

Lexus LS 600h L Hybrid Flagship Sedan Provides a Technologically Advanced, Clean and Refined Ride

August 30, 2011

The Lexus LS 600h L sedan was the first vehicle to bring fuel-efficient gasoline-electric hybrid technology to the prestige luxury segment when it went on sale for the 2008 model year. The long wheelbase flagship provides the highest level of performance, technology and luxury in the LS line. It is powered by the ultra-quiet Lexus Hybrid Drive system, which was the world's first to combine a V8 gasoline engine with an all-wheel-drive (AWD) hybrid drivetrain.

The LS 600h L hybrid carries over virtually unchanged for 2012 with the exception of the Nebula Gray Pearl exterior replacing Smoky Granite Mica.

Engine/Transmission/Drivetrain/Performance

The LS 600h L hybrid powertrain system uniquely combines a 5.0-liter V8 gasoline engine with two powerful electric motors and a large-capacity battery pack. The hybrid powertrain generates a peak combined output rating of 438 horsepower and can effortlessly accelerate the LS 600h L from zero-to-60 mph in just 5.5 seconds. Mid-range acceleration is even more impressive. The system's electric motor is capable of delivering maximum torque on demand and is most beneficial during passing maneuvers. The LS 600h L can accelerate from 50-70 mph in just 3.5 seconds.

The innovative V8 features an electric motor-driven Variable Valve Timing with intelligence (VVT-i) and Electrically controlled intake cam (VVT-iE). The combination of VVT-iE and oil pressure-controlled VVT-i for the exhaust cam provides superior engine-startup operation and high-output performance. A specially developed Hydrocarbon Absorber and Catalyst System is linked to the two-way exhaust to help prevent hydrocarbons contained in the exhaust from being released into the atmosphere during cold start up when the catalysts are not up to temperature. The LS 600h L also meets the Super Ultra Low Emission Vehicle II (SULEV II) certification.

The LS 600h L is a full hybrid, capable of operating in electric-only mode or with a combination of the gas engine and electric motor. Lexus hybrid technology allows electric-mode-only operation when certain conditions are met at low speeds or stop-and-go driving conditions, reducing fuel consumption and noise.

A compact 288-volt DC Nickel Metal Hydride (Ni-MH) battery pack is installed behind the rear seat. The battery's power is directed through a boost converter that efficiently raises voltage to a maximum 650V DC. An inverter changes this to AC, providing its elevated power to a 165-kW electric motor that turns at up to 10,240 rpm. The trunk also contains a 12-volt auxiliary battery that powers the audio, navigation, and other systems.

The LS 600h L powertrain uses two motor generators: MG1 and MG2. Each performs specific functions and can operate as either a motor or a generator, although MG1 is used as a starter motor and provides no motive force. The engine-driven generator, MG1, can charge the battery pack or provide additional power to the drive motor, MG2, as needed.

A regenerative-braking system further boosts efficiency. When the vehicle is coasting or the brakes are applied, the electric motors function as generators, capturing kinetic energy that would normally be lost as heat through the brakes and transforming it into useable electricity to recharge the batteries.

A state-of-the-art, full-time all-wheel drive system adapts to road surface conditions to help provide vehicle control during acceleration, and cornering. The AWD system employs a compact, ultra-quiet transfer case equipped with a TORSEN[®] limited-slip differential (LSD) that is 30 percent lighter in size and weight than previous TORSEN systems.

The LSD provides rear biased torque distribution of 40:60 during normal straight-line driving, automatically and continually adjusting power distribution according to changing speed and road conditions.

An eight-speed sequential braking mode, activated when the shift lever is in the “S” position, allows eight different stages of response. When up-shifting, engine speed is controlled by the selected range, offering an exhilarating boost in acceleration during each of the eight “shift” stages. When downshifting, brake-force increases to provide powerful deceleration.

The driver can select "Hybrid" (Normal), "Power," or "Snow" modes to change the rate of throttle opening for a given throttle-pedal angle. The Hybrid mode provides the smoothest operation and is ideal for city or suburban driving; Power sharpens accelerator pedal response and Snow mode softens accelerator pedal response, making it easier to accelerate on slippery road surfaces.

Chassis/Body/Suspension/Tires/Brakes

Multi-link front and rear air-suspension systems help maintain superb vehicle posture and driving performance while maintaining the ultra-comfortable ride that is synonymous with all Lexus vehicles.

The LS 600h L is equipped with large front- and rear-ventilated disc brakes and standard 19-inch, seven-spoke aluminum alloy wheels with all-season tires. These special wheels receive extensive buffing.

Electronic Power Steering (EPS) delivers a smooth steering feel and reduces parasitic losses. Variable Gear Ratio Steering (VGRS) optimizes the steering gear ratio according to vehicle speed, enhancing responsiveness and driver control.

Networked with the Vehicle Dynamics Integrated Management (VDIM) system, VGRS can make minor adjustments to the front-wheel angle to help provide control in challenging road conditions.

Safety/Security Features

The VDIM system incorporates and manages all of the car’s dynamic handling sub-systems, including: Electronically Controlled Brake (ECB) system, EPS, Vehicle Stability Control (VSC), Antilock Braking System (ABS), Electronic Brake-force Distribution (EBD) and engine torque via the electronically controlled throttle. Monitoring a variety of sensors, the system anticipates the onset of a vehicle skid or slide while cornering, and helps correct the situation with a combination of braking, throttle and steering control.

In addition to the active safety features, the LS 600h L is standard-equipped with eight airbags, with a maximum of 11 airbags available through option packages. The world’s first low-beam LED headlamps provide superior road illumination, and the standard Adaptive Front-lighting System (AFS) helps to illuminate a turn or curve as the driver steers into it.

The available Advanced Pre-Collision System (APCS) was the world's first system designed to react to pedestrians in the vehicle's path when it debuted on the 2009 Pebble Beach® Edition LS 600h L. This system is available for the LS 600h L (and the LS 460 models) with Lane Keep Assist. Using two small cameras mounted at the front of the car that work in conjunction with millimeter-wave radar, APCS is sensitive enough to detect certain nonmetallic objects.

As part of APCS, the LS also offers the Driver Attention Monitor System, which was another world first. A third camera, mounted on the steering column, monitors the orientation of the driver's face. If the camera detects that it appears the driver is not looking ahead for a few seconds or more, and if an obstacle is detected ahead, then it alerts the driver, first with a warning chime and a flashing light. As the car gets closer to the obstacle, APCS can begin to gently apply the brakes on its own.

To help assist the driver in maneuvering around the obstacle, the system reprograms the steering ratio, amplifying the intensity and quickness of the steering response. At the same time, APCS automatically retracts the front seatbelts and prepares the brake system to respond with full force when activated by the driver in anticipation of a possible impact.

Luxury/Comfort/Convenience

The LS 600h L is based on the long-wheelbase LS chassis, providing nearly five inches more legroom than the standard LS 460 model. This flagship sedan provides the highest level of comfort and convenience features in the LS series. Standard features include a hard disk drive (HDD) Lexus Navigation system with a back-up camera, Bluetooth® phonebook download capability, Voice Command casual language voice-recognition system, and an integrated XM Radio receiver.

For theater-level entertainment, the LS 600h L features a standard 19-speaker 450-watt Mark Levinson® Reference Surround Sound audio system. An auxiliary jack located in the front center console allows for MP3 digital music players while a USB port allows for iPod® connectivity. The audio system also features Bluetooth streaming audio.

Additional standard features include climate-controlled front seats; a driver's seat that features a standard slide-away feature that makes ingress/egress more comfortable; heated rear seats; a heated steering wheel; power rear sunshade; one-touch open/close power trunk; power door closers; headlamp washers; SmartAccess with push-button start and card key; electronic parking brake; Intuitive Park Assist; and laminated side glass. Intelligent High Beams adjust their brightness in response to oncoming vehicles.

The Cold Weather Package is also standard and features a windshield deicer, upgraded battery and more efficient heater. The LS 600h L also has the Advanced Parking Guidance System (APGS) which is designed to assist with parallel and back-in parking. Once the driver has correctly positioned the car and identified the desired parking spot via the navigation screen, APGS utilizes the rear back-up camera parking sonar sensors and electric power steering system to guide the car into the space, while the driver controls speed via braking.

Luxury Options

The optional Premium Package II includes butterfly rear headrests; driver's side rear seat with lumbar massage; rear climate controlled power seats with memory and power headrests; rear seat-mounted side airbags; a rear heater control panel; four-zone climate control; rear audio controls; additional wood trim; rear air purifier; rear headliner and side air ducts; power rear-door sunshades; and a rear seat entertainment system equipped with a power ceiling-mounted nine-inch screen for DVD viewing.

The available Executive Class Seating Package II includes all features in the Premium Package II and adds a power passenger's side rear seat with ottoman. The seat reclines up to 45 degrees with an upper-back recliner featuring a 17-degree angle adjustment. A multi-function massage feature for the passenger's side rear seat recliner can be used separately or in conjunction with the seat heater and cooler.

The package also includes a rear-seat wood-trimmed table, and the rear-seat entertainment system features a rear DVD player and wireless headphones. The rear climate control is upgraded with an infrared sensor located in the headliner that measures lap, upper body and seat surface temperatures on each side and adjusts airflow accordingly.

The LS 600h L also offers a telematics system, Lexus Enform[®] with Safety Connect[®], available by subscription (complimentary one-year trial subscription included). The Lexus Enform and the Safety Connect response centers operate 24 hours a day, 7 days a week—every day of the year.

Lexus Enform vehicles are factory ready for subscriptions to a variety of innovative SiriusXM services including NavTraffic, NavWeather, Sports, and Stocks. SiriusXM services offer complimentary 90-day trial subscriptions and require separate audio and data subscriptions.

Exterior Design

The LS 600h L flagship hybrid luxury sedan showcases the brand's L-finesse design philosophy, revealing a family resemblance that conveys elegance, refinement and a strong emotional appeal. Minimal body gaps, a low front grille and deep-drawn fenders all contribute to the car's distinctive, muscular profile. Lexus' attention to detail is seen in the integrated dual chrome exhaust tips and the one-piece chrome window surround. Projector-type headlamps with blue crystal rings, which introduced the world's first nighttime LED low beams, help provide excellent visibility and contribute to the design theme. Blue accents on the headlamps, badging, engine cover and the SmartAccess key fobs and Smart Card key are unique to the LS 600h L – as are the blue-tinted taillamps.

Interior Design

Passenger space and comfort were the primary focus of the interior cabin design. Genuine semi-aniline leather is featured throughout the cabin, its rich appearance softened and structured with additional stitching to create a relaxed atmosphere. The leather trim extends beyond the seats and onto the instrument panel, upper front doors and door armrests.

An Alcantara[®] headliner adds a pleasing touch point, and the center console is placed at the same height as the door armrests to enhance comfort and convenience. Additional luxury touches unique to the LS 600h L include a wood-trimmed and chrome-plated shift knob and wood-trimmed assist grips.

Warranty

All new Lexus vehicles come with a 48-month/50,000-mile basic limited warranty with roadside assistance for 48 months/unlimited miles. Powertrain and restraint system coverage is provided for 72 months/70,000 miles. Corrosion perforation protection is covered for 72 months, regardless of mileage. The hybrid-related components, including the HV battery, battery control module, hybrid control module and inverter with converter, are covered for eight years/100,000 miles.

###