

# All-New Lexus LS 500h Makes Its World Premiere at the 2017 Geneva Motor Show

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GENEVA, March 7, 2017 — The 2018 Lexus LS 500h, the full hybrid version of Lexus' new flagship sedan, was unveiled today in Geneva.

The model, which follows the world premiere of the twin-turbo gas V6-powered LS 500 at the 2017 North American International Auto Show (NAIAS) in Detroit, is a further manifestation of how Lexus has reimagined the luxury sedan, presenting bold design, enhanced performance and a sophisticated appeal to capture the imagination of forward-thinking customers.

The car's design successfully brings together the virtues of a long-wheelbase four-door sedan with a low, coupe-like profile, positioning the LS perfectly across the growing sedan and coupe segments.

The cabin has benefited from an equally new approach, focusing on "progressive comfort," interpreting Japanese aesthetics and craftsmanship traditions in the context of an advanced, luxurious and innovative vehicle interior such as the unique door trim ornamentation. Notably, the LS 500 was honored at the NAIAS with the EyesOn Design Award for Design Excellence – Interior Design.

Conceived as the new global pinnacle of the Lexus brand, the LS goes beyond what the world expects from a luxury car. Chief Engineer Toshio Asahi explained: "Developing such a flagship model required a massive paradigm shift. Rather than being bound by the conventions that had defined luxury cars in the past, we aimed to create a car with innovative, emotional and sensual appeal that would draw customers' eyes away from other luxury cars and provide entirely new values."

The LS 500h is equipped with the new Lexus Multi Stage Hybrid System, which provides enhanced responsiveness and linear acceleration, particularly when accelerating from a full stop. The powertrain features a 3.5-liter V6 Dual VVT-i V6 gasoline engine and two electric motors, together delivering maximum system power of 354 hp.

The LS 500h is built on the new Lexus Global Architecture – Luxury (GA-L) platform, which is shared with the all-new LC. This platform ensures a low center of gravity and optimum weight distribution, contributing to the car's essential stability and handling agility, which in turn deliver increased driver rewards. The fundamental high rigidity of the chassis allows the new multi-link suspension to be tuned to achieve enhanced handling performance and the supreme comfort for which the LS is renowned. The car's dynamic performance also benefits from the coordination of braking, steering and stability systems through Lexus Dynamic Handling.

Advanced technologies are further used to deliver impressive safety performance. The LS 500h's available Advanced Safety Package features the world's first Intuitive Pedestrian Detection system with Active Steering within the lane.

*Omotenashi*, expressing the unique sense of Japanese hospitality, defines the LS 500h's whisper-quiet and luxurious interior. Supreme comfort is provided by front and rear seats with multiple power adjustment, heating, cooling, and massage functions. There is also an optional rear seat arrangement that includes an extending leg ottoman and the most generous leg room of any LS generation. At 123 inches, the wheelbase of the new LS is in fact 1.3-inches longer than on the current long wheelbase LS 600h L.

Lexus *Takumi* craftsmanship also contributes to the special quality of the LS 500h's cabin, in luxurious new trims, materials and detailing, including a new pleating treatment and *Kiriko* glasswork on the inner door panels.

## **IMAGINATIVE TECHNOLOGY**

### **Full hybrid powertrain with 3.5-liter V6 Dual VVT-i gas engine**

The LS 500h's Lexus Multi Stage Hybrid System combines a 3.5-liter V6 Dual VVT-i gas engine with two electric motors, together delivering a total output of 354hp. The engine makes optimal use of Dual VVT-i (intelligent variable valve-timing), with timing precisely gauged in line with driving conditions, helping to secure high torque at all engine speeds. Measures to reduce friction losses and thus improve engine efficiency include the adoption of narrow, lightweight roller rocker arms and low-friction timing chains, while D-4S direct fuel injection helps create optimum combustion conditions, contributing to enhanced fuel economy.

### **Lexus Multi Stage Hybrid System**

The new LS 500h is equipped with Lexus' Multi Stage Hybrid System, a breakthrough technology that enriches the hybrid powertrain performance experience and is also seen on the all-new LC. The system adds a four-stage shifting device to the Lexus Hybrid Drive combination of a 3.5-liter V6 gas engine and two electric motors. The result is more direct response to driver inputs while maintaining the characteristic smoothness and efficiency for which Lexus hybrids are renowned.

In a conventional full hybrid vehicle, engine output is boosted by the electric motor via a reduction gear, but with the new Multi Stage Hybrid System the power from the V6 engine and the hybrid battery can be amplified by the four-stage shifting device, allowing much greater drive power to be generated when accelerating from stationary and achieving a 0-60 time of 5.4 seconds.

The design of the system places the multi-stage shift unit immediately behind the power split device, on an axis aligned with the engine crankshaft. Although the unit has four speeds, the D range has a simulated shift control pattern that delivers the feel of driving with a 10-speed gearbox. As vehicle speed rises, engine speed increases with a linear, direct and continuous acceleration feel, free from the "rubber band" effect witnessed in some continuously variable transmissions. In the 10th gear range, the CVT control allows for high-speed cruising at lower engine revs for quiet, smooth and fuel-efficient performance.

The transmission further benefits from an improved version of the artificial intelligence shift control found in conventional automatics. This enables intelligent, optimum gear selection to be made in line with driving conditions and driver inputs, for example when going up or downhill. By reading the vehicle's acceleration, deceleration and lateral G trajectories, the system can adjust gear shifts to suit the driver's style and behavior, without the driver having to select a different drive mode to get the kind of performance they want from the transmission.

Thanks to the Multi Stage Hybrid System's design, the driver is able to take advantage of an M mode to select and hold gears manually, using paddle shifts mounted behind the steering wheel – a function not previously available on a Lexus hybrid. Thanks to the coordinated control of the Power Split Device and the gear shifting mechanism, the gear shift will start instantaneously with the computer receiving the signal from the paddle shift, giving an exceptionally quick response.

### **Lithium-ion hybrid battery**

The LS 500h is fitted with a compact, lightweight, lithium-ion hybrid battery. It is 20 percent smaller than the nickel-metal hydride unit featured in the current Lexus LS 600h, yet has a higher power density. Using lithium-ion technology has also reduced the component's weight, helping reduce the car's overall mass, thus supporting overall fuel economy, emissions performance and handling balance.

It is the first Lexus hybrid battery to feature a satellite construction design, in which the cell voltage monitoring function has been made separate from the battery ECU. This allows for efficient use of what would otherwise be empty space inside the battery pack to house the wiring harness and battery cooling blower, thus reducing the unit's overall dimensions. The cooling blower itself has been made more powerful and thinner in size.

## LUXURY INTERIOR INSPIRED BY *OMOTENASHI*

*Omotenashi*, the Japanese concept of hospitality, is a common thread that has run through all LS models. In the context of a luxury automobile, it means taking care of the driver and passengers, anticipating their needs, attending to their comfort and protecting them from hazards.

### Takumi Craftsmanship

The quality, precision and pride in perfection that define Lexus' *Takumi* craftsmanship are richly evident in the luxury detailing in the new LS, as befits a flagship sedan. Lexus has produced a unique aesthetic for the new LS which can be witnessed in elements such as the interior lighting and an exceptional attention to detail in the finish and appearance of everything you see and feel.

### Inspired by Japanese culture and traditions

Natural woodwork and the application of sophisticated sliced wood and laser cutting technologies have been used to produce new interior finish options, including Art Wood/Organic, Art Wood/Herringbone and Laser Cut Special. The grain pattern of Art Wood is achieved by combining different color woods and is an original Lexus design, created using Takumi craftsmanship skills. The LS' new cross grain finish is larger with sharper contrasts between light and dark, creating a more vibrant effect. The new Laser Cut Special trim emphasizes the contrast between precise metal lines and natural wood.

Hand-pleated door trims were inspired by origami, the Japanese art of creating three-dimensional forms from a single piece of paper. The door panels were originally rendered in paper by a skilled fabric artisan. The finished three-dimensional pattern captures the Lexus "L" motif in its intricate and precise folds, conveying a different effect when seen in daylight or the cabin's night-time illumination.

For the ornamentation panel, the aim was to express Lexus' *Time in Design* philosophy. To achieve this, the team called on the skills of *Kiriko* artisan glassworkers who produced hand-carved designs that capture the contrast created by light and shadow. Through painstaking trial and error, a design was chosen that looks beautiful and sensual from any angle. Although fragile in appearance, the glass has been treated using reinforcement technology to ensure it is robust for use in a vehicle interior. The hand-carved design was reproduced using advanced glass production technology, which precisely scans and digitizes tens of thousands of facets. In the next step the glass ornamentation undergoes a series of treatments such as polishing and strengthening conducted by specialized Japanese Takumi craftsmen.

2018 Lexus LS Basic Specifications		
	LS 500	LS 500h
Vehicle type	Full-size premium luxury sedan	Full-size premium luxury hybrid sedan
Engine	3.5-liter V6, direct fuel injection, twin turbochargers	3.5-liter V6 hybrid engine
Valve mechanism	24-valve, DOHC, chain drive (with Dual VVT-i)	
Cylinders	6	
Layout	Front engine, RWD and AWD	Front engine, RWD and AWD
Transmission	10-speed automatic	Multi Stage Hybrid Transmission
Max engine output (hp)	415	295
Max engine torque (lb-ft)	442	258

Total System Output (hp)		354
Battery Type		Lithium-ion
Battery Voltage		310
Acceleration (0-60)	4.5 sec (RWD), 4.8 sec (AWD)	5.4 sec
Wheelbase		123 in. (3,125 mm)
Overall length		206.1 in. (5,235 mm)
Height		57.1 in. (1,450 mm)
Width		74.8 in. (1,900 mm)
Wheels		19 or 20-inch