

# The All-New Jaguar XF

## AT-A-GLANCE

- The all-new Jaguar XF: lighter and more efficient, with unrivalled refinement, dynamics and design
- Aluminium-intensive architecture
- Elegant, progressive design combines short overhangs and outstanding proportions with exceptional aerodynamic efficiency: Cd 0.26
- Segment-leading for rear seat space: row-two occupants gain 15mm more legroom, 24mm more knee room and up to 27mm more headroom
- All-new optional 10.2-inch touchscreen infotainment system - InControl Touch Pro - offers door-to-door navigation, and 17-speaker, 825W Meridian digital surround sound
- Optional reconfigurable 12.3-inch TFT instrument cluster features four visual modes and full-screen navigation display
- Powertrains from 132kW Ingenium diesel to 280kW V6 supercharged petrol with eight-speed automatic transmission
- Double-wishbone and Integral Link suspension deliver exceptional ride comfort, handling, and unrivalled refinement
- All-Surface Progress Control enables smooth, effortless drive-away on low-friction surfaces such as snow and ice - all the driver has to do is steer
- The all-new XF offers a host of additional technology including optional full-LED headlights, an optional laser head-up display which delivers high-contrast colour images, autonomous emergency braking, adaptive cruise control with queue-assist, lane keep-assist, intelligent speed limiter and semi-automated parking

## Summary

### The all-new Jaguar XF

The all-new Jaguar XF brings an unrivalled blend of design, luxury, refinement and efficiency to lead the business car segment.

The dynamic, coupé-like design is formed around Jaguar's aluminium-intensive architecture and combines the outstanding proportions, elegant surfaces and perfect lines which define all Jaguar cars, with a longer wheelbase, more interior space and exceptionally low aerodynamic drag.

The cabin is a seamless blend of contemporary luxury materials and finishes, traditional Jaguar craftsmanship and state-of-the-art technology, with features such as a reconfigurable 12.3-inch TFT instrument cluster, laser head-up display and the InControl Touch Pro premium infotainment system

*"I believe the all-new XF is the best looking car in its class. Elegant, handsome and with proportions that imbue a great sense of integrity - the all-new XF is true to the great tradition of sporting Jaguar saloons while being completely of its time."*

**Ian Callum, Director of Design, Jaguar**

The 2007 XF was a radical step forward for Jaguar - and for the business car segment. Combining a sleek, coupé-like exterior and a luxurious interior, it set the class benchmark for aesthetics and driving dynamics.

Features such as the rotary shift controller, rotating air vents and phosphor blue ambient lighting set the cabin apart from the competition and made the XF a highly desirable, aspirational vehicle. It was like nothing Jaguar had ever made before, and like nothing the competition could offer. The XF went on to become the most-awarded Jaguar ever.

The all-new XF retains its predecessor's core attributes but uses Jaguar's aluminium-intensive architecture to elevate them to a completely new level. It enables weight savings of up to 190kg and an increase in torsional stiffness of up to 28 per cent. The architecture also delivers dramatic improvements in packaging and the proportions so essential to Jaguar design.

The all-new XF is 4,954mm long: at 2,960 the wheelbase is 51mm longer than before, the front overhang 66mm shorter. Though 7mm shorter and 3mm lower than the original XF, rear seat space is class-leading thanks to 15mm more legroom, 24mm more knee room and up to 27mm more headroom than before. Aerodynamics are also superior: the drag coefficient drops from 0.29 to just 0.26.

The light, stiff body is also fundamental to the all-new XF's superb vehicle dynamics. Double wishbone front suspension and Integral Link rear suspension - combined with near-50:50 weight distribution - deliver the ideal balance between ride and handling.

*"From an engineering perspective, our targets with the all-new XF were bound by one holistic goal - it had to do everything better, and it does.*

*"It offers even better dynamics, even greater refinement for the comfort of its occupants, it delivers an all-new infotainment system, and it utilises every last mm of packaging to maximise interior space, while exploiting all the weight-saving optimisation offered by our new aluminium-intensive architecture. As a driver you will notice these benefits from the moment you sit behind the wheel, and as a passenger*

**Ian Hoban, Vehicle Line Director, Jaguar XF**

Adopting Electric Power Assisted Steering (EPAS) maintains Jaguar's leadership in steering feel but also reduces fuel consumption by up to two per cent and three per cent for diesel and petrol models respectively. EPAS also enables functions such as camber compensation and advanced driver assistance systems including lane-keep assist, driver condition monitoring and bay- and parallel park-assist.

Advanced passive damper technology delivers exceptional ride quality as standard through an extra valve which reduces damping forces at low speeds. For even better control the Adaptive Dynamics system monitors body movement 100 times a second and wheel movement 500 times a second to determine the optimum damper settings for the driving conditions.

Jaguar Configurable Dynamics technology, optional on all V6 models, provides the ultimate in control and enables the driver to individually tailor settings of the dampers, steering, engine and eight-speed automatic transmission.

All-Surface Progress Control, developed for low-speed driving in adverse conditions,

automatically manages the brakes and the throttle to deliver the best possible traction, enabling the car to pull away smoothly and without drama: the driver only has to steer. ASPC operates between 3.6km/h and 30km/h, and the desired speed is set by the driver using the cruise control switches.

Infotainment and connectivity is the most advanced Jaguar has ever offered. The all-new InControl Touch Pro system builds on the intuitive user interface of InControl Touch, and supports all the same features - but offers a 10.2-inch touchscreen and Dual View technology which simultaneously allows the driver to see information such as navigation, while the front seat passenger watches TV or a DVD.

To enrich the experience there's also natural voice control, supporting commands such as 'more like this' for track selection, and 10GB of the 60GB solid-state drive is dedicated to media storage, enabling Gracenote album art to be displayed. Audio systems include the exceptional 17-speaker, 825W Meridian digital surround sound system.

To minimise driver distraction the all-new XF offers a colour laser head-up display. Compared to competitor systems, this technology is smaller, lighter, and generates high contrast images which are easier to read in strong sunlight.

Stereo camera technology enables autonomous emergency braking, lane departure warning and lane-keep assist systems. Adaptive Cruise Control with Queue Assist takes the stress out of motorway driving in stop-go traffic by tracking the vehicle in front, at a safe distance.

The all-new XF is also the first Jaguar to offer adaptive full-LED headlights. Featuring two banks of LEDs and reflectors - one for dipped beam, the other for main beam - they generate light with a colour temperature closer to that of daylight than is achievable with Xenon lights, delivering better illumination. At the same time, energy consumption is reduced. So efficient are they that, unlike first-generation designs, cooling fans are not needed.

If the high-beam assist function is specified, the stereo camera will detect other vehicles in the distance, and the headlights will be dipped automatically as necessary to avoid dazzling other drivers.

### **Range summary**

The all-new XF range will consist of: XF Prestige, XF R-Sport, XF Portfolio, XF S.

The all-new XF powertrain range will consist of: 132kW 2.0-litre diesel automatic; 177kW 2.0 petrol automatic; 221kW diesel automatic; 250kW and 280kW 3.0-litre petrol automatic.

Following a £416million investment, the all-new aluminium-intensive Jaguar XF is manufactured at Jaguar Land Rover's Castle Bromwich Plant alongside the all-aluminium F-TYPE sports car and XJ luxury saloon.

The all-new XF joins the Jaguar saloon car range between the XE and XJ model lines.

*"The XF nameplate sits at the very heart of Jaguar; the original XF was revolutionary for the brand, and now the all-new aluminium XF represents another innovative step-change within the business segment.*

*"Lighter and more efficient, with enhanced space, a greater breadth of powertrains,*

*unrivalled dynamics and refinement and, of course, world-leading design, the all-new XF offers customers a compelling package."*

**Steven de Ploey, Brand Director, Jaguar**

## **Design**

**Staying true to the principles of elegant lines and disciplined surfacing, the all-new Jaguar XF is the most visually dynamic car in the executive segment.**

**Integrity, simplicity: Perfect proportions, aerodynamic efficiency**

As a manufacturer with an unrivalled tradition of designing outstanding sporting saloons, Jaguar has once again set the benchmark in the executive segment with the all-new XF.

Developed from a clean sheet using Jaguar's aluminium-intensive architecture, the second generation of Jaguar's most awarded car delivers even better proportions, more interior space and a progressive, highly streamlined form.

The more vertical front end, shorter front overhang, longer wheelbase and a sixth-light with characteristic daylight opening graphic signify the evolution of the Jaguar design language launched on the original XF in 2007. All-new XF now takes its rightful place between the mid-size XE and the luxury XJ saloons.

*"In creating the all-new XF, as a design team we have been driven by discipline, the discipline of simplicity. Every exterior line on the XF has a clear purpose - nothing is superfluous. Achieving that simplicity takes time and requires great determination; it's all too easy to add lines to a car, but much harder to add character by leaving lines out."*

*"Inside too, we have been driven by the desire to ensure the XF's cabin is as comforting as it is comfortable. New technology, including our new 10.2-inch touchscreen, is combined carefully with materials that cosset and reassure.*

*"The all-new XF has a clear sense of calm and strength, both outside and inside - and I'm proud of my team for delivering that."*

**Ian Callum, Director of Design, Jaguar**

From any angle the all-new XF is instantly recognisable as a Jaguar. The sleek, coupé-like profile, long bonnet with deep power bulge and the short front overhang mark this car out as a sporting saloon stood apart from the crowd.

Working in direct partnership with engineering and manufacturing, Jaguar's design team started with the new aluminium-intensive architecture and used it to shape an XF that would be even better than before - in every respect.

At 4,954mm, the all-new XF is 7mm shorter than its predecessor but such is the modular architecture's inherent design flexibility that the wheelbase could be increased by 51mm to 2,960mm. This longer wheelbase not only delivers the superior packaging that liberates 15mm more rear legroom, 24mm more rear kneeroom and up to 27mm rear headroom, but also contributes to the superb ride comfort.

The front overhang is now 66mm shorter, emphasising the car's dynamic, rear-wheel stance

and the outstanding proportions characteristic to all Jaguars.

And the mesh grille is now more vertical than before, delivering a more mature look to the car and helping to reduce drag.

Aerodynamics are improved further by using apertures in the front bumper to channel air over the front wheels. This helps to prevent the turbulent wheel wake from disturbing the smooth laminar airflow passing around the car.

The headlights - including the adaptive full-LED technology appearing for the first time in a Jaguar - are flush with the surrounding panels, improving not only aesthetics but also aerodynamics. They also feature Jaguar's signature J-Blade LED daytime running lights and a 'modern quad' design, referencing the four round lights that Jaguar saloons have made iconic. The fluting running backwards from the top of the headlights is another detail inspired by Jaguar's rich heritage.

The power bulge on the long aluminium bonnet runs all the way through to the nose cone, emphasising the car's performance potential, Integrating Jaguar's latest-generation deployable bonnet technology into the rear hinge assembly enabled the bonnet line to be 35mm lower. Not only does this contribute to the sleek styling but also improves visibility as well as pedestrian protection.

The one-piece aluminium bodyside pressings emphasise Jaguar's philosophy that surfacing should always be executed with the discipline of simplicity and purity. Designing and manufacturing these panels from a single sheet is extremely challenging but contributes not only to the overall stiffness of the body, but also to surfacing purity and quality because there are no visible joints.

The sweeping, coupé-like profile which defined the first-generation XF has evolved, and now features a sixth-light. The additional feature helps to reinforce the car's status and prestige, and also allows for a clearer view out from the rear seats. And the extra light flooding into the cabin creates a greater sense of spaciousness to mirror the increased leg and headroom.

The elegant daylight opening graphic features a full return, the form inspired by past Jaguar sports saloons. With radii honed to within fractions of a millimetre to deliver the complex curvature, the feature is testament to Jaguar's expertise in working with aluminium.

Still relatively high to emphasise dynamics and movement through ideal proportion between the wheel, body and cabin, the waistline is now slightly more horizontal than before, creating a more formal, business-focused appearance. The roofline is lower and the rear deck longer and higher to reduce drag.

Running from front to back, peaking above the rear wheel in terms of height and then tapering away, is a chamfered feature line known as 'the spear of light.' The reflections make the car appear even more lithe, more agile, more elegant.

At the rear, the LED tail lights feature the signature Jaguar graphic from F-TYPE - a line intersecting a roundel - also used on the XE. But here, the graphic is repeated, creating a clear hierarchy from XE, and an unmistakable pattern at night: everybody will know that this is the all-new XF.

The chrome signature blade running across the bootlid between the light clusters is now slimmer than before, emphasising the all-new XF's taut surfaces and dynamic visual balance.

To deliver the flush fit of the light clusters and perfect integration of the chrome blade, the boot lid is made from two steel pressings joined by laser brazing. As well as being highly energy-efficient, this state-of-the-art process was selected for its precision and neat, clean finish.

### **Interior design: simplicity, strength, space**

The interior of the XF has always attracted praise, especially the start-up sequence bringing the car to life as the rotary gear selector rises up from the centre console and the air vents rotate into position.

The brief was to retain that sense of occasion - and the strong, simple lines and horizontal feel of the instrument panel - but mature the design language and the use of materials, befitting the all-new XF's status now that XE is in position as the entry-level Jaguar sports saloon.

The layered instrument panel, now with Jaguar signature 'Riva Hoop' inspired by XJ, continues into the door, creating a unique cabin feel. This is enhanced by the generous application of veneers such as Gloss Figured Ebony and textured aluminium trim such as Dark Hex.

With options such as the reconfigurable, 12.3-inch full-TFT instrument cluster and 10.2-inch touchscreen, four-zone climate control, 10-colour ambient lighting, Black Suede cloth headliner and fluted Windsor leather seats, the all-new XF resets the standard for interior luxury and design.

Appreciation of the new XF's interior starts from outside - there's an approach sequence leading you in to the car as the Jaguar Intaglio at the centre of the Riva Hoop is lit up.

Once in your seat, you notice how the doors with optional power-close shut with reassuring precision and a sound painstakingly engineered to match the premium materials and perfect execution of the interior. Press the engine start button and watch the backlighting fade: the effect is calming - this is your personal space.

Look around and you notice the height of the waistline and the centre console: this enhances the feeling of being sat in the seat rather than on it, creating a sense of safety, comfort and security. The strong horizontal theme of the instrument panel, the layering of it, and the materials used for each layer creates a rich, luxurious, hand-crafted feel.

In the back, the sixth-light and optional panoramic sunroof let more natural light into the cabin and, just as importantly, heighten the perception of space delivered by the all-new XF's extra 15mm of legroom and 24mm of knee room.

The longer wheelbase also means that occupants in the second row are sat further away from the rear wheels, improving refinement even further. This also created the opportunity to reduce seat height slightly, contributing to the increased headroom, which is now up to 27mm more than before. Options such as the four-zone climate control system, heated

seats and window blinds make the second row an even more comfortable place to be.

The rear bench also features a more practical 40:20:40 split, making it easier to through-load bulky items such as skis or snowboards. The boot lid now benefits from an optional power close function.

### **architecture and Body structure**

**With the introduction of the all-new XF, every Jaguar features a light, stiff body structure made predominantly or entirely from aluminium - a unique achievement for a premium brand**

#### **Material benefit: aluminium-intensive construction**

Aluminium alloys, self-piercing rivets, structural adhesives: these are the essential elements around which every Jaguar is designed. Used to create inherently light, stiff body structures, they enable the highest standards of performance, efficiency, safety and dynamics.

These attributes were engineered into Jaguar's aluminium-intensive architecture from the very beginning. It is from this state-of-the-art modular structure that the all-new XF was developed. Also featuring advanced high-strength steels, the aluminium-intensive monocoque uses materials intelligently, exploiting each to its full potential.

Aluminium is also used to make the bonnet and front fenders, while the front-end carrier and cross-car beam are cast from even lighter magnesium alloys. Combined with the other weight savings made throughout the vehicle, this makes the all-new XF up to 190kg lighter than its predecessor.

*"We have the expertise in aluminium bodyshells, and now it's about applying that to our range of vehicles and showing the benefits to customers. We've made the new XF even better: we've reduced the weight, and increased stiffness, crash performance, fuel economy, handling and refinement. There is no downside to light-weighting."*

**Dr Mark White, Chief Technical Specialist, lightweight vehicle technologies**

The move from an all-steel to aluminium-intensive monocoque leverages more than a decade's experience of manufacturing luxury cars from aluminium in high volume. The one-piece bodysides of the all-new XF are testament to Jaguar's world-leading expertise in working with the material.

Stamped from a single sheet of high-strength 6000-series alloy, the bodysides weigh less than 6kg and are among the most technically-challenging panels Jaguar has developed and push the very limits of what is possible in terms of designing and manufacturing in aluminium. Perfecting the deep haunches and the sixth-light incorporated all of the learning from F-TYPE in terms of depth of draw and tightness of radii.

Assembly to the rest of the structure uses a two-stage framing process. The technique allows for greater joint efficiency through optimised positioning of the rivets. This translates to increased torsional rigidity of the body, and the all-new XF is up to 28 per cent stiffer than its predecessor.

Features such as the high-pressure die-cast aluminium front suspension towers increase local stiffness and make a significant contribution to the all-new XF's benchmark ride,

handling and steering.

### **Quieter by design**

The all-new XF is even more refined too, and much of the improvement comes from reducing structure-borne noise. Critical to this is that the body behaves as one homogeneous structure: wherever vibration energy finds a discontinuity it will concentrate and then radiate noise through to the cabin.

Every single part of the body was analysed in this way to ensure that as many potential sources of noise could be designed-out. In some areas, such as the crash structure behind the front bulkhead, fully-sealed, double-wall structures are used. Where sound deadening has been applied, the latest spray-on materials are used due to their combination of higher performance and lower weight.

Foam baffles inside the aluminium sections also contribute. These pieces are fitted during assembly: as the body passes through the e-coating ovens the heat causes the foam to expand so that it completely fills the section.

A further example of the painstaking attention to detail which delivered the all-new XF's benchmark low levels of cabin noise is typified by the way in which the high-level brake light is fitted to the body. Running all the way along the full length of the rear screen, this full-LED light has a seal and an acoustic barrier behind that to minimise any noise leakage through to the interior.

### **Closing the loop: Recycled aluminium alloy**

Aluminium pressings used where stiffness is a key criterion, such as underframe reinforcements, are typically formed from 5000-series alloys. These include RC5754, a grade unique to Jaguar Land Rover, and which is made predominantly from recycled material.

Around half of this is scrap sourced from the press shops, helping not only the move towards closed-loop recycling but also reductions in overall electricity consumption and therefore lifecycle CO2 emissions. Innovations such as this are a further example of Jaguar Land Rover's world-class aluminium expertise and drive for environmental sustainability.

### **Structural integrity: World-class safety**

The new XF has been engineered to meet the most demanding crash test requirements in the world. As part of the intelligent material mix in the body, the rear longitudinal members and the B-pillar reinforcements are made from ultra-high strength hot-formed boron steels, providing exceptional rigidity and stability of the occupant safety cell.

Pedestrian protection benefits from the more vertical front grille and the improved energy-absorbing properties of the front bumper but is enhanced even further by Jaguar's latest-generation deployable bonnet technology.

The system uses pressure sensors mounted in the front bumper to detect collisions with pedestrians. When deployment is initiated, pyrotechnic piston actuators integrated into the rear bonnet hinges fire, and, in some 40 milliseconds, can lift the trailing edge of the bonnet by approximately 130mm. This increases clearance between the pedestrian's head and

hardpoints in the engine compartment, helping to mitigate head injuries.

Jaguar's commitment to improving pedestrian protection in this way began back in 2006 with the launch of the XK. Compared to the airbag system used then, which was further developed for the XF, the latest technology in the all-new XF has even more accurate and robust sensing plus improved firing times, as well as weight and packaging benefits.

## **Chassis**

**The all-new Jaguar XF exceeds all expectations of how a business saloon should ride, handle and steer. Comfort and refinement have been taken to an even higher level and combined with agility and responsiveness that are unequalled in the segment**

### **Dynamic, agile, composed**

Whether on a mountain road or a motorway cruise, from behind the wheel or relaxing in the back, the new XF has been designed to deliver a driving experience that sets the class standard.

The light yet exceptionally stiff body with its combination of aluminium and advanced high-strength steels delivers near-50:50 weight distribution - the ideal starting point for dynamics development.

Double-wishbone front and Integral Link rear suspension systems provide the inherently high levels of stiffness needed for agile handling and steering precision with the compliance essential for first-class comfort and refinement. Advanced damper technologies - both passive and continuously-variable - improve ride quality still further and extend the all-new XF's breadth of dynamic capability.

*"The all-new XF has to deliver both driver reward through agility and immediacy of response when it's called for, and yet great ride composure and comfort too. The all-new XF's light and rigid aluminium intensive architecture is a key enabler for us delivering those attributes, as it provides an optimal basis for finely tuning the ride and handling characteristics of the car.*

*"The result is that the new XF is as satisfying to drive quickly, as it is comfortable to be driven in."*

**Mike Cross, Chief Engineer of Vehicle Integrity, Jaguar**

With components made entirely from lightweight aluminium, the all-new XF's double-wishbone front suspension is modelled closely on F-TYPE's and was chosen because fundamentally, there is no better configuration.

Its exceptionally high camber stiffness means that the tyres are able to generate lateral force immediately - which translates to sharper and more immediate turn-in. And the high roll camber gain means that the tyre's contact patch is maintained, generating more grip and delivering better feel.

Other refinements include lighter springs made from narrower-gauge steel and low-friction, PTFE-lined bushes for the tubular anti-roll bar.

### **Integral Link: Forces separated**

The optimum balance of ride and handling requires lateral and longitudinal stiffnesses to be tuned independently. This simply isn't possible with a conventional multi-link suspension rear suspension: changes to the one will affect the other, leading to compromises in the vehicle's dynamics attributes.

Integral Link is different, enabling the all-new XF to realise exceptional levels of comfort and handling. Bushes soft in recession allow the wheels to move rearwards and upwards upon impact, providing excellent energy absorption characteristics.

At the same time, camber stiffness can be increased, delivering greater responsiveness. Greater caster stiffness can also be achieved, for greater stability under braking.

### **Electric power-assisted steering**

The XF set the benchmark for steering feel. The all-new XF will do so again: steering response and on-centre feel are among the most important attributes which define Jaguar's dynamics DNA.

Everything from the tyres through to the steering wheel itself makes a difference but one of the key enablers is the enormous tuning potential of electric power-assisted steering (EPAS). From filters which damp unwanted disturbances caused by road surface irregularities to algorithms which compensate for changes in ambient temperature - EPAS has far more to offer than hydraulic systems ever could.

Incorporating all of the learning from F-TYPE and XE, the advantages of EPAS have been exploited to the full, giving the all-new XF an even more connected feel together with intuitive, linear response. And because the system only uses energy when the wheel is turned, it improves fuel efficiency by up to three per cent on the European combined cycle.

### **Torque Vectoring by Braking**

Another technology proven first on F-TYPE and now standard on the all-new XF is Torque Vectoring by Braking. On corner entry, lightly braking the inner wheels individually can mitigate understeer and help the driver to take the ideal line. Intervention is subtle and virtually transparent to the driver, but the increased agility is felt immediately.

### **Next-generation damper technology: smooth progress**

Making the all-new XF's body lighter and stiffer delivers inherent benefits in terms of ride control, but Jaguar's dynamics engineers looked closely at other fundamental improvements that could be made. One of the most effective is the integration of next-generation passive damper technology to enhance comfort, and - as an option on V6 models fitted with adaptive dampers - Configurable Dynamics.

The new passive dampers enable frequency-dependent damping - the ability to vary damping force not only with the velocity that the damper piston moves at, but also as a function of its frequency.

An extra valve in the piston provides an additional bypass. At road speeds typical of town driving, the valve is open, allowing some fluid to flow through it instead of the main valve in the piston. This reduces the damping force and makes the ride smoother and more supple, making the driving experience even more relaxing. With increasing speed the valve closes,

forcing all of the fluid to pass through the piston: damping force increases and the ride becomes firmer.

Jaguar's Adaptive Dynamics system has evolved too. Still monitoring body movement 100 times a second and wheel movement 500 times a second, the control algorithms for the adaptive dampers are now even more advanced; further enhancing low-speed ride comfort as well improving handling and agility at higher speeds.

### **Configurable Dynamics: Track-tested**

First developed for F-TYPE, Configurable Dynamics takes the all-new XF's duality of character to the next level. The system allows the driver to individually tailor the throttle mapping, transmission shift strategy, steering feel and Adaptive Dynamics settings using the touchscreen. Configurable dynamics is available on all V6 models equipped with Adaptive Dynamics.

### **Powertrain**

#### **Responsive, refined, rewarding**

**The new XF's four- and six-cylinder Euro 6 diesel and petrol engines are engineered for exceptional response, smoothness and efficiency, and all benefit from stop-start systems and smart regenerative charging. Characterised by a rapid build-up of torque from low speeds to give effortless acceleration, the linear throttle response and refined soundtrack of every one makes the driving experience as intuitive as it is rewarding.**

Designed, developed and manufactured in-house to meet Jaguar's exacting requirements for power, torque and refinement, Ingenium is a modular family which will deliver a wide range of world-class diesel and petrol engines.

The first unit to feature in the new XF is the 2.0-litre four-cylinder diesel rated at 132kW/430Nm. Every measure has been taken to ensure that this engine is as clean and efficient as it is quiet and smooth-running.

Features such as the offset cylinder bores and roller bearings for the camshafts and balancer shafts contribute to Ingenium's benchmark low levels of internal friction - more than 17 per cent less than the previous 2.2-litre diesel.

The split-cooling system features a mapped thermostat, a variable-flow pump and crossflow channels in the cylinder head to ensure a rapid warm-up from cold. A variable flow oil pump and switchable piston cooling jets cut parasitic losses still further and therefore reduce fuel consumption and emissions.

Ingenium is also one of the first diesel engines to feature variable valve timing. A cam phaser on the exhaust side allows the catalysts to reach operating temperature even more quickly, further reducing emissions. The technology also enables more efficient and robust regeneration of the particulate filter.

Complementing the inherently low levels of vibration ensured by the design of the stiff, deep-skirt cylinder block are acoustic covers fitted to the cylinder head, the chain drive and the sump. These covers prevent radiated noise from the engine from reaching the cabin and contribute to the all-new XF's exceptional levels of refinement. Switchable engine mounts

provide extremely effective isolation from the body, further reducing the transmission of structure-borne noise.

### **Clean diesel technology: NOx emissions minimised**

The 132kW Ingenium diesel engine features 1,800bar common rail injection systems and the latest variable geometry turbochargers to deliver a clean, quiet, efficient combustion process. A sophisticated exhaust gas recirculation (EGR) system featuring both high-pressure- and cooled low-pressure circuits reduces pumping losses still further, thereby boosting efficiency, while the reduction in peak combustion chamber temperatures delivers inherently low emissions of oxides of nitrogen (NOx).

Integrating selective catalytic reduction (SCR) technology into the exhaust gas after treatment system cuts NOx to very low levels. By injecting a urea solution upstream of a highly-efficient SCR catalyst, NOx is converted into harmless nitrogen and water, ensuring that the all-new XF can meet not only the stringent limits imposed by Euro 6 but also the most demanding emissions regulations worldwide.

### **High-output V6 diesel: 700Nm**

Renowned for its combination of high power and torque with excellent fuel economy and exceptionally smooth running, Jaguar's 3.0-litre V6 diesel in its latest generation exceeds all expectations.

The light, stiff, compacted graphite iron cylinder block retains the same 2,993cc displacement as before but changes to the fuel injection and boosting systems raise output from 202kW/600Nm to 221kW/700Nm.

The piezo common rail system now delivers fuel into the combustion chambers at pressures of up to 2,000bar through revised eight-hole nozzles, further improving mixture formation for cleaner, more efficient combustion.

The parallel-sequential turbocharging system benefits from turbos with more aerodynamically-efficient turbine and compressor wheels. In a Jaguar-first, ceramic ball bearing technology is used in the primary turbocharger. This technology reduces friction - especially at low temperatures - so torque builds up even more rapidly than before, delivering immediate response whenever the driver demands it.

Engine efficiency is also higher thanks to the adoption of a two-stage oil pump and a switchable coolant pump. Improved high-pressure EGR and the addition of a cooled low-pressure EGR circuit reduces pumping losses.

Utilising a higher proportion of recirculated exhaust gas reduces peak combustion chamber temperatures, inhibiting NOx formation. Better control means that cylinder-to-cylinder exhaust gas distribution is more uniform, cutting particulate emissions and also making combustion smoother and quieter.

Working in combination with EGR, an SCR system reduces NOx emissions to very low levels and ensures Euro 6 compliance.

### **Four-cylinder petrol power: Responsive, refined, efficient**

Already proven in XF, this 2.0-litre unit combines a low-inertia turbocharger with direct injection and fully variable valve timing to deliver the driveability of a larger naturally-aspirated engine but with significantly improved fuel economy.

The all-aluminium design is lightweight and compact and features twin contra-rotating balancer shafts to counteract vibration and enhance refinement. Isolating the fuel injectors from the cylinder head and fitting an acoustic layer to the high-pressure pump and the fuel rail reduces radiated noise.

Among the innovations on this highly advanced engine is the sheet metal turbine housing integrated into an air-gap insulated exhaust manifold. This feature not only saves weight, but it also reduces thermal mass, allowing the catalyst to reach light-off temperature sooner, thereby cutting fuel consumption and emissions.

### **Supercharged V6: Highly-rated sports car performance**

Enthusiasts demanding the most involving driving experience now have the choice of Jaguar's free-revving 3.0-litre supercharged V6 in 250kW and 280kW ratings.

Shared with the F-TYPE sports car, these all-aluminium engines combine supercharging with direct-injection and variable intake and exhaust valve timing to deliver exceptional throttle response, linear power delivery and a unique soundtrack.

A single balancer shaft enhances smooth-running and refinement, while a carefully-tuned symposer feeds some of the supercharged V6's induction sound back into the cabin to make exploiting the performance potential even more exhilarating.

This is the first time the 280kW version has been used in a Jaguar saloon and is reserved exclusively for the all-new XF S.

### **Comfortably ahead: Optimised eight-speed automatic transmissions**

Every engine in the all-new XF, from the 132kW four-cylinder diesel to the 280kW supercharged V6, is paired with a specifically-optimised version of ZF's peerless eight-speed automatic. Combined with Jaguar's unique rotary gear shift controller and paddle shifts, these state-of-the-art transmissions offer an unparalleled driving experience, blending exceptionally smooth launch behaviour with seamless shifting and outstanding efficiency.

The transmission controller monitors driving styles and adapts its shift patterns to suit. The ECU is also networked to the Jaguar Drive Control, offering even quicker shifts and more dynamic kickdown in Dynamic mode, and earlier up-shifts in Eco mode.

Complementing the stop-start system is Transmission Idle Control: if the vehicle is stationary and held against the brakes with the engine running, one of the brakes inside the transmission opens, reducing drag losses and therefore further reducing fuel consumption.

To improve driving comfort even further when running at very low engine speeds, all applications except the supercharged V6s feature a pendulum damper in the torque converter. This additional element is able to absorb very low frequency vibrations and prevent them from passing through to the cabin. This enables even greater fuel efficiency without compromising on refinement.

## **INFOTAINMENT AND CONNECTIVITY**

**With to door-to-door navigation to a 10.2-inch touchscreen with Dual View technology - the all-new XF offers all the functionality you'll ever need**

### **InControl Touch: Better connected**

The all-new XF features two state-of-the-art infotainment systems. The standard system is InControl Touch and is based around an 8-inch capacitive touchscreen with Jaguar's new user interface. Designed to be simple and intuitive to use, the contemporary graphics are crisp and clear.

The touchscreen supports gestures familiar from smartphones and tablets such as 'swipe' to perform actions such as moving from one page to the next or to change tracks, and 'drag' to scroll across maps.

Some customers prefer voice control. The enhanced speech recognition engine for InControl Touch enables the driver to make one-shot destination entry for the navigation system, for example, or to call a contact directly.

Planning journeys in the navigation system is quicker and easier than before thanks to smart data entry and faster route calculation. Map data stored on SD card is rendered in high quality 2D and 3D. A junction view feature means that you need never miss a motorway exit again, while images of terrain and cityscapes make following the route more intuitive. Turn-by-turn instructions can also be shown in the optional Head-Up Display, enabling the driver to keep their eyes on the road.

### **InControl Touch Pro: World-class infotainment technology**

The all-new XF is the first model to feature the equally new InControl Touch Pro infotainment system. Designed in-house from a clean sheet, it is the most advanced Jaguar has ever developed and delivers a truly outstanding multimedia experience.

At the heart of InControl Touch Pro is a 10.2-inch capacitive touchscreen. There are no buttons either side: instead, all the functionality has been neatly integrated into the bottom section of the touchscreen.

Like a smartphone, the home screen can be customised: wallpaper can be set to any image, and widgets can be added to provide shortcuts to favourite features. It's even possible to add extra home screens. And the touchscreen accepts the 'pinch to zoom' gestures familiar to all smartphone users - nothing could be more intuitive to use. InControl Touch Pro also supports the latest generation of Jaguar's Dual View technology, offering a 100 per cent increase in screen pixel count and brightness for sharper, clearer images.

Navigation has been taken to a new level. Map data stored on InControl Touch Pro's 60GB solid-state drive (SSD) can be accessed in a fraction of the time taken with conventional hard drive systems. Dead-reckoning functionality, which interprets vehicle data up to 40 times a second, can accurately position the vehicle even when GPS signals can no longer be received - perfect for city centres.

If you just want to enjoy the music, on-board Gracenote images stored on the SSD drive enrich the experience, and functions such as 'Play more like this' make it even simpler to access all of your favourite tracks. To make the most of it all there's the option of a 17-speaker, 825W digital surround sound system developed with renowned British audio experts Meridian. The system benefits from Meridian's Trifield and Audyssey's MultEQ XT technologies to ensure optimum sound reproduction with benchmark low levels of distortion.

## **ADVANCED DRIVER ASSISTANCE SYSTEMS**

**From traction systems which know the type of surface you're driving on to a stereo camera which reads the road ahead: the all-new XF features all of the intelligent technologies needed to reduce driver workload and make even the longest journeys feel effortless and stress-free**

### **Getting to grips: All-Surface Progress Control**

Even the most expert drivers can struggle to pull away smoothly on very low-friction surfaces such as snow, ice or wet grass - especially in a rear-wheel drive car. From a hill start it can be near-impossible because even the slightest pressure on the accelerator can be enough to break traction.

Conventional traction control systems attempt to modulate what happens after the wheels begin to slip - and often that's too late. Which is why the all-new XF features Jaguar's revolutionary All-Surface Progress Control (ASPC) system.

Leveraging the knowledge built up over decades of Jaguar Land Rover experience in off-road technologies, ASPC delivers a step-change in capability because there's no driver input on the pedals: the driver just has to steer.

ASPC works like a low-speed cruise control and can operate between 3.6km/h and 30km/h. The system is activated by pressing a button on the centre console and then the driver uses the cruise control switches on the steering wheel to set the maximum speed. After that, the system does all the hard work.

What makes ASPC so effective is that it doesn't just provide fine control of the throttle: it also uses the brakes in opposition to the throttle so that from standstill, only very low engine torque is applied to the driven wheels. This unparalleled capability ensures smooth progress with little or no wheel spin.

### **Forward-thinking: Stereo camera at the heart of intelligent safety**

The highly automated driving functions of tomorrow will only be made possible through the use of exceptionally accurate and robust sensors. Such technology is available today in the all-new XF: it is one of the few vehicles to feature a forward-facing stereo camera.

This state-of-the-art sensor, packaged in front of the rear-view mirror, generates a 3D view of the road ahead. The information is interpreted by highly sophisticated image processing software and the output used by a wide range of advanced driver assistance systems.

One of the most important is the autonomous emergency braking (AEB) system because it

has the potential to significantly reduce accident statistics. If the controller determines that a collision with a vehicle ahead is likely, the brake system is pre-charged and the driver given audible and visual warnings. If no avoiding action is taken and the collision deemed to be imminent, full braking is initiated to avoid it or mitigate the effects.

The stereo camera also enables the all-new XF's lane departure warning (LDW) and lane-keep assist (LKA) systems. By monitoring the vehicle's position relative to lane markings either side, LDW can prevent drivers from drifting out of lane by triggering a visual warning in the instrument panel and a haptic warning through the steering wheel rim.

If the driver drifts too close to the edge of the lane, the LKA system can guide the driver towards the centre by applying a small amount of counter-steering. The amount of torque applied to the steering wheel is slight and can be easily over-ridden by the driver at any time.

Drifting out of lane can be caused by driver fatigue as well as inattentiveness, and this can be identified by periods of little or no steering activity followed by sudden or excessive inputs. The all-new XF's Driver Condition Monitoring system recognises these patterns, and, by also checking activation of brake and accelerator pedals and various instrument panel buttons, will display a multi-stage visual warning in the instrument panel to prompt the driver to take a break.

### **In the line of sight: Laser head-up display**

The all-new XF is the latest Jaguar saloon to feature a laser head-up display (HUD). Projecting key information such as vehicle speed, gear shift indication and navigation instructions onto the windscreen makes it easier for the driver to concentrate on what matters most - the road ahead.

The colour images are exceptionally sharp and are adjustable both in height and in brightness, making it easy to find the ideal setting. The HUD may also be switched off if desired.

Laser technology offers several advantages over conventional TFT systems. The images it generates offer superior colour saturation and higher contrast, so they're far more resistant to 'washout' in bright sunlight. The images also remain clearly visible should the driver be wearing polarised glasses. And the system is not only more compact, but it's almost a third lighter - every gram counts as part of Jaguar's relentless focus of weight reduction.

### **Keeping a safe distance: Adaptive Cruise Control with Queue Assist**

The adaptive cruise control (ACC) system familiar from the previous XF has been enhanced with a function designed to take even more of the effort and monotony out of driving in heavy traffic. Using a long-range 77GHz scanning radar, the system will maintain a safe distance from the vehicle in front, all the way down to a standstill. Queue Assist then enables the all-new XF to track the vehicle in front as the traffic starts moving again.

### **Always looking back: Closing Vehicle Sensing and Reverse Traffic Detection**

Radar can keep watch on the area behind the car too, making overtaking safer. Medium-range sensors will alert the driver to the presence of vehicles approaching fast from behind

once they've closed to within 70 metres. As the vehicles approach the blind spot, a flashing icon appears in the mirror as a warning. Once the vehicle enters the blind spot, the icon is shown as a solid.

At slower speeds, such as reversing out of a space in a busy car park, the same radar sensors can also warn drivers of approaching vehicles which may be hidden from view or are outside the driver's peripheral vision.

### **Perfect positioning: Park Assist**

The effort of trying to slot a large car into a small space is now a thing of the past. The all-new XF features semi-automated park assist functions for both bay and parallel parking. Ultrasonic sensors measure the space and, if it's suitable, will enable the car to steer itself into position: all the driver has to do is operate the accelerator and the brakes. In the case of parallel parking, the system can also steer the vehicle out again.

Complementing this feature is the surround camera system. Five cameras combine to give a 360° view of the area around the car, including a plan view, to make manoeuvring easier and safer.