

What's New: 2019 Lexus LS

New Standard Features:

- Lexus Safety System+ 2.0
- Amazon Alexa and CarPlay® functionality
- Lexus Enform Remote (smart watch and Amazon Alexa skill integration)

New Optional Features:

- Lexus Safety System+ A now includes Lane Change Assist (LCA)
- White interior available on Luxury model with Mark Levinson
- 20-inch Vapor Chrome wheels available on Executive model

Color Changes:

- Satin Cashmere Metallic added

PLANO, TX – In their first year on the market, the Lexus LS 500 and LS 500h introduced a new generation of luxury in the flagship sedan segment. For 2019, the LS raises the standard again with the addition of new safety features, updated technology and a wider palette of available exterior and interior colors.

Already equipped with one of the most technologically advanced safety systems in the industry, the 2019 LS adds the Lexus Safety System 2.0 as standard equipment. LSS+ 2.0 adds daytime bicyclist detection and low-light pedestrian detection along with Road Sign Assist (RSA) and Lane Tracing Assist (LTA) to further expand the scenarios in which the LS is designed to provide additional safety to the driver and passengers.

Daytime bicyclist detection is part of an enhanced Pre-Collision System (PCS). Previously designed to detect a preceding vehicle or pedestrian, the Pre-Collision System now has the potential to detect a preceding bicyclist as well. The PCS has also been enhanced to help detect a preceding pedestrian in certain low-light situations by increasing the camera's sensitivity and dynamic range.

Road Sign Assist (RSA) displays select road sign information in the instrument panel (and head up display if equipped) while the Lane Tracing Assist (LTA) system is designed to detect lane markings to determine lane position and place the vehicle in the center of the lane when working in conjunction with the All-Speed Dynamic Radar Cruise Control. If road markings are not detected, LTA is also capable, in certain conditions, of following the car ahead of it.

The optional Lexus Safety System +A, a feature exclusive to the LS, also adds a new Lane Change Assist (LCA) feature. When activated by the driver with the Dynamic Radar Cruise Control (DRCC) engaged, the LCA system will determine if a safe lane change can be made and then actively steer the vehicle into the next lane if it is clear to do so.

Additional Technology for Connected Drivers

All LS models for 2019 come standard with Apple CarPlay® functionality that allows guests to access the same familiar interface of their iPhone® through the LS's 12.3-inch dashboard display. Another new addition for 2019 is Amazon Alexa integration. LS owners can ask Alexa for the same access to information and thousands of skills available through Alexa at home. Users can also control compatible smart home devices such as lighting, thermostat and security systems. Alexa can even sync to the navigation system to provide on-the-go recommendations.

The Lexus Enform Remote app is also enhanced for 2019 with the addition of compatibility with smartwatches and Alexa-enabled devices at home to make it easier to lock and unlock the doors, check the fuel level and start the car remotely.

Long, Low and Luxurious

The 2019 Lexus LS has a sleek and bold design with a coupe-like silhouette. Lexus designers took full advantage of the rear-wheel drive Global Architecture – Luxury (GA-L) platform to give the LS a stretched, ground-hugging appearance. Compared to the previous generation, the latest LS is about 0.6 inches lower, while the hood and trunk are approximately 1.2 inches and 1.6 inches lower, respectively.

The 2019 LS offers two 19-inch wheel designs and three 20-inch wheel designs. The 20-inch premium wheels employ a brilliant appearance created using an electroplating technique known as sputtering. All but one (F SPORT) of the wheel designs feature a hollow rim structure that helps reduce resonant sounds generated by the tires.

An Engaging, Nimble Feel

More than ever before, luxury sedan owners expect greater handling agility and performance without sacrificing comfort. Helping to provide the uncanny ride and handling balance is the latest generation of our unique chassis control technology known as Vehicle Dynamics Integrated Management (VDIM), which was first introduced in 2005. This system implements cooperative control of all available vehicle subsystems— ABS, Traction Control (TRAC/TRC), Vehicle Stability Control (VSC) and Electric Power Steering (EPS), Variable Gear Ratio Steering (VGRS) and Dynamic Rear Steering (DRS)—to control basic longitudinal, lateral and vertical motion as well as yaw, roll and pitch.

To further refine the ride quality, the LS offers an available air suspension system as well as the latest Adaptive Variable Suspension (AVS) which continually adjusts damping control in response to driving operations and road surface conditions.

The Power of a Twin-Turbo V6 and the Efficiency of a 10-Speed Transmission

For scintillating performance and excellent fuel efficiency, Lexus designed a 3.5-liter V6 engine specifically for the LS. This engine has an undersquare design for improved thermal efficiency coupled with twin turbochargers. The LS engine offers the output one would expect in a flagship sedan: 416 horsepower and 442 lb-ft of torque.

In RWD form, the LS 500 delivers a 0-60 time of 4.6 seconds. Perhaps more critical to driving enjoyment, though, is how Lexus tuned the engine and transmission to deliver instant acceleration and a constant buildup of torque toward the engine's redline. The driver can tailor powertrain response and feel by choosing from Normal, Sport S or Sport S+ modes. Just enough of the exhaust note can be heard to enhance the car's dynamic nature.

The 10-speed automatic transmission uses a torque converter, yet the shift times rival those of dual-clutch transmissions. The wide bandwidth afforded by 10 closely spaced ratios is ideal for all driving situations. These improvements, plus a resin plastic transmission oil pan, yield a 10-speed transmission weighing the same as the previous 8-speed gearbox.

The available AWD system features a TORSEN® limited-slip center differential to further enhance grip, traction and cornering stability. The torque distribution can vary from 31 percent front / 69 percent rear on dry roads to as much as 48 percent front / 52 percent rear on slick surfaces.

Hybrid Power Taken to a New Level

The 2019 LS Hybrid uses a Multi Stage Hybrid System that combines a naturally aspirated Atkinson-cycle 3.5-liter V6 gasoline engine with two electric motor/generators powered by a compact, lightweight lithium-ion battery. D-4S direct fuel injection and lightweight valvetrain components allow a 6,600-rpm redline, with Dual Variable Valve Timing with Intelligence (Dual VVT-i) ensuring ample torque across the engine speed range. Combined system output of the internal combustion engine with the electric traction system is 354 hp, enabling the LS 500h to accelerate from 0-60 mph in 5.1 seconds (RWD).

The system is based on the electronically controlled planetary continuously variable transmission of the Lexus Hybrid Synergy Drive coupled to an all-new four-speed automatic gear set at the output stage. The two systems work together to expand the overall range of gearing and increase operation of the V6 engine across a wider speed range than previous hybrids.

And with a 22.2-gallon fuel tank and EPA-estimated fuel economy of 25/33/28 (city/highway/combined), the LS 500h RWD has a range of over 600 miles, depending on driving conditions and habits.

Cabin Craftsmanship Redefined

The 2019 LS 500 offers a choice of nine interior color schemes, plus two for the F SPORT (Black and Circuit Red). In addition, nine choices in interior trim are available, including the exclusive Naguri-style aluminum for the F SPORT.

Nearly all elements are upholstery-wrapped, and a high level of craftsmanship has been applied even to the finer details, resulting in an elegant finish with a sense of depth. For example, the higher-grade seats feature quilting, and the perforation pattern on the F SPORT front seats has the same L-shaped mesh pattern as the car's front grille.

The Intersection of Tradition and Technology

A new approach to creating trim elements again turned to Japanese culture, combining traditional Japanese aesthetics with advanced manufacturing techniques. This is reflected in signature touches, such as beautiful interior ambient lighting inspired by Japanese Andon lanterns and armrests that appear to float next to the door panel.

On Executive models, Kiriko Glass ornamentation and available hand-folded pleats on the door trim perfectly illustrate the brand's "Innovative elegance through Japanese craftsmanship" and exemplify a true handcrafted approach.

The striking cut glass ornamentation – a world first in a production vehicle - draws inspiration from Japanese Kiriko glassware. Traditional Kiriko patterns are created using a technique that involves hand-cutting clear colors and delicate lines in a piece of glass, which are then repeatedly polished to a soft glow.

Integrated into the LS 500's cabin is the next-generation Remote Touch Interface (RTI), designed to mimic smartphone operation and supporting handwritten input. In addition to its 12.3-inch wide navigation display, the LS can incorporate an optional 24-inch color heads-up display (HUD) that projects a variety of information onto the driver's forward view.

Enveloping Rear Seat Luxury

While making the LS even more of a driver's car, Lexus also optimized the LS as a car to be driven in, lavishing considerable attention to the rear seat. There are options for both heating and massage in addition to the Executive Package which adds a passenger-side seat which can be reclined up to 48 degrees, an angle chosen for its precise level of comfort while the vehicle is in motion.

Because the new LS is lower than previous versions, Lexus for the first time equipped the available air suspension with an access function. Activated by unlocking the car with the smart key, access mode automatically raises the vehicle to make it easier to step into or get out of the LS.

The LS F SPORT

Lexus took full advantage of the new GA-L platform's inherent driving agility when developing the F SPORT package. Handling enhancements via the latest iteration of the VDIM system allows for integrated management of these chassis dynamics as a single system. More of the GA-L platform's intrinsic performance capability is unlocked via exclusive 20-inch alloy wheels with 245/45RF20 front and 275/40RF20 rear tires in either summer performance or all-season compounds.

In addition, larger front and rear brakes — six-piston aluminum monoblock calipers with ventilated 15.7 inch rotors in front and four-piston calipers with 14.1 inch rotors in back — assure confident stopping power. The available Performance Package on gas F SPORT models adds Variable Gear Ratio Steering (VGRS) system, Active Rear Steering and an Active Stabilizer.

Special F SPORT rocker moldings along with the aforementioned 20-inch wheels accentuate the rakish LS profile. Lexus

infused the F SPORT persona throughout the cabin, starting with the perforated-grill pattern on seating surfaces and Naguri aluminum trim elements. F SPORT 28-way electric/pneumatic seats with cushion length extenders brace occupants when driving through curves, ensuring exceptional comfort no matter the length of the drive.

Advanced Safety Features and Driver Support

The Lexus Safety System+ 2.0 comes standard on every LS for 2019. The Lexus Safety System+ A offers additional equipment and is available as an option. Both systems, in addition to other technologies, help to support more secure driving in a broad range of situations, providing the driver with information ranging from support status notifications to information on vehicle behavior during safety feature operation via the multi-information display and, when equipped, the large color head-up display (HUD).

EXTERIOR DIMENSIONS

Wheelbase 123 in.

Overall Length 206.1 in.

Overall Width (mirrors folded) 74.8 in.

Overall Height RWD

AWD 57.1 in. – Air suspension

57.5 in. – Coil w/AVS

57.5 in. – Air suspension

57.9 in. – Coil w/AVS

Tread Width Front

Rear 64.2 in

64.4 in/63.6 (F SPORT)

INTERIOR DIMENSIONS

Seating Capacity 5

Headroom Front

Rear 37.3 in

36.8 in. (w/pano roof)

37.3 in.

36.4 in. (w/pano roof)

Legroom Front

Rear 41.0 in.

38.9 in.

Shoulder Room Front

Rear 58.8 in.

56.4 in.

Hip Room Front

Rear 55.5 in.

55.1 in.

EPA Passenger Volume 99.4 cu. ft.

97.6 cu. ft. (w/pano roof)

Cargo Volume 16.95 cu. ft.

WEIGHTS AND CAPACITIES

Curb Weight/GVWR RWD (Coil/Air)

AWD (Coil/Air)

Executive Package (RWD/AWD) 4,707/4,751 lbs.

4,905/4,938 lbs.

4,905/5,093 lbs.

Weight Distribution (F/R) 53/47

Fuel Capacity 21.7 gal.

ENGINE

Type, Materials Aluminum block and cylinder heads, V6 twin turbo

Designation V35A-FTS

Valvetrain DOHC 24-valve

Intake: VVT-iE (Variable Valve Timing-intelligent by Electric motor)

Exhaust: VVT-i (variable valve timing with intelligence)

Displacement 3.5 liters / 3445 cc / 210.2 cu.in.

Bore x Stroke 3.37 in. x 3.94 in.

Compression Ratio 10.47 : 1

Horsepower (SAE) 416hp @6000 rpm

Torque 442 lb.-ft.@1600-4800 rpm

Fuel System EFI (Electronic Fuel Injection), D-4ST (Direct injection 4-stroke gasoline engine Superior Version with Turbo)

Fuel Requirement Premium 91-octane unleaded

Emission Certification LEV III ULEV125

Layout Front engine, rear-wheel drive or all-wheel drive

Transmission Type 10-speed automatic

Designation AGA0

Gear Ratios

1st 4.923

2nd 3.153

3rd 2.349

4th 1.879

5th 1.462

6th 1.193

7th 1.000

8th 0.792

9th 0.640

10th 0.598

Reverse 5.169

Final Drive Ratio 2.764

CHASSIS AND BODY

Suspension Front

Rear High Mount Multi-link

Multi-link

Steering - Type

Turns (lock to lock)

Turning Circle (curb to curb)

Vehicle speed-sensing rack and pinion with electric power assist

RWD 2.9/AWD 2.8

RWD 18.7 ft./AWD 19.7 ft.

Brake System Front

Front F SPORT

Rear

Rear F SPORT 14.0 in (357mm) ventilated rotors with four piston aluminum calipers, normal brake pads

15.7 in (400 mm) ventilated rotors with six piston aluminum calipers, normal brake pads

13.1 in (335mm) ventilated rotors with two piston aluminum calipers, normal brake pads

14.1 in (359 mm) ventilated rotors with four piston aluminum calipers, normal brake pads

Standard Wheel Size

Optional 19 x 7.5 in.

20 x 8.5 in.

Standard Tire Size

Optional

F SPORT 245/50R19 all season

245/50R20 all season

245/45/R20 all season

245/45R20 summer front

275/40R20 summer rear

Spare Tire/Wheel Temporary

0-60 mph Acceleration (mfg. est.) 4.6 seconds (RWD)

Top Track Speed 136 mph

Lexus Estimated Fuel Economy* (City/Hwy/Combined) 19/29/23 mpg RWD

18/27/21 mpg AWD

Coefficient of Drag (Cd) .028

*Actual mileage will vary.

EXTERIOR DIMENSIONS

Wheelbase 123 in.

Overall Length 206.1 in.

Overall Width 74.8 in.

Overall Height

RWD 57.1 in. – Air suspension

57.5 in. – Coil w/AVS

AWD 57.5 in. – Air suspension

57.9 in. – Coil w/AVS

Tread Width - Front RWD

AWD 64.2 in.
64.2 in. – Coil w/AVS
64.4 in. – Air suspension
- Rear RWD

AWD 64.4 in.

64.4 in.
Ground Clearance RWD 5.8 in. – Air suspension
6.6 in. – Coil w/AVS
AWD 5.8 in. – Air suspension
6.3 in. – Coil w/AVS

INTERIOR DIMENSIONS

Seating Capacity 5

Headroom

With Moonroof

- Front

- Rear

37.3 in.

37.3 in.

With Panorama roof

- Front

- Rear

36.8 in.

36.4 in.

Legroom

With Moonroof

- Front

- Rear

41.0 in.

38.9 in.

With Panorama roof

- Front

- Rear

41.04 in.

38.9 in.

Shoulder Room - Front 58.8 in.

- Rear 56.4 in.

Hip Room - Front 55.5 in.

- Rear 55.1 in.

Passenger Volume

- With Moon roof

- With Panorama roof

99.397ft³

97.556ft³

Cargo Volume 15.185 cu ft w/o rear cooler

14.126 cu ft w/rear cooler

WEIGHTS AND CAPACITIES

Curb Weight

RWD 4,883lb – Air suspension

4,850lb – Coil w/AVS

AWD

5,071lb – Air suspension

5,027lb – Coil w/AVS

with Executive Package

RWD

AWD

5,027lb

5,225lb

GVWR (in lbs.)

RWD

6,020lb

AWD

6,205lb

Weight Distribution (front/rear) 51/49

Fuel Capacity 22.2 gal

HYBRID POWER SYSTEM

Type Series/parallel system with gas engine and electric motors

Total System Power 354 HP

ENGINE

Type V6, aluminum block and cylinder heads

Designation 8GR-FXS

Valvetrain DOHC 24 Valve

Intake: VVT-iW(variable valve timing with intelligence Wide)

Exhaust: VVT-i(variable valve timing with intelligence)

Displacement 3.5 liters / 3,456 cc / 210.9 cu. in.

Bore x Stroke 3.70 x 3.27 in (94.0 mm x 83.0 mm)

Compression Ratio 13.0 : 1

Horsepower (SAE) 295HP@6,600rpm

Total System Output 354 HP

Fuel System EFI (Electronic Fuel Injection), D-4S (Direct injection 4-stroke gasoline engine Superior)

Fuel Requirement 91 Octane or higher

Emission Certification LEV III-SULEV30

SULEV with OBD,

Tier3 with OBD

ELECTRIC MOTORS

Motor Generator 1 (MG1) Function Primary generator, engine starter, controls engine speed

Type Permanent magnet motor

Cooling system Water-cooled

Motor Generator 2 (MG2) Function Drives rear wheels; regenerative braking

Type Permanent magnet motor

Cooling system Water-cooled

HYBRID BATTERY PACK

Type Lithium-ion

Cell Quantity 84 cells

Nominal Voltage 310.8 V

System Voltage 650 V

DRIVETRAIN

Layout Front engine, rear-wheel drive or all-wheel drive

Transmission Type Multi Stage Hybrid Transmission

Designation L310(RWD) / L310F(AWD)

Gear Ratios 1st 3.538

2nd 1.888

3rd 1.000

4th 0.650

Rev. N/A

Differential Gear Ratio (Front/Rear) RWD: (- /3.615) AWD: (3.916 / 3.916)

CHASSIS AND BODY

Body/Frame Steel unibody construction

Suspension - Front and rear Front: High Mount Multi-link, double joint; Rear: Multi-link

Steering Electric Power Steering (EPS): Vehicle speed-sensing rack and pinion with electric power assist

- Turns, Lock to Lock RWD: 2.9, AWD: 2.8

- Turning Circle (curb to curb) RWD: 18.7 ft (5.7 m), AWD: 19.7 ft (6.0m)

Brakes/Type Anti-lock Braking System (ABS); Electronic Brakeforce Distribution (EBD); Brake Assist (BA)

- Front

14.0 in (357mm) ventilated rotors with four-piston opposed aluminum calipers, high-friction brake pads

- Rear 13.1 in (335mm) ventilated rotors with two-piston opposed aluminum calipers, high-friction brake pads

Wheel Size/Type 1. 19 in. (cast aluminum - standard)

2. 20 in (cast aluminum, resonator / forged aluminum - available)

Tire Size/Type 1. 245/50RF19

2. 245/45RF20

Tire Brand(s) Bridgestone, Dunlop, Michelin

PERFORMANCE

0-60 mph Acceleration (manuf. estimate) 5.1 seconds (RWD)

5.2 seconds (AWD)

Top Track Speed (electronically limited) 136 mph (220 km/h)

Manufacturer-estimated Fuel Economy*

RWD City 25 mpg/ Highway 33 mpg/ Combined 28 mpg

AWD City 23 mpg/ Highway 31 mpg/ Combined 26 mpg

Coefficient of Drag (Cd) 0.27

*Actual mileage will vary

Standard Exterior Features

- Triple-projector ultra-compact LED headlamps with cornering lamps
- LED taillamps and turn signals
- Rain-sensing windshield wipers
- Electrochromic (auto-dimming) inside and outside mirrors with puddle lamps
- Hands-free power open/close trunk
- Auto door closer
- 19-inch alloy wheels
- Power moonroof

Standard Interior Features

- Heated leather-trimmed steering wheel
- Magnesium paddle shifters
- 16-way power-adjustable heated and ventilated front seats
- Power-adjustable front headrests
- Dual-zone climate control
- Power rear sunshade
- Drive Mode Select with Sport S+ and Custom modes
- Intuitive Parking Assist with auto-brake
- Vehicle Dynamics Integrated Management
- Lexus Enform Wi-Fi. Complimentary 4GB one-year trial is included.
- Lexus Enform Remote app and Destination Assist. Complimentary for the first year of ownership.
- Lexus Enform App Suite 2.0
- Lexus Enform Dynamic Navigation. Complimentary for the first three years of ownership.
- Navigation System with 12.3-in color LCD multimedia display
- Active Sound Control
- Active Noise Cancellation
- Remote Touchpad
- Dynamic Voice Command with Bluetooth® and USB smartphone connectivity
- SmartAccess with push-button Start/Stop

Standard Audio System

- Lexus 12-speaker Premium Audio System
- 8-channel 300-watt class-D amplifier
- Digital signal processing with Automatic Sound Levelizer (ASL)
- HD Radio™ (complimentary traffic and weather)
- Integrated SiriusXM® Satellite Radio receiver (complimentary 90-day trial subscription included)
- Single-disc CD/MP3/WMA player

Multimedia and Connected Services

- Navigation with 12.3-inch high-resolution display with full-screen map capability including 3D rendering
- Home screen divided into three sections (customizable for HVAC, audio, traffic, MID)
- Dynamic Voice Command
- Speed limit display on road traveled
- Cache Radio; ability to pause live AM/FM radio and HD Radio (up to 15 minutes)
- Traffic and Weather data provided via HD Radio (free to all users while in HD Radio range)

Standard Safety and Security

- Lexus Safety System+ 2.0 standard

- o Pre-Collision System with low-light pedestrian detection and daytime bicyclist detection
- o Lane Departure Alert with Steering Assist
- o Intelligent High Beam
- o All-speed Adaptive Cruise Control
- o Road Sign Assist
- o Lane Tracing Assist
- Location specific Tire Pressure Monitor System (TPMS)
- Complimentary for the first ten years, Lexus Enform Safety Connect includes an Emergency Assistance Button (SOS), Roadside Assistance, Automatic Collision Notification, and Stolen Vehicle Notification. The Lexus Enform response center operates 24/7/365.

Individual Factory Options

- Art Wood Organic, Art Wood Herringbone and Laser Special premium wood trims
- Heated wood- and leather-trimmed steering wheel
- Heated leather-trimmed steering wheel (LS F SPORT)
- Panorama glass roof (LS 500)
- Premium LED headlamps with Adaptive Front Lighting System
- Adaptive Variable Air Suspension with rapid height function
- Mark Levinson 23-speaker, 2,400-watt Quantum Logic Immersion Reference Surround Sound Audio System
- 24-in Head-Up Display
- Panoramic View Monitor
- 19-in split-10-spoke alloy noise-reduction wheels with high-gloss finish
- 20-in split-10-spoke alloy noise-reduction wheels with Vapor Chrome finish
- 20-in split-five-spoke forged alloy wheels with polished finish

Factory Option Packages

- Interior Upgrade Package
 - o Quilted-stitch perforated semi-aniline leather interior trim
 - o 28-way power-adjustable driver's seat with multifunction massage
 - o Ultrasuede headliner and sun visors
 - o Wood- and semi-aniline leather-trimmed center console
 - o Semi-aniline leather-trimmed door armrests
 - o Heated rear seats

- Luxury Package
 - o 28-way power-adjustable passenger seat with multifunction massage and cushion extender
 - o Remote adjustment for passenger seat 18-way power-reclining outboard rear seats with memory
 - o Four-zone Climate Concierge with climate-comfort front and outboard rear seats, infrared sensors and air purifier
 - o Power side-window sunshades
 - o Semi-aniline leather-trimmed rear armrest with 7.0-in touchscreen controller
 - o Rear-seat knee airbags

- Executive Package
 - o Butterfly power-retractable front headrests
 - o 22-way power-adjustable rear seats with butterfly headrests, memory and multifunction massage with heat
 - o Right-rear power recliner with sliding ottoman

- Executive Package with Kiriko Glass (includes Executive Package features plus the following)
 - o Kiriko Glass interior door trim
 - o Hand-pleated interior door trim

- F SPORT Package (LS 500)
 - o Unique exterior trim (bumper, grille, lower doors, rear diffuser)
 - o F SPORT 20-inch split five-spoke alloy wheels with Graphite finish
 - o Six-piston front brake calipers with 15.7-inch ventilated discs
 - o Four-piston rear brake calipers with 14.1 ventilated discs.
 - o F SPORT Adaptive Variable Suspension
 - o LFA-inspired instrument panel with movable display
 - o F SPORT perforated leather interior (steering wheel, shifter knob) with Ultrasuede headliner
 - o F SPORT 28-way adjustable sport seats
 - o Passenger seat power cushion adjuster
 - o Aluminum pedals and interior trim

- Performance Package (includes F SPORT Package features plus the following)
 - o Variable gear ratio steering
 - o Active rear steering
 - o Active stabilizer bars

- Lexus Safety System+ A Package
 - o Lexus CoDrive with enhanced All-Speed Dynamic Radar Cruise Control, Lane Trace Assist and Lane Change Assist.
 - o Pre-Collision system with active braking, active steering assist, front lateral side detection and head up display integration.
 - o Front Cross Traffic Alert