

With the All-New 2018 LS, Lexus Reimagines Global Flagship Sedan

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2017 North American International Auto Show (NAIAS) – Jeff Bracken

DETROIT, January 9, 2017 — It is possible that no single automobile has, upon introduction, upended its category as decisively as the first Lexus LS did when it launched the luxury brand 28 years ago. The 1990 LS 400 was the original luxury disruptor, winning critical acclaim and astonishing customers by setting new benchmarks for comfort, powertrain performance and smoothness, quietness, build quality, attention to detail, and dependability. The brand supported that groundbreaking vehicle by setting and maintaining new standards for customer service and satisfaction.

Now, Lexus is about to repeat history with the introduction of the all-new, fifth-generation LS flagship sedan for 2018, unveiled at the 2017 North American International Auto Show. Inside and out, the new LS reflects a strong, uniquely Japanese identity and approach to luxury. Yet, the LS was designed to be the brand's latest global citizen, available in about 90 countries.

“Not only will the LS symbolize the Lexus brand, it will become the definitive new-generation luxury car embodying Japanese tradition and culture,” said Toshio Asahi, chief engineer for the new LS. “As such, this global pinnacle must go far beyond what the world expects from a luxury car.”

Longer, Lower, Wider – and More Exciting

Longer and lower than the sedan it replaces, the all-new LS debuts a strikingly bold design with a coupe-like silhouette punctuated by the Lexus design language. A new driver-centric performance feel comes from building the LS on the company's all-new global architecture for luxury vehicles (GA-L). This premium rear-wheel drive platform, an extended version of the one used for the stunning new Lexus LC 500 coupe, will offer a more dynamic experience on the road while further elevating renowned Lexus comfort.

The original Lexus LS won acclaim by anticipating what luxury customers would want, rather than simply amplifying what established luxury automobile brands offered at the time. In that spirit, the 2018 LS sedan's spacious cabin, unique appointments and visionary technology will once again surprise customers by resetting expectations for a global flagship sedan.

“We set previously unheard of targets and resolutely pushed ahead towards these ambitious goals,” said LS chief engineer, Asahi. “The customers who are going to want to own a Lexus flagship are already surrounded by luxury on a daily basis, people who have a sharp eye for authenticity to begin with. We wouldn't turn their heads with a conventional premium product.”

A Flagship Reborn

Just as the original LS launched the Lexus brand, the all-new 2018 LS continues the brand's more dynamic direction. Each generation of LS sedans leading up to this iteration advanced luxury, craftsmanship, performance and safety in their own way, with the most recent also introducing a far more emotional design and engaging on-road performance.

To create the all-new LS, Lexus took the approach of starting from new, reimagining what a flagship sedan should be, as if launching the brand all over again. The goal was not to improve on what Lexus has done, but to exceed expectations of global luxury customers.

A common thread going through all LS models remains: *Omotenashi*, the concept of Japanese hospitality. Applied to a luxury automobile, it means taking care of the driver and passengers, anticipating their needs,

attending to their comfort and helping to protect them from hazards.

Vehicle Dynamics

More than ever before, luxury sedan drivers demand greater handling agility and performance feel without sacrificing comfort. It's one of the most difficult balances to achieve in a vehicle, yet the new Lexus global architecture for luxury vehicles (GA-L) meets the challenge. The new platform debuted in the LC 500 coupe and now, with a longer wheelbase, underpins the new LS. To enhance center of gravity height and weight distribution, the new LS has a wide and low design.

The GA-L platform is the stiffest in Lexus history, setting the stage for enhanced handling, ride smoothness and cabin quietness. The 123-inch wheelbase is 1.3-inch longer than the current LS long-wheelbase model.

Helping to provide the uncanny ride and handling balance in the new LS is the latest generation of a chassis control technology known as Vehicle Dynamics Integrated Management (VDIM). This system implements cooperative control of all vehicle subsystems – braking, steering, powertrain, and suspension – to control basic longitudinal, lateral and vertical motion as well as yaw, roll and pitch. Optimal control of these motions helps to enable exceptional ride comfort, enhanced traction and safety and handling agility. Handling can be further enhanced by active stabilizer bars and the Lexus Dynamic Handling (LDH) System with independent front and rear steering. VDIM is capable of aiding stability when the car is traversing split-friction surfaces, such as dry pavement and ice.

In creating the new LS, engineers used lightweight materials including ultra-high tensile steel sheet and aluminum to carve over 200 pounds from the current LS platform and body. These savings, along with the implementation of the new V6 engine and enhanced body rigidity, allow for a more dynamic driving experience.

Critical to its driving performance, the new platform lowers the car's center of gravity by placing most of the mass, including the engine and the occupants, in a position more centralized and lower in the chassis. Special braces in the engine compartment, stiff aluminum front and rear suspension towers, and other features help bolster the strength of key chassis structures.

The LS has a history of outstanding suspension compliance, yet Lexus saw opportunity for new gains in this realm as well. For example, the multilink suspension employs double ball joints on the upper and lower control arms to help allow for control of the smallest movements from the driver inputs and road conditions. Beyond sharing workload, a dual ball joint arrangement helps optimize suspension geometry to increase wheel control and yield more precise steering response with better initial effort. To reduce unsprung weight and therefore aid agility and comfort, aluminum is used extensively in the suspension.

LS Performance and Smoothness Redefined: Twin-Turbo V6 and 10-Speed Transmission

For both high power and excellent fuel efficiency, Lexus designed an all-new 3.5-liter V6 engine specifically for the new LS with all-new twin turbos developed through the company's F1 technology. This new engine in the LS is indicative of the more dynamic approach being taken by Lexus, offering V8-level power without sacrificing fuel economy—all while minimizing noise and vibration. The new LS engine offers the output one would expect in a flagship sedan: 415 horsepower and 442 lb-ft of torque, sizeable gains over the current LS model's V8. The long stroke and optimized stroke-to-bore ratio contribute to high-speed combustion and the efficiency of the twin turbos, which assist the LS with a projected 0-60 time of 4.5 seconds (RWD).

Perhaps more critical is how Lexus tuned the engine and transmission to deliver instant acceleration and a constant buildup of torque toward the engine's redline.

A ladder frame structure in the cylinder block, redesigned engine mounts, electric wastegates and numerous other features help ensure the remarkable powertrain smoothness, a Lexus hallmark. The driver will be able to tailor powertrain response and feel by choosing from Normal to Sport to Sport+ modes, and just enough of the exhaust note can be heard to enhance the sporty feel.

The first-ever 10-speed automatic transmission for a premium passenger car, having already debuted in the Lexus LC 500, is also used in the new LS flagship sedan. It is a torque-converter automatic, yet with shift times that rival those of dual-clutch transmissions. The wide bandwidth afforded by ten closely spaced ratios is ideal for all forms of driving, helping to provide an optimal gear for all conditions.

Shifting via paddles is available, yet many will prefer the advanced electronic control system, which anticipates the driver's input. The system chooses the ideal ratio by monitoring the acceleration, braking and lateral-g forces.

For starting acceleration, the close ratios of the low gears and the shortened shift time enable a rhythmical and exhilarating acceleration feel. The high torque of the twin-turbo engine matches ideally with the higher gear ratios for effortless, serene highway cruising, yet very quick downshifts yield direct acceleration with no lag in G response.

Torque converter lock-up activates in all ranges except when starting off to provide a direct feel, while also supporting fuel efficiency.

Crafting a Unique Identity

“The LS is the flagship of the Lexus brand,” said chief designer, Koichi Suga. “More than any other model, it embodies the history and image of Lexus and serves as a symbol for everything the brand stands for.”

Following the “Yet” philosophy that has been passed on since the first-generation LS, Lexus created a design offering the room and comfort of a prestige “three-box” sedan, yet with the stylish silhouette of a four-door coupe that holds stronger appeal for younger luxury customers.

Lexus designers took full advantage of the new platform, with its lower profile and length on par with that of a prestige long-wheelbase sedan, to give the new LS a stretched, ground-hugging appearance. Compared to the current LS, the new model is about .6 inches lower, while the hood and trunk are approximately 1.2 inches and 1.6 inches lower, respectively. The new LS is the first Lexus sedan with a six-side window design. Also a first for a Lexus sedan, the flush-surface windows smoothly integrate with the side pillar.

To preserve headroom with the lower profile, the new LS features an outer slide-type moonroof. The unique rendition of the spindle grille mesh, with a texture that seemingly changes in different light, is the result of both intense CAD development and hand-adjusting thousands of individual surfaces.

The LS debuts five wheel designs, including two new 19- and three 20-inch wheel designs. The 20-inch premium wheels employ a brilliant appearance created using an electroplating technique known as sputtering. All but one of the wheel designs feature a hollow rim structure that helps reduce the resonance sound generated by the tires.

Progressive Comfort with Traditional Inspiration

Creating a new standard of flagship luxury is not simply a matter of adding more features. Inspired by the omotenashi principle, Lexus sought to instill the new LS cabin with luxury that welcomes and envelops the

occupants while treating the driver like a partner.

“I suggest that you simply open the door and experience that immediate, intuitive sense that you’re looking at an interior that is unlike any luxury car before,” said chief designer Suga.

New seating designs, including available 28-way power front seats that feature heating, cooling and massage, exemplify this approach. The organically shaped dash design clusters information displays at uniform height to support the “seat-in-control” layout that emphasizes the driver’s ability to operate all systems without the need to change posture.

While making the new LS even more of a driver’s car, Lexus also lavished attention to the rear seat, developing a design that creates seamless, enveloping continuity between the trim and seatbacks for passenger egress.

Options for heating, cooling and massage make the rear seat a welcoming environment. The available power front and rear seat with Shiatsu massage and a raised ottoman, part of a wider rear seat luxury package, offers the most legroom of any previous-generation LS. In addition, the seat behind the front passenger in this optional package can be reclined up to 48 degrees, and can be raised up to 24 degrees to help assist the rear-seat passenger in exiting the vehicle.

Because the new LS is lower than previous versions, Lexus, for the first time, equipped the available air suspension with an access function. Activated by unlocking the car with the smart key, access mode automatically raises the vehicle and opens the seat bolsters to welcome drivers behind the wheel.

The Intersection of Tradition and Technology

Lighting and attention to detail express a unique aesthetic in the LS. A new approach to creating trim elements again turned to Japanese culture, combining traditional Japanese aesthetic with advanced manufacturing techniques. This is reflected in signature touches, such as beautiful interior ambient lighting inspired by Japanese lanterns and armrests that appear to float next to the door panel.

Inspired by Shimamoku wood patterns, the new forms that combine the artistic combination of natural woodwork and application of Japan’s sophisticated sliced wood and laser cutting manufacturing technologies can be seen in the new LS. New patterns include Art Wood Organic, Art Wood Herringbone, and Gray Sapele Wood with Aluminum. Compared to the straight-grain Shimamoku pattern, the new LS cross-grain is a larger pattern featuring bolder contrasts between light and dark, giving the wood a more vibrant appearance.

The Sounds of Near Silence – or Great Music

Lexus tuned the LS exhaust to convey a more authoritative tone, yet also designed the cabin to ensure utterly quiet cruising. New sound suppression methods further hush the environment compared to previous LS models. Active Noise Control quiets the cabin even more by detecting the sound of the engine coming into the vehicle and cancelling certain frequencies using antiphase sound from the audio speakers.

The serenity of the LS cabin provides an ideal stage for the standard premium audio system or the audiophile-worthy available 3D surround Mark Levinson audio package with in-ceiling array speakers. The package features a more inviting graphic user interface. Its next-generation remote touch is designed to mimic smartphone operation, also supporting handwritten input. In addition to its 12.3-inch wide navigation display, the LS can incorporate an optional 24-inch color heads-up display (HUD)—the largest in the world—that projects a variety of information onto the driver’s forward view.

Advanced Safety Features and Driver Support

Structurally, the all-new Lexus LS offers a high degree of passive safety for occupant protection in collisions. Lexus has also equipped the LS with technologies that can possibly help prevent crashes from occurring or mitigate their effects.

The LS will feature the brand's Lexus Safety System + and offer the Advanced Safety Package, which features the world's first system with Intuitive Pedestrian Detection with Active Steering within the lane. With this system, if a pedestrian is detected in the lane ahead and a collision is imminent, the LS is designed to automatically brake and potentially steer around the person while staying in the lane. The available color HUD is utilized in alerting the driver.

2018 Lexus LS Basic Specifications	
Vehicle type	Full size premium luxury sedan
Engine	3.5-liter V6, direct fuel injection, twin turbochargers
Layout	Front engine, RWD and AWD
Transmission	10-speed automatic
Horsepower	415
Torque	442
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