

LEXUS GS



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LEXUS GS

TABLE OF CONTENTS

4
ABRIDGED

6
DESIGN

10
ENGINES AND
TRANSMISSIONS

14
DRIVING DYNAMICS

18
ON-BOARD TECHNOLOGY

21
SAFETY

25
TECHNICAL SPECIFICATIONS

ABRIDGED

The new, 2016 Lexus GS goes on sale in Europe as a four vehicle model range: in addition to the two full hybrids - GS 300h and the flagship GS 450h - which will be sold in all markets in Europe, Lexus introduces the first-ever GS 200t and the GS 350 AWD in selected markets*. The GS remains the only premium sports sedan to offer customers a choice of two full hybrid powertrains.

DESIGN & PACKAGING

A further development of Lexus' unique, L-finesse design philosophy, the new GS features new, powerful and dynamic exterior styling with a more aggressive frontal treatment showcasing the brand's trademark spindle grille and a sporting, three-lamp headlight cluster.

Revisions to the spacious cabin environment include significant enhancements to both functionality, and material finish and quality. Within it, driver-focused cockpit combines outstanding ergonomics with upgraded HMI (Human Machine Interface) systems which set a benchmark for on-board technologies in the segment.

An improved Remote Touch Interface (RTI) is linked to a 12.3-inch Electro Multi Vision (EMV) multimedia display incorporating a useful full-screen

function. A brighter, clearer Head-Up Display (HUD) features an expanded range of data incorporating Lexus Safety System + status information.

The GS's 3-zone S-Flow air-conditioning with 'nanoe' air cleaning technology now incorporates a blower customisation function linked to a new Customize setting in the Drive Mode Select system. And a choice of superior audio systems includes a 17-speaker Mark Levinson Premium Audio.

GS F SPORT models feature exclusive exterior and interior styling with a unique 'F' mesh grille, 19-inch alloys, an LFA-inspired driver's meter and Naguri-style aluminium ornamentation.

POWERTRAINS

With a total system power output of 254 kW/345 PS, the high-performance flagship GS 450h will accelerate from 0-100 km/h in 5.9 seconds and has a maximum speed of 250 km/h. Conversely, average fuel consumption is only 5.9l/100 km, and CO₂ emissions just 137 g/km.

The GS 300h provides a total power of 164kW/223PS delivering a fuel consumption of 4.4l /100km and CO₂ emissions of only 104g/km.

* The GS 200t and GS 350AWD will not be covered in this presskit.

DRIVING DYNAMICS

The driving dynamics of the new GS model range have been significantly enhanced to offer customers an even more engaging driving experience.

Body rigidity has been improved through the increased use of structural adhesives, and spot, laser and laser screw welding. The suspension, steering and brake systems have all been optimised to combine sharp, accurate steering and excellent body control with outstanding high-speed stability and all the ride comfort appropriate to a Lexus performance sedan.

An expanded range Drive Mode Select system features a new Customize mode for individual powertrain, chassis and air-conditioning settings.

F SPORT-exclusive chassis tuning features bespoke front and rear suspension settings to further enhance the efficiency of the Adaptive Variable Suspension (AVS) system. Rear wheel drive F SPORT models further benefit from larger, 18-inch front disc brakes for improved stopping power.

GS 450h F SPORT is equipped with the Lexus Dynamic Handling (LDH) system, which integrates the sports sedan's Dynamic Rear Steering (DRS), Variable Gear Ratio Steering (VGRS) and Electric Power Steering (EPS), coordinating every aspect of front and rear wheel control to provide agile, sharp and confident handling with a more direct response to the driver's actions.

SAFETY

Already showcasing Step 5 of Lexus' unique Vehicle Dynamics Integrated Management (VDIM) system, the technologically advanced active safety and driver assistance systems of the new, GS have been even further enhanced by the adoption of the sophisticated Lexus Safety System +.

Fitted as standard on Luxury grade and F SPORT models, this newly developed suite of active safety technologies includes a Pre-Crash Safety (PCS) system, All-speed Adaptive Cruise Control, Advanced Lane Keep Assist (A-LKA) with Vehicle Sway Warning; Road Sign Assist (RSA) and Adaptive High-beam System (AHS).

A Blind Spot Monitor (BSM) with Rear Cross Traffic Alert (RCTA) are also fitted as option, and a Tyre Pressure Warning System (TPWS) as standard, across the new GS model range.

DESIGN

- Muscular, more aggressive styling with powerfully projecting Lexus trademark spindle grille
- Contemporary, premium quality interior with improved functionality, instrumentation and ornamentation
- Exclusive F SPORT exterior and interior styling with unique 'F' mesh grille, 10-inch alloys, LFA-inspired driver's meter and Naguri-style aluminium ornamentation

BOLD, AGGRESSIVE EXTERIOR DESIGN

The design of the new GS builds on the muscular strength inherent in the model's DNA with even more bold and aggressive styling, reflecting the combination of long-haul comfort and sporting agility that is the hallmark of a true Gran Turismo sedan.

Featuring revised styling to the front, sides and rear, the new Lexus is 4880 mm long, the increase of 30 mm over its predecessor due to the larger front overhang of a new grille and bumper design.

The front features a powerfully projecting iteration of Lexus' signature spindle grille. The inner section echoes the spindle shape defined by the grille surround, and extends three-dimensionally rearwards to define the hard lines and surfaces of the hood centre section.

The horizontal grille bars are colour-coordinated in grey and black, with the colours of the upper and lower grilles reversed. The bars themselves are optimally shaped to manage airflow into the engine compartment.

A new, narrower and more sporting headlight design features a unique three-lamp array. Each element of the simultaneously-illuminating, three-

lamp cluster contains both high and low beam LED lamps, and incorporates Lexus-hallmark L-shaped low beam lamps.

Set below the headlamp clusters within the upper surface of sharply projecting bumper corners, independently located, arrowhead motif LED Daytime Running Lights (DRL) give the GS its own aggressive, visually unique signature.

Seamlessly integrating design and function, the spindle grille incorporates brake cooling air intakes, whilst new foglamps are integrated within the outer corners of a lower bumper shaped to emphasise the GS's broad, stable stance and low centre of gravity.

At the sides, a new rocker moulding character line is 20 mm lower than that of the current model, further reinforcing the GS's low centre of gravity. The line kicks up under the rear door, both to add dynamism and to strengthen the visual integration between the moulding and the front and rear bumpers. To the rear, the boot lid is underscored by new, L-shaped chrome plating, and new LED combination lamps adopt an evolution of the Lexus L-shaped motif. The colour of the lower bumper has been changed from black to a metallic dark grey, further accentuating the GS's wide, stable stance and low centre of gravity.

The new GS range may be fitted with a choice of three alloy wheels: a 17-inch nine-spoke design; a new, 18-inch, sharply-machined five-spoke design; and a new, 19-inch mesh spoke design featuring hollow rims to reduce road noise.

A total of eleven body colours is available, of which six -Sonic White, Copper Brown, Graphite Black, Deep Blue, Sapphire Blue and Morello Red - are new. F White and Sapphire Blue are exclusive to the F SPORT grade.

CONTEMPORARY, PREMIUM QUALITY INTERIOR DESIGN

The new GS's revised interior features significant enhancements to both functionality, and material finish and quality. It combines a spacious cabin environment with a snug, driver-focused cockpit that enables customers to remain alert and comfortable over long periods of time -an essential requirement of a sports sedan.

With all functions and driving components consolidated in the driver's seat surroundings, the interior combines outstanding ergonomics with advanced HMI (Human Machine Interface) systems which set a benchmark for on-board technologies in the segment.

The dashboard is divided into two distinct zones: an upper Display Zone, with an ultra-wide, 12.3-inch, LCD multi-display screen located at an ideal distance for at-a-glance viewing, and a lower Operation Zone which allows access to system controls such as an upgraded version of Lexus' remote Touch Interface (RTI) with improved functionality.

Within the driver's instrument binnacle, the large-diameter Optitron meters have been redesigned for a more three-dimensional appearance. They now feature a high-quality spin process dial finish, the meter needles are light-emitting along their full length, and the rev counter adopts a non-linear scale to emphasise the combination of low rpm torque and high rpm power available from the new GS powertrain line-up.

Set between the driver's meters, the steering wheel switchgear-operable 4.2-inch colour Multi-information Display now features an additional multimedia linkage function to enable the display of information such as mobile phone caller details and audio track titles.

A new, next-generation, 380 mm diameter steering wheel with double-stitched real leather incorporates rim heating and a vibration function activated by the Advanced Lane Keep Assist system.

Reinforcing the overall roominess of the interior, the clean horizontal sweep of the dashboard has been emphasised by the adoption of a more dynamic shape to new, full-width metal ornamentation. This anchors redesigned air vents and a new analogue clock featuring GPS automatic time adjustment.

Below, the centre console instrumentation features a new, high-end audio panel with milled aluminium knobs, whilst the climate control section adopts a new, high-contrast, Electroluminescent Display (ELD) for improved visibility of temperature settings to the GS's three-zone air-conditioning system.

Further trim enhancements include new high-prestige metal ornamentation to the gear shift lever, steering wheel, air vents, door handles and switchgear. And the seat upholstery features a new design incorporating a horizontally quilted back panel and a new side stitching pattern.

Finally, the quality of the interior lighting has been improved through the adoption of a centrally-mounted LED rear room lamp, and a change in ambient lighting hue from the current silky white to warm white.

The new GS's contemporary, beautifully crafted, premium-quality interior is available in a choice of six colour schemes, of which three are new: Sandstone, which combines ivory with light grey; Rich Cream, which features a high-brightness, soft cream colour overlaying a black base colour; and Noble Brown, which co-ordinates a rich brown and light brown accent stitching with the black base colour.

These colour scheme options are complimented by a choice of five ornamentation treatments, including three new, highly-contemporary finishes: Open Pore Walnut; a dynamic, Black; and the striking, striped wood effect of Black Shimamoku.

EXCLUSIVE F SPORT EXTERIOR AND INTERIOR STYLING

All new GS F SPORT variants feature an exclusive spindle grille design which combines a strongly three-dimensional form with a unique 'F' mesh pattern. The front bumper side bezels have been enlarged to visually broaden the vehicle's stance and reinforce its sporting credentials.

Two F SPORT-exclusive treatments are available to the lower section of the rear bumper: a black metallic finish, or colour-coordination with the 'F' mesh spindle grille.

All F SPORT models feature unique, 10-spoke, bright machine finish, 19-inch alloy wheels.

A choice of eight body colours is available, of which three -Sapphire Blue, Graphite Black and Morello Red metallic- are new, and two -Sapphire Blue and F White - are exclusive to GS F SPORT models.

On-board, all F SPORT instrument binnacles inherit a descendant of the innovative driver's meter from the LFA, and a large, 8-inch Multi-information Display screen. F SPORT Hybrid models further feature a hybrid system indicator integrated within the binnacle.

F SPORT interior design is completed by a perforated leather-clad steering wheel and shift lever, aluminium pedals and scuff plates, model-unique Naguri-style aluminium ornamentation (which applies a traditional Japanese woodcraft to metal machining), and a choice of three interior colour schemes including an evocative, F SPORT-exclusive Dark Rose.

ENGINES AND TRANSMISSIONS

- GS 300h and flagship GS 450h – the only model in the segment to offer a choice of two full hybrid powertrains

GS 300h - FULL HYBRID POWERTRAIN

The GS 300h's Lexus Hybrid Drive system combines a powerful 105 kW/143 PS electric motor with a Euro 6-compliant, 2494 cc, dual-injection, 4-cylinder Atkinson cycle petrol engine generating 133 kW/181 PS at 6,000 rpm and peak torque of 221 Nm between 4,200 and 5,400 rpm.

Delivering maximum system power of 164 kW/223 PS, the two powerplants drive the rear wheels both independently and in tandem, as appropriate, through the hybrid system's electric continuously variable transmission (E-CVT).

In addition to the petrol engine and electric motor, the GS 300h's hybrid drive system further comprises a generator, a high-performance nickel-metal hydride battery, a power split device which, via planetary reduction gears, combines and re-allocates power from the engine, electric motor and generator according to operational requirements, and a compact power control unit to govern the high speed interaction of the system components.

The GS 300h will accelerate from 0-100 km/h in 9.0 seconds and has a maximum speed of 190 km/h, yet returns average fuel consumption figures as low as 4.4 l/100 km and generates remarkably low, highly tax-efficient CO₂ emissions of as little as 104 g/km.

The Atkinson cycle petrol engine is equipped with numerous advanced technologies designed to optimise its integration within the full hybrid powertrain, enhancing performance whilst minimising fuel consumption and emissions.

Atkinson cycle timing features an expansion stroke that is longer than the compression stroke, resulting in a more efficient conversion of combustion energy. The adoption of the Atkinson cycle, a higher compression ratio and other advanced technologies contribute to the enhanced thermal efficiency of the engine, which achieves the rating of 38.5%.

Fuel efficiency is also enhanced through in-cylinder direct injectors with a side slit and an optimised injection hole shape, a revised intake port shape, and optimised airflow. The adoption of roller arm-type valve gear and roller-type D-4 pump gear further improves fuel economy.

The friction of sliding parts within the cams has been greatly reduced. And the adoption of a low-friction timing chain with enhanced wear-stretch performance and a stretch belt to lower tension further reduce friction to enhance fuel economy.

Dual VVT-i (Variable Valve Timing-intelligent) to both intake and exhaust camshafts also significantly ameliorates engine performance. Dual VVT-i allows a greater intake/exhaust valve overlap, benefiting both low-end and top-end torque as well as contributing to a reduction in exhaust emissions and better cold-start performance.

A high-efficiency Exhaust Gas Recirculation (EGR) system incorporates a water-cooled EGR cooler, a step motor EGR valve with significantly enhanced responsiveness compared to conventional technology and optimal EGR gas flow. In combination, these technologies help realise excellent fuel economy.

Finally, several measures ensure that engine quietness and smoothness have been maximised to compliment the inherently quiet operating characteristics of the Lexus Hybrid Drive system.

The location of the port injectors and port injection during idling and low load driving have been optimised, along with the crankshaft shape. Noise and vibration have been further reduced through the enhanced rigidity of the cylinder block and intake manifold, the optimised efficiency of the balance shaft and the adoption of resin gears within the hybrid transaxle.

GS 450h - FULL HYBRID POWERTRAIN

Sharing the GS 300h's powertrain architecture, the GS 450h's Lexus Hybrid Drive system features a compact, 147 kW, water-cooled permanent magnet electric motor mated to an ultra-smooth running, 3456 cc Atkinson cycle V6 petrol engine. The engine develops 215 kW/288 DIH hp at 6000 rpm and 352 Nm of torque at 4500 rpm.

With a total system power output of 254 kW/345 PS, the GS 450h will accelerate from 0-100 km/h in 5.9 seconds and has a maximum speed of 250 km/h. Conversely, average fuel consumption is only 5.9l/100 km, and CO₂ emissions just 137 g/km.

Adapted specifically for the full hybrid powertrain, the 3.5 litre, DOHC, V6 petrol engine benefits from several technical improvements. It adopts the Atkinson cycle to optimise the fuel-efficient benefits of Lexus Hybrid Drive.

Further reductions in fuel consumption have been achieved through a high physical compression ratio of 13:1, a mid-port intake tumble generator and the adoption of next generation D-4S direct injection technology.

LEXUS HYBRID DRIVE IN OPERATION

As with every Lexus hybrid vehicle, the GS 300h and GS 450h are full hybrids capable of operating in petrol or electric modes alone, as well as a combination of both. They offer customers a uniquely quiet, refined and sophisticated driving experience.

Over the course of any journey, the Lexus Hybrid Drive system operates in several different modes to maximise its overall efficiency: At rest, the engine stops automatically to conserve fuel. Under operating conditions of low engine efficiency such as start-up and low to mid-range speeds, the vehicle runs on the electric motor alone, thus eradicating CO₂, NO_x and PM emissions.

Under normal driving conditions, power allocation is constantly adjusted between engine and electric motor to combine optimum performance with maximum fuel efficiency.

During deceleration and under braking, the electric motor acts as a high-output generator to effect regenerative braking. Normally wasted as heat, kinetic energy is recovered as electrical energy for storage in the high performance battery.

The full hybrid drive system's seamless electric continuously variable transmission (E-CVT) is controlled by Shift-by-Wire technology. It features a six step sequential Shiftmatic override gear change operated via steering wheel-mounted paddle shifters.

This configuration delivers all the driving performance expected of a sporting coupe, combined with the excellent fuel economy that is the hallmark of Lexus Hybrid Drive technology.

In addition, Drive Mode Select system offers a choice of four drive modes to increase the capabilities of the full hybrid powertrain, including a full hybrid-unique, EV mode which allows for ultra-quiet running on electric motor power alone, resulting in zero fuel consumption and CO₂, NO_x and PM emissions.

DRIVING DYNAMICS

- Enhanced body rigidity with increased structural adhesives, and spot, laser and laser screw welding
- Improved Noise and Vibration (NV) performance for a quieter cabin and enhanced aerodynamics for high speed stability
- Optimised suspension, steering and brakes for improved ride comfort with excellent agility and steering feel
- Expanded range Drive Mode Select system with new Customize mode for individual powertrain, chassis and air-conditioning settings
- F SPORT-exclusive chassis tuning with the Dynamic Rear Steering (DRS) benefits of the Lexus Dynamic Handling (LDH) System

INCREASED BODY RIGIDITY

The new GS features even higher body rigidity through the application of 188 extra spot welding points, the increased use of structural adhesive for body part coupling over some 22,500 mm, greater use of laser welding, and 132 additional laser screw welding points around the bodysell door openings.

In combination, these measures further enhance ride comfort and ensure even more precise vehicle movement in response to steering inputs.

IMPROVED NOISE, VIBRATION (NV) AND AERODYNAMIC PERFORMANCE

The Lexus sedan's already exceptional Noise and Vibration (NV) performance has been further enhanced through the addition of sound absorbing material to the upper cowl area, resulting in an ever quieter cabin environment.

The current GS range showcases the introduction of aerodynamic damping, a completely new approach to the management of airflow over a vehicle body. This concept involves bringing the airflow closer to the body and using it to help control the vehicle's movements for greater handling stability.

In a further development of this unique approach to vehicle aerodynamics, the bottom edge of the new GS's front bumper has been positioned 10 mm further forward, adjusting the airflow volume passing under the vehicle to promote even greater high speed stability.

OPTIMISED SUSPENSION, STEERING AND BRAKES

The new GS features a double wishbone front and multilink rear suspension system which combines legendary Lexus ride quality with excellent agility and steering feel, and a particular focus on rear stability.

The coil spring characteristics and the shape of the shock absorber free piston in both front and rear systems have been optimised, as well as the shape and spring characteristics of the front stabiliser. These measures further enhance both ride comfort and handling stability.

The new GS's powerful, fade-free braking system features 17-inch front and rear discs*.

ADAPTIVE VARIABLE SUSPENSION (AVS) SYSTEM

Available on Luxury grade and F SPORT versions of the new GS model range, Adaptive Variable Suspension (AVS) system allows the driver to fine tune the vehicle's ride characteristics with a choice of two damper settings; ECO / NORMAL / SPORT S modes, for everyday driving comfort, and SPORT S+ mode, for improved body control and even more precise responses to steering input whilst cornering.

In response to driving operation, vehicle body motion and road surface conditions, AVS automatically adjusts the performance of the suspension at all four wheels, independently activating the adjustable damping force shock absorbers to fulfil a wide range of specific control functions.

Selecting the AVS system's SPORT S+ mode automatically increases the difference between inner and outer shock absorber damping through corners to further reduce vehicle roll. Simultaneously, VGRS automatically reduces the steering gear ratio by approximately 10% whilst the Electric Power Steering (EPS) increases steering assist torque by some 4%.

*18" front brake discs are available on GS 450h

These measures combine to minimise body roll, sharpen vehicle handling and optimise steering feel for the ultimate in sports sedan driving. AVS is fully integrated within an expanded range Drive Mode Select system, described below.

EXPANDED RANGE DRIVE MODE SELECT SYSTEM

The new GS features a revised Drive Mode Select system with an expanded range of functions. It allows the driver to choose between ECO, NORMAL, SPORT (replaced by SPORT S and SPORT S+ on vehicles fitted with AVS) and new CUSTOMIZE driving modes, maximising either the vehicle's environmental efficiency or its dynamic abilities.

In ECO mode, engine output, throttle opening are automatically modulated to optimise fuel efficiency under all driving conditions. The air conditioning system temperature and airflow volume are also cooperatively controlled, lowering the system's the heating and cooling capacity to further reduce fuel consumption.

In SPORT or SPORT S modes, engine output and throttle opening are optimised to enhance power deliver at intermediate throttle angles, the automatic transmission shift timing is modified, and the amount of assistance delivered by the Electric Power Steering (EPS) reduced. Together, these measures offer highly responsive acceleration and a sporting steering feel for a more dynamic and engaging driving experience.

When M-range is selected, the driver benefits from the total control of fully manual gear changes via steering wheel mounted shift paddles. With rapid up shifting and throttle blipping on down shifts, customers can enjoy the most direct, sporting driving experience the new GS has to offer.

Available on GS models equipped with AVS, SPORT S+ mode combines the SPORT or SPORT S mode's enhanced powertrain output with coordinated control of the Vehicle's Dynamic Integrated Management (Step 5 VDIM), including the Adaptive Variable Suspension (AVS), Electric Power Steering (EPS) and -on F SPORT models fitted with Lexus Dynamic Handling (LDH)- the Variable Gear Ratio Steering (VGRS) and Dynamic Rear Steering (DRS).

SPORT S+ mode automatically increases the difference between inner and outer shock absorber damping through corners to reduce vehicle roll. Simultaneously, VGRS reduces the steering gear ratio whilst the EPS's Variable Flow Control (VFC) increases steering assist torque. These measures combine to minimise body roll, sharpen vehicle handling and optimise steering feel, rewarding drivers with the ultimate in sporting driving dynamics.

Fitted to models equipped with AVS, CUSTOMIZE mode allows the user select his choice of individual powertrain, chassis and air-conditioning settings through the Drive Mode Customisation display on the EMV multimedia screen, combining them to attain a control setting unavailable through the other modes offered.

Enhancing the enjoyment of the new GS's expanded breadth of driving style preferences, the ambient illumination of the driver's instruments changes to a tranquil blue in ECO mode, whilst switching to red in both SPORT / SPORT S and SPORT S+ modes. Switching to SPORT or SPORT S modes in the GS 300h and GS 450h automatically changes the system power indicator into a tachometer.

F SPORT DRIVING DYNAMICS

F SPORT models feature retuned front and rear suspension to further enhance the efficiency of the Adaptive Variable Suspension (AVS) system, maximising body control and steering response for improved vehicle agility. Both front and rear shock absorber characteristics have been modified to optimise AVS damping control, and the adoption of low-viscosity oil reduces friction for improved shock absorber efficiency. In addition, the rear suspension shock absorber has been inclined further to the rear, and the lower bushing enlarged and stiffened.

In combination, these modifications maximise the AVS system's control of body roll and, hence, improve the vehicle's response to steering inputs for increased agility and a more engaging driving experience.

Rear wheel drive F SPORT model further benefit from larger, 18-inch front disc brakes for improved stopping power.

LEXUS DYNAMIC HANDLING (LDH) SYSTEM

GS 450h F SPORT can be equipped with the Lexus Dynamic Handling system, making it the world's first hybrid vehicle to feature an integrated four-wheel steering system.

The leading edge platform technology of the Lexus Dynamic Handling system offers an integration of Dynamic Rear Steering (DRS), Variable Gear Ratio Steering (VGRS) and Electric Power Steering (EPS), to coordinate every aspect of front and rear wheel control and provide agile, sharp and confident driving behaviour with a more direct response to the driver's actions.

Monitoring vehicle speed, steering direction and driver inputs, LDH calculates the optimum angle for all four wheels. Using VGRS to the front and DRS to the rear, the system can independently control both front and rear wheel steering angles to greatly improve turn-in response, rear grip, vehicle stability and overall cornering agility. At speeds below 80 km/h, LDH turns the front and rear wheels in opposite directions, and in the same direction thereafter.

ON-BOARD TECHNOLOGY

- Improved Remote Touch Interface (RTI) with 12.3-inch multimedia display featuring full- screen function
- Expanded Head-Up Display (HUD) range incorporating Lexus Safety System + information
- Enhanced 3-zone S-Flow air-conditioning with Drive Mode Select-linked Customize settings and 'nanoe' air cleaning technology
- Superior Audio Systems including 17-speaker Mark Levinson Premium Audio system with Clari-Fi MP3 file playback technology

IMPROVED REMOTE TOUCH INTERFACE (RTI) WITH 12.3-INCH MULTIMEDIA DISPLAY

The Lexus Remote Touch Interface (RTI) multi-function control device has been designed for optimum user-friendliness and ease of operation. It is linked to the world's largest on-board multimedia display: a 12.3-inch, full colour, liquid crystal Electro Multi Vision (EMV) screen with an ultra-wide, 24:9 format.

The RTI system incorporates a slide haptic joystick mechanism -a planar slide-type controller, much like a computer mouse, that allows users to scroll quickly and easily across the display screen.

In addition to simply pushing the controller, the ENTER function can now be controlled with switches located on either side of the unit. A Back function switch has also been provided in front of the Remote Touch knob.

In addition to full screen displays such as the navigation map, the EMV screen's size allows for the permanent display of two types of information simultaneously, such as map/audio, Night View/map and navigation input/ incoming call.

The new GS's multimedia systems have also been enhanced through new screen layouts and additional functions. The audio and radio display screens have been redesigned to improve visibility and operability, a total of 72 station presets is now available, and a DAB tuner has been added to the system. Both Shortcut and Main menus have been added to the voice recognition display, and a speed dial function has been added to the hands-free phone system for added convenience.

EXPANDED HEAD-UP DISPLAY INFORMATION RANGE

Minimising the driver's eye movement from the road ahead, the GS's Head-Up Display (HUD) relays essential driving information. The use of a wedge-shaped PVC film within the windscreen glass sandwich both enhances the clarity of the display and eliminates the risk of a double image projection.

Maximum HUD brightness has now been increased from 8,000 to 10,000 cd/m² and the contrast ratio adjusted accordingly, to achieve outstanding display visibility.

In addition to the existing vehicle speed, audio, navigation, ECO bar, Sport mode tachometer and gear shift indicator displays, the HUD now offers a wider range of information in conjunction with the adoption of the Lexus Safety System +.

This includes Pre-Crash Safety (PCS) and Auto Cruise Control (ACC), Advanced Lane Keep Assist (A-LKA) and Road Sign Assist (RSA) displays.

ENHANCED S-FLOW AIR CONDITIONING WITH NANO E TECHNOLOGY

The new GS's S-Flow 3-zone air-conditioning system now features a lighter, quieter and more efficient compressor. A blower customisation function has been adopted, which allows users to select Fast, Normal or Eco airflow in conjunction with the new CUSTOMIZE setting of the Drive Mode Select system.

S-Flow technology maintains optimum occupant comfort whilst significantly reducing power consumption. Using sensors it determines if the front passenger seat or rear seats are occupied. If not, the system automatically closes all vents serving the unoccupied seats.

The target airflow volume is customised for each seat through Temperature Airflow Output (TAO) control. When the thermal load is large (cool-down in summertime, warm-up in winter) the air-conditioning operates throughout the cabin to quickly obtain a comfortable interior temperature. Once the overall interior temperature is stabilized, the system concentrates only on occupied seats.

In addition to TAO control, upper and lower independent, multilayer air mix technology has been adopted to achieve an environment tailored for both the driver and front and rear passengers. The system also features a two-tier Interior/Exterior Air Control which prevents window fogging by introducing low humidity exterior air to the upper half of the cabin.

And 'nanoe' air cleaning technology automatically releases 20 to 50nm diameter nanoe particles -negatively charged ions wrapped in water molecules- into the cabin via the driver's side dashboard air vent. By attaching themselves to airborne particles and molecules, the nanoe ions have both an air purifying and odour eliminating effect. They also deodorise vehicle seats and ceiling to create a cleaner cabin environment.

SUPERIOR AUDIO SYSTEMS

The new GS range may be equipped with a choice of two superior audio systems offering unparalleled power and clarity.

The standard system represents the next generation of realism and clarity in Lexus sound. It features a fully digital Class-D amplifier capable of creating virtually distortion-free sound with minimal voltage losses. The natural sound dynamics and rich harmonies generated by the high definition amplification are faithfully reproduced by a 12-speaker layout.

The 17-speaker Mark Levinson Premium Audio system uses the same technologies as those found in top-end home audio systems to offer superb sound quality equivalent to that of a live, concert hall performance. It features a Generation III ML5 amplifier which generates a total of 700 Watts, whilst consuming just 6.5 Amps.

The system now incorporates Clari-Fi playback technology, which compensates for the loss of high frequencies and the lack of clarity which can occur when using digital music players and other compressed sound sources, to create a clearer, richer sound, close the original recording quality.

Developing twice the volume for the same power consumption, GreenEdge power-saving technology has been incorporated into each of the 17 speakers. GreenEdge technology covers a wider frequency band than conventional systems, giving an enhanced dynamic range.

The system features five 90 mm GreenEdge Unity speakers with a coaxial structure which integrates mid- and high-range units within the same structure. The all-round cabin positioning of the five Unity speakers gives consistent timbre for both front and rear seat occupants, resulting in a whole new level of surround sound, definition, atmosphere and quality.

SAFETY

- Enhanced Active Safety features, including new Lexus Safety System +
- Includes Pre-Crash Safety (PCS), All-speed Adaptive Cruise Control, Advanced Lane Keep Assist (A-LKA) with Vehicle Sway Warning, Road Sign Assist (RSA), Automatic High Beam (AHB) and Adaptive High-beam System (AHS)
- Step 5 Vehicle Dynamics Integrated Management (VDIM) system
- Blind Spot Monitor (BSM) with Rear Cross Traffic Alert (RCTA) are fitted as option, and Tyre Pressure Warning System (TPWS) as standard
- Enhanced Passive Safety with improved offset collision load dispersal, 10 Supplemental Restraint System (SRS) airbags

ACTIVE SAFETY

LEXUS SAFETY SYSTEM +

Luxury grade and F SPORT versions of the new GS are now fitted, as standard, with the Lexus Safety System +, a newly developed set of active safety technologies designed to help prevent or mitigate collisions across a wide range of traffic situations.

Combining a camera and millimetre-wave radar for a high level of detection performance, the Lexus Safety System + features a Pre-Crash safety System (PCS) with a pedestrian detection function, All-speed Adaptive Cruise Control, Advanced Lane-Keep Assist (A-LKA) with a Sway Warning function, and either Automatic High Beam (AHB) or Adaptive High-beam System (AHS) headlamp technology. Additionally, the GS is also equipped with a Road Sign Assist (RSA).

Between approximately 10 km/h and the vehicle's maximum speed, the Pre-Crash safety System detects vehicles in front and reduces the risk of hitting them from the back. When there is a possibility of a collision PCS prompts the driver to brake with an audible and visual alert, and also primes Pre-Crash Brake Assist to deliver extra stopping force when the driver presses the brake pedal.

In addition, PCS implements a close interaction between the Variable Gear Ratio Steering (VGRS) and Dynamic Rear Steering (DRS) incorporated within the GS's Step 5 Vehicle Dynamics Integrated Management (VDIM) system improving vehicle response to the driver's emergency steering inputs to increase the chances of obstacle avoidance.

If the driver fails to react in time, the system automatically applies Pre-Crash Brake, reducing speed by approximately 40 km/h or even bringing the car to a complete stop, in order to prevent the collision or mitigate the force of impact.

Because PCS is equipped with both a camera and millimetre-wave radar, it is also able to detect potential collisions with pedestrians, in the event of which automated braking operates at relative speeds of between 10 to 80 km/h, and can reduce speed by approximately 30 km/h.

The All-speed Adaptive Cruise Control system helps the driver to keep a safe distance from the car in front. Capable of differentiating between vehicles directly in front of the Lexus and those in an adjacent lane, the system will automatically slow the GS, match the speed of the vehicle in front and, once the road is clear, accelerate to the previously selected cruising speed.

By using the forward-facing camera and millimetre-wave radar in combination to monitor vehicles merging into or out of the lane ahead, the system not only helps maintain smooth acceleration and deceleration while driving, but is also capable of operating at all speeds down to 0 km/h. After a complete stop, and then restart of the preceding vehicle, the GS's driver need only press the accelerator briefly to reactivate the system's tracking of the car in front.

Active when the All-speed Adaptive Cruise Control is switched on, the Advanced Lane-Keep Assist (A-LKA) function automatically assists the driver with some of the steering operations necessary to avoid lane departure. The minimum vehicle speed at which the system will operate has now been lowered to near-stopping speeds.

As part of the A-LKA, the Vehicle Sway Warning function monitors both the vehicle's position within a lane and the driver's steering inputs to detect vehicle behaviour symptomatic of driver drowsiness or a lack of concentration, alerting the driver via an indicator in the Multi-information Display and a warning buzzer.

Available as an option on the Comfort grade, the Automatic High Beam helps ensure excellent forward visibility during night-time driving. It detects both the headlights of oncoming vehicles and the tail lights of preceding vehicles, automatically switching between high and low beams to avoid dazzling other drivers.

Adaptive High-beam System technology automatically shields the section of the headlamp beam which is directly projected at preceding or oncoming vehicles. By using high beams more frequently, this cutting-edge system enables earlier detection of pedestrians and obstacles.

Road Sign Assist supports drivers by ensuring they always have the best possible information, even if they have, perhaps, overlooked a road sign. It identifies traffic signage such as speed limit, no overtaking, road condition and highway and expressway signs.

The driver can use the steering wheel-mounted controls to switch between a choice of RSA displays on the Multi-information Display screen; a Permanent display which shows one recognised sign type, and a Tab display which will show up to three signs -such as speed limit, no overtaking and no entry- simultaneously.

In case of speed limit, no overtaking and no entry sign recognition, the system gives a visual and audible alert should it detect overtaking manoeuvres, street entry in the wrong direction, or the driver exceed the posted limit.

VEHICLE DYNAMICS INTEGRATED MANAGEMENT (VDIM) STEP 5

The new GS 450h F SPORT features Step 5 of Lexus' unique, state-of-the-art Vehicle Dynamics Integrated Management (VDIM) system to enhance performance, traction control and vehicle stability.

With comprehensive status data provided by sensors throughout the vehicle, VDIM integrates the Anti-Lock Brakes (ABS), Electronic Brakeforce Distribution (EBD), Traction Control (TRC) and Vehicle Stability Control (VSC) active safety systems with the Electric Power Steering (EPS) and, where fitted, Variable Gear Ratio Steering (VGRS) Adaptive variable Suspension (AVS) and the Dynamic Rear Steering (DRS) of the Lexus Dynamic Handling (LDH) system.

Whilst VDIM can help restrain vehicle yaw and roll motion through integrated control of the AVS and VGRS, the Step 5 system incorporates the LDH system. This enables it to control the steering angle of all four wheels, achieving the ideal slip angle to help govern the lateral motion of the vehicle when, for instance, there is a risk of understeer or oversteer when cornering, or when braking on a road surface with differing levels of grip between the left and right hand wheels.

By the application of integrated control of all the elements related to vehicle movement, including motor torque, brakes and steering, VDIM not only optimises the activation of braking, stability and traction control systems, but is also able to further improve the overall kinetic performance of the vehicle.

Moreover, whereas conventional active safety systems are only activated immediately after a limit of the vehicle's dynamic envelope has been reached, VDIM activates control before that limit is realised. As a result, the limits of the vehicle's dynamic threshold have been expanded, whilst offering smoother vehicle behaviour at this threshold through less obtrusive intervention and, hence, a more pleasurable drive.

BLIND SPOT MONITOR (BSM) WITH REAR CROSS TRAFFIC ALERT (RCTA)

The BSM system uses rear-facing millimetre-wave radar to detect vehicles in the GS's blind spots. It notifies the driver of this potential hazard by illuminating the BSM icon on the corresponding door mirror. If the turn signal is in operation at the time, the BSM icon will blink.

The RCTA system employs the BSM radar to alert the driver backing out of a parking space to approaching vehicles which may not be visible in either the rear view monitor or door mirrors. When approaching vehicles are detected, the system flashes the BSM icons on the door mirrors, sounds a warning buzzer and indicates the direction from which the detected vehicle is approaching on the dashboard EMV screen.

TYRE PRESSURE WARNING SYSTEM (TPWS)

The TPWS notifies the driver of a drop in air pressure in any of the GS four tyres. The system shows the air pressure for each tyre on the Multi-information Display. When low pressure is detected, the system automatically highlights both the location and air pressure of the affected tyre in amber.

PASSIVE SAFETY

BODY STRUCTURE

Reflecting the stringent car-to-car impact compatibility standards unique to the Lexus marque, the GS has been created with the express aim of achieving optimum safety in full-frontal, offset, side-on and rear collisions.

The comprehensive use of high- and ultra-high-tensile steel within the body structure optimally transfers and disperses impact load, minimising cabin deformation during a collision and maintaining space for the occupants.

Improved dispersal of frontal, small overlap collision loads is provided by a sliding spacer which ensures that impact from the outer side of the front side member is also sustained by the body frame, and the adoption of a torque box and A-shaped brace to protect occupants against impact from the front wheels.

Particular attention has been paid to side impact protection, with ultra-high-tensile steel adopted for rocker outer reinforcement, the rear door impact beam sheet thickness increased, and the use of hot press sheet steel in the construction of the B Pillar.

During the die moulding of hot press steel, firing and quenching occur at the same time as pressing, both enabling the creation of profiles that would be difficult to form with cold sheet steel, and increasing the strength of the material itself.

PEDESTRIAN PROTECTION

The new GS's front bumper, cowl and corrugated sheet bonnet have been carefully designed to offer enhanced pedestrian protection in the event of a collision.

The bead height and pitch of the corrugated bonnet have been optimised with a new, thinner design. The frontal bonnet structure has been designed to easily deform on contact with a pedestrian's upper legs, and a gap between the bonnet and the top of headlamps helps reduce the force of a head impact.

Impact absorbing materials built into the front bumper help reduce the load applied to a pedestrian's legs. And the front wings incorporate a new, head impact alleviating structure.

Both the cowl panel area and cowl louvre comprise easily deformable structures, with deformation controlled by the use of different sheet thicknesses.

AIRBAGS

The new Lexus GS benefits from 10 airbags; two-stage Dual Supplementary Restraint System (SRS) front airbags, both driver and front passenger knee airbags (the latter installed in the glove box door), front and rear side airbags, as well as both front and rear side curtain airbags.

The advanced, Supplementary Restraint System controls variable-force front airbags for both driver and front passenger. Sensors determine the severity of an impact and, hence, the force with which the airbags are deployed.

GS TECHNICAL SPECIFICATIONS

MAJOR DIMENSIONS AND VEHICLE WEIGHTS		GS 450h	GS 300h
Overall dimensions	Length <small>mm</small>	4880	4880
	Width/Folded Mirror <small>mm</small>	1840	1840
	Height <small>mm</small>	1455	1455
Wheelbase		2850	2850
Tread	Front <small>mm</small>	1575	1575
	Rear <small>mm</small>	1590	1590
Effective Head Room	Front <small>mm</small>	985, 965* ¹	985, 965* ¹
	Rear <small>mm</small>	960	960
Effective Leg Room	Front <small>mm</small>	1075	1075
	Rear <small>mm</small>	935	935
Shoulder Room	Front <small>mm</small>	1455	1455
	Rear <small>mm</small>	1415	1415
Hip Room	Front <small>mm</small>	1385	1385
	Rear <small>mm</small>	1375	1375
Interior	Length <small>mm</small>	2050	2050
	Width <small>mm</small>	1535	1535
	Height <small>mm</small>	1180, 1140* ¹	1180, 1140* ¹
Couple Distance	Front to Rear <small>mm</small>	945	945
Seating Capacity	person	5	5
Overhang	Front <small>mm</small>	900	900
	Rear <small>mm</small>	1130	1130

GS TECHNICAL SPECIFICATIONS

MAJOR DIMENSIONS AND VEHICLE WEIGHTS		GS 450h	GS 300h
Coefficient of Drag		0,26	-
Min. Running Ground Clearance	mm	130	130
Location of Min. Running Ground Clearance		Brace / Front suspension member	Brace / Front suspension member
Kerb Weight	Front Min. - Max.(EC/ECE) kg	940 - 965	870 - 895
	Rear Min. - Max.(EC/ECE) kg	880 - 895	860 - 875
	Total Min. - Max.(EC/ECE) kg	1820 - 1860	1730 - 1770
Gross Vehicle Weight		2305	2235
Trunk Space	L	450,17*3	450,17*3
Towing Capacity	With Brake kg	1500	500
	Without Brake kg	750	-
Fuel Tank Capacity	L	66	66

ENGINE		GS 450h	GS 300h
No. of Cyls. & Arrangement		6-cylinders, V type 60 degrees	4-cylinders, in-line
Valve Mechanism		24-valve DOHC with Dual VVT-i	16-valve DOHC with Dual VVT-i
Bore x Stroke	mm	94.0 x 83.0	90.0 x 98.0
Displacement	cm ³	3456	2494
Compression Ratio		13.0 : 1	13.0 : 1
Fuel Injection System		EFI, D-4S	EFI, D-4S
Emission Certification		EURO 6 with OBD	EURO 6 with OBD
Fuel Type		Petrol	Petrol
Recommended Octane Rating	RON	95 or more (Octane)	95 or more (Octane)
Max. Output	EEC kW/rpm (ps/rpm)	215 / 6000 (292 / 6000)	133 / 6000 (181 / 6000)
Max. Torque	EEC Nm/rpm (kg-m/rpm)	352 / 4500 (35.9 / 4500)	221 / 4200 - 5400 (22.5 / 4200 - 5400)
Fuel Consumption	Urban L/100km	from 6.5	from 4.6
	Extra Urban L/100km	from 5.4	from 4.3
	Combined L/100km	from 5.9	from 4.4
CO ₂ Emissions	Urban g/km	from 151	from 107
	Extra Urban g/km	from 125	from 101
	Combined g/km	from 137	from 104

GS TECHNICAL SPECIFICATIONS

MOTOR GENERATOR		GS 450h	GS 300h
Motor Type		Permanent magnet synchronous motor (1KM)	Permanent magnet synchronous motor (1KM)
Max. Voltage	V	650	650
Max. Output	kW (hp_ps)	147 (197_200)	105 (141_143)
Max. Torque	Nm (kg-m)	275 (28)	300 (31)

HYBRID BATTERY			
Battery Type		Nickel-Metal hydride	Nickel-Metal hydride
Nominal Voltage	V	288	230
Number of Battery Cells		240	192
System Voltage	V	650	650

TOTAL SYSTEM OUTPUT			
Total Max. Output*	kW (hp_ps)	254 (340_345)	164 (220_223)

PERFORMANCE			
Max. Speed	km/h	250	190
Acceleration (0 to 100 km/h)	sec.	5.9	9.0

CHASSIS		GS 450h	GS 300h
Transmission	Type	CVT	CVT
Layout		FR	FR
Motor Reduction Ratio		Lo: 3900 / Hi: 1900	3.333
Differential Gear Ratio (Front/ Rear)		- / 3.266	- / 2.764
Brake Type	Front	Ventilated Disc	Ventilated Disc
	Rear	Ventilated Disc	Ventilated Disc
Lock to Lock		2,8	2,8
Min. Turning Radius	Tyre _m (ft.)	5,3, 5,1* ²	5,3

*1: With sunroof - *2: With LDH (Lexus Dynamic Handling) system - *3: Undertray with tyre repair kit

LEXUS GS

