

= Lexus LS =

The Lexus LS ( Japanese : レクサス LS , Lexus LS ) is a full @-@ size luxury car serving as the flagship model of Lexus , the luxury division of Toyota . Now in its fourth generation , all LS models have featured V8 engines and rear @-@ wheel drive , with Lexus also offering all @-@ wheel drive , hybrid , and long @-@ wheelbase variants .

As the first model developed by Lexus , the LS 400 debuted in January 1989 with the second generation debuting in November 1994 . The LS 430 debuted in January 2000 and the LS 460 / LS 460 L series in 2006 . A domestic @-@ market version of the LS 400 and LS 430 , badged as Toyota Celsior ( Japanese : トヨタ セルシオ , Toyota Serushio ) , was sold in Japan until the Lexus marque was introduced there in 2006 . In 2006 ( for the 2007 model year ) the fourth @-@ generation LS 460 debuted the first production eight @-@ speed automatic transmission and an automatic parking system . In 2007 , V8 hybrid powertrains were introduced on the LS 600h / LS 600h L sedans .

Development of the LS began in 1983 as the F1 project , the code name for a secret flagship sedan . The resulting sedan followed an extended five @-@ year design process at a cost of over US \$ 1 billion , and premiered with a new V8 engine and numerous luxury features . The Lexus LS was intended from its inception for export markets , and the Lexus division was formed to market and service the vehicle internationally . The original LS 400 debuted to strong sales , and was largely responsible for the successful launch of the Lexus marque .

Since the start of production , each generation of the Lexus LS has been manufactured in the Japanese city of Tahara , Aichi . The LS name stands for " Luxury Sedan " . Some Lexus importers use the backronymic name , " Luxury Saloon " .

= = First generation ( XF10 ) = =

= = = 1989 ? 1992 = = =

In August 1983 , Toyota chairman Eiji Toyoda initiated the F1 project ( " Flagship " and " No. 1 " vehicle ; alternatively called the " Circle @-@ F " project ) , a clandestine effort aimed at producing a world @-@ class luxury sedan for international markets . The F1 development effort did not have a specific budget or time constraints , and the resulting vehicle did not utilize existing Toyota platforms or parts . Instead , chief engineer Ichiro Suzuki sought to develop an all @-@ new design , aiming to surpass rival American and European flagship sedans in specific target areas , including aerodynamics , cabin quietness , overall top speed , and fuel efficiency . During development , 60 designers , 1 @, @ 400 engineers split up into 24 teams , 2 @, @ 300 technicians and over 200 support workers built approximately 450 flagship prototypes and 900 engine prototypes and logged 2 @. @ 7 million kilometres of testing on locations ranging from winter Europe roadways ; deserts in Arizona , Australia , and Saudi Arabia ; to U.S. highways and wilderness areas .

In May 1985 , designers started work on the F1 project . In late 1985 , designers presented the first exterior study models to F1 management , featuring a sports car @-@ like design with a low @-@ slung hood and narrow front profile . By 1986 , the sedan used a three box design with an upright stance , more prominent grille , and a two @-@ tone body . Extensive modeling and wind tunnel tests resulted in a low drag coefficient for a conventional production vehicle of the time ( Cd 0 @. @ 29 ) . For the passenger cabin , materials selection tests evaluated 24 different kinds of wood and multiple types of leather for two years before settling on specific trim combinations . By 1986 , the Lexus marque was created to support the launch of the flagship sedan , and the vehicle became known as the Lexus LS . Following eight design reviews , subsequent revisions , concept approval in September 1986 , and over US \$ 1 billion in development expenses , the final design for the production Lexus LS 400 ( chassis code UCF10 ) was frozen in May 1987 with design patents filed on 13 May 1987 .

In January 1989 , the LS 400 made its debut as a 1990 model at the North American International

Auto Show , in Detroit , Michigan . U.S. sales began in September 1989 , followed by limited exports to Australia , Canada , and the United Kingdom . The LS 400 's new 4 @. @ 0 liter 1UZ @-@ FE 32 @-@ valve V8 engine , capable of 190 kilowatts ( 250 hp ) and 353 newton metres ( 260 ft · lbf ) of torque , was linked to a new four @-@ speed automatic transmission with ECT @-@ i electronically controlled shifts , super @-@ flow torque converter and rear differential . The chassis used an independent , double @-@ wishbone suspension setup , and a passive air suspension system was optional . The LS 400 's 0 ? 100 kilometres per hour ( 62 mph ) time was 8 @. @ 5 seconds , and its top speed was 250 kilometres per hour ( 160 mph ) . Compared to the rival target BMW 735i ( E32 ) and Mercedes @-@ Benz 420 SE ( W126 ) , the LS 400 had a quieter cabin , with 58 dB at 100 kilometres per hour ( 62 mph ) ; a higher top speed ; a lower drag coefficient and curb weight ; and it avoided the U.S. Gas Guzzler Tax . At its introduction in 1989 , it won the Car of the Year Japan award .

The LS 400 was among the first luxury sedans to feature an automatic tilt @-@ and @-@ telescoping steering wheel with SRS airbag , power adjustable shoulder seat belts , and an electrochromic rear @-@ view mirror . The five @-@ passenger cabin included California walnut and leather trim , power @-@ adjustable seats , and soft @-@ touch controls . A back @-@ lit electroluminescent gauge cluster featured a holographic visual effect , with indicator lights projected onto the instrument panel . The memory system stored the driver 's seat , side mirror , steering wheel , and seat belt positions . Available luxury options included a Nakamichi premium sound system and an integrated cellular telephone with hands @-@ free capabilities . The LS 400 further contained some 300 technological innovations to aid smooth operation and silence , including fluid @-@ damped cabin fixtures , vibration @-@ insulating rubber mounts , airflow fairings , and sandwich steel body panels .

In Japan , the launch of Lexus was complicated by Toyota 's existing four domestic dealership networks at the time of its introduction . The Toyota Crown and Toyota Century were exclusive to Toyota Store locations . During the LS 400 's development , local dealers ' requests for a Japanese domestic market version had grown , and a right @-@ hand @-@ drive Toyota Celsior @-@ badged version was introduced shortly after the LS 400 's U.S. debut , and introduced 9 October 1989 and only available at Toyopet Store locations . The Celsior , named after the Latin word for " supreme " , was largely identical to the LS . Models came in either basic " A " , upgraded suspension " B " , or fully equipped " C " trim specifications . The Crown and the Crown Majesta , which appeared later in 1991 , were only available at Toyota Store locations which carried Japan @-@ only Toyota luxury models , like the Century . The Celsior introduced two world firsts : high @-@ performance twin @-@ tube shock absorbers and an air suspension combined with an upgraded version of Toyota 's semi @-@ active dampers Toyota Electronic Modulated Suspension , called Piezo TEMS . This was ahead of its time , Mercedes @-@ Benz first introduced a similar electronically controlled air suspension on the 1999 Mercedes @-@ Benz S @-@ Class ( W220 ) ( Airmatic ) .

Adding incentive for early U.S. sales was a base price of US \$ 35 @, @ 000 , which undercut competitors by thousands of dollars and brought accusations of selling below cost from rival BMW .

In December 1989 , shortly after the LS 400 's launch , Lexus ordered a voluntary recall of the 8 @, @ 000 vehicles sold so far , based upon two customer complaints over defective wiring and an overheated brake light . All vehicles were serviced within 20 days , and the incident helped establish Lexus ' customer service reputation . By 1990 , U.S. sales of the LS 400 had surpassed those of competing Mercedes @-@ Benz , BMW , and Jaguar models . Production of the first @-@ generation LS 400 totaled over 165 @, @ 000 units . Years after its introduction , the LS 400 remained a reliable choice for a used car , making Consumer Reports ' 2007 list of recommended vehicles that regularly last 320 @, @ 000 km ( 200 @, @ 000 mi ) or more with proper maintenance .

== = 1992 ? 1994 == =

Debuting in September 1992 as a 1993 model , the refreshed LS 400 ( designed in 1991 ) was

introduced with more than 50 changes , largely in response to customer and dealer requests . The vehicle received larger disc brakes , wheels , and tires , and adjustments were made to the suspension and power steering systems to improve handling . Stylistic changes included additional body side moldings and a revised grille , along with a greater selection of colors . For the interior , a standard passenger front airbag ( first Toyota @-@ built series production car available with passenger front airbag ) , an external temperature gauge , digital odometer , seat belt pretensioners , and chlorofluorocarbon @-@ free refrigerant were added . In 1992 , the Celsior introduced the world first GPS navigation system with voice instructions , supplied by Aisin . By 1994 , the LS 400 's U.S. base price exceeded US \$ 50 @, @ 000 , a figure that had steadily risen since the vehicle 's introduction . Customer demand for the vehicle and shifts in foreign exchange rates contributed to the increase in price . The growing popularity of the LS internationally was an asset to Toyota , as Japan had entered into an economic recession in 1991 , that later became what was called the collapse of the Japanese asset price bubble or " bubble economy " . Production of the first @-@ generation LS ended in September 1994 to make way for production of the second @-@ generation model in October .

= = Second generation ( XF20 ) = =

= = = 1994 ? 1997 = = =

The second @-@ generation Lexus LS 400 ( UCF20 ) debuted in November 1994 ( for the 1995 model year ) with a longer wheelbase and similar specifications as the original model . The public unveiling of the vehicle occurred in a gala ceremony held at the San Francisco Opera House in California . The sedan was equipped with an updated 4 @. @ 0 @-@ liter 1UZ @-@ FE V8 engine , producing 194 kilowatts ( 260 hp ) and 366 newton metres ( 270 ft · lbf ) of torque . Internally , over 90 % of the redesigned LS 400 's composition was new or redesigned , with increased sound insulation , a strengthened body structure , suspension updates ( first LS / Celsior with Skyhook adaptive computerized air suspension ) , and improved brakes . The redesigned model was 95 kg ( 209 lb ) lighter than its predecessor and achieved slightly better fuel economy . The 0 ? 100 kilometres per hour ( 62 mph ) time improved to 7 @. @ 5 seconds .

Development of the second @-@ generation LS 400 began after worldwide launch of the first generation . Given the first @-@ generation model 's successful reception and high level of customer satisfaction with its design , replicating the original LS 400 's attributes with its successor was one of chief engineer Kazuo Okamoto 's primary goals ( he stated that " a tradition cannot be founded if you reject the first generation " ) . Externally , the most significant change was an increase in wheelbase length of 36 mm ( 1 @. @ 4 in ) , resulting in more interior space and an additional 66 mm ( 2 @. @ 6 in ) of rear seat legroom . However , as the overall length remained the same , trunk capacity was slightly reduced . The more aerodynamic body ( Cd 0 @. @ 28 ) retained the general profile and contours of the original LS 400 and was the work of the Caltex Design Research center in the U.S. Designers had evaluated 20 competing concepts , including several with a radically changed body , before selecting a winning entry in 1991 that included forms and contours similar to the original LS 400 . Upon final approval in 1992 , an evolutionary redesign was the ultimate result , with new design features consisting of sharper angles , curved body lines , and a beveled grille . More prominent side lines provided a reference point for parking maneuvers , and forward visibility was improved . Production development lasted from 1991 until conclusion in the second quarter of 1994 .

The redesigned LS 400 interior received upgraded features , varying from dual @-@ zone climate controls to rear cupholders . A newly patented seat cushion design , similar to the car 's suspension , utilized lightweight internal coil springs and stabilizer bars to improve comfort . One of the first in @-@ dash CD changers was offered as an option . Safety enhancements included enlarged crumple zones , three @-@ point seat belts at all positions , and a new collapsible steering column . In Japan , the Toyota Celsior equivalents were offered in the same " A " , " B " , and top @-@ spec "

C " configurations as before , along with an additional selection of exterior colors . Several optional features , such as a compact disc @-@ based Global Positioning System ( GPS ) navigation system and reclining rear seats , were available only in Japan .

At its U.S. debut , the redesigned LS 400 retained a pricing advantage over European competitors in its largest market , launching with a base price of US \$ 51 @, @ 000 . However , cost differences had narrowed following more aggressive pricing and added feature content from rival manufacturers . To promote their new flagship , Lexus launched a US \$ 50 million advertising campaign , the most expensive marketing effort since the launch of the division . In mid @-@ 1995 , sales slowed as the U.S. government threatened tariffs on Japanese luxury cars over the widening U.S.-Japan trade deficit , potentially raising the price of a fully optioned LS 400 to over US \$ 100 @, @ 000 . Subsequent negotiations averted the sanctions by the second quarter of that year , and sales recovered in the following months . Ultimately , second @-@ generation LS 400 sales were not as voluminous as the original model ; production totaled approximately 114 @, @ 000 units .

Production of the UCF20 ran from October 1994 to July 1997 . For 1997 , a limited " Coach Edition " LS 400 was produced in partnership with American leather manufacturer Coach Inc . The edition featured Coach leather seats ; embroidered emblems on the exterior , floor mats , and armrest ; special colors and added trim ; and a Coach cabin bag . Production was limited to a yearly run of 2 @, @ 500 units .

== = 1997 ? 2000 == =

Designed in 1996 , in September 1997 a revised LS 400 was introduced for the 1998 model year . Changes were a five @-@ speed automatic transmission , increased engine output ( to 216 kilowatts ( 290 hp ) , with variable valve timing ( VVT @-@ i ) , and an added 41 newton metres ( 30 ft · lbf ) of torque . Acceleration times and fuel economy were improved as a result . The suspension and steering also received minor tweaks to improve feel and handling . Stylistically , the vehicle sported a new front fascia , side mirrors , and updated wheels ; a rear windshield diversity antenna replaced the conventional power mast . The cabin received upgrades , including a trip computer , HomeLink , retractable rear headrests , reading lamps , and ultraviolet @-@ tinted glass , while the climate control gained a micron filtration feature with a smog sensor .

In August 1997 , the first production laser adaptive cruise control on a Toyota vehicle was introduced on the Celsior version ( Japan only ) It controlled speed only through throttle control and downshifting , but did not apply the brakes . Because of laser technology limitations , it deactivated in bad weather .

A CD @-@ ROM @-@ based GPS automotive navigation system became an option in the U.S. Added safety features included front side airbags , vehicle stability control and in 2000 , brake assist . Introduced low beam HID headlamps . The headlights were also equipped with a programmable delay feature for proximity illumination . In February 2000 , the limited " Platinum Series " LS 400 was introduced at the Chicago Auto Show in partnership with American Express . The edition featured most luxury options standard , along with separate exterior colors , wheels , badging , and two years ' no @-@ fee use of an American Express Platinum Card .

= = Third generation ( XF30 ) = =

== = 2000 ? 2003 == =

The third @-@ generation Lexus LS 430 ( UCF30 ) debuted at the North American International Auto Show in January 2000 as a 2001 model , introducing a new body design and a host of new interior and technological features .

It was the first US market Lexus with adaptive cruise control ( called Dynamic Laser Cruise Control ) . It employed a lidar sensor and ( unlike the laser ACC introduced in 1997 on the Celsior ) was able to activate brakes for deceleration . However , because of laser technology limitations , it

deactivated in bad weather .

The sedan was equipped with a new 4 @. @ 3 liter 3UZ @- @ FE engine generating 216 kilowatts ( 290 hp ) and 434 newton metres ( 320 ft · lbf ) of torque . The LS 430 was one of the first gasoline V8 vehicles to be certified as an Ultra Low Emissions Vehicle ( ULEV ) . The standard suspension had been completely redesigned , with a double @- @ wishbone setup at all four wheels ; a Euro @- @ tuned suspension was offered for the first time . A new torque @- @ activated electronic control unit made throttle adjustments based on vehicle speed , engine revolutions per minute , and pedal position . The LS 430 sported a 0 ? 100 kilometres per hour ( 62 mph ) acceleration time of 6 @. @ 7 seconds . Sales began in October 2000 in the U.S.

Heading into the planning of the LS 430 , division executives concluded that the previous LS redesign had been too restrained in its approach . The LS 430 development team , led by chief engineer Yasushi Tanaka , accordingly opted for a more thorough exterior , interior , and technological redevelopment . The development of the LS 430 took four years . Selected from 16 different concept designs , the resulting vehicle of December 1997 ? when the final design ( by Akihiro Nagaya ) was approved ? saw the sedan 's dimensions increase in terms of wheelbase and height . The exterior featured a larger grille with rounded edges , quarter windows on the rear doors , and rounded trapezoidal headlamps . The body was also more aerodynamic than previous LS sedans ( Cd 0 @. @ 26 ; 0 @. @ 25 with air suspension ) , and was the product of wind tunnel testing at facilities used for Shinkansen bullet train development . A 76 mm ( 3 @. @ 0 in ) wheelbase stretch resulted in more interior volume and allowed the engine to be positioned further aft for better balance . Trunk space was increased by one @- @ third due to repositioning of the fuel tank .

Compared to previous generations , the LS 430 featured a greater number of model configurations and options . While sharing the same body style , variants were differentiated by chassis configuration and onboard equipment . Models with the Euro @- @ tuned sport suspension , sold as the " Touring " package in the U.S. , featured larger , high @- @ speed brakes . These brakes were also standard on European market models . Fully optioned models with height adjustable air suspension , tuned for a combination of soft ride and responsive handling , were sold in the U.S. as the " Ultra Luxury " edition .

The LS 430 interior featured walnut wood trim on the dashboard and upper doors , along with semi @- @ aniline leather and oscillating air conditioning vents .

The GPS navigation system was totally redesigned . A liquid crystal display with touchscreen on the upper center console served as interface . First LS with voice controlled navigation . First system featuring DVD ( instead of CD @- @ ROM ) maps on a luxury sedan .

Introduced a Mark Levinson premium sound system . In its highest trim specification , the LS 430 included Lexus Link telematics , power door and trunk closers , heated and cooled front seats , and power reclining massage rear seats equipped with audio controls , power sunshade , a cooler , and air purifier . Several rear seat features adopted for the LS 430 had been previously available in Japanese market luxury vehicles . Safety features added to the LS 430 included front and rear side curtain airbags , park sensors , rain @- @ sensing windshield wipers , and electronic brakeforce distribution . The vehicle also gained water repellent windshield and side glass .

The LS 430 first went on sale in the U.S. with an initial base price of US \$ 55 @, @ 000 , ranging up to US \$ 70 @, @ 000 when fully equipped . At the high end , the LS 430 's pricing encroached on European rivals as Lexus became increasingly able to command higher price premiums for its vehicles . Sales for the LS 430 surpassed the previous generation , and production exceeded 140 @, @ 000 units . The LS 430 was produced until July 2006 , marking the last occasion the Lexus flagship was produced in a single body style . In Japan , the equivalent Toyota Celsior was also sold from August 2000 until March 2006 , when the long @- @ awaited introduction of Lexus Japan saw the arrival of new generation Lexus models . XF30 design patents were filed by Toyota in domestic Japan , on 8 March 1999 at the Japan Patent Office under patent number 1080448 .

In every year of production , the LS 430 was the most reliable luxury sedan in the J.D. Power and Associates Initial Quality Survey ( with the early and late models of this series the best performing ) , and the highest recorded scorer in the history of J.D. Power 's Vehicle Dependability Survey .

Thatcham ratings data via the UK Motor Insurance Repair Research Centre listed the theft @-@ prevention capabilities of the LS 430 as a maximum 5 stars , with the LS 430 being the first automobile to achieve the maximum theft @-@ deterrence rating in 2001 .

= = = 2003 ? 2006 = = =

Designed throughout 2002 , the LS 430 update debuted in September 2003 as a 2004 model .

The first radar ( instead of previous lidar ) sensor on a Lexus sedan allowed the new Dynamic RADAR Cruise Control to work in any weather conditions . The millimeter @-@ wave radar technology also enabled the first Pre @-@ Collision System ( PCS ) on a Lexus sedan ( with partial autonomous braking only on the Japanese market Toyota Celsior version ) . A " low @-@ speed tracking mode " was added in 2004 . The low @-@ speed speed tracking mode was a second mode that would warn the driver if the car ahead stopped and provide braking ; it could stop the car but then deactivated .

Introduced a new six @-@ speed automatic transmission and revised styling . The powerplant remained the same as before . Exterior changes included restyled front and rear fascias , light @-@ emitting diode ( LED ) taillights , and different wheels .

Debuted the first Lexus high @-@ intensity discharge headlights for the high beam ( Bi @-@ Xenon ) , and also the first AFS adaptive curve headlights , which swiveled the projector headlamps in the direction of vehicle turns .

The interior received knee airbags , lighted rear @-@ seat vanity mirrors , and new trim selections , including bird 's eye maple wood . New options included an updated navigation system , Bluetooth , a backup camera , . A driver @-@ programmable electronic key feature allowed the vehicle to detect the key fob in the owner 's pocket and unlock the doors by touch .

= = Fourth generation ( XF40 ) = =

= = = 2006 ? 2009 = = =

Development on fourth generation LS began in 2001 , with the design process being done under Yo Hiruta from 2002 to 2004 when the final production design was frozen . In October 2005 , Lexus premiered a gasoline @-@ electric hybrid concept car , the LF @-@ Sh ( Lexus Future @-@ Sedan hybrid ) , at the Tokyo Motor Show , publicly previewing the next Lexus flagship with a concept version for the first time . Introduced at the January 2006 North American International Auto Show for the 2007 model year , the fourth @-@ generation Lexus LS became the first Lexus model to be produced in both standard and long @-@ wheelbase versions . Using an all @-@ new platform , the LS 460 ( USF40 ) uses the standard 2 @,@ 969 mm ( 116 @.@ 9 in ) wheelbase , while the LS 460 L ( USF41 ) features a stretched 3 @,@ 091 mm ( 121 @.@ 7 in ) wheelbase . The fourth @-@ generation models ' technical specifications were shown in greater detail at the Geneva Motor Show in February 2006 . A hybrid version , LS 600h L ( UVF46 ) , was previewed at the New York International Auto Show in April 2006 . At its introduction in 2006 , it won the Car of the Year Japan award for the second time .

The LS 460 and LS 460 L are both equipped with a new 4 @.@ 6 liter 1UR @-@ FSE V8 producing 283 kilowatts ( 380 hp ) and 498 newton metres ( 367 ft · lbf ) of torque , coupled to the first production eight @-@ speed automatic transmission . Acceleration from 0 ? 100 kilometres per hour ( 62 mph ) is listed at 5 @.@ 7 seconds .

The development of the LS 460 and its variants , led by chief engineer Moritaka Yoshida , began as Lexus was shifting its design strategy towards a more diversified product lineup , with new @-@ vehicle launches largely focused on global markets . Plans called for the next @-@ generation LS to differentiate itself further beyond previous models in terms of design and technology . A " Super LS " model , priced above the US \$ 100 @,@ 000 ultra @-@ luxury category , was also considered . Externally , the Lexus LS received the styling cues of Lexus ' new design direction , called L @-@

finesse . First shown on the LF @-@ Sh concept , the vehicle gained body forms running the length of the car , wheel arches , arrow @-@ shaped chrome trim , a lower @-@ set grille , and crystalline adaptive headlamps .

The LS 460 interior gained a push @-@ button start , thin @-@ film transistor instrument display , and numerous luxury options , ranging from a hard disk drive @-@ based GPS navigation system and song library to a heated steering wheel and XM NavTraffic . Standard equipment included power 16 @-@ way driver and 12 @-@ way front passenger seats with lumbar adjustment and seat heaters , leather upholstery , premium sound system , power moonroof , and trunk pass @-@ through . The climate control offered the first infrared body temperature sensors in an automobile ; it also featured ceiling air diffusers . An " Executive " seating package on the LS 460 L included a rear @-@ seat DVD entertainment system , swivel tray table , and a shiatsu massaging ottoman seat .

It was the first LS with continuous controlled Adaptive Variable Suspension AVS . The addition of an automated parallel parking assist feature , the first of its kind in the U.S. , allowed the LS 460 to steer itself into preselected parking spaces . Other drive @-@ assist features included a brake @-@ hold system , radar cruise control , electric variable gear ratio power steering , and electronically controlled braking . The new stability control system was improved to anticipate skids and alter steering assist and gear ratios . The suite of new safety features extended from an eye @-@ tracking Driver Monitoring System to a lane departure warning system . The pre @-@ collision system added the first production image processing chip in a car capable of identifying vehicles and pedestrians in real time , along with millimeter @-@ wavelength radar , stereo cameras , and infrared night vision projectors . A rear pre @-@ collision system with whiplash @-@ preventing active seat headrests and dual @-@ chamber front airbags was also introduced .

The LS 460 and LS 460 L arrived at dealerships in Japan , the U.S. , and Europe in late 2006 , and the vehicle reached Australia , East Asia , and the Middle East in 2007 . The U.S. base prices for the 2007 LS 460 and LS 460 L were US \$ 61 @,@ 000 and US \$ 71 @,@ 000 , respectively . In 2006 and 2007 , the average price paid for U.S. market LS 460 L sedans exceeded US \$ 80 @,@ 000 , due largely to added options packages , placing the Lexus LS in the same average price range as its long @-@ wheelbase Audi , BMW , and Jaguar rivals for the first time .

After debuting a hybrid powertrain with the 2005 LF @-@ Sh concept , Lexus began sales of the LS 600h L ( UVF46 ) , the first production V8 @-@ powered full @-@ hybrid vehicle , in May 2007 for the 2008 model year . The long @-@ wheelbase LS 600h L is equipped with Lexus Hybrid Drive , featuring a 5 @. @ 0 liter 2UR @-@ FSE V8 engine mated to a high @-@ output electric motor with nickel @-@ metal hydride battery packs . This system uses a continuously variable transmission and generates an output of 327 kilowatts ( 439 hp ) . Fuel economy is slightly higher overall than the lower @-@ powered non @-@ hybrid LS , and the hybrids achieve a U.S. Super Ultra Low Emission Vehicle ( SULEV ) rating . Features specific to the LS hybrids include the first production low beam LED headlights , a leather @-@ trimmed dash , and blue @-@ tinted hybrid badging . In April 2007 , Lexus announced that the base price for the LS 600h L would be over US \$ 104 @,@ 000 , surpassing the V12 @-@ equipped Toyota Century as the most expensive Japanese luxury car ever produced . A standard @-@ wheelbase version destined for Asia and Europe , the LS 600h ( UVF45 ) , was launched in Japan in May 2007 . The first 100 LS 600h L sedans sold in the U.S. were offered as " Launch Edition " models via the Neiman Marcus catalog for InCircle members .

In 2008 , all @-@ wheel drive versions of the non @-@ hybrid LS 460 ( USF45 ) and LS 460 L ( USF46 ) models premiered at the Moscow International Motor Show . Debuting at the 2008 Pebble Beach Concours d 'Elegance , the LS 600h L " Pebble Beach Edition " , limited to 50 units , was produced in partnership with the Pebble Beach Company . A specialized Lexus LS 460 was installed as a driving simulator at Toyota 's Higashifuji Technical Center , in Shizuoka , Japan , for automotive safety testing , and in 2009 at Tokyo 's Intelligent Transport Systems ( ITS @-@ Safety ) exhibition , the LS 460 ITS @-@ Safety concept was unveiled showing road @-@ to @-@ vehicle and vehicle @-@ to @-@ vehicle information @-@ exchange technologies .

== = 2009 ? 2012 == =

Debuting in late 2009 for the 2010 model year , the revised LS 460 and LS 460 L included restyled front and rear fascias , side mirror turn signals , and new wheel designs . New technology included automatic high beam lights and a self @-@ repairing clear coat for the exterior paint . The standard cabin received additional chrome trim , an optional DVD entertainment system behind the center armrest , and in certain markets , an all @-@ digital instrument panel with night vision capability . The LS 460 Sport ? a performance variant equipped with a sport @-@ tuned air suspension , Brembo brakes , forged wheels , paddle shifters , body kit , and a unique interior ? was added . The Sport model received the Sport Direct Shift transmission , also found in the Lexus IS F , with downshift rev @-@ matching capability and manual mode . A new interior customization program , " L @-@ Select " , also became available for LS customers in Japan .

= = = 2012 ? present = = =

Lexus released an official photograph of its restyled XF40 series in July 2012 . The substantial update incorporates the new Lexus corporate fascia , comprising the " spindle " grill and consequently sees the fitment of a redesigned hood , reshaped front fenders and headlamps , plus a new bumper . These styling revisions see the retention of the side profile and doors , including rear fenders . Thus , the newly designed tail @-@ lamps , trunk lid , and rear bumper are only partially modified . For the first time , an F @-@ Sport variant will be offered . ' Nanoe ' technology is used in the air conditioning system where 20 ? 50 nm ions are bonded to water molecules .

= = Manufacturing = =

The Lexus LS has been consistently produced on dedicated Lexus assembly lines at Toyota 's flagship Tahara factory , located in the city of Tahara , in Aichi Prefecture , Ch?bu region , southwest of Nagoya , since 1989 . Tahara remains the sole production site , having inaugurated its new line number four specifically for assembly of the original LS 400 .

For the Lexus LS , the Tahara plant developed new molds and enhanced assembly techniques and instituted measures aimed at increasing the precision of the sedan 's fit and finish . The 1989 LS 400 became the first production automobile to receive extensive laser welding , allowing for seamless steel welds . A large sheet metal press was developed to reduce or eliminate panel gaps by stamping large sections whole instead of singly . Separately installed parts , such as exterior lights , were also spring @-@ loaded for a tighter fit . On the LS 400 , engineers reduced door panel gaps in half versus Toyota @-@ brand vehicles , from 7 mm ( 0 @.@ 28 in ) to 4 mm ( 0 @.@ 16 in ) , with measurements made within 0 @.@ 01 millimetres ( 0 @.@ 00039 in ) ; on the LS 430 , measurement margins were increased tenfold , to 0 @.@ 001 mm ( 3 @.@ 9 x 10 ? 5 in ) . When production switched to the LS 460 , the number of laser welds was doubled .

Despite Tahara 's large @-@ scale automation , Lexus LS production also involves specialized personnel who are tasked with key production points , such as testing each vehicle 's V8 engine via dynamometer and stethoscope for calibration before installation . With the LS 460 , a hand @-@ sanded paint process was introduced . The production standards used on the Lexus LS were eventually adopted by the manufacturer for other vehicles ; in 2007 , the assembly of Toyota Corolla economy cars used the same panel gap measurements as the LS 400 did eighteen years earlier .

= = Industrial significance = =

The Lexus LS marked the first successful entrant of a Japanese manufacturer into the prestige luxury arena , a market that had long been dominated by established European and American brands . By 1991 , with the LS 400 its top @-@ selling model , Lexus had overtaken Mercedes @-@ Benz and BMW in overall U.S. sales , and in 2000 , the marque passed Cadillac as the luxury sales leader in the largest automotive market . Rival manufacturers responded with lower prices and added features . In particular , Mercedes @-@ Benz reorganized its operations , shifting to a targeted @-@ cost process similar to Lexus production methods , and dropped competing U.S.



base prices by nearly 10 percent . To rival the LS 400 , extra features were rushed for the launch of the 1991 Mercedes @-@ Benz S @-@ Class ( W140 ) , causing budget overruns and costing the job of Daimler @-@ Benz 's chief engineer , Wolfgang Peter . Approximately 5 percent of 1989 LS 400 sales went to buyers employed by rival manufacturers , including GM , Ford , and Chrysler . When the LS 400 was disassembled for engineering analysis , Cadillac engineers concluded that the vehicle could not be built using existing GM methods . Industry publications noted the LS 400 's precise panel gaps , and the subject became a common evaluation standard in road tests . The LS 430 's interior noise level was later used by rival makes as a measure of cabin quiet .

According to industry observers , the introduction of the Lexus LS reshaped Toyota 's image from that of an " econobox " manufacturer to the builder of an automotive standard bearer . This stood in contrast to the predictions of early detractors , including rival manufacturers who dismissed Toyota as incapable of producing a competitive luxury vehicle . Japanese contemporaries from the luxury divisions of Honda ( Acura ) and Nissan ( Infiniti ) had differing degrees of success . Honda had entered into a joint venture with Britain 's Austin Rover Group in November 1981 , launching Project XX with an Austin Rover ? Honda XX letter of intent to replace the Rover SD1 with the Rover 800 and to provide a midsize , V6 @-@ powered luxury sedan for Honda , called the Honda Legend . Marketed as the Acura Legend in the U.S. , the sedan initially sold well , but subsequent models ( renamed Acura RL ) performed below sales expectations . Launched by Nissan in December 1989 , the V8 @-@ powered Infiniti Q45 closely rivaled the LS 400 in specifications and price , but was unsuccessful in sales ( attributed to unconventional styling and marketing ) , leading to its discontinuation in 2006 . The success of the Lexus LS became a test case for mainstream manufacturers targeting upscale segments . By investing in a separate marque , Toyota was able to avoid the stigma attached to a mass @-@ market brand 's charging premium prices . The effect of the LS 400 on the automotive industry led Automobile Magazine to add the sedan to its " 24 Most Important Vehicles of the 20th Century " list in 1996 .

= = Lexus LF @-@ FC concept = =

The Lexus LF @-@ FC Concept , first shown at the 2015 Tokyo Motor Show previews the next generation LS flagship sedan . The front of the concept is dominated by Lexus 's signature " spindle grille " and the entire car has an aggressive angular design .

= = Sales and production = =

In its largest market , the U.S. , the Lexus LS was the top @-@ selling flagship luxury sedan for 15 of the first 17 years following its debut . In Japan , the next @-@ largest market for the Lexus LS , the introduction of the 2007 LS 460 attracted 12 @,@ 000 pre @-@ orders , and the Lexus LS has gone on to sell successfully in its class . Following the introduction of the LS 460 and Lexus ' expanded global launch in 2007 , sales of the Lexus flagship have increasingly come from outside the brand 's traditional U.S. strongholds . By 2007 , the Lexus LS ranked second globally in flagship sales , next to the Mercedes @-@ Benz S @-@ Class ' 85 @,@ 500 units , with 71 @,@ 760 Lexus LS sedans sold worldwide , and over half the total coming from outside the U.S. market . In 2008 , U.S. sales fell 42 % amidst the late @-@ 2000s recession , mirroring the overall decline of the luxury car market .

The Lexus LS has not sold as well in Europe , where Lexus suffers from smaller brand recognition , image , and a less @-@ developed dealership network . In European markets such as the Czech Republic , the Lexus LS has ranked behind Mercedes @-@ Benz , Audi , and BMW in flagship luxury car sales . Automotive analysts have suggested a possible rationale for the sales disparity , in that European buyers place less emphasis on vehicle reliability and have more brand loyalty to established domestic marques . In contrast , the Lexus LS has ranked second in sales to the Mercedes @-@ Benz S @-@ Class ( and ahead of rivals from BMW , Audi , and Jaguar ) in markets outside Europe , such as South Africa .

= = Technical specifications = =

= = Awards = =

Notable examples of awards received by the Lexus LS include ( 2007 ) World Car of the Year , International Car of the Year , ( 1991 ) Canadian Car of the Year , Wheels Car of the Year , and Top Gear Limousine of the Year . The Lexus LS has been the highest @-@ rated luxury car in Automobile Magazine , Car and Driver , Consumer Reports , Fleet World , and MotorWeek . In J.D. Power 's long @-@ term Vehicle Dependability Study , the Lexus LS has been the most reliable car for fifteen consecutive years , the most for any manufacturer , and Consumer Reports has ranked the sedan as the most reliable vehicle tested . Safety awards include Auto Bild 's 2007 Innovation Prize for the LS 460 pre @-@ collision system , consecutive first place rankings in the What Car ? Security Supertest , and Kiplinger 's " Best in Safety for Cars \$ 40 @,@ 000 and Over " . Technical honors range from Ward 's 10 Best Engines , and Edmunds.com 's " Best Sound System in Cars Over \$ 30 @,@ 000 " .

In U.S. consumer publications , Lexus ' flagship model is recognized as one of the most reliable vehicles ever built , having held the top ranking in J.D. Power and Associates ' U.S. Vehicle Dependability Survey for fifteen consecutive years ( 1994 ? 2009 ) , again in 2012 , third place in 2013 , and top again in 2014 .