PRESS INFORMATION
FOR RELEASE: Embargoed until 00.01hrs, 20 October, 1998

## LAUNCH OF NEW S-TYPE SALOON SIGNALS NEW ERA FOR JAGUAR

Jaguar's new S-TYPE sports saloon, the company's most eagerly awaited new model for decades, makes its world debut today at the Birmingham International Motor Show. The new S-TYPE, designed and developed at Jaguar's Engineering Centre at Whitley, Coventry, will be built at the company's Castle Bromwich plant in Birmingham and goes on sale in March 1999.

The Jaguar S-TYPE is an all-new, more affordable, compact, luxury sports saloon to complement and extend Jaguar's existing range of XJ Series saloons and XK sports cars. S-TYPE is the company's first compact saloon since Jaguar pioneered the market in the nineteen fifties and sixties with the legendary Mark 2 and original S-Type. The new S-TYPE is positioned below Jaguar's XJ Series saloon range in both size and price and will compete in one of the fastest growing segments of today's passenger car market.

The recently launched V8 XJ Series saloons and XK sports cars are today achieving customer satisfaction levels which rival the world's best competitive standards. As a result, Jaguar is on course to achieve record sales in 1998, with annual sales exceeding 50,000 cars for the first time in the company's history. The introduction of S-TYPE will build on this success. With a three-model line up, Jaguar expects to sell around 85,000 cars in 1999, effectively double the level achieved in 1997, rising to over 90,000 cars in the year 2000, the first full year of S-TYPE sales.

Jaguar forecasts worldwide sales of 40,000 S-TYPES in 1999, rising to over 55,000 cars in 2000. The largest markets for S-TYPE will be Europe and the USA, each taking around 40 per cent of world sales. The UK alone will take around 20 per cent, Germany 8 per cent and Japan 5 per cent of total sales.
Commenting on Jaguar's new model, Nick Scheele, Chairman and Chief Executive, said:
"The new S-TYPE is a true Jaguar thoroughbred, ably representing the company's core marque values of distinctive style, refined power, agile handling, supple ride and luxurious comfort. While S-TYPE's instantly recognisable styling signature evokes the spirit of its acclaimed antecedents, the Mark 2 and original S-type saloons, advanced technologies set new standards in terms of durability, quality, reliability, customer convenience and driving pleasure."

17 September 1998

Leading-edge design technologies ensure that S-TYPE bodies are built to a consistently high standard of quality, incorporating all the associates values of strength, refinement, durability and craftsmanship. The modern, spacious interior achieves a harmonious blend of ergonomic excellence, safety engineering and high quality, hand crafted natural materials.

The new all-aluminium, 240 bhp (DIN), 3.0 litre AJ-V6 and proven, 280 bhp (DIN), 4.0 litre AJ-V8 engines employ innovation in design and manufacture to deliver outstanding performance, refinement and driveability, combined with excellent fuel economy and low emissions. Designed especially for S-TYPE, the high output 3.0 litre AJ-V6 is the company's first ever production V6 engine and shares many design features with the larger AJ-V8, including combustion system, cooling system, cylinder head and valve gear.

The 4.0 litre AJ-V8 engine is similar to that fitted to the Jaguar XJ saloon and XK8 sports models, further refined for its S-TYPE application. S-TYPE also features new five-speed manual (3.0 litre) and five-speed automatic (3.0/4.0 litre) transmissions, while a bespoke powertrain electronic controller provides significant advances in refinement, driveability and reliability.

S-TYPE, in both three and four litre forms, is an impressive performer. The 3.0 V6 manual sprints from zero to 60 mph in 6.8 seconds (8.0 seconds for the automatic) onto a top speed, where conditions allow, of 146 mph (auto, 141 mph). At the same time, the 3.0 manual achieves an average fuel consumption of more than 27 mpg. The 4.0 V8 automatic accelerates effortlessly to 60 mph in a mere 6.6 seconds with a top speed, where conditions allow, of 150 mph.

Refined, powerful engines are allied to a chassis which combines outstanding ride comfort with poised agile handling. The new double wishbone suspensions provide traditional Jaguar refinement but with a distinctly dynamic character. The ideal 50/50 front/rear weight distribution, combined with the new electronic traction control, anti-lock braking and variable ratio, speed proportional steering systems provide optimal vehicle control. Electronic brake distribution provides enhanced stability in adverse conditions, while the optional Dynamic Stability Control system links with the anti-lock braking, traction and steering systems to prevent oversteer. The latest generation of Jaguar's Computer Active Technology Suspension, employing electronic adaptive dampers, is also available as an option.

17 September 1998

Multiplexed electrical architecture supports the comprehensive feature specification and advanced technologies including automatic, dual-zone climate control and the optional rain sensing wiper and reverse park control systems. An integrated satellite navigation system is also available as an option and links with the UK's Trafficmaster system to provide real time data on traffic delays.

For the first time on a production car, S-TYPE features voice activated control of all primary audio, phone and climate control functions, providing safe, hands-free operation. Voice activation is available as an option in the UK and USA.

S-TYPE features a strong crash structure, innovative collapsible steering column and protected under-floor plastic fuel tank. The driver and front passenger are protected by dual front and side airbags which protect both chest and head. A state-of-the-art crash sensing system controls the deployment of all airbags and pyrotechnic seat belt pre-tensioners. Comprehensive, state-of-the-art security systems, fully integrated into the vehicle electronics, exceed the stringent British Insurance Industry Criteria for customer peace-of-mind and include perimeter alarm, immobiliser, deadlocking, intrusion sensing and automatic locking on drive-away. 'Smart' locking helps prevent keys being locked in the car.

Throughout S-TYPE's design and development, Jaguar employed a cross-functional team of highly qualified engineers with international design and manufacturing experience which took maximum advantage of the global knowledge and expertise within the selected component suppliers. The flair and ingenuity of Jaguar engineers, so effectively executed on the XK8 sports car and recently launched V8 XJ Series saloon were applied to S-TYPE, particularly in the areas of powertrain, ride and handling, refinement, styling and interior ambience. Applying the lessons learnt from one programme to the next ensures a process of continuous improvement. In addition, Jaguar engineers employed innovative design methodologies and simulation techniques to ensure the achievement of all functional and quality targets.

Designed, developed and built by Jaguar in the UK, S-TYPE enters a new segment of the market with world class standards of quality and technology, benefiting from access to the knowledge, resources and best practices of Ford Motor Company.

S-TYPE represents the beginning of a new era of joint product development with Ford, sharing its platform architecture with the new Lincoln LS. The concept of joint development ensured that

Jaguar's core marque values in terms of style, performance, refinement, ride, handling, luxury, comfort and craftsmanship were engineered into the concept design at the very beginning of the engineering programme, encapsulating the essential Jaguar character and identity. This form of design collaboration also enabled Jaguar to realise all-new, class-leading systems and components "under the skin", the source of which is unimportant to potential customers.

Jaguar top powertrain engineers also worked closely with their Ford counterparts throughout the new AJ-V6 engine programme. The concept design of the AJ-V6, which uses a cylinder block derived from that of the Ford V6 modular engine, was undertaken by the same team of engineers who created Jaguar's highly successful AJ-V8. Detailed design of the AJ-V6 was completed by a co-located team of Jaguar and Ford engineers, resulting in a valuable interchange of expertise and technology. The development and testing of the AJ-V6 took place at Jaguar's Engineering Centre at Whitley in Coventry.

S-TYPE is produced at Jaguar's Castle Bromwich factory in Birmingham, the site of the company's existing body assembly and modern paint shop facility for the current XJ Series saloons and XK sports car ranges. The development of Castle Bromwich to accommodate S-TYPE production represents one of the largest inner city investments in the UK of the last 50 years. The total investment for the S-TYPE programme amounted to £400 million, of which around £200 million was associated with the development of the Castle Bromwich site.

Commenting on the significance to Jaguar of the launch of S-TYPE, Nick Scheele, Jaguar's Chairman and Chief executive, said : "The launch of S-TYPE signals the dawn of a new era in the history of Jaguar. The new S-TYPE represents the first stage of a dramatic product-led expansion of the company over the next four years, which will attract a new generation of customers to the Jaguar marque. This will fuel a four-fold rise in Jaguar sales from fifty thousand cars this year to over two hundred thousand cars by 2002, firmly establishing Jaguar as a leading player in the world's premium car market."

PRESS INFORMATION
For release; embargoed until 00.01hrs, 20 October 1998

## THE NEW S-TYPE AT A GLANCE

17 September 1998

**Process**

S-TYPE was designed and developed through innovative process management including early component sourcing, crossfunctional programme teams, advanced quality planning, rapid prototyping and predictive/analytical techniques.

Dynamic Programme Simulation provided a rigorous, computer-based analytical 'test bed' to determine, in advance, the implications of management decisions on issues such as resources, productivity and prototype scheduling - the first automotive application of this technique.

Dimensional Management, employing computer-based assembly variation modelling techniques, was used to determine the optimum body design, before building any prototypes. Over one million 'virtual' cars were built on the computer to establish optimal assembly processes before the start of production.

Intensive operator training programmes and the building of prototypes on the production line helped ensure manufacturing readiness at launch

More than 450 prototype and pre-production AJ-V6 engines were built and tested on dynamometers and in vehicles.

Simulated autobahn durability tests were conducted equivalent to 100,000 miles at an average of over 100 mph.

Body engineers undertook computer aided simulation and aluminium soft tooling techniques to perfect panel radii, material flow and manufacturing of the two-pressing, highly styled bonnet assembly.

Extensive acoustic windtunnel testing ensured best-in-class 'windnoise' isolation.

**Body structure**

'Limousine'-style door design extends into the roof line for easier entry and exit

One-piece body side, incorporating the rear wing and a one-piece front door opening panel provides a highly stable structure ensuring highly consistent shut lines and door seal location.

A plastic moulded reinforcement member, highly complex in shape, provides a very stable mounting for the style-critical headlamps and grille.

Leading-edge hydroform technology, injecting oil into a tube of steel, was used to mould the shape of the complex radiator crossmember

High strength steel was used in critical areas of the body following extensive finite element analysis, optimising the weight of the bodyshell.

All doors have triple seals with welded locating channels for optimum refinement.

Body apertures restricted to a total of 25 cm_ to minimise air leakage, maximising perceived refinement.

85 per cent of body-in-white, including all vulnerable areas, are double-sided, zinc coated steel

Specially shaped plastic outer sills minimise risk of stone chips on bottoms of doors.

**Exterior features**

One-piece body coloured front/rear bumpers with energy absorbing moulded polypropylene foam core resist parking knocks at up to 5mph (8 Km/h).

Front grille, integral with front bumper, moves backwards in minor accidents without damaging adjacent components.

Front bumper incorporates foglamps and telescopic headlamp power wash, where specified.

Fine-wire heated wiper park fitted as standard to front screen (full heated screen is an option).

Rear screen contains antennae for audio, security, cellular phone and Trafficmaster, where specified.

Elliptical quad headlamps have impact resistant polycarbonate lenses and use 'freeform' reflectors with a high gloss, aluminium, vacuum metallised finish for jewel-like appearance. All lamps have long-life bulbs.

Electronic headlamp levelling and automatically operating headlamps, responding to ambient light,

are standard.
Reverse Park Control, incorporating rear bumper mounted sensors and audible warning is available as an option.
Rain Sensitive Wipers, working on the principle of refracted light using photodiodes and light-emitting diodes, are optional fit.
A glass sunroof with electrically operated tilt/slide and encapsulated seal is standard.

**Interior style and engineering**

Soft-feel foam and slush moulded facia skin over a rigid injection moulded armature has an integrally moulded passenger airbag deployment door for a tamper-proof, perfect fit.
Strong tubular steel crossbeam fits behind the facia, enhancing refinement through torsional rigidity and crash performance, while providing very stable mounting for the steering column, minimising vibration.
Five-function trip computer with two independent memories is integral with the instrument pack and VF, eleven language message centre display.
Ignition key barrel ergonomically located in the facia
Mirror polished, Mushroom stained bird's eye maple veneers on doors, facia and console. One-piece, full width facia veneer employs a light weight magnesium substrate for enhanced quality and durability.
8-way electrically adjustable front seats are standard on 3.0 V6 with a 2-position memory recall facility (seats, steering column and exterior mirrors) available as an option on 3.0 V6 and as standard on 3.0 V6 "special equipment" and 4.0 V8.
Steering column adjustable for tilt and reach is standard, electrically operated on 3.0 V6 "special equipment" and 4.0 V8.
Front seats incorporate side airbags to protect both head and chest.
Bench-style rear seat with, for the first time in a Jaguar, a 60/40 folding backrest.
All five seating positions have adjustable head restraints.
Optional, electrically operated "scissor" action rear sunblind.
Optional facia-mounted phone presenter.
Multi-function luggage retention system, including four tie-down points, in the boot.
Steering wheel controls for main audio, telephone and cruise control functions is standard on 3.0 V6 "special equipment" and 4.0 V8 (optional on 3.0 V6) for safe, hands-free operation.
Electrically adjustable, heated door mirrors are standard with a power fold back option.
Optional electrochromic interior mirror.
Automatic climate control system - Jaguar's first dual-zone system - with particle filtration, is standard fitment on all models. 4.0 V8 models have a residual heating system providing heat to the cabin at low ambients for up to 20 minutes after the engine is switched off.

**Powertrain**

New 240bhp DIN (179 kW) 60°, all-aluminium quad cam 3.0 litre AJ-V6 - Jaguar's first ever production V6 - delivers best-in-class specific power of 80.9 bhp/litre (60.3kW/litre) with 90 per cent of peak torque available between 2500 and 6000 rev/min.
- AJ-V6 shares design features with 4.0 AJ-V8 including combustion and low volume cooling systems, cylinder head and valvegear.
- AJ-V6 'first-for-Jaguar' features include 3-stage, variable intake manifold with dual-intake tuning valves and long, equal length exhaust downpipes for maximum low speed torque.
Proven, 280 bhp DIN ( 209 kW) all-aluminium, quad cam 4.0 litre AJ-V8 now features linear variable cam phasing, full authority throttle body, air assist injection and twin-wall exhaust manifolds.
Lightweight 5-speed Getrag manual transmission available with AJ-V6 engine.

New 5-speed automatic transmission - standard on 4.0 V8 and 3.0 V6 "special equipment" - features wide ratio spread for optimum performance, economy and refinement and fully electronic, intelligent gearshift control.
Bespoke powertrain electronic controller which integrates both engine and transmission functions, has a memory capacity of 1 Megabyte.

**Vehicle dynamics**
All-independent, double wishbone front and rear suspension with extensive use of light weight aluminium componentry and twin front crossbeams.
Variable ratio, speed proportional power steering.
Ventilated discs front and rear and 4 channel anti-lock with electronic brake distribution for enhanced stability in adverse conditions.
Standard-fit electronic traction control system with engine and brake intervention.
Optional electronic Dynamic Stability Control system linking with the anti-lock, traction control and steering systems to prevent oversteer.
Optional Computer Active Technology Suspension (CATS), employing two-stage electronic adaptive dampers.
Pirelli P6000 (16 inch) and P Zero (17 inch) tyre systems.
Ideal 50/50 front/rear weight distribution.

**Electronics**
Single multiplexed network links all major powertrain, chassis and body electronic control modules, transmitting data at up to 700 messages per second. Fewer, shorter wires improve packaging quality and reliability.
Engine and transmission control is achieved by a single module with a dedicated, high speed internal communication link. This powertrain controller connects by hard wire for high speed communication to the throttle body to operate the full authority electronic throttle.
A combined electronic module for anti-lock brakes, traction control and steering systems provides full chassis systems integration.

**Security systems**
RF remote controlled security systems, fully integrated into the vehicle's electronics system exceed insurance industry criteria and include perimeter alarm and immobiliser with random encrypted coding, deadlocking, volumetric intrusion sensing, automatic locking on drive-away and 'smart' locking, helping to prevent locking the key inside the car.
Fully encrypted, electromechanical steering column lock responds only to dedicated transponder key. Steering column locking mechanism is integrated into facia, preventing physical attack.
Global open/close for windows and sunroof.

**Audio, communications and telematics systems**
For the first time on a production car, optional voice activated controls for the audio (radio/cassette/CD), phone and climate control systems, responding to the spoken instructions of the driver, provide safe, hands-free operation. The system responds to a wide diversity of English and North American accents, but also provides for training to recognise a specific voice.
A first for Jaguar is the optional fully integrated, on-board satellite navigation system using multi-lingual, digitised map data on CD-ROM. The system can point out useful landmarks and points of interest and links with the UK's Trafficmaster system to provide real time data on traffic delays.
The 175 Watt, twelve-speaker, premium sound system, features two active "centre fill" speakers, an active sub-woofer enclosure and 6-disc C.D. autochanger. Digital sound processing,

working with Dolby, provides special audio effects and compensates for the number of vehicle occupants.

The premium specification Motorola Startac 130 portable GSM phone is a factory fit option, combining the advantages of vehicle integration, safety, convenience and performance with the versatility of a pocket phone.

**Safety/environment**

Bodyshell exceeds all crash legislation worldwide, including the latest European side impact and offset frontal impact tests.

Computer analysis and modelling were used extensively by engineers together with a comprehensive dynamic crash test programme.

High strength steel used in critical areas such as front longitudinals, seat belt anchorages and suspension mounting points.

Doors have hot-stamped boron steel side intrusion beams, full height B/C post and A pillar reinforcements and one-piece front and rear door-hinge reinforcement panels, all in high strength steel.

'Catcher' bracket assemblies retain rear doors in their frames in the event of side impact.

Front end structure dissipates crash energy efficiently via convoluted front rails and a roll formed solid steel beam.

Energy absorbing ribs, moulded into the upper A and B/C pillar trim panels, and a headliner of energy absorbing foam reduce risk of head injury.

Fuel system includes deformable, plastic fuel tank under the rear floor, away from impact zones and an inertia fuel cut-off switch.

Front seat-mounted, side airbags protect both head and ribcage.

Twin frontal airbags and pyrotechnic seatbelt pre-tensioners; passenger bag is powered by environmentally friendly mix of clean air and twelve per cent hydrogen, which is smokeless and easier to recycle.

All rear seating positions have three point belts with automatically locking retractors, ensuring child seats are securely restrained.

Leading-edge restraints control module can discriminate between crash events warranting airbag deployment and those which don't.

Internally stroked steering column which telescopes within its own length, combines with stiff mounts to achieve very robust and repeatable crash 'stroke'.

AJ-V6 and AJ-V8 engines meet toughest exhaust and evaporative emission standards in the world. High compression ratios, fast warm-up precision cooling system, variable cam phasing and twin close-coupled catalysts deliver low emissions and good fuel economy.

A minimum of 80 per cent by weight of each S-TYPE is recyclable, while 84 per cent of component packaging is durable and returnable.

**Manufacturing**

Development of Jaguar's Castle Bromwich site is one of the largest UK inner city investments for 50 years.

At Castle Bromwich, S-TYPE bodies are constructed, painted and finally assembled into complete cars (on the same site, the bodies for Jaguar XJ saloon and XK sports cars are constructed, painted and shipped to Jaguar's Browns Lane plant in Coventry for final assembly).

The majority of components are delivered by suppliers to the trackside on a just-in-time basis.

4500 spot welds on each S-TYPE body are applied by the latest computer controlled machines, using closed-loop secondary current control for precision welding.

Body panels may be audited by positioning in "environmental cubes" which perform a thorough geometric check of all components.

The one-piece body side pressings, incorporating the rear wing, nearly 4 metres long, are formed in a 2,000 tonne capacity press.

Door and bonnet outer panels are made from a special bake-hardening steel, more resistant to minor impacts.

Accurate fitting of doors, bonnet and bootlid ensured by precise measurement of body openings, achieved by means of a laser camera system, which also performs a final check on the overall geometry of the body.

Paint shop is a sealed, clean room with controlled temperature and humidity. Among the environmental measures are close control and incineration of remaining paint solvent emissions.

New environmentally efficient, gas-fired boiler house and effluent treatment facility installed at Castle Bromwich for S-TYPE production.

Waterborne paint system cuts basecoat solvent emissions by 85 per cent.

The body is internally protected by hot wax injection, which flows into place during stoving.

Final assembly is performed on a series of skillets (platforms of laminated wood) to create a continuously moving floor for efficient, ergonomic assembly.

The drivetrain is built up in two separate assemblies:
engine, transmission, front suspension, brakes and steering
rear axle assembly - final drive, rear drive shafts, rear suspension and brakes.

With the addition of the propellor shaft the complete driveline assembly is dynamically balanced in a special rig, rotating the propshaft at 2500rev/min.

When mating the driveline to the body, laser cameras are used to validate alignment.

Each completed car is the subject of a comprehensive electrical check by means of VCATS (Vehicle Configuration and Test Systems).

Non-contact laser technology measures front and rear suspension geometry and headlamp alignment.

Further validation is performed on a rolling road, including engine, transmission, brakes.

At the final inspection stage, each car passes through a high intensity water spray line, equivalent of a monsoon, tilting the car to simulate "awkward" parking situations. All water test facilities feature a low loss recirculation system.