VOLVO S60

SAFETY

Volvo's commitment to safety is as old as the company itself, and the Volvo S60 has been extensively crash tested in the award winning Volvo Safety Centre in Gothenburg, Sweden and features a comprehensive safety package designed to protect all occupants in a wide variety of accidents.

The SIPS (Side Impact Protection System) includes side and Inflatable Curtain (IC) airbags that protect both front and rear occupants.

In a frontal collision, 'intelligent' airbags work in unison with the safety belts, while the WHIPS (Whiplash Protection System) reduces the risk of back and neck injuries in the event of a rear impact.

A passenger airbag cut-off switch is now available to enable child seats to be carried in the front seats, as is an integrated child seat in the rear armrest. In the rear of the car, all three passengers benefit from three-point seatbelts with pre-tensioners and hear restraints, plus there are ISOFIX mounting points for child seats.

To improve the driver's vision, Volvo has introduced water repellent glass (WRG) available for door mirrors and (laminated) side windows.

In addition, Volvo also has the option of an innovative 'BLIS' (Blind Spot Information System) safety system using digital camera technology in the door mirrors to detect and alert the driver if there are any vehicles alongside the car.

- SIPS (Side Impact Protection System) with side airbags and an IC (Inflatable Curtain) airbags to protect front and rear passengers
- Twin front 'intelligent' airbags
- Five three-point seatbelts with pre-tensioners and head restraints. Load limiters for front occupants
- WHIPS (Whiplash Protection System) standard for front seats
- WRG (Water Repellent Glass) for door mirrors (standard on some models) and (laminated) side windows (optional)
- BLIS (Blind Spot Information System) available (optional)
- 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

- Top score (when tested) four star EuroNCAP crash test rating, 100% score for side impact

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 S60, 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 S60 achieved a four star rating and a maximum 100% score in the side impact tests. EuroNCAP's testers concluded: "The S60 provides a structurally stable safety cage and is particularly good at protecting its occupants in a side impact, deploying airbags to protect their heads and bodies."

The S60 tops its league in the annual Consumers Association safety ratings and is always at or near the top in independent tests carried out in the US and Europe.

Side Impact Protection System

One of the keys to the Volvo S60's impressive crash protection is the Volvo 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 front seats will actually move inwards in the event of a heavy side impact to keep the occupant away from the intrusion.

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.

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 pre-tensioners, which are

fitted for all five occupants. The pre-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.

Whiplash Protection

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 'WHIPS' – the Volvo whiplash protection system, first introduced at the launch of the Volvo S80 in 1998, and is now standard in all Volvo front seats.

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.

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, two integrated booster cushions are also available for the rear seats.

Blind Spot Information System

Volvo's most recent safety innovation is BLIS – Blind Spot Information System – to improve the driver's visibility. Despite large window panels and effective door mirrors, there is always the risk of offset rear blind spots while driving. This can increase the risk of accidents, especially when changing lanes or overtaking.

BLIS is a digital camera-based monitoring system installed on each door mirror that keeps a watchful eye on the area alongside and offset rear behind the car. It takes 25 pictures each second and by comparing the pictures taken, the system can register when a vehicle is moving within the BLIS zone - which measures 9.5 metres long by 3 metres wide on either side of the car – and illuminates a warning lamp on the appropriate door mirror to alert the driver. The system alerts the driver both to cars approaching from behind and cars that have currently been overtaken. This information gives the driver added scope for making the right decisions in such situations.

BLIS is programmed to identify cars as well as motorcycles, in daylight as well as at night. Since BLIS is camera-based, however, it has the same limitations as the human eye does.

This means the system will not function in conditions of poor visibility, for instance in fog or flying snow. In such a case, the driver receives a message that BLIS is not in action. It is also configured not to react to parked cars, road barriers, lampposts and other static objects.

The system is active at all speeds above 10 km/h. It reacts to vehicles that are driven a maximum of 20 km/h slower and a maximum of 70 km/h faster than the car itself. BLIS can be switched off via a button in the centre console and is available as an option from the end of 2004.

Water Repellent Glass (WRG)

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