All-New Lexus LC Performance Coupe Opens New Chapter in Brand History

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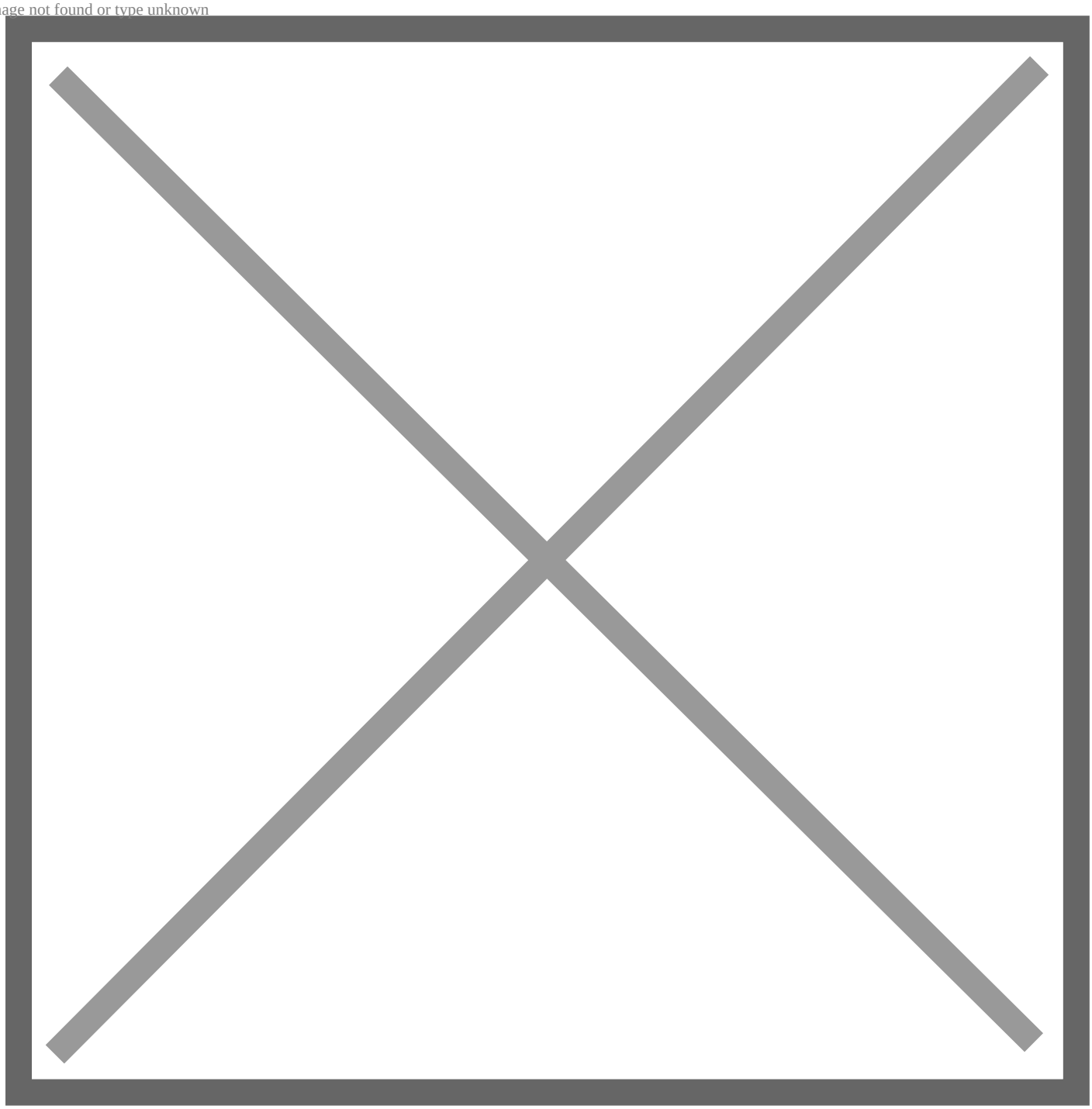

The emotional designs and high-performance models issued by Lexus in the last few years prefaced a new chapter for the brand, one that begins now with the arrival of the 2018 LC flagship performance coupe. A concept car come to life, the Lexus LC combines stunning design, scintillating performance, long-distance comfort and premium craftsmanship to join an elite group of international grand touring coupes.

The Lexus LC 500 makes the strongest statement yet about the brand's future direction. Previewed by the LF-LC concept in 2012, the Lexus LC debuted as a production model at the 2016 North American International Auto Show in Detroit. This spring it arrives in Lexus dealerships as the V8-powered LC 500 with an MSRP of $92,000 and the LC 500h with a new Multi Stage Hybrid powertrain at an MSRP of $96,510. Toyota Motor Corporation president, Akio Toyoda, who is also Chief Branding Officer and master driver for Lexus, inspired development of the LC. Focused on offering more emotional and exciting vehicles for global markets, he called for a flagship production coupe echoing the spirit of the hand-built Lexus LFA supercar and delivering the visual impact of the Lexus LF-LC concept.

Provocative, Elegant and Purely Lexus

Debuting at the 2012 North American International Auto Show in Detroit, the Lexus LF-LC was a true concept, not a thinly disguised pre-production prototype. The LF-LC won the EyesOn Design award for Concept Car and stirred many to question whether Lexus would build it.
Turning the LF-LC concept into a production model while remaining faithful to its visual excitement required nothing less than a new development process, combining design and engineering disciplines as never before at Lexus. The process yielded an entirely new platform for the LC, called GA–L (Global Architecture – Luxury), which also forms the foundation for the all-new 2018 LS flagship sedan and will underpin future front engine/rear-wheel drive Lexus models. The platform was designed with a lower center of gravity to aid agility and driving pleasure and to enable more alluring vehicle designs. The production LC preserves the concept's adventurous appearance, and the design itself helped achieve performance targets, especially with regard to low center of gravity, aerodynamics and high-speed stability. It's also a trophy winner, having won the EyesOn Design awards for Design Excellence – Production Car and Interior Design.

Lexus Identity

Immediately identifiable as a Lexus thanks to its hallmark spindle grille and dynamic character lines, the 2018 LC represents the most passionate expression of the brand's design direction. The grille itself features a unique mesh texture that changes visual tension as it spreads across the front of the car. Independent L-shaped daytime running lights beneath new ultra-compact Triple LED headlamps create the distinctive LC front lighting signature. Functional venting serves aerodynamic stability and cooling. The combination of a large glass panel and blacked-out rear pillars creates a floating roof appearance, and chrome-plated moldings along the edges, which echo the lines of a traditional Japanese sword, amplify the effect. One can, however, order an optional carbon fiber reinforced plastic (CFRP) roof in place of the glass.

The body's substantial, "planted" look stems from prominent quarter panels that flare away from the center of the car and door panels that are pulled inward. The flowing lines maintain a consistent tension in the body panels through to the rear, where very slim tail lamps use mirrors to create a three-dimensional sequence of L-shaped graphics. The sweeping roofline tapers rearward between muscular, sloping fender tops, underscoring the car's wide and stable stance, and the Lexus spindle shape is repeated in the rear fascia. Large ducts feed air into the rear wheel arches, the airstream exiting smoothly across the tire sidewall to bolster straight-line stability and steering responsiveness.

The underbody is almost completely smooth, and even the rear muffler, angled like a diffuser, plays a role in aerodynamic performance. The available active rear spoiler automatically deploys when vehicle speed rises

above 50 mph, reducing lift to enhance high-speed stability.

LC 500: High-Output V8 with Sound and Fury

The Lexus LC offers a choice no other premium coupe does: the LC 500 with a high-performance V8 or LC 500h with a new-generation Multi Stage Hybrid powertrain. In both, the focus is driving excitement, with the LC 500h offering higher fuel efficiency associated with the world's luxury hybrid leader. Upon startup, exhaling through the variable Active Exhaust, the 5-liter naturally aspirated V8 issues a clarion call to driving enthusiasts. Based on the engine in the Lexus GS F an RC F high-performance models, the LC 500 version raises the output to 471 hp and 398 lb.-ft. of peak torque. The LC 500 can sprint from zero to 60 mph in less than 4.5 seconds. It's a well-proven performance engine, with a low-mass reciprocating assembly using lightweight forged connecting rods, along with titanium intake and exhaust valves to allow a 7,300-rpm redline. The 32-valve cylinder heads, equipped with performance-tuned Variable Valve Timing (VVT-iE), take full advantage of the engine's low internal friction and aggressive
valvetrain specs. The D-4S injection system uses direct fuel injection that allows a high compression ratio (12.3:1), augmented by port fuel injectors to enhance low-speed response. Under acceleration, the LC 500 V8 reveals its character in a continuously rising power curve, with the 471 hp developed at 7,100 rpm and the torque peak sustained from 4,800-5,600 rpm. The fast-revving V8 issues a stunning soundtrack amplified by a special resonance tube connecting the intake to the firewall, plus a standard Active Exhaust that rumbles and roars like a high-performance GT should. The driver can adjust the natural exhaust sound level via the Drive Mode Select system. The V8 is a good citizen, too, switching to the Atkinson cycle to enhance fuel efficiency at cruising speeds and Otto cycle for higher performance levels when accelerating.

10-Speed Transmission

The Lexus LC 500 debuts the first 10-speed automatic transmission for a luxury automobile. Smaller and lighter than some 8-speed units, this new transmission executes shifts at speeds rivaling dual-clutch transmissions, yet with the seamless performance and smoothness of a torque converter automatic. Very quick downshifts eliminate lag in G response. The LC 500 allows manual shifting via magnesium paddles. Even drivers who pride themselves on making expertly timed shifts, however, will find the advanced electronic control system, which anticipates the driver's inputs by monitoring acceleration, braking and lateral-g forces, always chooses the ideal ratio. Torque converter lock-up engages in all ranges except when starting off to provide a direct feel and also aid fuel efficiency. With the Drive Mode Select feature, the LC driver can set the vehicle's performance responses according to the driving situation. SPORT S+ extracts the most from the powertrain and transmission shifts and also fully opens the baffles in the Active Exhaust under acceleration.

The Next-Generation Hybrid

Lexus, which introduced the world's first luxury hybrid 13 years ago, developed a new Multi Stage Hybrid System specifically for the LC 500h. Like other Lexus hybrid configurations, the Multi Stage Hybrid System teams the gasoline engine with two electric motor/generators, but similarities end there. The Atkinson-cycle 3.5-liter V6 gasoline engine uses D-4S direct fuel injection, and lightweight valvetrain components allow a 6,600-rpm redline, with Dual VVT-i ensuring ample torque across the engine speed range. The new system keeps the planetary-type continuously variable transmission from Lexus Hybrid Synergy Drive and also adds a unique four-speed automatic transmission. Working in concert, the two gearsets alter output in four stages to utilize the V6 engine across the entire speed range. In M mode, the two gearsets act together to provide the effect of 10 ratios, giving the LC 500h a highly engaging driving feel and allowing the driver to shift through the ratios with paddle shifters. In automatic mode, AI shift control matches gear selection to driving conditions and driver inputs. The Multi Stage Hybrid System allows for more electric assist at lower vehicle speeds, and it enables the LC 500h to operate with the gasoline engine off at speeds of up to 87 mph.

Combined system output is 354 hp, yet that figure does not fully indicate the LC 500h's performance potential. In a conventional full hybrid vehicle, engine output is amplified by the electric motor via a reduction gear. With the new Multi Stage Hybrid System, the power from the V6 engine and the electric motor can be amplified by the 4-speed automatic transmission, generating much greater drive power when accelerating. The LC 500h is the first Lexus hybrid that can spin its rear wheels. It is also the first Lexus hybrid to use a compact, lightweight lithium-ion battery. The battery pack fits neatly between the rear seats and the luggage compartment and has a high power density, with its 84 cells producing 310.8 volts.

The (Light) Material World

The LC 500 exhibits razor-sharp reflexes, exceptional handling balance and rock-solid stability. Rock solid could also describe the stiffest unibody Lexus has ever produced. The strategic use of lightweight, high-strength steels yield a structure that is more resistant to twisting forces than even the exotic, carbon fiber-intensive LFA supercar. The combination of high-strength steels, aluminum and CFRP, along with deleting a spare tire in favor of run-flat tires and moving the 12v battery to the trunk area, helps yield 52:48 weight distribution (LC 500h). Perhaps more critically than that figure alone reveals, the engineers followed an "inertia spec" to locate as much mass as possible toward the center and lower in the chassis to improve the center of gravity. The drivetrain mass is located behind the front axle line to create a front mid-ship layout; the driver hip and heel points are lowered, and wheels are pushed to the corners. The low center of gravity enabled Lexus to reduce the LC 500's roll angle without making the suspension too stiff, which would hurt ride comfort. Aluminum is used for the hood, front fenders and door skins, with the inner panels of the doors and trunk made from CRFP sheet-molding compound. Only the rear fenders are steel. To produce the optional carbon fiber roof with its twill weave effect, Lexus employs a new, high-speed resin transfer molding process, developed at the Motomachi factory from a technique originally used in production of the LFA supercar. Raw carbon fiber material is inserted into a mold and clamped in place before the injection of the resin, a process that enables volume production.

Another new technique is used for combining aluminum with steel to help save weight in key areas, notably the front suspension towers. The use of self-piercing riveting allows these different metals to be securely joined where traditional welding methods are unsuitable.

A Chassis with Sports Car Moves

Achieving sports car handling with a high degree of ride comfort, while maintaining the low hood height, was a particularly demanding challenge. The solution was a double ball joint front suspension that allows for control of the smallest movements from driver inputs and the road surface, yielding more precise steering response with better initial effort. All but one of the control arms are made of lightweight forged aluminum, reducing unsprung weight and improving suspension response. The LC driver will feel the effectiveness of the suspension design in the immediate response at initial turn-in, controlled body motion and precise, linear response that create a rhythmical and smooth driving experience. The LC 500's electric power steering (EPS) gives a natural feel, while yielding high handling precision.

"We spent more than triple the usual amount of R&D time to pursue linear steering and to find the sweet spot for road contact feel," said LC Chief Engineer Koji Sato. Those seeking an even wider handling envelope can opt for the available Lexus Dynamic Handling system (LDH), which coordinates EPS with Variable Gear Ratio Steering (VGRS) and Active Rear Steering (ARS). Both LC models offer the same 20- or 21-inch wheels and Michelin Pilot Super Sport or Bridgestone Potenza S001 run-flat tires. Tire sizes are 245/45RF20 front and 275/40RF20 rear with 20-inch wheels, and 245/40RF21 front and 275/35RF21 rear with 21-inch wheels. The runflat tires' increased lateral stiffness complements the LC's highly rigid suspension, while reduced vertical stiffness aids ride comfort. Improved rolling resistance allows the tires to make a contribution to

the vehicle's overall fuel efficiency. The high-performance braking system employs 6-piston front brake calipers and 4-piston rear calipers.

A New Benchmark for GT Cabins

The ideal grand touring coupe cabin must strike a balance between function and comfort, sporting intent and luxury. The Lexus LC hits that note with an intuitive layout and an optimal seating position that set the stage for spirited driving. The design places the driver's hip point as close as possible to the car's center of gravity, where feedback from the car is the most communicative to the driver.

The low instrument panel position, together with the low hood line and narrow A pillars, give the low-seated driver a commanding view of the road. All driving controls are easy to reach without altering one's posture. Lexus positioned the information displays at the same height, to reduce the degree of eye movement required to read them. The instrument binnacle houses the latest version of the thin film transistor (TFT) display technology introduced in the Lexus LFA supercar, including a moving central ring.

Comfort and luxury are no less thorough. The LC's exclusive seats feel as good as they look, with a new two-part construction technique where the main part of the seatback drapes the over the shoulder area and then wraps around the seat back. Bolsters in the shoulder area help hold the driver securely in cornering maneuvers, and the available sports seats feature even more substantial bolsters.

Details help make the LC an exemplary driver's car. For example, the steering wheel cross section changes around its circumference to allow for variations in grip and twisting of the wrist, and large, substantial feeling magnesium alloy paddle shifters are easily hooked by the fingertips. The front passenger has not been ignored; the side of the center console rises to form an integrated grab handle. With function, there is also beauty and impeccable craftsmanship. The flowing lines of the door panels serve as an extension of an exterior line that flows from the hood and through the windshield to build a sense of continuity between the exterior and interior. Available interior color schemes for the LC include new Bespoke White and Toasted Caramel, together with Rioja Red and Black finishes seen in other Lexus models. The quality and finish of the upholstery, trim materials and detailing reflect the Takumi craftsmanship and fine attention to detail for which Lexus is renowned. It can be seen and felt in the hand stitching of the leather-wrapped gearshift lever and the draping treatment of the Alcantara door panel trim, among numerous other details.

Multi-talented Multimedia

The Lexus LC 500 cockpit artfully integrates the brand's latest audio, navigation and connectivity technologies, making them easily accessible. The new Lexus multimedia package combines an inviting graphic user interface with software that enables future enhancements, and the center console features the latest-generation Remote Touch Interface touchpad control, with quick and intuitive operation. As thrilling as the LC sounds from the outside, Lexus also ensured that sounds inside the cabin would delight those with a fine ear for musical detail. A new 12-speaker Pioneer surround sound system comes as standard equipment and uses an 8-channel Class-D amplifier. Instrument panel speakers combine direct and reflected sound to create an immersive soundscape. Lexus' industry-exclusive 15-year partnership with Mark Levinson has yielded an optional reference-quality 13-speaker system tailored to the LC cabin. Clari-Fi music restoration technology enhances playback by automatically analyzing and improving the sound quality of compressed, digitized music sources.

Lexus Safety System+

Both versions of the LC are equipped as standard with Lexus Safety System+, an array of active safety features that can help the driver avoid an accident, or help lessen the consequences of a collision. The system uses a camera and millimeter-wave radar to monitor the road ahead for potential hazards and collision risks. This combination provides the LC with a Pre-Collision System with Pedestrian Detection, which is designed to detect vehicles and pedestrians under certain conditions; All-Speed Dynamic Radar Cruise Control; Lane Departure Alert with Steering Assist and Vehicle Sway Warning, and Intelligent High Beam system (IHB).