

Press Release

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Studies in four-point seat belts and child seating

Providing all the passengers with the best possible protection in an accident is one of the cornerstones of the Volvo Cars and Ford Motor Company safety philosophy. In this context, the Volvo Safety Concept Car (SCC) has several new features that may find their way into forthcoming car models.

Key new features:

- V4 and X4 seat belt design
- Rear seats designed for child
- Pedestrian protection with external air bag

To help hold the occupants of the car in place even more securely in the event of a rollover accident or other multi-sequential crash scenarios, different types of innovative safety belt design are being tested. Since the three-point safety belt is already the single most important safety-enhancing feature in a car, it is important to assess whether other types of restraining device, such as the four-point harness, would provide an even higher safety level.

The Volvo SCC is therefore fitted with two different prototype four-point safety harnesses that engineers at the Ford Research Laboratory, Volvo Cars and TRW are currently evaluating and developing jointly: a crossover harness (CrissCross - X4) and a brace-type system (Center Buckle - V4). Both promote even better belt geometry for improved occupant protection.

- The X4 CrissCross harness is a conventional three-point safety belt that is supplemented with a retractable diagonal chest belt that goes from the shoulder to the hip. The regular three-point safety belt is put on first, followed by the additional chest belt. Since the system forms a cross-brace across the chest, the shoulders are located securely so that the occupant is kept more firmly in place if the car rolls over or is hit from the side. The cross-brace across the seat occupant's chest also helps distribute incoming crash forces more uniformly across the chest cage.
- The Center Buckle V4 belt is similar to the harness used in racing cars and for child seats. The belt retracts into the seat frame when not in use. The upper attachment points are located near the seat occupant's shoulders and the lower anchorage's are on the left and right of the hips. The belt, which is V-shaped, is worn over the shoulders like backpack straps once the occupant is in the seat and is fastened conveniently with a buckle across the pelvis and hips. The belt secures the shoulders to effectively hold the body in position in a rollover accident.

Vertically adjustable rear seat for children

Child comfort in the rear seat is a matter of vital safety. One precondition, which dictates whether child safety equipment is actually used, is that it must be comfortable and convenient - for children and parents alike. The child-safety equipment in the Volvo SCC focuses as much on comfort and ease of use as it does on providing crash safety.

Today's generation of Volvo rear seats are designed for adults and modified to suit children. In the SCC, Volvo Cars approaches the matter from the opposite direction and presents a rear seat that is designed first and foremost for children.

Both the seats in the rear of the SCC have seat cushions that can be varied vertically. This is done

so that the rear seat can be altered to suit all the children who have outgrown rearward-facing child seats. The seat cushion height is adjusted steplessly to match the child's height exactly and with due attention to belt geometry, comfort and forward visibility.

Protection system for vulnerable road users

The design of a car has a crucial effect on the severity of injuries that a pedestrian or cyclist might suffer in a collision.

An external airbag at the joint between the hood and windshield helps prevent the victim's head from striking the windshield glass and the A-pillars. A sensor at the front of the hood activates the airbag and it remains inflated for a few seconds to extend the protective effect.

The front of the Volvo SCC has a rounded design without any sharp edges. This is done to reduce the force of impact. The hood itself has a crumple zone featuring a large empty space between engine and hood panel - so that the pedestrian has less likelihood of hitting any solid components just beneath the hood.

Contact:

Daniel Johnston
Volvo Cars of North America
1 800 970 0888

Maria Sheler-Edwards
Ford Motor Company
1 313 248 4979

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