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### **THE 2007 AUDI S6 – REFINED POWER IN THE SPORTS LUXURY CLASS**

Distinct sports appeal, elegant style and supreme comfort – these are the characteristic features of the current Audi A6. At the time of its market launch in 2004, this luxury-class sedan shot straight to the top of the luxury segment thanks to its dynamic qualities. The Ingolstadt brand is now unveiling a sporty top version of the very highest caliber.

The Audi S6 stands for unequivocal dynamism, as expressed by the engine, transmission, suspension and design, for sporting luxury and for eminent exclusivity.

The new Audi S6 will be powered by a new V10 engine that is virtually identical in form to the engine in the new Audi S8. The ten-cylinder engine of under square configuration develops 435 hp from a swept volume of 5.2 liters at 6,800 rpm, and 398 ft.-lbs. of torque. The latter is achieved at engine speeds of between 3,000 and 4,000 rpm.

As on the Le Mans winning R8, the successful racing car, FSI gasoline direct injection assures superior power output in the new Audi S6. The S6 sprints from 0 to 60 mph in 5.1 seconds; its top speed is electronically governed at 155 mph.

The advantages of this pioneering engine are very well defined:

- Substantial engine torque at low revs
- Sporty behavior thanks to engine speeds of up to 7,000 rpm
- Highly spontaneous response, short reaction time
- Shorter shift times, even swifter gear changes
- Unique, throaty sound when accelerating
- Perfect synthesis of sporty driving pleasure and comfortable long-distance suitability

The transmission, steering, chassis and brakes of the S6 have been modified to reflect the engine's power. The latest generation of quattro permanent four-wheel

drive with asymmetric/dynamic torque split transmits this power to all four wheels.

The firmer settings of the springs, dampers and elastokinematics as well as a more direct steering ratio ensure that the power and dynamism of the drivetrain reach the road with precision and minimal losses.

The design of the new S6 completes the picture: the sporty top model in this car line has the looks of an athlete, albeit in elegantly understated attire. There is an atmosphere of sporty elegance inside the car. Its lavish equipment gives the Audi S6 the status of a technology leader and makes it pre-eminent within its competitive field.

## **Engine**

### **Newly developed V10 with FSI technology and beefy torque characteristic**

For the first time in its history, the Audi brand is presenting a ten-cylinder engine – the new V10 FSI. The V10 in the new Audi S6 is a new development. It first appeared in the Audi S8 and now has been specifically retuned to propel the top model of the Audi luxury range.

The V10 features-gasoline direct injection FSI on the Audi models. This combination of ten cylinders and FSI technology gives Audi a unique technological position on the market.

A ten-cylinder engine is the ideal design for realizing sporting aspirations. It has the edge on a comparable twelve-cylinder unit thanks to the smaller number of components, resulting in lower moving masses and less internal friction; the fuel is consequently put to very efficient use. A V10 is moreover considerably lighter and more compact than a conventional 12-cylinder engine – including all its add-on components, the engine of the new Audi S6 is just 27-inches long, 35.1-in. wide, and 28-in. high.

Although an eight-cylinder engine would be even more compact, to make it into the five-liter-plus class it would need large, heavy pistons and connecting rods, so its ability to rev freely would be impaired as a result. It is no coincidence that many competitors have generally concentrated simply on high torque with their large-capacity V8 engines, rather than attempting to squeeze sporty performance out of them too.

The 435 hp V10 in the new Audi S6 belongs to the next generation of Audi V-engines, all of which have a 90-degree included angle and a spacing of 90 millimeters (16.6 in.) between cylinder centers. The bore measures 84.5 millimeters (3.33 in.), stroke is 92.8 mm (3.65 in.), and its displacement 5,204cc.

The crankcase of the Audi ten-cylinder engine is produced by low-pressure die-casting, from a hypereutectic aluminum alloy. This technology renders separate cylinder liners superfluous; the cylinder barrels are instead honed directly from the material by mechanically exposing the hard silicon crystals. A so-called bedplate design – an intermediate frame – gives the crankcase extremely high torsional rigidity and improves its vibrational behavior. Its cast-in bearing bridges, made from grey cast iron, reduce thermal expansion and keep the amount of play at the main crankshaft bearings within tight tolerances.

The high-strength connecting rods are made from forged steel, and the pistons from an aluminum alloy. At the rated engine speed, each of them covers an average distance of 21 meters per second. With its crankpin offset of 18 degrees, the V10 fires at the ideal spacing of 72 degrees crankshaft angle. A balancing shaft located between the cylinder banks eliminates the free inertial forces of the first degree and also contributes towards the engine's notable refinement.

All four camshafts of the ten-cylinder engine (two per cylinder bank – the DOHC principle) can be adjusted continuously by 42 degrees crankshaft angle via hydraulic camshaft adjusters, depending on the load and engine speed. In this way, filling of the combustion chambers is optimized across the entire engine speed range and the engine response is enhanced.

The camshafts – complete with the balancing shaft, the oil and water pump and the auxiliaries – are driven by maintenance-free chains running on the reverse side of the engine.

The valves – 40 in total – are actuated via roller cam followers with hydraulic valve-play compensation.

The diameter of the valves on the intake side is 32.5 mm, and 28.0 mm on the exhaust valves. The highly-loaded exhaust valves are sodium-filled, which ensures a better cooling effect.

The V10 in the new Audi S6 uses the FSI gasoline direct injection principle; this permits a high compression ratio of 12.5:1 and a correspondingly effective combustion process.

FSI technology has impressively demonstrated its dynamic potential in motor sport – the R8 racing car equipped with it participated in the Le Mans 24 Hours five times for Audi, emerging as the winner on four of those occasions.

In the Audi S6, the FSI technology is managed by a highly advanced Bosch Motronic bearing the designation MED 9.1, operating with two separate control units according to the master/slave principle.

Unlike conventional indirect manifold injection, the FSI common rail injection system injects the fuel directly into the combustion chambers in precisely metered amounts, at a pressure of up to 1470 psi. This results in an extremely homogeneous fuel/air mixture, benefiting the efficiency of the combustion process. An internal cooling effect moreover takes place, allowing the engine's basic compression ratio to be raised to a high 12.5:1. A highly efficient combustion process is the result.

The magnesium two-stage variable intake manifold is fed via two separate air paths with two air filters. The variable intake manifold incorporates electronically controlled tumble flaps that induce a tumbling motion in the air drawn in at low engine speeds and loads; this enhances the efficiency of the combustion process inside the engine even further.

The two-stage layout of the magnesium intake manifold serves the same purpose. Depending on the load and engine speed, the longer manifold length (26.6 in.) is activated to provide ample torque at low and medium engine speeds, and the shorter manifold length (12.1 in.) to ensure high power output at higher engine speeds.

The design of the single-pipe manifolds likewise contributes to the dynamically optimized charge cycle; it is matched precisely to the firing order of the V10. On each cylinder bank, the exhaust ducting of the first and second cylinder and of the fourth and fifth cylinder is combined; it only converges with the exhaust ducting of the third cylinder relatively far down. Four main catalytic converters take charge of exhaust emission control.

The powerful ten-cylinder engine has been optimized for high torque as well as high engine power. It achieves 435 hp at 6,800 rpm, and musters up 398 ft.-lbs. of torque at engine speeds as low as 3,000 to 4,000 rpm.

Over 90 percent of the torque is available from as low as 2,300 rpm. The V10 exhibits instant throttle response and very refined running, and under load it also produces a throaty rumble that is characteristic of a dynamic vehicle of Grand Touring caliber. The V10 is a far cry from a rough-diamond sports engine: for all its sporty character, this ten-cylinder engine exhibits very low-vibration and plenty of refinement.

For Audi, lightweight design is a philosophy that has implications for every area of a vehicle. As in motorsport, the engineers developing the S6 fought to shave every gram of weight possible. Thanks to its compact design and thinner walls, the V10 weighs just 484 lbs. A dynamically balanced distribution of axle loads and impressive road behavior are the result. For the same reason, the battery and the power management are housed in the luggage compartment.

The car effortlessly reaches its top speed of 155 mph, the point at which the electronic governor smoothly cuts in. Top speed performance being enhanced among other things by its low drag coefficient of  $c_D$  0.31.

## **Drivetrain**

### **More direct for even greater dynamism**

The entire drivetrain of the Audi S6 has been designed from scratch. The engine's power on the S6 is translated into locomotion by a six-speed Tiptronic as standard, which adapts to the driver's style by means of an intelligent feature. It performs this as a function of the momentary lateral and longitudinal acceleration forces and the amount of engine power that is currently being called up. The software program that controls the Tiptronic electronically has been optimized to deliver more dynamic gear changes; the gear changes are noticeably swifter in the one-touch mode in particular.

The driver can call up the automatic transmission's "S" sport mode via the console shift lever – the shift characteristics here are set for higher engine speeds.

And it is possible to change gear manually in both modes by means of the aluminum-look shift paddles that are located behind the steering-wheel rim and move in unison with the steering wheel itself (they are, in effect, mounted on the steering wheel). The selector lever has an aluminum look and – like the steering wheel – is trimmed in smooth leather.

The servotronic steering with its direct ratio makes a noticeable contribution to the agile handling of the S6.

### **Power and control**

Like most Audis, the new Audi S6 takes quattro<sup>®</sup> permanent four-wheel drive as its basis. Its virtues are already widely acknowledged: superior traction in all driving conditions. More than a quarter of a century of expertise acquired in this

domain by the Ingolstadt-based brand has led to the development of a new quattro generation with asymmetric/dynamic torque split – further evidence of Audi's guiding principle of "Vorsprung durch Technik".

A self-locking centre differential, installed longitudinally in the driveline, distributes power between the front and rear wheels, always according to the prevailing situation. The normal split is 40 percent to the front wheels and 60 percent to the rear – this slight bias in favor of the rear has been chosen to place even greater emphasis on the sporty, dynamic character of the new Audi S6.

If the surface conditions change – for instance if they become wet or slippery, or if the car is driven onto a different type of road surface – this purely mechanical differential responds without any delay; depending on the requirements at any given moment, it can divert up to 85 percent of power to the rear wheels or as much as 65 percent to the front wheels. If a wheel on one axle spins (wheel slip), it is moreover brought under control by the Electronic Differential Lock EDL, which applies the brakes. This newly configured package of technical features guarantees a further increase in agility, particularly spontaneous turn-in properties and even greater driving stability.

The electronic stabilization program shuts down in two stages: when the ESP button is pressed once, only the ASR traction control system is deactivated; the ESP remains active, to stabilize the car if needed. The instrument cluster briefly displays "ASR off" and the ESP symbol remains permanently lit. It stays active in the S6 until ASR is switched back on by pressing the ESP button a further time. On the new S6, ASR does not cut in automatically once a defined speed is exceeded (as is the case on the A6).

If the ESP button is pressed for longer than three seconds, all ESP functions are switched off. Only the electronic differential lock EDL and the anti-lock braking system ABS now remain active. Pressing the ESP button a further time switches all ESP functions on again.

As a result, the desired degree of electronic assistance can be determined by the driver via the ESP button. Without ASR traction control, the degree of stability can, within certain limits, be determined by the driver via the accelerator pedal. Drivers with sporting ambitions who may wish to probe the limits of handling can in addition completely deactivate the ESP functions with the second stage.

## **Chassis**

### **Firmer and more spontaneous**

The dynamic suspension layout of the new Audi S6 is based on a technology that has already demonstrated its sports caliber in the most challenging of conditions: the refined four-link front suspension acknowledged as a typical Audi feature and the self-tracking trapezoidal-link rear suspension carried over from the A6. This combination gives the S6 one of the most complex and efficient rear suspension layouts currently available. In terms of its kinematic behavior, this technical feature provides a taste of the out-and-out sporty, active characteristics of the Audi S6. The precise reduction of bump toe-in as a function of spring travel improves the car's directional stability, steering precision, and handling. The entire layout is designed in such a way as to produce a neutral response with a moderate tendency to understeer when the very high limits of handling are approached.

The chassis is constructed using a multi-material concept. The principal components of the chassis feature lightweight aluminum construction, resulting in decisively lower unsprung masses. The targeted use of sheet steel, on the other hand, achieves optimum rigidity wherever it is required. In selecting specific materials and manufacturing methods for each individual suspension link, Audi's engineers have been able to ensure that the chassis represents an optimum blend of low weight, high rigidity and maximum safety.

As a reflection of its explicitly sporty character, the suspension settings of the S6 have been made firmer, even compared with the A6 sports suspension, and at the same time assure a high standard of comfort for long-distance driving. The Audi S6 is always noticeably more agile; driving stability and traction have moreover been further optimized specifically for the high performance standards of the Audi S6.

The Audi S6 comes standard with 19-inch cast aluminum wheels of a 5-arm wing design. The wide performance tires have the format 265/35 R19, a further feature differentiating them from the Audi A6.

A strong brake system assures supreme braking performance and decelerates the car quickly even under high loads. Its four large discs are ventilated, the discs on the front wheels measuring 15.2 inches in diameter and those at the rear measuring 13 in. The front brake discs are 1.4 in. thick, the rear brake discs 0.9 in. The brake calipers are painted black; the front calipers are adorned with a titanium grey supporting plate with an S-specific S6 emblem.

## **Design**

### **Supremely athletic presence**

The models in Audi's S range have traditionally epitomized a consistent and refined form of sports appeal. This applies in equal measure to the new S6, which now dynamically hones the visual impact made by the A6. These models are renowned for their inherently light and elegant character – their very distinctive aesthetic appeal reflects their exceptional status as sports models in the luxury class.

The S6 looks unmistakably even more supremely athletic out on the roads – but without even the slightest hint of aggression. The most striking differences compared with the A6 are to be found at the front end. The eye-catching single-frame grille displays the S6 emblem, and its vertical aluminium-look struts are of a double design by way of further differentiation. There is an air inlet beneath the grille. A spoiler lip at the front end of the car provides additional down force.

Another innovation in the front bumper is a pioneering development in terms of both road safety and style: the separate LED daytime running lights, each of which consists of five white light-emitting diodes and consumes only a minimal amount of energy. When these light strips are switched on, the effect is utterly distinctive: they make it incredibly easy to identify the new Audi S6 and the low-down position of the daytime running lights gives the car a dynamically flat appearance.

To accommodate this concept, the front fog lights have been incorporated into the main headlights, the covers of which are tinted grey. Bi-Xenon adaptive headlights are provided as standard equipment. The rear light units incorporate LED brake lights as standard.

The trim strips along the lower edge of the doors have been made wider, to accentuate the "S" character; they are painted in the body color. Other striking differentiating features are door sill trims bearing the S6 logo at all four doors, the rear spoiler integrated subtly into the luggage compartment lid (rather than merely added onto it), aluminum-look exterior mirrors, the V10 emblem at the front beneath the side turn indicators, and an S6 logo on the rear end. The vehicle's tail end also displays a color-contrasting diffuser in the bumper, for turbulence-free air routing, and the four ellipsoidal tailpipes of the exhaust system, with its notably sporty acoustics.



## **Interior**

### **Luxury and refinement in detail**

In the same way as the body design, the interior of the new Audi S6 reflects a character of dynamic elegance and high quality – from the organically flowing driving area that surrounds the driver to the integrated MMI (Multi Media Interface) operating concept, which remains unequalled by any competitor thanks to its logical, intuitive operating principle.

The luxurious interior of the S6 features specific highlights and distinguishing features. For instance, there is a new generation of sports seats. They have integral head restraints and pronounced lateral supports, and are upholstered in Silk Nappa leather. The front seats are electrically adjustable in multiple directions as standard, and include a lumbar support. A multi-stage heating function for both front seats is included as standard. The rear seats are equipped with L-shaped head restraints affording a better view to the rear. ISOFIX mountings for installing child seats on the outer rear seats are standard.

The three-spoke multifunction leather sports steering wheel with the S logo is a typical example of the hand-crafted character that Audi so often achieves in its attention to detail: it is trimmed in smooth leather and displays a color-contrasting double stitch with an exclusive seam pattern. The reach and height of the steering wheel can be power adjusted, including an automatic entry and exit aid. The shift paddles, which are mounted to the steering wheel (in other words, they move as it is turned), have an aluminum-look finish. The knob on the transmission selector lever is likewise finished in aluminum and trimmed with smooth leather-

The standard trim inserts are in Grey Birch wood. Carbon Fiber inserts will be available as an option. The material on the instrument panel represents a further innovation in the S6: it correspondingly exhibits an anthracite-colored metallic surface characteristic. Anthracite is also the predominant color featured on the other sections of the instrument panel. The centre console, on the other hand, is in black.

The instrument needles are in white and its numbers use characteristic S-style italics; the dials are in dark grey. An S6 logo also adorns the dials of the rev counter.

The color Driver Information System, which comes as standard, has an additional digital speedometer in the new S6. The driver receives information on a high-resolution 7-inch color display, a standard feature of the MMI Multi Media Interface, which has a high performance yet is also straightforward and intuitive to use. There is a welcome screen customized specifically to the S6.

Compared with the A6, the MMI furthermore integrates the extended-specification radio system and the standard Bose Surround Sound System with 6 disc CD changer.

Operation of the Bluetooth car phone is likewise via the MMI system in the Audi S6.

The deluxe automatic air conditioning system plus with separate temperature distribution for the driver's and front passenger's sides, as well as air quality and humidity sensors, maintains a very high level of occupant comfort. The light and rain sensor and the cruise control system likewise play a part in this.

## **Safety**

### **Protection without compromises**

quattro permanent four-wheel drive is one of the fundamental areas of expertise of the Ingolstadt brand. It gives Audi drivers decisively more active safety by assuring optimum traction in critical situations. The asymmetric/dynamic torque split that is possible on the new Audi S6 builds on this already significant advantage. The highly efficient brake system, too, makes a substantial contribution towards active safety.

The high standard of active safety of the new Audi S6 stems principally from its superior engine power, pioneering quattro drive and the complex ESP system. The sporty top model in the Audi executive range also boasts a full complement of passive safety systems. This model comes complete with a package of restraint systems that are perfectly matched to the highly rigid aluminum body, including two dual-stage full-size front airbags, side airbags for the front seats and large-area Audi Sideguard<sup>®</sup> curtain head airbags. Side airbags for the rear seats are available as an optional extra.

All five three-point belts in the Audi S6 of course operate in conjunction with belt force limiters. There are belt tensioners for the front seats' restraint systems as standard. The S6 shares the same body structure as the IIHS "Top Safety Pick" A6.

The safety contribution of the daytime running lights on the new Audi S6, which simultaneously represent an unmistakable design feature, should not be underestimated. The separate LED daytime running lights, each of which consists of five white light-emitting diodes and consumes only a minimal amount of energy – the individual diodes have a rating of just one watt – are a striking touch at the front of the S6. Furthermore, the flat light strips underneath the side air inlets underscore the flat, road-centered proportions of the S6 and emphasize its status as a genuine sports car.

## **A tradition of expertise: the S models**

### **Sports appeal, elegance and luxury**

The S models' forte has traditionally been to blend outstandingly dynamic performance with extraordinary standards of comfort and attention to detail. They guarantee agile handling and nimble reflexes. But the suspension must never be so hard that your back starts to complain, nor the engine need be revved up so high that your ears are left ringing. This combination of advanced technology, dynamic performance and stylish sophistication in the S models traditionally appeals to younger customers of a more dynamic, sporty outlook who want to discover for themselves the absolute nature of the Audi brand.

The forefather of all Audi S models was the 1985 S1, the last and technically most advanced evolution model of the revolutionary rally competition car. 224 of its road-going version, the Sport quattro with Kevlar body and an output of over 300 bhp, were built. 1991 saw the first S model purely for use on public roads enter the showrooms – the Coupé S2, the designated successor to the “Ur-quattro” (original quattro).

In characteristic Audi style, the S2 was equipped with permanent four-wheel drive. It blended sportiness with refinement, the net effect of which was more than the sum total of these character traits. Inspired by the success of the S2, a self-contained family of S models grew over the years, from the S3 to the S4 and the S6, all the way up to the S8.

More or less in parallel with the S2, Audi brought out the first S6, though it was initially built as the S4 and was based on the Audi 100; it remained in production continuously from 1991 to 1997. This first S6 model – available as both a saloon and an Avant, and equipped originally with a 2.2-litre turbo engine, then also with a 4.2-litre V8 engine – was a bestseller with over 27,000 units sold worldwide.

The previous Audi S6 put in its first appearance at the 1999 Frankfurt Motor Show. It was notable among other things for a 4.2-liter V8 engine tuned up to 340 bhp, with five-valve technology, aluminum suspension and of course quattro permanent four-wheel drive, and remained in production until the end of 2004.

Sales of all S models together up to the present day amount to some 150,000 units.

Like its predecessors, the new Audi S6 has been developed for people wishing to express their individuality through the car they drive. Many of these are businesspeople or successful freelancers who have opted for a prestigious sports car with high suitability for everyday use and which is intended to encapsulate their personal success and communicate their outlook as top performers.

The most important sales markets for the new Audi S6 are Germany, the USA and Switzerland.

## **Warranty**

The 2007 Audi S6 will be backed by an outstanding combination of warranties and protection that includes:

- Four-year/50,000 mile new vehicle limited warranty
- 12-year limited warranty against corrosion perforation
- 24-hour Roadside Assistance for four years provided by Road America

More information on all Audi models can be found at [www.media.audiusa.com](http://www.media.audiusa.com).

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