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Volvo All-New S80

Launch

The significantly new Volvo S80 is the second generation of Volvo's large prestige sedan, launched at the Geneva motor show in February 2006. The new S80 model is a luxurious car with an elegant and dynamic profile influenced by modern Scandinavian design.

A powerful V8 engine provides performance and driving comfort. The V8 engine features Volvo's electronically controlled all-wheel drive. An active chassis is available as an option, contributing to the car's highly dynamic driving characteristics.

A new generation of driving and support systems together with a further-enhanced body structure and advanced interior safety systems all interact to contribute to the high level of safety, both preventive and protective.

Design

The all-new Volvo S80 is very near in length to its predecessor (4851mm), but is 27mm broader and 34mm taller. Other significant enlargements to the new S80 are its extended wheelbase and wider front and rear track. The positive effects are immediately identified once driving the new S80. It is more precise and athletic in its responses, and the driver is offered better interior space with improved comfort and refinement.

The longer wheelbase is the foundation of the new S80's dynamics and also its proportions. Front and rear overhangs are short. Body is wide. Visually the S80 responds with poise and confidence. The S80's stance is strong. All in all, the new S80 offers a considerably different driving experience than did its predecessor.

The exterior design carries more rounded contours and raised bonnet profile. The headlights, positioned lower than in the previous S80 model, follow the curvature of the front. More shapely and with more side profile, the headlights are now a distinctive design feature.

The doors are convex and pronounced in shape unlike the previous S80, and the rear quarter glass is a fix part of the door. The classic and pronounced Volvo shoulder line is higher and broader than before, and the sills have a more dominant profile, creating a visually lower centre of gravity and imparting a steadier, more stable appearance.

The design carries strength and security. As well, elegance and the sense of constant motion are the effect of the S80's more sweeping lines, an almost imperceptible transition between the rear window and the boot, and an abruptly cut-off tail section.

The S80's 'Volvo' heritage is marked by a somewhat larger grille. The bonnet's characteristic V-shaped lines have been extended forward and down into the chin spoiler. And those typical Volvo tail lamps now have a slimmer profile that blends smoothly with the broad shoulders. LED lights at the top enhance the Volvo heritage clearly even in the dark.

Interior Design

The interior design is characterised by clean surfaces, harmonious lines, exciting contrasts and logical function – expressions of Scandinavian design tradition that help forge a dynamic and harmonious interior atmosphere.

The recurring design themes are the sweeping parallel lines that trace the edge of the instrument panel and door panels. Amid these sweeping lines, purposefully rectangular, the ignition lock and air vents visually contrast.

The Floating Centre Console is the centre point of interior design in S40/V50/C70. This revolution in interior design was inspired by traditional Scandinavian design. The S80's interior also centres on a slim centre console but this second-generation centre console has been modified to blend seamlessly with the car's classic and exclusive design, and it extends all the way to the rear seat.

Safety

Volvo Cars has a holistic approach to safety which encompasses preventive and occupant protective safety.

Preventive safety – the avoidance of accidents – was one of the most important starting points during the new S80's development. Volvo Cars has created an entirely new generation of advanced driving and support systems for the new S80.

Adaptive Cruise Control (ACC) uses a radar sensor to help the driver maintain the distance to the vehicle in front. ACC should primarily be seen as a comfort-enhancing function, but it contributes at the same time to more controlled driving when the traffic rhythm is uneven.

Collision Warning with Brake Support (CW) helps avoid rear impacts, minimising the risk of such collisions. If the car approaches another vehicle from behind and the driver does not react, the system alerts the driver with audible and visual signals. If the risk of a collision nonetheless continues to increase despite the warning, the brake support system is activated. The brake pads are gently pressed against the discs and brake pressure is hydraulically amplified in preparation for an emergency stop.

The all-new Volvo S80 is also equipped with **Blind Spot Information System (BLIS)** and **Intelligent Driver Information System (IDIS)**, two innovations that assist the driver to maintain better control over the traffic situation.

BLIS registers if another vehicle is in the offset rear blind spot alongside the car and alerts the driver via a visual signal.

IDIS helps stop the driver being distracted by non-essential information in pressing situations, for instance, by delaying incoming phone calls or SMS.

Active Bi-Xenon Lights – moving headlight beams that follow the curvature of the road – help maintain the best possible visibility in the dark on twisting roads.

Personal Car Communicator (PCC) is an advanced control centre in pocket format. At the touch of a button, the car owner can instantly find out whether ...

... the car is locked or unlocked

... the alarm has been activated

... the alarm has been set off and someone is inside the car.

The information is stored so that it is possible to check if the car really was locked when it was parked, at any time and from anywhere.

Protective safety in the new Volvo S80 is structured in the form of a network of exterior and interior safety systems that interact to reduce the risk of occupant injury in the event of a collision.

The exterior systems have the task of distributing and absorbing incoming collision forces so that the passenger space is preserved as intact as possible. The body is therefore built in the form of a box-section structure using varying grades of steel, with all the components interacting to provide controlled deformation.

Like the rest of the Volvo range, the new S80 features a transversely installed engine and front-wheel drive. Transverse engine installation provides more deformation space in the engine compartment and helps reduce the risk of engine intrusion into the passenger compartment in a frontal collision.

The larger V8 engine is also installed transversely in the new S80 thanks to its extremely compact dimensions and effective packaging.

The purpose of the interior safety systems is to keep the passengers securely in place and to minimise the risk of serious injuries. In order to provide the most effective protection possible, Volvo Cars has developed a number of unique systems.

A new type of side-impact airbag makes Volvo's patented Side Impact Protection System (SIPS) even more effective. The **new side-impact airbags** feature two separate inflation chambers – one at hip height and one at chest height. Since the hips can withstand greater impact than can the chest, the lower chamber is inflated at five times higher pressure than the upper section.

The side-impact airbags interact with the **Inflatable Curtains (IC)** and the body's network of beams to protect as effectively as possible.

Volvo's system for avoiding neck injuries – **Whiplash Protection System (WHIPS)** – is one of the most effective on the market. In the event of a severe impact from the rear, the front seat backrest and head restraint move together with the occupant's body, thus catching its movement. In the latest generation of WHIPS, the system's function has been further developed to provide an even smoother 'catching' motion.

All five seats are equipped with three-point inertia reel safety belts, belt pre-tensioners and head restraints. The highest possible safety requires that all occupants always use their safety belts.

Driveline and chassis

The new Volvo S80 has a transversely mounted powertrain with either front-wheel drive or alternatively all-wheel drive (AWD). The transverse engine installation permits effective space utilisation for deformation in the engine compartment and also makes it possible to create a more spacious passenger compartment.

Elegant, comfortable and dynamically responsive, the new S80 is also Volvo's first sedan to be powered by a V8. The compact V8 engine was launched in the Volvo XC90. A unique design – with a mere 60 degree angle between the two banks of cylinders – makes the V8 remarkably compact.

The chassis with coil-over struts at the front and multilink axle at the rear is designed to ensure predictable driving manners and alert steering response. The multilink rear axle is an independent suspension system with a number of links that are set up to provide a combination of controlled wheel movements and high ride comfort. Some of the links have the task of providing a certain degree of anti-skid steering effect. A long wheelbase and wide track together with an extremely torsionally rigid body contribute to the well-controlled driving manners.

The new Volvo S80 AWD can optionally be specified with an active chassis based on Volvo's Four-C technology. With this system, the chassis setting is automatically adjusted to suit the current driving situation, thus improving both handling and ride comfort. Three alternative chassis settings allow the driver to alter the car's driving behaviour to suit his or her personal tastes at the mere touch of a button.

The V8 version of the new Volvo S80 is equipped with Volvo's all-wheel drive. The AWD system uses an electronically controlled hydraulically activated clutch to distribute power between the front and rear wheels to provide the best possible road grip in all situations.

Volvo's advanced Dynamic Stability and Traction Control (DSTC) system is fitted as standard. DSTC steps in to assist the driver should the system detect any tendency to

skid.

The environment and air quality

The new Volvo S80 is built and equipped to impact as little as possible on the global environment and to provide a clean and healthy in-car environment.

Petrol engines with low internal friction, efficient combustion and advanced exhaust filtration techniques all help to produce low emission levels. Energy-efficient diesel engines produce low emissions of carbon dioxide, and particulate traps reduce tailpipe soot particulates by more than 95 percent.

The filter is a CDPF – Coated Diesel Particulate Filter – in which a special coating helps burn the particulates. Therefore, no additives are needed, and the filter requires no maintenance. Burning away soot particulates takes approximately 20 minutes and occurs automatically at 500 to 1000km intervals, depending on driving conditions.

Volvo IAQS (Interior Air Quality System) effectively reduces the amount of particles, pollen, gases and certain unpleasant odours in the air that enters the passenger compartment. All the interior fabrics and leather used in the upholstery are certified according to ÖKO-TEX 100, an international standard that guarantees that the interior is free from allergenic and hazardous substances.

The climate unit can also be supplemented with the Clean Zone Interior Package (CZIP), an advanced system that provides healthier air quality inside the passenger compartment (approved by the Swedish Association against Asthma and Allergy). When the car is unlocked using the remote control, the passenger compartment is automatically ventilated for about a minute if the outdoor temperature exceeds 10 degrees Celsius.

Production

The new Volvo S80 is built at the Volvo Torslanda plant in Göteborg, Sweden where Volvo also builds the XC90 and XC70.

Sales

Average annual sales for the new Volvo S80 are expected to total about 50,000 cars. The S80 will be marketed throughout the world. The largest markets are the USA, Germany, Britain, Sweden and China.

Australian sales of S80 have historically reached a few hundred per year comprised of two models – S80 T6 and S80 2.9.

Volvo Car Australia will offer at launch the all-new S80 as a two-model range – introducing the refined and efficient 4.4-litre 232kW V8 and the 2.4-litre 136kW turbocharged diesel D5 engine.

The narrow-angle V8 (60 degrees) accompanies a Haldex computer-controlled all-wheel-drive system to underpin exceptional performance and driving dynamics in the S80 V8 AWD. The V8 and D5 engines marry to a new six-speed automatic transmission.

The S80 D5 will introduce the range at the recommended retail price of \$71,950 with an appointment of luxury features.

The luxurious and performance-minded S80 V8 AWD is the pinnacle of Volvo's model range in many ways. In terms of acceleration, the S80 V8 AWD achieves 0-100km/h in 6.5 seconds combined with a high level of refinement from a six-speed automatic transmission and an extremely smooth, modern V8 engine producing 232kW. At \$95,950, the S80 V8 AWD will compete to its advantage within the European premium sedan segment by offering an excellent value equation and excellent driving dynamics.

Dimensions

Length:	4851mm (+28mm)
Width:	1861mm (+28mm)
Height:	1493mm (+54mm)
Track:	
front:	1588mm (+6mm)
rear:	1585mm (+25mm)
Wheelbase:	2835mm (+45mm)
Aerodynamics:	0.29 Cd
Frontal area:	2.34 m ²

Petrol

V8:	60 degree V
Capacity:	4414cc
Maximum power:	232kW
Maximum torque:	440Nm

Diesel

D5:	Inline five cylinder
Capacity:	2400cc
Maximum power:	136kW
Maximum torque:	400Nm

Delivering Premium Driving Dynamics

- **Exceptional torsional rigidity from body structure**
- **FOUR-C active chassis fine tunes S80's dynamics in all situation**
- **All-wheel drive provides optimal roadholding and smooth power delivery**
- **Adjustable power steering and electronic parking brake**

A rigid body and optional active chassis contribute to the excellent dynamic driving properties of the all-new S80 luxury sedan. And to ensure optimal power efficiency and roadholding in all situations the V8 model is equipped with Volvo's all-wheel-drive system.

The goal throughout the S80's development was to deliver an enthralling premium ride quality. The driveline, in fact, the entire car has been tuned to deliver an excellent driving experience.

The S80's body features a highly advanced structure that contributes to excellent deformation properties in a collision and boasts exceptional torsional rigidity to benefit ride and handling. Torsional rigidity is crucial to stable, predictable and controlled driving properties.

Active chassis with FOUR-C – and three choices

The all-new Volvo S80 with V8 or in-line six-cylinder engine can be optionally specified with an active chassis based on Volvo's FOUR-C technology. This is an advanced self-adjusting chassis system that uses a number of sensors to continuously monitor the car's behaviour. The dampers are able to rapidly respond to the immediate driving situation in a mere fraction of a second.

FOUR-C continuously modifies the damping rate to suit the car's speed. As vehicle speed increases, so too does the damping effect to achieve far greater chassis control over a wide range of speeds and varying road conditions. FOUR-C also resists the car's tendency to squat, dip or roll under firm acceleration, hard braking or quick steering manoeuvres.

"The active chassis adds an extra dimension of control," says Silvia Güllsdorf, S80 Project Director at Volvo Cars. "The driving properties improve whatever the situation. Progress is both safer and more entertaining."

FOUR-C was offered on the previous S80; however, the system has been further developed to offers three alternative chassis settings instead of the previous two.

- **COMFORT** – sedate, comfortable ride quality
- **SPORT** – controlled body movements, faster steering response
- **ADVANCED** – firm damper control, maximum road holding

In an emergency driving situations, however, FOUR-C always responds by providing maximum stability to assist the driver.

All-Wheel Drive

S80 will debut in Australia with a dynamic drivetrain combination – 4.4-litre V8 accompanied by an advanced all-wheel-drive system. An electronically controlled hydraulic clutch constantly balances the power bias between the front and rear wheels to ensure optimal roadholding in various situations.

The latest version of Volvo's all-wheel-drive system features Instant Traction, which sets a favourable bias (approximately 80Nm) to the rear wheels when starting off on a slippery or loose surface.

Adjustable power steering

Speed-dependent power steering is standard on Australian-spec Volvo S80. It provides more power assistance at low speeds, for instance, to make parking easier. The power assistance gradually declines as road speed increases, disappearing entirely at high cruising speeds.

To give all drivers optimum road feel, the steering servo assistance can now be adjusted via the S80's settings menu and set-up system. Power steering effort can be set at one of three levels – low, medium, high.

Power Parking Brake

To help when starting off on an uphill gradient, V8 versions of the all-new Volvo S80 (and all right-hand-drive models) are equipped with an intelligent electronically operated parking brake – Power Parking Brake. If the parking brake is engaged at a stop light, for instance, it is automatically released as the car moves off.

DSTC fitted as standard

DSTC (Dynamic Stability and Traction Control) is a standard feature on the all-new Volvo S80. DSTC is a yaw-sensor-based stability system which, when necessary, reduces the engine output and applies suitable braking force to reduce the risk of a skid.

“Each one of these systems contributes to safer driving and more driving pleasure,” says Gllsdorf. “By combining them this way in the all-new Volvo S80, we can offer a premium driving experience whatever the driving conditions.”

Performance from Volvo's S80 Premium Sedan

- **Compact 4.4-litre V8 engine**
- **New 3.2-litre inline six-cylinder engine (Aust market release in March)**
- **Volvo designed and developed 400Nm D5 turbo diesel**
- **Six-speed automatic transmission across S80 model range**

The new S80 will reinforce Volvo Car's position in the prestigious premium car segment. A key asset that will promote the S80 as a legitimate challenger to its rivals in the European premium sedan market is refined power and on-road performance.

Three new efficient engines accompanied by a refined new-generation six-speed automatic transmission have greatly improved the S80.

A powerful and efficient 4.4-litre V8 engine, a new extremely compact inline 3.2-litre six cylinder engine, and a 2.4-litre turbocharged D5 diesel engine offer drivers top-class performance and driving comfort.

Volvo's in-house manufactured five-cylinder 2.4-litre D5 engine offers an extraordinary combination of performance, drivability and environmental efficiency.

In the new S80, Volvo continues with a transverse drivetrain layout. A transverse engine provides useful space for deformation in the engine compartment in the event of a collision. The transverse layout also improves passenger compartment space.

First Volvo sedan with V8 power

The all-new Volvo S80 V8 AWD is the first sedan from Volvo to receive the compact, transversely mounted V8 engine that was first launched in the Volvo XC90. The engine's unique narrow 60-degree angle makes it extremely compact. And by reversing the traditional offset of the cylinders and placing the left row ahead of the right, the engine has the optimum shape for fitting into the car's body structure.

Furthermore, the entire engine is manufactured in light aluminium alloy. A counter-rotating balancer shaft calms the engine harmonically.

The naturally aspirated V8 engine is immensely powerful producing more than 52kW per litre. At a total swept capacity of 4.4 litres, the V8 delivers 232kW and 440Nm. Of this peak output, as much as 370Nm is available from 2000rpm – the most common rev range in everyday driving.

“With a powerful V8 in the S80, we can reach out to the most discerning of customers,” says Derek Crabb, Vice President Powertrain at Volvo Cars. “In the prestige class, there are many buyers who would never consider any other engine alternative.”

Furthermore, this is one of the cleanest V8 engines on the market. Four catalytic converters – two of which are positioned close to the engine – and a highly advanced

engine management system contribute to quick start-up of the filtration process and reduce exhaust emissions to a minimum (satisfies ULEV II and Euro 4 requirements).

To improve fuel economy without compromising performance, the V8 engine is equipped with variable camshaft phasing and a variable intake system.

New six-cylinder inline engine – two engines in one

Volvo Cars recently revealed an entirely new high-efficiency six-cylinder inline engine. The inline six displaces 3.2 litres and produces a peak output is 175kW and 320Nm, corresponding to increases of 31kW and 40Nm when compared to the Volvo previous 2.9-litre inline six.

The new inline engine features advanced valvetrain control and a variable intake system to deliver good performance and high fuel efficiency. Several innovative solutions have also made it possible to build the engine within extremely compact dimensions.

The valvetrain features VCT (Variable Cam Timing) and CPS (Cam Profile Switching) on the inlet side – two key elements in providing the engine with excellent driveability and flexibility across a wide engine speed range.

With CPS the intake valves can be lifted to two different heights depending on the engine speed and load.

In normal driving, with normal throttle opening and low engine revs, fuel consumption is modest at the same time that torque is sufficient to provide good driveability.

“In principle, Cam Profile Switching creates two engines in one,” explains Crabb. “We can unite widely differing demands on the engine and easily meet the requirements of customers with entirely different wishes. Our focus is just as much on satisfying customers who prioritise performance as those who are more interested in driving comfort and fuel economy.”

VIS (Variable Intake System) consists of two throttle flap valves which adjust the intake manifold volume to suit the current driving situation.

“With VIS we can exploit the engine’s capacity to the maximum and extract the maximum possible power throughout the entire rev range,” says Crabb.

As does the V8 engine, the 3.2-litre six-cylinder engine is mated to a six-speed automatic Geartronic transmission. It is engineered to handle the immense power produced by these engines. Geartronic allows the driver to change gears manually.

Compact format contributes to impressive collision safety

Despite the engine’s 3.2-litre displacement, it has extremely compact exterior dimensions. The complete engine package is only 3mm longer than Volvo’s current five-

cylinder engine.

“A compact format is a matter of safety,” explains Crabb. “It is particularly important that the engine takes up minimal space longitudinally in the vehicle. The way we see it, a compact transversely installed engine is the best way of reducing the risk of intrusion into the passenger compartment in a collision.”

The engine’s compact format has been achieved by locating the ancillaries, such as the power assisted steering pump and air conditioning compressor, behind the engine in the space above the gearbox. Consequently, there is no front-end drive of the ancillaries. Instead they are driven via gears by the rear end of the crankshaft. This engineering solution is known as READ – Rear End Ancillary Drive. The alternator is direct-driven and installed on the engine block. This solution means that the entire engine and transmission package takes up minimum space, particularly in the car’s longitudinal direction.

By designing the drive system in the form of a small gearbox with an intermediate shaft inside the driveshaft – known as a Shaft-In-Shaft design – it was possible to ensure a very short package. The two shafts are driven by different gears that give them different speeds (one speed for camshaft drive and one for the ancillaries).

“It’s a particularly compact solution that is the result of highly advanced development work,” explains Crabb.

The vibration damper, which compensates for vibration in the six-cylinder engine’s relatively long crankshaft, has also been integrated into the engine block.

“All told, the new six-cylinder engine offers a premium experience in every respect,” comments Crabb. “This applies to its performance and fuel efficiency as well as its driving comfort and the sound of the engine. The fact that the engine’s design also helps enhance safety isn’t something the customer usually thinks about, but it is naturally a key element in Volvo’s product concept,” he adds.

Energy-efficient turbo diesel of the new D5 generation

The all-new Volvo S80 can also be specified with Volvo’s in-house manufactured five-cylinder D5 turbodiesel engine. Launched in May 2005, it is the second D5 generation. The Volvo D5 engine is very powerful and responsive. The turbocharged D5 engine delivers 400Nm throughout a very wide rev range.

Compared with the previous generation, the new D5 engine has been improved and refined extensively with a new electronically controlled turbo charger, refined multi-throttle injection technology and a very powerful engine management system. The improvements result in an entirely new driving experience with considerably higher performance and improved drivability.

At the same time, there has been a sharp reduction in emissions. A particle filter requiring no service is fitted as standard, making the D5 very environmentally efficient.

“The D5 will be perceived as a lively petrol engine, only more powerful and more environmentally efficient,” says Crabb.

Engine range – petrol

Engine	Configuration	Power kW	Torque Nm
4.4	V8	232	440
3.2	I6	175	320

Engine range – diesel

D5	I5	136	400
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New S80 Inspires With Scandinavian Luxury

- **Inviting and intelligent combination of aesthetics and functional technology**
- **Emphasis on dynamics – in design and when driving**
- **Production volume – 50,000 per year**
- **USA the largest market**

The all-new Volvo S80 reveals a unique strength: “We’re challenging the very best in the segment by offering refined Scandinavian luxury. In other words clean and elegant lines combined with intelligent function. Every single detail has been designed with a firm focus on the user’s well-being,” says Fredrik Arp, President and CEO of Volvo Cars.

Scandinavian luxury radiates a different, more human prestige by combining aesthetics and technology in an inviting and intelligent way.

“We are convinced that we have a particularly strong product here, one that is going to win over many customers from our competitors. We expect that as much as 70 percent of the average volume of 50,000 cars a year will go to buyers who do not drive a Volvo today,” says Arp.

Refined design and well-being with well thought-out technology

The second-generation Volvo S80 has a more compact and dynamic exterior. On the inside the aura of well-being is created with refined colours and materials in harmony with well thought-out technology that is highly advanced yet easy to use. In addition, the S80 is equipped with a class-leading audio system.

“It’s not about packing in masses of technical gadgets whatever the price. Instead, we prefer to regard the car as a complete entity where the technical solutions interact to give the occupants a comfortable, dynamic and safe driving experience. You should have full control – both over the car and over the surrounding traffic,” explains Silvia Güllsdorf, S80 Project Director.

S80 engine range includes a V8 and a D5 turbodiesel

- A 4.4-litre V8 producing 232kW and 440Nm
- A new 172kW, 320Nm 3.2-litre six-cylinder engine
- Five-cylinder D5 turbodiesel 136kW and 400Nm
- New S80 available with all-wheel drive in combination with V8 engine and 3.2-litre inline six engine
- Active FOUR-C chassis (Continuously Controlled Chassis Concept) is standard on all Australian model variants.

“We’re enhancing our competitiveness on several important markets. In the USA, a V8 is a must to succeed in this segment, while a really strong diesel alternative is most important in Europe. The first-generation S80 and in particular our success with the XC90 have made us an established and highly respected brand in the premium segment,” asserts Arp.

World-class safety

World-class safety levels and a firm focus on environmental care are factors that contribute to the Scandinavian luxury of the new Volvo S80.

In the area of safety, there are features such as a further-developed and patented structure and new active safety systems.

For instance, the S80 is the first Volvo model with Adaptive Cruise Control, Collision Warning and Brake Support. The advanced PCC (Personal Car Communicator) remote control is a world-first and features a number of intelligent safety and security functions.

Volvo Cars is also taking another step forward in creating a car that is clean inside and out. With its sophisticated climate unit and careful choice of interior materials, the new S80 – equipped with Clean Zone Interior Package (CZIP) – meets the Swedish Asthma and Allergy Prevention Association's extremely stringent criteria.

Audio And Communication Systems Of Premium Luxury Class

- Digital technology reproduces natural sound
- Dolby Pro Logic II Surround with adjustable audio profile
- Speakers from world-renowned manufacturer Dynaudio
- MP3 and WMA formats
- Handsfree with Bluetooth and mobile phone

Amplifier from Alpine, digital Dolby Pro Logic II Surround and first-class loudspeakers from Denmark's Dynaudio deliver audio excellence in the new S80 luxury sedan.

The S80 provides a total audio experience of unparalleled quality.

"This car offers excellent prerequisites for high-class sound reproduction," says Silvia Güllsdorf, S80 Project Director at Volvo Cars. "High-quality materials, a well-dimensioned interior, and effective sound-damping materials contribute to a particularly favourable audio environment. Our audio systems are the very best available in the automotive world."

Digital technology reproduces natural sound profile

The very latest advances in digital technology are used to control and tailor audio reproduction to suit the shape of the passenger compartment and the location of the loudspeakers. In coordination with DSP (Digital Signal Processing) the tone curve has been fine-tuned to create authentic sound quality.

Digital technology is also used in Volvo's modern amplifier, which has been co-developed with Alpine. A digital class D amplifier has very low current consumption allied to a very high efficiency rating. This means it produces less heat than an

analogue amplifier – and it can be made more compact.

Volvo's amplifier also has a very high attenuation rate, thanks to ICEPower® technology from Danish experts Bang & Olufsen PowerHouse a/s. This system contributes to the clear and powerful sound all the way down to the deepest bass tones.

Automatic volume and tone adjustment

Thanks to the use of digital technology, the sound can be adjusted to suit current driving conditions as they change. Not only volume but also tone is adjusted automatically to match the car's speed. There is also the possibility of individual preferences – in the car's menu system with its personal settings, it is possible to determine just how much the sound should be adjusted in response to road speed. There are three levels to choose between – low, medium and high.

Two audio performance levels for Australia

The all-new Volvo S80 is available with a choice of two audio system levels:

- High Performance – with 4x40 W amplifier and 8 loudspeakers
- Premium Sound – with 5x130 W digital amplifier, Dolby® Pro Logic II Surround and up to 12 loudspeakers.

Dolby Pro Logic II Surround with individual adjustment of audio profile

Volvo was the first car manufacturer with a factory-fitted audio system featuring Dolby® Pro Logic Surround. The technology was developed to produce a natural-sounding multi-channel audio perception and was introduced in 1997 in the first Volvo C70 series.

The system being offered in S80 is the latest surround-sound generation, Dolby Pro Logic II Surround. It is a 5.1-channel system that offers a broad audio profile in the front seats and genuine stereo effect and full band width in the rear seat. What is more, the sound from the front and rear loudspeakers blends smoothly to create a natural audio experience.

To contribute to the best possible individual sound experience, the Premium Sound system has a new adjustment option. The audio profile can be optimised in three different ways – for best possible audio experience in the driver's seat, in both front seats, or in the rear seat. These settings are made via the car's information system.

"This is a good way of avoiding having to compromise on sound quality," says Güllsdorf. "A driver travelling alone in the car can adjust the sound system entirely to suit personal tastes. And if the car owner is sitting in the rear seat, it's equally easy to deliver the high audio quality there."

Loudspeakers from Dynaudio of Denmark

The loudspeakers in the Volvo S80 are of exceptional quality in every respect. The Premium Sound system has loudspeakers from Denmark's renowned Dynaudio.

“We both share the same uncompromising attitude to audio quality,” explains Güllsdorf. “Together we have acquired in-depth knowledge about sound inside the car. The result is truly high-class audio reproduction. That is why we’re also placing the Dynaudio logotype on the instrument panel of the all-new Volvo S80 – it represents a crowning achievement for both our companies.”

The front doors have well-dimensioned three-way loudspeakers. The rear doors feature two-way loudspeakers with a tweeter element and combined bass and intermediate register element and powerful cones. The tweeter element is made of textile (known as a silk dome tweeter), a Dynaudio speciality that creates more precise sound. Each loudspeaker has a passive crossover filter to provide a harmonious total sound experience with the best possible band width and dynamism.

A specially developed centre loudspeaker in the instrument panel works together with the door loudspeakers to create a natural, homogeneous sound profile.

“We are very proud of the audio experience we can offer in the S80,” says Güllsdorf. “It’s easy to forget that you’re actually in a car and not in a concert hall.”

Plays MP3 format

Volvo's High Performance and Premium Sound systems now play CDs with music in MP3 or WMA format. This means that the CD changer can store several hundred music tracks to allow the driver access to a large music library in the car.

What is more, all the audio systems now feature an extra input (AUX) for connection of additional equipment such as a portable MP3 player.

To further enhance radio reception quality, the FM radio has three aerials that interact with each other to provide the best possible reception in a system known as Scanning Diversity.

Wireless handsfree function in the car with Bluetooth and a mobile phone

The new S80 will offer its occupants the convenience of using a regular mobile phone in combination with the car’s loudspeakers – entirely wireless – courtesy of the new Bluetooth function.

After Bluetooth has been activated, the car’s phone module detects and registers the mobile phone and automatically links it to the car’s own system. After that, it operates as part of the integrated handsfree system. SMS text messages and other information texts can be read on the S80's information display and incoming phone calls automatically mute the sound from the radio or CD player.

With Bluetooth and a regular mobile phone, you always have access to the same phone directory. And you never need to switch between several SIM cards. In addition, several phones can easily be linked to the same network so that everyone using the car can have his or her own phone connected, although only one at a time is prioritised for

automatic activation. The Bluetooth system will link a total of five phone.

“In this way, you are truly mobile,” says GÜllsdorf. “No switching between different phones and no delay when getting out of the car. And you don’t need to stay sitting in your parked car just because you’re in the middle of a handsfree call. You simply pick up your mobile phone and leave the car and continue your conversation without interruption.”

Safety and Security in New Volvo S80

Volvo introduces leading-edge personal security features in the all-new S80 luxury sedan.

“Safety is not just a matter of avoiding accidents,” explains Silvia Güllsdorf, business project manager for the all-new Volvo S80. “In an increasingly insecure world, safety also extends to control over our immediate environment, both at home and in the car.” The Volvo S80 comes with a unique optional feature – the Personal Car Communicator (PCC).

The PCC is an advanced, pocket-sized remote control. The device is used to unlock the car door when you pull the door handle. To lock the door, you press the button, either on the door handle or the PCC.

“Wondering if the car is locked is a very common worry – and a frequent one. I know that I often have to check it myself by unlocking and relocking the car after I have walked a few metres,” says Güllsdorf with a smile.

With the PCC, you simply check the key to see if the car is locked. And you do not even have to be near the car; the key simply ‘remembers’ whether your last action was to lock or unlock.

You can also start the car without a key. Just sit in the driver's seat, place your feet on the pedals and push a button to start the engine.

The PCC is much more. When approaching the car from a range of 60 to 100 metres, you can obtain a security status report by pressing the information button. Different LEDs then tell you if the car is locked or unlocked, other LEDs tell whether somebody has interfered with the vehicle and caused the alarm to go off. A flashing red light means that the heartbeat sensor has been activated and that there is an intruder in the car.

“Our surveys show that motorists in many countries are fearful of assault, whether going to and from the car at night or in dark unsupervised parking places. Or assault by somebody who has hidden in the car,” says Güllsdorf.

However, the S80 offers a few features that quickly dispel darkness when approaching the vehicle. Just one pushbutton operation on the remote control will switch on all of the car's lights, as well as the interior lighting.

This is also useful when looking for your car in a dark parking area. When leaving the car, the headlights can also be switched on for 30-90 seconds by operating the headlight flasher. This feature offers you an illuminated pathway to your front door. The car alarm is activated if somebody breaks a window, moves about in the car or the panic button on the remote control is pressed. The car will then emit a cacophony of

sound and light, and all of the lights will come on – all while the alarm itself is sounding.

Other security options include a level meter to detect if the car is raised in an attempt to steal the wheels.

“Personal security is a matter of untroubled car ownership and avoiding situations that can present personal risks,” declares Gllsdorf.

The new S80 is available with laminated side windows to reduce the risk of theft and damage. The locks are also more robust; the most advanced being the BLL type with a deadlocking function. This means that the lock cylinder is free to rotate about 30 seconds after the door has been locked, making it impossible to open. And should a persistent thief succeed in entering the car, the doors cannot be opened from inside.

The locking system is provided with a number of setting options. The in-car menu enables you to choose whether all of the doors or just the driver’s door will be opened when the car is unlocked. Some markets also offer the convenience of opening the windows by holding down the button for a few seconds when unlocking the vehicle. The windows are closed if this is repeated when locking the car.

“Other concerns relate to driving through unsafe areas. If this situation arises, the locking system can be programmed to lock the doors automatically when the car moves off. And if the doors are unlocked by mistake, they will relock themselves if no door is opened within half a minute.

“What we have done in the all-new S80 is attempt to meet the needs of owners for personal security,” says Gllsdorf. “Personal security is one of the cornerstones of Volvo’s safety philosophy.

Volvo S80 Technical Briefs

1. Planet Overview, According to S80

Volvo revealed the S80 V8 AWD on February 28, 2006 at the Geneva Motor Show, just months prior to its on-sale release in Europe in June. All variants of the new S80 sedan are built at Volvo's Torslanda Plant in Gothenburg, Sweden.

Volvo will produce approximately 50,000 S80s annually of which Volvo anticipates 70 percent will be sold to first-time Volvo buyers.

The main markets globally are USA, Germany, Russia, Sweden, China and UK.

2. S80 Model Range

Volvo Car Australia will bring to market three S80 models in 2007:

S80 V8 AWD	\$95,950
S80 D5	\$71,950
S80 3.2 AWD	\$75,950 (<i>released in late March</i>)

3. Power to the 60-degree V

Volvo's first-ever V8-powered sedan, the S80 V8 AWD shares its 4.4-litre 60-degree V8 engine, six-speed automatic transmission, and all-wheel-drive system with the XC90 V8.

However, the S80 V8 AWD (kerb mass of 1742kg) is 360kg lighter than the XC90 V8 (2102kg).

Less weight equates to less time - S80 V8 AWD is quick, accelerating from 0-100km/h in 6.5 seconds.

4. Acronymology – the Science of Safety Nomenclature

S80 inherits many of Volvo's world-first technologies and introduces a few of its own:

CZIP – Clean Zone Interior Package – purges interior air to reduce the exposure of occupants to air-borne contaminants. CZIP is activated when the S80 is unlocked after being parked.

PCC – Personal Car Communicator – is an important advanced function of the key FOB. No matter when or where, the holder of the key FOB can press the i button and the PCC will tell you whether the car is locked or unlocked.

The PCC (if within 100 metres) will also inform you if the S80's alarm has been triggered. A heartbeat sensor detects if anyone may be hiding in the car.

5. New S80 is Actively Safer

As did the first-generation S80 in 1998 (introduction of world-first Inflatable Curtain), the second-generation S80 pushes safety technology to a higher level, albeit with a focus on impact avoidance.

ACC – Adaptive Cruise Control – uses a radar sensor to maintain the distance to the vehicle in front. ACC is a comfort-enhancing feature which contributes at the same time to more controlled driving when the traffic rhythm is uneven.

CW – Collision Warning with Brake Support – helps avoid rear impacts, minimising the risk of such collisions. If the car approaches another vehicle from behind and the driver does not react, the system alerts the driver with an audible warning and a red visual warning. If the risk of a collision continues to increase despite the warnings, the Brake Support system is activated. The brake pads are gently pressed against the discs and brake pressure is hydraulically amplified in preparation for an emergency stop.

Active Bi-Xenon Lights – moving headlight beams that follow the curvature of the road – help maintain the best possible visibility in the dark on twisting roads.

Blind Spot Information System (BLIS) – available as a \$1200 option on all Volvo models

Intelligent Driver Information System (IDIS) – standard on S80, S40, V50 and C70

6. Safety in Better Bags

New seat-mounted side-impact airbags feature two separate inflation chambers – one at hip height and one at chest height. Since the hips can withstand greater impact than can the chest, the lower chamber is inflated at five times higher pressure than the upper section.

The side-impact airbags interact with the Inflatable Curtains (IC) and the S80's body structure with its network of beams protects occupants as effectively as possible.

7. Against the Tape

New S80 V8 AWD	vs	Old S80 T6
4851mm	(overall length)	4822mm
1861mm	(overall width)	1832mm
1493mm	(overall height)	1434mm
2835mm	(wheelbase)	2791mm
7.51kg/kW	(power to weight)	8.37kg/kW
11.9L/100km	(combined fuel)	11.1L/100km
6.5sec	(0-100km)	7.3sec
\$95,950	(RRP)	\$98,950
232kW	(peak power)	200kW
440Nm	(peak torque)	380Nm

8. Cetane for D5

The S80 D5 is the second diesel model to be introduced by Volvo into Australia. It follows the XC90 D5 introduced in September 2006. The S80 D5 will be joined by the

S40 D5 and V50 D5 diesels by the end of this quarter. A C30 D5 will be offered toward the end of 2007.

So what's the common link? Volvo diesel models sold in Australia will use the Volvo designed and Volvo built 2.4-litre five-cylinder aluminium diesel engine. However, the D5 engine's peak torque output depends directly on the transmission.

When linked to the five-speed automatic, D5's peak torque is 350Nm; when linked to the six-speed automatic, D5's peak torque reaches 400Nm.

9. Articulate about Particulates

All Volvo diesel models are equipped as standard with a particulate filter. It is a CDPF – Coated Diesel Particulate Filter – in which a special coating helps burn the particulates. Therefore, no additives are needed, and the filter requires no maintenance. Burning away soot particulates takes approximately 20 minutes and occurs automatically at 500 to 1000km intervals, depending on driving conditions.

10. Mirror Image

Front & Rear Park Assist is standard on all S80 variants, and so are a few other 'nifty' things to help you see backwards. Each side mirror can be dipped – when the gearbox is in reverse - by touching the mirror adjust button.

Also, via the vehicle settings menu, you can request the side mirrors to fold when the vehicle is locked using the key FOB. The mirrors will also fold out when the vehicle is unlocked.

11. Electronically Activated Handbrake

The electronic handbrake will release when you drive away – in Drive or Reverse. It replaces the foot pedal brake (as you know on XC90) on all RHD S80s.

12. Bum Steer – The Cure

Steering effort can be personal. You can adjust the steering *effort* – low, medium, high – through the S80's settings menu.

The steering effort function is not linked to the suspension control which can also be adjusted through a selection of three settings – Comfort, Sport, Advanced.

The FOUR-C damping control system is a development of Ohlins and debuted on the S60 R and V70 R in 2003.

FOUR-C (Continuously Controlled Chassis Concept) automatically adapts the stiffness of the shock absorbers in response to the road surface. Damping control of each shock absorber can be changed in 5-15 milliseconds.

FOUR-C is a standard feature on all Australian S80s – including the S80 D5 diesel.

13. Does It Make My Bum Look Big

As much a matter of safety as it is a matter of lateral thinking, when you open the boot, the S80 will automatically illuminate its tail lights. This gives an added measure of safety especially when roadside accessing the spare wheel.

14. Radar Love

ACC – Adaptive Cruise Control – makes it debut on the S80 as a \$2950 option. Try it! The option is fitted on a few of the S80 V8 AWDs. You can set the spacing distance to the car in front by fingering the control on the steering wheel.

Its full name – ACC with Collision Warning System and Brake Support – does more than allow you to cruise comfortably. Collision Warning System will alert you to a high risk situation – an imminent collision – with an audible alarm and a flash of red LED lights on the instrument panel in the driver's line of sight.

Brake Support reacts by preparing the brakes for full braking effort (via EBA and ABS systems). If the driver does not react (either by braking or by accelerating), the system will apply up to 30 percent braking effort.

15. ABS Brakes and Lights

Okay, you've hit the brakes for full effect and as expected the ABS and EBA systems have done their jobs. So why are the hazard lights flashing?

The hazard lights are activated when the S80 exceeds deceleration above 0.7g. So to answer the question: to warn other drivers that you've rapidly decelerated.

16. Wave of Approval

Adaptive Cruise Control operates at 76Ghz. This is critical because there are areas in Australia (near radio telescopes and satellite guidance systems) that use 24Ghz as their operating frequency.

17. Clean & Clear View

The high pressure headlight washer cleans one headlight at a time. That way the driver's night vision is not severely reduced.

Drive with the headlights on during the day, as many of us do, and the Active Bi-Xenon Lights will illuminate. However, the system senses daylight and will not 'activate' the movement of the headlight in coordination with the steering. There's simply no need to.