV (October 30, 2007) - It's only fitting that a SEMA concept car from Volvo be focused on safety. It's a natural fit. Yet 2007 marks the first year that Volvo has built a SEMA vehicle with a specific safety theme: enter the Volvo XC70 Surf Rescue (SR). Inspired by the surf rescue vehicles rolling up and down the Southern California beaches, the XC70 SR embodies Volvo's core value of protecting life in a bold and eye-catching concept that will make its world debut at this year's Specialty Equipment Market Association tradeshow.

As with every SEMA concept from Volvo, all of the XC70 SR's standard safety equipment is intact and functioning. The 2008 Volvo XC70 is all new and incorporates the leading edge of passive and preventative safety systems.

"We developed the all-new XC70 with the goal that it should be the safest vehicle in its segment," says Ingrid Skogsmo, Director of Volvo Cars Safety Center. "The XC70 model shares the same sophisticated network of interacting safety systems as the all-new Volvo S80. The patented body structure absorbs energy in a highly efficient way. And the interior safety system includes the latest generation of side airbags and whiplash protection. Furthermore, we are introducing a world innovation in the field of child safety."

In a true demonstration of versatility of the family/adventure XC70, Volvo combines a height-adjustable integrated booster cushion - a world's first - with an extended inflatable curtain to provide the industry's best passenger safety system for precious cargo in the rear seat.

Safety innovations do not end there. The latest technological updates include a new, stronger side structure to optimize side-impact protection, not only for children but for all occupants. The body's entire side structure is both stronger and lighter thanks to a well-balanced combination of high-tensile steel of different grades.

In addition, a new type of side-impact airbag - first seen in the all-new S80 model - refines Volvo's patented SIPS (Side Impact Protection System) into an even more effective safety system. The new side-impact airbags have two separate chambers, one for the hip section and one for the chest. Since the hips can withstand greater force than the chest, the lower chamber inflates with up to five times more pressure than the upper section. The side-impact airbags interact with the inflatable curtains and the body's network of safety beams to provide the most effective protection.

Volvo's system for avoiding neck injuries - WHIPS (Whiplash Protection System) - is one of the most effective on the market. In the event of a rear-end collision, the front seat backrest accompanies the passenger's initial body movement and dampens the incoming force rather like one's hand does when catching a ball. The all-new XC70 features the next generation of WHIPS mechanism, further developed to ensure that the damping motion is gentle and to provide good contact between the head and head restraint throughout the impact sequence.

With the high ground clearance of the all-new XC70, there are relatively high-positioned bumpers which may create a greater risk of damage to an oncoming passenger car with lower positioned bumpers. To reduce the risk of injury in a collision, the front suspension sub-frame is supplemented with a lower cross-member positioned at the height of the bumper in a conventional

car. This lower beam is integrated into the XC70's structure and is neatly concealed behind the spoiler. In a collision, the lower cross-member is aimed to strike the oncoming car's protective structure, activating its crumple zone as intended so the occupants can be given the maximum level of protection.

Protection for pedestrians and cyclists has also been further developed in the all-new XC70. The front has been given energy-absorbing properties, not least with a generously dimensioned soft structure in front of the bumper that helps reduce the risk of leg injuries. In addition, the spoiler's lower edge has been reinforced and moved forward, almost on a level with the bumper. The aim is that the area of contact on pedestrians or cyclists should be distributed across a larger area, thus helping to further reduce the risk of injury. The hood lines are raised and a honeycomb structure underneath spreads the load in the event of an impact, thus helping to absorb the energy and reduce the risk of personal injury.

Further protecting the driver and passengers inside the all-new XC70 is the collapsible steering column which, upon deformation, moves horizontally for the best possible interaction with the airbag; pedals that functionally limit the risk of penetration into the passenger compartment; airbags with two-stage function; seat belt pre-tensioners and belt reminders for all five seats; force limiters for the front seat belts; reinforced, transversely fitted tubular beam between the A-posts; strong SIPS tubes in the seats and a sturdy magnesium bracket in the middle of the vehicle; diagonally fitted beams of Ultra High Strength Steel in the doors; and, as with all Volvo cars, a compact transversely mounted engine.

"The best way to protect the vehicle's occupants is to avoid accidents," says Skogsmo. "That's why we've developed a number of advanced driving and support systems that interact intelligently to assist the driver in difficult situations, yet without taking over the driving itself or taking over responsibility for safe progress. The task is to assist the driver to take the right decisions, by alerting him or her and in various ways indicating how best to get out of the situation."

In order to help the driver stay a safe distance behind the vehicle in front, Volvo has developed Adaptive Cruise Control (ACC). This system should be primarily regarded as a comfort function but it does also contribute to more controlled progress if the rhythm of traffic is uneven.

The technology also is used as a basis for several of Volvo's advanced driving and support systems. Using a radar sensor, the adaptive cruise control continually monitors the gap to the vehicles in front and automatically adjusts the vehicle's speed to ensure that this gap does not shrink too much. The driver activates the cruise control by setting a desired speed between 18 and 124 mph and then selecting the minimum time gap to the vehicles in front. There are five different time gaps to choose between.

Rear-end collisions are a common type of accident. In many of these cases, the reason is that the driver is distracted and fails to respond in time. Against this background, Volvo has developed a system known as Collision Warning with Brake Support. The area in front of the vehicle is continuously monitored with the help of a radar sensor. If the all-new XC70 approaches another vehicle from the rear and the driver does not react, a red warning light flashes in the windscreen. At the same time, a warning buzzer sounds. In certain situations, this is enough for the driver to respond and take action to avoid the danger.

If the risk of a collision increases despite the warning, the brake support system is activated. In order to shorten the reaction time, the brakes are prepared for action by automatic application of the pads against the discs. In addition, brake pressure is amplified hydraulically which results in good braking effect even if the driver does not press particularly hard on the brake pedal.

"If the road speed is not too high, brake support helps reduce the consequences of a collision," says Skogsmo. "However, it is always the driver's reactions that are crucial to the outcome."

To help drivers maintain better control over the driving situation, the all-new XC70 is equipped with BLIS (Blind Spot Information System). Using cameras integrated into the door mirrors, BLIS registers whether another vehicle is in the blind spot offset to the rear. If there is a vehicle there, a light illuminates at the relevant mirror to alert the driver and increase his or her chance of making the appropriate decision.

The all-new XC70 has a highly advanced braking system with a number of functions that interact to ensure the shortest possible braking distance under all circumstances. They include Hydraulic Brake Assist (HBA), a new generation of Volvo's emergency braking support system that utilizes

both vacuum and hydraulic reinforcement to help the driver brake in the shortest possible distance in a panic situation; Optimized Hydraulic Brakes (OHB) to reinforce deceleration under hard braking by compensating for low vacuum pressure in the brake servo; Ready Alert Brakes (RAB) that can predict rapid braking and apply the brake pads against the discs even before the driver has time to press the brake pedal; and Fading Brake Support (FBS) that utilizes hydraulics to gradually build up braking pressure during long hard braking, thus helping cut the risk of brake fade and maintaining pedal feel.

In order to contribute to the best possible visibility during night-time driving on curving and twisting roads, the all-new XC70 can be equipped with Active Bending lights (ABL) – swiveling headlights that follow the sweeps and bends of the road. A mini-processor is used to calculate and analyze a number of parameters and optimize the light beam to suit the situation. The headlights can be swiveled up to 15 degrees in either direction. In order to save wear and tear on the system, it is automatically deactivated in daylight conditions.

In an increasingly insecure world, control is important even when the vehicle is parked. As a matter of theft-prevention and avoiding situations that may involve personal risks, Volvo's Personal Car Communicator (PCC) provides information aimed at security and safety. This advanced pocket-sized control center can tell the owner if the vehicle is locked or unlocked, and if the alarm has been triggered. In the case of the alarm having been triggered, PCC will indicate whether someone is inside the vehicle via a highly sensitive heartbeat sensor and an advanced calculation process.

Furthering security, the all-new XC70 can be specified with laminated glass in all the windows, including the rear side windows and the tailgate, making break-ins more difficult. This means that the luggage compartment also gets effective protection. The rear storage system under the luggage compartment floor has a capacity of more than 1.62 cubic feet (without spare wheel), and it is now lockable. It is locked automatically and conveniently when the tailgate is closed and locked.

The all-new XC70 packages both security and convenience with its optional power-operated tailgate. With the press a button on the remote control, complete access to the storage area occurs courtesy of the vehicle's hydraulics. In order to reduce the risk of accidentally squashing one's hands or fingers, it is closed from the panel on the tailgate itself. In addition, a dual-stage safety function is integrated into the tailgate, involving a pinch protection molding on each side and an emergency stop. The hydraulic system is equipped with a force sensor, stopping immediately if it senses an obstruction during operation.

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