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THE LEXUS LS 500h

INTRODUCTION

The Lexus LS: a fifth generation of the brand-defining flagship saloon

The original Lexus LS was the result of six years' work by 1,400 engineers to build a luxury car that would rival the best in the world. This "Project F1" duly delivered the original LS 400 model in 1989, launching the Lexus brand and setting in train a transformation of the prestige vehicle market.

Toshio Asahi, Chief Engineer of the fifth generation LS, reflected on how the original model took the motor industry by surprise: "Its excellent driving performance and superior quietness were proof that we allowed no compromise."

More than that, it also sparked a revolution in customer service and satisfaction, with newcomer Lexus consistently setting new benchmarks for the established industry players to aspire to.

Three decades later, an all-new, fifth generation LS flagship saloon is a model that draws on the proud history of its predecessors while breaking new ground in design, technology and performance, and extending the boundaries of automotive luxury.

The challenge for Lexus was not simply to go beyond the achievements of the past, but to reimagine what a global flagship saloon should be. This mission had the close attention of Toyota President Akio Toyoda, who is committed to introducing more excitement to Lexus models and who helped in the development of the new LS in his role as a Master Driver.

2021 Lexus LS

In early 2021, Lexus introduced significant updates to the LS across a wide range of vehicle qualities, including ride and handling, performance, comfort, styling and equipment features. Details of the changes made are included in the relevant press kit chapters below, and in the technical and equipment specification tables.

BRAVE DESIGN

- A luxury flagship saloon that defines the Lexus brand
- Radical design with coupe-like silhouette, yet the spaciousness of a prestige saloon
- Interior combines modern design with traditional Japanese aesthetics

- New platform delivers even higher level of LS agility and comfort

Crafting a unique identity

Koichi Suga, Chief Designer of the LS, recognised from the outset the pivotal role the model plays in defining Lexus, embodying the brand's history, image and what it stands for.

"I knew that this was an amazing opportunity to create a Lexus flagship saloon for the world," he said. "With my team we wanted to produce something completely new, with unique proportions. Our goal was a car that is longer, lower and wider with a more powerful presence," he said.

The designers were helped in their task by the new Global Architecture – Luxury (GA-L) platform on which the car is constructed. Its proportions allow for an extended wheelbase, a spacious interior and a lower, ground-hugging appearance with coupe lines.

Chief Designer Suga made outline sketches on dozens of small Post-it notes before crystallising his ideas for a sporty look that would project a more emotional image for Lexus.

"Our modelling theme was 'forged from passion,' with the sense of the 'passion' being pushed outwards towards the four wheels," he said. "Our sketches were drawn with an emphasis on a flowing silhouette and large tyres. Meanwhile we also had to address the critical points of providing space for rear seat passengers and ease of getting in and out of the car."

In the process of defining the car's design, no fewer than seven mock-up models were completed, compared to the three or four usually created for an all-new model development programme, reflecting the intense attention to detail and importance of the LS to the Lexus brand as a whole.

Design generated by the spindle grille

The spindle grille has become a signature feature of Lexus vehicle design, but its purpose is not simply to be a brand signifier. On the LS it provides a starting point for the car's design theme, generating lines which flow through the body and converge at the rear.

The grille itself has an intricate mesh design with 5,000 individual surfaces (more than 7,000 in the case of the F Sport), which took a highly skilled CAD modeller six months to produce, followed by further precision adjustment by hand. The sophisticated pattern echoes the shape of the grille as it folds back, with a sense of tension and an appearance which changes according to the light.

The spindle theme is also evident in the car's rear styling and is even picked up in the stitching pattern for the F Sport seat upholstery.

Exterior design

Lexus has revolutionised the LS's design principles, moving from its established "three-box" saloon to a car that presents a radically different, coupe-like silhouette. Its lower, sleeker lines, which are more appealing to today's customers, have been achieved without sacrificing any of the spaciousness and comfort that are fundamental to the LS's status as a flagship model.

Notably, it is the first Lexus saloon to feature a six-window profile, which ensures excellent outward visibility, and also the first to feature windows with flush surfaces that integrate smoothly with the side pillars.

A shoulder line running from front to rear expresses the low centre of gravity and the car's low posture, emphasising the horizontal axis. The lines of the front and rear wings are slanted forwards, generating a dynamic impression and evoking the car's performance qualities.

The ground-hugging appearance is not an illusion: the GA-L platform has allowed the LS's height to be reduced by 15.2mm, with the bonnet and boot lowered even further – by approximately 30.5 and 40.6mm respectively.

The frontal design makes a bold statement with the dramatic forward thrust of the spindle grille and a low bonnet profile, achieved thanks to the positioning of the front suspension towers permitted by the new GA-L platform. The boundary between the bonnet and the fenders is deeply sculpted, accentuating the contrast between the different surfaces.

The effect was heightened with styling changes introduced for the 2021 model with a reshaped front bumper and a dark metallic finish for the inner surfaces of the spindle grille mesh.

Also new for 2021, the ultra-compact, triple bi-LED (high/low beam) headlights are housed in slimmer, high-projector units that accommodate the BladeScan Adaptive High-beam System, and the daytime running lights are rearranged in an "L" motif. Sequential turn indicators are aligned with the running lights, comprising 16 LEDs that illuminate in just 0.08 seconds.

At the rear, the shoulder line connects to the rear combination lamps, then folds down and back on itself to connect to the rear diffuser, echoing the lines of the spindle grille. The full LED combination lamps have a sleek design with strong vertical corners that give them an instantly recognisable shape.

The LS is equipped as standard with a glass sunroof which opens externally. This allows for a design that is 30mm thinner than previously, preserving cabin headroom beneath the low roofline.

The LS is fitted as standard with 20-inch alloy wheels. A new design with a contrast black and bright machined finish was introduced for the LS Takumi in 2021. An exclusive wheel design is fitted to the F Sport model, while other model grades are equipped with wheels with a noise reduction system. All LS models use run-flat tyres: 245/45R20 front and 275/40R20 rear for the F Sport and 245/45R20 for all other versions.

Advanced paint finish

Lexus has explored new possibilities in paint technology to create Lunar Silver, a finish introduced for 2021 that throws the contours of the bodywork into sharp relief with contrasting brilliant highlights and deep shadowing.

Sonic technology is used to condense the paint into a layer that is just one micron thick. This means the aluminium particles it contains are packed more densely and are more uniformly aligned to give a flawless finish with a mirror-like shine. To achieve these results the surface of the base paint, primer and clear layers have also had to be rendered as smooth as possible.

Interior design

The design of the LS's interior combines traditional Japanese aesthetics with advanced manufacturing techniques, reflected in elements such as the soft ambient lighting that makes the armrests appear to float next to the door panels, and new ways of working with wood to create trims with vibrant and detailed grain patterns.

Chief Designer Suga explained: "I hope that when you open the door, you have an immediate sense that you are looking at an interior that's unlike any luxury car you've seen before."

The LS has a driver-focused cockpit and a front passenger seat area designed to gently envelop the occupant. Elements such as fine leather, precise stitch-work and detailed metal and wood accents add to the welcoming ambience with a range of textures and surfaces that are pleasing to the eye and touch.

The seats are optionally available (Takumi grade) with an L-aniline leather upholstery that is remarkably soft and supple – up to 30 per cent softer than premium semi-aniline leather. Only the finest one per cent of hides are selected for the L-aniline tanning process.

The dashboard has a sweeping array of fixed, horizontal metal fins spanning its full width, neatly concealing the movable fins that direct airflow from the air conditioning vents. The information displays are positioned at a uniform height in a "seat-in-control" layout that allows the driver to view and operate all the systems without changing their body posture.

Directly in front of the driver, the standard combination meter is set in a stitched leather frame, with the Optitron display presenting what looks like a physical metal bezel. An elegant, full screen animation is presented on the eight-inch TFT screen when the driver enters and leaves the vehicle. A high-definition, full-colour head-up display is fitted as standard, the largest in the LS's segment. Images are projected to appear three metres ahead of the driver, to minimise the eye focus adjustment required between looking at the display and the road ahead.

The steering wheel has a three-spoke design and smaller diameter (-10mm) than that used in the previous LS model. The profile varies around the circumference to provide ideal grip characteristics. Three versions of the wheel are available: leather trim for the LS 500h; with leather, wood inserts and an integrated heater linked to

the car's Climate Concierge for the Takumi grade; and, for the F Sport, perforated leather finish and a performance grip profile that's shared with the LC Coupe.

A range of interior colours and trims is available, starting with black smooth leather with Laser Cut wood inlay for the LS 500h. The F Sport choices are Dark Rose, Black and White Grey or F White smooth leather, all with Naguri aluminium trim. The Takumi model is available with standard semi-aniline or optional L-aniline leather in a Crimson and Black interior featuring hand-pleated door cards and Kiriko cut glass ornamentation. White and black leather with Art Wood Organic trim and Camel or Saddle Tan L-aniline leather with, respectively, Laser Cut and Art Wood Herringbone, are also available. For 2021, a new Nishijin and Haku trim option was added (details in the craftsmanship chapter, below). The choice of wood trims was increased to include a new Laser Cut Special Ash Open Pore trim finish option. This uses natural wood that is dyed black to bring out its strong grain pattern, creating a sharp contrast with a silver metal layer beneath, revealed by a highly skilled laser-cutting process.

TAKUMI **CRAFSTMANSHIP**

- *Takumi* craftsmanship combines the best traditions of Japanese culture and aesthetics with modern design and technologies
- Luxury interior embraces artforms such as Kiriko glass-making and Origami in the creation of exclusive ornamentation and hand-pleated door panels
- Specialist techniques applied to create new Art Wood trims

The intersection of tradition and technology

The fine skills of *takumi* craftspeople contribute to the high quality of every Lexus vehicle, but in developing the new LS, Lexus has gone further to combine the traditions of Japanese culture and aesthetics with contemporary design and advanced technologies.

It was Chief Designer Koichi Suga's vision for the LS that it should draw on traditional Japanese artforms, such as Kiriko glass-making and Origami. He said: "As a Japanese luxury brand, we wanted to integrate elements of Japanese culture and the timeless appeal of Japanese craftsmanship to express the artistic side of Lexus."

The Lexus *takumi*

The *takumi* are the most senior craftspeople in Lexus, responsible for ensuring that the required excellent quality is achieved in every stage of the car-making process.

Using the skills of the human hand, eye and ear, honed through years of experience, they can detect the smallest imperfections and determine the fine adjustments that may be needed to improve performance or appearance.

They also contribute to the hand-crafted elements of the vehicle, for example the precision stitching of the leather upholstery. The *takumi* undergo intensive training, moving from straight lines to the rapid sewing of curved seams. Once they have mastered this technique, they work on a real instrument panel, repeating the seaming technique several hundred times over a period of three months. At Lexus's giant Kyushu factory there are just 12 *takumi* responsible for the detailed accuracy of every stitch.

The *takumi* are also responsible for training and inspiring other technicians, helping them learn the skills that will make them the *takumi* of the future.

To earn *takumi* status, Lexus craftsmen have to complete a number of rigorous challenges, including a daily *origami* cat challenge. To demonstrate their dexterity and attention to detail, they must perfectly complete the folded cat design in less than 90 seconds. What's more, they have to accomplish the task using only their non-dominant hand.

Kiriko glass ornamentation

The traditional skills and designs of Japanese Kiriko glass-making have been used to create a unique ornamentation for the LS's door panels. Masters of Kiriko worked with Lexus to replicate the hand-carved appearance of the glasswork, which adds extra dimensions of visual and tactile appeal with its light-catching, multi-faceted surface. Although the glass looks delicate, it is in fact very strong thanks to modern reinforcement technology. In the UK it can be specified as an option for the LS 500h Takumi model, in combination with a crimson and black interior finish.

Hand-pleated door panels

The draped pleating in the door panels has been achieved using the time-honoured skills of *origami* paper-folding. A colour designer and a fabric artisan produced Hand Pleats, a new fabric pleating technique that creates a three-dimensional pattern that is pleasing to the eye and touch. The process took four years to develop and can only be carried out by the human hand. It mirrors the work of the finest *origami* artists, requiring individual sheets of fabric to be expertly folded, like a sheet of paper. The finished panel changes in appearance according to the time of day and cabin illumination, adding to the elegance and enveloping quality of the interior. It is available as part of the Kiriko glass option for the LS Takumi.

Nishijin and Haku detailing

Lexus's design provides many contemporary interpretations of traditional Japanese decorative arts and aesthetics. For the 2021 LS it combined two time-honoured skills to produce striking new interior detailing.

The Nishijin and Haku option for the door panels weaves together black and silver in an organic pattern inspired by waves shimmering in moonlight. This application of weaving and metalwork techniques is a “simulation” – the Japanese art of using diverse materials to express the beauty and character of the natural world.

The craft of *nishijin* has its roots in materials created for Japanese nobility. Metal foil is stretched on washi paper and cut into thin strips to make a flat yarn that is woven to produce an organic pattern in which the silver threads create a shimmering wave effect. Used within the new LS’ door panels, this is matched to a Haku door handle surround. *Haku* is a heritage craft dating back more than 400 years, in which metallic foil is flattened to a thickness of between one and two microns. Hand-applied by *takumi* craftspeople to the new LS, it has a delicate shine, evoking moonlight.

Art Wood

Lexus has applied new ways of working with veneers to produce unique designs and effects that distinguish the LS from any other model.

Using *takumi* craftsmanship, it has produced Art Wood finishes that fuse the natural beauty of wood with Lexus’s brave design. Art Wood Organic uses a precise layering technique and a natural gloss coating to bring out vibrant, contrasting, flame-like grain patterns. For Art Wood Herringbone, techniques used to craft fine musical instruments are applied, with the hand-grafting of small pieces of wood to create delicate symmetrical patterns.

A third interpretation, Laser Cut, uses laser technology to cut through the veneer to expose a sub-layer of metal, creating a pattern inspired by the way the Lexus L-motif is worked into the mesh of the LS’s spindle grille.

OMOTENASHI

- New LS embraces the traditional Japanese hospitality principles of *omotenashi* in caring for vehicle occupants and anticipating their needs
- Advanced new front and rear seat designs with class-leading levels of adjustment and sophisticated new massage functions
- Precision control of the cabin environment for each occupant with upgraded Climate Concierge
- Bespoke 23-speaker 3D Surround Mark Levinson Reference System using advanced new Quantum Logic Immersion (QLI) technology to create a full, three-dimensional sonic environment

The meaning of *omotenashi*

Lexus believes that creating new standards of luxury in a flagship model is not simply a matter of adding more equipment features and technologies. Rather it aims to produce a kind of progressive luxury that welcomes and cares for the vehicle’s occupants, anticipating their needs and enabling the driver to feel perfectly

connected to the car. It's a way of thinking that's inspired by *omotenashi,* the finest principles of traditional Japanese hospitality.

The influence of *omotenashi* starts with the "welcome" sequence as the driver approaches the vehicle. Inside the car there is a meticulous attention to detail in providing the most comfortable, safe and relaxing environment for all occupants, whether taking the wheel, or enjoying being chauffeured as a passenger.

Premium Access

To make getting in and out of the LS as comfortable as possible, F Sport and Takumi models equipped with air suspension provide a premium access function. This automatically raises the low-slung saloon by 40mm to an ideal 555mm hip-height in just four seconds when the vehicle is unlocked. Once the occupants are on board and the hybrid system is switched on, the car returns to its regular ride height. The same convenient height adjustment is made when the car is stopped and a door is opened for someone to exit.

For the driver and front seat passenger, there is a sense of the car being prepared for their arrival, with the seat belt holder extending by 50mm when the front doors are opened, ready for use. For the driver, the holder also rises when the hybrid system is switched off, to make unbuckling easier. The feeling of being welcomed into the car continues with the outer cushion bolster opening out when the car is unlocked, and then automatically returning to its normal, supportive position when the driver is seated. The driver's seat also automatically rises and moves rearwards to make for easier exit from the vehicle; similarly, when the driver enters the car, it returns to the previous driving position when they are seated.

The cabin lighting adds to the sense of welcome, with an illumination inspired by the soft glow of traditional Japanese *andon* lanterns. Light sources are located behind the door trim panels and armrest, giving indirect, downward illumination that adds to the sense of spaciousness.

Seating design

The design of the seats in the LS was a prime consideration and a defining factor in the *omotenashi* qualities of the car.

Lexus developed the seating to suit two types of customer: those who want to drive the car and those who will mostly be chauffeured in it as a passenger. This required equal attention to be paid to the needs of the driver, as well as rear-seat occupants, ensuring everyone on board can travel in supreme comfort, regardless of how long the journey lasts.

Front seating with 28-way adjustment

The LS is available (F Sport and Takumi grades) with a driver's seat with 28-way power and pneumatic adjustment, including controls to adapt support for the back, pelvis and hips. The design provides excellent

side holding, pelvis stability and shoulder support, and allows people of all body sizes and types to find their ideal position at the wheel and feel at one with the car.

Built on a new frame, the front seats are stronger and more rigid, using a high tensile steel side frame, yet they weigh only about 6kg.

The quality of the seats is critical to the comfort experienced by driver and passengers, so for the 2021 model, Lexus made changes that include new urethane seat padding, an additional, softer layer on top of the cushion padding and deeper seams between the cushion/backrest and the bolsters. The result is more comfort, less vibration and better body-holding.

Rear seats with premium access

The multi-function touchscreen in the rear centre armrest console (Takumi grade) is used to precisely control the position of the rear seats, together with audio, climate, sunshade and interior lighting functions. The front passenger seat and entertainment monitor are also automatically adjusted to suit the chosen configuration.

There are three pre-set rear seat positions: Business, which is the default; Entertain, which reclines the seat for comfortable viewing of the entertainment monitor, and Relax, which extends the leg ottoman, deeply reclines the seatback and moves the front passenger seat to its furthest forward position to provide maximum legroom (at 1,022mm, 86mm more than in the previous LS). When the passenger arrives at their destination, the seat automatically returns to its default position as soon as the rear door is opened, allowing for an easy and comfortable exit.

The rear seats are available with best-in-class 22-way adjustment (Takumi grade), including back, hip and pelvis support and ottoman leg-rest extension. The angle of rear seat recline is also class-leading, at 48 degrees, achieved through adept packaging and a revised reclining mechanism.

***Shiatsu* massage functions**

Lexus consulted Japanese *shiatsu* experts to help design new massage systems for the front and rear seats that provide the right degree of thumb-like pressure in the right places to help the occupant relax.

For the front seats (Takumi grade) there are five separate massage courses which can be selected using the multi-information display, working with a centripetal or centrifugal action, or focusing on the lumbar, upper and lower body regions. For the driver this promotes relaxation without impairing their control of the car.

The rear seat massage function (Takumi grade) has also been upgraded with its operating area expanded to cover the occupant’s thighs as well as back. In a world-first, the system includes two spot heaters for the shoulder and lower back to provide targeted heat stimulation in conjunction with the Shiatsu massage.

Multiple setting options let the user tailor the massage sequence to suit their preference, with full body settings or operation focused on the upper or lower body, shoulders or lumbar region.

Climate control

Lexus has succeeded in engineering a more compact yet no less efficient climate control system that supports the highest levels of on-board comfort. The smaller size of the air conditioning unit has helped secure the LS's low bonnet line and low centre of gravity. The separate rear air conditioning system has also been made smaller, so there is less impact on the amount of load space available in the boot.

Climate Concierge

The Climate Concierge provides co-ordinated and efficient control of the air conditioning, seat heating and ventilation and heated steering wheel to maintain a comfortable environment to suit each person on board.

The system uses an upgraded infra-red matrix sensor to monitor the body temperature of all the vehicle occupants, with the number monitoring zones increased from six to 16 to provide complete coverage of the interior. This allows for much finer control of heating and cooling, taking into account factors such as uneven heating cause by low-level sunlight through the windows. Operation is controlled via the main multimedia display; where four-zone climate control is specified (Premium Pack option and Takumi grades) there are additional controls in the rear seat console.

Near-silence – or the stirring sound of music

Lexus has designed the cabin of the LS 500h to provide a quiet and calming environment, using new sound suppression methods to hush the interior to a level beyond any previous LS model. Active Noise Control detects when engine noise enters the cabin and cancels out certain frequencies using antiphase sound from the audio speakers.

Mark Levinson Reference Audio systems have been a feature unique to Lexus's most exclusive models, designed in co-operation with Lexus's engineers to achieve performance tailored to the interior architecture of each vehicle.

The LS is equipped (F Sport and Takumi grades) with a new 3D Surround Mark Levinson QLI Reference Surround System, operating through an array of 23 high-efficiency speakers in 16 locations around the cabin, and using a 16-channel Mark Levinson Reference amplifier. Quantum Logic Immersion – QLI – and ClariFi technology help produce exceptional sound reproduction, of a higher quality than in any previous Lexus model.

QLI technology separates the audio sources into individual streams – vocals, instruments and spatial sound information – similar to the original arrangement. These audio streams are then mixed to recreate a full, three-dimensional sonic environment. The new system was developed as the benchmark against which all others will be compared for the next 10 years.

A Pioneer 12-speaker premium system is provided as standard equipment on the entry-level model, specifically designed for the LS's interior.

Lexus's focus on providing a supremely quiet cabin environment has extended to the development of noise reduction wheels. The 20-inch design, featured on all versions apart from F Sport, has a hollow rim section with a resonator hole that helps reduce air resonance generated by the tyres. This occurs when the tyre deforms as it travels over the road surface, changing the internal air pressure; in turn, this causes the air inside the tyre to vibrate, generating sound waves. With the noise reduction wheel, the sound waves are directed towards the resonator hole, where they resonate with the air in the hollow section of the wheel. This creates friction in the air, which converts the soundwave to heat, absorbing resonance and reducing sound pressure. The wheel design also enhances rigidity and saves weight.

Power boot lid with hands-free operation

The LS (F Sport and Takumi grades) has a power-operated boot lid that can be opened and closed hands-free, using a kick-sensor beneath the rear bumper. When carrying luggage, or wanting to avoid touching the car's bodywork, the user only needs to stand within the sensor's range with the smart key on their person to activate the control, by passing their foot below the edge of the bumper.

IMAGINATIVE TECHNOLOGY

- LS available with new technologies for improved active safety, together with driving assistance functions that signal Lexus's progress towards future automated driving systems
- Lexus Safety System+ A features include Lexus Co-Drive, Pre-Collision System with Pedestrian Alert and Active Steering Assist, Lane Trace Assist and Front Cross Traffic Alert
- Additional Parking Support Brakes and enhanced Panoramic View Monitor
- Automated Advance Park system

Advances in active safety and driver assistance technology

Lexus has been promoting the development of automated driving technologies since the 1990s, working towards its goals of eliminating traffic accidents and providing individual mobility for people who otherwise would not be able to enjoy that freedom.

The LS makes important progress in this area. As well as being equipped with Lexus Safety System+, the package of active safety systems Lexus has been rolling out across its vehicle range, it is the first model to benefit from the more advanced Lexus Safety System+ A. Provided as standard on the LS 500h Takumi, this comprises both active safety functions designed to help prevent an accident from happening, together with more sophisticated driver assistance features that signal a move towards providing a degree of automated driving.

Called Lexus CoDrive, this uses Dynamic Cruise Control and Lane Trace Assist to give a partial level of automated driving capability comparable to the SAE International level 2.

New and improved active safety technologies

Pre-Collision System with Pedestrian Alert and world-first Active Steering Assist

The Pre-Collision System (PCS) is a function familiar from Lexus Safety System+, but in the new Lexus Safety System+ A (LS 500h Takumi) its operation has been enhanced with the addition of both Pedestrian Alert and the world-first Active Steering Assist.

PCS uses millimetre-wave radar and a stereo camera to detect pedestrians and vehicles ahead and supports collision prevention and the mitigation of damage by alerting the driver and providing Pre-Collision Brake Assist and Pre-Collision Braking. The improved system can detect cyclists and night-time pedestrians and has an improved deceleration performance under automatic braking. For example it can slow the vehicle by as much as 37mph when a pedestrian is detected ahead, improving the chances of avoiding a collision.

With Pedestrian Alert, if there is the possibility of a collision with a pedestrian in front of the vehicle, the presence and location of the pedestrian is shown in an animation on the head-up display, contributing to the driver's intuitive recognition of what is happening on the road ahead.

The Active Steering Assist determines when there is high risk of a collision with a pedestrian in the car's lane of travel, or with a continuous structure, such as a crash barrier. If it calculates that it would be difficult to avoid a collision using brake control alone, but that it might be avoided with steering control, it will initiate automatic steering control in addition to triggering an alert and applying the brakes.

BladeScan Adaptive High-beam System (AHS)

Introduced for 2021, the LS follows the RX luxury SUV in adopting a BladeScan™ Adaptive High-beam System (AHS) in which a fast-rotating mirror projects light from LEDs to provide smooth and fine illumination over a wider area than standard LED systems. It is provided as standard on F Sport and Takumi models and is included in the LS Premium Pack option. The standard LS uses the conventional two-stage Automatic High Beam (AHB) system.

Front Cross Traffic Alert (FCTA)

FCTA is designed to help prevent collisions happening at intersections by detecting vehicles moving across the flow of traffic ahead. It uses forward direction radar and is the world's first system of its kind to alert drivers to the direction from which a cross-traffic vehicle is approaching at an intersection. Alerts are shown on the driver's head-up display. If the LS continues to move forwards regardless of there being a vehicle in cross traffic, a warning buzzer is sounded and an alert is shown on the multi-information display.

Lane Trace Assist (LTA)

LTA helps to prevent the car straying from its traffic lane. As well as detecting lane lines on the road surface, it is now able to distinguish boundaries between asphalt/Tarmac and other surfaces, such as grass, dirt and kerb stones, thanks to advances in its recognition capabilities. This means it can now provide alerts to the driver and adjust steering operation even on roads that are not marked with lines.

Road Sign Assist (RSA)

RSA uses a camera and navigation system maps to acquire road sign information, which it then relays to the driver using the head-up and multi-information displays. This promotes safer driving by reducing the risk of the driver failing to see or notice important highway commands and warnings.

Driver assistance technologies

Lexus CoDrive advanced driving assist technology

Lexus CoDrive adds Lane Tracing Assist (LTA) to the basic functions of Dynamic Radar Cruise Control to provide steering support in line with the driver's intentions. By providing seamless driving support on roads with many bends, or in traffic jams, Lexus CoDrive can reduce the burden on the driver. It gives the driver clear information about the status of the driving support that's being provided, via the LS's head-up and multi-information displays.

Dynamic Radar Cruise Control

The Dynamic Radar Cruise Control offers outstanding basic recognition performance, with wide-angle detection using a new millimetre-wave radar and a camera with a wider forward recognition range. The system also helps make driving more comfortable, with smooth acceleration at start-up and during vehicle following, departure and acceleration.

Lane Trace Assist

Lane Trace Assist uses steering control to provide lane-keeping support when the LS's Dynamic Radar Cruise Control is in operation. As well as using a camera to detect lane demarcation lines on the road, it traces the path of the vehicle ahead to provide assistance when the lines cannot be recognised. This can happen, for example, in low-speed traffic when there little space between the LS and the vehicle ahead.

Additional safety technologies

Parking support brakes

The LS's low-speed braking support systems have been integrated in a single package, to reduce the risk of damage from low-speed bumps when parking or manoeuvring, helping the driver avoid hazards such as

nearby moving vehicles, pedestrians and stationary objects such as walls and street furniture. The world's first rear pedestrian support brake has been added to the Intelligent Clearance Sonar and Rear Cross Traffic Auto Brake. This detects pedestrians behind the vehicle using a rear camera; if there is a risk of a collision, alerts and brake control are triggered.

Panoramic View Monitor with side clearance and cornering view functions

Side clearance view and cornering view functions have been added to the Panoramic View Monitor fitted to the LS 500h, making it easier for the driver to determine the safe space around the vehicle. Side clearance view produces an image on the LS's display monitor that shows the area in front of the car as if seen from a high position above the rear of the vehicle, giving the driver better sight of the space on each side of the car, for example when passing another car on a narrow road. When side clearance view is operating, cornering view automatically produces an image of the vehicle as seen from the rear at an angle in line with the car's direction when moving through a bend or turn. These help the driver confirm left or right turns can be made safely on narrow roads and avoid driving up onto the kerb. For 2021, the system's functionality was increased to include pedestrian detection.

Automated Advance Park system

Lexus takes all the effort out of parking with its first fully automated Advanced Park System, provided as a standard feature on the 2021 LS Takumi. It is also the first Lexus system and the first in the luxury car segment to have a memory function that will recognise and store details of spaces the driver uses regularly, such as home or office, making the parking process even easier.

It goes further than any previous Lexus parking assistance technology by controlling steering, throttle, brakes and transmission to execute safe and accurate manoeuvres. As well as being smooth and precise, it also operates promptly – quicker than systems on competitor models.

After drawing up alongside a parking space, the driver engages the system which then uses clearance sonars and the Panoramic View Monitor camera to gain a 360-degree view of the area and any obstacles. It calculates the most efficient and safe parking manoeuvre, suppressing the vehicle's speed if clearance is tight. The live image and clear graphics on the central display keep the driver informed of the vehicle's path and any obstacles.

It will also operate regardless of whether the space is marked out with lines, or if there are no adjacent vehicles.

Multimedia system and the Lexus Remote Touch Interface

The LS is equipped with a next-generation multimedia system that provides complete control of navigation, audio, media, telephone, apps and climate control, as well adjustment of and customisation of key vehicle settings. It uses a 12.3-inch high-resolution screen that provides quick and clear information and graphics.

The dynamic voice recognition provides more accurate response to spoken commands by using on and off-board speech processing. Manual operation is by means of the Lexus Remote Touch Interface with a new, enlarged and frameless touchpad that allows gesture controls to be used – pinch, scroll, drag, double-tap – like those for smartphones, while also supporting handwritten input.

For 2021, the system gained a revised touchscreen, positioned closer to the driver. Its functions were extended to include easy smartphone integration via Apple CarPlay and Android Auto, giving access to popular apps for navigation, entertainment and messaging using the touchscreen.

EXHILARATING PERFORMANCE

- Constructed on the new Global Architecture – Luxury platform, with direct dynamic benefits of a low centre of gravity and optimum front/rear weight distribution
- LS 500h uses the Lexus Multi Stage Hybrid System, as debuted in the new LC coupe
- Sophisticated suspension systems, including Adaptive Variable Suspension with continuously variable control and new air suspension

The new Global Architecture – Luxury platform

The Global Architecture – Luxury (GA-L) platform that underpins the LS 500h is fundamental to its quality. This all-new structure was developed from a “clean sheet of paper,” taking a completely fresh approach to engineering, materials and design. The same platform is used for the Lexus LC flagship coupe, but for the LS it has been extended to gain the extra rear cabin space that was a design priority.

In fact, the LS’s 3,125mm wheelbase is 35mm longer than that of the previous LS long-wheelbase model. In spite of this increase in length, the driver still sits in the centre of the wheelbase, with a hip-point close to the car’s centre of gravity (which is a best-in-class 543mm).

The combination of a low centre of gravity, a very stiff chassis and excellent weight balance contributes to reassuring, poised vehicle dynamics, with seamless braking, steering and acceleration, and a consistently comfortable cabin environment for driver and passengers alike.

The platform allows the LS to be about 15mm lower overall, compared to the previous model, with reductions of approximately 30 and 40mm in the height of the bonnet and boot respectively, giving the car a ground-hugging appearance.

It has also enabled heavier elements to be moved closer to the centre of the vehicle, with the engine moved to a front-midship position, the driving position moved rearwards and the hybrid battery (a lighter and more compact lithium-ion unit) located further forward.

Together these measures help lower the car's centre of gravity and achieve an optimum 51/49 front to rear weight balance, minimising body roll and improving steering response for a more engaging driving experience.

Lightweight materials and highly rigid body structure

The optimisation of vehicle mass distribution has been further helped by the use of new, lightweight materials in the car's structure, including cast aluminium front and rear suspension towers. As aluminium cannot be welded to steel, these are connected to the body using self-piercing rivets and high-strength adhesive bonding. Compared to equivalent steel parts, these towers are significantly lighter and more rigid – about twice the rigidity and 42 per cent less weight at the front; around 1.5 times more rigid and 50 per cent lighter at the rear.

Other lightweight metals, including ultra-high tensile steel, steel alloys and aluminium are used in critical areas to provide strength and rigidity. In fact, high tensile steel accounts for almost 30 per cent of the vehicle's mass, more than double the proportion in the previous LS. Principal panels, including the doors, wings, bonnet and boot lid are made of aluminium; where the doors are concerned this not only saves weight, but also allows for a slim but strong structure, maximising space inside the car.

The use of structural adhesive and laser screw welding is also significantly greater, to increase the rigidity of panel joints. Almost 33 metres of adhesive is applied to the underbody, compared to just five metres previously.

Suspension

Suspension compliance has been a defining element in the ride quality and comfort of successive Lexus LS generations. With the latest model a new, high-mounted multilink system has been developed for both the front and rear suspension, allowing even better performance to be achieved.

The front system uses double ball joints for both the upper and lower control arms, allowing control of the smallest movements caused by driver inputs or the road surface. This unique arrangement optimises the suspension geometry to increase wheel control and give more precise steering control with better initial effort. To help reduce weight, aluminium is used extensively throughout the suspension.

The rear system is a new, compact multilink design that provides high levels of stability. As with the front arrangement, it is based on the suspension developed for the LC coupe, but with adjustments to the bushing to enhance handling stability and ride comfort.

Adaptive Variable Suspension

The LS is equipped with a new, more advanced Adaptive Variable Suspension that provides continuous adjustment of damping control for all four wheels in response to the way the car is being driven and road surface conditions. This continuously variable capability has increased the number of control levels from nine (in the previous LS's system) to 650. The result is faster, seamless and more refined operation.

For example, when driving on uneven roads, the system can increase ride comfort without too great an increase in damping force. When the steering wheel is turned, however, damping force is automatically increased to suppress the effect of the car's weight transfer and maintain a flat cornering attitude.

To further improve ride quality and comfort, the AVS performance was enhanced for the 2021 model with a new linear solenoid and an enlarged flow path inside the control valve. This expands the dampers' variable width, giving better performance over rough surfaces. As well as added comfort, this supports better steering response and vehicle stability. Adjustments to the rigidity of the anti-roll bars achieve a better load transfer during vehicle roll for a more a more comfortable vehicle posture when cornering, and line-tracing that's more faithful to the driver's intentions.

Air suspension

An electronically controlled air suspension is also available for the new LS (F Sport and Takumi grades), providing exceptional ride quality. It uses a closed system in which compressed air is stored in a pneumatic tank so that it can be supplied to the suspension at the moment it's needed to raise vehicle height.

The air suspension is used to provide the LS's Access Mode for ease of entry to and exit from the vehicle, as described in the *Omotenashi* chapter, above.

Braking system

The LS 500h is fitted with a new generation Electronically Controlled Braking system (ECB) that uses build-up control to increase vehicle deceleration, gradually increasing brake fluid pressure, even if the driver is maintaining constant pressure on the brake pedal. This communicates an appropriate braking feel.

The system features 357 x 34mm front and 335 x 25mm rear spiral-vented discs. There are four-piston callipers at the front and two-piston units at the rear. Larger brakes are featured on the LS 500h F Sport, detailed in the specific F Sport chapter below.

Vehicle Dynamics Integrated Management

Vehicle Dynamics Integrated Management (VDIM) co-ordinates control of a range of vehicle handling and active safety systems to enhance the overall dynamic performance of the LS. Its operation covers the vehicle's ABS, Traction Control, Vehicle Stability Control and Electronic Power Steering, plus Variable Gear Ratio Steering, and Dynamic Rear Steering on the F Sport model.

Lexus Dynamic Handling

The Lexus Dynamic Handling System (LS 500h F Sport) provides a higher degree of handling poise and control in all driving scenarios, controlling the angle of all four wheels through co-ordination of the Variable Gear Ratio Steering (VGRS), Dynamic Rear Steering (DRS) and Electronic Power Steering (EPS).

Its operation is calculated according to the vehicle's speed and dynamic behaviour. Thus at speeds below 50mph, the front and rear wheels operate at a different angle for agile handling and securing cornering; at speeds above 50mph, the front and rear wheels are at the same angle of steering, for greater stability.

The VGRS controls the steering angle in line with vehicle speed and the driver's inputs, giving better yaw response, turning performance and stability when cornering or changing lanes. The steering gear ratio is automatically adjusted, taking vehicle speed and driving conditions into account. This means fewer turns of the wheel are needed at low speeds, or when making a U-turn. The optimum ratio is selected to provide easy-to-handle responsiveness at low to medium speeds, while at high speed the VGRS helps achieve a controlled, stable feel.

Aerodynamics

The sleek exterior design of the LS 500h is aerodynamically efficient as well as beautiful to look at. The overall form of the upper body has been crafted to have an ideal wind-cheating shape, with detailed enhancements that suppress turbulence and improve dynamic performance. It also enables a smooth rearward airflow to the back of the car, where it merges with the flow of air from the underbody.

The sides of the front bumper are shaped to direct the airflow along the side of the wheel houses. Also, small but effective aero stabilising fins have been located on the door frame moulding and rear combination lamps, to keep the airflow closer to the body and so improve handling stability. The rear lights have an air-kick shape, their corners curved to direct the airflow smoothly away from the vehicle.

Flush side window glass supresses the turbulence that usually occurs when air flows over uneven surfaces.

Beneath the car, the underbody has been almost fully covered to reduce drag, with aerodynamic fins located to guide the airflow smoothly rearwards. Vertical fins just behind the rear tyres help reduce turbulence and drag.

The LS 500h has a 0.26 coefficient of drag (0.28 with all-wheel drive).

Performance and smoothness redefined

The LS 500h has a self-charging, petrol-electric hybrid powertrain that uses Lexus's revolutionary Multi Stage Hybrid System, a technology first introduced in the LC 500h flagship coupe. It also features a naturally aspirated, 3.5-litre V6 Atkinson cycle petrol engine, two electric motors/generators and a compact, lightweight lithium-ion battery. Constructed using lightweight valvetrain components and equipped with D-4S direct fuel injection and VVT-I intelligent variable valve timing for both inlet (with VVT-iW 'wide' operation) and outlet valves, the engine delivers ample torque across all engine speeds, up to a 6,600rpm red line.

Combined system output (engine and electric motors) is 264 kW/354bhp, enabling acceleration in the front-wheel drive model from rest to 62mph in 5.4 seconds; with all-wheel drive the acceleration time is 5.5 seconds.

For 2021, the supreme smoothness, refinement and effortless power of the LS 500h were been further increased through technical revisions that strengthen the contribution of the lithium-ion high-voltage battery.

In making the changes, Lexus sought to improve the car's drivability by increasing the level of assistance the battery provides to the electric motor and expanding its range of operation. The focus was on the quality experienced in the "normal" driving that accounts for around 90% of the time on the road, when the driver is applying only moderate pressure on the accelerator pedal and only low G forces are generated.

As a result of the changes, less effort is needed to move faster; acceleration is smoother and more linear, keeping the vehicle stable and suppressing G forces. This provides more comfortable city driving, but there are also benefits when travelling on winding routes, or when pulling away on an uphill gradient. Only slight pressure on the throttle is all that's needed to make smooth and powerful progress.

With the hybrid battery playing a greater role, the engine is able to operate at lower rpm, which makes for even quieter running, for example when the engine restarts after a period of EV electric mode driving.

Lexus Multi Stage Hybrid System

The Multi Stage Hybrid System uses the established Lexus Hybrid Drive electric continuously variable transmission, coupled to a new four-speed shift device. This arrangement expands the range of gearing, proving more direct response to driver inputs and a higher level of dynamic performance, while at the same time maintaining the smooth, refined performance required for a luxury flagship.

In a conventional full hybrid vehicle, engine output is amplified by the electric motor via a reduction gear, but with the new Multi Stage Hybrid System the power from the V6 engine and the electric motor can be amplified by the automatic transmission, allowing much greater drive power to be generated when accelerating from stationary.

Lexus has succeeded in increasing maximum engine rpm from 6,000 to 6,600rpm. And thanks to the Multi Stage Hybrid System, the operating range in first, second and third gears has been increased, so that maximum rpm is reached at about 37mph.

The Multi Stage Hybrid System allows the LS 500h to be driven at higher road speeds with the combustion engine switched off, compared to previous Lexus hybrids – up to 87mph. It also allows the V6 engine to produce more drive power when pulling away.

Transmission with 10-speed driving feel

The design of the system places the multi-stage shift device immediately behind the power split device, on an axis aligned with the engine crankshaft. Although the transmission has four speeds, the D range has a simulated shift control pattern that replicates the feel of driving with a 10-speed gearbox. As vehicle speed rises, engine speed increases with a linear, direct and continuous acceleration feel that avoids the "rubber

band" effect witnessed in some continuously variable transmissions. In the 10th gear range, the CVT control allows for cruising at lower engine revs for quiet, smooth and fuel-efficient performance.

The transmission also benefits from an improved version of the AI 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. The system also includes an automatic Drive Mode switching control. This means it can adjust gear shifts to suit the driver's style and behaviour, without the driver having to select a different drive mode to get the kind of performance they want from the transmission.

M mode with manual gear selection

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. Thanks to the co-ordinated 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.

Drive Mode Select

Drive Mode Select lets the driver tailor the car's performance to suit personal preference and the road conditions. In addition to Normal and ECO modes, the LS offers Comfort and Custom settings, together with Sport S and Sport S+. According to the mode selected, there is automatic adjustment of the powertrain, Adaptive Variable Suspension, Electric Power Steering, Variable Gear Ratio Steering and air conditioning operation, as appropriate.

Drive Mode	Powertrain	SUSPENSION & STEERING AVS/EPS/ VGRS/LDH	Air Conditioning	Engine Sound
ECO	ECO	NORMAL	ECO	NORMAL
Normal	NORMAL	NORMAL	NORMAL	NORMAL
Comfort	NORMAL	COMFORT	NORMAL	NORMAL
Custom	ECO NORMAL SPORT	COMFORT NORMAL SPORT	ECO NORMAL	NORMAL
Sport S	SPORT	NORMAL	NORMAL	SPORT
Sport S+	SPORT+	SPORT	NORMAL	SPORT

Run-flat tyres

The LS is fitted as standard with run-flat tyres, developed to provide appropriate levels of ride quality and comfort. They also contribute to the car's optimum weight distribution and dynamic performance. The reinforced rubber used in the sidewalls allows the LS to travel with a flat tyre for up to 100 miles at speeds up

to 50mph. In pursuit of even better ride quality and comfort, the vertical stiffness of the tyres' sidewall was reduced as part of a package of details improvements for the 2021 model. This delivers a more comfortable ride, without compromising their run-flat capabilities.

THE LS 500h F Sport

- Styled and engineered for more sporty appeal
- Exclusive 10-spoke 20-inch F Sport wheels, rocker mouldings and more powerful brakes
- F Sport-exclusive interior, including seats, steering wheel, aluminium pedals, instrument display and Ultrasuede headlining

The LS 500h range includes an F Sport version, styled and instilled with a more engaging driving spirit. As well as bespoke design elements for both the exterior and interior, the F Sport benefits from carefully applied chassis tuning and enhancements, while maintaining an exceptional level of comfort.

Lexus was able to make good use of the inherent agility of the new GA-L platform when developing the LS 500h F Sport's handling. It deployed the latest iteration of its Vehicle Dynamics Integrated Management to provide optimum control of chassis dynamics through a single, co-ordinated system, delivering better traction, safety and handling agility. The F Sport also benefits from Variable Gear Ratio Steering and Dynamic Rear Steering.

Further benefits are gained through the use of exclusive 20-inch 10-spoke F Sport cast alloy wheels, fitted with 245/45RF20 tyres at the front and 275/40RF20 tyres at the rear. Larger brakes are used, too: 400 x 36mm front ventilated discs with six-piston monoblock aluminium callipers at the front and 355 x 25mm ventilated discs with four-piston callipers at the rear, both with high-friction brake pads.

In design aspects, the LS 500h F Sport "turns up the volume" of the new LS design, while remaining faithful to its principal styling cues. Of particular note is an exclusive interpretation of the spindle grille with an even more intricate design that serves as a further demonstration of Lexus's attention to fine detail. A team of CAD operators worked for months to achieve exactly the desired combination of texture and light interplay, adjusting more than 7,000 individual surfaces in the mesh pattern (compared to 5,000 for the standard LS model).

The F Sport amplifies the LS's rakish profile with its bespoke wheels and special rocker mouldings. The theme continues in the cabin, not least with the F Sport grille pattern being replicated in the perforations of the leather seat upholstery. The seats themselves are F Sport designs, with 28-way power and pneumatic adjustment and cushion extenders that provide extra body-holding performance when cornering and exceptional comfort, no matter how long the journey.

The driver's instrument display features a special F Sport speedometer and tachometer with an outer ring that moves outwards to reveal a dual information display – a design adapted directly from display technology first used in the Lexus LFA supercar.

The F Sport-exclusive steering wheel has been designed to increase the driver's sense of connection with the car's enhanced dynamic performance. It has the same grip profile as the wheel used in the LC coupe, produced through detailed measurements of palm pressure distribution and road testing by a Takumi driver. Further details include F Sport accelerator pedal, footrest and shift lever. As a finishing sporting touch, the headlining is finished in tactile Ultrasuede material.

UK Model range

- Three versions of the LS – LS 500h, F Sport and Takumi

Model range and equipment highlights

The LS is available in three equipment grades: LS 500h, F Sport and Takumi. All-wheel drive is available for the LS 500h with optional Premium Pack and is standard on the Takumi model.

As befits a model that sits at the pinnacle of the Lexus range, the LS offers an exceptional level of equipment features at every grade level.

The LS 500h sets the tone with 20-inch cast alloy wheels, ultra-slim triple-LED headlights with Automatic High Beam, Lexus Navigation with a 12.3-inch EMV display and 12-speaker Pioneer audio system, dual-zone climate control with nanoe air quality control and a 360-degree Panoramic View Monitor (with pedestrian alert function on the Takumi model). The front seats have 20-way power adjustment, smooth leather upholstery and integrated heating and ventilation.

The LS 500h's specification can be enhanced with an optional Premium Pack, which introduces four-zone climate control with Climate Concierge and nanoe technology, a bespoke 23-speaker Mark Levinson QLI Reference Surround audio system and integrated heating and ventilation for both front and rear seats. Fine semi-aniline leather upholstery and 28-way front seat adjustment are also included.

The LS 500h F Sport amplifies the new model's dynamic capabilities, both in its exclusive styling and its sophisticated vehicle control systems. On the outside it's distinguished by its dedicated alloy wheel design and lower-profile tyres, spindle grille with intricate mesh pattern of L-motif elements, visible black brake callipers stamped with the Lexus name and jet black plating details for the side sills, front bumper and boot lid. In the cabin the three-spoke steering wheel and shift selector have a perforated leather finish and there is an F Sport combi meter with a moving ring design that uses display technology first developed for Lexus's LFA supercar. The F Sport seats are finished in smooth leather. On the technical front the Vehicle Dynamics Integrated

Management is extended to include control of the F Sport's Variable Gear Ratio Steering and Dynamic Rear Steering.

The LS 500h Takumi delivers the fullest expression of *omotenashi,* the Japanese tradition of hospitality that inspires features that prioritise the comfort and safety of everyone on board. This can be witnessed in Shiatsu massage functions that are provided for the rear seat and in the front seat Relaxation Package; a rear-seat entertainment system; and rear seats with 22-way adjustment and an extending ottoman leg rest. It also benefits from Lexus Safety System+ A, Lexus's most sophisticated package yet of active safety and driver assistance systems.

LS TIMELINE AND UK SALES

1987	May	The design for the Lexus "F1" model is finalised.
1988	November	The "F1" is designated the LS400, with LS standing for Luxury Sedan and 400 denoting the 4.0-litre V8 engine.
1989	January	The LS400 is revealed to the public at the Detroit motor show.
	May	The first production LS400 comes off the line at Lexus's Tahara factory.
1990	June	Lexus is launched in the UK with the LS400.
1995	January	The LS400 undergoes revisions to its styling, performance and equipment specification.
1998	January	A new LS400 is launched.
2000	November	An all-new LS430 model is launched, powered by a new 4.3-litre 32-valve V8 engine.
2003	October	The Lexus LS 430, the third generation of Lexus's flagship model is launched.
2006	January	The LS 460 is unveiled at the North American International Auto Show in Detroit. It displays higher specification than ever before and is presented for the first time in standard and long-wheelbase body styles. Power is from a new 4.6-litre V8 engine.
	April	Lexus unveils the LS 600h at the New York Auto Show, the world's first hybrid power model to feature a V8 engine.
2007	April	LS 460 is named World Car of the Year 2007
	October	The hybrid power LS 600h and long wheelbase LS 600h L are launched in the UK, a new flagship for the Lexus range.
2008	August	An all-wheel drive version of the LS 460 debuts at the Moscow motor show. It
2010	March	The LS 600h gains exterior styling changes, Brembo braking system, automatic high beam operation and new and revised equipment features for the 2010 model year.
2012	July	Lexus releases first details of a new LS, with revised styling, better driving dynamics and, for the first time, an F Sport model.
	October	UK specifications and pricing are released and it is announced the new range will include a V8 petrol-powered LS 460.
2013	January	The new LS goes on sale in the UK, priced from £71,995.
2016		The LS 460 is phased out from the LS range.

2017	January	New LS makes its world debut at the Detroit motor show and wins an EyesOn Design Award.
	March	The LS 500h is seen for the first time, at the Geneva motor show.
	April	The New York International Auto Show hosts the first appearance of the LS F Sport.
	December	Orders open for the new LS in the UK, with first deliveries to customers scheduled for early 2018.
2018	December	LS adopts a new three-grade line-up: LS 300h, F Sport and Takumi.
2021	January	The 2021 LS goes on sale in the UK.

LS sales in UK markets in 2021: 10

Cumulative UK sales since launch (1990): 12,710

LEXUS LS 500h TECHNICAL SPECIFICATIONS

ENGINE AND HYBRID SYSTEM		
Engine code		8GR-FXS
Engine type		3.5-litre V6
Valve mechanism		24-valve DOHC with VVT-iW (intake) and VVT-i (exhaust)
Displacement (cc)		3,456
Bore x stroke (mm)		94.0 x 83.0
Compression ratio		13.0:1
Total system output (bhp/DIN hp/kW)		**354/359/264**
Max. engine power (bhp/DIN hp/kW @ rpm)		295/299/220 @ 6,600
Max. engine torque (Nm @ rpm)		350 @ 5,100
Motor generator		
Type		A/C permanent magnet, synchronous motor
Max. voltage		650
Max. power (bhp/kW)		177/132
Max. torque (Nm)		300
Hybrid battery		
Type		Lithium-ion
Nominal voltage		310.8
Number of cells		84
System voltage		650
PERFORMANCE		
0-62mph (sec)	RWD	5.4
	AWD	5.5
Max. speed (mph)		155
DIMENSIONS		
Overall length (mm)		5,235
Overall width (mm)		1,900
Overall height (mm)	Coil suspension	1,460 – RWD 1,470 - AWD
	Air suspension	1,450 – RWD 1,460 - AWD
Wheelbase (mm)		3,125
Track front (mm)	RWD	1,630
	AWD	1,630 – coil suspension & F Sport 1,635 – Air suspension
Track rear (mm)	RWD	1,635 / 1,615 – F Sport
	AWD	1,635 / 1,615 – F Sport
Overhang front (mm)		940
Overhang rear (mm)		1,170
Coefficient of Drag (Cd)		0.26
Luggage capacity (litres)		430

WEIGHTS (kg)		
Kerb weight (kg)	RWD	2,175 – 2,215 coil springs 2,265 – 2,320 air suspension 2,270 – 2,290 F Sport
	AWD	2,340 – 2,400 2,380 – 2,425 with Relaxation Package
Gross vehicle weight (kg)	RWD	2,725
	AWD	2,800
TRANSMISSION		**Multi Stage Hybrid**
Gear ratios	1st	3.538
	2nd	1.888
	3rd	1.000
	4th	0.650
	5th	Variable
	6th	Variable
	7th	Variable
	8th	Variable
	9th	Variable
	10th	Variable
	Reverse	N/A
Differential ratio	RWD	3.615
	AWD	3.916
FUEL CONSUMPTION (WLTP)		
Combined – (mpg)	RWD	35.7 – 36.6
	AWD	30.7 – 30.7
Fuel tank capacity (l)		82
EMISSIONS (WLTP), INSURANCE, SERVICING & WARRANTY		
CO_2 emissions – combined (g/km)	LS	182
	LS Premium Pack	184– RWD 214 - AWD
	F Sport	184
	Takumi	215
Insurance groups		50E
Service intervals		10,000 miles/annually
Comprehensive new vehicle warranty		3 years/60,000 miles
Hybrid warranty		5 years/60,000 miles (whichever comes first)
Corrosion/perforation warranty		12 years/unlimited mileage
Surface rust/paintwork		3 years/unlimited mileage
SUSPENSION		
Front		High-mount multilink
Rear		High-mount multilink

BRAKES	
Front	Ventilated discs with 6-pot callipers – F Sport Ventilated discs with 4-pot callipers – other grades
Rear	Ventilated discs with 4-pot callipers – F Sport Ventilated discs with 2-pot callipers – other grades
Front disc size (diameter, mm)	400 – F Sport 357 – other grades
Rear disc size (diameter, mm)	359 – F Sport 335 – other grades
STEERING	
Type	Rack and pinion, electric power steering
Ratio	13.0:1
Turns (lock to lock)	RWD – 2.9 AWD – 2.8
Min. turning radius, tyre (m)	RWD – 5.7 AWD – 6.0
WHEELS & TYRES	
Wheel sizes	20-inch cast alloy with noise reduction 20-inch cast aluminium – F Sport
Tyre Sizes	245/45RF20 245/45RF20 front/275/40RF20 rear – F Sport

LEXUS LS 500h EQUIPMENT SPECIFICATIONS

SAFETY, DRIVER ASSISTANCE & HANDLING	LS	F SPORT	TAKUMI
Lexus Safety System+: Pre-Collision System, Dynamic Radar Cruise Control, Road Sign Assist, Lane Keep Assist, Sway Warning, Automatic High Beam (AHB)/Adaptive High-beam System (AHS)	✓ (AHB)	✓ (AHS)	×
Lexus Safety System+ A: Pre-Collision System with pedestrian Alert and Active Steering Assist, Dynamic Radar Cruise Control, Lane Trace Assist, Road Sign Assist, Adaptive High-beam System, Front Cross Traffic Alert and Lexus CoDrive	×	×	✓
Vehicle Dynamics Integrated Management	✓	×	✓
Vehicle Dynamics Integrated Management with Variable Gear Ratio Steering and Dynamic Rear Steering	×	✓	×
ABS with Brake Assist and Electronically Controlled Braking System	✓	✓	✓
Traction Control	✓	✓	✓
Vehicle Stability Control	✓	✓	✓
Electric Power Steering	✓	✓	✓
Variable Gear Ratio Steering	×	✓	×
Dynamic Rear Steering	×	✓	×
Hill-start Assist Control with Hold switch	✓	✓	✓
Electric Parking Brake	✓	✓	✓
Blind Spot Monitor and Rear Cross Traffic Alert Brake	✓	✓	✓
Drive Mode Select	✓	✓	✓
Adaptive Variable Suspension	✓	✓	✓
Air Suspension with Access mode	×	✓	✓
Auto-locate Tyre Pressure Warning System	✓	✓	✓
All-wheel drive	×	×	×
Driver and front passenger front, side and knee airbags	✓	✓	✓
Curtain airbags	✓	✓	✓
Outer rear seat side airbags	✓	✓	✓
Rear seat cushion airbags	Opt[1]	×	✓
Motor-driven seatbelt retraction	✓	✓	✓

ISOFIX child seat system on outer rear seats	✓	✓	✓
Pop-up Hood	✓	✓	✓
SECURITY	**LS**	**F SPORT**	**TAKUMI**
Alarm with intrusion, tilt and glass breakage sensors	✓	✓	✓
Automatic double locking	✓	✓	✓
Automatic & easy door closing	✓	✓	✓
Window security code etching	✓	✓	✓
Locking wheel nuts	✓	✓	✓
COMFORT & CONVENIENCE	**LS**	**F SPORT**	**TAKUMI**
Smart Entry and push-button start	✓	✓	✓
Key Card	Opt[1]	✓	✓
Dual-zone climate control with nanoe technology	✓	✓	×
4-zone climate control with Climate Concierge	Opt[1]	×	✓
Auto-dimming rear-view mirror	✓	✓	✓
Digital rear-view mirror	×	×	✓
LED interior lighting	✓	✓	✓
Touch sensor map lights	✓	✓	✓
Electric fuel cap release	✓	✓	✓
Tilt/slide sunroof	✓	✓	✓
Power boot lid with kick sensor	Opt[1]	✓	✓
Power rear window sunshade	✓	✓	×
Power rear and rear side window sunshades	Opt[1]	×	×
Power rear and rear side and quarter light window sunshades	×	×	✓
Front centre armrest with storage	✓	✓	✓
Rear armrest with storage	✓	✓	✓
3x 12V power sockets	✓	✓	✓

INSTRUMENTS & CONTROLS	LS	F SPORT	TAKUMI
3-spoke steering wheel with leather trim and paddle shifts	✓	×	×
3-spoke steering wheel with leather trim, wood inserts, paddle shifts and integrated heater	Opt[1]	×	✓
3-spoke steering wheel with perforated leather trim and paddle shifts and integrated heater	×	✓	×
Power-adjustable steering column with memory	✓	✓	✓
F Sport meters	×	✓	×
Analogue GPS clock	✓	×	✓
Analogue clock with L-motif design	×	✓	×
360-degree Panoramic View Monitor (with pedestrian alert on Takumi grade)	✓	✓	✓
Large colour head-up display	✓	✓	✓
SEATING & TRIM	**LS**	**F SPORT**	**TAKUMI**
Smooth leather upholstery	✓	×	×
Semi-aniline leather upholstery	×	×	✓
F Sport seats with smooth leather upholstery	×	✓	×
L-aniline leather upholstery	×	×	Opt
20-way power adjustable front seats	✓	×	×
28-way power/pneumatic adjustable front seats	Opt[1]	✓	✓
18-way adjustable rear seats	Opt[1]	×	×
22-way power adjustable rear seats with ottoman leg rest	×	×	✓
Heated and ventilated front seats	✓	✓	✓
Heated rear seats	Opt[1]	✓	✓
Ventilated rear seats	Opt[1]	×	✓
Front seat massage functions	Opt[1]	×	✓
Rear seat massage functions	×	×	✓
Power adjustable front headrests	✓	✓	×
Power adjustable front headrests with memory	Opt[1]	×	✓
Leather shift lever trim	✓	×	✓
Perforated leather shift lever trim	×	✓	×
Aluminium scuff plates	✓	✓	✓
Aluminium sports pedal set	✓	✓	✓
Ultrasuede headlining	Opt[1]	✓	✓

Black semi-aniline leather with Nishijin and Haku door trim	×	×	Opt
Crimson/black semi-aniline leather with Kiriko glass and pleated door trim	×	×	Opt
AUDIO, COMMUNICATION & INFORMATION	**LS**	**F SPORT**	**TAKUMI**
DAB tuner	✓	✓	✓
8in TFT multi-information display	✓	×	✓
F Sport combi meter with moving outer ring	×	✓	×
12.3in touchscreen Lexus Navigation: full European mapping, Remote Touch Interface control, access to connected services, Streetview, DVD player, 12.3in touchscreen display	✓	✓	✓
Smartphone integration via Apple CarPlay & Android Auto	✓	✓	✓
Rear DVD player	×	×	✓
Rear seat entertainment system	×	×	✓
Rear multi-operation panel	Opt[1]	×	✓
4 USB ports (2 front, 2 rear)	✓	✓	✓
Aux-in socket	✓	✓	✓
Bluetooth	✓	✓	✓
12-speaker Pioneer sound system	✓	×	×
23-speaker Mark Levinson QLI Reference Surround audio	Opt[1]	✓	✓
EXTERIOR	**LS**	**F SPORT**	**TAKUMI**
20in alloy wheels	✓	×	✓
20in F Sport alloy wheels	×	✓	×
Triple LED headlights with Automatic High Beam	✓	×	×
Triple LED headlights with BladeScan Adaptive High-beam System	Opt[1]	✓	✓
LED daytime running lights	✓	✓	✓
Cornering lights	✓	✓	✓
Sequential LED turn indicators	✓	✓	✓
Headlight cleaners	✓	✓	✓
Heated, auto-dimming, auto-folding door mirrors with reversing tilt function	✓	✓	✓
Power front windows with auto-up/down	✓	✓	✓

Water-repellent front door window coating	✓	✓	✓
Acoustic side door glass	✓	✓	✓
Rain-sensing wipers	✓	✓	✓
Intelligent Parking Support sensors front and rear	✓	✓	✓
Advanced Park System	×	×	✓
LED door illumination	✓	✓	✓
Windscreen de-icer	✓	✓	✓
Power boot lid open/close	✓	✓	✓
Hands-free boot release	Opt[1]	✓	✓
F Sport grille	×	✓	×
Jet black plating on front bumper, boot lid and side sills	×	✓	×
Black brake callipers with Lexus logo	×	✓	×
Metallic paint	Opt	Opt	Opt
Lunar Silver special paint finish	Opt	Opt	Opt
OPTION PACKS	**LS**	**F SPORT**	**TAKUMI**
[1]Premium Pack: triple-eye LED headlights with AHS, 4-zone climate control with Climate Concierge, 23-speaker Mark Levinson sound system with DVD player, 28-way power adjustable front seats with integrated heating and ventilation, semi-aniline leather upholstery, rear seat cushion airbags, card key, 3-spoke heated leather steering wheel, hands-free boot release, power rear and rear side window shades, Ultrasuede headlining, 28-way power-adjustable front seats, heated and ventilated rear seats, rear multi-function control panel, front seat massage function, front headrests with memory setting, rear seat lumbar adjustment, 18-way rear seat power adjustment	Opt	×	×

ENDS

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