

Press Release

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All-New Volvo V70, Model Year 2009

All-New Volvo V70 Redefines The Premium Estate Market Model Year 2009

Overview

- Class-leading versatility
- More luxurious, more dynamic than outgoing V70
- Designed to be the world's safest estate
- Innovative safety technology includes world's first integrated, dual-stage child booster seat
- New six-cylinder engines include a 285PS turbo offering 152mph performance
- Advanced 47.9mpg, 2.0-litre diesel engine
- The all-new Volvo V70 is built in Torslanda near Gothenburg in Sweden
- iPod compatible as standard
- Sporty R-DESIGN specification introduced in May 2008

The all-new Volvo V70 is a versatile, luxurious estate car designed both for demanding families and keen drivers. Larger, roomier, sportier, more functional and more environmentally friendly than the outgoing Volvo V70, the new model takes styling cues from its hugely successful predecessor. Yet every body panel, as well as the vehicle's chassis architecture, is new.

With its sleeker and more athletic lines, rakish windscreen, blacked-out side pillars, C30-inspired taillights and dynamic tailgate angle, the V70's head-turning style hints at its newfound on-road dynamism.

Load-carrying space is bigger, by 55 litres, and boot access is better than on the outgoing V70. This is partly because the upright tail-lights have moved from the rear pillars to the tailgate, so the opening is bigger than ever. A powered tailgate - for both opening and closing - is available for extra convenience.

The cabin is also completely new. It's roomier than the previous V70 - front seat, back seat and rear load space have all grown - and higher quality, with superior trim and many more interior features, including an ingenious new 40:20:40 split rear seat that allows long items to be carried while two adult passengers are sitting comfortably in the back.

'The V70 is the heart and soul of the Volvo brand, the vehicle that, more than any other, defines us as a maker of premium, practical and safe Swedish cars,' says president and CEO of Volvo Cars Fredrik Arp. 'Volvo is the world leader in the large estate car segment. We pioneered this market more than 50 years ago and we are determined to continue to dominate. On so many fronts, the all-new Volvo V70 is a crucial model for us. On so many levels, the all-new V70 wins as the supreme estate car.'

Like its predecessor, the Volvo V70 was designed from the outset as an estate - so, unlike nearly all its rivals, it is not an estate version of a saloon. This purer and more focused approach leads to a car with fewer compromises. It was also designed, first and foremost, as a comfortable, functional family estate. It is therefore unlike many rival premium estates, which have been designed to be sporty as much as spacious.

'It was an amazing responsibility to develop an all-new V70,' says Tomas Ahlborg, project director. 'The priority was simple: to take all that was great about the existing V70 and make it better in every way. Particular areas for improvement were identified as driving dynamics and the need to give an even more premium feel. Naturally we also wanted further to improve the space and versatility and I believe we have now delivered the most functional and practical estate car that Volvo has ever built.'

A Volvo would not be a Volvo without class-leading safety innovations and, unsurprisingly, the V70 excels in this area. Award-winning new technology includes a new design of child car seat with a height-adjustable booster cushion that ensures optimal seatbelt geometry for maximum safety and protection but also offers good visibility out of the windows - making children (and parents) happier. 'When children complain less, parents drive more safely,' says Ahlborg. Small children would use the higher booster setting, which allows them to see out of the windows. Larger children, who still need a boost, now ride in unmatched safety.

Primary safety is also improved thanks to an innovative new Adaptive Cruise Control and the new Collision Warning with Auto Brake, which warns drivers when they are getting dangerously close to the car in front and then primes the strong disc brakes for maximum braking force.

All engines, including two in-line, six-cylinder motors, are transversely mounted for maximum safety in a frontal impact. It's the first time that a six-cylinder engine has been offered in a Volvo V70. The top-line engine is a 3.0-litre, 285PS, 400Nm, turbocharged six, capable of propelling the T6 version of the V70 to a top speed of 152mph and from 0-60mph in 6.7 seconds. A non-turbocharged, 238PS six-cylinder is also available. Both six-cylinder engines are British-built, in Bridgend, Wales.

Other engines include a five-cylinder, 2.5-litre, turbo, petrol 2.5T (200PS), two 2.4-litre, five-cylinder turbodiesels (185PS D5 and 163PS 2.4D), a 2.0-litre (145PS) petrol unit and a 2.0-litre, 136PS turbodiesel capable of a frugal 47.9mpg (157g/km) on the official combined cycle.

Two eco-friendly FlexiFuel engines, just as happy to run on bioethanol as petrol, are offered: a 2.0-litre, 145PS unit and a five-cylinder, 200PS, 2.5-litre motor. The FlexiFuel engines automatically recognise what sort of fuel is being used and alter the tune accordingly. In bioethanol form these engines offer total CO₂ savings of approximately 80 per cent.

The T6 comes as standard with Volvo's unique All-Wheel Drive (AWD) system, which is also available on the D5, which automatically distributes power to the wheels that have most grip, assuring superb traction. Front-wheel drive - for a perfect balance of predictable cornering, safety and good traction - is used for the other powertrains. Volvo's Dynamic Stability and Traction Control (DSTC) is standard. Numerous dynamic sensors monitor the vehicle's behaviour so that, when necessary, the system can reduce engine torque and apply carefully calculated braking power to stop skids.

The 3.2 and T6 AWD are mated exclusively to Volvo's Geartronic gearbox, which offers both full automatic and manual clutchless changes. The T6 gets a sport mode, for even sharper performance. The 2.0-litre variants, 2.5T, 2.4D, D5 and FlexiFuel models come as standard with a manual gearbox. While the 2.4D and D5 are available with Geartronic as an option.

To package this improved performance, the Volvo V70 is sleeker and more athletically styled than its predecessor. 'It's not a sports estate - it's a functional and versatile estate first and foremost,' says Stefan Jansson, chief designer, exterior. 'But we have definitely dialled up the sportiness, both dynamically and in the styling.' Examples include the more steeply raked windscreen, the blacked-out side pillars, the distinctive, C30-inspired tail-lights, the more inclined upper tailgate and the tauter surfacing. 'The metal seems to be stretched more tightly over the body, giving a tauter, more muscular feel,' says Jansson. It's a distinctively Swedish design - clean, functional, no fuss, highly distinctive - and it has a very good drag co-efficient of 0.31Cd.

The new chassis architecture and suspension give a sharper and refined driving experience. 'The

all-new V70 has been refined and improved in every respect,' says Tomas Ahlborg. 'The chassis technology offers a high-class feel and superb control in all situations. This helps reinforce Volvo's special position in the premium estate car segment.' Ride quality, quietness, high-speed stability and all-round dynamic comfort have all been substantially improved.

'This is a family car first and foremost, so a pliant ride, secure road holding and excellent stability were all crucially important,' says Ahlborg. 'Stability is a real priority, especially in a car that can accommodate five full-size adults and so much luggage.'

Volvo's innovative Four-C active suspension is available as an option on SE and SE Lux models. Computer control automatically firms up dampers as speeds increase, improving handling and steering response. The R-DESIGN variants get a Lowered Sports Chassis (lowered 20mm at the front and 15mm at the rear).

The all-new Volvo V70 is slightly longer than the outgoing model - by 113mm - but this extra length has been put to good use. Front and rear crash protection is even better than on the old V70 - a car with legendary crash protection - and the extra length has also been used to make the new vehicle more spacious. Rear-seat legroom has been boosted by 48mm and load capacity increased by 55 litres. Access to the rear has also been improved, helped by locating the large rear tail-lamps in the tailgate rather than on the rear pillars, which increases the size of the rear opening.

Comfort, a cornerstone of the outgoing V70, has been improved, partly by all-new seats, which are based on those of the luxury S80. Volvo is renowned for comfortable seats that allow for hours of pampered motoring. The new seats are further improved by the availability of internal ventilation, in which fans and perforated leather further boost seating comfort on hot days. For more typically Swedish weather, the all-new Volvo V70 is also available with heated front and rear seats.

The all-new Volvo V70 is available in three luxury trim levels - SE, SE Lux and R-DESIGN. Prices start at £24,995 for the 2.0P SE and rise to £38,515 for the T6 AWD SE Lux. Not only do these prices offer substantially better value than most rival premium estates, but Volvo V70s also traditionally have the best residual values in the class.

Design Concept

- Highly functional estate featuring greater versatility and space
- Expressive Swedish design that is tauter and more muscular than outgoing V70
- Raked windscreen and more steeply angled upper tailgate give the car a sporty character
- Aimed at premium family market yet car is also sporty and fun to drive

Background to the design

Volvo pioneered the premium European estate when it launched the PV445 in 1953. Known as the Duette, it became popular with small businessmen and families who liked its strength, reliability and spaciousness. It was called the Duette because it was effectively two cars in one: a flexible van and a comfortable passenger saloon. There was nothing else like it and it invented a whole new category of car, the multi-purpose estate.

The first Volvo estate to be imported into the UK was the 220 Amazon of 1962. Unlike the PV445, this vehicle had a saloon-like monocoque (unitary) body for greater rigidity and lighter weight. It was followed by the cleanly styled 145 of 1967. Volvo estates were by now becoming familiar sights on UK roads. The chunkier 245 series followed. Volvo's leadership in the premium estate market, both in the UK and worldwide, was now firmly established.

Volvo estates in those days were practical, comfortable vehicles, renowned for their safety, functionality and longevity. 'That is our heritage and it is one that we are immensely proud of,' says Englishman Steve Mattin, Volvo Cars design director. Those wonderful Volvo estates gave the Swedes a reputation for safety, toughness, reliability and durability; they were family-friendly cars that also stood for minimalist, highly functional Swedish design.

Volvo estates that followed became more prestigious, more comfortable, better to drive and more

stylish. They were luxurious large saloons - but with the added benefits of an estate. And they retained the time-honoured Volvo values of space, functionality and versatility.

The biggest jump of all was probably the last V70, the series two, launched in 1999. Designed under the directorship of Englishman Peter Horbury, it redefined Volvo's form language, partly by borrowing cues from earlier Volvos. Those strong, rounded shoulders were similar to the body sides of the much-loved Amazon. And, in typical form-follows-function Volvo style, they not only look protective, but also help to provide the immensely strong side protection for which Volvo is renowned. All modern Volvos, from the large S80 to the small C30, now share this styling detail. The V-shaped bonnet, introduced on the first S80 and second series V70, is highly distinctive, as is the soft, rounded nose - which has additional pedestrian safety benefits. The soft edges and curvaceous, truncated tail give both visibility benefits - especially in reverse parking - and aerodynamic advantages.

The latest V70 - the 10th generation of the Swedish *herrgårdsvagn* (estate car) - continues the 'dual personality' of the original PV445 Duette and its innovative thinking. 'Today's V70 is incredibly versatile, yet it's also very dynamic to drive. We have reinforced both elements by giving the all-new V70 a generous dose of luxury to increase its premium level even further,' says Mattin.

Sportier stance of Volvo V70

Design director Steve Mattin describes the V70 as 'the jewel in the crown' of Volvo. 'Our task was to refine it carefully to give the all-new Volvo V70 even more star quality.'

The design team started the process by closely examining the world's most successful premium estate car - the existing V70. Says Stefan Jansson, chief designer, exterior: 'The outgoing V70 is a fabulous car. The duality in its personality made it successful. It was immensely practical yet it had an edge to it - it was stylish and desirable. You could go on a family holiday or dress up and go to the theatre. It was just the right size of vehicle. So we started with the existing V70 and decided to turn up the volume.'

The all-new Volvo V70 had to be better in every way: more practical, more spacious, more reliable, safer, more dynamic. A key demand was to make it look more upmarket and prestigious and, in keeping with its greater dynamic ability, to make it look sportier too.

Says Stefan Jansson: 'There were some design elements from the old car that we knew we wanted to retain, like the shoulder line, the V shape in the bonnet and the upright tailgate - all classic and easily identifiable V70 features. We knew we had a winning recipe. We just wanted stronger flavours.'

'Proportions are crucial. We worked hard on getting the stance and the whole attitude of the car just right. We wanted more of a wedge. We lifted the rear of the car a little to make it look more dynamic. The climbing waistline gives a forward-leaning, dynamic stance. Premium is the balance of luxury and dynamics - we wanted both with the all-new V70, a perfect balance.'

'The chrome frame around the window-line of the SE Lux model adds a premium feel - it really highlights the window graphics. The old V70 had body-colour B- and C-pillars whereas, on the all-new V70, they are blacked out. The blacked-out pillars cause the windows virtually to flow together in one single element. This, and the chrome moulding, creates an aura that is luxurious yet sporty at the same time.'

'The old car also had unusual concave surfaces - it helped with reflections - whereas the new car has all positive body surfacing. We wanted a more muscular, athletic surfacing finish for the new car.'

The more reclined windscreen adds to the sporty feel, and so does the more steeply raked upper section of the tailgate. Instead of a flat tailgate, the all-new V70 has a kink where metal meets glass. 'It looks sportier but does not compromise load carrying or load access one single bit,' says Jansson. Quite the contrary. Load-carrying space is bigger, by 55 litres, and boot access is better than on the outgoing V70. This is partly because the upright tail-lights have moved from the rear pillars to the tailgate, so the opening is bigger than ever. The tailgate glass is also deeper at the sides, improving rearward visibility. A powered tailgate - for both opening and closing - is available for extra convenience.

All the rear lights above the waistline - including the high-mounted third brake light - are LED lights,

which are brighter and react faster than conventional tail-lights. If the load is so large that the driver is forced to drive with the tailgate slightly open, the lower lights on the body sides become supplementary brake lights - another delightfully clever detail on the meticulously conceived all-new Volvo V70.

At the front, the grille is unique to the V70. The vertical chrome bars - reminiscent of the 'waterfall' grille seen on many Volvos, including the V50, XC90 and earlier V70 - have a black egg-crate grille behind, to give the all-new Volvo V70 a sporty touch. The nose is heavily rounded, in keeping with the soft edges of the car. 'Volvos are never aggressive in style,' says Jansson. 'Mind you, if you saw an all-new V70 coming up behind you in the rear-view mirror, you'd definitely get out of the way.'

The more rakish appearance doesn't just suggest a sportier character. It helps the all-new V70 cleave the air more cleanly: its Cd drag coefficient is just 0.31.

'An honest, practical car'

'We have such a strong heritage here - it's like handling the Swedish crown jewels,' says Stefan Jansson. 'The V70 is the core of the brand. Part of Volvo's brand is our form-follows-function honesty. There is nothing contrived or artificial about Volvo. So the all-new V70 had to be practical and look practical. We also want to produce a very honest car. What you see is what you get.'

The all-new Volvo V70 is longer by 113mm and wider by 57mm than the outgoing model. Its wheelbase, which contributes to the greater cabin space, is increased by 61mm. Nonetheless, the all-new V70 is still shorter than rival estates such as the Mercedes-Benz E-class, BMW 5-series Touring and Audi A6 Avant.

'Of course we look at rival cars to see what they're doing,' says project director Tomas Ahlberg. 'But we take a different position with our estate. We do not compromise space and functionality for sportiness. We also know that the old V70 was appreciated because it wasn't too long. We decided to go a little longer to improve legroom and safety, both at the front end and at the rear. But the all-new V70 is still shorter than our rivals to make it more manoeuvrable and easier to drive. We just didn't believe that our customers wanted such a big car as those offered by rivals.'

The Volvo V70 is available in 15 different exterior colours, two of which are new: Saville Grey and Caper Green Pearl, all developed to emphasise the estate car's sportier and more luxurious aura.

Interior Design

- Luxurious elegant cabin
- Roomier than the outgoing V70
- Innovative integrated two-stage booster seat improves child safety
- Simple Swedish architecture using premium materials
- Great versatility including folding rear seats that concertina in a single motion
- Front passenger seat also folds, for even greater carrying capacity
- Superbly comfortable seats offer internal ventilation as well as front and rear heating
- Highly functional luggage area includes under-floor storage space and side rails to secure items

The Volvo V70 is a brilliant synthesis of functionality and Swedish luxury. It is the roomiest and most versatile estate that Volvo has ever made and also the most upmarket. In both front and back seats, you are riding in a luxury car - leather seats are available, as is wooden trim and all manner of high-end specification. Yet the enormous rear load area and the versatility of the cabin - not least the easy-to-fold seats - transform the all-new Volvo V70 into one of the world's most effective carryalls.

Improved carrying capacity and even greater functionality

The outgoing Volvo V70 was recognised for its legendary spaciousness and versatility. Yet the all-

new V70 is even better. Rear load area is increased by 55 litres. Rear access is improved by a bigger aperture, thanks partly to locating the rear tail-lights on the tailgate rather than the rear pillars. Total load length, with rear seats folded, is 1878mm (up 30mm).

The ingenious new 40:20:40 split rear seat offers unrivalled versatility. Unlike conventional 60:40 or 50:50 split rear seats, the new set-up means that long items such as skis can be accommodated while two adults sit in comfort in the rear. When all three seats are folded, the load area is completely flat. The backrest of the front passenger seat can also be folded, further improving carrying capacity.

The rear seats now fold easily. In one movement they fold flat into the floor without the need to remove headrests.

The rear load bay itself is also extremely versatile. There is a large, 46-litre, lockable storage area under the floor for valuable goods. Aluminium rails are fitted to the floor and their adjustable anchorage points make it easy to secure items. The anchorage points can be tucked down into the rails when not in use. The boot's side panels also have built-in load anchorage eyelets, further to help fasten goods. In addition, the side panels can be fitted with multifunctional rails to attach hooks, load-anchoring nets and cargo space dividers, to name just a few of Volvo's many loading accessories. In effect, the all-new V70 offers a 3D load-securing system. A sliding floor is also available.

'The designers spent a huge amount of time wondering how we could improve the functionality of that boot,' says design director Steve Mattin. 'I'm really proud of all the innovative details we have conceived to make the ownership experience even more enjoyable and practical.'

Cabin has greater length, shoulder-room and legroom

The longer cabin means more room for all passengers. 'One of the goals was to ensure that all five occupants travel first-class, not just the two people in the front,' says project director Tomas Ahlborg.

Rear legroom has increased by 48mm, rear knee clearance by 21mm and front shoulder-room by 30mm. The longer cabin also means the distance between the front and rear occupants is extended by 21mm.

Volvo has an excellent reputation for seating comfort. The seats on the V70 are new and even better than the outgoing model's and the electrically operated front seats can be upholstered in perforated and ventilated leather. Front seat ventilation is supplied by the car's air-conditioning system: the air flows through the upholstery and seat cushion, reducing any stickiness caused by warm weather. The system also comes with heated front seats for chilly days, while heated rear seats are now available.

Integrated two-stage child booster seat

Another major seating innovation is Volvo's new integrated, two-stage child booster seat.

'Modern cars tend to have higher belt lines [where the bottom of the windows meets the body] so younger children tend not to be able to see out of the window in the back these days,' says Karl-Johan Ekman, technical project leader. 'It's a big problem because if they're bored and causing trouble then you won't drive so well.' The two-stage booster allows small children to sit higher and larger children still to receive a height boost. In both cases seatbelt angles are optimised, so safety is improved. The booster can be fitted to either of the outer rear seats.

Luxury cabin befitting a premium saloon

Though the V70 has been designed as a practical family workhorse, it is also a consummate luxury car. It epitomises Scandinavian luxury. The cabin is simple, elegant and functional, and seamlessly combines beauty and technology. It is a less complex and warmer environment than that typically found in rival German cars. High-quality materials are used extensively, including different grades of leather, two different types of wood and brushed aluminium. Apart from the different leather upholsteries, the all-new Volvo V70 is also available with T-Tec - a modern, sporty finish that is attractive, hard-wearing and practical. That new material is standard on the entry-level SE model.

One of the most elegant pieces of interior design is the sleek, ultra-slim centre console, which contains most of the important switches and controls. It contributes to the understated simplicity of the interior, avoiding a plethora of confusing switchgear.

New cabin based on luxury S80

The cabin of the V70 is based on the luxury S80, so - as designer Stefan Jansson puts it - 'we got a lot for free. It was a fantastic starting point as the S80 is renowned for its quality, luxurious interior.' The dashboard, for instance, is almost identical to that of the S80 and the front seats are similar, too.

Driving Dynamics: Engines

- Widest-ever engine choice includes six-cylinder, five-cylinder and four-cylinder units
- All engines located transversely for improved safety
- Turbo six engine develops 285PS and gives T6 scintillating performance
- Choice of three economical diesel engines, including an especially frugal 2.0 and two brawny, five-cylinder, 2.4 units
- Two environmentally friendly FlexiFuel engines available

For the first time the Volvo V70 gets a six-cylinder engine. In turbocharged, top-of-the-range T6 guise, the new British-built, six-cylinder engine gives a 152mph maximum speed and 0-60mph acceleration in 6.7 seconds.

The three diesel engines - a 2.0-litre and two 2.4 five-cylinder units - will be the big sellers in Britain and in Europe as a whole. These ultra-modern, common-rail diesel engines combine excellent fuel economy - 47.9mpg on the combined cycle for the 2.0, 42.2mpg for both 2.4D and D5 - with fine performance.

Turbocharged T6

Designed by Volvo in Sweden but built in Bridgend, Wales, the SI6 (short in-line 6) is both powerful and amazingly compact. In 3.0-litre T6 turbocharged form, it produces 285PS and 400Nm of torque over an incredibly wide rev band. So the car can be driven at low revs, economically, and the T6 will still deliver enormous urge.

The turbocharger is an unusual twin-scroll device that allows for excellent low-rev pick-up - so there is none of that traditional turbo 'lag' - and yet also delivers enormous thrust when maximum performance is desired. Maximum torque is available from just 1500rpm all the way to 4800rpm and after that, there is only a small drop-off in torque.

The smaller engine displacement compared with the naturally aspirated SI6 - 3.0 litres compared with 3.2 - is due to a slightly smaller bore and stroke. The smaller capacity is more than compensated by the innovative and remarkable turbocharger. The twin-scroll technology allows the turbo to operate in two stages. The inflow is divided into two lots of three cylinders, allowing for swifter response and also allowing for a smaller turbo.

The T6's combined fuel consumption is 25.0mpg - commendably efficient for a 150mph-plus car with such enormous capability and carrying capacity.

Compared with the outgoing T5 V70 model, the new T6 has better in-gear acceleration and is more refined. Handling and overall driving composure are improved and so is high-speed refinement.

Normally aspirated SI6 engine

There is also a normally aspirated version of the SI6 engine producing 238PS and 320Nm of torque. This more relaxed 3.2 engine is perfect for long, relaxing motorway drives and will prove especially popular in North America. Performance is strong: top speed 146mph and 0-60 acceleration in 7.8 seconds. Combined fuel consumption is 26.9mpg.

As with the T6, there are twin overhead camshafts and 24 valves (four per cylinder) to provide optimal engine breathing. On the 3.2 engine, breathing is further improved by Volvo's patented Cam Profile Switching (CPS) system, which features two completely different intake cam profiles machined onto the same camshaft. The engine management system decides which cam profile to use, depending on the engine's running conditions and driver's torque demands. One profile is ideal for low-speed/low-load driving and offers good torque and excellent fuel economy. The other, which gives longer valve lift, is ideal for enthusiastic driving at higher speeds. An ingenious, two-piece hydraulic valve tappet arrangement alters the cam profiles.

The 3.2 engine also features a continuously Variable Cam Timing (VCT) system, which constantly alters valve overlap to achieve optimum power, efficiency and emissions. The combination of CPS and VCT gives the new straight-six engine an astonishingly broad power and torque band, as well as improving outright performance, fuel economy and the vehicle's drivability.

In addition, the Variable Intake System (VIS) - which varies both intake tract length and, more unusually, plenum volume, through two throttle flap valves - boosts low-end torque and high-end power, further helping the breathing capability of this astonishing engine. For instance, in normally aspirated guise, 80 per cent of the vehicle's maximum torque is available across the entire rev range.

'We knew we needed a six-cylinder engine in the all-new V70,' says project director Tomas Ahlberg. 'A premium car in the US and European markets needs the appeal of a six, no matter how good the top-line, turbo, five-cylinder unit was in the outgoing V70.'

But Volvo did not follow convention and fit a V6 - favoured by rival makes as they are usually cheaper to develop and easier to package. A straight-six engine, as used on the T6 and 3.2, is intrinsically the smoothest and most refined of all engine configurations.

The biggest problem with a straight-six is that they're long and therefore difficult to package transversely. 'Transversely mounted engines are safer - that's why we use them,' says Ahlberg. 'They reduce the risk of an engine penetrating the passenger load space and also can be designed with more crumple space in front and behind, allowing the safety systems to work more effectively.'

Most straight-six engines would not fit into a car's engine bay crossways; they're too long. Volvo engineers overcame this problem by making the new SI6 engine extremely compact and much shorter than the straight-six norm.

The key was a new and innovative drive system known as READ - Rear End Ancillary Drive. All ancillaries, such as the power-steering pump and air-conditioning compressor, are driven by gears at the rear end of the crankshaft in the space above the gearbox. The alternator is direct-driven and fitted on the engine block. The flywheel damper, which compensates for vibrations in the six-cylinder engine's relatively long crankshaft, is inside the engine block.

The result is an extremely short engine, of just 625mm - only 3mm longer than Volvo's five-cylinder engine. This substantially increases engine bay space, so the straight-six can be fitted crossways and the excellent crash structure can be configured around it.

The SI6 has an aluminium block and head, and both are structurally optimised to balance low weight and stiffness. Even the camshaft cover is structural, allowing it to incorporate the camshaft bearing caps for further weight reduction.

Five-cylinder turbo petrol and diesel units

Three five-cylinder engines are offered: a 200PS turbo petrol engine on the 2.5T and two turbodiesels, the D5 (185PS) and 2.4D (163PS). As with the six-cylinder SI6 engine, the five-cylinder units are mounted transversely, improving safety.

The 2.5T petrol engine is a smooth and refined engine and has a meaty 300Nm of torque. Like the new SI6 engine, it's an extremely compact unit, partly because the turbocharger has been integrated into the exhaust manifold. Top speed is 130mph and 0-60mph acceleration in manual guise takes only 7.6 seconds. Combined fuel consumption is 29.7mpg in manual mode.

There are three versions of Volvo's 2.4-litre, five-cylinder, common-rail diesel engine. This unit has been substantially revised and now has a new electronically controlled turbocharger, refined multi-

throttle injection technology and a very powerful engine management system. It is one of the cleanest and most advanced diesel engines in the world. The improvements have resulted 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. The engine easily exceeds Euro 4 emissions. Particulates of the D5 are only 0.002g/km compared with the Euro 4 standard of 0.025. A particle filter requiring no servicing is fitted as standard.

The D5 produces 185PS and a massive 400Nm of torque from 2000-2750rpm. Maximum speed is 140mph in manual form and 0-60mph takes only 8.4 seconds, outstanding for a big diesel estate. Yet average fuel economy on the official combined cycle is 42.2mpg. The D5 is also available with AWD, boasting the same 185PS and torque and features a top speed of 137mpg in manual form and a combined mpg of 38.7.

A 2.4D version of the new diesel engine, producing 163PS and 340Nm of torque, is also available. Top speed is 130mph and 0-60mph acceleration takes 9.4 seconds in manual form. Combined fuel consumption is 42.2mpg.

New 2.0-litre diesel and petrol engines

Unlike the outgoing V70, the all-new model is also offered with a choice of diesel or petrol four-cylinder engines. Like all the other engines, they are transversely mounted.

'More buyers than ever are focusing on fuel economy and it's important to give them more choice,' says Lex Kerssemakers, senior vice president of brand, business and product strategy at Volvo. 'The 2.0-litre alternatives give a very attractive combination of good fuel economy and driving pleasure.'

The four-cylinder, 2.0-litre turbodiesel has a lively 136PS and a massive 320Nm of torque (the same as the normally aspirated six-cylinder engine and more than the 2.5T). This high-technology, eco-friendly engine uses second-generation common-rail diesel technology and is fitted with a maintenance-free, regenerating diesel particulate filter. Top speed is 121mph, 0-60mph acceleration takes 10.9 seconds and, most pleasingly of all, combined fuel consumption is a frugal 47.9mpg.

The 2.0-litre petrol unit features state-of-the-art four-valve technology, double overhead camshafts, lightweight aluminium construction and modern electronic fuel injection. This entry-level engine produces 145PS and 190Nm of torque and punts the all-new V70 to a top speed of 124mph. Acceleration from 0-60mph takes 11.5 seconds and official combined fuel economy is 32.8mpg.

FlexiFuel engines dramatically cut CO₂ emissions

Volvo now offers the broadest range of biofuel-powered vehicles in the UK. The latest to join the Volvo biofuel range are the 2.0F four-cylinder and 2.5F five-cylinder V70 models.

'Volvo has a long-standing commitment to environmental protection,' says Lex Kerssemakers, senior vice president of brand, business and product strategy at Volvo. 'We believe FlexiFuel vehicles have considerable potential to cut total CO₂ emissions and we are committed to their development.'

The FlexiFuel engines run on E85 - a blend of 85 per cent plant-derived sustainable ethanol and 15 per cent petrol. Vehicles that run on E85 produce about 80 per cent less CO₂ than conventional petrol power owing to the carbon absorbed during the growing process. Plants typically used for E85 include corn, wheat and sugar beet.

Running a FlexiFuel Volvo is easy. If E85 is not available, the V70 can easily use conventional unleaded petrol. The car's advanced electronics automatically recognise what sort of fuel is being used and adjust the engine's tune accordingly. No special action is necessary by the driver.

The 2.0F engine is based closely on the normal 2.0-litre V70 unit and develops identical power - 145PS and 190Nm of torque. Similarly, the turbocharged 2.5F five-cylinder FlexiFuel engine develops the same power (200PS) and torque (300Nm) as the 2.5T unit on which it is based.

Both FlexiFuel engines drive almost identically to their petrol equivalents. The fuel hoses, valves and gaskets are modified to compensate for the more corrosive properties of ethanol, while the

injection valves are larger and reinforced, as more fuel must be injected into the engine - E85 has a lower energy density than petrol.

Driving Dynamics: Chassis

- All-new chassis architecture with fully independent suspension for a compliant ride and good handling
- Torsional rigidity of new body increased by 15 per cent
- Active Four-C chassis available as an option on SE and SE Lux models
- New Lowered Sports Chassis as standard on all R-DESIGN variants
- More sporty driving experience but priority is ease of driving and all-round stability
- DSTC Dynamic Stability and Traction Control is standard to prevent slides and skids

The priorities with the all-new Volvo V70 were a comfortable ride, secure road holding and high stability. 'The driving experience has been improved in every respect,' says Tomas Ahlborg, project director. 'It offers a sportier drive but the real key, as with any Volvo, is that it must be stable and safe.'

Greater torsional rigidity aids ride and handling

Like all monocoque (unitary) body cars, the most important single factor in good dynamics is a rigid body platform. If the platform twists and bends then the handling will become unpredictable, the ride quality will deteriorate and the car will lose primary safety.

The V70 has all-new chassis architecture that offers a very high degree of structural integrity. Thanks to its careful, computer-aided design and the use of different grades of high-strength steel, the all-new V70 has 15 per cent greater torsional rigidity than the outgoing V70, itself an immensely strong and stiff car.

The suspension has been set up to give a comfortable low- and high-speed ride, ensuring great agility and feedback from car to driver. The all-new steering system - speed-sensitive power steering is available - and carefully honed, fully independent suspension help give what Tomas Ahlborg calls a 'high-class driving feel and superb control whatever the situation'.

The suspension uses coil springs all round. The front uses MacPherson struts while the rear has a multi-link arrangement.

Four-C active suspension

The SE and SE Lux variants can be specified with Volvo's innovative active suspension Four-C chassis. This is an advanced, self-adjusting chassis where electronic sensors continually monitor the car's behaviour and the dampers readjust in a fraction of a second. This technology reduces the car's tendency to squat, dip or roll under firm acceleration, hard braking or fast steering manoeuvres.

The advanced multiplex control systems update the suspension settings an almost unbelievable 500 times every second. The system is especially useful when the car's handling balance is naturally upset - for example, during fast take-off (with Four-C, the rear dampers are set to maximum stiffness to reduce squat and optimise front-end traction), during hard braking (the front dampers are stiffened to reduce nose dive) and when cornering (outside dampers are stiffened to reduce roll and improve road holding).

Dampers are also automatically stiffened as speed increases. During quick steering manoeuvres, the all-new V70 takes on an agility and composure that belie its size and carrying capacity. 'With an active chassis, the car's driving behaviour improves in all situations,' says project director Tomas Ahlborg. 'It is both safer and more entertaining to drive.'

Though dampers are adjusted automatically, drivers can also programme in their desired road behaviour. Three chassis settings, all at the touch of a button, alter the car. Available settings are:

- Comfort - which provides the most comfortable ride with calm, harmonious body movements
- Sport - for more tightly controlled body movements and a firmer, 'hunkered down to the road' feel. Steering response is sharpened, body roll is reduced
- Advanced - the maximum sports choice that noticeably firms up dampers and would be the desired setting for brisk drives on smooth, winding roads

In an emergency situation - when the driver needs maximum control - the ingenious Four-C system overrides the personal settings to deliver maximum stability and tyre grip. Equally, as speed builds, the dampers automatically become firmer to improve handling, response and safety.

Sporty R-DESIGN

The new R-DESIGN variant features a Lowered Sports Chassis as standard. Lowered by 20mm at the front and 15mm at the rear, the new chassis reduces the centre of gravity providing enhanced stability and a more sporty drive. The sporty chassis offers plenty of driving pleasure and immense control in every situation and has been optimised with the help of features such as stiffer anti-roll bars and bushings and lower ground clearance for more direct road contact and more responsive and rewarding steering feedback.

"The big challenge with this project the R-Design chassis was to combine crisp driving pleasure with Volvo's renowned secure properties in poor road conditions such as heavy rain or snow. I'm convinced we've found exactly the right balance," says Ekkehard Schwartz, Vice President Chassis and Vehicle Dynamics.

DSTC - Dynamic Stability and Traction Control

This is standard on all models in the Volvo range. An electronic stability and traction system that stops skids and slides, it uses sensors to detect if any of the wheels is losing traction or grip. If so, power is cut to the relevant wheel. If the sensors detect early signs of a skid, the system automatically brakes the relevant wheel to reduce speed and regain control.

Driving Dynamics: Steering, Brakes and Transmission

- Speed-dependent power steering is offered, ensuring good high-speed feel and easy parking
- Easy-to-use Power Parking Brake
- Highly advanced braking system includes HBA (Hydraulic Brake Assist), RAB (Ready Alert Brakes), FBS (Fading Brake Support) and OHB (Optimised Hydraulic Brakes) - all to ensure shortest possible stopping time and maximum control
- Collision Warning with Auto Brake reduces risk of rear-end collisions
- Six-speed Geartronic gearbox allows for full automatic or manual shifts
- All-Wheel Drive (AWD) standard on sporty T6

The Volvo V70 balances sharp, agile handling with renowned Volvo safety features. 'Enjoyable driving is important,' says Tomas Ahlborg. 'But for us, enjoyable driving is not about being aggressive. It's about always being in total control and a real first-class experience.'

Sharp steering, strong brakes that always stop in the shortest possible time irrespective of road conditions, and smooth-shifting transmissions are all important factors in the total driving experience. A number of new primary safety technologies are available on the all-new V70, including Volvo's innovative Collision Warning with Auto Brake, which monitors the distance to the car in front and then optimises braking strength to help you avoid accidents.

Six-speed automatic or manual gearboxes

The 3.2 and T6 AWD are mated exclusively to Volvo's Geartronic gearbox, which offers both full automatic and manual clutchless changes. The T6 gets a sport mode, for even sharper performance. The 2.0-litre variants, 2.5T, 2.4D, D5 and FlexiFuel models come as standard with a

manual gearbox. While the 2.4D and D5 are available with Geartronic as an option.

The modern Geartronic transmission can be used either as a full automatic or as a clutchless manual. In automatic mode, gear changes are so smooth as to be almost imperceptible. On the T6 model, the Geartronic box has a sports button, which allows higher revs before each gear change and slightly faster shifts, while also sharpening kickdown.

The six-speed manual improves both performance and fuel economy, and is a smooth-shifting clutch-and-stick shift aimed at those who prefer changing gear themselves. The 2.0F is the only engine which comes as standard with a five-speed manual gearbox.

All-Wheel Drive

The T6 gets electronically controlled All-Wheel Drive (AWD) as standard and it's an option on the D5, while all other V70s are front-wheel drive. The AWD system improves the handling and road holding of the powerful, turbocharged, six-cylinder model by apportioning torque to all four wheels. The computer-controlled set-up automatically sends torque to the wheels with most grip, ensuring maximum possible traction and primary safety. The front-to-rear torque split changes constantly, as the sophisticated electronics control a hydraulic clutch that determines the most effective distribution of torque.

Sensors monitor the road surface and the positions of the steering, brake and accelerator. In normal conditions on a dry tarmac road, almost all the power is distributed to the front wheels. However, as soon as slippage occurs, torque is diverted to the rear wheels to boost grip.

This unique system also features Volvo-patented Instant Traction that detects loose or slippery surfaces and switches drive from front to rear (or vice versa) to help with standing starts.

AWD not only improves traction on slippery surfaces, such as gravel, mud or ice, but also improves the handling balance of the car. The T6's powerful engine presents a problem for a front-drive chassis. Torque steer can occur as the steering has difficulty controlling the powerful driven wheels. Four-wheel drive improves steering feel on such a powerful car, as well as improving traction and handling balance.

Other V70 models all use front-wheel drive, as fitted to the vast majority of Volvos since the 850 was launched more than 15 years ago. Front-wheel drive offers more predictable and safer handling, plus better traction, than conventional rear-wheel drive.

Highly advanced interactive braking system

The V70 has ABS anti-lock brakes to stop skids and aquaplaning and big disc brakes - ventilated at the front - all round. It also has a suite of advanced interconnected braking features to deliver the best possible stopping performance. They include:

- Hydraulic Brake Assist (HBA). This is an update of Volvo's previous EBD (Electronic Brake Distribution) and EBA (Emergency Brake Assist). This new generation system, first shown on the latest S80, helps the driver to stop in the shortest possible distance in emergency situations. Unlike the previous system, which only used vacuum assistance to boost braking strength, HBA reinforces brake pressure hydraulically. In an emergency, when the driver does not press the pedal sufficiently firmly or quickly, HBA ensures that maximum braking pressure is applied, always giving the driver the greatest chance to reduce the likelihood, or seriousness, of an accident.
- Optimised Hydraulic Brakes (OHB). In heavy braking, vacuum pressure in the brake servo can become low, reducing braking effort. OHB compensates by using hydraulic pressure to boost braking effort.
- Ready Alert Brakes (RAB). If the accelerator is released suddenly or the adaptive cruise control registers an obstacle in front of the car, RAB is deployed. The brake pads are instantly positioned very close to the discs, reducing braking response time and braking distance.
- Fading Brake Support (FBS). In long, hard braking, such as on a lengthy, mountainous descent, there is a risk of brake fade. FBS uses the hydraulics to gradually build brake pressure, maintaining pedal feel.

Collision Warning with Auto Brake

This clever new technology, first shown on the latest S80, reduces the risk of rear-end accidents;

where an impact is inevitable, it should reduce its severity.

A radar sensor, fitted behind the grille, continually monitors the area in front of the vehicle. If the sensor detects that the car in front has braked suddenly, or that you are too close to the vehicle in front, or that there is an obstacle in your path, a red warning lamp flashes on the windscreen and a warning buzzer sounds. In many situations, this will be sufficient to alert the driver and the danger will pass. However, if the risk of collision increases, the brake support system is activated. The pads move very close to the brake discs and the hydraulic brake pressure is increased. Thus the brakes are fully prepared for a panic stop. Even if weak pressure is applied to the brake pedal, maximum brake pressure will be automatically used to cut stopping distance. The driver's reactions remain crucial, however - the car will never apply the brakes automatically.

To warn traffic behind, the brake lights will start to flash when the brakes have been applied in this way. Once the speed drops below 30km/h (19mph), the hazard warning flashers are also automatically activated.

The sensitivity of the collision warning system can be adjusted via the car's settings menu. There are three different positions that can be set according to driving style or road conditions.

Adjustable speed-dependent power steering

All V70s get sharp, power-assisted, rack and pinion steering as standard. On R-DESIGN and all T6 models, speed-dependent power steering is standard. This provides extra power assistance at low speeds, for example to make parking easier. The power assistance gradually declines as road speed increases, disappearing entirely at high cruising speeds. To give all drivers their own optimum road feel, the level of steering servo assistance can now be adjusted via the car's set-up system. Power steering assistance can be set at one of three levels, depending on personal taste.

Power Parking Brake

This smart parking brake is released automatically once the accelerator is pressed (and the driver's seatbelt is fastened), making hill starts easier, especially for cars fitted with manual gearboxes. The parking brake is engaged by pushing a lever to the left of the steering wheel and can be manually disengaged by pulling the same lever. The parking brake is automatically engaged once the key is removed from the ignition or, for models with keyless drive, when the driver's door is opened.

Quality and Equipment

- High level of standard equipment, even on entry-level SE
- High-quality cabin materials and trim, all of which are emissions- and allergen-free
- Beautifully styled interiors typical of Swedish premium design
- SE, SE Lux and R-DESIGN trim levels offered
- Superb in-car entertainment offers some of the best sounds on the road
- Three-year/60,000-mile warranty

Scandinavia is renowned for its great interior design and Volvo is no exception. Volvos manage to combine high-quality functionality, easy-to-use design simplicity and premium materials. A Volvo has clean surfacing and is pleasing both to look at and to touch. Volvos come much better equipped than rival German premium cars and their quality extends further than materials and design, including longevity, too. Independent studies invariably conclude that Volvos are among the longest-lasting and most durable of all cars.

V70 SE

The entry-level V70, the SE, is a luxurious car. Standard features include an electrically adjustable driver's seat with pre-fixed memory, an eight-speaker High Performance stereo with 160-watt output, automatic rain-sensing wipers and an auto-dimming rear-view mirror. Self-levelling headlamps are standard and so is Volvo's electronic climate control air conditioning. Other features usually found only on upper-level models include standard Cruise Control, power-

adjustable and heated door mirrors with Autofolding function, a leather steering wheel and gearknob and the full suite of Volvo safety features, including dual-chamber SIPS side airbags and inflatable side curtains. All Volvo's state-of-the-art electronic traction and braking controls, such as DSTC (Dynamic Stability and Traction Control), ABS (anti-lock brakes) and HBA (Hydraulic Brake Assist) are standard. Remote-control central locking is also standard.

The SE uses handsome cross-brushed aluminium trim and features seats skinned in Volvo's new sporty Sundby Textile/T-Tec upholstery, which offers great comfort, looks and durability.

Outside, 17-inch Spartes alloy wheels and colour co-ordinated front spoiler and side mouldings are fitted. Prices start at £24,995 for the 2.0P SE and rise to £35,485 for the T6 AWD SE.

V70 R-DESIGN

The R-DESIGN takes all the luxury fittings of the SE and enhances them with sportier styling and handling. Speed-dependent power steering - which firms up as speed builds - is standard and so is the new Lowered Sports Chassis. Larger, 18-inch Cratus alloy wheels give greater visual presence and increase the car's footprint, while a rear spoiler also clearly signals that this is the sports model. Other decals include a R-DESIGN badge on the front silver matt grille and silver matt-finish door mirror caps.

Interior upgrades include unique leather faced upholstery in Off Black & Cream embossed with the R-DESIGN logo, leather-trimmed steering wheel with aluminium insert and R-DESIGN logo and unique instrument dials with blue inserts. Other new details include aluminium sports pedals and centre stack, sports gearlever and sports floor mats.

Prices start at £26,745 for the 2.0 R-DESIGN and rise to £37,235 for the T6 AWD R-DESIGN.

V70 SE Lux

While the R-DESIGN derivative is the sportiest in the V70 range, the SE Lux is the most luxurious. Standard features include leather upholstery, a choice of two wood trims including walnut, heated and powered front seats, and luxury floor mats. Active Bending headlamps are standard, there's a smart chrome window trim, a powered tailgate for easier opening and closing, silver roof rails and rear park assist for easier reverse parking. Seventeen-inch Canicula alloy wheels are standard.

Prices start at £28,545 for the 2.0D SE Lux and rise to £38,515 for the T6 AWD SE Lux.

T6 AWD

The T6 AWD is the sportiest vehicle in Volvo's range. It gets turbocharged, 285PS, six-cylinder power and all-wheel drive (AWD) is standard. Like other engine choices, the T6 comes in SE, R-DESIGN and SE Lux trim levels. All T6 models, however, get speed-dependent power steering, a special chronograph instrument panel and twin aluminium exhaust pipes.

Audio systems

The V70 has been designed to offer the best sound experience in the class. The standard audio is Volvo's acclaimed 'High Performance' system, featuring eight speakers and 160-watt output. The top-of-the-range Premium Sound system - optional (for £1000) on all models - is one of the very best in the automotive world, irrespective of price. It uses an Alpine digital 5x130-watt amplifier, Dolby Pro-Logic II Surround and 12 speakers from renowned Danish speaker manufacturer Dynaudio. It's a 5.1 channel system that provides a true stereo effect. Thanks to the digital amplifier, the system automatically adjusts both volume and tone to compensate for outside noise. The amplifier has a very high damping factor, thanks to the ICEPower technology from Danish hi-fi expert Bang & Olufsen. This system contributes to the powerful sound, which remains clear all the way down to the deepest bass notes.

The Dynaudio speakers are of exceptional quality. The front doors have well dimensioned, three-way loudspeakers. The rear doors feature two-way loudspeakers with a tweeter and a mid/woofer. The tweeter diaphragm is made of textile (known as a silk dome tweeter), a Dynaudio speciality that helps create crystal-clear sound. Each loudspeaker has a passive crossover filter to provide a harmonious total sound experience with the best possible bandwidth and dynamics.

Specially developed centre loudspeakers in the instrument panel work together with the door

loudspeakers to create natural, homogeneous music. It sounds more like a concert hall than a car interior.

A special set-up facility allows the sound to be optimised for the best possible audio experience. The profile can be set to optimise sound for the driver, for both front seat occupants or for the rear seat. 'A person driving alone in the car can set the audio profile with unashamed selfishness,' says project director Tomas Ahlborg. 'If the owner is riding in the back seat, it's just as easy to prioritise the audio experience there.'

The normal High Performance system, standard on the SE, R-DESIGN and SE Lux, also offers exceptional sound quality. It gets a CD player, a 4x40-watt amplifier and eight speakers.

For even richer and deeper bass notes, both the Premium Sound and High Performance systems can be enhanced by a 12-litre, dual-chamber sub-woofer under the luggage floor close to the rear seat backrest. This Alpine-developed sub-woofer includes two 6.5-inch bass elements and an integrated 2x130-watt amplifier. Designed to offer the best possible bass performance, it is a £180 option on all models.

All sound systems feature an extra input for connection to portable MP3 players, such as iPods, enabling them to be mated to the car's audio system.

An iPod and USB Interface is available as an accessory on all models and enables the MP3 Player or iPod to be connected directly to the sound system and controlled through the radio controls. Names and information of the songs will appear on the information display on the Centre Console and the devices will charge throughout the time they are plugged in.

Bluetooth compatibility plus improved satellite navigation

Bluetooth, the advanced wireless system, enables your mobile phone to be connected to the car's loudspeaker system. This allows for perfect sound and minimises the interference often experienced when a mobile is used while driving.

Volvo's RTI (Road and Traffic Information) navigation system has a faster processor, which means alternative routes are plotted faster than before, and there is more detailed information, including local speed limits when a national border is crossed. A number of new countries have been added, mostly in Eastern Europe. This new sat-nav system features RDS-TMC (traffic message channel) which displays up-to-date information on traffic problems. The large colour screen display rises from the top of the dashboard, safely positioned in the driver's view. When not in use it retracts, helping to keep the car's interior design less cluttered and more Swedish minimalist.

Personal comfort settings

The V70 driver can adjust the car's comfort functions to suit his or her personal needs. These settings are altered in the car's information system. The menu includes the seats, rear-view mirrors, climate unit, audio unit, navigation system and, to a certain extent, the car's driving properties.

One of the selectable functions is automatic operation of the rear defroster. When this setting is chosen, the defroster is automatically activated when the outside temperature reaches 9 degrees C or below. Another example is the speed-dependent power steering, which can be set at one of three levels via the information system.

Rear seat DVD

The V70 can be fitted with an advanced rear seat entertainment (RSE) system. An integrated DVD player, eight-inch flat-screen monitors built into the front seat headrests, wireless headphones and remote control are all included. An extra socket means it is possible to connect an additional DVD player or video game. The two screens can then be used independently. Introduced in May 2008, a Digital TV option is also available to supplement the RSE system. This new option enables passengers to watch Freeview channels as well as providing a card slot that can be used for subscription services like SKY.

Extensive options list

The V70 includes hundreds of options to allow owners to personalise their cars. For better value, some of these options are grouped in packs:

- Winter pack: heated front seats, headlamp cleaning system, luxury floor mats and heated washer nozzles - £450 on SE models and £275 on R-DESIGN
- Winter pack with Active Bending Headlamps - £1,000 on SE Models and £825 on R-DESIGN
- Family pack: two, two-stage, integrated booster seats, power child locks (rear doors only) and passenger airbag cut off switch - £260
- Communications pack: RTI navigation system with RDS-TMC, remote control, European DVD maps, PCC (Personal Car Communicator) with Heartbeat sensor and Keyless Drive and Bluetooth® handsfree system - £2,000
- A new Driver Support pack (not available on 2.0, 2.0D, 2.0F, 2.5T and 2.5F): BLIS (blind Spot Information System), ACC (Adaptive Cruise Control) with Distance Alert and Collision Warning with Auto Brake and LDW (Lane Departure Warning) and DAC (Driver Alert Control) - £1,500
- Security pack: PCC (Personal Car Communicator) with Heartbeat Sensor and Keyless Drive, 360° Laminated Windows including cargo area (front side windows are water repellent) and TPMS (Tyre Pressure Monitoring System). - £750

Warranty

The V70 is backed by a three-year/60,000-mile warranty. There's a three-year, unlimited-mileage warranty on the paintwork and 12 years 8 or 12 years against rust perforation. All Volvos have free RAC cover for one year, including breakdown assistance anywhere in Europe.

Safety

- Engineered to be the safest car in the class
- Improved child safety integrated dual-stage booster cushions and extended inflatable curtain
- New stronger side structure
- Second-generation WHIPS system avoids neck injuries
- Better pedestrian and cyclist protection
- Active Bending Lights 'see around corners'
- Advanced electronic traction, stability and braking systems deliver superb primary safety

Safety is the key quality of any Volvo. Ever since the first Volvo was built in 1927, the overriding priority has been to develop cars that help prevent accidents and, if the accident does happen, to offer maximum protection. 'Cars are driven by people. Therefore the guiding principle behind everything at Volvo is, and must remain, safety,' declared co-founders Assar Gabrielsson and Gustaf Larson.

Child safety improved with integrated two-stage booster seat

Volvo has also been a pioneer in child safety - an area of car design that is frequently overlooked. A world first for the V70 is a height-adjustable booster cushion. Integrated into the rear seat, it can be set at two heights, allowing children of different sizes to see out of the car while also getting optimal seatbelt support. The lower setting is intended for children between 115 and 140cm in height and weighing between 22 and 36kg. The upper setting is designed for children measuring 95-120cm and weighing between 15 and 25kg. The integrated child booster cushions can be used on both outer rear seats.

The seats are specially designed so that the seatbelt geometry is optimum irrespective of the child's height. The safety belts also have specially adjusted force limiters so they restrain the child with just the right amount of tensioning force in a collision.

'It's a sad fact that the least well protected occupants in many cars are children,' says project leader Tomas Ahlborg. 'This is because the child seats don't fit them properly, the seat is not properly secured or the belt does not fit them correctly. This new Volvo innovation optimises safety for children who have grown out of rear-facing baby chairs but who are too small to sit in a normal adult seat.'

SIPS side impact protection offers even greater safety

Volvo has also further developed its SIPS side impact protection system thanks to a stronger side body structure. The body's entire side structure is both stronger and lighter thanks to a well balanced combination of high-tensile steel of different grades (High Strength Steel, Extra High Strength Steel and the extremely strong Ultra High Strength Steel). The various components and grades of steel interact to reduce penetration into the passenger compartment.

The inflatable roof curtains in the V70 have also been extended by 60mm, offering greater head protection for children and adults alike.

The V70 also gets a new type of side airbag. These new side impact airbags have two separate chambers - one for the hip section and one for the chest. The hips can withstand greater force than the chest, so the lower chamber inflates with up to five times more pressure than the upper section. The side impact airbags interact with the inflatable curtains and the car's network of safety beams to provide the most effective possible protection.

Crumple zones made using different grades of steel

The patented front body structure in the all-new Volvo V70 is divided into zones, each of which has a different task during the crash sequence. The outer zones are responsible for most of the deformation. The closer the collision forces get to the passenger compartment, the less the material deforms. In order to give each zone the right properties, different grades of steel are used in different structures. In all, there are four different grades. Apart from regular body steel, three different grades of high-tensile steel are used: High Strength Steel, Extra High Strength Steel and Ultra High Strength Steel.

These crumple zones are:

- Zone for deformation at low speeds: The front bumper is attached to a cross-member made of aluminium. The attachment points at the body's longitudinal beams are designed as collapsible 'crash boxes'. They absorb low-speed collision forces without damaging the rest of the body's beam structure.
- Zone for deformation at high speeds: The straight sections of the longitudinal beams are made of High Strength Steel, a very tough grade of steel optimised for high energy absorption. This zone accounts for most of the deformation.
- Back-up zone: The beam section that curves out towards the A-posts serves as a barrier protecting the passenger compartment and also as a back-up to reduce deformation. Its shape also helps minimise the risk of the front wheel penetrating the passenger compartment. Instead, the wheel helps absorb the collision forces. This section is very rigid and is made of Extra High Strength Steel.
- Three-point attachment: A rigid cross-member links the two A-posts and the lower side-members so that they form a particularly sturdy three-point attachment on each side. This design is particularly effective at protecting the passenger compartment in a severe impact.

Compact transverse engines improve safety

Like all other models in the Volvo range, the all-new Volvo V70 has a transverse driveline and front- or four-wheel drive. A transverse installation gives the engine more space inside the engine compartment to allow the crumple zones and other safety systems to work more effectively. It also reduces the risk of the engine penetrating the passenger compartment in a frontal impact. Even the in-line, six-cylinder engines are installed transversely in the all-new Volvo V70 model, thanks to its extremely compact format and efficient packaging in the engine compartment.

Second-generation WHIPS system

WHIPS (Whiplash Protection System) reduces the risk of neck injuries in a rear-end collision. The front seat backrest accompanies the passenger's initial body movement and dampens the

incoming force rather like one's hand does when catching a ball.

The all-new Volvo V70 features the same generation of WHIPS mechanism as was launched on the all-new S80 model. This generation was further developed to ensure that the damping motion is gentle and to provide good contact between the head and head restraint throughout the impact sequence.

Protection for pedestrians and cyclists

The new, rounder front end of the all-new V70 has a large, energy-absorbing soft structure in front of the bumper that helps reduce leg injuries to other road users in the event of a crash. The spoiler's lower edge has also been reinforced and moved forward, almost on a level with the bumper. The area of contact on a pedestrian's or cyclist's leg should be distributed across a larger area, reducing their risk of injury.

The bonnet is raised on impact to help cushion any blow and its underside has a honeycomb structure that absorbs crash energy and reduces injury.

Protective safety solutions

- Collapsing steering column that moves horizontally upon deformation for the best possible interaction with the airbag
- Pedals that limit the risk of penetration into the passenger compartment
- Driver and passenger airbags with two-stage function for superior cushioning and ultimate protection
- Seatbelt pre-tensioners for all five seats
- Seatbelt reminders for all five seats
- Force-limiters for the seatbelts
- Reinforced, transversely fitted tubular beam between the A-posts
- Strong SIPS tubes in the seats and a sturdy magnesium bracket in the middle of the car
- Diagonally fitted beams of Ultra High Strength Steel in the doors

'The best way to stay safe is to avoid accidents'

The all-new Volvo V70 has an awesome array of safety protection devices, but its suite of accident avoidance devices is no less impressive.

The all-new Volvo V70 incorporates a host of innovative safety features. These include numerous advanced braking functions (see 'Driving Dynamics: Steering, Brakes and Transmission'), Volvo's DSTC (Dynamic Stability and Traction Control - see 'Driving Dynamics: Chassis') and Collision Warning with Brake Support (see 'Driving Dynamics: Steering, Brakes and Transmission') - Volvo's clever new technology that reduces the risk of rear-end accidents.

Active Bending lights

Good headlamps are essential for safe night driving. The standard halogen headlamps give an excellent light spread on low or high beam and are automatically height-adjusted to avoid dazzling oncoming cars, irrespective of load.

For even better illumination, the all-new Volvo V70 can be equipped with Active Bending lights - swivelling headlamps that follow the sweeps and bends of the road. The headlamps can be swivelled up to 15 degrees in either direction, totalling 30 degrees, and can light up a longer stretch of road as it twists and turns. In order to save wear and tear on the system, it is automatically deactivated in daylight.

Like the standard halogen headlamps, the Bi-Xenons are automatically adjusted depending on how heavily the car is loaded and also on whether the car is accelerating or braking. So the

headlamps always point at optimal 'level' height.

The headlamps are cleaned using an electromagnetic, high-pressure system that washes one headlamp at a time - another ingenious Volvo safety feature - so as to always provide the best possible illumination under all conditions. Bi-Xenon lights are brighter at both low- and high-beam than conventional halogen lights and have a wider spread.

Advanced driver information systems boost safety

The all-new Volvo V70 can be equipped with BLIS (Blind Spot Information System) and DAC (Driver Alert Control). Using cameras integrated into the door mirrors, BLIS registers whether another vehicle is in the blind spot offset to the rear of the car. If there is a vehicle there, a lamp lights up at the relevant mirror to alert the driver.

Rather than monitoring human behaviour (which varies from one person to another) DAC monitors the progress of the car on the road. Monitoring driving behaviour is more reliable as it assesses the impact that fatigue or distraction has on the car's movements and assesses whether it's being driven in a controlled, consistent manner. This system consists of a camera located between the windscreen and the interior rear view mirror, a number of sensors and a control unit. The camera measures the distance between the car and the road lane markings, while the sensors register the car's movements. This information is sent to the control unit which then calculates whether the driver is at risk of losing control of the car. If the risk is assessed as high, the driver is alerted via an audible signal, while a text message and coffee cup symbol appear in the car's information display to urge the driver to take a break. The driver has the opportunity to access driving information throughout a journey, the starting point is five bars and the less consistent the driving, the fewer bars remain.

Both the Driver Alert Control and Lane Departure Warning are activated when the car reaches 40mph and they will stay active as long as the speed exceeds 37mph. The availability of these systems depends on the number and quality of visible road markings. The lane markings must be clearly visible and poor light, fog, snow and extreme weather conditions can make the system unavailable.

IDIS (Intelligent Driver Information System) is standard on all Volvo V70 models. IDIS is an electronic information system that helps prevent the driver from becoming distracted by irrelevant information in busy situations. By continuously monitoring certain functions in the car, such as brake application and movements of the steering wheel, accelerator pedal and turn indicators, IDIS can assess the complexity of the driving situation. The information is processed and at a certain level of complexity, any information that is not essential to safety is delayed, for instance incoming phone calls or SMS text messages.

Adaptive Cruise Control with Distance Alert

To help the driver maintain a safe distance from the car in front, Volvo has developed Adaptive Cruise Control or ACC. It uses a radar sensor to measure continuously the distance to the vehicles in front and automatically adapts the speed of the car to help ensure the distance is not too short. This technology also forms the basis of several of Volvo's advanced driving and support systems, including Collision Warning with Auto Brake.

The driver activates the cruise control, setting the desired maximum speed at between 18 and 125mph, and chooses the minimum time interval to the cars in front. There are five different time intervals to choose from.

Distance Alert (DA) is another feature included in this option. The system helps the driver maintain a safe distance to the vehicle in front even when Adaptive Cruise Control is not in use. Activated via a button on the centre console, the driver can choose between five settings, similar to that of the ACC. If the time gap to the car in front gets shorter than the selected speed, the driver gets visual information in the head-up display on the lower section of the windscreen.

ACC with Distance Alert forms an option along with Collision Warning with Auto Brake.

Security

- Personal Car Communicator (PCC) enhances security

- Electronic immobiliser
- Remote key fob activates alarm and deadlocks
- Laminated side windows available
- Home Safe and Approach lighting is standard
- Volvo On Call rings for help automatically

Volvo has an unmatched reputation for car safety. But personal protection is also of growing importance, which is why the all-new V70 has numerous features to give owners extra peace of mind.

Personal Car Communicator

This looks remarkably like a regular remote control but it can do a lot more than just activate the locks and alarm. A simple push of a button can, within a few seconds, tell the car owner if:

- the car is locked or unlocked
- the alarm has been triggered
- the alarm has been triggered and someone is inside the car (registered by a highly sensitive heartbeat sensor)

The information is available and up-to-date as long as the distance between the PCC and the car is 100 metres or less. In addition, the most recent data is logged so the owner can at any time and any place check whether the car really was locked when it was parked.

Volvo On Call

This ingenious device uses advanced telematics to call for help during an emergency. The system uses the integrated GSM telephone and GPS satellite navigation to automatically call the emergency services when an airbag or seatbelt pre-tensioner is triggered during an accident. Alternatively, you can ring the emergency services by pushing a red SOS button on the GSM phone.

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 can offer roadside assistance.

Volvo On Call also offers vehicle tracking in the event of theft.

Home Safe and Approach lighting

By pressing a button on the remote controller when approaching the car, the driver can turn on the inside lights, the side marker lights and the lights in the rear-view mirror. On leaving the car, a tweak of the headlamp stalk activates the dipped beam headlamps for 30, 60 or 90 seconds (programmable), lighting the path to the door.

Laminated glass all round

To make break-ins more difficult, the Volvo V70 can be specified with laminated glass in all the windows, including the rear side windows and the tailgate, giving the whole car, including the luggage compartment, effective protection.

The storage system under the luggage compartment floor has a capacity of 46 litres if the car does not have a spare wheel. It is locked automatically when the tailgate is locked.

Deadlocks, immobiliser and alarm

Standard features include a remote-control key fob that activates an alarm and strong deadlocks. Even if a thief does break into the car, for instance through breaking the glass, the deadlocks make it impossible to open the doors from the inside. The key fob also activates an electronic

immobiliser that makes starting the car impossible without the correct key.

Environment

- Fuel-efficient engines, including two environmentally friendly FlexiFuel variants
- Euro 5 emissions standard for SI6 engines
- Particulate filter on diesel cuts 95 per cent of exhaust particulates
- New Clean Zone Interior Package (CZIP) gives extraordinarily clean air inside car and reduces risks of allergy
- All new Volvos are 85% recyclable and 95% recoverable
- Interior trim materials are allergen-free
- Cabin air filter removes dust, pollen and exhaust particles
- Each new Volvo is backed by an Environmental Product Information (EPI) analysis, available at www.volvocars.com/epi

Volvo Cars' commitment to environmental activities and continuous investment to help reduce its carbon footprint goes far beyond lowering CO₂ emissions. Volvo's 'Clean inside and out' programme represents a holistic approach to the environmental impact of the car. It focuses on health, resource utilisation and the ecological consequences of the production, use and disposal of the vehicle.

Volvo Cars' focus on other energy sources than oil has been going on for more than 25 years. Back in 1982 the company took the first step by using residual heat from the nearby refineries to heat the factory in Torslanda, Sweden. In 1988 Volvo started using natural gas, which was the main fuel for heating its European factories (Sweden and Belgium) and, from 1 January 2008, Volvo's European manufacturing units now only use green electricity - hydropower. This is Volvo's latest step in making its production climate neutral and future plans may also extend to other energy sources such as biogas and wind-power.

Economical, clean engines

All of the engines available in the new V70 are outstandingly economical, given their performance and the vehicle's load-carrying capability. The manual diesel engine models have official combined fuel consumption figures of 47.9mpg (2.0D) and 43.5mpg (2.4D and D5), outstanding figures for a large luxury estate car with 140mph (D5) performance. Even the high-performance T6 achieves a combined figure of 25.0mpg - yet has a top speed of 152mph.

The V70 diesel engines are among the most advanced and cleanest in the world. They have a particulate filter that reduces exhaust particulates by 95 per cent, and meet Euro 4 emissions by a comfortable margin. For instance, the D5 engine has less than half the permitted level of carbon monoxide, beats NO_x (oxides of nitrogen) levels by 25 per cent and has only a fraction the permitted level of particulates (0.001g/km when the limit is 0.025).

The new, in-line, six-cylinder engines - both normally aspirated and diesel - comply with Euro 5 emissions control standards and also meet the US's strict ULEV (Ultra Low Emissions Vehicle) II standards. The four catalytic converters and new oxygen sensors ensure that engine working temperature is reached quickly when starting from cold, further reducing emissions.

FlexiFuel engines

FlexiFuel cars run on E85, which is a blend of 85 per cent renewable ethanol and 15 per cent petrol. Ethanol is an entirely renewable fuel and can be produced from just about any biomass source, such as corn, wheat, sugar-beet or cellulose. If the car is run on E85, emissions of fossil carbon dioxide, a greenhouse gas, drop by up to 80 per cent compared with petrol.

Two FlexiFuel V70s are offered: a 2.0-litre, 145PS unit and a 2.5-litre, turbo, five-cylinder, 200PS engine. If a driver can't find E85, these FlexiFuel cars can be refuelled with normal unleaded petrol. E85 and petrol are both filled in the same tank. The engine management system precisely

monitors the fuel mixture in the tank and automatically adjusts both injection and ignition to suit the different fuels.

Clean cabin environment

Environmental protection also extends to ensuring that V70 occupants breathe the purest air possible.

Volvo's Air Quality System monitors the cabin, minimising odours and pollutants entering from outside. The air-conditioning system always ensures that the air is cleaner inside the car than outside. A cabin air filter prevents dust, pollen and exhaust gas particles from entering the car.

Furthermore, Volvo's new Clean Zone Interior Package (CZIP) features an automatic air-purging system. When the car is unlocked by the remote control, the passenger compartment is automatically ventilated for about one minute if the outside air temperature is above 10 degrees C. Carefully selected trim materials, which minimise emissions of harmful substances, further help to provide cabin air of a cleanliness approved by the Swedish Asthma and Allergy Association.

Corporate Citizenship

Volvo was one of the first manufacturers to use tools to evaluate the total life-cycle environmental impact of its products. The system, known as EPI (Environmental Product Information), enables Volvo to evaluate the impact of its products throughout their life on natural resources, ecosystems and human health. Volvo then makes every effort to reduce its total environmental impact. This information is available to the public at www.volvocars.com/epi.

As a result of this policy, the Volvo V70 is built in one of the automotive world's cleanest factories: emissions of solvents from the Volvo Torslanda plant in Sweden have been reduced by over 90 per cent since 1972. Volvo's annual Corporate Citizenship report is available at www.volvocars.com/citizenship.

Did You Know?

- 1. The Volvo V70 is the best-selling car in Sweden
- 2. Sweden should account for about a third of all sales of the all-new V70
- 3. Volvo is the world leader in large estate car sales
- 4. Overall estate car sales are growing internationally
- 5. The all-new V70 is the first V70 model to use a six-cylinder engine. The last Volvo estate to use a six-cylinder engine was the V90, which stopped production in 1998
- 6. The all-new V70 is built in Torslanda near Gothenburg in Sweden. The previous V70 was also built in Ghent, Belgium
- 7. The first Volvo V70 was launched in 1996, replacing the 850
- 8. Though sold worldwide, the Volvo V70 appeals particularly to the European market. About 80 per cent of all V70s are sold in Europe
- 9. Volvo hopes to sell 75,000 all-new V70s a year, 7000 of them in the UK
- 10. The first Volvo estate, the 1953 PV445 Duette, was powered by a 1.4-litre, 44bhp, four-cylinder engine

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