This press pack accompanied the UK launch of the IS F in April 2008. Some changes were made to the model during its time on sale, which can be tracked using the IS Timeline feature available on the Lexus IS F archive web page. Additional assets and information relating to the IS F may be obtained from the Lexus press office if required.

LEXUS IS F

The first Lexus performance thoroughbred

- The most powerful engine yet in a Lexus - performance-tuned 5.0-litre V8 producing 417bhp (423 DIN hp) at 6,600rpm and 505Nm of torque
- Sport Vehicle Dynamics Integrated Management (VDIM) programmed to suit high performance driving
- Lexus / Brembo developed 360mm ventilated and drilled six piston front and 345mm two piston rear disc brakes provide optimum braking performance
- Bespoke, lightweight forged BBS 19-inch alloy wheels
- Dedicated, high-performance tyres, developed with Michelin and Bridgestone
- Stiffer, stronger, lower suspension design
- Pre-crash Safety (PCS) and Adaptive Cruise Control (ACC) fitted as standard
- 10 airbags including driver and passenger knee airbags
- Multimedia Pack with 14 speaker Mark Levinson premium surround audio system, satellite navigation and rear park assist monitor fitted as standard
- Extensive pre-production testing carried out at the world's top race circuits
- Nought to 62mph in 4.8 seconds with top speed electronically limited to 168mph
- CO_2 emissions of 270g/km
- On sale in the UK in April, priced at £51,105

The introduction of the IS F represents a significant milestone in the history of Lexus. In the words of Chief Engineer Yukihiko Yaguchi: "I wanted to develop a car that transforms every moment of driving into pure experience – a car that lets you feel and enjoy driving pleasure every time you drive, an experience that is truly engaging."

The result of this ambition is a car that delivers exceptional performance and handling, engineered to inspire and reward whether driven on the open road or on the track. And, because it's a Lexus, it is engineered, built and finished to the highest standards.

Although the starting point for the IS F was the IS sports saloon, it is a different machine in all key aspects, equipped with a new engine and brakes and with significant revisions to the suspension, steering, handling systems and aerodynamics to ensure the extra power and performance can be exploited to their full capabilities.

At the heart of the IS F is a new all-aluminium 5.0-litre V8 engine, engineered for high output and high-performance driving. The headline figures are 417bhp (423 DIN hp) at 6,000rpm and 505Nm of torque at 5,200rpm, giving nought to 62mph in 4.8 seconds. But these are just part of the story: the engine – the most powerful yet in a Lexus – benefits from a series of advanced technical features that guarantee durability and consistent performance under the toughest driving conditions.

These include high-flow intake ports and a high-lift valvetrain, a compact intake fuel surge tank and an oil scavenge pump, that keeps oil supply stable, even through high speed bends. Lexus's D-4S direct and port injection and electrically-driven VVT-iE on intake promote both superb performance and efficiency.

The engine is matched to an eight-speed Sport Direct Shift (SPDS) automatic transmission, a development of the world-first unit that made its debut in the Lexus LS 460. A defining feature of its operation is that it utilises a torque converter in first gear (in M mode only), and lock-up technology from second gear upwards, giving smooth and rapid shifts. The driver can choose between ultra-quick manual shifts in M mode, using paddle shifts on the steering wheel. On downshifts, the transmission uses a blipping control to match the engine speed at high rpm, accomplishing the shifts in just three tenths of a second. The direct shift mechanism means upshifts are among the quickest in any road car system, effected in 0.1 seconds.

To suit the IS F's performance profile, Lexus has adapted its Vehicle Dynamics Integrated Management (VDIM) system, with management of the ABS, traction control, Electronically Controlled Brake Limited Slip Differential and Vehicle Stability Control adjusted to improve behaviour both on road and on track. VDIM also controls the three gearshift modes – Sport, Normal and Snow – and adapts the electric power steering accordingly. In Sport mode, VDIM only intervenes when maximum drift is reached, enabling the accomplished driver to enjoy the car's full potential.

The IS F uses the same double wishbone front and multilink rear suspension configuration as the standard IS, but with the benefit of a number of track-proven modifications, with high strength steel used for key elements to reduce weight and increase rigidity. Sitting an inch closer to the ground, the IS F also has a lower centre of gravity.

Lexus worked with Brembo to develop the IS F braking system, with 360mm ventilated and drilled six-piston discs at the front and 345mm two-piston discs at the rear. The attention to detail extended to the 19-inch BBS forged alloy wheels and the creation of bespoke tyres with both Michelin and Bridgestone to suit the car's high performance capabilities.

On the road the IS F can be distinguished from other IS models by its lower stance, deeper front spoiler with larger grille and intakes and the wider wheel arches with side vents. At the rear the stacked quad tailpipes in deep rear bumper signal the presence of the V8 engine and a spoiler is neatly integrated into the lip of the boot.

Lexus IS F in the UK

The IS F will go on sale in the UK in April, with supply limited to 150 examples in 2008. The on-the-road price is £51,105. The car benefits from Lexus's standard three-year-60,000-mile warranty and in line with other Lexus models, has service intervals of 10,000 miles for a Health and Safety check and 20,000 miles for a major service.

Specification that outstrips the competition

The Lexus IS F offers much more than scintillating performance, it benefits from a superior standard specification that goes far beyond what its key rivals can offer.

Measured against the Mercedes-Benz C63 AMG, BMW M3 and Audi RS4, it goes further in terms of handling and safety by providing a Sport Vehicle Dynamics Integrated Management (VDIM) system and knee airbags for both driver and front passenger. None of its rivals offers Adaptive Cruise Control or the Pre-Crash Safety system, either.

THE BIRTH OF THE IS F

Originally the IS F was not part of any long-term Lexus strategy, it evolved through the enthusiasm of two engineers, Yaguchi-san and Sakamoto-san. Their desire to develop a high performance car had already led them to experiment with the IS 300 and with the debut of the new generation IS they continued to work on advancing the car's dynamics, while lobbying senior management for support.

Their commitment and expertise yielded results. As the project gained momentum and was presented to higher executives, so the internal feedback became more positive. The result was that in 2004 they were given the go-ahead for what had already become known within Lexus as the 'F' project.

The intense media, customer and distributor interest generated at the car's launch at the 2007 Frankfurt motor show confirmed what many in the company already suspected: the time was right for a high performance challenger bearing the Lexus badge.

Why 'F'

The F in IS F refers to the Fuji Speedway, the car's 'home circuit' and the venue for much of its track testing. Fuji is also referenced in the design of the F, shaped to represent some of the circuit's curves.

Fuji Speedway

Fuji Speedway and the Higashi Fuji Technical Centre, located at the foot of Mount Fuji, is the IS F's birthplace and spiritual home. The circuit was founded in 1963, originally to host NASCAR-style races. In 1976 and 1977 it hosted the first two Japanese Formula One grands prix, but subsequently ran mainly Japanese national events due to increasingly stringent safety requirements.

Toyota Motor Corporation acquired a majority stockholding in 2000 and undertook a complete refurbishment of the venue both to provide a purpose-designed test track and a fully functioning motor sport venue.

In 2003 the track was closed for a complete rebuild to a design by German grand prix circuit architect Herman Tilke. It reopened in 2005 and once again hosted the Japanese Grand Prix in 2007.

A NEW CONCEPT TAKES SHAPE

In creating the IS F, Lexus had to address a series of key questions. Foremost among them was what exactly a committed driver wants from his or her car and what basic elements are required to achieve an exciting driver on road and track. From this starting point, three wider areas of research were developed: response, sound and acceleration.

Response

For the discerning driver to gain maximum reward from a car's performance, three elements are crucial: acceleration, braking and steering. The more directly the car responds to the driver's input, the more satisfying the experience becomes.

To achieve a dynamically refined response from the IS F, Lexus engineers developed a compact 417bhp 5.0-litre V8 engine with D-4S direct fuel injection, VVT-iE, hollow overhead camshafts and an electronic throttle.

To ensure constant power delivery, even in high-speed cornering, a small fuel surge tank and high-mounted oil scavenge pumps are fitted. Race car technology is featured in the forged crankshaft, sintered con-rods and ultra-rigid block casting techniques.

The result is an engine that delivers instantaneous response anywhere in the rev range, with seemingly limitless linear acceleration.

Perhaps more important is the driver's feeling of control over this power. By developing the eight-speed Sport Direct Shift (SPDS) transmission Lexus delivered the kind of direct response usually only found in motor sport, with shifts effected in just a tenth of a second. One of the main benefits of this transmission is that in M-mode, the driver has complete control over the gear changes and can hold any gear, using racing-style paddle controls. By contrast, in D-mode, performance is like a normal, albeit very direct and precise, automatic.

Full lock-up control is used during both acceleration and deceleration in second gear and higher, without using the torque converter. This means changes in engine output can be transmitted directly, just like a manual transmission. If engine speed is too low to allow lock-up control however, the system will use the torque converter function.

The response and weight of the steering have been fine-tuned for high performance driving. A new type of Vehicle Dynamics Integrated Management (VDIM) automatically adjusts the power steering setting when VDIM Sports mode is selected.

The suspension, brakes, wheels and tyres have all been modified, reducing the vehicle's unsprung weight and giving sharper, more directly responsive handling.

Sound

The sound made by a high performance car is an emotive and important quality; defining and engineering that sound is a skilled and painstaking process that was given high priority in the development of the IS F.

The car's sound design falls into three distinct categories. In the low and medium speed range, the V8 creates a strong exhaust sound, while maintaining an overall tranquil quality. At higher speeds the second intake port opens and the engine note changes sharply to become impressively powerful. As the maximum speed range is approached, it is the polished and pure sound of the V8 alone that can be heard, intensifying in synchronicity with engine speed.

Acceleration

Lexus has given the IS F smooth, seamless and seemingly limitless acceleration by optimising the engine's size and lightness and the relationship between power, transmission and handling with the vehicle's overall weight. These aspects were finely tuned by some of the world's best test drivers in an extensive programme of track testing, using some of the world's most famous circuits. The result delivers the driver with exceptional acceleration and a superbly balanced feel of perfect car control.

DESIGN

The IS F makes an unmistakable design statement, adding a new dimension to the L-finesse design language with themes and features that set it apart from standard Lexus models.

Exterior

Based on the IS sports saloon, the IS F can be clearly differentiated when viewed from front, side or rear. The deep front bumper has a trapezoidal shape that expands outwards to give the car a powerful head-on stance and the radiator grille and lower cooling ducts are all larger to ensure adequate engine and brake cooling. Front fog lamps, fitted as standard, are integrated into the lower bumper, at the outer edge of the cooling ducts. High-Intensity Discharge (HID) headlights with cleaners are also provided as standard with Lexus's Intelligent Adaptive Front Lighting System (I-AFS) to improve illumination through bends.

To accommodate the V8 engine, the IS F has a larger front overhang and bonnet. To balance the overall design, the rear overhang is also slightly greater than on the regular IS models.

The front wheelarches are wider to accommodate the 19-inch forged-alloy wheels, which have an asymmetrical 10-spoke design with a smoked metal finish. Side vents in the wings channel heat from the engine and accentuate the IS F's wedge-shape profile, their lower edges flowing neatly into the thicker sills and continuing in a strong character line through to the rear bumper.

The rear bumper adopts the same trademark trapezoidal shape with two sets of twin stacked tailpipes set on a slant. The rear lights feature LEDs with clear lenses, giving the IS F a distinctive night-time appearance. The bootlid incorporates a subtle but aerodynamically efficient spoiler; further underbody elements help maintain a smooth airflow around the vehicle. The F logo, finished in white, black and blue is positioned on the lower right side of the bootlid and above the side repeater indicator lights.

Interior

The cabin features black semi-aniline leather with blue accents and a black roof lining. The F logo is incorporated in the side of the seat cushions. The seats are upholstered in a combination of perforated leather for the centre part of the cushion, seatback and shoulder area, with smooth leather for the headrests and side sections. The rear has a two-seat configuration with central armrest

The front seats are eight-way electrically adjustable with power lumbar support and memory settings. The bolsters have been increased in size to give extra lateral support suitable for high performance driving.

Sporting details extended to silver carbon fibre-effect finish around the gear shift, aluminium pedals and a three-spoke steering wheel finished in perforated leather with the F logo at the base.

The speedometer and tachometer have blue LED-lit needles and the instrument cluster includes additional voltage and oil temperature gauges. The display also gains an indicator lamp to show when the car's control systems are in Sport mode.

Colours

The IS F is available in five metallic finishes: Arctic Pearl, Palladio Silver, Cadoxton Slate, Velvet Black and Mesa Red, all with black leather interior.

ENGINE AND TRANSMISSION

NEW 5.0-litre V8 ENGINE

The Lexus IS F is powered by a performance-tuned 5.0-litre V8 engine producing 417bhp (423 DIN hp) at 6,600 rpm and 505Nm of torque at 5,200rpm. It has been specifically engineered for higher power output, high-performance driving and durability. A high specific output of 83.2bhp per litre and high operating range up to a 6,800rpm red line reflect the attention to engineering detail.

Extensive use is made of new technology and a number of features are exclusive to the engine, making it one of the most sophisticated V8s in the world. Key elements include:

- Aluminium block with built-in reinforcements
- High-flow intake ports and high-speed, high-lift valvetrain to enable high engine speed and power
- Compact intake fuel surge tank to increase engine response
- Oil scavenge pump, to ensure stable oil supply even in high G-force bends
- Liquid-cooled oil cooler for more efficient temperature control during high-load driving
- Weight-saving hollow camshafts, which carry oil to the cylinder heads
- D-4S (Direct-injection 4-stroke gasoline engine Superior version), combining direct and port injection
- Electrically-driven VVT-iE on intake, with mechanical inlet and hydraulic outlet valves

Construction

The engine is based on a die cast aluminium cylinder block with steel liners, with ribs positioned on the block's outer wall to provide high rigidity. The forged crankshaft benefits from high-frequency hardening to the fillet area and uses a double torsional damper on the crank pulley to reduce noise and vibration. Crankshaft journals are polished to a mirror finish to minimise the friction generated between the connecting rods and the crankshaft, and forged sintered iron alloy connecting rods ensure high-rpm durability. The result is that the bottom end of the IS F engine fully complements the smooth and quiet performance at the top end.

The pistons use two-piece oil rings for low friction, and the skirt area is resin-coated to reduce noise and vibration. The timing-sensor rotor is attached at the rear of the crankshaft, where there is less vibration.

Innovative breathing

The high-flow cylinder heads have a lightweight valve train, contributing to the IS F V8's high-rpm capability. Maximum horsepower arrives at 6,600rpm (just 200rpm shy of the red line), and peak torque at 5,200rpm. The resulting performance character, while responsive in low-speed situations, delivers supreme power at higher engine speeds. The choice of ratios for the eight-speed Sport Direct Shift transmission helps further ensure responsiveness at all vehicle speeds.

New technologies

New technologies are deployed in the engine to maximise efficiency and reduce emissions, including D4-S fuel injection and an intelligent, electronic throttle. D-4S integrates two types of fuel injection: a direct-type high-pressure fuel injection system, which provides a cooling effect in the cylinders and enables the high compression ratio (11.8:1) employed to extract maximum energy from the fuel; and a set of low-pressure port fuel injectors that help produce a precise burn to optimise power and efficiency under light and medium-load conditions.

Valve train

Lightweight titanium intake valves are operated by roller rocker arms with integrated low rolling resistance needle bearings that significantly reduce friction between the cam and the sliding parts. This improves rolling smoothness, improves fuel efficiency and helped the engineers develop a more compact valve train layout.

Lubrication for the rollers is provided through the roller rocker arms pivot via an oil passage in the fixed pivot. A heat-resistant steel alloy with a high nickel content is used for the umbrella area of the exhaust valve, which increases high temperature durability.

High-flow intake ports were specially designed for the engine, with a cross-section area optimised to improve intake efficiency and increase air intake volume.

Oil cooler and scavenge pump

Using a high-mounted oil scavenge pump ensures oil supply to the valve train is maintained, even at high speeds and under high cornering loads. The system removes excess oil from the cylinder head area and returns it to the oil pan, preventing oil surge problems, even when forces of 1G or more are generated in a turn.

It is vital to keep the oil at the correct operating temperature to maintain reliable high engine speeds. To do this, the IS F has an oil cooler that uses the engine coolant as a major means of cooling the lubricant and preventing oil deterioration.

Advanced camshaft technology

The aluminium cylinder heads feature integrated cam journals. The four composite camshafts use sinter-forged cam lobes on hollow shafts, with oil carried inside of the shafts to the cylinder heads. This delivers both a significant weight saving and increased durability compared to conventional designs.

Intake VVT-iE

Lexus has made a significant advance in valve-control technology, taking maximum advantage of the new camshaft by upgrading the variable intake valve timing from hydraulic to intelligent electric motor drive (VVT-iE). As a result the control range has been extended to cover low engine speeds, where hydraulic pressure is at a disadvantage, making a major contribution to low-range acceleration. The exhaust camshaft uses hydraulically controlled variable valve timing.

Electronic throttle

The electronic throttle uses a non-contact throttle sensor and a DC electric motor. The throttle valve shaft has been machined down from 10 to 7mm and the intake air passage area has been expended to reduce intake resistance. This endows the IS F with the appropriate dynamic throttle response for ultra high performance driving, while also helping improve fuel efficiency.

Dual intake system

The dual air-intake system uses a primary intake passage for low and medium engine speeds. At higher engine speeds (above 3,600rpm), both the primary and secondary passages are opened, helping boost power at high revs. Both intake passages share a common high-efficiency, low-restriction air filter. The intake manifold uses a simple plenum design with equal-length runners.

Timing chain cover

Keeping the engine compact, while maintaining a high power-to-weight ratio, was a priority in the development of the IS F. By integrating the water pump, oil pump and scavenge oil pump into the timing chain cover, a significant weight saving was achieved.

Furthermore, arrangement of the reinforcement ribs on the inner side of the cover has cut noise emission from the timing chain, without incurring an excessive weight penalty.

Combustion chambers

The IS F's compact pent-roof combustion chamber design positions the long-reach sparkplug nearly in the centre. A water jacket between the exhaust port and plug thread ensures optimal cooling around the plugs.

Adopting a slanted squish profile optimises swirl, resulting in more stable combustion and thus optimum performance and fuel efficiency. Enlarging the valve diameter has also maximised air intake efficiency and output.

Supporting systems

A true high-performance engine relies on outstanding support systems and thoughtful engineering that touches every detail. The Lexus IS F's stacked quad tailpipes, for example, are more than just a visual statement, they play an important role in the high-performance exhaust system by reducing backpressure.

The stainless steel exhaust system starts with tubular exhaust manifolds and integrated catalysts. Next come dual 2.4-inch diameter front pipes that are joined before a pre-silencer and 2.7-inch single centre pipe, after which the system splits into two 2.1-inch pipes, feeding into twin 16.8-litre silencers.

A number of additional engineering details were integrated into the IS F to improve performance and efficiency. A cooling-fan motor was installed that is 30 per cent lighter than conventional fan motors, and the fan shape was modified to enhance cooling and control noise. Front engine mounts have liquid-filled insulators, and the rear mounts are covered by rubber heat insulators.

Inside the fuel tank, an offset high-output fuel pump and a sub-tank help prevent fuel starvation during cornering. The alternator uses a larger front bearing, a cooling fan and die-cast aluminium cooling fins for the rectifier; the planetary-gear starter uses a crank-hold feature.

EIGHT-SPEED SPORT DIRECT SHIFT TRANSMISSION

A range of new technologies was used in the development of the IS F’s eight-speed Sport Direct Shift (SPDS) transmission, which blends the performance characteristics of an automated manual-type transmission with the smoothness and refinement of a planetary-type automatic. As a result, the driver can choose between ultra-quick manual shifts for performance driving, and smooth automatic shifts when convenience is the top priority.

The result fully lives up to the directive of “driving fun and performance that can also be enjoyed on a circuit”, laid down by chief engineer Yaguchi-san.

The revolutionary design features a torque converter in first gear (in M mode only), before switching to lock-up technology from second gear onwards.

There are two modes: M for clutchless manual driving and D for automatic. In D mode, the automatic gear selection has sporty but comfortable characteristics; in M each gear can be held right up to the 6,800rpm red line. Using the paddle shifters gives an instant response with the distinct, direct feel, ideally suited for sports or circuit driving.

The paddle switch shift can be used in both modes, but paddle shifting while in D mode is not the same as in M. If the vehicle is stopped, or travelling at a constant speed for a certain period of time, the transmission will automatically move into D mode. In addition, the driver can switch immediately to D mode by holding the upshift paddle (+) for one second.

Manual mode (M) goes beyond simply allowing manual gear selection by changing the way the transmission operates to suit performance driving. In M mode, the driver experiences the feel of a manual transmission, specifically the immediate G-forces during acceleration and deceleration. In addition, the transmission uses downshift blipping control to match engine speed for high-rpm downshifts.

Eight-speed transmission

The eight-speed transmission was specially developed to match and maximise the dynamic characteristics of the IS F's V8 engine. Offering a good balance of close ratios and a wide ratio range, it provides seamless, linear acceleration and good fuel efficiency.

First gear has a particularly low ratio, which improves acceleration from standstill. Eighth gear is set high to promote fuel efficiency at higher speeds. The intermediate gears are all close ratio, giving smooth and powerful acceleration and optimum power and torque across the complete performance range.

The direct shift mechanism means upshifts are made in just one tenth of a second, among the quickest for any production road car clutch system.

The transmission control system uses high-flow linear control valves for engaging and disengaging the clutches. The resulting simultaneous release and engagement of the shifting clutches provide fast shifts while reducing gearshift shock. The solenoids allow direct control of the hydraulic pressure applied to the shifting clutches, along with centrifugal fluid pressure cancelling mechanisms, giving finer control than conventional clutch-control systems. In addition to a conventional input-shaft speed sensor, the intermediate members of the gear train use a speed sensor to allow more precise control of gear changes.

Driving enthusiasts pride themselves on the ability to execute a perfect manual-transmission downshift, which requires "blipping" the throttle while the clutch is disengaged to match the engine speed to the lower gear. The IS F transmission executes perfect downshifts in a similar way but with a consistency most drivers cannot match with a manual transmission.

When a downshift instruction is received, the transmission control system quickly opens the electronic throttle, instantaneously increasing engine speed (blipping) to match the engine speed after the gear change. Simultaneously, the system completes the gear change by smoothly and quickly engaging the shift clutch. The downshift, with throttle blipping, takes just 0.2 seconds.

Torque converter

A new torque converter was designed to handle the greater torque produced by the 5.0-litre engine and ensure the IS F moves smoothly and powerfully away from rest, but the unit is no larger than that used in a six-speed transmission. In M mode, the torque converter only operates on first gear.

Weight-saving design and construction

In common with all other mechanical elements in the IS F, weight saving was a priority in the development of the transmission. A meaningful reduction was achieved by using a one-piece aluminium construction for the casing. The compact design means that in terms of length and girth, the unit is the same size as a conventional six-speed transmission.

To ensure the right level of cooling and no compromise in gear shift response in high-performance driving conditions, an air-cooled automatic transmission fluid cooler is used. In addition, a new breather system ensures there is no risk of fluid being lost in very fast corners or under extreme braking.

HANDLING, DYNAMICS AND DRIVING PLEASURE

Vehicle Dynamics Integrated Management

To achieve the right blend of handling and control, Lexus has adapted its Vehicle Dynamics Integrated Management (VDIM) system for the IS F, to suit high performance driving. Effective management of vehicle control elements such as the ABS, traction control (TRC), Electronically Controlled Brake Limited Slip Differential (ECB LSD) and Vehicle Stability Control (VSC) improves all aspects of the car’s track performance and on-road behaviour.

VDIM also automatically controls the three gearshift modes - Sport, Normal and Snow - adjusting the electrically driven power steering to match whichever is selected. In Sport mode VDIM only cuts in when maximum drift is achieved, allowing the driver to enjoy really spirited driving. This helps drivers of all levels of ability to find the optimum line, helping increase driving performance. Even Lexus's top test drivers were able to lap the Fuji circuit faster with VDIM in Sport mode than with it switched off.

For the truly adventurous, VDIM can be completely switched off, allowing spectacular power slides. This does not leave the driver with an uncontrollable car, though, as the ECB LSD remains active, giving the driver handling and braking qualities like those enjoyed by race and rally drivers.

Steering

Positive, precise and perfectly placed steering is a prerequisite of performance driving. The IS F's steering column has electric adjustment for reach and rake and three memory settings. A stepless jointing system ensures steering feel is always direct and positive.

The Electric Power Steering (EPS) switches in conjunction with the transmission's Normal mode for everyday driving comfort, and Sport, which adds weight for improved feel at higher speeds.

For extra comfort, the leather steering wheel cover is tailored in just two sections. Audio, navigation and communication control buttons are handily integrated into the spokes of the wheel.

Brakes, Wheels and Tyres

Gaining maximum controlled stopping power from the brakes was a priority in the development of the IS F. To achieve this, 360mm ventilated and drilled six-piston front discs and 345mm two-piston rear discs were jointly developed with Brembo, giving optimum response under hard, repeated operation, even in the worst driving conditions.

The forged, sculpted 19-inch alloy wheels were developed with BBS and help reduce the car's unsprung weight to near full-race efficiency. The front wheels measure 19 x 8J, with 225/40R19 tyres and 19 x 9J at the rear, with 255/35R19 tyres.

Both Michelin Pilot Sport PS2 and Bridgestone Potenza tyres were developed specifically to accommodate the IS F's high-speed performance capabilities. Design parameters called for handling grip befitting a premium sports car, but with the control and ride quality expected of a Lexus in this class.

SUSPENSION

The IS F is based on the robust IS platform, which was engineered from the start to allow a high dynamic envelope. The stiff body structure and the rear subframe are connected through several reinforcements.

Although it uses the basic double-wishbone front suspension and multi-link rear suspension deployed in the IS, the IS F benefits from a series of track-proven modifications. Lexus engineers developed the suspension using a data gathering system that is more usually associated with race cars to analyse performance in all conditions. With this data they were able to re-evaluate every aspect, even the bushings.

The result is a reworked, lighter suspension system, fully optimised to suit the car's dynamic performance. The IS F sits an inch lower on its suspension than the standard IS, helping lower the centre of gravity for quicker handling response. High-strength steel suspension components create an optimal combination of rigidity and weight.

Front suspension

The front coil and wishbone suspension has been given a full mechanical makeover to gain precise steering with perfect turn-in and camber angles. Using high tensile sheet steel for the suspension arms and aluminium for the steering knuckles helped reduce weight.

High-rate springs with early activating bump stops reduce roll angle when cornering and nose dive under braking. Large diameter anti-roll bars increase roll rigidity, while at the same time optimising roll posture. These are complemented by hub bearings developed exclusively for the IS F.

The whole assembly, with larger diameter monotube, gas-filled shock absorbers, ensures not only reliability, but superb adhesion in high G-force cornering.

Rear suspension

The state-of-the-art multilink rear suspension has received the kind of attention usually reserved for race car preparation to ensure excellent roadholding in all conditions.

Higher-rate springs have been adopted to reduce cornering roll, squat and braking dive. Once again, an early activated bump stop helps cut the level of roll, as do the high-pressure gas-filled shocks, which also provide better early linear response.

The length of the upper arms has been changed to optimise alignment for the 19-inch wheels and enhance tyre grip. The torque control arm bushings have been tuned to give optimum toe-in variation under cornering stresses.

The rear suspension member bushes have been stiffened, to reduce sway and increase stability when braking and accelerating. In addition, the whole mounting position of the rear suspension has been determined to maximise every aspect of roadholding.

SAFETY AND EQUIPMENT

Safety

The Lexus IS F benefits from the same package of active, passive and preventive safety equipment that earned the regular IS model a top five-star Euro NCAP rating. In addition, it benefits from substantially larger and more powerful brakes, to provide appropriate, secure stopping performance in line with its greater performance capabilities.

Key safety features fitted as standard include: -

- ABS
- Brake Assist System (BAS)
- Electronic Brakeforce Distribution (EBD)
- Traction Control (TRC)
- Vehicle Stability Control
- Sport Vehicle Dynamics Integrated Management (VDIM)
- Driver and front passenger front, side and knee airbags
- Front and rear curtain airbags
- Whiplash Injury Lessening (WIL) front seats
- Adaptive Cruise Control (ACC) with Pre-Crash Safety system (PCS)

Advanced safety technology

Lexus has invested in new Pre-Crash Safety (PCS) technology that can help gauge when there is a high risk of a collision and activate appropriate warnings to the driver and prepare safety systems to minimise the consequences of any impact.

Adaptive Cruise Control (ACC) maintains a safe, pre-set distance from the vehicle ahead, while the PCS system determines when a frontal collision is unavoidable, tensions the front seatbelts and prepares to engage emergency braking to help reduce impact. The two systems are combined in a single package, controlled by the same millimetre-wave radar system, operating through a sensor mounted on the front grille.

Equipment

The equipment specification of the IS F mirrors that of the IS SE-L grade, with the addition of ACC and PCS (see above) and a Multimedia Pack as standard.

The Multimedia Pack comprises a 14-speaker Mark Levinson premium audio system with six-DVD autochanger, 5.1 surround sound, Bluetooth connectivity, satellite navigation and rear park assist monitor, with functions operated through a central full-colour monitor with touch-screen controls.

In addition, the exterior and interior design includes a number of sports-themed features unique to the model, including a bootlid spoiler, quad tailpipes and semi-aniline black leather upholstery with blue highlights. The 19-inch 10-spoke alloy wheels are also reserved for the IS F.

Such is the high level of standard specification, just a single option is available – an electric tilt and slide-adjustable sunroof costing £800.

LEXUS IS F TECHNICAL SPECIFICATIONS

ENGINE	
Engine Type	2UR-GSE
Cylinders/arrangement	V8
Valve mechanism	32-valve DOHC with Dual VVT-i, VVT-iE on intake
Block Material	Aluminium
Head Material	Aluminium
Displacement (cc)	4,969
Bore x Stroke (mm)	94.0 x 89.5
Compression ratio	11.8:1
Fuel Injection Type	EFI, D-4S
Octane Rating	95 or higher
Max. Power (bhp/DIN hp @ rpm)	417/423 @ 6,600
Max Torque (Nm/rpm)	505 @ 5,200
FUEL CONSUMPTION AND EMISSIONS	
Urban (mpg)	16.8
Extra Urban (mpg)	34.0

Combined (mpg)		24.8
CO_2 Emissions (g/km)		270
VED band		G
PERFORMANCE		
0-62mph (sec)		4.8
Max. speed (mph)		168
DIMENSIONS		
Overall length (mm)		4,660
Overall width (mm)		1,815
Overall height (mm)		1,405
Wheelbase (mm)		2,730
Tread (mm) front		1,560
Tread (mm) rear		1,515
Overhang (mm) front		885
Overhang (mm) rear		1,045
Coefficient of Drag (Cd)		0.27
Minimum turning radius (m)		5.1
Fuel tank capacity (litres/gallons)		64/14.1
INTERIOR DIMENSIONS		
Interior room length (mm)		1,855
Interior room width (mm)		1,457
Interior room height (mm)		1,165 (1,120 with sunroof)
Boot capacity (l)		378
WEIGHTS (kg)		
Kerb weight		1,700
Gross vehicle weight		2,110
TRANSMISSION		
Type		AA80E
Gearbox type		Eight-speed Sport Direct Shift automatic
Gear ratios	1st	4.596
	2nd	2.724
	3rd	1.863
	4th	1.464
	5th	1.231
	6th	1.000
	7th	0.824
	8th	0.685
	Reverse	2.176
Differential Gear Ratio		2.937
BRAKES		
Front – diameter x thickness (mm)		Ventilated discs, 360 x 28
Rear – diameter x thickness (mm)		Ventilated discs, 345 x 26
SUSPENSION		
Front		Double wishbone
Rear		Multilink

STEERING	
Steering gear type	Rack and pinion
Power steering type	Electric motor, vehicle speed-sensing
Ratio	13.6
Turns lock to lock	2.9
TYRES AND WHEELS	
Wheels	19in BBS alloy
Tyres – front	225/40R19 93Y
Tyres – rear	255/35R19 96Y

LEXUS IS F EQUIPMENT SPECIFICATIONS

SAFETY & DRIVING DYNAMICS		IS F
Driver and front passenger two-stage airbags		✓
Driver and front passenger TAP side airbags		✓
Driver and front passenger knee airbags		✓
Front and rear curtain shield airbags		✓
Passenger airbag cut-off switch		✓
ABS with Electronic Brakeforce Distribution (EBD) and Brake Assist (BA)		✓
Vehicle Stability Control (VSC)		✓
Traction Control (TRC)		✓
Sport Vehicle Dynamics Integrated Management (VDIM)		✓
8-speed Sport Direct Shift Transmission with paddle controls		✓
F-Sport suspension		✓
Adaptive Variable Suspension (AVS)		✓
Speed-sensitive Electronic Power Steering (EPS)		✓
Adaptive Cruise Control (ACC) with Pre-crash Safety system (PCS)		✓
Whiplash Injury Lessening (WIL) front seats		✓
Tyre Pressure Warning System (TPWS)		✓
Front seatbelt pretensioners with force limiters		✓
Outer rear seatbelt pretensioners with force limiters		✓
Seat integrated front seatbelt anchorage and support		✓
Seatbelt warning system		✓
Rain-sensing windscreen wipers		✓
Auto-dimming rear view and door mirrors		✓
Adaptive Front-lighting System (AFS)		✓
Isofix child seat mounts (x2, rear)		✓
SECURITY		
Anti-theft system with intruder sensor, alarm and immobiliser		✓
Speed-sensitive auto door locking		✓
ENTERTAINMENT, INFORMATION & COMMUNICATIONS		
Electro Multi Vision touch-screen display		✓
Multimedia pack	Satellite navigation with dynamic route guidance	✓
	Lexus Parking Assist Monitor	✓

	Bluetooth connectivity	✓
	14-speaker Mark Levinson 5.1 surround sound system with 6- DVD autochanger	✓
Steering wheel-mounted audio and phone controls		✓
Audio input jack plug		✓
INSTRUMENTS & CONTROLS		
Optitron instrumentation with Electro-Chromatic Display		✓
Multi-information display		✓
Cruise control		✓
Sport pedals		✓
COMFORT & CONVENIENCE		
Smart entry and keyless start system		✓
Electric front and rear windows with one-touch down function		✓
Front and rear parking sensors		✓
Electric tilt and telescopic-adjustable steering wheel		✓
LED internal illumination		✓
Electrically adjustable, heated and folding door mirrors		✓
VENTILATION		
Dual-zone climate control air conditioning		✓
Clean air and pollen filter		✓
SEATING, UPHOLSTERY & TRIM		
Semi-aniline leather upholstery		✓
Leather trim		✓
8-way electrically adjustable heated front seats with power lumbar support		✓
Wood and carbon fibre-effect trim inserts		✓
Leather steering wheel and gear shift trim		✓
BODY & EXTERIOR		
Front fog lights		✓
LED tail lights and brake lights		✓
Front and rear door scuff plates		✓
High-Intensity Discharge (HID) headlights with cleaners		✓
Sunroof		Opt
19in. BBS alloy wheels		✓
Space saver spare wheel		✓