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The All-New Volvo S60 - Dynamic Performance And Handling Generate Pure Driving Pleasure

The all-new Volvo S60 is much more than a beautiful study in design. It's the most driver-oriented car Volvo has ever produced. Every facet of the new S60's chassis has been engineered to provide the utmost in driving pleasure. Whether it's a twisting country road, daily commute or cross-country journey, the S60 aims to please with its fine-tuned suspension and performance-bred powertrain.

Upon first glance at the S60's initial design sketches, Volvo's chassis experts knew that the challenge to make the car ride and drive as good as it looked was going to be exceptional.

"This project has been about pure passion for the task of driving Volvo's chassis development expertise to its very pinnacle," says Paul Welander, Senior Vice President Product Development at Volvo Cars. "You simply have to drive the car to understand - preferably on a narrow winding country road where every sweeping bend brings a new challenge. That's where the all-new S60 comes into its own and shows off its agility with sparkling enthusiasm."

The journey to these heights of driving dynamics has been filled with challenges and new solutions. The chassis team chose early on to translate the brief from Volvo Cars' top management to "create Volvo's sportiest car ever" into a prototype that served as a test-bench for validating various technical solutions.

**Dynamic chassis puts the "sport" in sport sedan**
The all-new S60 will be offered with three chassis: Touring, Dynamic and FOUR-C Active Chassis. In the U.S. the S60 comes standard with the Dynamic chassis. Touring is offered as a no-cost option while FOUR-C is offered optionally.

The difference between the two chassis alternatives is found in the dampers and the front and rear subframes. While both offer exceptional ride and handling qualities, the Touring chassis has been tuned to give a smoother ride on poor road surfaces.

"The spotlight was on giving the concept of comfort a whole new dimension," says Sällqvist. "The dynamic chassis has an alert, quick-responding architecture that puts the focus on the driving experience, yet without diluting the impression of a comfortable ride."

The Dynamic chassis, with its improved steering, stiffer springs and bushings, as well as more damping than in any current Volvo, is for passionate drivers. It features an alert, quick-responding architecture with a focus firmly centered on squeezing the most fun out of any road.

The all-new S60 can be specified with the FOUR-C active chassis, which has also been modified and refined for better control and comfort. This is an advanced, self-adjusting chassis system that uses sensors to continuously monitor the car's behavior. In fractions of a second, the dampers are adjusted to suit the current driving situation. The driver can select three individual chassis settings to alter the car's ride: Comfort, Sport or Advanced.

Enhanced all-weather performance and traction with the latest generation of all-wheel drive from Haldex will be standard on U.S. models equipped with the T6 engine. The software in the AWD system has been modified to fully exploit the sporty new chassis to the limit.
The all-new Volvo S60 is 182.2 inches long, with a wheelbase of 109.3 inches. The track is 62.6 inches up front and 62.0 inches at the rear.

**Sharp minds create quicker steering reflexes**
During the development process, the chassis team carved out a holistic solution featuring changes and refinements for virtually every detail that influences a car's driving properties.

For example, the steering gear ratio has been made 10 percent faster than in previous models to give enhanced steering feel and sharper response. The steering column's thicker tubing and stiffer bushings result in increased torsional rigidity by 100 percent. This contributes to the increased feeling of direct contact with the road.

"Really good steering is intuitive," says Sällqvist. "The car appears to sense your driving intentions even while they are just thoughts. In this area I feel we have taken a huge step forward."

Up front, the struts have thicker piston rods compared with the sports chassis in the Volvo S80. The 47 percent increase of stiffness means that the structure is better able to take up lateral loads. The springs themselves are shorter and stiffer than before with Eigen frequency increased by 10 percent.

The bushings are generally stiffer than in Volvo's current sports chassis. Front strut mounting stiffness has increased by 50 percent. The subframe bushings front and rear are up to twice as stiff when compared with previous models. Link arm bushings have also been optimized for sporty driving with full control.

**Damping everything except enthusiasm**
The dampers offer more damping performance than in previous Volvo models. The damper mountings at the rear are made of PUR (polyurethane) instead of rubber, a solution that provides better balance between comfort and dynamic control.

"We spent many weeks fine-tuning the dampers in the English countryside," says Sällqvist. "We drove on old Roman roads that have only received a few layers of tarmac over the centuries. This was a perfect environment for finding the right damping qualities - well controlled roll and bounce movements."

**First sedan with Advanced Stability Control**
The chassis in the all-new S60 is backed by a range of electronic systems to further sharpen the driving experience.

Volvo’s Dynamic Stability Traction Control (DSTC) system incorporates a new driver-selectable sports setting that disables the anti-spin system for more active driving with an increase in oversteer.

The S60 is the first sedan on the market equipped with Advanced Stability Control. A new roll angle sensor identifies any skidding tendency at a very early stage so the anti-skid system can step in earlier and with greater precision. Advanced Stability Control is a great asset in dynamic driving involving considerable lateral forces, which improves handling and rapid avoidance maneuvers.

Trailer Stability Assist helps dampen the weaving or snaking action that may occur when towing a trailer. The car is stabilized by applying braking force to one or more wheels and by reducing engine torque.

Engine Drag Control prevents the wheels from locking during engine braking on a slippery surface.

**Corner Traction Control for tighter cornering**
Corner Traction Control is a new feature that uses torque vectoring for smoother cornering. This technology is a further refinement of the Dynamic Stability and Traction Control (DSTC).

When cornering, the car's inner driven wheel is braked while at the same time more power is transmitted to the outer driven wheel. This allows the driver to take the corner more tightly while reducing any tendency to understeer.

"You can accelerate out of the curve while retaining your grip on the road," says Sällqvist. "This
system makes it easier to smoothly maintain your desired line on winding roads and on wet surfaces. Corner Traction Control is a huge asset when you want to swing out from a small side road to merge with a highway and need to accelerate swiftly to join in with the flow of traffic."

**Advanced, integrated braking functions**

A highly advanced braking system is an important part of the dynamic driving properties of the all-new S60. The sedan is equipped with a number of features that interact to provide the shortest possible stopping distance in all scenarios.

Ready Alert Brakes can predict when swift braking is needed. The brake calipers are applied lightly to the brake discs even before the driver presses the brake pedal.

Hydraulic Brake Assist helps the driver brake in the shortest possible distance. In an emergency situation where the driver does not press the brake pedal fast or hard enough, Hydraulic Brake Assist can help utilize the ABS system optimally and thus shorten the overall braking distance.

Optimized Hydraulic Brakes is a system that amplifies braking ability during firm braking by using hydraulics to compensate for low vacuum pressure in the brake servo.

Fading Brake Support uses the hydraulic system to gradually build up brake pressure during long, hard braking. This helps reduce the risk of brake fade and maintains pedal feel.

The all-new S60 is also equipped with a standard Electronic Parking Brake.

**More powerful T6 engine for the U.S. market**

The all-new S60 will be launched in the U.S. with the T6 engine, an upgraded, more powerful version of the T6 engine currently offered in the XC60 premium crossover. All T6 models come standard with Volvo’s all-wheel-drive system.

The turbocharged T6, displacing 3.0-liters, has been improved with lower internal friction and is the most powerful six-cylinder engine currently offered by Volvo. It now puts out 300 horsepower and a stout 325 lb.-ft. of torque. Maximum torque is achieved from just 2,100 rpm and remains available throughout the rev range. Power is transmitted to the wheels via Volvo’s second-generation six-speed automatic Geartronic transmission. New valves and lower friction mean faster gear changes than before.

**Keywords:**

The all-new S60 will be launched in the U.S. with the T6 engine, an upgraded, more powerful version of the T6 engine currently offered in the XC60 premium crossover. All T6 models come with engine-specific cooling so they can maintain peak performance regardless of the weather.

Fading Brake Support helps to maintain brake pressure during prolonged hard braking. This reduces the risk of brake fade and maintains pedal feel. Fading Brake Support uses the hydraulic system to gradually build up brake pressure during long, heavy braking to help prevent brake fading. The brake pads are also designed for a longer fade resistance.

Ready Alert Brakes can predict when swift braking is needed. The brake calipers are applied lightly to the brake discs even before the driver presses the brake pedal. This prepares the brake system for rapid, effective braking. If the driver gives no brake pedal input, Ready Alert Brakes do not engage. If the driver lightly presses the brake pedal, the available brake pressure is used to reduce and maintain the brake pressure. If the driver presses the brake pedal harder, more brake pressure is used. This helps to achieve the shortest possible stopping distance and maximum safety in all scenarios.

Advanced, integrated braking functions are also available. The S60 is the first sedan on the market equipped with Advanced Stability Control. A new roll angle sensor identifies any skidding tendency at a very early stage so the anti-skid system can step in earlier and with greater precision. Advanced Stability Control is a great asset in dynamic driving situations involving considerable lateral forces, which improves handling and rapid avoidance maneuvers. The dynamic chassis has an alert, quick-responding architecture that puts the focus on the driving experience. Advanced Stability Control is also a key component of Corner Traction Control for tighter cornering.

The S60 is also fitted with Engine Drag Control, which prevents the wheels from locking during engine braking on a slippery surface. Engine Drag Control works by closing the throttle when engine braking is detected. It helps to maintain control of the vehicle and utilizes the ABS system optimally to reduce the overall braking distance.

Addressing driver needs, the S60 is also the first sedan to be equipped with the new Motor Drag Control. This feature provides braking energy regeneration with reduced symptoms of engine braking on high-grip surfaces. Thereby, it improves the high-speed driving experience.

Cornering Induction Brakes enhance the low-speed handling by increasing brake pressure for better balance between comfort and dynamic control. They help to reduce braking judder and improve the feel of the brake pedal. Cornering Induction Brakes work by automatically adjusting the pressure to the rear brakes to counteract the weight转移 and maintain better balance.

The S60 is also equipped with a Rear Electronic Limited-Slip Differential, which monitors the difference in speeds between the rear wheels and applies the brakes to the wheel that is turning faster. This helps to maintain traction and stability.

The S60 is the first sedan on the market to be equipped with a Rear Electric Parking Brake. It provides greater stability during parking since the electric parking brake is applied to both rear wheels. It also helps to reduce the risk of spin in slippery conditions and the risk of kerbing.

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