

2006 model year

VOLVO XC90

OVERVIEW

In brief:

Stylish and modern, with the flexibility of up to seven forward facing seats, powerful engines and comprehensive safety features including a Roll Over Protection System (ROPS), the Volvo XC90 is not only highly desirable, but a next generation Sports Utility Vehicle (SUV) that has taken a step ahead of other key premium brand rivals.

The XC90 is Volvo's first SUV, and one that has made a big impact with its innovative interior, comprehensive standard specification, competitive pricing, and advanced safety standards. More than 2,200 customers placed their XC90 orders before it even arrived in UK showrooms. Volvo increased production by nearly 50 per cent to nearly 90,000 per annum to meet the global demand for the XC90, which has quickly become Volvo's best selling model.

The XC90 has won many prestigious SUV awards, both in the USA, homeland of the SUV, and the UK, including *What Car?* magazine's 'Best 4x4' and *The Sun* newspaper's 'SUV of the Year'.

In Full:

- Flagship of Volvo's XC range (XC70 and XC90) with 218 mm of ground clearance.
- Flexible and innovative interior with up to seven, individual forward facing seats.
- Car-like driveability with Electronic Haldex AWD with Instant Traction™.
- S, SE and Executive trim levels, plus Luxury 'Inscription' interiors available.
- Innovative safety: Roll Over Protection System and Roll Stability Control.
- Fully crash tested at the Volvo Safety Centre – including compatibility with smaller cars.
- Superior Volvo safety levels, inc. BLIS, WHIPS, SIPS, IC, DSTC, EBD etc.
- Higher standard specifications than rival SUVs from other premium brands.
- High Performance and Premium Sound audio with Dolby Pro Logic II surround sound™.
- Headphone sockets available for rear passengers to listen to different music sources.
- Turbo engines: 272bhp T6 or 210bhp 2.5T petrol engines, and new 185bhp D5 diesel.
- Only 87mm longer than a Volvo V70 estate.
- Healthier Oeko-tex standard compliant, emissions-free interior.
- Produced in Volvo's Torslanda plant in Gothenburg, Sweden.

The XC90 has proved an instant success since its launch in 2003, and has rapidly become Volvo's best selling model, globally and in the UK, with total sales of over 84,000 in 2004, of which over 7,000 came to British customers.

With its modern design, powerful diesel and petrol engines, Roll Over Protection System (ROPS) and seven-seat capability, the Volvo XC90 is not only stylish and desirable – but a next generation Sport Utility Vehicle (SUV) that takes it a step ahead of other key premium brand rivals.

The XC90 has made a big impact on the press and public alike, with its innovative interior, comprehensive standard specification, competitive pricing, and advanced safety features – with over 2,200 customers placing orders before it arrived in showrooms. It has become Volvo's best selling model, and XC90 production at Volvo's Torslanda plant in Sweden has increased by nearly 50 per cent over initial plans to nearly 90,000 per annum.

The XC90 has won prestigious SUV awards over in USA - the homeland of the SUV - while here in the UK its many awards include *What Car?* Magazine's 'Best 4x4', and *The Sun* newspaper's 'SUV of the Year'.

Design concept

Inside and out, the XC90 showcases great design:

"Masculine, but not macho; muscular, but not aggressive," is how Peter Horbury, former Vice President and Chief Designer at Volvo Cars describes the XC90. "Nobody should be in any doubt that this is a modern Volvo."

The interior design is characterised by airiness, space and quality with a dashboard set low for a car-like driving experience and using typically simple Scandinavian style.

Typical of the XC90's ingenuity and flexibility is the removable armrest between the front seats to offer more legroom for the passenger in the centre seat in the second row of seats. But there's more: That centre seat also has an integrated booster cushion and slides forward to bring a child closer to the passengers in the front seats.

In fact, all seven seats are individual with head restraints and seatbelt pretensioners, while, unlike some rivals, the XC90's sixth and seventh seats don't take up valuable loadspace or have to be clumsily removed; instead they simply and cleverly fold away individually under the boot floor when not required.

Yet, despite all these features and ingenuity, the Volvo XC90 is just 87mm longer than a Volvo V70 estate – and smaller than the new Audi A6 saloon!

Driving Dynamics

The XC90 is designed for all types of road surfaces and has intelligent Haldex, electronically controlled all-wheel drive with Instant Traction™ with a choice of powerful petrol or diesel turbo engines:

- **T6**: transverse 6-cylinder, 24 valve, 2.9-litre petrol engine with twin turbochargers. 272bhp and 380 Nm of torque from 1,800-5,000 rpm.
- **2.5T**: transverse, 5-cylinder, 2.5-litre turbo petrol engine. 210bhp and 320Nm of torque at 1,500-4,500 rpm.
- **New D5**: transverse 5-cylinder, 2.4-litre common rail turbodiesel engine with standard DPF (diesel particulate filter) with oxidising coating. Now with 185bhp and 400 Nm of torque from 2,000-2,750 rpm. Euro IV compliant.

Engine	T6	2.5T	D5 (Euro IV)
Type	2922cc transverse 6 cyl/24v turbo	2521cc transverse 5 cyl/20v turbo	2401cc transverse 5 cyl/20v turbo
Fuel	Petrol	Petrol	Diesel
Power	272 bhp	210 bhp	185 bhp
Torque Nm at rpm	380 Nm at 1,800 – 5,000 rpm	320 Nm at 1,500 - 4,500 rpm	400 Nm at 2,000 – 2,750 rpm
0-62mph manual/auto	n/a 9.3 geartronic	9.5 manual 9.9 geartronic	10.9 manual 11.5 geartronic
Top speed manual/auto	n/a 130 geartronic	130 manual 130 geartronic	121 manual 118 geartronic
CO2 g/km	n/a 304 geartronic	269 manual 282 geartronic	219 manual 239 geartronic
MPG man/auto			
Urban	-/15.4	18.8/17.4	26.4/23.7
Extra urban	-/29.7	31.7/30.4	40.9/38.2
Combined	-/22.2	25.2/23.9	34.0/31.4

Service intervals for the T6 are 12,500 miles/12 months, while the 2.5T and the new D5 engine have both now increased from 12,000 to 18,000 miles or 12 months (whichever is sooner).

The XC90 is as easy, responsive and rewarding to drive as any regular Volvo saloon or estate model. Its torsionally rigid body, transverse engines and all-wheel drive combine to give an almost even weight distribution (53 per cent front, 47 per cent rear).

The front MacPherson suspension, together with the ZF steering gear, promotes increased precision and sharp response. Speed Sensitive Steering is standard on T6 petrol models and optional for the 2.5T and D5 diesel.

The XC90's braking system is designed and tested to help stop the vehicle safely, even when it is fully loaded with seven people and luggage.

Quality and equipment

The XC90 is available with S, SE and Executive trim levels, all offering a high standard level of specifications compared to most other premium brand rivals.

A high level of luxury equipment is fitted as standard to every model, including Electronic Climate Control with Volvo's Air Quality System (AQS) and pollen and active carbon filters, a high performance or premium sound audio system with CD and at least 8 speakers, alloy wheels, rear park assist, information centre, RSC (Roll Stability Control) and DSTC (Dynamic Stability and Traction Control).

The standard specification of the 'S' model includes:

- Alarm with immobiliser.
- ECC (Electronic Climate Control) with AQS (Air Quality System) and pollen filter.
- Information system.
- Steering wheel remote audio controls.
- High Performance sound system with CD, 4x40w amplifier and 8 speakers.
- Key-integrated remote control central locking with deadlocking system.
- 17in alloy wheels.
- Piano black trim.
- Front fog lights.
- DSTC (Dynamic Stability and Traction Control) with EBA
- Siljan textile/vinyl upholstery.
- Electronic all wheel drive with Instant Traction™.
- Load compensating suspension.

Upgrading to the SE specification offers:

- Electric folding door mirrors with water repellent glass and ground lights.
- Electric driver's seat (with memory) and door mirror memory
- Leather-faced upholstery.
- High-performance audio system with 6 x CD, 4x40w amplifier and 8 speakers.
- 18in alloy wheels.
- Rain sensor – automatic windscreen wiper activation.
- Auto-dimming rear view mirror.
- Wood or aluminium trim.

SE models can be upgraded with the bespoke Volvo 'Inscription'™, launched for the 2006 model year, which opens a whole new colourful world of interior sophistication with a collection of bespoke, exclusively designed interiors. Soft 'semi Aniline' leather upholstery, with ribbed inserts on the seats, comes from the finest hides and is available in a kaleidoscope of eight exciting colour combinations for all three rows of seats, and door panels. It also includes a soft leather sports steering wheel and Nubuck trimmed floor mats with contrasting piping. Inscription™ black walnut wood trim is also exclusively available with this option.

Optional rear headphone sockets allow the passengers in the second and third rows of seats to listen to a CD, radio or mini disc simultaneously. In addition, a choice of DVD-based rear seat entertainment systems is also available.

A comprehensive range of optional items includes Bi-Xenon headlights, heated seats, integrated telephone and Volvo's RTI satellite navigation system now with TMC (Traffic Message Channel) that warns of traffic problems ahead and can even re-route the driver, if required.

The Executive represents the ultimate XC90 with the following additional specification:

- Executive soft leather upholstery and door inserts with contrast piping.
- Executive soft leather extra padded front door armrests.
- RTI satellite navigation system with RDS-TMC and Europe DVD maps.
- Integrated GSM telephone.
- Premium sound audio system with Dolby Pro Logic II digital surround sound™.
- Mini disc player and sub woofer under load area floor.
- Rear seat headphone sockets.
- Refrigerator in front centre armrest.
- Executive Nubuck trimmed floor mats.

- 18in Split-rim alloy wheels.
- Bi-Xenon headlamps with cleaning system.
- Brushed aluminium roof rails.
- Metallic paint.
- Colour co-ordinated door handles, door mirrors and rubbing strips.
- Unique matt silver grille.
- Rear skid plate.
- Electric passenger seat.
- Heated front seats.
- Walnut wood trim in door panels, centre console and gear lever knob.

Safety

"Cars are driven by people. The guiding principle behind everything we make at Volvo, therefore, is – and must remain – safety," said Assar Gabrielsson and Gustaf Larson, founders of Volvo, in the early 1930s.

Volvo's founders were the first to take a clear and unambiguous approach to the issue of safety. The company's safety philosophy is based on a holistic approach.

In order to optimise the XC90's safety and, in particular, reduce the risk of a roll-over, Volvo has developed a Roll Over Protection System with new Roll Stability Control (RSC) technology. This uses a gyro-sensor to register the car's roll speed and roll angle to instantly calculate the terminal angle and risk of a roll-over, and automatically activate the DSTC (Dynamic Stability and Traction Control) anti-skid system, if required, to help the driver maintain control.

For added protection, Volvo has also reinforced the XC90's roof structure with extremely tough Boron steel, which is four to five times stronger than normal steel. In addition, the side Inflatable Curtain (IC) protects all three rows of seats and has been designed to stay inflated longer in case of multiple roll-overs, and to help keep occupants inside the vehicle. As you would expect, the XC90 scores highly in a variety of international safety ratings, including pedestrian protection.

In addition, an integrated booster seat is standard in the centre seat of the middle row, plus Volvo offers a passenger airbag cut-off switch to enable child seats to be carried in the front of the car, and ISOFIX mounting points.

In 2005, to improve the driver's visibility and help avoid accidents, Volvo has introduced water repellent glass for door mirrors (standard on some models) and side windows (optional).

Volvo has also considered the XC90's crash compatibility with other, smaller cars, and designed a lower cross-member - concealed behind the front spoiler - at the height of a bumper in a conventional car to impact with and activate its crumple zones as intended.

Environment

Naturally, Volvo has not forgotten the XC90's environmental credentials, either, and ensured its fuel economy and low emissions are class leading.

Volvo's 'clean inside and out' environmental programme reflects its continuing commitment to the environment. Its plants are some of the automotive world's cleanest factories, and 85 per cent of each car can be recycled, plus every new Volvo is backed by an EPI (Environmental Product Information) which is available at www.volvocars.com/epi. Volvo also produces an annual Corporate Citizenship report, available on www.volvocars.com/citizenship.

Like all Volvos, the XC90's interior is free from allergy inducing emissions, and an active carbon filter ensures dust and exhaust particles do not enter the cabin, while an Air Quality System (AQS) shuts down the air input if outside air is too dirty.

Volvo's PremAir® - a special catalytic coating on the radiator which converts up to 75 per cent of the harmful ground-level ozone passing through it into pure oxygen, is available with the XC90 engine range. In addition, they already meet the stringent EU 2005 emissions requirements.

DESIGN CONCEPT

In brief:

"Masculine, but not macho; muscular, but not aggressive," is how Peter Horbury, former Vice President and Chief Designer at Volvo Car Corporation, described the XC90's exterior design at its launch.

"Nobody should be in any doubt that this is a modern Volvo," says Horbury.

The exterior design incorporates both the latest and traditional Volvo design features:

- **V-shaped bonnet**
- **Broad, pronounced, rounded shoulders**
- **Characteristic tail lamps**

The muscularity of the XC90 is complemented by angled corners front and rear, a gently sloping (split) tailgate and a shorter roof section to promote a smooth, non-aggressive impression. It also helps the vehicle to look more compact and desirable.

A 'cockpit forward design' allows the windscreen to be positioned further forward and to be more steeply raked than those of other SUVs, yet also maximises interior space so that the XC90 can seat seven – in a body just 87mm longer than a V70.

In full:

"Masculine, but not macho; muscular, but not aggressive," is how Peter Horbury, the former Vice President and Chief Designer at Volvo Car Corporation described the XC90's exterior design at its launch.

"Nobody should be in any doubt that this is a modern Volvo," says Peter Horbury.

The XC90's muscular stance incorporates both the latest and traditional Volvo features:

- V-shaped bonnet
- Broad, pronounced rounded shoulders
- Characteristic tail lamps

The muscularity of the XC90 is matched by rounded corners front and rear, a gently sloping (split) tailgate and shorter roof section to promote a smoother, non-aggressive impression and helping the vehicle to look more compact and desirable.

The XC90's "cockpit forward design" enables the passenger compartment to be as far forward as possible with a more steeply raked windscreen than in most other SUVs.

This has allowed Volvo to make a seven-seat SUV yet still within modest overall body dimensions: The Volvo XC90 is 4.80 metres long, just 87 mm longer than a Volvo V70.

The XC90's tailgate is gently sloping rather than vertical to clearly state this is not regular Volvo estate car. This also means the shorter roofline helps the vehicle appear smaller and gives it a modern, sporty stance.

For added convenience, the tailgate is split so the lower section can be used as a seat or table, and strong enough to be stood on if loading items onto the roof, while the upper section is not too large, heavy or high when opened.

For customers who want some added style for their XC90, there are some specific options which may interest, such as:

- dark tinted rear windows
- Bi-Xenon headlights
- Aluminium running boards
- Rear skidplate
- Roof protection ribs. (Seven rubber ribs mounted lengthwise on the roof)

DRIVING DYNAMICS

ENGINES

In brief:

The XC90 is available with a choice of powerful petrol and diesel engines producing plenty of power and, especially, torque from low engine speeds and through the mid-range, for maximum flexibility and driving pleasure.

Volvo has also ensured that the XC90 offers class leading emissions and fuel economy. The new D5 (185bhp) diesel engine has received extensive modifications for 2006 to enhance power delivery, refinement, performance and emissions. A DPF (diesel particulate filter) with oxidising coating is now standard and the engine is Euro IV compliant.

In Full:

The XC90 is available with a choice of three powerful, turbo engines: one diesel and two petrol:

- **T6:** transverse 6-cylinder, 24 valve, 2.9-litre petrol engine with twin turbochargers. 272bhp and 380 Nm of torque from 1,800-5,000 rpm.
- **2.5T:** transverse, 5-cylinder, 2.5-litre turbo petrol engine. 210bhp and 320Nm of torque at 1,500-4,500 rpm.
- **New D5:** transverse 5-cylinder, 2.4-litre common rail turbodiesel engine with standard DPF (diesel particulate filter) with oxidising coating. Now with 185bhp and 400 Nm of torque from 2,000-2,750 rpm. Euro IV compliant.

All engines produce plenty of power and, especially, torque from low engine speeds and through the mid-range for maximum flexibility and driving pleasure.

Volvo has also ensured the XC90 offers class leading emissions and fuel economy. The petrol T6 achieves up to 29.4mpg on the extra urban cycle with emissions of 309 g/km, while the D5 diesel registers 37.7mpg on the same cycle, with emissions of 242 g/km.

Both engines come from Volvo's car range, but they have been re-profiled to suit XC90. In particular, the petrol engine produces more torque from lower down the rev range.

Engine	T6	2.5T	D5 (Euro IV)
Type	2922cc transverse 6 cyl/24v turbo	2521cc transverse 5 cyl/20v turbo	2401cc transverse 5cyl/20v turbo
Fuel	Petrol	Petrol	Diesel
Power	272 bhp	210 bhp	185 bhp
Torque (Nm at rpm)	380 Nm at 1,800-5,000 rpm	320 Nm at 1,500-4,500 rpm	400 Nm at 2,000-2,750 rpm
0-62mph manual/auto	n/a 9.3 g'tronic	9.5 manual 9.9 g'tronic	10.9 manual 11.5 g'tronic
Top Speed Manual/auto	n/a 130 g'tronic	130 manual 130 g'tronic	121 manual 118 g'tronic
CO2 g/km	n/a 304 g'tronic	269 manual 282 g'tronic	219 manual 239 g'tronic
MPG man/auto			
<u>Urban</u>	-/15.4	18.8/17.7	26.4/23.7
<u>Extra urban</u>	-/29.7	31.7/30.4	40.9/38.2
<u>Combined</u>	-/22.2	25.2/23.9	34.0/31.4

T6

The six-cylinder engine is the same unit that powers Volvo's executive saloon, the S80 T6. It has a parallel turbo system – two small and highly efficient turbochargers installed alongside each other, driven by and feed three cylinders each. It is equipped with Continuously Variable Valve Timing (CVVT) on both the inlet and exhaust sides.

CVVT adjusts valve timing to suit the engine's current revs and load, and it thus exploits the engine more effectively, reducing fuel consumption and emissions. One of the most important results is that maximum torque is available from just 1800 rpm, compared with the 2000 revs/minute of the version in the S80.

2.5T

The five-cylinder 2.5-litre turbo petrol engine joined the XC90 range in 2004 to offer something between the T6 and D5. With a low-pressure turbo, the 2521cc unit offers 210bhp with 320Nm of torque available from 1,500 – 4,500 rpm.

It offers similar performance to the larger T6 engine, achieving 0-62mph in 9.5 seconds with emissions of 269 g/km.

D5

In the UK, the majority of Volvo XC90 customers choose the performance, economy and range of a diesel engine. And from the 2006 model year, Volvo now offers a new, extensively modified version of its refined 2.4-litre, five-cylinder turbodiesel: the D5. Power delivery, refinement, performance and emissions are all enhanced compared to the original D5. The D5 also has the option of a new, high torque six-speed Geartronic available.

The new D5 Euro IV engine received a significant power boost from 163bhp to 185bhp, now boasting the same levels of torque as the high performance S60 R, with 400 Nm available from just 2000 rpm. This flexible performance provides a potential top speed of 121 mph, with 0-62mph now possible in 10.9 seconds (compared to the previous D5's 12.2 seconds).

These enhancements have been achieved as a result of customer feedback and achieved by the following technological developments and extensive changes to performance characteristics of the D5 diesel engine - see following details:

- New electronic glow plug system for faster starting.
- More advanced injection process with 7 spray holes (instead of 5) in each injector for complete fuel atomisation and more efficient combustion and enhanced performance.

- New, larger and more efficient turbocharger with electronic control for faster/more precise control of charge pressure; plus larger compressor wheel, new cambered vanes for improved response at all speeds, and reduced turbo lag.
- Turbo centre housing now water cooled to provide continued cooling after engine stops.
- Improved flow of air/exhaust gases for optimal flow and reduced drop of pressure.
- More powerful engine management system with more sensors to improve regulation.
- EGR (Exhaust Gas Recirculation) system modified for improved flow/regulation.
- New, more effective cooling system for EGR.
- New, faster, electronically controlled throttle moves EGR gases/ regulates temp better.
- Air swirl in combustion chamber is now infinitely variable for more efficient combustion.
- Increased volume for combustion chambers, and consequently a lower compression ratio.
- Larger catalytic converter with oxygen sensor for more precise emissions control.
- NOx emissions reduced by 50%
- Maintenance free, coated diesel particulate filter (Euro IV compliant) automatically burns off soot particulates approximately every 500 miles.
- Low emissions superior to Euro IV control standard requirements:

	<u>Euro IV requirement</u>	<u>D5 (S60 example)</u>
CO (Carbon monoxide)	0.500 g/km	0.207 g/km (58% better than required)
NOx (nitrogen oxide)	0.250 g/km	0.187 g/km (25% better than required)
Particulates	0.025 g/km	0.001 g/km (96% better than required)

CHASSIS

In brief:

The Volvo XC90 uses a wide track and long wheelbase for maximum stability and a car-like driving experience.

The XC90 is designed for all types of roads, irrespective of the surface beneath the tyres or the weather conditions.

Even though the XC90 was never designed to be a serious off-roader, it has the versatile combination of electronically controlled Haldex AWD (all-wheel drive) with Instant Traction™ and generous ground clearance – 218mm – for when the going gets tough.

A high seating position gives the XC90 driver a feeling of safety and greater awareness of the road ahead, as well as the knowledge that he or she can control the car with the help of instant, well-weighted response from the chassis, engine and brakes.

In full:

- Car-like driving experience.
- Wide track and long wheelbase for maximum stability.

The Volvo XC90 is designed for all types of roads, irrespective of the surface beneath the tyres or the weather conditions.

Even though the XC90 was never designed to be a serious off-roader, it has the versatile combination of electronically controlled Haldex all-wheel drive with Instant Traction™ and a generous 218 mm of ground clearance for when the going gets tough.

A high seating position gives the XC90 driver a feeling of safety and greater awareness of the road ahead, with the knowledge that he or she can control the car with the help of instant, well-weighted response from the chassis, engine and brakes.

The chassis in the Volvo XC90 is designed to give the vehicle the same ride and roadholding characteristics as a passenger car.

In the XC90, however, the suspension is more substantial to handle heavier loads, the higher ground clearance and all-terrain possibilities.

The rear multi-link suspension is well isolated, with the dampers and springs attached directly to the subframe. This results in a quieter ride as road and transmission noise is largely filtered out before it reaches the bodywork.

A wide track (1634 mm front, 1624 mm rear) and a long wheelbase (2857 mm between the front and rear axles) make for exceptional stability, with the XC90 behaving consistently and dependably even on curving, twisting and uneven roads.

STEERING, BRAKES AND TRANSMISSION

In brief:

- **Speed Sensitive System (standard T6).**
- **Emergency Brake Assistance (EBA).**
- **Intelligent Haldex Electronic AWD with Instant Traction™.**

- DSTC and TRACS.
- 2.5T: 6-speed manual gearbox or 5-speed Geartronic.
- New D5: 6-speed manual gearbox or new high-torque 6-speed Geartronic.
- T6: 4-speed Geartronic transmission standard.

The XC90 is as easy, responsive and rewarding to drive as any regular Volvo saloon or estate model. Its torsionally rigid body, transverse engines and all-wheel drive combine to give an almost even weight distribution (53 per cent front, 47 per cent rear).

The front MacPherson suspension and new ZF steering gear promote increased precision and sharp response. Speed Sensitive Steering is standard on T6 petrol models and optional on other models.

The XC90's braking system is designed and tested to help stop the vehicle safely, even when it is fully loaded with seven people and luggage.

Geartronic transmission is standard on T6 models and optional on the rest of the range. The 2.5T engine is offered with a six-speed manual transmission as standard, or the option of a 5-speed Geartronic. The D5 has a six-speed manual unit, and for 2006 also has the option of a new six-speed Geartronic.

In full:

- Speed Sensitive System (standard T6).
- Emergency Brake Assistance (EBA).
- Intelligent Haldex Electronic AWD with Instant Traction™.
- DSTC and TRACS.
- 2.5T: 6-speed manual gearbox, or 5-speed Geartronic.
- New D5: 6-speed manual gearbox, or new high-torque 6-speed Geartronic.
- T6: 4-speed Geartronic transmission standard.

The XC90 is as easy, responsive and rewarding to drive as a regular Volvo saloon or estate model. Its torsionally rigid body is designed with transverse engines and all-wheel drive creates almost even weight distribution (53 per cent front, 47 per cent rear).

The front MacPherson suspension, together with the ZF steering gear, promotes increased precision and sharp response. Speed Sensitive Steering System is standard on T6 petrol models and optional on the rest of the range.

DSTC, EBD and EBA

The XC90's braking system is designed and tested to help stop the vehicle safely, even when it is fully loaded with seven people and luggage, and is backed by sophisticated traction and stability control systems. Dynamic Stability and Traction Control (DSTC) is standard on every model and prevents wheelspin by either braking the wheel that has lost traction (up to 25mph) or, at speeds above 25mph, by reducing engine power and using extra sensors to detect the onset of a skid. The system then automatically slows the appropriate wheel to restore control. It ensures that the driven wheels get exactly as much power as they can transfer to the road.

All XC90s benefit from ABS brakes with EBD (Electronic Brake Distribution) with an optimised brake system and EBA (Emergency Brake Assistance) which monitors how quickly the brake pedal is pressed, and determines if the driver is panic-braking. When this occurs, the brake pressure is boosted to maximum in the shortest possible time, to reduce the stopping distance.

AWD with Instant Traction™

The Volvo XC90's AWD (all-wheel drive) system has the latest electronic system developed in conjunction with the Swedish specialist, Haldex. It operates independently of driver input, distributing torque automatically between the front and rear wheels for the best possible grip in all conditions.

For 2006 model year, a new 'pre-charged' function uses a non-return valve within the coupling making 80Nm of torque instantly available to the rear wheels if the sensors detect any slippage. It feeds more power to the rear wheels as the car pulls away to improve acceleration. Once moving, power is balanced between front and rear, reducing drive to rear wheels when not needed, and helping to reduce fuel consumption.

The intelligent AWD system uses a variety of sensors to monitor the road surface and the steering wheel, brake and accelerator pedal positions. In normal driving conditions on dry roads, 95 per cent of the power is distributed to the front wheels. However, for off-road work, or if the sensors detect slippage, between 5 and 65 percent of the power/torque is diverted to the rear wheels to maximise traction, if required.

Compared with previous Volvo all-wheel drive systems based on a viscous coupling differential, the new Haldex AWD system has a much quicker response - without the driver noticing.

In addition, the power is distributed between right and left wheels by 'TRACS' - Volvo's traction control system. TRACS intervenes, when necessary, by braking a wheel if it starts to spin and to increase the power to the wheel with the best traction. This means power is automatically and smoothly distributed to any wheels with the best traction at any given time.

TRACS is deactivated during braking so the brake and ABS systems can function effectively, for high stability and shorter braking distances.

Geartronic

With Volvo's Geartronic transmission, the driver gets the best of both worlds: on the one hand, the transmission can be left to take care of gearchanging entirely automatically, or the driver can over-ride the system to change gears when required.

The automatic transmission is adaptive, which means that it monitors the driver's driving style and adjusts the gearchanging pattern accordingly. It also features a "W" setting for winter driving on slippery surfaces when it will start in a higher gear to avoid wheelspin and loss of control.

The Volvo XC90 T6 has 4-speed Geartronic transmission as standard, while a five-speed Geartronic is available with the 2.5T engine. Also, for 2006, a new high-torque six-speed Geartronic was introduced with the new D5 engine.

INTERIOR DESIGN CONCEPT

In brief:

- **Innovative and flexible interior.**
- **Seven individual, forward facing seats in three rows.**
- **Centre seat of middle row features integrated child booster cushion and moves forward nearer adults in front of car.**
- **Elegant, car-like dashboard with typically simple Swedish design**

The interior of the Volvo XC90 is characterised by airiness, space and quality – but particularly by its innovative and flexible design.

The XC90's interior offers the greatest flexibility in the premium SUV class, with generous interior space and seven individual, forward facing seats – all with head restraints and seat belt pretensioners.

The centre seat in the second row has an integrated child booster cushion and also slides forward so it can be directly between the two front seats, to improve contact between a child and the front seat occupants.

What's more, the armrest between the front seats is removable to create more leg room for the passenger in this centre seat.

The third row features two separate seats, offering full comfort for children or for adults of modest build. Unlike on some rival cars, these do not take up valuable space or have to be clumsily removed; instead, they simply fold away individually out of sight into the boot floor, so are always on hand.

In Full:

- Innovative and flexible interior.
- Contemporary, Swedish design with uncluttered, ergonomic dashboard.
- Seven individual, forward facing seats in three rows.
- Centre seat of middle row features integrated child booster cushion.
and moves forward nearer adults in front of car.
- Air vents on B-pillar for added comfort of rear passengers.
- Front passenger seat folds forwards to accommodate loads.

The interior of the Volvo XC90 is characterised by airiness, space and quality – but particularly its innovative and flexible design in a car that is just 87mm longer than a Volvo V70 estate – and smaller than the new Audi A6 saloon!

The XC90's interior offers the greatest flexibility in the premium SUV class with generous interior space with seven individual, forward facing seats – all with head restraints and seat belt pretensioners.

The middle seat in the centre row has an integrated child booster cushion and also slides forwards independently so it can be positioned directly between the two front seats, thus improving contact between a child and the front seat occupants. What's more, the armrest

between the front seats is removable to create more leg room for the passenger in this centre seat.

The third row features two separate seats, offering full comfort for children or for adults of modest build. Unlike some rivals, these do not take up valuable space or have to be clumsily removed, but instead they neatly and simply fold away individually out of sight into the boot floor when not in use, so are always on hand.

"Everyone rides in Business Class in the Volvo XC90, nobody travels economy class." says Peter Horbury, Volvo's former Vice President and Chief Designer.

Both the second and third rows of seats can be folded down to create an entirely flat luggage compartment floor no less than 1.89 metres long, 1.13 metres wide and with a volume of 1837 litres (64.9 cu ft). In addition, the front passenger seat also folds forward to accommodate extra long loads. Even with all seven seats in use there is still a useful amount of loadspace for the family – or, to be precise, 249 litres (8.8 cu ft).

The driver will appreciate one of the clearest and most ergonomically designed instrument panels in a typically simple Scandinavian simplicity of line and functionality: plenty of information from a small number of meticulously designed instruments.

Compared with those found in a normal saloon, the instruments and controls are angled slightly up towards the driver's eyes. Together with the high seating position, this enhances the feeling of control – the single quality that SUV buyers generally prize most highly.

QUALITY AND EQUIPMENT

In brief:

- **Higher standard specification than many other premium brand rivals.**
- **S, SE and Executive models.**
- **Bespoke 'Inscription™' interiors available.**
- **New RTI satellite navigation system with RDS-TMC and Europe DVD maps.**
- **Dolby Pro Logic II with surround sound™.**
- **Mini disc and DVD-based rear seat entertainment available.**
- **Extensive range of options and accessories.**
- **Rear seat headphone sockets.**
- **Volvo On Call telematics system.**

In the Volvo XC90, considerable importance has been attached to providing a comprehensive standard specification in a quality, well designed and desirable environment.

Standard specifications include 17in alloy wheels, CD player, high performance audio system with eight speakers and 160w output, rear park assist and DSTC (Dynamic Stability and Traction Control) with EBA (Emergency Brake Assistance) – not forgetting the Haldex AWD with Instant Traction™, of course.

Upgrading to the SE model includes larger 18in alloy wheels, leather upholstery, an integrated six CD changer and powered driver's seat (with memory).

New, bespoke 'Inscription™' luxury interiors introduced for 2006 offer a range of eight exclusive, full semi-aniline soft-leather upholsteries, in single and mixed colours with ribbed seat panel inserts inspired by leather motorcycle racing suits.

An extensive range of desirable options and accessories includes Bi-Xenon headlights, dark tinted rear windows, aluminium side running boards, load carriers, roof protection ribs, and rear skid plate.

Rear-seat passengers have the option of accessing their own control unit for the audio system, located conveniently in the C-post. There they can plug in their headphones and simultaneously listen to one of three separate audio sources (CD, radio or mini disc) so they are not just limited to what's coming through the loudspeakers. This means that parents and children can each indulge their different taste in music at the same time – making long trips in a Volvo XC90 much more enjoyable.

In Full:

- Higher standard specification than many other premium brand rivals.
- S, SE and Executive models available.
- 'Inscription™' range of bespoke luxury interiors.
- Extensive range of options and accessories available.
- Dolby Pro Logic II with surround sound™.
- DVD-based rear seat entertainment and Mini Disc available.
- New RTI satellite navigation system with RDS-TMC and Europe DVD maps.

- Rear Seat headphone sockets.
- Volvo On Call telematics system.

In the Volvo XC90, considerable importance has been attached to providing a comprehensive standard specification in a quality, well designed and desirable environment.

Standard specifications include 17in alloy wheels, CD player, high performance audio system with eight speakers and 160w output, rear park assist and DSTC (Dynamic Stability and Traction Control) with EBA (Emergency Brake Assistance) – not forgetting the Haldex AWD with Instant Traction™, of course.

The standard specification of the 'S' model includes:

- Alarm with immobiliser.
- ECC (Electronic Climate Control) with AQS (Air Quality System) and pollen filter.
- Information system.
- Steering wheel remote audio controls.
- High Performance sound system with CD, 4x40w amplifier and 8 speakers.
- Key-integrated remote control central locking with deadlocking system.
- 17in alloy wheels.
- Piano black trim.
- Front fog lights.
- DSTC (Dynamic Stability and Traction Control) with EBA
- Siljan textile/vinyl upholstery.
- Electronic all wheel drive with Instant Traction™.
- Load compensating suspension.

Upgrading to the SE specification offers:

- Electric folding door mirrors with water repellent glass and ground lights.
- Electric driver's seat (with memory) and door mirror memory
- Leather-faced upholstery (all 7 seats).
- High-performance audio system with 6 x CD, 4x40w amplifier and 8 speakers.
- 18in alloy wheels.
- Rain sensor – automatic windscreen wiper activation.
- Auto-dimming rear view mirror.
- Wood or aluminium trim.

SE models can be upgraded with the bespoke Volvo 'Inscription™', launched for the 2006 model year, which opens a whole new colourful world of interior sophistication with a collection of bespoke, exclusively designed interiors.

Soft 'semi Aniline' leather upholstery, with ribbed inserts on the side bolsters of the seats, comes from the finest hides and is available in a kaleidoscope of eight exciting colour combinations for all seven seats, and door panels. It also includes a soft leather sports steering wheel and Nubuck trimmed floor mats with contrasting piping. Inscription™ black walnut wood trim is also exclusively available with this option.

Optional rear headphone sockets allow the passengers in the second and third rows of seats to listen to either a CD, radio or mini disc simultaneously. In addition, a choice of DVD-based rear seat entertainment systems are also available.

A comprehensive range of optional items includes Bi-Xenon headlights, heated seats, integrated telephone and Volvo's RTI satellite navigation system now with TMC (Traffic Message Channel) that warns of traffic problems ahead and can even re-route the driver, if required.

The Executive features the following additional specification over the SE variant:

- Executive soft leather upholstery and door inserts with contrast piping.
- Executive soft leather extra padded front door armrests.
- RTI satellite navigation system with RDS-TMC and Europe DVD maps.
- Integrated GSM telephone.
- Premium sound audio system with Dolby Pro Logic II digital surround sound™.
- Mini disc player and sub woofer under load area floor.
- Rear seat headphone sockets.
- Refrigerator in front centre armrest.
- Executive Nubuck trimmed floor mats.
- 18in Split-rim alloy wheels.
- Bi-Xenon headlamps with cleaning system.
- Brushed aluminium roof rails.
- Metallic paint.
- Colour co-ordinated door handles, door mirrors and rubbing strips.
- Unique matt silver grille.
- Rear skid plate.
- Electric passenger seat.
- Heated front seats.

- Walnut wood trim in door panels, centre console and gear lever knob.

In addition, Volvo was the first car manufacturer in the world to offer Dolby Prologic II surround sound™ in a car audio system. Dolby Pro Logic II creates the conditions for optimum audio perception even for passengers in the rear seats, and the sound profile is both broader and more natural.

A mini disc player is also optional, and can be combined with the Dolby Prologic system, while rear-seat passengers have access to their own control unit for the audio system, located conveniently in the C-post. There they can plug in their headphones and simultaneously listen to one of three separate audio sources (CD, radio or mini disc), so they are not just limited to what's coming through the loudspeakers. This means that parents and children can each enjoy their different taste in music at the same time – making long trips in a Volvo XC90 much more enjoyable.

Rear Seat Entertainment

Rear seat entertainment also includes a choice of DVD-based systems. The factory option offers a DVD player in the front armrest with two, seven inch screens in the head restraints of the front seats. Alternatively, there are two other options offered as an accessory fit; these consist of a twin screen system with a DVD fitted in the boot that can take 10 DVDs at a time, or a roof-mounted single screen that is lowered on powered hinges. They can be remote-controlled and used with wireless headphones to avoid disturbing other passengers. The DVD players play ordinary CDs as well.

RTI with RDS-TMC

Volvo's RTI (Road and Traffic Information) satellite navigation system now features a new RDS-TMC (Traffic Message Channel) which displays up to date information of any traffic problems. It comprises of a large colour screen that rises from the top of the dashboard to be safely positioned in the driver's view.

This is linked to a DVD map system and displays information for most of Europe, and displays any traffic problem areas by a set of red or yellow symbols to indicate the severity of any congestion, and the driver can then select the symbol on the desired route to find more details of the extent of the problems.

Controls on the rear side of the steering wheel make it easy for the driver to use the system while driving, or there's a remote control unit for passengers to use. The system also calculates the estimated time of arrival, along with a map that is accurate down to 50 metres.

Other Options

Volvo owners are also encouraged to give their car a personal touch by choosing from a range of stylish optional extras, such as darkened side and rear windows, third row seating air conditioning, or a rear entertainment system. Many are conveniently grouped together, such as the Winter, Bi-Xenon, Premium, and Communications Pack:

Winter Pack:	Heated front seats with headlamp cleaning system and luxury floor mats.
Bi-Xenon Pack:	Bi-Xenon headlights and headlamp cleaning system. Heated front seats and luxury floor mats.
Premium Pack:	Power driver and passenger heated front seats, luxury floor mats, Bi-Xenon headlamps with headlamp cleaning system, premium sound audio system with Dolby Pro Logic II Digital Surround Sound, 4 x 70W + 1 x 25W amplifier, 12 speakers, Mini Disc player, subwoofer and rear seat headset sockets x 4.
Communications Pack:	Dual band integrated GSM telephone with handset, RTi navigation system with RDS-TMC, remote control and Europe DVD maps, plus Volvo On Call telematics system

Volvo On Call – advanced Telematics

Volvo On Call is a valuable personal safety feature using advanced Telematics. The system uses an integrated GSM telephone with a built-in GPS unit for satellite positioning, and ensures help is always close at hand.

Volvo On Call - Safety Package: Volvo On Call comes with a standard safety package. If an airbag or seatbelt pre-tensioner is triggered in the event of an accident, Volvo On Call automatically calls the Emergency Services via BT999 and can also provide data of your location.

Alternatively, pressing the red 'SOS' button on the integrated GSM telephone will put you straight through to the Emergency Services.

Also, if the car breaks down or you need help, pressing the Volvo On Call button will put you straight through to a Volvo On Call operator who is only a call away at any time of day to offer personal services such as route guidance, or to guide roadside assistance to you.

Volvo On Call - Security Package: An optional Volvo On Call security package offers the added benefits of a remote door unlock facility, theft notification and vehicle tracking.

In the future, Volvo On Call's services could include automatically contacting your local dealer when a service is required.

Accessories

There's also a vast range of accessories to accommodate the needs of every Volvo XC90 owner.

There is a parking assistance system for the front and rear of the car, while the wide range of load-carrying systems includes ski and roof boxes, bike racks and surf board holders, plus towbars – all designed to ensure the car can accommodate all the active hobbies, interests and busy lives of Volvo owners.

Quality and Customer Satisfaction

Volvo's employees are justifiably proud of the quality of their products, but they're equally determined to offer the best customer service. Volvo's management has set a goal of achieving 'Customer satisfaction no. 1' in the premium sector. To fulfil this ambitious target, the company has initiated a series of Quality Forums, which scrutinise information from a combination of internal and external sources, including independent rankings by companies such as JD Power. Having analysed the data, the Forums initiate action plans to improve performance in specific areas.

This quality assurance package is backed up by a comprehensive warranty. The standard mechanical warranty is three years/60,000 miles, there's a three year unlimited mileage warranty on the paintwork and eight years cover against rust perforation. In addition, all Volvos are covered by one year's free RAC cover, which provides full breakdown and recovery assistance, anywhere in Europe, 24 hours a day.

SAFETY

In brief:

- **ROPS (Roll Over Protection System)**
- **RSC (Roll Stability Control)**
- **Special Boron steel reinforced roof structure**
- **IC (Inflatable Curtain) – for all three rows of seats**
- **Lower cross-member for increased car-to-car crash compatibility**

Everyone expects Volvos to be safe – irrespective of vehicle type. With the launch of its first-ever SUV, Volvo Car Corporation enters an entirely new segment and the goal is perfectly clear: to lead the way in terms of safety.

This has meant an increased focus on several new areas. One of them is the important issue of the increased potential of roll-over accidents – because of an SUV's higher centre of gravity – and crash compatibility with smaller vehicles.

A Roll Over Protection System (ROPS) includes a new feature – Roll Stability Control (RSC) – which uses a gyro sensor to monitor the car's roll angle and speed. If the roll angle becomes critical it automatically applies the brakes and DSTC system to help the driver maintain control.

Volvo has also added extra strong Boron steel to the roof structure for maximum protection for occupants in the event of a roll-over, and has designed the Inflatable Curtain (IC) to stay inflated for longer than normal across all three rows of seats in case of a multiple roll-over.

Finally, the XC90's subframe has a lower cross member neatly concealed behind the front bumper so it impacts at the same height as the bumper of a conventional car's protective structure and crumple zones.

In Full:

- RSC (Roll Stability Control)
- Special Boron steel reinforced roof structure
- IC (Inflatable Curtain) – for all three rows of seats
- Lower cross-member for increased car-to-car crash compatibility

Everyone expects Volvos to be safe – irrespective of vehicle type. With the launch of its first-ever SUV, Volvo Car Corporation enters an entirely new segment, and the goal is perfectly clear: to lead the way in terms of safety.

This holistic approach is – and always has been – one of the corner stones of Volvo's safety philosophy.

With the entry of Volvo Cars into the SUV market, there is increased focus on several new areas. One of them is the important issue of the increased potential of roll-over accidents because of an SUV's higher centre of gravity.

Roll-Over Protection System

Volvo's new Roll-Over Protection System, 'ROPS', tackles the problem from two directions:

- a stability-enhancing system, Roll Stability Control (RSC), minimises the risk of the XC90 rolling over in the first place
- increased protection for the occupants if the vehicle does roll-over

Owing to its higher centre of gravity, an SUV may have a higher risk of rolling over in certain critical situations compared with a conventional car. That is why the centre of gravity in the Volvo XC90 has been kept as low as possible compared to most SUVs. In fact, it is just 89 mm higher than that of the Volvo XC70.

However, this does not mean that Volvo has compromised on one of the properties that SUV buyers value so highly: a commanding seating position. The front seats are no less than 165 mm higher than in the Volvo XC70.

Roll Stability Control

In order to help reduce the risk of a roll-over situation, Volvo has developed an active stability-enhancing system known as Roll Stability Control or 'RSC'. The system uses a gyro-sensor to register the car's roll speed and roll angle to instantly calculate the terminal angle and roll-over risk.

If there is an obvious risk of rolling over, the DSTC (Dynamic Stability and Traction Control) anti-skid system is activated and responds by reducing the engine's power and braking one or more wheels as necessary until the car understeers and stability is regained.

This significantly helps reduce the risk of a roll-over accident initiated by extreme manoeuvres and is the only active stability-enhancement system to measure the car's roll angle.

Special Boron steel in a reinforced roof structure

If the Volvo XC90 experiences a roll-over the passive safety systems kick in.

The goal is to reduce the risk of occupants' heads from coming into contact with the car's interior roof panel or sides. So, Volvo has reinforced parts of the roof structure in the Volvo

XC90 with extremely tough Boron steel, which is four or five times stronger than normal steel.

All seven seats are equipped with seat belt pretensioners to hold the occupants securely in place. In an accident, the pretensioner pulls the seat belt firmly across the occupant's body in order to help provide maximum protection.

To help prevent the head from striking the car's sides, the Volvo XC90 is equipped with Volvo's Inflatable Curtain (IC). IC also helps prevent the occupants or any limbs from being thrown from the car in an accident. In the Volvo XC90, the IC protects all three rows of seats.

The Volvo XC90's IC is specially adapted to stay fully inflated for longer to offer maximum protection in a roll-over scenario. If the occupant's head is resting against the window at the moment of inflation, the curtain will slip between the glass and the occupant's head.

Compatibility

The problem of compatibility – when an SUV collides with a car that sits closer to the road surface – was another important focus throughout the development of the XC90.

A typical SUV has a high ground clearance and thus often comes with high-positioned bumpers. This may create a greater risk of damage to the oncoming car and more serious injuries to its passengers as the lower car's protective beams and crumple zones simply slip below the front of the SUV without being activated.

In order to reduce the risk of this type of injury, the XC90's front suspension subframe is supplemented with a lower cross-member neatly concealed behind the front spoiler and positioned at the height of the beam in a conventional car.

The lower cross-member strikes the oncoming car's protective structure, activating its crumple zone as intended so the occupants can be given the maximum level of protection.

Considerable attention has also been given to the safety of pedestrians, cyclists and other relatively unprotected road-users. The entire front of the car features clean, gentle and smooth lines, and there are no protruding parts which may cause injuries.

The engine in the Volvo XC90 is installed low in the vehicle. As a result, the bonnet has no less than 80 mm of deformation space before there is any contact with the engine below it. It

thus serves as a soft impact-absorbing "bumper", reducing the risk of serious injury if a pedestrian is thrown onto the bonnet.

High safety level in the third row of seats

The Volvo XC90's third row of seats provides a high level of passenger safety. There is generous space behind it, so collision force in a rear-end impact can be effectively absorbed and dissipated.

The occupants of the rearmost seats sit just above the rear axle, which is the optimum position in terms of side-impact safety. These seats also feature belt pretensioners, head restraints and protection from the Inflatable Curtain.

WHIPS, Volvo's award-winning Whiplash Protection System, is fitted in the two front seats of the Volvo XC90. WHIPS is activated in the event of a rear-end collision from speeds as low as 9 mph, helping to reduce trauma on the spine and neck and thus reducing the risk of injury.

ENVIRONMENT

In brief:

Volvo's continued commitment to the environment is reflected in its 'clean inside and out' programme.

An air filter prevents dust, pollen and exhaust particles reaching the interior, while the Interior Air Quality System ensures that the air inside the cabin is always cleaner than that outside. All the trim materials comply with Oeko-Tex standards to create a healthier, emissions-free interior, helping to reduce the risk of an allergic or asthmatic reaction.

Another pioneering feature is Volvo's PremAir system, which converts up to 75 per cent of the ground level ozone passing through the radiator into oxygen. Several of the engines in the range already also meet the stringent EU 2005 and America's ULEV (Ultra Low Emissions Vehicle) emissions requirements.

The XC90 is built in one of the automotive world's cleanest factories and 85 per cent of each car can be recycled. Every new Volvo is backed by an Environmental Product Information (EPI) analysis which can be viewed at

www.volvocars.com/epi. Volvo also produces an annual Corporate Citizenship report, which is available at www.volvocars.com/citizenship.

In brief:

- 'Clean inside and out' environmental commitment.
- Interior trim materials conform to Oeko-Tex standards and are allergen-free.
- Cabin air filter removes dust, pollen and exhaust particles.
- PremAir® ozone system converts up to 75% of ground level ozone to oxygen.
- Interior Air Quality System ensures cleaner air inside than out.
- 85 per cent of the car can be recycled.
- Several of the engines already meet stringent EU 2005 emission requirements.
- Each new Volvo is backed by an Environmental Product Information analysis, available at www.volvocars.com/epi.
- Volvo produces an annual Corporate Citizenship: www.volvocars.com/citizenship.

Environmental care is one of Volvo's core values, so designing the XC90 represented an extra challenge - a Volvo SUV had to have class leading emissions and fuel economy.

"We know that some people are uncomfortable about the fact that SUV's produce higher emissions and consume more fuel than most passenger cars," says Hans Wikman, the XC90 Project Director.

As a result, the XC90 will take the lead in the SUV segment for both fuel economy and emissions. The 6-cylinder, T6 petrol engine meets the American ULEV (Ultra Low Emission Vehicle) requirements.

Volvo's D5 diesel engine is Euro IV compliant, offering top-class fuel economy and low emissions achieved through a number of interacting factors. Here are a few examples:

- Both diesel and petrol engines are made of aluminium. This material is lightweight, which helps cut fuel consumption and thus emissions
- The engines are of Volvo's latest low-friction generation. All the moving parts are designed to offer the least possible resistance
- The cylinders' combustion chambers are designed to rotate the fuel/air mixture effectively and achieve high compression for more efficient combustion
- Three-way catalytic converter

- CVVT (Continuously Variable Valve Timing). This system adjusts valve timing to suit current engine revs and load more efficiently to reduce fuel consumption and emissions

Healthier Inside

According to the 2001 RAC Report on Motoring, the typical private motorist drives for over 250 hours each year, while in the same period, a company car driver spends an average of 425 hours inside their vehicle.

Yet, while most of us are aware of vehicle emissions and air quality issues, how many drivers know that the air inside their cars may also be harmful? Or that the metals, textiles and leathers used in car interiors can emit volatile substances, which activate allergies and skin conditions?

Many motorists don't realise their car could be increasing their risks of asthma, eczema, headaches, eye irritation or even a heart attack. In recent years, the number of people suffering from allergies and other forms of hypersensitivity has been growing rapidly.

Volvo's 'clean inside and out' programme to create emission-free cars is a healthy solution to the problem.

The interior of the Volvo XC90 complies with a strict standard called Oeko-Tex, which sets maximum levels for dangerous substances contained in textiles and trim materials. All the leather upholstery and the trim meets strict Oeko-Tex standards.

Furthermore, the leather is tanned using natural plant substances and the components on the Volvo XC90 that most frequently come into contact with the skin – the door handle, ignition key and safety belt locks – are also compliant with Oeko-Tex and allergen-free.

Clean Air

The Volvo XC90 also takes further care of the environment inside the passenger compartment and reduces the risk of allergy-related problems with its Electronic Climate Control (ECC) with automatic Interior Air Quality System (IAQS).

IAQS consists of a filter featuring a particle trap and an active carbon filter, removing particles such as pollen and unpleasant odours from the incoming air, and has a sensor that automatically activates the air recirculation function if the concentrations of substances such as nitrogen oxide, carbon monoxide and hydrocarbons in the air entering the cabin are too high.

PremAir[®], Volvo's "ozone-eater" is a unique Volvo environmental innovation that combats the problem of ground-level ozone. Ground-level ozone is formed through the combination of air pollutants and strong sunlight. It can cause respiratory problems and also inhibits plant growth.

Volvo was the first carmaker in the world to tackle this with the introduction of PremAir[®] in 1999, which is available for the XC90 range. It consists of a special catalytic film coating on the car's radiator that converts up to 75 percent of the ground-level ozone into oxygen as it passes through the radiator.

Corporate Citizenship

Volvo's commitment also extends beyond the car's immediate environment. It was one of the first manufacturers to use tools to evaluate the life-cycle environmental impact of its products. The system, known as EPI (Environmental Product Information) enables Volvo to evaluate the impact of its products and processes on natural resources, ecosystems and human health. This information is available to the public at www.volvocars.com/epi.

It's a strategy that's clearly paid dividends. The XC90 is built in one of the automotive world's cleanest factories with emissions of solvents from the Volvo Torslanda plant in Sweden reduced by over 90 per cent since 1972. Plus, 85 per cent of each car can be recycled and every new Volvo is backed by an EPI. Volvo's annual Corporate Citizenship report is available on www.volvocars.com/citizenship.

SECURITY

In brief:

- **'Best Manufacturer' British Insurance Car Security Awards 2004 and 2005.**
- **Electronic immobiliser fitted as standard.**
- **Alarm and deadlock system operated from remote control key fob.**
- **Approach and Home Safe Lighting system.**
- **Laminated side windows optional.**
- **Dark tinted side and rear windows available.**

Volvo is committed to protecting the car, its occupants and their possessions. It was voted 'Best Manufacturer' in the first 'British Insurance Car Security Awards' announced in July 2004 and won the same title again in 2005.

The Volvo XC90 is fitted as standard with a sophisticated alarm and immobiliser system that can be switched on and off using the remote controller on the key fob. The combination of deadlocks and optional laminated side windows can make the Volvo XC90 a difficult car to break in to, while dark tinted rear windows are available to help conceal the contents of the interior.

The remote control also operates the Approach lighting system, which illuminates the car and the surrounding area as the driver approaches. Likewise, a tweak of the headlight stalk activates the Home Safe system, switching on the headlamps for 30 seconds after the occupants have left the vehicle.

In Full:

- 'Best Manufacturer' British Insurance Car Security Awards 2004, 2005
- Electronic immobiliser fitted as standard
- Alarm and deadlock system operated from remote control key fob
- Approach and Home Safe Lighting system
- Laminated side windows optional
- Dark tinted side and rear windows available

Volvo's passion for safety also extends to issues of personal security. The Volvo XC90 is fitted as standard with a wide range of features designed to protect occupants from burglary, theft and assault.

Volvo was voted overall 'Best Manufacturer' in the first 'British Insurance Car Security Awards' announced in July 2004, and won it again in the second awards in 2005. The BISCA aim is to raise consumer awareness of vehicle security and recognise manufacturers' efforts to make more secure cars. To be eligible for the awards, all cars had to pass strict selection criteria in line with the New Vehicle Security Ratings scheme (NVSR) developed by the Motor Insurance Repair Research Centre (Thatcham).

An electronic immobiliser makes it impossible to start the car without the right key, while the outer lock cylinder rotates, making it difficult to break in to. If the thief does manage to get

in, via a window, for example, the deadlock system makes it impossible to open a door from the inside. The availability of laminated side windows can also make it harder for thieves to gain access to an XC90.

The deadlock system is activated by the remote control key fob, allowing the driver to open the car as they approach. This system can also be used to access the tailgate independently of the doors, which is a useful deterrent to opportunist thieves.

The same remote control system also switches on the alarm system, which is fitted as standard to the Volvo XC90. The alarm is triggered if anyone attempts to open the doors, the bonnet or the tailgate. It also reacts to movement inside the car or if a window is broken. As an option, this system can be upgraded to include a level sensor that activates the alarm if the car is jacked up in any way.

An important contribution to personal security is provided by the Approach and Home Safe lighting system. By pressing a button on the remote controller as they approach the car, the driver is able to turn on the inside lights, the side marker lights and the lights in the rear-view mirrors. On leaving the car, a tweak of the headlight stalk activates the dipped beam headlamps for 30 seconds, lighting a path to the door. It's a simple system that offers considerable peace of mind.

XC90 owners may also choose tougher laminated side windows to protect against break-in, while the option of dark tinted side and rear windows are a popular way of making it harder to see any personal contents inside the car – but also gives added personal security as it makes it much less obvious whether the driver is alone or not.

DID YOU KNOW?

1. Volvo Car UK received 2,200 XC90 orders before the car even arrived in showrooms.
2. Prior to the XC90 launch, Volvo expected to sell approximately 3,500-4,000 XC90s in 2003 in the UK, and 5,500 in 2004, and in reality sales reached 3,956 in 2003 and soared to 7,178 in 2004.
3. The XC90 is now Volvo's best-selling model. In 2004 global XC90 sales totalled 84,032 – representing over 18 per cent of Volvo's total sales of 456,224 cars.
4. The XC90 was also Volvo Car UK's best-selling model in 2004, with total sales of 7,178 – representing nearly 18 per cent of Volvo's UK sales of 40,005 in 2004.
5. The XC90 was the third best-selling SUV in the UK in 2004: The top 5 were:

Land Rover Discovery,	11,437
BMW X5,	8,421
Volvo XC90,	7,178
Range Rover,	6,484
Mercedes M-Class	5,433
6. 83 per cent of the UK's XC90 customers chose the D5 turbodiesel engine, with SE trim.
7. The XC90 has won many awards around the world, including in the UK:
 - 'Best 4x4' - What Car? Car of the Year Awards 2003
 - 'SUV of the Year' - The Sun
 - 'Best 4x4' - BBC Top Gear magazine
8. 53 per cent of XC90 customers are aged between 35 – 44, while 74 per cent have a family, with an average gross annual household income of £79,150*, noticeably higher than any other model in the Volvo range.
9. The Top 3 reasons given for buying an XC90 were: Number of Seats (48%), Style (34%), Safety features (34%)*.
10. Most XC90 customers were previously driving other premium brands*: Mercedes (13%), Land Rover (9%), BMW (8%), Audi (6%).

* Source: New Car Buyers Survey, 2004.