

SAFETY

In brief:

Volvo's commitment to safety is legendary, and the Volvo S80 features a comprehensive safety package designed to protect occupants in a wide variety of accidents.

The SIPS (Side Impact Protection System) includes side and Inflatable Curtain (IC) airbags to protect both front and rear occupants. In a frontal collision, 'intelligent' airbags work in unison with the safety belts and pretensioners, while the WHIPS (Whiplash Protection System) reduces the risk of back and neck injuries by 50 per cent in the event of a rear impact. All three passengers in the rear seats benefit from three-point seatbelts with pretensioners.

The success of these systems is reflected in a top score (when tested) four star EuroNCAP rating and the Volvo S80 achieved a maximum 100% score in the side impact test.

In full:

- Top score (when tested) four star EuroNCAP rating, 100% score for side impact.
- SIPS (Side Impact Protection System) with side airbags and IC (Inflatable Curtain) airbags for front and rear passengers.
- Twin front 'intelligent' airbags.
- Five three-point seatbelts with pre-tensioners. Load limiters for front occupants.
- WHIPS (Whiplash Protection System) for front seats.
- DSTC (Dynamic Stability and Traction Control) standard on all models
- ISOFIX mounting points for rear seats
- Passenger airbag cut-off switch now available (optional)
- Extensively crash tested in Volvo award winning Safety Centre in Sweden

Volvo's commitment to safety is as old as the company itself. As Assar Gabrielsson, one of the founders of Volvo, declared: "Cars are driven by people. The guiding principle behind everything we make at Volvo therefore, is – and must remain – safety."

It's a philosophy that has been demonstrated to fine effect in the Volvo S80, which features a comprehensive safety package designed to protect occupants in a wide range of accidents. The success of these measures was recognised in the EuroNCAP crash tests where the Volvo

S80 achieved a maximum four star rating (when tested) and a maximum 100% score in the side impact tests. EuroNCAP's testers concluded: "This large Volvo is very safe and gave a good all round performance, especially in side impact where the driver's head is well protected by a drop-down curtain airbag."

SIPS

The key to this impressive performance is the Side Impact Protection System (SIPS). A large part of the force of a collision that would otherwise penetrate through the side of the car is dissipated by SIPS via beams, pillars, the floor, the roof and other parts of the car body.

The side impact airbags then play an important role in protecting the chests of the occupants. They are fitted in the outer edge of the front seats, not in the door, which ensures that they're always securely positioned next to the occupant's side, whatever the position or angle of the seat.

IC

Further protection is provided by the IC (Inflatable Curtain) airbag, which sits in the headlining and protects both front and rear occupants. In the event of a side impact, IC inflates in a few thousandths of a second and then remains inflated for about three seconds in order to provide maximum protection throughout complex collision sequences.

Intelligent Airbags

The two front airbags are 'intelligent' and deploy in two stages according to the severity of the accident, alleviating the risk of facial injuries caused by the occupant's faces impacting with the airbag. They are complemented by three-point safety belts with tensioners, which are fitted for all five occupants. The tensioners activate within a few thousandths of a second in the event of a collision and tighten the belt for maximum protection. The front seat safety belts then release a little so that the driver and passenger are cushioned by the airbags in a controlled manner.

WHIPS

Volvo's WHIPS (Whiplash Protection System) made its debut in the S80 in 1998 and is now fitted across the Volvo range to help prevent neck and back injuries in a rear impact.

Volvo was the first car manufacturer to improve driver comfort by studying ergonomics and introducing adjustable lumbar support backs in 1964 and, after nearly 40 years of continuous research, crash testing and innovation, Volvo is now proud to claim its seats can reduce whiplash injuries by 50 per cent.

Seventy per cent of personal injuries in car accidents include whiplash, but Volvo's research shows this risk can be reduced by half with its WHIPS.

Volvo's WHIPS seats significantly reduce the force on the spine and head by absorbing energy from the impact and offering superior support thanks to a combination of an innovative moving support mechanism in the seat back, and a fixed head restraint design permanently at the right height and position.

In practice, the WHIPS seat mechanism bends backward with the occupant's body - first in parallel and then in a short reclining movement.

Volvo's traffic accident research team compared real-life whiplash injuries from Volvos with and without WHIPS, and the results point to a clear conclusion: WHIPS reduced short term and long term (of more than a year) injuries by 33 per cent and 54 per cent respectively, with whiplash injuries in women these were reduced by as much as 50 per cent and 75 per cent, respectively.

All Volvo car head restraints were placed in the highest category in the 'New Car Whiplash Rating' published by the Thatcham Motor Insurance Repair Research Centre. Static tests were carried out to measure the design and position of head restraints in 500 car models.

"We are very proud of coming out so well," says Volvo Car Corporation's safety engineer and whiplash specialist, Lotta Jakobsson. "Volvo has long understood how important head restraints are, and led the industry in introducing them.

"However, static evaluations of head restraints only show a part of what happens in real life accidents. That is why Volvo has invested over a decade's research into crash testing and analysis of real accidents, and introduced its Whiplash Protection System - 'WHIPS'.

In October 2002, the United States Insurance Institute for Highway Safety (IIHS) compared car seats with and without whiplash protection, and achieved an average injury reduction of 49 per cent.

Like Volvo, the Swedish insurance company, Folksam, also compared real-life accidents, and showed that WHIPS seats reduced whiplash injury by 40 per cent. Folksam also crash tested seats from different 2003 cars and Volvo seats were considered the best, with an overall

whiplash injury reduction in the region of 50 per cent possible, if all cars had seats as good as Volvo.

Water Repellent Glass (WRG)

Another aid to improve driver visibility is Water Repellent Glass (WRG) that Volvo has now introduced as standard on door mirrors and is also available for (laminated) side windows.

On the side windows the WRG gathers water as pearls of moisture which easily blow away by the wind speed, leaving a dry glass panel with unobstructed visibility. Since it is more difficult for dirt to fasten on dry surfaces, it is also easier to keep the windows cleaner. The WRG treatment requires that the windows be laminated.

On the WRG door mirrors, a different method is used. Here, the water is distributed evenly across the entire glass surface so that it is possible to see through the water. In certain weather conditions, the function can be speeded up if the mirror heater elements are activated.

Child Safety

A passenger airbag cut-off switch is now available to enable a child seat to be carried in the front of the car, while in the rear Volvo has also paid special attention to child safety with the option of an integrated booster cushion built into the rear centre armrest designed for children aged between 4 and 10.

In addition, an integrated child seat in the rear, centre armrest is also available as part of the optional 'Family Pack'.