THE HISTORY OF THE JAGUAR XJ-S

(Second revised edition)

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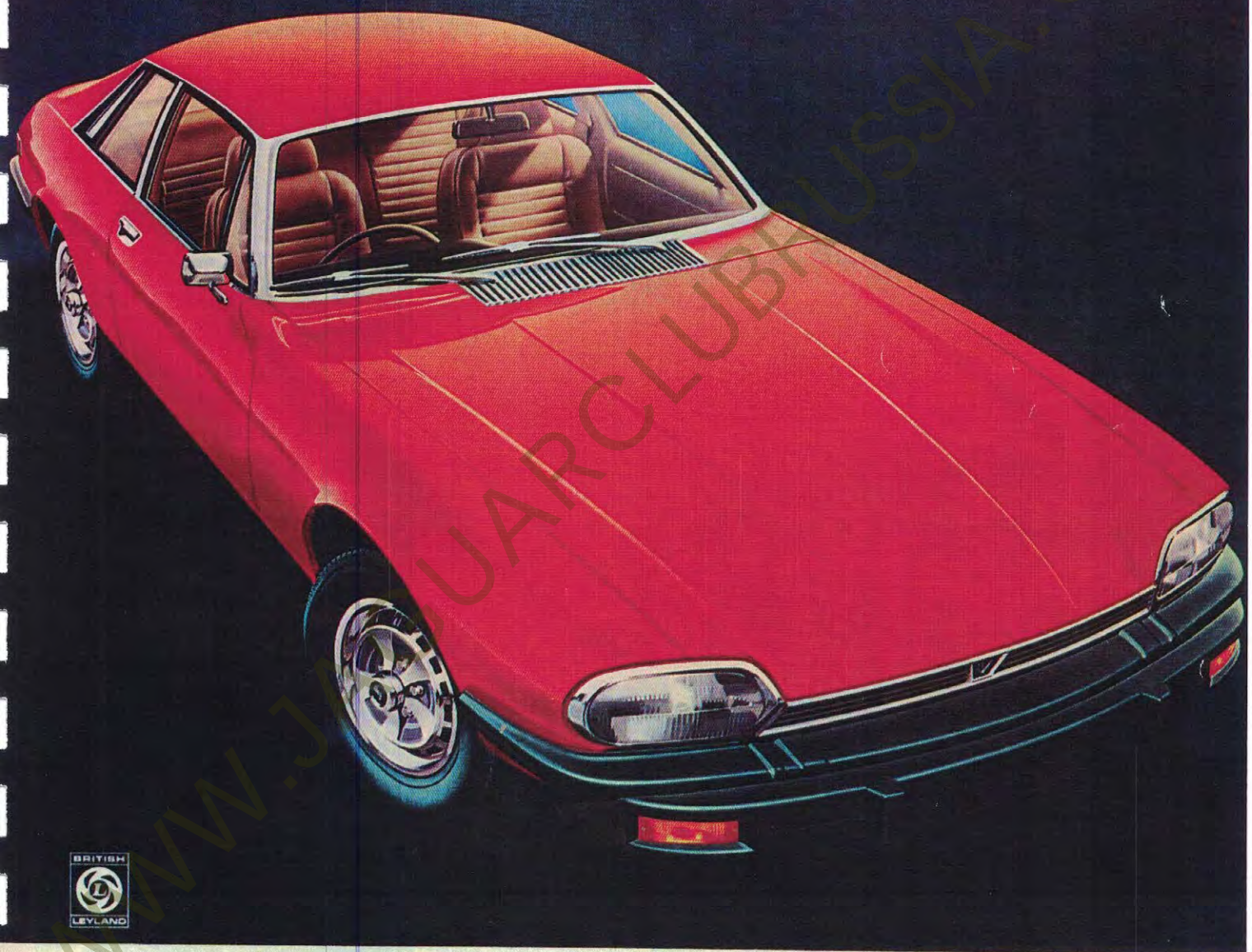
Jaguar Daimler Heritage Trust

JAGUAR DAIMLER
Heritage Trust

SEPTEMBER 10, 1975. A BLACK DAY FOR MODENA, STUTTGART AND TURIN.



What's good news for the British motor industry has to be bad news for our foreign competitors.

And the best news of this or any other year has to be the Jaguar XJS.

No other car made currently offers a comparable combination of performance and luxury at anywhere near the price.

Which explains why export orders for the XJS are already expected to be in excess of £20 million. In the first year.

Needless to say, performance of the XJS is startling. Zero to sixty takes under seven seconds. Top speed, where permissible, is in the region of 150 mph.

Yet this level of performance is achieved in levels of silence and safety that will astonish and delight you. As will the mpg figures.

Technically, the XJS has many features which are unique to Jaguar. And the list of luxury and safety features fitted as standard equipment is long and impressive.

Which is as it should be, considering that the XJS has been designed to be the definitive Jaguar.

Which makes it, in many ways, the definitive high-performance luxury car.

September 10, 1975. A great day for British motoring. And for Britain.

The Jaguar XJS

The car everyone dreams of.
But very, very few can ever own.

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1. A Brief History of Jaguar Cars

Jaguar was created by the inspiration of William Lyons and William Walmsley. The company has been through numerous transformations over the past 85 years and the company we now know as Jaguar started in Blackpool in 1922 as the Swallow Sidecar Company. The name was changed on a number of occasions until it finally became Jaguar Cars Limited in February 1945. In order for the company to use the name Jaguar, they had to get permission from Armstrong Siddeley Motors Limited, who had used the name on one of their aero engines. Permission was granted willingly. Ironically, Jaguar later returned the favour and allowed their name to be used on a new fighter aircraft.

Whilst continuing the production of sidecars, the company moved its thoughts towards motor vehicles and in 1927 produced the first Austin Swallow. This used the Austin Seven chassis from the Austin Motor Company. William Lyons thought that Herbert Austin's design had a very strong appeal but the end product could be improved. Lyons made the decision to design a body to fit the Austin Seven chassis, to be more luxurious and attractive to the eye.

In 1928 William Lyons won an order from a dealer (Henlys in London) that far surpassed his expectations. The company was struggling to turn out two cars a day and the factory was over-run with chassis. This was obviously a major concern and a problem that needed to be resolved if they were to remain in business. Larger premises were an absolute priority and since the majority of the suppliers were in the Midlands, it was an obvious choice to re-locate there. Suitable premises were found in Coventry and the company up-rooted and moved its production to the factory off Holbrook Lane in Foleshill.

The company was expanding and was now using chassis from Austin, Fiat, Swift, Standard and Wolseley. However, William Lyons made an arrangement with Captain Black, Managing Director of Standard, to supply a chassis exclusively for Swallow; this would make a car which was unique to the Swallow Sidecar and Coachbuilding Company, as the company was now called. This paved the way for them to produce a complete car, which was launched as the S.S.I at the 1931 Olympia Motor Show.

The S.S.I and a smaller S.S.II companion model based on the Standard Nine chassis were so popular that William Lyons within a few years decided to launch an all-new six-cylinder four-door saloon car. The new model made its debut to great acclaim in 1935 and was the first car to bear the name Jaguar, or more precisely, SS Jaguar, as the company was now SS Cars Limited.

In 1937 Jaguar's most distinctive trademark, the "leaper" mascot, was prompted by a crude accessory version produced by an outside company. It shocked Jaguar, and Advertising Manager Ernest Rankin described it as "a cat shot off a fence". Ernest Rankin commissioned the artist Gordon Crosby to produce Jaguar's own, a more acceptable model in the style still seen today.

With the outbreak of war in September 1939, the war effort started within many factories and car production was quickly run down as munitions, including aircraft, aeroplane engines and military vehicles took priority. Jaguar produced sidecars for the military, including specialised vehicles for carrying cameras and parachutes for the Royal Air Force. The company also worked on aircraft such as Whitley, Stirling, Wellington and Lancaster bombers, De Havilland Mosquitoes, Spitfires and the Gloster Meteor jet fighter. They were responsible for the production of wings, airframes and bomb bay doors.

The change of name of the company in 1945 to Jaguar Cars Limited symbolised the total realisation of William Lyons's dream to become a complete and independent British manufacturer of luxury motor cars, which now simply bore the marque name Jaguar.

The first proper post-war models were launched at the 1948 Earls Court Motor Show. The star exhibit was the XK120 sports car which for the first time featured the twin overhead camshaft XK engine. Offered at a basic factory price of just under £1000 and with a top speed of over 120mph (over 190km/h), the sports model quickly became immensely popular in the important American export market.

With the success of new models, Jaguar was expanding at an enormous rate and in 1953 production reached 10,000 units a year, while in 1958 almost twice as many cars were made. Therefore, space was paramount. In 1952 Jaguar had purchased the Browns Lane site from the Ministry of Supply, however, there was no room for expansion here and Government policy stressed that any new industry must be located in development areas. Jaguar decided that they did not want to leave Coventry and become divorced from the main motor industry, so, in 1960, Jaguar completed negotiations with the B.S.A. group to purchase the Daimler Company with its large under-utilised factory at nearby Radford, and this was successful.

During the 1960s, the comfort of the post war boom was over and smaller companies had to look for safer options. As Sir William Lyons, knighted in the 1956 New Year's Honours List for services to export, was the major shareholder of Jaguar, he decided it was time to forge an alliance with another company if Jaguar was to survive.

In 1966 Jaguar merged with B.M.C. (Austin, Morris, and MG amongst other brands) to form British Motor Holdings. The new company commanded 44 per cent of the home market with nine private car marques and four commercial vehicle brands. Sir William Lyons did, however, retain the title of Chairman of the Jaguar group, which apart from Jaguar and Daimler now also included Guy and Coventry Climax.

In May 1968 "a major cloud had appeared over the horizon", with the consummation of the merger to end all mergers, between British Motor Holdings and the Leyland Group, now embracing Rover and Triumph cars, as well as vast commercial vehicle interests. The newly merged company would be known as the British Leyland Motor Corporation (BLMC, later known commonly as BL). Sir William Lyons's dream of "getting together to face world competition" had come true. Seen with hindsight, British Leyland must rate as a catastrophe. Although a combination of two groups, their share of home market sales declined from 44 per cent to 40 per cent in just two years.

While 1968 was a watershed for the British motor industry, it also marked the pinnacle in the career of Sir William Lyons, as in September Jaguar unveiled his supreme creation, the XJ6 saloon. For Sir William, it was the model that he had longed for, attractive to the eye, well balanced and free from unnecessary embellishment. Totally new concepts in styling, like fashion, can often prove short-lived in terms of satisfaction and pleasure, but this was not to be the case.

Sir William Lyons managed to retain Jaguar's autonomy within BL for a few years, but he retired in 1972, and Jaguar soon began to loose its identity. Against everything Sir William Lyons had fought for, Jaguar lost its autonomy and was no longer governed locally; the central British Leyland board took over all decisions concerning the company. This lasted for a few years, until Michael Edwardes was appointed Chairman of BL in 1977 and began to turn BL around, encouraging individual marques to assume their separate identities once again.

In 1980, Michael Edwardes approached John Egan, a former BL director, and offered him the position at the top of Jaguar. John Egan took control of the company in April 1980 as Chairman and Chief Executive and he was committed to turning it around to better the competition. Plans were now also being laid for the gradual re-privatisation of BL which had become effectively nationalised in 1975.

The company was facing a difficult time in its history and changes were needed to ensure its survival. Egan instigated a number of initiatives and commented:

"When I joined Jaguar, it soon became obvious to me that we had to put every possible effort into matching our quality up to the acknowledged levels of Jaguar excellence in design and refinement. To succeed in today's highly competitive world, we needed the best finish and reliability as well as the best engineering.

"A short term approach was not the answer – such efforts only produce temporary improvements. We needed an in-depth commitment to quality and reliability in our own plants and in those of our suppliers. An absolute and pervasive obsession with the ideal of 'right first time' had to become a way of life for all of us."

Following a year in his position as Chairman, John Egan was confident that Jaguar was on the right track for success in the pursuit for perfection. A number of groups – Quality Circles, Quality Action Groups and Task Force – were set up to look at various aspects of the business. Their tasks and functions were as follows:

Quality Circles – the concept behind this functional group came from Japan. The shop stewards, supervisors, inspectors and hourly graded production employees worked closely together to identify minor concerns.

Quality Action Group – the responsibilities of this group varied depending on the seriousness of the problem raised. This group had three levels of hierarchy, level one consisted of the Plant Directors, level two was chaired by David Fielden, Director of Quality and a Jaguar Board member, and level three was John Egan's responsibility.

Task Force – this group consisted of employees from Service, Manufacturing and Quality. This group proved very successful in raising the fundamental quality standards; however, it didn't last long. The group was disbanded and the company introduced a newly formed Quality organisation to continue maintaining and improving the product quality on a permanent basis.

As well as getting "our own house" in order, John Egan was keen to continue the trend of reform across the entire organisation which would ultimately include the suppliers. When Jaguar Cars re-created itself in 1980 it had around 1700 suppliers who, as a group, were responsible for around 60 per cent of the company's quality and reliability issues. This was a situation that the company felt it couldn't tolerate. The suppliers whose performance was below the accepted norm were instructed to improve their performance, or they would lose the Jaguar business.

From the company's perspective, they applied the lessons learnt in the aircraft industry during the 1960s. This meant that more precise specifications of the materials and functional requirements of the component would be identified at the earliest opportunity. The quality and reliability procedures were put into place to ensure the supplier was able to maintain the required design quality. The negotiations relating to all of the supplier functions included additional disciplines to ensure quality was adhered to.

To ensure the company received goods to the exact specification requested of the supplier, a number of systems and procedures had to be implemented beforehand. Obviously, the company incurred costs; however, the benefits from setting up the related systems and procedures far outweighed the cost of the potential warranty claims that would have been made if this hadn't been done. The purpose of introducing these measures was to avoid the warranty claims and most of all to refrain from disappointing the dealer and the customer.

Every Jaguar and Daimler car was inspected by a Vehicle Electrical Test (VET), which ensured the cars were electrically sound. The VET was a sophisticated computerised system that was developed in conjunction with Ferrari and every car built was tested for electrical faults.

At the other end of the technological scale, the company introduced a purge on the superficial damage caused to the cars and/or components on their way through the various plants. Employees were no longer allowed to go near the painted bodyshell in the conventional overalls with buttons or zips located on the front, all overalls had to be smooth-fronted to avoid the risk of scratches.

The effectiveness of the measures John Egan and his team introduced could only be measured by the results of the quality audits carried out each day on new cars that had been selected at random. The cars were examined in detail and marked on a demerit basis according to the number of faults. This method of auditing gave a quality index that rose as the build quality of the cars improved. As well as highlighting the overall quality picture, the audit would identify any recurring problems that required additional action.

In conclusion to the steps taken by John Egan to improve the reputation of the company in terms of quality and reliability, the involvement of the employees was paramount to the success of the company. The campaign sought to encourage the pride that employees had in their world famous product and to make it absolutely clear why and how improvements had to be made.

At every opportunity, the management involved the employees and spoke honestly about the company's financial position. During the presentations given by the management, the issue of

the quality of the products was stressed and employees were encouraged to take responsibility for their actions and their surroundings. The company has continued the practice of holding regular group meetings to discuss the financial position of the company and they encourage active dialogue with the employees. The huge improvement in build quality made by John Egan and his team during the 1980s was of crucial importance to the survival of the XJ-S at this critical stage in the history of Jaguar.

On the 22 May 1984 a public announcement was made regarding the sale of the shares of the Jaguar Cars company. On the 24 July 1984 another meeting was held where the sale of the shares was approved and the shares would have a face value of £0.25 each. On the following day (25 July 1984) the underwriters, Hill Samuel announced the shares would go on sale on Friday 3 August 1984 at a cost of £1.65 per share and 180 million shares were offered. Jaguar's shares were floated on the stock exchange and were over-subscribed eight times. John Egan would maintain his role as Chairman and Managing Director of Jaguar Cars Limited. Sir William Lyons himself bought shares in what had been his company, somewhat ironic as he had founded the company, but he wanted to show his support.

February 1985 was a sad month for Jaguar, Sir William Lyons died at the age of 83, hundreds attended his funeral at Coventry Cathedral, many being employees past and present. It was felt that as he had tragically lost his only son, Sir William Lyons had no-one to follow after him and that swayed him in his decision to form an alliance with B.M.C. Sir William Lyons made no secret of his displeasure with the Ryder report which in 1975 proposed to submerge Jaguar's identity in favour of a corporate BL identity. Equally, he made no secret of his support for John Egan and the split from British Leyland. It was most gratifying that he lived to see his company regain its independence.

John Egan turned the company around from a loss of £47 million in 1980 to a profit of £90 million in 1984. Despite this turnaround, Jaguar became a victim of its own success. Production figures were up, but despite the improvements, poor quality was still costing millions in warranty claims. By 1988, profits were down to £47.5 million. The underlying downward financial trend continued, and during the autumn of 1989 dramatic events were taking place behind closed doors that would change the course of Jaguar's history forever.

Just when Sir John Egan thought he had arrived at a suitable deal with General Motors, Ford announced that they were purchasing Jaguar shares. The following morning the Chairman for Ford of Europe, L Lindsay Halstead, and Ford's negotiating team met with the Jaguar Board to discuss terms for a full takeover. This was subsequently approved by shareholders of Jaguar plc in a meeting on 1 December 1989, and the merger took effect in early 1990.

Jaguar had once again lost its independence and was now to become part of a larger manufacturer. The realities of the situation were that the company would almost certainly have failed if it had tried to struggle on alone. The final cost to Ford for purchasing Jaguar was £1.6 billion. Egan left soon after the merger, and Ford appointed Bill Hayden instead. A casualty of the take-over was that the XJ41/42 project for a sports car to replace the XJ-S, the so-called "F-type", was cancelled. The XJ-S soldiered on, until it was finally replaced in 1996 by the new XK8.

2. How Did the XJ-S Begin?

In 1968 Jaguar's product life cycle was well established and the workforce was in the throes of producing the E-type Series 2. The company had already planned its replacement, the V12-engined Series 3 and were even discussing what future product should be the ultimate replacement for the E-type. Inevitably, Jaguar would replace the E-type with a sports or sporting car, but Jaguar also needed to attract a new sector of society, a younger clientele in the 35 to 55 age bracket, in the more affluent sector but not necessarily of sports car enthusiasts.

The former Bristol aerodynamicist, Malcolm Sayer, had been responsible for designing Jaguar's racing cars since 1950 and was given the difficult task of finding a replacement for the E-type. Sayer had worked extensively on the C-type, D-type and E-type projects, particularly as regards the aerodynamics of the cars. He wanted to take this process further by harnessing the aerodynamic forces so that they positively contributed towards road holding and vehicle stability. He pursued the idea of a traditional front-engined, rear wheel drive car; this new Coupé would eventually be christened the XJ-S. The XJ-S styling was due to the collaboration of two men, Sir William Lyons with his instinctive feel for styling and Malcolm Sayer with his aerodynamic expertise.

With falling sales and a low return on investment, funds for the development of a new car were extremely low. The XJ21 project, inspired by the E-type, had been conceived but the usual E-type model was synonymous with open cars. Their market had diminished and they faced an uncertain future in the important North American market. The company produced a mock-up of the XJ21 which was supposed to be the E-type replacement, but in reality the XJ21 and the E-type were very similar in appearance.

For Jaguar, there were five basic steps to designing the new car:

- Develop styling models until a qualified and general approval can be given for the basic shape
- Produce and test a readily modifiable wind tunnel model. At the same time, start to modify a scrap XJ under structure to make a full sized mock-up for internal conditions. The styling design and model development would proceed until a more detailed approval had been given to produce a quarter scaled model
- Build a full-sized mock-up of the approved exterior features
- Proceed with the mechanical and structural designs

- Build the prototype from the drawings based on the finally approved versions of the exterior, interior, mechanical and structural designs

Jaguar was working on the next generation of models as far back as May 1967, one of which was a new two-plus-two seater E-type. The designers looked at a variety of modifications that were broken down into four stages and these were:

- Stage 1 – modifications were made to the bonnet, front wings and to the widening of the front and rear wheel tracks
- Stage 2 – modifications were made to the bonnet, wings, raised scuttle and doors on the body. With regards to the chassis, the frame was widened to take the planned 3.4 litre V8 or the 5.3 litre V12 engine with a five-speed manual gearbox or alternatively, the Model 8 Borg Warner automatic gearbox

Stages 1 and 2 were already in the hands of Malcolm Sayer, looking for the next distinctive model that would generate sales for the company.

- Stage 3 – a complete re-styled E-type utilising the current floor structure, suspension, front and rear axles
- Stage 4 – an E-type replacement that was based around the XJ saloon chassis

It was felt that the stage 4 modification would not necessarily satisfy the E-type customer base either in relation to the weight or size. I believe it was at this point that the design team realised a totally new image was required to entice customers back to buying Jaguars and this meant producing a car that would surpass all expectations. Therefore, the XJ21 was dropped from the potential production line-up and the company's efforts were re-directed towards the alternative design. Malcolm Sayer produced the first drawings of the XJ-S in 1968 but due to the possibility of convertibles being banned in America, only the closed coupé version was developed further.

Sayer submitted his design brief of a two-plus-two sports car based on a shortened XJ6 saloon platform on the 9 September 1968 to Sir William Lyons for consideration. One surprising comment made by Malcolm Sayer was:

"From the general description of the car the aim of the project was to produce a low wide high speed car at least as eye-catching as those the Italians will produce, even if it means sacrificing some of the more sensible values such as luggage and passenger space."

Sir William Lyons and Malcolm Sayer worked extensively together on this project and originally considered a lower bonnet line. However, international regulations on crash protection and lighting caused a major re-think. Malcolm Sayer would use the slide rule and wind tunnel as his principal design aids, whilst Sir William Lyons drew on more than 40 years' experience in creating beautifully crafted Jaguar cars which had an unmistakable mark of his strong vision. Like all other Jaguar models, they wanted this car to surpass all other competing models currently being produced by other manufacturers. They wanted to design a car that offered a challenge, to sell at a price and still come out on top.

A third member of the design team was Chief Stylist Doug Thorpe, although his involvement with the project did not occur until the closing stages of the body design. Doug Thorpe suggested making certain changes to the body shape and ordered a clay model to be produced that reflected his recommendations, a design which was created by the stylist Oliver Winterbottom. The styling department were not completely happy with design, so they continued to produce sketches and drawings for alternative body designs and offered them for consideration but to no avail.

Sir William Lyons commented: *"We decided from the very first that aerodynamics were the prime concern, and I exerted my influence in a consultative capacity with Malcolm Sayer. Occasionally I saw a feature that I did not agree with and we would discuss it. I took my influence as far as I could without interfering with his basic aerodynamic requirements and he and I worked on the first styling models together. We originally considered a lower bonnet line, but the international regulations on crush control and lighting made us change and we started afresh. Like all Jaguars we designed it to challenge any other of its type in the world – at whatever price and still come out on top."*

By February 1969, the internal code name XJ27 was being used but the decision on the body style was still to be made. The two principal designers Malcolm Sayer and Doug Thorpe were producing their concepts for the body, Malcolm Sayer's body was fitted to a base unit and Doug Thorpe's body design was still under development but well on its way. A mock-up of the internal layout and features was being built.

On 8 September 1969 a discussion took place to understand the legal requirements for the height and function of the bumpers. It was also agreed at this meeting that a styling study for an open top version should be made in parallel with that of the closed version. By the time October came around, both body mock-ups had been reviewed by the management but no final decision had been made. Malcolm Sayer's one-eighth scale model had been completed and the results from the wind tunnel tests looked encouraging. The designers started to strip an XJ6

in preparation for the mock-up where the front end on prototype number 4 was modified. Although this full-scale model depicted what the designers wanted, it was never planned to be a working model, and remained a non-runner.

By January 1970, the decision to use Malcolm Sayer's body design had been made. It was now time to see the prototype bodies being produced. There was a set back in February 1970 when the external styling had to be modified to accommodate the American lights. The outer skin profile was widened by 0.5in (13mm) on each side to accommodate larger tyres. During the early months of 1971 came the sourcing and pricing of the parts. The open top version was still being worked on and revised designs were ready by April. The management had scheduled to reveal the forthcoming XJ27 at the 1973 Motor Show. At the end of 1971 came the task of fitting the V12 engine into the body, the aim was to keep the bonnet line as low as possible so the ancillary parts had to be specially designed to fit into the engine bay.

Malcolm Sayer played a major role in the design of the XJ-S but he did not see it through to fruition, as sadly he died at just 54 years old in 1970 after giving 20 years' service to Jaguar. One of the very controversial design aspects of the XJ-S was down to him, the "Flying Buttresses" that linked the corners of the Coupé roof to the rear wings. The reasoning behind the buttress design was that they would add to the high-speed stability of the car. During the design phase of the XJ27 the death of Malcolm Sayer was not the only disruption to the project, Sir William Lyons also made the unprecedented decision to "hang up his hat" and retire from his life-long love affair with the company that he had created.

In May 1971, Pressed Steel Fisher, the body making branch of BL at Castle Bromwich, started the programme whereby production build would commence to ensure bodies were ready for Job 1 in March 1973, with saleable bodies being ready for the Motor Show at Earls Court in October. Problems were discovered in November 1971 when Triplex pointed out that the curvature of the windscreen would not meet the British standard for clarity of vision. The first prototype body from Pressed Steel Fisher was available at the beginning of 1972. Throughout 1972, Jaguar started tests on the XJ27. They started with the front end impact passenger tests using an XJ12 to simulate the XJ27 positioning. E-type seats were used in place of the re-designed XJ27 seats, the front seat frame was to be modified from that of a Triumph Stag. Roof crush, safety belt anchorage and side impact tests were performed. The programme was starting to fall behind, due to concerns related to the instrument panel, as well as to the supply of bodies from Pressed Steel Fisher. As a result of this, the production date was moved back to the end of November 1974.

Sir William Lyons handed over the reins of power to "Lofty" England in 1972. By this time, the basic design features of the XJ27 had already been set in stone and agreed as the way forward. In November 1972 wind tunnel testing began on the first XJ27 prototype body. The prototype XJ27/1 being tested was in standard form without the front bumper which gave a front end lift of 2¼in (70mm) at a speed of 130mph (209km/h); this lift represented an approximate force of 346 lb/ft. This was deemed as totally unacceptable and an investigation was to commence to look at the effects of introducing a chin-type spoiler. The stated aim was to reduce the lift by 100 lb/ft maximum front and rear at 160mph (257km/h).

The XJ27/2 had a wooden mock-up of the front grille and the energy-absorbing front bumper, mandatory under the Federal requirements of the USA. It was fitted with a four headlamp configuration, and a full-width chin-type spoiler that was 3½in (89mm) deep and mounted vertically below the radiator intake aperture. The front end lift was reduced to 225 lb/ft at a speed of 130mph and after the first test it was deemed possible to eliminate this lift. A modified XJ6 rear bumper was fitted together with a full-width 1¼in (32mm) high spoiler on the edge of the boot lid. The testing undertaken included half of the car being covered in woollen tufts and photographed to measure the effects of the airflow.

The first two prototype bodies were tested in the Motor Industry Research Association (MIRA) wind tunnel on 15 and 17 November, and 4 December 1972. The tests showed that the airflow pattern over the body shape was very good. A spoiler was added at the front and an undershield was fitted below the engine, and a dramatic reduction of 50 per cent to lift and a 10 per cent reduction in drag were recorded. The spoiler also reduced the aerodynamic side forces and moved the centre of pressure back. This was extremely desirable for the stability of the car.

In February 1973, the plans for the new car were presented to the Board for consideration and approval. By August of that year, Bob Knight was pushing to get the XJ27 completed and by the end of that year fuel injection had been specified instead of carburettors for Job 1. During this same month, tests were carried out on the braking system of the XJ27/1 in order to determine which specification would be most suitable. In October 1973 additional testing was completed on the XJ27/2, the testing took place in Belgium and Germany where the Dunlop tyres were put through their paces and the effects of the chin-type spoiler on the cooling system were checked out. The testers were surprised how this spoiler improved the effectiveness of the transmission, engine oil coolers and the water radiator. Top speed was improved by 2-3mph (3-5km/h). Tests were also carried out on the eight-tooth rack and pinion steering, brakes, transmission, exhaust, interior features and general drivability. The testers were less than impressed with the overall driving position and visibility.

The XJ27 had a wheelbase of 102in (2591mm) and was derived from the XJ6 platform. With the basic design signed off, the serious development work was able to commence. The XJ27 used the already existing accomplished engine from the E-type and XJ12, the manual gearbox from the E-type and the automatic gearbox from the XJ12.

One of the non-design related contentious aspects of the XJ27 project was the name to be given to this new and exciting model.

Customer Evaluation and Product Research

Jaguar prides itself on understanding the needs of the customers it is targeting, one way the company is able to foresee the success of a particular model line is with the help of existing or potential customers. The company carried out an extensive evaluation of the products which were being proposed. This particular study of the XJ27 took place during December 1974 and was prepared for Benton & Bowles Limited by IFT Marketing Research Ltd. The methods and results are detailed below:

Objective – the objective of the research were:

- To look into the image portrayed by six possible names for a new Jaguar sports car
- To establish which one of the names would be most suitable

Design – a total of 35 interviews were planned representing three types of car owner:

- XJ6 and XJ12 owners
- E-type owners
- Owners of expensive sports cars of other makes

Main Finding

Who makes the car – respondents were read the following statement and were then asked who they thought would make such a car:

Two-door sports coupé powered by 5.3-litre V12 cylinder engine. The car will combine the superb engineering and performance of the finest sports cars with the quietness and interior appointments of the latest saloon car.

Many named two possible manufacturers with Jaguar the favourite answer. Of the 34 owners surveyed, the two largest groups were 16 Jaguar owners followed by five Mercedes owners.

The main reason why the evaluation team thought it was made by Jaguar was that *"Jaguar would be the only people who would make a 5.3-litre car or a car with a V12 engine."*

Jaguar chose a selection of names before the evaluation/research process took place. Each name was presented to the group and the responses are detailed below.

Name 1 ~ XJ SS – Six participants felt that the name had Nazi connotations. It was interesting to note that three of them thought the name XJ SS was the best name for the car. The positive comments made were

- Brings Jaguar to mind
- Relates to sports car

Out of the 34 taking part, only 23 had positive comments to make about the name. The negative comments are shown below:

- Don't like the Nazi or wartime overtones
- Old-fashioned

Name 2 ~ 12 + 2 – half of the participants did not like the name 12 + 2, the main reasons being that it wasn't original or did not really mean anything. The Jaguar owners tended to be slightly more positive than those who didn't own a Jaguar.

Only 17 of the 34 taking part had negative comments about the 12 + 2 name. The negative comments are detailed below:

- Not original enough
- Does not tell you anything
- Does not sound like a car name
- Too much like the competitors

Name 3 ~ XKF – this name also had more negative comments than positive ones. The positive comments made were:

- Sounds alright/good/acceptable

- Sounds like a Jaguar
- Appropriate; XK150 was a good car; sounds like XK150
- Sounds like a sports car
- Natural progression from E-type
- Masculine appeal

19 of the 34 taking part had negative comments about the name. The negative comments are detailed below:

- Too much like XK150; not original
- Does not mean anything
- Old fashioned

Names 4-6 ~ Optima, Ultima and Premier – none of these names appealed to the group, there was a lack of enthusiasm for the names and there wasn't much difference between the Jaguar and non-Jaguar owners. The comments made were:

- Don't like them; don't appeal
- Does not mean or convey anything
- Nothing to do with a car

Summary – based on the research compiled, Jaguar XJ SS was by far the most popular name for the new car. XJ SS outperformed the other proposed names, followed by 12 + 2. The table below shows the results in relation to the names presented to the group:

	Total	XJ6/XJ12	E-type	Other
XJ SS	23	10	4	9
12 + 2	6	1	3	2
XKF	4	0	1	3
Optima	0	0	0	0
Ultima	1	0	0	1
Premier	1	1	0	0
Total	**35**	**12**	**8**	**15**

Only one participant wouldn't choose any of the names presented above. At the end of the evaluation, the participants were asked how likely it was that they would consider purchasing the car they had been evaluating. Reactions to the proposed car were favourable even among

the non-Jaguar owners. The tables below show the results and comments for both "yes" and "no" to purchasing this particular car.

	Total	Jaguar	Other
Likely	23	14	9
Unlikely	11	6	5
Total	**34**	**20**	**14**

In my opinion it was due to these results that the management decided to call the new car XJ-S instead of XK-F.

XJ-S Gets a Track of its Own

The Jaguar assembly plant based at Browns Lane in Coventry had a new assembly track installed specifically for the introduction of the XJ-S. The track was 2000ft (610 metres) long and was built alongside the existing track for the XJ saloon and Coupé models. The laying of the new track was part of a £6.5 million investment package for the development and production of future Jaguar cars. As well as the new track at Browns Lane, the body production site at Castle Bromwich, then still part of Pressed Steel Fisher, had new tooling and press shop equipment installed as part of the investment programme.

The track installed at Browns Lane had been designed to provide the maximum working space around and underneath the car for the employees. There was an elevated area at the beginning which dropped to ground level for the fitting of the trim, followed by a sunken area towards the end for the final under-floor work to be carried out. With the introduction of the new track layout, a new method of zone inspection was also introduced. The track was divided into 12 individual zones and after each zone there was a quality control inspection checkpoint. Any rectification that needed to be carried out was done immediately within the zones and not left until after the assembly process.

With this new process in place, it meant that the quality was continuously monitored and defects were rectified before the final finish. Following Jaguar's tradition, the XJ-S was subjected to a rigid standing order within the factory and the sixth and final coat of paint was not applied until every car had been thoroughly road tested and declared mechanically sound.

Selling the XJ-S Worldwide

North America (USA and Canada) was identified as the market that needed to be conquered in terms of sales for the new model. It was envisaged that this market would yield around £26 million in the first year of the XJ-S being available. North America had always been Jaguar's most successful market and it was expected to take around 75 per cent of the XJ-S cars built. The XJ-S style and competitive pricing structure was seen as a "big earner" for Jaguar.

The initial production level for the XJ-S was set at approximately 60 cars a week, totalling around 3000 cars a year, this volume was around 25 per cent of its successor, the XK8 – that model would yield around 12,000 cars in its first year with 60 per cent going to North America. For distribution purposes, the North American markets would be allocated their volume first, and the remaining cars would then be distributed between UK dealers, European markets, and a small number of cars for Australia and other overseas markets.

The XJ-S would share components with the XJ saloon range and in doing so, the XJ-S offered exclusive styling and a low production volume which was backed by a worldwide parts and service network.

Sales and Marketing Director, Keith Hopkins said *"It is expensive compared with previous Jaguars, but is extremely good value compared with its exotic competitors. Like all Jaguars built it offers much more at a lower price.*

"Jaguar has never followed fashion. Fashion changes but flair is timeless. This is a car that is equally at home on Sunset Boulevard, the Champs-Elysées and the Via Veneto.

"The styling is typical of Jaguar – modern yet restrained. It has an aesthetically pleasing individuality with a wide customer appeal. This has always been the basis of Jaguar styling and the XJ-S takes this into new areas. We are announcing the XJ-S on the eve of the Frankfurt Motor Show with the deliberate intention of letting the opposition see that we are really out to capture a large slice of the market.

"It will be the spearhead and the figurehead for the new British Leyland Cars."

3. DESIGN FEATURES OF THE XJ-S

After the final decision had been made, Doug Thorpe kept the final production model as close to the original specifications as possible with only a few minor detail changes being made. The Convertible version was never finalised due to the proposed ban in America that could have gone ahead. The ban never actually happened as the proposal was squashed in the Federal Courts in 1973, but this news came far too late, and Jaguar had missed a great opportunity. When the Convertible version was eventually re-considered, extensive work had to be done to strengthen the bodies.

Particular areas have been broken down to emphasize changes and features, these are:

Mechanical

Jaguar took the opportunity to use existing technology and adapted the XJ-S floorpan from an XJ saloon. Straight away, the concept of a lightweight sports car became unrealistic. Together with the floorpan came the basic suspension, steering and braking systems from the saloon car.

The XJ-S was built on a shortened wheelbase, measuring 102in (2591mm) which was the same as the old XK models but was 6in (152mm) longer than the original E-type, while the front and rear track were wider due to the XJ ancestry. Basically, the XJ-S employed the floorpan of the XJ6 with the rear bulkhead and suspension mounting points being brought forward by 6.75in (171mm). The front bulkhead and engine bay had to be strengthened substantially, making the bodyshell much stiffer than the original XJ saloon.

The XJ-S customers would have a choice of a four-speed manual or a three-speed automatic gearbox. The manual unit was a slightly modified version of the four-speed box used in the E-type Series 3. The optional automatic gearbox was a Borg Warner model 12 and proved to be the most popular. Only around 350 manual XJ-S V12 cars would be made and none were sold in North America.

Safety

To ensure that the new Jaguar met all current regulations, the fuel tank was positioned above the rear suspension. Side impact bars were fitted in the doors and special bumpers were fitted to comply with the American legislation on low-speed collision impact on cars. These bumpers were fitted to all XJ-S cars regardless of market, and were the first bumpers of their type to be

fitted on a car sold in Europe as well as North America. These bumpers were fitted to protect the XJ-S and its occupants in the event of a low speed collision.

The front and rear bumpers were mounted on Menasco struts which worked on the same principles as telescopic shock absorbers. In a collision of up to 5mph (8km/h), the struts would effortlessly absorb the energy from the impact. This strut used a silicone wax as the hydraulic medium, it had the ability to soak up the energy created by the collision and be in a position to force the strut back to its original position afterwards. When a collision took place, the silicone wax was forced by the piston through small ports in the chamber. After the initial impact, the silicone wax returned to the chamber forcing the piston and bumper back into position.

Exterior

The XJ-S had the same frontal area as the XJ but was surprisingly far superior aerodynamically, with a Cd (Co-efficient of aerodynamic drag) figure of 0.39 in the MIRA wind tunnel, compared with the XJ6 that recorded a figure of 0.48. The E-type two-plus-two only managed a figure of 0.455, not much better.

The design of the "flying buttresses" may have been controversial; however, Malcolm Sayer saw them as an aerodynamic necessity for the car. From certain angles, they were considered attractive, and they were definitely unusual for a British manufacturer. This feature gave more character to the appearance of the car. The bodyshells were produced by the Pressed Steel Fisher plant at Castle Bromwich, Birmingham, and weighed in at 720 lbs (327kg) which was roughly 14 per cent lighter than the XJ long wheelbase saloon; however, with the introduction of sound-deadening material the car was still going to be a heavyweight. Despite the sporty appearance and nature of the car, Jaguar engineers were striving to achieve suppression of noise as a major feature. They even went as far as tapering the engine bay towards the rear of the car to deflect noise from the power unit.

Models destined for the American market were fitted with conventional twin headlamps, whereas other markets were fitted with special oblong shaped halogen units made by the French electrical supplier Cibié; highly efficient but controversially styled, they were some times called "bus headlamps".

Interior

The company followed the tradition of its sports car range with regards to the interior trim. While the traditional walnut fascia and door trim were characteristic of saloon models, the sports cars

had a vinyl covered fascia, always black from 1961 onwards. On the XJ-S, the dashboard was a single large moulding. The door casings were covered in vinyl. The lay-out of the instrumentation and controls was largely similar to the XJ saloon; however, the instruments were unique to the XJ-S, with new air-cored auxiliary gauges.

Engine

The XJ-S took full advantage of the powerful V12 engine, which had made its debut in 1971 in the E-type Series 3. It was introduced to restore the power that had been lost due to the introduction of emission laws in the USA. The engine was thought up in the 1950s but wasn't further developed until the 1960s when the company contemplated a return to racing.

The V12 engine project was in the capable hands of Bill Heynes, Claude Baily, Walter Hassan and later Harry Mundy. The first fuel-injected 4991cc, four-cam engine developed a healthy 502bhp (brake horse power) and was installed in the XJ13 prototype racer. The first tests of XJ13 at MIRA produced a lap speed of 161mph (259km/h) with an astonishing 176mph (283km/h) down the straight.

Although the four-cam engine would have been preferred for racing cars, it was decided that for road use, the two-cam version would be better. It still performed extremely well, and was found to be quieter and lighter. It also produced a higher torque output at lower revolutions, which was an important factor, as most of the cars leaving the factory would be fitted with automatic transmission. Finally, the two-cam version was cheaper to produce and easier to maintain.

The specifications laid down for the XJ-S gave the car an all-alloy, 60 degree V12 with a capacity of 5.3 litres and fuel injection. At launch power was quoted as 285bhp which was more than enough to endow the car with true GT (Grand Tourer) performance.

Instrumentation

The Jaguar engineers were faced with a problem, to ensure fast reactions they were required to match the performance of the XJ-S with the performance of instruments supplying information to the driver. So, the instrumentation was designed and developed to match the car's high performance and included a comprehensive warning system that gave the driver instant information which positively attracted attention in the event of a failure.

The mechanical and safety functions were monitored through a series of coloured lamps, red or amber. The red lamps would indicate a major fault to the driver, functions such as brake failure

or loss of oil pressure. The amber lamps covered the secondary faults such as a bulb failure or unfastened safety belts. When a failure occurred the appropriate lamp would illuminate and this was known as an "attention-getter" as the driver could not miss it.

If the red lamp was lit, the driver should stop immediately and investigate the potential cause, whereas an amber lamp would suggest that the driver could continue the journey and investigate the cause at an appropriate stopping point. A second red or amber lamp would pin-point the cause of the fault.

It seemed logical to try to eliminate the thought processes that took place between the driver registering a problem and actually deciding what action should be taken. The most important instruments on the fascia were calibrated vertically with the mid-point horizontal level indicating the normal operating condition. These were known as air-cored units and they worked using a variation in a magnetic field between three opposing coils. The needles that rose above, or dropped below the centre line were noticed more easily. This design gave a high degree of accuracy and reliability to the gauges of the XJ-S.

With this concept in mind, the designers decided to mount the four auxiliary instruments together on a line between the speedometer and the tachometer. These gauges were for water temperature, oil pressure, fuel level, and battery voltage. The row of warning lights was fitted above the instrument cluster in front of the driver.

4. THE LAUNCH OF THE XJ-S

After the 1973 oil crisis, during the mid 1970s the political situation within the UK was somewhat uncertain, the economy was in turmoil and the British Leyland Motor Corporation losses were enormous. In 1975, these losses led to the company being effectively nationalised to safeguard the jobs of the workers. The launch of a new expensive sports car couldn't have come at a worse time.

The much acclaimed new Jaguar was introduced to a select group of motoring journalists in May 1975, when four cars were put through their paces and were made available for testing by the press. Although the new Jaguar model was not being officially released for some months, dealers were being supplied with cars as early as June. However, even with the embargo in place, a serious error was made in Jaguar's largest market, America, regarding the release of details of the forthcoming new arrival. In January 1975 nearly eight months before the public launch, British Leyland were showing their range of forthcoming new models at Boca Raton in Florida, an event primarily for the benefit of the new Triumph TR7. At this designated launch gathering of around 200 dealers and their families, the showing of the new XJ-S was supposed to be for the eyes of the dealers only. However, to the dismay of the management, an XJ-S was inadvertently shown not only to dealers but also to their families. One dealer photographed the forthcoming Jaguar and supplied the photograph to the press; it appeared in *Road & Track* magazine in May 1975 with a comprehensive breakdown of the specifications. Thankfully, this did little harm but it was still an embarrassing occurrence.

The public release took place on 10 September 1975. The release was titled "*The Finest Jaguar Yet*", and the contents of the release have been reproduced below:

"The most exclusive and expensive 150 mile-an-hour Coupé called simply the XJ-S – is unveiled today (10 September 1975) by British Leyland. Launched on the eve of the Frankfurt Motor Show, it is designed to capture sales from that small jet-set group of European cars which can be counted on the fingers of one hand. The XJ-S combines a new and distinctive aerodynamic body with unsurpassed levels of comfort, refinement and quietness and the silky smooth power of the Jaguar V12 5.3 litre engines with electronic fuel injection.

"Although expensive for a Jaguar, the XJ-S will be modestly priced by comparison with its competitors – and will have the added advantage of easily-accessible service points around the world. The XJ-S is aimed at winning exports – particularly in the North American market – where it is expected to earn £26 million in the first year with other overseas sales adding another £4 million. Performance is outstanding with a 0-60 time in just 6.8 seconds but the

combination of fuel-injected V12 5.3 litre engine with sleek styling produces excellent fuel economy for a car of this class. Development drivers returned between 15 and 18mpg. Production at the Coventry factory has initially been set at about 60 cars a week. The XJ-S incorporates several 'firsts'. New and powerful quartz halogen biode headlights have been designed for the car by Cibié in conjunction with Jaguar. The tyres, too, have been developed exclusively for the XJ-S. The fuel, water temperature, oil pressure and battery condition gauges are of a new design for pin-point accuracy and there is an 'at-a-glance' warning system for instant driver reaction. The bumpers, the first of their type in Europe, are mounted on telescopic shock absorbers to prevent 5 mph damage.

"The XJ-S was styled mainly by the late Malcolm Sayer who spent many years applying the principles of aerodynamics, first to aircraft and later to Jaguar cars, Sir William Lyons, the creator of the Jaguar marque also imprinted his style on the car, which is the last model with which he was associated before his retirement."

Derek Whittaker, Managing Director of British Leyland Cars commented *"The XJ-S takes British Leyland Cars into entirely new and extremely lucrative markets. It is aimed at the most discerning motorists in the world who want the very best. On all counts, the XJ-S meets these requirements with sheer style that is unmistakably Jaguar.""*

The press release from British Leyland went into great detail ensuring writers had as much information on this new product as possible, and this has been reproduced below.

Jaguar XJ-S – The Technical Details

The XJ-S, the most advanced development of the XJ theme, incorporates many completely new features, several of which are not only new to Jaguar and BL, but are a world first.

In this, the most expensive and exclusive Jaguar, every effort has been made to produce the quietest, most comfortable and luxurious high performance car on the market. Particular attention has been paid to driver control layout, seating and interior silence.

Strength and Safety

The XJ-S steel monocoque bodyshell meets all current safety regulations and anticipates forthcoming legislation in North America and Europe. All cars have the same bodyshell and exterior features, including "no damage" 5 mph impact bumpers. The bumpers are the first of this type on the European market, and feature a steel armature mounted to Menasco struts

housed in the longitudinal chassis members. Side intrusion barriers are built into the very wide doors, which are mounted on reinforced hinges. The forward hinged bonnet gives excellent access to all major components and is supported by two gas struts. A dual purpose lever both opens and positively locks the bonnet. Luggage capacity in this car is exceptionally large even by luxury saloon car standards. Jaguar engineers have designed the rear end of the XJ-S not only to meet rear impact tests but also to accommodate as much luggage as the XJ saloons. The deep boot also houses the battery, fuel tank, fuel pump and the spare wheel, which has a "tailor-made" cover for luggage protection. Jaguar's meticulous attention to detail is illustrated by the louvres in the boot which keep the air fresh and remove staleness.

Style with Comfort

The interior of the XJ-S has been designed and developed with one main object in mind – to give the owner the highest possible degree of sumptuous refinement and yet retain the taut feel of an exclusive high performance car.

New Seats

Four adults can travel in comfort. The front seats are fully adjustable "fore and aft", fully reclining, and of a new design with the seat cushion made up of two separate components, the centre section and the outer square. The centre section "gives" under the weight of the occupant, while the outer part firmly grips without pinching. The door and side panels have combined armrests, door pulls and individual ashtrays. Inertia reel front seatbelts are standard and are available for the rear seats too. The reels are hidden behind trim panels. Rear seatbelt buckles are neatly housed in a central tray.

The Sound of Silence

An established hallmark of the Jaguar theme is interior silence, and the XJ-S can be firmly placed amongst the world's quietest cars. The bulkhead and transmission tunnel are fitted with close-fitting moulded heat and sound shields. Wiring passing through the bulkhead is by multi-pin plug and socket units – to avoid holes through which noise can pass. The basis of the interior insulation is the fitting of moulded under-carpet pads tailored to fit exactly into the front footwells, bulkheads and transmission tunnel. Damping pads are fitted to the floors, door panels and rear seat pan, and the parcel shelf and rear side panels are all sound insulated. The floor and lower door panels are trimmed in deep-pile felt-backed carpet. The entire luggage compartment is trimmed in black carpet, and a layer of sound insulation is sandwiched between the petrol tank and rear seat bulkhead and the axle cover.

Take Notice – Eighteen Times Over

The full-width one-piece fascia houses the instruments, multi-directional air vents and a lockable glove compartment. The fascia unit is vacuum-formed and trimmed in black PVC with a thickly padded crash roll along the top. A lower centre console houses the auxiliary switches, clock, radio, and the heating and ventilation controls. The instruments are all in a single nacelle which contains speedometer, tachometer, fuel, water temperature, oil pressure and battery condition indicators, and eighteen warning lights along the top. All major functions, both mechanical and safety, are monitored by the warning lights. The instrument binnacle is wired by printed circuits, and two multi-pin plugs connect it to the main wiring loom. The rim of the 15.5 inch steering wheel is covered in leather. The wheel is an acrylic moulding which resists chips and scratches and is lighter than normal steering wheels.

Warning – At a Glance

For XJ-S drivers red and amber mean more than a wait at traffic lights – they are the key colours in an "at a glance" system of warning lights to give the driver immediate warning of a major failure, a secondary fault and information about which auxiliary equipment is operating. Auxiliary push-push switches operate the heated rear window, interior lights, map lights and hazard warning lights. Ignition and lighting controls are located in the fascia on either side of the steering column and are illuminated by the same fibre-optic system that was introduced on the Series 2 XJ saloons. The fascia incorporates a large lockable glove compartment with a flip-up vanity mirror in the lid. The sun visors are recessed into the one-piece headlining. Electrically operated windows and central door locking are standard and the controls are on the gearbox console. The XJ-S has five interior lights – two behind the rear passengers, one at each end of the fascia and one above the driving mirror. The handbrake lever is mounted on the driver's door sill. When the handbrake is applied the lever can be returned to the "off" position, out of the way. The brake is then released by pulling up the lever and pressing the release button in the top of the handle.

Automatic Temperature Control

The XJ-S has fully automatic air conditioning developed by Delanair and Jaguar for the Series 2 XJ saloons. There are only two controls, one for temperature and one for the automatic and manual operation. The system provides a wide range of temperatures and the occupants select the required setting which is then maintained regardless of outside conditions. Ventilation is through fascia and foot well vents. The fascia has four multi-directional vents, one at each end

of the fascia and one at each end of a large central vent. The footwells are ventilated from the sides of the transmission tunnel. The air conditioning is programmed to maintain the face level air at a lower temperature than the foot wells to ensure clear heads and prevent stuffiness. Air extraction is through the rear quarter panels via a collection chamber in the body panels. The chamber is lined with foam to silence roar as the air leaves the car.

Power to Match Power

In a high speed car like an XJ-S it is vital to have powerful, far seeing headlamps. A world first for Jaguar and Cibié are new quartz-halogen biode headlamps developed for the car. The lamps have two independent reflectors, each with a halogen H1 bulb, and the reflectors are specially designed for dip or main beams. To achieve the correct shape of the dipped beam cut-off and the widespread main beam, a screen of auxiliary prisms is located inside the main reflector. The screen, combined with the outer lens, provides a long, wide spread of light for fast, accurate driving.

Grace and Pace

The heart of the XJ-S is the Jaguar 5.3 litre fuel-injected V12 engine, which produces 285bhp DIN and 294 lbs/ft DIN torque, and is renowned for its smoothness and flexibility. Lucas electronic fuel injection has increased the power of the engine, but has given it a flatter torque curve to make it one of the most flexible and tractable power units in the world. Capable of vivid acceleration, the XJ-S has a maximum speed of 150mph plus. Aerodynamics and fuel injection combine to give fuel economy and Jaguar development drivers have returned a fuel consumption range of 15 to 18mpg.

Fuel System

The single 20-gallon tank is mounted in the safest position – between the passenger compartment and the boot, between the rear wheels. The tank feeds into a sump tank immediately below, designed to provide a continuous supply of petrol to the high pressure fuel pump, even if the main tank is running low. The fuel pump has a permanent magnet motor which runs immersed in petrol; it operates at a pressure of 28psi, maintaining a constant supply of petrol to the injectors.

Transmission

A choice of two gearboxes is available for the car: the Jaguar four-speed manual all-synchromesh unit, or the Borg Warner three-speed fully-automatic Model 12 transmission. A single piece propeller shaft drives the differential. This is a four-pin Powr-Lok (limited slip) unit with a 3.07:1 gear ratio.

The Rough and the Smooth

Sharp corners, bumpy lanes or a motorway – the XJ-S covers all in a manner no other car can match. Cushioned on the Jaguar all-independent suspension systems, the ride and handling are superb. Very careful attention has been paid to the total roll stiffness and its distribution at the front and back. This has resulted in the fitting of new rear and up-rated front anti-roll bars; at the same time a critical look at the rear spring and damper units and the damper units and the damper force/velocity relationship produced a rear suspension that has exceptional handling and a very comfortable ride. A great deal of work was carried out on the steering geometry in conjunction with the new Dunlop SP Super Sport tyres. The result was the fitting of an eight-tooth pinion – giving a reduction in overall ratio. This work produced extremely accurate steering with a very rapid response.

A New, Fast Tyre

The new tyres have been developed for wet road performance, quick response, low wear rate and to run at higher speeds than the SP Sport. Jaguar and Dunlop returned to one of their old record-breaking haunts – the Jabbeke autoroute in Belgium – to carry out high speed testing of the tyres and the car. Accompanying the new tyre is the latest light alloy road wheel from Kent Alloys, recently offered for the first time on XJ 5.3 saloons. The new wheel, designed exclusively for Jaguar cars, is a low pressure die-cast unit made from a development of BSS 1490 LM 25 aluminium alloy, further improved by GKN Kent Alloys to improve elongation and give an ultimate tensile strength of 14 tons per square inch.

Reaching a Full Stop

In just over twenty seconds, the XJ-S can accelerate from rest to 100mph and brake to a stop. To give this stopping power the front brakes are 11.18 inch diameter ventilated discs with four piston callipers and on the rear, mounted inboard, are 10.38 inch discs. Friction material is Ferodo 2430, which is renowned for its high coefficient of friction and long life with very good anti-fade characteristics. Incorporated into the front to rear split hydraulic circuits is a pressure differential warning actuator, which causes the brake warning light to illuminate if one circuit fails. Servo assistance is fitted in the form of a Girling in-line tandem servo mounted on the

brake pedal box. This is direct-acting, using vacuum assistance from a vacuum reservoir tank located under the front wing.

Wipers

The two-speed windscreen wipers are controlled by a steering column stalk with a single wipe facility. The motor linkages are mounted as a single unit underneath the windscreen scuttle air vent, and the entire unit lifts out after removal of four screws. The simple mounting arrangement, for reliability and easy maintenance, is another "European first" for the XJ-S.

Electronics and Electrics

To equip a car like the XJ-S with electronic fuel injection, electronic air conditioning, quartz-halogen biode headlamps, electric windows, central locking, heated rear window, two-speed wipers, eighteen warning lights and all the normal electrical equipment, needs a highly sophisticated wiring system. All components are wired by multi-pin plugs, which are coded in the layout of the plug pins. Feeding power to all these systems requires a high capacity battery and a powerful alternator. Lucas provides both with the Pacemaker CP13 battery with a capacity of 68 amps at a 20 hour rate and the 20 ACR alternator producing 60 amps at 3500 engine rpm.

Rear Lights

The rear light clusters wrap around and combine rear, stop and flasher lights, reflectors and side markers. Reversing lights are in the number plate illumination panel which runs the full length of the boot lid.

Exhaust System

In common with the rest of the Jaguar range, the exhaust system has stainless steel silencer boxes, tail pipes and over-axle pipes.

The XJ-S was shown to the world for the first time at the Frankfurt Motor Show in September 1975. This controversial new model was already with some of the dealers in anticipation of a great and successful unveiling. This new model was seen by some as hard to justify, and the political and economic uncertainty at a time of cutbacks made the XJ-S a target for sceptics. The so-called two-plus-two had a massive thirst for fuel and was seen as uneconomical, but

let's be honest, who worries about fuel consumption when the Jaguar name is synonymous with luxury and comfort.

In October 1975 the XJ-S was unveiled at the British Motor Show at Earls Court. The layout was to show unity between the BL marques, so the Jaguar was placed on the same stand as the Morris Marina and the Austin Allegro. One magazine wrote:

"Big L is making a great effort to appear dynamic and go-ahead in this Diamond Jubilee show, and is lumping all its offerings together under one 'Leyland Cars' banner instead of under individual marque names – an honest move reflecting internal policy, but one which will no doubt annoy (or perhaps sadden) Jaguar enthusiasts, to name but a single group of diehards."

Expectations were naturally high, but, thankfully, at least overall, few were disappointed. *Autocar* magazine said:

"An XJ12 driver put into the driving seat of the XJ-S would certainly notice more performance, a slight and valued improvement in the saloon's already superb handling, and different visibility – the XJ-S tends towards American and Italian fashion in super-fast cars where the faster the car, the less rearward view is deemed necessary – but he would find it more refined if anything, and as gentle to drive. Whatever one thinks of the appearance of the XJ-S – for what personal prejudices are worth, not all of us find this Jaguar as immediately beautiful as several of its predecessors – to drive the XJ-S, even for an afternoon is to admire it very much."

All said and done, the XJ-S launch was a success and the company could only hope for increased sales to preserve the Jaguar marque. The production figure for the first full year (1976) totalled 4020 cars. The model was to go through numerous changes and facelifts over the coming years and these are detailed in the following sections.

5. THE HISTORY AND PRODUCTION CHANGES OF THE XJ-S

Like every other model, the XJ-S would have various production changes over its life cycle.

Production dates and model years have often been confused with one another, the easiest way to explain this is that production for the next model year tends to start during the late summer or early autumn of the previous calendar year, for example, the first 1984 model year cars were actually produced and supplied in late 1983. This has been common practice throughout the history of the company.

5.1 Changes that occurred between 1976 and 1979

Jaguar was making minor changes to the model as early as 1976 with:

- The boot strip lettering was altered to a finer style from chassis number 2W 1258
- Changes to the door trim
- Cloth interior trim became available as an option (rarely seen)
- The earliest cars had a plastic rim steering wheel with horn attached by a thin centre bar, in the centre of the horn push was a gold on amber oval badge. This soon changed to a leather covered wheel rim

Numerous mechanical and engineering modifications were also made throughout the year.

Minor changes to the 1977 model year cars were to improve the appearance of the roof gutters. The finish was improved and the width reduced from 2W 2638. The side light fuse was changed from a 10amp to 3amp to improve the side light circuit protection from 2W 3755.

During the early months of 1977, a significant mechanical change was made when the original Borg Warner automatic transmission unit was replaced by the General Motors GM400 three-speed unit. The manual transmission was still available for those customers who preferred this.

Later that year, to coincide with the start of the 1978 model year, there were a number of small cosmetic changes made to the exterior. These were:

- The matt black boot lid panel was replaced by a body coloured panel
- Silver-grey finish was added to the rear light cluster
- The radiator grille was changed from black to chrome
- The chrome strip on the centre B/C window pillar was replaced by black trim

- The silver coloured instrument dial rims were changed to black
- A new quartz time clock was introduced from chassis number 2W 4126
- Legislation for Australia called for an audible flasher unit to be fitted from VIN 100536

In 1978 the original chassis number system was replaced by the VIN system. The new "Vehicle Identification Number" series started with 100001. The VIN number 101855 started the 1979 model year XJ-S and the following enhancements were introduced:

- Revised thicker quality carpet which included the carpet on the "kick" door trim boards
- A dual calibrated mph/kph speedometer was required by UK legislation from April 1979. Jaguar started the introduction earlier from VIN 101179
- A new 85mph speedometer was introduced for legislative purposes in the American market at VIN 103813
- The Phillips AC460 mono radio/stereo unit was replaced with the AC860 unit previously used in Daimler Vanden Plas models – UK only
- A four-speaker installation was introduced
- Revised rear quarter panel and armrest to improve the front safety belt installation and provide sufficient space for the four-speaker system
- Improved rear exhaust extensions with "rolled" ends
- The direction indicator lever and the windscreen wiper lever positions were reversed compared to previous model years
- The rear seat tunnel trim was improved with the deletion of the plastic moulding
- A revised steering wheel impact pad was introduced
- Legislation regarding the introduction and use of seat belts meant there were many different specification set-ups depending on the receiving market
- A revised panel lamp rheostat and control knob which provided a minimum brightness stop position had been introduced in place of the "off" position – Italy only
- Exterior door mirror shape was changed to become squarer
- Electric aerial with stainless steel low profile mast mounted on the off-side rear wing – UK only
- The centre console was finished in trim colour

At the end of 1978 for the 1979 model year, the decision was taken to delete the four-speed manual gearbox option. The last XJ-S model with manual transmission was despatched during January 1979. Jaguar could no longer claim to making a car capable of reaching 150mph (241.4km/h) as the automatic transmission model could only reach 145mph (233.4km/h). A spokesman reported that there were no plans to fit the five-speed Rover gearbox being used on the XJ6 Series 3 to the XJ-S as the demand for the manual gearbox was very small, and the

A pre-H.E. 1978 XJ-S

1983 V12 H.E. XJ-S

1985 3.6 litre Cabriolet

A range of Jaguar XJ-S models in 1991 including 3.6 litre Coupé, V12 Coupé and a V12 Convertible

5.3 litre V12 had more than adequate torque to overcome the power losses of the automatic transmission. It was also reported that the 77mm Rover five-speed gearbox had not got the strength required for the XJ-S application.

The last manual XJ-S built had chassis number (VIN) JNAEW1AC 101814 and was painted Squadron Blue. From launch to 1979 the company produced 352 XJ-S cars with the manual gearbox, none of which were ever sold in America. A test car was produced to American specification and was tested and certified to Federal standards, however, the company took the decision not to supply the manual version to the USA as the dominant demand was for the automatic version.

In December 1979, the new Lucas/Bosch P-digital electronic fuel injection system was introduced, which slightly improved fuel consumption and bhp. This was identified by a round single fuel rail and was introduced from engine 8S 16400 at around VIN 104146.

5.2 Changes that occurred between 1980 and 1989

Unfortunately by 1980, annual production had fallen to just over 1000 units (see p.148). This figure was an all-time low for the model. For a time production was stopped and a Board meeting was held to discuss the future of the XJ-S. Thanks mainly to John Egan the XJ-S gained "a stay of execution". Jaguar was having a rough time with poor build quality and thirsty engines, while the image of British Leyland also assisted the decline, but with the decision to stick with the model there was only one way for the XJ-S to go and that was up.

A couple of major mechanical modifications took place in 1980, these were:

- Cars going to the American market were fitted with a new catalytic converter
- Rear fog lamps were introduced as standard equipment for the UK market at VIN 103476

Apart from the major changes shown above, there were a couple of minor changes for 1980, these were:

- Flush fitting aerial
- Pirelli P5 tyres were introduced for the American market

The XJ-S HE model

The main factor in the turn-around was the introduction in 1981 of the May "Fireball" cylinder head on the V12 engine. The new engine was called the H.E. (high efficiency) and gave the XJ-S an increase in performance but more importantly, there was a dramatic improvement in fuel economy, which had always been the car's downfall.

The new H.E. was announced on 15 July 1981. It was deemed as a revolutionary new economy development of the renowned V12 5.3 litre fuel-injected engine. The new cylinder head design potentially improved fuel consumption to more than 20mpg in out-of-town driving. The XJ-S HE was officially recognised as the world's fastest production car with automatic gearbox, as apart from its improved fuel efficiency, it had a higher top speed of 155mph (249.5km/h).

The fuel consumption benefits were a result of the introduction of the "Fireball" combustion chamber. It was invented by the Swiss engineer Michael May and this was the first time the design had been used on a production engine. Jaguar's engineers spent five years perfecting May's principles to suit the demand of a production engine; the development was overseen by Jim Randle (Director of Vehicle Engineering) and Trevor Crisp (Group Chief Engineer – Power Units and Transmissions).

John Egan (Chairman and Chief Executive) commented *"While the performance and smoothness of the Jaguar V12 engine has always been regarded as nothing short of astonishing, we were aware that the unit's fuel consumption, although gradually being improved, needed a major economy advance to reflect the world's increasing energy consciousness.*

"By the standards of conventional combustion techniques the engine was already highly efficient, but we know that we needed a method of providing even more efficient means of burning the precious fuel. Michael May's ideas provided the basis of the solution. We entered into a long term development and licensing arrangement with him."

The secrets of the "Fireball" lay in the split level combustion chamber arrangement, with the inlet valve set into a shallow collecting zone and the exhaust valve set higher up within the "bath tub" type combustion chamber, which also housed the spark plugs and a ramped channel connecting the two areas. As the piston rose during the compression stroke, the mixture charge was pushed out of the inlet valve pocket and swirled rapidly round into the main chamber. These characteristics ensured a rapid and complete burning of the very lean fuel mixtures. The

compression ratio was increased from 9.0:1 to no less than 12.5:1. Power was now 299bhp at 5000rpm, with torque of 318 lb/ft at 3000rpm (European specification).

A decision was made to re-develop what was already a very reliable constant energy module. Initial thoughts centred on the idea of a separate ignition system for each bank of six cylinders with a double-deck distributor. It was discovered that the module could be made with a more powerful amplifier moving from 5 to a maximum of 8 amps, this would provide enough power for all 12 cylinders. After an extensive search, Lucas developed the novel solution of using a twin coil system, where the secondary coil was used solely as a large inductor. To keep the system cool, the coil was mounted in front of the radiator. The new ignition system incorporated a magnetic pick-up within the distributor and proved to be 100 per cent reliable throughout its development.

To accommodate manufacture of the new cylinder head, it was decided that investment should be made at the Radford Engine plant. The Company invested £½ million at Radford and most of the money was spent on four new transfer machines for the revised spark plug locations, together with a numerically controlled triple-head milling machine which finished machining the new combustion chambers. The objective of the Jaguar engineers was to ensure everything adhered to Jaguar's high standards for consistent quality and reliability, and improved efficiency. With this in mind, they investigated means of removing potential areas where operator error may occur. The company introduced Programmable Logic Control (PLC) on the machine tools; a system of diagnostic fault finding on both the block and head which ensured consistent high levels of accuracy on all machining operations. It was reinforced by an electronic link-up of all the machine tool storage boards in the lines, this system signalled when the pre-determined tool life had expired which maintained the tools maximum efficiency.

Additional sophisticated electronic gauging systems were introduced in all areas where a high level of accuracy was essential. The machine accurately measured 26 separate ordinates (centre distance) in one single operation. The first machine of its kind to be installed at Jaguar meant the operation would be reduced from many hours of manual labour to just a few minutes. Arrangements were also made for machining the locations of the valve seat inserts, for shrink fitting the inserts and to take into account the differing depths of the new valve positions from the head joint face.

The Lucas/Bosch P-digital electronic fuel injection system that was introduced in 1979 had some minor adjustments made. The improved power and torque characteristics allowed the use of a higher ratio (2.88:1) rear axle which in turn also aided the economy, cruising refinement and maximum speed.

Along with the new engine there were some external changes:

- New badges: The boot badge was changed from XJ-S to XJ.S and moved to the right-hand side; H.E. letters were added to the left-hand side of the boot panel; a round "growler" badge was added on the bonnet; and a silver on black Jaguar script badge was placed above the rear number plate lamp
- The vent by the windscreen was now black instead of chrome
- On the side of the car, indicators were added to the front wings in front of the wheel
- A wider range of paint colours was offered
- Tapering twin coach lines were introduced in a contrasting colour
- Starfish alloy wheels – five spoke dome-design in grey with bright silver paint added further distinction to the Dunlop D7 215/70 series tyres on wider 6½in rims
- Black finish wheel nuts together with a growler fitted to the wheel centre
- New bumpers were introduced for the XJ-S that were similar to those previously used on the Series 3 saloon. The bumpers had the addition of chrome at the top
- Twin rear fog lamps were incorporated into the rear bumper and direction indicators were recessed into the front bumper
- Windshield wipers had a delay wipe facility incorporated in addition to the existing two-speed and flick wipe function
- A timer was linked to the heated rear window, this would automatically switch off after 15 minutes to preserve the battery life
- A lightweight aluminium condenser was fitted to the air conditioning system under the bonnet
- Twin electrically operated door mirrors were fitted as standard

The tyres used were developed by Dunlop specifically to support the requirements of Jaguar and Rolls-Royce and they were manufactured in the UK. The tyres had a distinctive five-ribbed tread pattern augmented by numerous pin like holes which provided good water clearing properties and high levels of grip. The Dunlop engineers worked closely with the Jaguar engineers to pay particular attention to the levels of noise and comfort, in addition to ensuring a high degree of structural integrity and safety. The road holding, handling and braking were improved considerably with an estimated 10-15 per cent improvement in tyre life.

There were also differences made internally:

- Elm burr veneer was introduced for the first time on this model and was extensively used throughout the car

- The saloon style steering wheel was used, with thicker built-in horn push
- The introduction of all-leather upholstery and trim, including door trims, rear quarter castings, centre console, armrest and stowage locker
- A timer was linked to the interior courtesy lamp which switched off 15 seconds after the doors had been closed
- Large automatically operated red guard lamps were situated in the rear of the door pockets which provided a "door open" warning
- The central locking system was improved to allow both doors to be locked by means of the interior or exterior locks on either door
- The centre console door lock switch was deleted
- A thick pile carpet was colour-keyed to the new range of interior trim and headlining colours
- The air conditioning controls were mounted on a matt black panel instead of aluminium as previously
- The air vents in the centre and at the ends of the fascia were modified to suit the wood veneer treatment
- The spare wheel and battery box was covered by fully-tailored carpet replacing the pressed cardboard that covered the face of the spare wheel and plastic battery box previously
- A flush-fit courtesy lamp was fitted in the boot
- Strapped to the right-hand side of the boot was an attaché case style toolkit replacing the tool roll

The extensive use of Connolly hide further enhanced the luxury aspect of the XJ-S Coupé. The standard equipment included the air conditioning and the revolutionary Phillips 990 micro-computer stereo radio cassette unit with an electric aerial. This system had automatic search tuning to seek the strongest signal, which avoided the need to manually retune even between limited range FM transmitters.

The return to the traditional use of veneer was encouraged due to the sophisticated target audience who demanded the luxury expected from Jaguar. John Egan commented *"We had overwhelming feed back from our dealers, particularly in the USA, that potential customers thought that some of the XJ-S detailing did not reflect the traditional British image of what many people describe as the ultimate in luxury sports Coupés. They told me that matt black fascias were appropriate for out-and-out sports cars like the E-type, but the XJ-S clearly demanded more of a quality stamp…. Having seen the results, I think they were absolutely right!"*

After an initial period of success for the XJ-S, demand had reduced dramatically, and the market doubt and uncertainty had reduced sales to a mere trickle. A reputation for high fuel consumption, indifferent quality and poor residual value threatened the very existence of the future model range. As a result of an organisation management re-structuring within the marketing functions, demand exploded when the company introduced the HE variant. Jaguar worked extremely hard with regards to the quality and reliability of the cars produced, and it paid off. The new XJ-S HE lifted the sales for Jaguar and the volumes rose from 1292 in 1981 to 3478 in 1982. The upturn brought sales figures back to the levels achieved in 1976-78, and went on from there. The H.E. also benefited from Jaguar's new methods of quality control. The company was beginning to experience the phenomenon of demand far exceeding the ability to produce, and customers had to wait for their cars.

For the 1983 XJ-S, the following features were introduced:

- Coat hooks were fitted on the upper B/C post
- Cloth seat material was changed from polyester to woven velour
- A new square section fuel rail was introduced on V12 engines with fewer connections
- The parcel shelf on all XJ-S models was now finished in black carpet in place of PVC from VIN 108747
- The boot changed to a vinyl spare wheel cover and plastic battery box from VIN 107138 (late 1982)

In addition to the standardised changes, the following were available as optional extras:

- Cruise control
- Headlamp wash/wipe
- Lap and diagonal static rear safety belts

The six-cylinder XJ-S

October 1983 (1984 model year) saw the XJ-S range expand with the introduction of the six-cylinder AJ6 engine. The new power unit met Jaguar's standards as a replacement for the old XK engine. The main advantages were that it was lighter in weight, and had better economy.

AJ6 engine in Detail

The company invested heavily in a new engine for its growing model range, and committed £30 million to the project. The all-new engine was a 3590cc aluminium alloy unit. It had two overhead camshafts and 24 valves, and was only the third Jaguar engine to be introduced in the post-war period, following the XK series in 1948 and the V12 in 1971, both of which continued to power other models in Jaguars range. All three engines were produced at Jaguar's Radford plant – the old Daimler factory – in Coventry.

The design objective of the AJ6 engine reflected Jaguar's forward-thinking approach to producing a power unit that combined high levels of performance and refinement with exceptional fuel efficiency. The AJ6 engine produced 225bhp (DIN) at 5300rpm and delivered 240 lb/ft torque at 4000rpm, this gave the car a blend of performance and tractability, coupled with excellent fuel economy. The AJ6 was relatively lightweight and was endowed with the inherent smoothness and balance of the six-cylinder in-line configuration. The engine sat neatly under the bonnet at a 15 degree angle. High on the list of priorities was rugged durability with minimal servicing requirements, both of which were built into the design from the concept stage.

Cylinder Head

Looking down at the engine, one of the most striking aspects was the long inlet tracts that went from the manifold to the cylinder head. Their 17in (432mm) length provided a useful ram effect, giving the engine the power to pull easily at mid-range rpm. The cylinder head offered good heat dissipation. The four valve fuel injected cylinder head design gave extremely good breathing efficiency at high rpm. The combustion chamber was a pent roof design with two pairs of inlet and exhaust valves inclined at an angle of 46.5 degrees. The domed piston design was one of the features used to achieve a 9.6:1 compression ratio.

Valves

The valves were operated by twin overhead camshafts via the maintenance-free bucket-type tappets, each camshaft ran in seven bearings for maximum stability. The exhaust valves were

treated with a special hardening process, a two-hour bath in a hot mineral solution laid a surface of nitrogen and carbon which optimised the wear characteristics and gave a high degree of heat and wear resistance, necessary for a performance engine.

Exhaust System

The exhaust gases exited via two cast-iron manifolds into twin down pipes. These merged into a single pipe to the main silencer from where twin pipes led to two rear silencers and tail pipes.

Cylinder Block

Maximum structural rigidity for durability and refinement was naturally a priority when designing the aluminium cylinder block. The block itself was a deep-skirted design extending well below the crankshaft centre-line before it was mated with the sump. This increased the beam stiffness and allowed the bell housing for the transmission to be fully supported by the crankcase, rather than partially by the sump.

The cylinders had cast-iron thin-walled dry liners which were another weight saving feature. The aluminium alloy pistons had been highly engineered to maintain a specific clearance within the extreme operating temperatures which contributed to the refinement and efficiency.

The cooling fan was driven through a viscous coupling; this allowed it to run at less than engine speed. It had thermal control and both features helped to minimise the engine power loss.

A design feature of the 3.6 litre was the replacement of most of the gaskets normally required by a metal to metal jointing process. The process used with all joints except the cylinder head employed a sealant known as RTV (Room Temperature Vulcanising) which set under normal temperatures to provide a direct and highly effective barrier against oil leakage. The method used for the critical rear crankshaft oil seal was probably the best in the industry at that time. The use of a special lip material for the seal (PTFE – Poly-Tetra-Fluoride Ethylene) allowed it to withstand the heat and friction generated from contact with the crankshaft by combining high levels of temperature resistance with self-lubricating properties. A spring-tensioned flange held the seal in contact with the crankshaft to eliminate air gaps.

Electronic Fuel Injection

The AJ6 engine was equipped with an advanced electronic fuel injection system that made a significant contribution towards efficiency, economy and consistent operation. The electronic

control unit consisted of a microprocessor which responded to information sent to it by a number of sensors that monitored the throttle opening, engine compartment and coolant temperatures, engine speed as well as acceleration and deceleration. Using the information gained, the microprocessor controlled two critical areas of the engine's operation to optimise the efficiency and economy. Under normal conditions, the processor controlled the solenoid operated injectors which determined the precise amount of fuel required from the pre-set calibrations stored in its memory. The processor operated a fuel cut-off on the overrun which came into effect whenever the throttle was closed above 1100rpm, this made vital fuel savings.

Endurance Testing

High efficiency, durability and reliability were built into the AJ6 engine; it was then tested to its limits on the pre-production cars. Tests were carried out in a climate controlled wind tunnel and subjected the engine to the harshest extremes in temperature, ranging between -30°C and +50°C, this checked cold starting, hot running, flexibility and smoothness. Continuous development work was kept up through dynamometer testing combined with computer analysis. Systematic rig testing of all major components and sub-assemblies determined the optimum design, this ensured the durability came up to the highest standards required. The pre-production cars came through the rigorous endurance testing regime on the proving grounds which ranged from the bitter Canadian winter to the heat of the Arizona desert, from the arduous stop-start driving in New York to the non-stop fast running on the German Autobahns as well as on the Nardo high-speed circuit in Italy.

Transmission

In the 3.6-litre XJ-S, to go with the new AJ6 engine engine, a new Getrag 265 five-speed gearbox was introduced, so a manual option was available again since its deletion in 1979. The Getrag transmission was carefully chosen as being the best unit available of its kind and it suited the 3.6 litre perfectly. The transmission was engineered for refinement and durability and the five-ratio sports shift gear change allowed the driver to make full use of the engine's eager responsiveness and broad power band.

The car was capable of a top speed of 145mph (233km/h) and had a 0-60mph (0-97km/h) acceleration time of just 7.6 seconds. The fuel economy was also impressive, as the car easily managed to get 25mpg (11.3 l/100km) with a variety of driving styles. With the chosen gearing – an overdrive fifth gear of 0.76:1 and a final drive ratio of 3.54:1 – the car was capable of 28.4mph (45.7km/h) per 1000rpm in fifth gear when driven in a relaxed high-speed cruising mode. The engine turned over at only 2464rpm when travelling at 70mph (113km/h).

To fit the new engine, the bonnet had to be re-profiled giving a slight power bulge to allow for the taller AJ6 engine, the V12 kept the flatter bonnet. Otherwise, there was very little change to the exterior except for a:

- 3.6 litre badge on the boot
- "S" badge on the radiator grille
- Pepper pot alloy wheels, also known as perforated alloy wheels with Dunlop 215/70 VR15 tyres

The internal changes compared to the V12 model included:

- A small change to the centre console to allow for the manual gear lever
- The steering wheel had a gold on black centre badge; the V12 remained the same
- Seat facings in leather, with Ambla trim elsewhere; the V12 had all-leather trim

The mechanical changes included:

- A plastic cap replaced the metal one on the windscreen wash/wipe reservoir at VIN 108985, both caps are interchangeable up to VIN 110190 when the reservoir and cap were both re-designed

Compared to the V12 models, the 3.6 litre version was £2000 cheaper and as a consequence, it attracted a wider sector of customers and introduced more people to the brand. The 3.6 was seen as a more sporting car, especially as it was fitted with a manual gearbox; performance was not far behind the V12, yet fuel economy was significantly better.

Jaguar shipped 27 Coupés to the USA for testing, these were built to the Federal American specification. Some were driven by employees for evaluation purposes and the remainder were tested by the engineers at the Jaguar facility in Arizona. The decision was made not to import the 3.6 litre model to America and the cars already there were sold to employees.

The XJ-SC Cabriolet

In addition to the 3.6 litre Coupé, Jaguar produced a Cabriolet (XJ-SC) version. Although the American threat of making convertible models illegal had by now gone away, the company did not at this time have the time or the money to develop a full Convertible version. The Cabriolet was therefore introduced to meet at least some of the expectations of customers who wanted

an open Jaguar sports car. The XJ-SC benefited from the top of the range equipment level equal to that of the V12, including the starfish alloy wheels and full leather trim.

For some, the introduction of the Cabriolet version meant a return to the open air motoring not seen since the end of production of the E-type in 1974. The Cabriolet was produced against specific customer orders only, and Jaguar made use of the specialist body-building and coach trimming skills of Park Sheet Metal Ltd in Coventry as well as Aston Martin Tickford at Bedworth.

In brief, the Cabriolet started life as a standard XJ-S body at Castle Bromwich but the roof and rear header panel were left off. Due to the design, the XJ-SC required additional work which meant it going to Park Sheet Metal for the fitting of rear panels and bodyshell strengthening. After that, the bodies were transferred back to the Castle Bromwich site to be painted. Following painting, the bodies were returned yet again to Coventry where the final assembly was done at Browns Lane. The Tickford facility at Bedworth then installed the roof, composed of a folding rear hood with the alternative of a half-hardtop, and removable targa-type panels for the front. After completion of this, the cars were returned to Browns Lane for the final inspection, road test and audit. A more detailed account of the production methods follows below.

Within the Castle Bromwich facility at each sub-assembly point jigs were used to assemble the panels. This was done to the tolerances pre-determined by the design. Larger jigs were used on the main assembly line to ensure the tolerances were maintained throughout the entire build process. Following the body-in-white process, the exterior shell was drilled to allow fitment of exterior trim. Prior to the bodies being shipped to Park Sheet Metal, they were inspected and oiled before being stored in a computer-controlled facility.

When the bodies were received by Park Sheet Metal, the work undertaken included the removal of the roof and the distinctive buttresses, the reinforcement of the under body and boot area, the re-styling of the rear panels, fitment of the front header panel and installation of the twin roll bars which were totally enclosed within the contoured panels. The bodies were then returned to the Castle Bromwich plant for rust protection and painting.

The bodies were then sent to Browns Lane where they joined the other XJ-S models on the pre-mount, mount and trim tracks. The pre-mount track was responsible for the installation of the wiring harness, sound proofing, brake pipes, air conditioning and windows. The mount track took care of the front axle, rear axle, engine, transmission, exhaust and wheels. Once on the

trim track, the interior features were fitted, including wood veneer for the fascia and door inserts as well as the Connolly leather trim.

After the hood, roof panels and hardtop had been fitted by Tickford at Bedworth, the completed car finally returned to Browns Lane where checks were made to ensure the car complied with the legislative requirements of the final destination. Prior to despatch, the cars were valeted and the remaining exterior trim was fitted followed by a final quality audit.

The two interlocking targa roof panels were trimmed in black fabric to look like a soft top. The panels were lightweight, tipping the scales at only 12 lbs (5.4kg) between them. There was a storage envelope for the panels in the boot. A folding rear hood in black fabric was supplied as standard, together with the alternative rear half-hardtop. The hardtop incorporated a heated rear window which was direct-glazed to the panel to reduce wind noise and improve rigidity. The folding hood was closed using a simple "lift and push" action to lock onto the centre bar. When it was lowered, the hood stowed away above the rear deck line, folding away beneath a tailored padded cover. The roof panels and the hood were trimmed with a nylon headlining. The black colour theme was continued to include the roof panels, the centre bar, header rail, cant rails and the "B" posts.

Designed as a two-seater, the Cabriolet offered a number of interior storage areas, behind the front seats there were twin lockable storage boxes above which was a luggage platform fitted with a forward retaining rail.

The standard features of the XJ-S Cabriolet included:

- Starfish alloy wheels – 6½in instead of 6in rims
- New rear quarter windows
- The fuel tank and the lockable filler cap were relocated
- Twin rear magazine pockets

The Cabriolet was priced at £20,756 which was seen as extremely competitive for the time.

Within the XJ-S range, Jaguar now had two fixed-head Coupé models. The combination of a powerful four valves per cylinder, 225bhp engine and the Getrag five-speed gearbox was bound to appeal to the driving enthusiasts. The XJ-S 3.6 litre was expected to develop a similar owner profile to that of the legendary E-type. The Coupé was keenly priced at £19,250 and still included features such as air conditioning, leather seat facings and a high-quality stereo system.

At the top of the range was the V12 HE model with automatic transmission as standard, this model was seen as the car that would entice the enthusiasts for grand touring cars.

John Egan commented *"The XJ-S HE has been remarkably successful since its launch just over two years ago. By offering improved fuel economy, better quality and reliability and a number of detailed but significant styling improvements we transformed the fortunes of the original XJ-S, which had been somewhat neglected since its introduction in 1975. Now with two additional models, both fitted with our new AJ6 engine, we can offer broader choice to the customer with a range of cars from the sporting manual transmission XJ-S 3.6 Coupé through the exciting XJ-SC 3.6 Cabriolet up to the XJ-S HE which continues as the magnificent flagship of the range."*

For the XJ-S HE, there were four major refinements introduced:

- Wash/wipe system that cleared the headlamps of dirt and spray, this improved the visibility for the driver in poor weather conditions
- A sophisticated trip computer (the same as that offered on the XJ saloon range), this provided information on average speed, average fuel consumption, the amount of fuel used and a digital clock
- Clarion stereo radio/cassette with electronic digital tuning and a noise reduction system
- Cruise control (formerly available as an optional extra)

When compared with the Mercedes 500SEC and the Porsche 928S *Motor* magazine summed up the XJ-S HE qualities as "*for refinement, smoothness and quietness, the Jaguar has no equal at any price*".

The company estimated the XJ-S range would set a sales volume of around 4500 cars for 1983, escalating to 6000 for 1984 and they hoped to achieve 9000 by the late 1980s.

The V12 Cabriolet

The decision to launch a V12 Cabriolet was perhaps made as the 3.6 litre was not selling as well as expected, and the fact that the 3.6 litre models were not exported to the American market, which was the biggest market for the XJ-S. However, slow sales were partly due to the long delays in production, having to move the bodies between four sites and three companies. There were also quality problems with leaky roofs. Things were improved in 1985 when it was

decided to bring the completion of all Cabriolets "in-house", hoping to improve quality and speed of build, which it did to some extent.

On 17 July 1985 Jaguar announced the introduction of the XJ-S HE V12 Cabriolet. Unlike the 3.6 litre version introduced two years earlier, the XJ-S HE V12 Cabriolet would not be produced for a limited customer base. The XJ-SC 3.6 litre was produced in low volumes for the "on-demand" customers due to the fact that the targa roof was fitted by an external company. With the new addition to the range, Jaguar moved away from using the expertise of the supplier and decided to bring the fitting of the roof in-house, this meant numbers were not limited and Jaguar could build larger volumes of both the 3.6 litre and the V12 5.3 litre models.

John Egan commented *"Since the XJ-SC was announced in the autumn of 1983 we have never been able to satisfy demand for this desirable car. The car was only available to special order and we were having to quote unreasonably long delivery periods. It was frustrating for us and for our customers. So we took the decision to fit the Cabriolet roof entirely 'in house'. We will now be stepping up production in line with demand – which we expect to grow significantly with the introduction of the V12 Cabriolet.*

"Last year sales of XJ-S models reached a record 6,028 units worldwide. In fact the growth in XJ-S sales has paralleled Jaguar's resurgence as a Company. In 1981 sales of the XJ-S range had dropped to 1,199 units. Very significant registration increases were posted in 1982, 1983 and 1984. This year our target is in the region of 8,000 sales worldwide and the expansion of the model range will most certainly contribute towards the achievement of what will undoubtedly by another record sales year for the XJ-S range."

The V12 Cabriolet was designed from the outset as a two-seater car, unlike its Coupé counterpart; there was no provision for any rear seat passengers. Initial construction of the V12 Cabriolet started at Jaguar's Castle Bromwich plant, the body panels were assembled into a complete body unit which was then shipped to an external supplier to have the roof removed and then returned back to the Castle Bromwich plant to be painted. Extensive pre-treatment processes together with meticulous attention to quality control ensured the body was able to withstand the rigours of corrosion – regardless of the most extreme climate conditions.

Following a thorough body inspection, the completed bodies were transported to the Browns Lane assembly plant. The body shell was then joined with the power train which had been produced at Jaguar's engine and transmission plant at Radford. Browns Lane was not only the main assembly plant for Jaguar cars, it was also the plant where the wood veneer and leather

trim was created from the raw materials. The use of wood and top grade leather epitomised the quality of the Jaguar range.

The burr elm veneers for the fascia and door casings were selected to ensure that only matching grains were used. The veneers were sanded, polished and mounted on to base wood for installation into the finished car, this process would take at least three weeks. The selection of the hides for the leather trim and seats was another painstaking process. It could take up to five whole hides to complete the interior trim of a car. The hides were matched and cut by extremely skilled craftsmen, many of whom had a lifetime's experience in leather work. The seats were hand sewn and then matched with the other leather trimmed pieces before installation took place, a practice that continues today.

Every car was rigorously inspected as it passed down the assembly line. As well as the inspectors taking the cars on road test, the new cars were subjected to a static computerised rolling road test. High pressure water tests were designed to expose any leaks and the car went through a thorough safety check to ensure it complied with legislation in whatever country it was destined for. The road test was used to monitor handling and performance. The inspector would listen for any excessive wind noise, and the emissions levels would be checked. The car would then be returned to the final line to have the exterior trim, bumpers, badges and door mirrors fitted. This was followed by even more checks and tests before the finished car was allowed to leave the company.

The new V12 Cabriolet shared the sophisticated mechanical specifications of the XJ-S HE Coupé. Like the 3.6 litre Cabriolet, the V12 version had the storage envelope in the boot to house the targa panels when removed. Externally, the V12 Cabriolet was identified by the XJ-SC HE badging and V12 motif on the front grille. The paint work was finished with twin coach lines.

In many respects, the interior of the V12 Cabriolet was identical to the V12 Coupé, but the Cabriolet owners had two generous lockable storage boxes behind the front seats to protect any valuables and a fully carpeted boot area with chromed retaining bar. A digitally tuned Clarion E950 radio/cassette was fitted as standard and it was accompanied by four balanced speakers. An electric aerial retracted automatically when the radio was switched off. A full air conditioning system with variable temperature settings was fitted.

The V12 Cabriolet was competitively priced at £26,995. The Coupé and Cabriolet versions of the XJ-S were now both available in 3.6 litre five-speed manual form, and 5.3 litre automatic form. Since the introduction of the XJ-S range in 1975, sales figures had totalled 31,818 cars.

1983 saw production of 4749 cars and this figure was surpassed in 1984 with the production of 6509 cars. During the first five months of the new variants being available, the sales of XJ-S rose to 2954 cars, this was made up from 481 3.6 litre models and 2473 5.3 litre models. The UK took 902 cars.

Further changes were made as follows:

- New trip computer with CMOS technology incorporating "watchdog" circuitry to prevent the wipe-out problems of the previous system, from VIN 121421 in December 1984
- Legislation for Australia required rear seat belts to be fitted
- A new dipstick with revised marking was introduced on AJ6 engines

There were more changes during 1985 for the 1986 model year:

- The H.E. badge was dropped from VIN 125019 in June 1985 and was replaced with a simple V12 badge on the boot
- The interior veneer was changed to burr walnut due to the lack of supply of elm, although the 3.6 litre models continued with elm for a while longer; on the V12 the burr walnut fascia and door inserts had matchwood inlays
- All models had an upgraded stereo system – V12 had the Clarion E950 and the 3.6 litre had the Clarion E920
- The interior for the 3.6 litre models was downgraded by the use of Ambla combined with a herringbone tweed-like wool mixture cloth, both for the seats and head rests
- Full leather was still available on V12 versions as well as a special order extra-cost option for the 3.6 litre versions
- The bag for the jack was made of carpet material
- The 3.6 litre models had chromed front seat adjuster bars and chromed radio speaker surrounds
- New door lock assembly. This change reduced the number of keys (door, boot and glove box). The new lock can be recognised by the key slot being vertical. It was possible to fit the new lock to earlier cars (VIN 124819 in June 1985)
- US legislation required that a central high-mounted stop lamp be fitted (VIN 125881 in August 1985). On coupés it was fitted inside the rear window, on cabriolets it was in a black housing on the boot lid
- An extra-cost option glass electric sunroof became available

From 1983 to 1986 sales soared with annual production up from less than 5000 to over 9000 units, half of which, all V12s, went to the American market.

Jaguar showed its commitment to the XJ-S with numerous improvements for the 1987 model year, most importantly in February it announced that automatic transmission would be available as an extra-cost option on the 3.6 litre models for the first time. This addition was made available for a couple of reasons, firstly, the success of the new four-speed ZF 4HP22 automatic transmission used in the XJ40 saloon and, secondly, the poor sales of the 3.6 litre manual-only models.

Interior changes for 1987 included:

- A new veneered "ski slope" to the centre console and new console mounted switch gear, including the switches for the seat heater and lumbar support, together with the re-designed switches for the electric windows, sunroof and cruise control
- To comply with legislation, all UK specification cars made on and from 1 October 1986 or registered from 1 April 1987 required the dipped headlight circuit to be illuminated in a dimmed condition when the side lights were switched on (VIN 135892 in October 1986)
- The seats incorporated heating elements in both the seat cushion and backrest with an automatic switch-off mechanism controlled by a timer and a thermostat. The lumbar support was inflated or deflated by an electric pump – standard on the V12 but optional for the 3.6 litre models
- The front safety belt anchorage moved with the seats instead of being attached to the floor. This improved the safety belt fitting and allowed the seat to be adjusted with the safety belt fastened
- Passive restraint safety belts were introduced on all cars for the USA built after 2 February 1987
- A stainless steel tread plate with the Jaguar logo gave the impression of quality and elegance
- All models had the gold on black steering wheel badge
- New lighting switches
- Mark III Delanair air conditioning was introduced from VIN 134286 in August 1986
- A new scissor jack was supplied

Exterior changes included:

- There was an almost all-new range of paint colours
- From VIN 133000 in June 1986, TPA (Thermo-Plastic Acrylic) paint was changed to COB (Clear lacquer Over Base) enamel

- All models were fitted with heated door mirrors and windscreen washer jets. The mirror heating elements were activated by the heated rear window switch and were under the control of the timer
- Front fog lamps were optional on the 3.6 litre models but came as standard on the V12 models. The fog lamps were fitted with covers to protect then when not in use
- A new type of locking fuel filler flap was fitted to the Coupé models, this reduced the number of keys to two for greater convenience
- Thick coach lines were replaced with two thin colour lines on the V12 models

Mechanical changes included:

- A new cruise control made by Hella could be fitted to all six-cylinder models as an extra-cost option. The cruise control allowed cruising at a higher speed and gave faster acceleration. On manual cars, the system operated on all five forward gears at speeds above 25mph (40km/h); on automatic cars, it operated in the "D" and "3" modes
- The new engine management system controlled both the fuelling and ignition, the result being superb responsiveness, even when driven from cold start, improved economy and it reduced the need for servicing
- Radiator header tank was revised on the 3.6 litre model
- The ZF 4HP 22 automatic gearbox became available on the 3.6 litre models
- A revised electrical wiring harness was introduced
- The mounting position for the front seat runners was changed from VIN 139052 in February 1987, requiring the introduction of a modified bodyshell

The 3.6 litre Cabriolet ended production in 1987. The V12 Cabriolet sales figures had improved but it had not been a big seller, especially in the American market. In September 1987 it was announced for the 1988 model year there would be a sports pack option available for the 3.6 litre models.

Significant changes were made to steering and suspension to enhance the sporting nature of the car. The sport pack added up to a slightly stiffer feel for the driver and was initially an extra-cost option, but from March 1988 it became standard on the 3.6-litre Coupé. The interior also had an upgrade to enhance the “sporty” feel with the introduction of sports style seating and a thicker leather rimmed steering wheel. The exterior of the car saw new cast alloy Lattice road wheels with a traditional spoked design, together with wider, lower profile tyres. There were no mechanical changes to the 5.3 litre version but the interior saw some enhancements that were similar to that of the 3.6 litre version.

Roger Putnam, Jaguar's Director of Sales and Marketing said *"An increasing number of customers for the 3.6 litre version of the XJ-S are younger, more sporting drivers. They want a car with more sporting characteristics. The changes we have made will undoubtedly increase the appeal of the car to this sector of the market.*

"With the XJ-S we have two very distinct models appealing to a much broader market. For the sporting driver there is the 3.6 litre version with manual or automatic transmission, whilst, for the motorist who appreciates the ultimate in vehicle refinement, we have the 5.3 litre V-12 powered Coupé and Cabriolet."

The suspension revisions to the 3.6 litre combined sporty handling characteristics with outstanding ride comfort. Front spring rates were increased from 69.5 lb/in to 96.6 lb/in and the rear spring rates from 134.3 lb/in to 180 lb/in. When combined with a larger 0.875in (22mm) front anti-roll bar with a rate up from 107 lb/in to 152 lb/in and a 0.629in (16mm) rear anti-roll bar of 30 lb/in, this reduced the body roll and improved the bounce and pitch control. It also enabled the maximum grip to be exploited from the Pirelli P600 235-60 VR 15 tyres which were fitted to the 3.6 litre model. The tyres were mounted on 6.5in rims and were specially developed to optimise ride and handling. Outstanding dry weather grip and dynamic stability were combined with very high levels of aquaplaning resistance, both in a straight line and under cornering.

Boge dampers were carefully tuned to the suspension characteristics and optimised the ride and handling capability. The steering was more direct and 17 per cent stiffer than on previous XJ-S models. This was achieved by re-designing the mounting bushes for increased lateral rack location and by employing a revised power steering hydraulic valve that gave decreased levels of assistance. Drivers found the steering precise and progressive, with excellent high speed straight line stability. There were no changes made to the engine or the transmission.

Earlier in 1988, the engine management technology from the XJ40 XJ6 was incorporated on the 3.6 litre XJ-S. The electro-mechanical ignition system previously used was replaced by a more sophisticated fully electronic system, and this was combined with the electronic fuel injection to form an integrated engine management system. The engine now developed 221bhp (165kW) giving the manual gearbox model a maximum speed of 140mph (225km/h). As before, customers could choose from the Getrag 5-speed manual gearbox or the ZF 4-speed automatic gearbox which had been introduced in early 1987.

The major change to the interior trim was the introduction of sports seats. Sculptured side bolsters gave firm lateral support and the cushion and backrest had been designed to minimise

the fatigue felt by the driver or passenger on long journeys. On the 3.6 litre models, the seats were upholstered in a luxurious wool cloth which was hard wearing yet soft to the touch, while the seat facings were trimmed in leather. Full leather seats and heated seats with electrically adjusted lumbar support could be specified as an extra-cost option. Lower safety belt anchorages were mounted directly to the seats for improved driver and passenger comfort. There was a change to the design of the steering wheel, where the centre bar now had two thumb indents for operating the horn.

On the V12 version, the distinctive starfish alloy wheels remained as the standard fitment, however, the customer could specify the alloy sports wheels with the wider, lower profile tyres as a no-cost option. External changes included a slightly bolder twin coach line. From VIN 147527 in December 1987 there was a revised specification hood material, due to complaints of the colour fading in markets which experience a high level of ultra-violet rays. On cars in the VIN range from 132024 to 147527 a new flexible paint was to be used to restore the colour of the hood, this came in black, blue and brown.

The XJ-S Convertible

The last V12 Cabriolet came off the track in February 1988 and was donated to the Jaguar Daimler Heritage Trust Collection. During 1988 the Teves anti-lock brake (ABS) system was introduced. The 1988½ model year saw the introduction of the XJ-S V12 Convertible. This car went on sale in the UK on 27 April after a preview at the Geneva Motor Show. This model was the world's fastest and most refined open top car. The tradition for making open two-seaters started at Jaguar when the SS Jaguar 100 was introduced in 1935, it continued with the XK Series in the 1940s and 1950s and finished with the E-type Roadster which ceased in 1974. That tradition was to be resumed with the introduction of this new model. Unlike its famous predecessors, the XJ-S convertible had a fully powered operated roof that could be raised and lowered at a touch of a button, and even included a heated and tinted glass rear window.

The Convertible replaced the Cabriolet in the range and it was anticipated that sales would be substantially increased. Over 80 per cent of the cars produced were expected to be exported. America would be the largest market with a share of 55 per cent of worldwide sales. The UK, Canada, West Germany, Japan and Australia would also be key markets for the car, collectively taking a further 35 per cent of sales. Approximately 600 Convertibles were expected to be sold in the UK in the first year, hopefully rising to 1000 the following year.

In 1987, about 100,000 luxury sports cars were sold around the world with America taking around 70 per cent of them. GM's Chevrolet Corvette and the Porsche 944 and 911 accounted

for 60 per cent of the American sales. West Germany and the UK were the next significant luxury sports car buyers with 12,000 and 7000 sales respectively. The main competition for the XJ-S Convertible would, of course, be other convertibles in the luxury sector, primarily the Mercedes SL and the Porsche 911 Cabriolet.

The design of the new body style was entrusted to another specialist, Karmann of Germany. A surprising amount of re-engineering was required, no less than 108 new panels and 48 modified pressings were employed in the construction of the Convertible. Before the introduction of any new model or facelift, the company would carry out extensive research covering every aspect. Major decisions were discussed at board level and the introduction of the Convertible was no exception. The board met to discuss the feasibility of the project on the 28 August 1984 and the results are summarised below.

Product Strategy – *It is proposed to introduce a facelifted version of XJ-S Coupé in 6 and 12 cylinder form to replace the current Coupé models at 1988 model year commencement. At the same time it is also proposed to introduce a fully open Convertible, to the facelift specification, in V12 form only to replace the current XJ-S Cabriolet models.*

At 1990 model year it is envisaged that XJ-41 would pick up XJ-S 6 cylinder business and establish a distinct and more performance oriented image. From the launch of XJ-41 it is proposed to continue the XJ-S in V12 form only.

The benefit of this strategy would be to allow the retention of the V12 engine and its associated prestige image without the extensive structural modifications (and demand on both financial and engineering resources) required to install this engine in XJ-40 or 41.

For information, the XJ41 project was later dropped from the proposed Jaguar line-up. The minutes from the board meeting continued with:

Engineering Design and Development Status – *As a first stage in the Convertible project, Karmann of West Germany were commissioned to produce a fully working concept prototype which was completed in May 1984. This has defined vehicle rigidity and torsional strength requirements, the hood installation and operation, and overall vehicle styling. A detailed review of the feasibility of this project can now be undertaken to establish the full design criteria and tooling requirements.*

The initial subjective assessment of the Convertible concept prototype indicates that the on-road dynamic behaviour will be better than the current Mercedes SL. The feasibility of achieving the required refinement standards will be confirmed in December 1984.

Alternative Strategy – Convertible Only/No Facelift – *As an overlay to the Action Strategy an alternative strategy has been evaluated. This strategy assumes the introduction of a V12 Convertible in non-facelifted form (replacing Cabriolet) alongside the current XJ-27 and XJ-57 models.*

The "Convertible only" route would offer only a two month improvement in introduction timing versus the Action route, enabling a Convertible production to commence in April 1987. This is principally because the duration of the Engineering development programme for the Convertible is not influenced by the largely cosmetic facelift features. By not undertaking the facelift the Engineering resource requirement would be reduced by approximately 50 per cent.

Risks and Opportunities – *The principal risk of this programme is non-availability of sufficient Engineering resource particularly in the critical area of Body Design and Development. Other risks associated with this programme are similar to all others in terms of timing slippage and competitive advances. However, specific concerns surround the torsional rigidity of the Convertible body and the achievement of refinement standards particularly in respect of the frameless door glass on Coupé and Convertible models.*

An additional note was made in the minutes regarding the tolerances within the body-in-white assembly plant at Castle Bromwich. The note confirmed that the acceptable tolerances for the Convertible could be achieved.

Conclusion – *Jaguar Cars has no viable option but to undertake this programme, particularly in view of the risk to the XJ-41 programme. With the XJ-S Facelift and Convertible Jaguar's sales worldwide would increase by over 5000 units in the peak year whilst generating good financial returns in the period up to point when the protection afforded by the Special Rights Redeemable share expires at the end of 1990.*

Adoption of the XJ-S strategy would reduce the dependence on XJ-40 and help strengthen the franchise. This strategy would also allow the retention of the V12 engine with its prestige image in the Jaguar range without the extensive structural modifications required for XJ-40/41.

Request – *The Jaguar Cars Board approved the strategy on the 28 August and the Jaguar Plc Board is now requested to approve the proposal and permit the expenditure of £1.8 million*

advance funding to allow the engineering programme at Karmann to proceed through to the end of February 1985.

It is obvious from these minutes just how much advance preparation and research was undertaken before a model got the go-ahead for production. These discussions held at least four years in advance of job 1 clearly show the timescale required from conception to production, the Convertible wasn't introduced until 1988½ model year and the facelift was set for 1991½ model year.

The production of the Convertible had been given the "green light" and it was now time to start pulling everything together. The entire body structure was based on the XJ-S Coupé underframe but was re-engineered for optimal refinement. The main areas affected were the rear wings, rear saddle panel immediately behind the hood, the windscreen panel, header and "A" posts.

During the early design phases, the Marketing staff worked closely with Styling and the project team to ensure that the basic design had that special Jaguar quality of "desirability". Market research studies including customer clinics were used to confirm the appeal of the car and identify the likely buyer groups.

Utilising a cohesive approach, the 12-man team headed by Ken Giles, Manufacturing Executive, was pulled together in May 1985 and they co-ordinated the relevant Jaguar resources which included the external suppliers who were contracted to support the programme. Ken Giles commented *"The Chairman's brief to us was typically straightforward – he wanted a world class Convertible, we had to have a saleable vehicle on our stand at the 1988 Geneva show and be able to start selling cars in the UK and Europe by May 1988."*

Meeting weekly, the team's first priority was to finalise the design concept. The Structural Dynamics Research Corporation (SDRC) was appointed to assist with the structural design and vibration development to optimise ride refinement.

The team liaised with Karmann, who with their extensive knowledge and expertise in the manufacture of convertibles co-operated in the design of the press tooling and assembly jig manufacture. New assembly tooling was designed by Karmann which included the production of an Automated Guided Vehicle (AGV) system. The AGV assembly facility was installed at Jaguar's Castle Bromwich plant at a cost of £3.6 million. It consisted of a unique build station for various sections of the body build with pneumatic clamping to maintain accuracy. The AGVs moved bodyshells from one work station to another by following a wire concealed in the factory

floor. A scissor lift system on the AGV allowed the working height of the body to be altered to suit a particular welding operation.

By January 1987, Ken Giles and his team were ready for a full "Methods Build" which was a static assembly of complete cars using approved off-tool panel samples, to ensure their fit and function as well as the validity of the processes. This exercise was completed by March 1987. Browns Lane had an investment of £2 million to build pre-production cars; this facility adopted the name "manufacturing test bed" for all new programmes. This allowed operators to be trained in small groups and enabled process engineers to experiment with new production techniques, away from the demands of the main assembly tracks.

In the autumn of 1987, the time had come for the project team to evaluate its own work. A full "ride and drive" appraisal was arranged and in November, the team took cars from the pre-production facility and tested them at the MIRA proving ground facility, as well as on the open roads. Having satisfied themselves with the essential issues of ride quality, body stiffness, hood operation, wind noise and waterproofing, the team invited Sir John Egan and the Board to carry out exactly the same appraisal. This was done and the request to move the project forward to pilot production was approved.

A great deal of work had been done to ensure the very highest standards of ride quality and comfort for the occupants was maintained. The team led by Jim Randle, Director of Product Engineering, worked on three main areas:

Firstly - dynamic finite element modelling which used sophisticated computerised programmes that predicted the shake behaviour of the complete car including all running gear mountings. The Convertible's torsional stiffness exceeded the original target by 15 per cent.

Secondly – tests were carried out to establish the car's response to vibration inputs over the frequency range 5-30Hz in a laboratory, using a dedicated piece of vibration equipment known as a "paddle rig".

Thirdly – development of FEPs (Fully Engineered Prototypes) which were tested on a variety of road surfaces, to examine the interaction of mounts and the effect on noise isolation. The testing was carried out in Phoenix, Arizona and involved testing 30 combinations of mounting rubbers on test cars. Each combination was assessed for shake and internal noise levels. The development work resulted in a reduction of 40 per cent in peak response at the body resonant frequency versus the original undeveloped prototype.

The whole package of actions; the structural strengthening and the optimised settings for the engine, front and rear crossbeam and suspension mounts achieved excellent resistance to body shake. Jim Randle commented *"Convertibles pose obvious problems for the car designer – how to achieve a very high standard of dynamic refinement with minimal body vibration and deflection over varying surfaces without the aid of the rigidity provided by a roof. We examined this issue more rigorously than many because we believe all Jaguars should have good chassis refinement. The Engineering and project teams had as their objective, the production of a world class Convertible. I believe we have achieved that."*

The hood had undergone an extensive and severe rig test cycle. Jaguar's test standard of 8000 cycles or one hood operation a day for 22 years was believed to be considerably more stringent than those of competitors. In addition to the hood development testing, a comprehensive proving programme including crash tests and hot/cold climate durability mileage testing had taken place.

The frameless door glass design had been through a particularly tough test programme. A rig test slammed each door 100,000 times, both by pushing the door itself and by pushing the unsupported door glass, this equated to eight times a day for 34 years.

The electrically operated hood represented not only a very elegant design solution but a very practical one. The hood was constructed of the highest quality and was fully lined and padded. Its tinted and heated glass rear window ensured excellent "hood up" appearance as well as offering the obvious demisting, security and durability advantages over the more commonly used plastic rear window.

The hood assembly required a specific and dedicated work station; the dedicated buck accurately represented the cockpit of the car. Tension straps and padding were then added and the high quality fabric cover was stretched over the frame. The heavy woven hood fabric came in three colours, black, blue and brown. The header rail was finished off and the detail brackets, handles and seal carriers were added.

The hood was padded for sound proofing, and the inside was lined with the standard Limestone headlining material as used on the Coupé models. The hood moved from the Trim Shop to the main assembly area, with the hood in position and bolted to the car, the hydraulic system could be connected. The glass rear window with its heater element was fitted on line and gave an attractive flush fitted appearance.

The entire hood assembly including the rear quarter windows would lower in 12 seconds by the operation of a single rocker switch on the centre console, once unlatched by a lever at the top of each "A" post. The hood motor and hydraulic pump were situated on one side of the rear stowage compartment, completely out of view. A padded fabric hood cover was part of the standard specification, this ensured an attractive appearance when the hood was fully lowered. The hood had a manual override function for emergencies. The motor and switch were located in a space beneath the rear floor to the side of the stowage compartment and switching from automatic to manual override was as easy as turning a switch.

The doors were frameless which allowed the deletion of the quarter lights. The direct glazed front windscreen had a thickness of 5mm compared to 6.35mm on the Coupé. The Convertible bodyshell was strengthened around the transmission tunnel, front and rear bulkheads and the rear floor area. Steel tubes in the inner sills and "A" posts further optimised torsional rigidity.

The Convertible was powered by Jaguar's 5.3 litre V12 engine giving 291bhp (217kW) in non-catalyst form which delivered outstanding performance, relaxed and effortless high speed cruising. The 150mph (240km/h) top speed was just 1mph (1.6km/h) slower than the Coupé which demonstrated how effectively Jaguars engineers addressed the question of aerodynamics. The Convertible had a drag coefficient of 0.39 against a figure of 0.38 for the Coupé. Effective sealing around the windows, the incorporation of a direct glazed windscreen and deletion of the front quarter window all helped to reduce the aerodynamic penalty.

The kerb weight of the UK specification Convertible was 1900kg compared to 1800kg for the V12 Coupé. The weight increase of 100kg was due to the strengthening of the body structure and the incorporation of the hood motor, operating mechanism and the rear quarter window motor regulator assemblies.

To avoid the hood stacking too high in the folded position, Jaguar significantly reduced the size of the fuel tank on the Convertible. Capacity was reduced by 2 gallons (9 litres), from 20 to 18 gallons (91 to 82 litres) which was still more than adequate for a Grand Tourer. As well as the smaller fuel tank, boot capacity was reduced from 10.15cu.ft (284 litres) to 9.24cu.ft (259 litres).

The Convertible featured an anti-lock braking system made by Teves as standard. Operating on the Girling four-wheel disc brakes as fitted to the XJ-S models, the Teves anti-lock actuation system had a hydraulic power boost operated from an electric pump mounted on the body. Like the anti-lock braking system fitted to the XJ6 range, the system fitted to the XJ-S range had an added refinement of "yaw" control. This allowed the system to differentiate between and compensate for differing road surfaces under near and offside wheels. The Electronic Control

Unit (ECU) featured a self-checking facility that detected whether or not the system was working; this properly alerted the driver through a warning lamp on the fascia.

The Convertible was a pure two-seater and behind the driver and passenger seats was a useful stowage compartment that could be locked to protect personal belongings when left unattended. When the hood was in the up position, the space could be used as additional luggage space and the radio speakers were mounted on the front edge. The stowage compartment had a lamp which provided illumination when required.

Interior fittings were luxurious and comprehensive, top quality hides were used to cover the anatomically designed seats. The rear quarter panels were trimmed with leather, burr walnut veneer was used extensively on the fascia panel, centre console and the door cappings, where it had intricate matchwood inlays. Air conditioning was standard as well as seat heating and electrically adjustable lumbar supports. The in-car entertainment system was by Alpine for the UK and was removable if the car was left unattended. The removable unit was supplied with a zip-up bag for protection against the elements, should the owner wish to store it in the boot or rear stowage compartment. The Alpine system was a cost option for European markets together with the Clarion security fixed audio unit. For UK customers, there was a cost option of a cellular telephone.

Sales of the XJ-S gained momentum in 1988 with production of just over 10,300 units, 4500 of which went to the American market (2000 of which were Convertibles). The XJ-S continued to sell well in 1988 and 1989.

Changes to the range included:

- Revised audio equipment – the UK Coupé had the Clarion 950 and the UK Convertible had the Alpine 7283L
- A revised speed control
- A new washer reservoir
- A new central locking system

For the 1989 model year cars, the following changes were introduced:

- The availability of the sports suspension on the V12 coupé and the option of a catalyst for all V12-engined cars, except in the USA where it was already standard
- The Starfish alloy wheel became an option, as most customers preferred the Sports alloy wheel; the Starfish type wheel was not compatible with the sports suspension

- The deletion of the air injection from all catalyst AJ6 models in all markets
- ECU packaged on the side of the passenger foot well with trim and bonnet lever modifications to suit
- Premium unleaded fuel labels on the instrument pack and fuel filler on cars for the American markets
- For 1988½ model year, the grille was changed together with the location of the washer jets (November 1988) due to supplier constraints

On the V12 models, Jaguar introduced a digital ignition system manufactured by Marelli. This was introduced as a running change during November 1988 on the Convertible but was included on Coupés built during October and November.

From its low point of only 1057 cars in 1981 when there were talks about dropping the model altogether, by 1989 sales had turned around and the range achieved an all-time record volume of 11,227 cars which equated to 23 per cent of total Jaguar production. The XJ-S had survived and thankfully created an endearing character of its own.

The improvement was due to the concerted efforts of the Sales and Marketing team who worked tirelessly to understand the requirements of the customers. Their research data indicated that style, performance and comfort were the fundamental factors in the UK. Whilst these attributes were broadly repeated in America, the American customers were more vocal in their attitudes to the styling, exclusivity and individuality, and this was the main reason for the purchase of a Jaguar. The customer satisfaction rate for the style had increased over time both over here and in America, the American customers rated the exterior style of the XJ-S at 9.8 points out of 10, very close to a perfect score. These surveys allowed Jaguar to plan its product development and the designers understood where improvements needed to be made.

5.3 Changes that occurred between 1990 and 1996

At the end of 1990 all V12 cars were fitted with a catalytic converter, previously only found on models destined for the American market. After complaints that the XJ-S was falling behind in driver comfort, slight alterations were made, these being:

- A new four-spoke, five position tilt non-air bag steering wheel with thick centre pad and gold on black badge. USA cars had a driver's air bag as standard, which looked similar but had an embossed growler. On cars with the driver's air bag an energy absorbing knee bolster was fitted, but the passive safety belts were deleted
- New indicator and wiper stalks with illuminated graphics were introduced
- The Tibbe ignition, starter switch and steering lock were moved to the steering column
- For the 3.6 litre models, the in-car entertainment unit was upgraded to a Clarion 950HX system in the UK and Overseas but optional in Europe as they had an Alpine system
- On US convertibles, the housing for the high-mounted stop lamp changed from black to body colour
- Headlamps with a levelling system (Germany only) with a three-position rotary switch on the steering column
- A new three-plane gear lever on 3.6-litre cars with manual Getrag 265 gearbox
- Daytime running lamps (Canada only)

An all-time record 11,207 cars were produced in 1989 and there was a fall to 9226 cars in 1990, even though the American market did improve. More significantly, the 1991 production figure dropped to 4,649 cars, which resembled the figure for 1983 where they made 4749 cars, but this had more to do with the market rather than problems with the XJ-S.

The XJ-S facelift

In May 1991 the first and only major facelift was announced. Production of the new model actually began in March, with VIN 179734. There were several reasons for the facelift:

- Firstly, the model needed bringing up-to-date, more in line with customer expectations and requirements
- Secondly, the original tooling was rather tired and panel fit was never that good anyway
- Thirdly, there was no possibility of Jaguar bringing out a totally new model in the immediate future, as the proposed new F-type sports car had been cancelled

About £50 million was spent in re-designing the XJ-S and to the untrained eye it is difficult to tell the new car from the old. The styling changes were significant in scope yet subtle in character. There were a number of changes to the exterior, interior and mechanically.

Geoff Lawson, Jaguar's Chief Stylist, explained *"The XJ-S has become a latter-day classic so we had to think carefully about changes. Our approach has been to freshen and refine the appearance of the XJ-S whilst preserving the unique character of the original. Our instincts told us this was the proper course and our customer research tended to back up this view."*

There were over 1200 new or modified parts in the new XJ-S Coupé. The biggest changes were to the bodywork; of the 490 panels it took to make an XJ-S bodyshell, there were:

- 130 – new panels
- 50 – modified panels
- 310 – carry-over from the previous model
- On the other hand, 16 panels from the old bodyshell were deleted

The change in body panels included areas of the boot, rear wings, doors, sills and Coupé roof. The aim was to give a smoother and more contemporary look to the XJ-S whilst preserving the essential and endearing qualities of the original design. The decision to produce larger, one-piece panels meant the number of joints could be reduced and the bodywork quality would ultimately improve. For example, each Coupé rear wing was now a one-piece pressing instead of the five pieces previously required for the same panel. Action was also taken to improve corrosion resistance on the new range. The proportion of body panels that were zinc coated had been increased to 40 per cent (by weight).

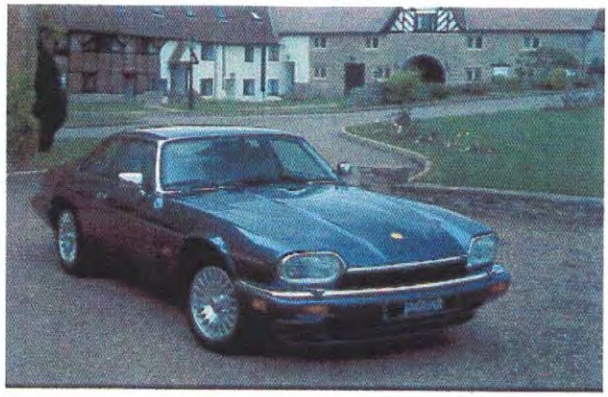
Many exterior facing components and their fixings were modified, either in the material design or the finish. This was done to reduce any potential corrosion, for example, bumper fixings, door strikers and hinges, direction indicator lens fixings, front grille fixings and fog lamp brackets etc. Further improvements had been made to the body paint and sealing processes too. The process required to protect the panels from corrosion included:

- Zinc phosphate dip/spray
- Electrocoat dip
- Seam sealing with plastisol sealer
- Anti-chip coat on sills and lower door areas
- Surface coat
- Oil sanding

1990 V12 XJ-S Convertible

1992 V12 XJS facelift

1993 2+2 Convertible interior trim



1994 final facelift 6.0 litre V12 XJS with body-coloured bumpers

- Base coat
- Two clear coats
- Bitumen underseal
- Wax injection of all box sections

The major panels were now sourced from Venture Pressings, Jaguar's newly commissioned joint venture company based at Telford and this ensured better body panel quality and consistency.

The new XJ-S range had been designed to make it easier to manufacture. Substantial capital investment was made in the assembly process at the Browns Lane, Radford and Castle Bromwich plants. £4 million had been invested at Jaguar's Castle Bromwich plant on a new framing facility which would bring all of the panels together in a single computer controlled welding process.

Approximately £350,000 was invested at the Radford engine and transmission plant where the automated engine test facility was modified to enhance the V12 engine. Browns Lane saw an investment of £1 million, major facility changes were made on Track 3, the volume production track. This included a new glazing facility, seat and trim facility as well as changes to the VETS (Vehicle Electrical Test System) and rolling road anti-lock braking system test facilities.

The full manufacturing process for the XJ-S range had been validated to ensure capable and repeatable processes by the use of the specialised pilot production facility known as Track 7. This facility simulated all aspects of a new model's production and enabled full process development and proper operator training prior to the volume production starting. Track 7 contained "state of the art" manufacturing technology. For example, a body could be held in an overhead sling and rotated completely on its side for underbody build and inspection. A body could be dropped over the engine and axles which were laid out on an AGV (Automated Guided Vehicle).

Bill Hayden commented *"The launch of the new XJ-S is important from the quality standpoint too. We are taking our first panels from Venture Pressings operation which will give us complete control over body supply. We have also invested in new manufacturing facilities so that we can achieve improved fit and finish as well as more efficient assembly. Our objective in all this is quite simple. It is to produce better and better quality products here at Jaguar. Our commitment to that objective will be rigorous and unrelenting."*

The new XJ-S was taken through a thorough development programme which involved both rig testing and environmental testing. These tests were designed to ensure the product performed well and reliably in all market conditions. Durability tests were run on cars that equated to hundreds of thousands of miles at the Timmins facility in Ontario where temperatures could be as low as -40°C and at the other end of the scale, temperatures could reach +45°C in Phoenix, Arizona. The total durability testing for this model exceeded 1 million miles.

The components were put through their paces with extensive "runs" on the rig testing machinery, for example, the seats were attached to a system that simulated an occupant sitting down up to 1 million times. The wiper system was continuously tested for a period of 625 hours and this was equivalent to uninterrupted operation for almost a month. The new headlamp power wash was rig tested for 10,000 cycles and the memory seat switchpack for 50,000 cycles. Respectively, these were equivalent to once a day and five times a day for 28 years.

The bonnet with the bulge was introduced on the 12-cylinder cars for the 1992 model year range so there was no longer a need to manufacture two bonnet styles. From the front there were minor trim changes:

- A chrome strip was introduced along the leading edge of the bonnet
- The radiator grille was restyled and changed back to black
- The headlamps were completely new and provided improved lighting performance although the characteristic XJ-S style was retained. In the American market, single headlamp units were fitted for the first time
- A new style headlamp power wash system was standard on the XJ-S V12 and optional for the six-cylinder model. The system exceeded the EEC minimum standard requirements and cleaned 95 per cent within ten seconds instead of the required 70 per cent. Heated nozzles prevented the system from freezing in cold weather; they were also chromed to blend in with the bright bumper upper surface. The system was designed to be "vandal-proof" as there were no headlamp wipers and it had few parts, making it more reliable
- The wiper grille, immediately in front of the windscreen was body coloured
- The windscreen was direct glazed and was completely flush with the windscreen panel. This gave a smoother line and it reduced air turbulence

With the above, the overall effect of the new power wash system, new grilles and bonded windscreen was a cleaner, more modern looking front end.

From the side:

- The Coupé had new half door pressings without window frames and front quarter lights, as already found on the Convertible; these frameless doors gave a smoother look to the car. The design also improved the "line of sight" in the door mirrors
- Newly designed door seals meant excellent durability together with good wind and water sealing performance. The door aperture seal was an assembly of three extrusions connected by transition mouldings so that the seal performed as a continuous one-piece seal. The seal had a low friction coating to improve wear resistance and appearance
- On the Coupé versions, the rear side window was revised and was directly glazed to the body. Although it looked like there was more glass, there was no difference in vision from the inside. The rear quarter glass area was completely restyled and enlarged. The new window was encapsulated to provide a smoother, superior finish to the glass edges. The design meant the window lay flush with the body of the car making it visually more attractive and easier to replace in the event of a breakage. It had a black obscuration area with a simple "XJS" graphic printed on it. This area was trimmed with a new chrome surround
- The door handles were re-designed and fewer parts were required in the event of a replacement, this meant they were more reliable especially in countries with predominantly low temperatures
- The air extraction grille was moved to the "B/C" post shut face instead of behind the rear quarter glass, the benefit of this was that it could only be seen when the door was open
- The sills had been flared at the front and rear to enhance the lines of the side view
- The fuel filler flap design had also been changed to blend in with the new profile. The fuel filler flap was now linked to the central locking system, thus removing the need for an integral lock barrel and it improved both the style of the car and the security
- The Coupé and Convertible models had the 15in lattice alloy wheels as standard, the 16in alloys were available as a cost option on the six-cylinder and V12 Coupé models. The new alloy wheels were fitted with lower profile 225/55 ZR16 tyres, this provided further improvements to handling versus the 235/60 VR15 tyres fitted to the standard 15in wheels
- The indicator situated on the front wing was moved from in front of the wheel to behind

The most noticeable difference was to the rear:

- The rear window was directly glazed to the body. The angle of rake of the rear window had been increased to such a point that the lower edge extended rearwards to the leading edge of the boot lid. The combination of the frameless door glass, bonded front

and rear windscreens and the encapsulated rear quarter glass resulted in an overall increase in glass area and it gave the car a more contemporary look

- The rear lamps were designed to accommodate the wide variety of number plates in use worldwide. To accommodate the American and Canadian licence plates, in particular, filler pieces had been specially designed to fit inboard of each lamp assembly to maintain an integrated rear style
- New neutral density rear lamps fitted into a new boot lid and the rear wing panels. The outer sections of the lamp assemblies, packaged in the rear wings contained the direction indicators and tail/stop lamps. The inner sections housed the reversing and rear fog lamps, the reflectors were housed separately within the bumpers. The lamps were developed in conjunction with Carello and involved the first application of a patented high contrast optics system to the tail/stop lamp which gave very good lighting performance and completely suppressed the red signal colour when unlit
- New rear wing panels
- New boot lid shape with chrome strip
- There were a number of changes in the boot, these being:
    - Smoke Grey replaced Slate Grey for the carpets on cars that were trimmed in Saville Grey, Isis Blue or Warm Charcoal. Sage Green or Champagne replaced Rattan on cars trimmed in Parchment or Barley
    - The spare wheel and battery were covered with carpet
    - The boot lamp switch was incorporated in the boot latch to improve the reliability
- The tool box situated on the left-hand side of the boot was not fitted to cars destined for the American market
- The smallest change was the drop of the full stop in the XJ-S boot badge

The striking new body design was accompanied by a range of colours that were introduced during 1990. On the Convertible model, Beige was added to the existing hood colours.

Internally, changes were subtle but noticeable:

- The old instrumentation on the fascia was replaced with the traditional and clearer layout of two large main dials with four smaller supplementary gauges, the same dials used on the XJ40 saloon. The supplementary gauges replaced the previously used "barrel" type gauges. The dials and gauges were inset into a simulated veneer mask to match the burr walnut fascia. The trip meter was integrated into the tachometer and the odometer was included in the speedometer to preserve the overall balance of the layout. The supplementary gauges covered fuel level, battery condition, water coolant temperature and oil pressure

- A new bank of "secret till lit" warning lamps were sited along the top of the fascia. The warning lamps had new additions which covered front fog lamps in operation, transmission mode, for example Sport, transmission failure and check engine
- New switchgear on the fascia was illuminated and controlled by a dimmer switch. The left-hand stalk covered lighting and the cruise control resume/cancel button (where fitted). The right-hand stalk covered the wiper functions. Pressing the washer button with the headlamps on activated the headlamp power wash system, where fitted
- The controls for the front and rear fog lamps were located to the left of the steering column
- A new on-board computer was fitted as standard. It featured a new layout and LCD graphics, it was straightforward to use, covering commonly required functions such as, average fuel consumption, instantaneous fuel consumption, fuel used, average speed, distance travelled and time taken. There were also buttons for reset, miles/kilometres conversion and time
- The electronic air conditioning was completely new and had revised temperature and fan speed range knobs, as well as new graphics. A new motorised aspirator was introduced which continually drew air from the interior of the car across a temperature sensor. This allowed a more accurate reading of the true temperature of the cabin and provided an improved response and better temperature control
- New "box pleated" sport front seats were electrically operated on all models, using the same door mounted switchpack as the XJ40. The electric seats had fore/aft and recline adjustment, the six-cylinder Coupé and V12 also received a new two-position memory seat incorporating the door mirrors as an optional extra. The memory was linked to the door mirrors so that the seats and door mirrors could be re-set at the touch of a button. The seats could also be adjusted rearwards with the ignition switched off for easier access to the car. The seats had a recess in the side to accommodate the backrest tilt lever in an integrated fashion
- The rear seats were individual bucket style seats which improved the comfort of the passengers, and the safety belt buckles were housed neatly in the centre section. The parcel shelf and rear quarter panel was re-designed to complement the rear seat style
- The electric seat heating and the lumbar support were redesigned for better performance, the new system was designed for faster warm-up and better temperature stability. It employed a closed loop temperature sensing system in addition to the timer. The lumbar support system was refined for quieter operation when inflating or deflating
- The front safety belts on the Coupé were now mounted on an adjustable shoulder anchorage on the "B" post for improved comfort
- The Alpine AJ9150 series stereo system was also taken from the XJ40, with the exception of the face plate. The stereo featured an integrated anti-theft system. The

tuner featured RDS (radio data system) which gave automatic identification of the stations broadcasting the traffic information, station identification rather than frequency, automatic retuning to the strongest signal and a tape/CD interrupt feature when traffic information is being broadcasted. The system was designed to control the optional dealer accessory remote six disc CD autochanger which was neatly mounted in a specially styled boot compartment. On all cars, the wiring harness was designed to allow the optional fitment of the CD autochanger

- Speaker specifications were improved to ensure better sound quality with four 6¼in speakers replacing the 5in speakers previously fitted
- A flashing LED indicated the presence of a security system on the car. Once disconnected from the battery, the system would no longer function until the security code is entered correctly. If the code was entered incorrectly three times, the car would fail to start for 30 minutes
- If the lights were left switched on when the ignition was turned off, an audible warning was activated to notify the driver that the lights were still in the on position
- The Hella cruise control on the V12 was refined and had three major advantages over the previous system used:
    - More accurate control of the speed chosen
    - More logical layout of the on/off/set/resume functions
    - The addition of a cancel function

Jaguars have long been admired for their luxurious interiors, where traditional materials, skilled craftsmanship and tasteful design combine to produce a distinctive ambience. The company was continually looking for ways to improve and refine all aspects of the design of its saloon and sports car ranges, so there were a number of important changes affecting colour and trim in the XJ-S range.

The most noticeable change was the introduction of an attractive range of colour-keyed fascias. A total of five new fascia colours were available, these being Doeskin, Barley, Mid-Grey, Sage Green and the existing Warm Charcoal. The burr elm was deleted and burr walnut was used for the veneer trim, the inlays remained the same on the Convertible models but the V12 Coupé version had a new veneer insert with matchwood inlays in the rear quarter trim panels. The six-cylinder Coupé also had the new veneer inserts but without the inlays.

In keeping with the colour co-ordinated theme, the plastic safety belt buckle mouldings were also colour-keyed in addition to the Warm Charcoal. There were several changes to the carpet colour range, the Slate Grey carpet was deleted and replaced by the lighter Smoke Grey colour on cars trimmed in Warm Charcoal. A new Sage Green carpet colour replaced Rattan carpets

on cars trimmed in Parchment; this provided an improved colour blend. The Champagne coloured carpets used on cars trimmed in Magnolia were now also used on cars trimmed in Barley.

The 4.0-litre engine

Mechanically there were major modifications to the six-cylinder engine with the 3.6 litre being increased to 4.0 litres by lengthening the stroke on the AJ6 engine. The new engine provided both improved performance and better fuel economy. The catalyst equipped 4.0 litre Coupé automatic accelerated to 60mph (97km/h) in just 8.4 seconds compared to 8.8 seconds for its predecessor, it also reached a maximum speed of 140mph (225km/h) compared to 136mph (219km/h) for the 3.6 litre models. The 4.0 litre manual catalyst version was able to accelerate to 60mph (97km/h) in just 7.5 seconds and reached a maximum speed of 141mph (228km/h). The non-catalyst 4.0 litre automatic Coupé went to 60mph (97km/h) in 8.4 seconds and had a maximum speed of 142mph (228km/h). The non-catalyst 4.0 litre manual Coupé went to 60mph (97km/h) in 7.3 seconds and had a maximum speed of 143mph (230km/h).

The XJ-S 4.0 litre Coupé automatic was equipped with a catalyst exhaust system as standard, but in the UK market it was possible to order a non-catalyst system as a no-cost option. With the catalyst, the maximum power for the AJ6 4.0 litre engine was 223bhp (166Kw) at 4750rpm compared to 199bhp (149Kw) at 5400rpm for a European catalyst equipped 3.6 litre version. This represented a 12 per cent increase in power for the six-cylinder models. Maximum power for the non-catalyst car had been increased from 221bhp (165Kw) at 5100rpm to 235bhp (175Kw) at 4750rpm, an increase of 6 per cent.

The new engine management system and advanced catalyst system contributed towards the improved fuel economy over the 3.6 litre engine models despite the increase in engine displacement and a weight increase of 50kg. The 4.0 litre engine also featured the Lucas 15 CU engine management system. For the first time, the six-cylinder model was introduced in Canada, Austria, Sweden, Switzerland, Australia, Japan and South Africa, which would provide additional sales opportunities for the company.

The V12 Coupé and Convertible models benefited from improvements to the Jaguar V12 engine. A completely new fuel control system was developed to complement the introduction of the Marelli digital ignition system. The Lucas 26 CU provided improved starting performance, more efficient operation during warm-up, improved drivability, and a diagnostic facility that stored any fault data for retrieval at a later stage. The system had an enhanced "limp home"

facility in the event of a sensor failure. Additional changes increased the engine efficiency and reliability through:

- Modifications to the fuel rail which gave more evenly distributed fuel delivery to each cylinder
- Modifications were made to the system which improved the hot climate drivability for markets that required the fitment of an evaporative emission control system

Changes were also made to the fuel rail to provide a more efficient fuel flow. The injectors were new and there was a newly designed spark plug which incorporated a "V" groove earth electrode, this improved efficiency and firing consistency. The main characteristic of the Jaguar V12 continued to be the remarkable low speed torque. Peak torque for this new V12 in standard catalyst specification had increased from 298 lb/ft (404Nm) at 2800rpm to 306 lb/ft (415Nm) at 2800rpm. Maximum power for the V12 with catalyst was now 280bhp (209Kw) at 5550rpm compared with 273bhp (204Kw) at 5250rpm on the previous version.

The more efficient low loss catalyst system provided benefits to the performance and fuel economy of the V12 Coupé and Convertible models (a non-catalyst specification was available as a no-cost option). It achieved 19.1mpg (14.8 l/100km) compared with 18.6mpg (15.2 l/100km) of its predecessor. The catalyst was a sophisticated design which met the most stringent emission legislation whilst minimising the power loss traditionally associated with catalyst cars. The system improved the free flow of exhaust gases and reduced back pressure by branching them through two shorter catalysts working in parallel, instead of through a single longer catalyst. The effectiveness of the low loss system meant that the power output of the catalyst 4.0 litre engine was within 5 per cent of the non-catalyst versions, compared with 10 per cent for the 3.6 litre engine. The benefits were more obvious with the V12 catalyst where the maximum power was only 2 per cent less than that of the non-catalyst version. The end result was the "best of both worlds", with environment friendly engines which gave a smoother and more eager performance. Minor cosmetic changes were made to the under-bonnet area giving a tidier look. Particularly noticeable was the new inlet manifold casting with an etched stainless steel badge carrying the words "Jaguar V12". The V12 now had an on-board digital diagnostic system.

There were two new transmissions designed specially for the 4.0 litre, a 5-speed Getrag 290 manual gearbox and a ZF 4HP 24 automatic gearbox. The upgraded manual transmission featured an increased diameter clutch, 280mm compared to 240mm on the Getrag 265 version. A twin flywheel was fitted in conjunction with the manual transmission which improved change quality and drive line refinement.

The new automatic gearbox had a 30 per cent higher torque handling capacity than the ZF 4HP 22 that was fitted to the 3.6 litre version, and it could comfortably handle the increased power and torque outputs of the 4.0 litre engine. This gearbox gave the new XJ-S 4.0 litre Coupé model significantly improved driving refinement. This was as a result of the electronic interface with the engine management system that retarded the ignition timing during upshifts, reducing the torque input from the engine as the gear change took place. It offered the benefits of improved starting times, improved idle speed control, improved diagnostic system capability and improved automatic shift quality as a result of the system's ability to communicate electronically with the control unit on the ZF 4HP 24 transmission.

The gearbox featured two pre-programmed modes of operation, these being "Sport" and "Normal". Sport mode allowed the transmission to be more sensitive to changes in the throttle position so that it would change down more readily at higher engine speeds. Gears were held on to longer and part-throttle changes down to first gear were possible. Normal mode was designed for everyday use, delivering responsive, quiet and smooth performance.

The new XJ-S range represented a substantial investment by Jaguar in the future of their unique luxury sports car. The comprehensive list of improvements would ensure the new model continued to compete successfully during the 1990s. The market research played an extremely important part and Bill Hayden, Jaguar's Chairman and Chief Executive commented *"Our strategy was based on recognising the classic strengths of the XJ-S but also identifying through our market research those areas where we could improve our customer satisfaction and competitiveness. I am delighted with the new range. It is the best XJ-S yet. We have freshened the car's appearance without losing its distinctive styling. With the new 4.0 litre engine, improved V12 and the interior facelift, we have an outstanding competitive XJ-S to offer sports car buyers here and abroad."*

He also commented *"In today's car market, it is important that Jaguar maintains its momentum in terms of new product development and improved product quality. I believe that we have achieved something special with the new XJ-S range. We have improved upon a classic sports car and made it more appealing to both existing customers and new buyers. The new range will certainly improve our competitiveness and generate further sales growth during the 1990s."*

For the 1992 model year range, whilst preserving the unique characteristics of the original XJ-S design, the new car had a smoother more contemporary look and feel. Despite all of these modifications, sales still continued to fall, production dipping to 3633 cars in 1992.

The XJ-S 4.0 litre Convertible

A further model, in the shape of a 4.0 litre Convertible, was announced in February 1992 with sales commencing in May. This model started from VIN 184574. Like the Coupé, this new model was powered by the 24 valve 4.0 litre AJ6 engine and was at first offered with the ZF four-speed automatic gearbox only; the manual version followed later. New features included a driver's side airbag which became an option on all other XJ-S models and was designed for use in conjunction with the conventional three-point safety belts. It was standard on cars in the USA and Canada.

The Convertible models, both the 4.0 litre and V12, were also fitted with a stainless steel cruciform strut assembly under the front end, this provided significant improvements in the ride quality and comfort. This under floor strut represented a significant structural development, it was in the shape of an "X" and constructed entirely from stainless steel tubing. It was attached to the car by the end of each arm; two at the forward jacking points beneath the footwells and two at either side of the cross member beneath the radiator. The cruciform strut reduced the body flexing by increasing the effective torsional rigidity of the body shell by an incredible 25 per cent. Longer front and rear springs were fitted to the Convertible to compensate for the reduction in ride height due to the cruciform strut.

Externally, the 4.0 litre Convertible shared the elegant body styling of its V12 counterpart with the interior design and equipment changes introduced during 1991. Both cars benefited from a new, easier to operate door handle release mechanism made by Tibbe, the same as on the XJ40. The V12 had front fog lamps and headlamp power wash as standard, both items were available as a cost option on the 4.0 litre.

The XJ-S 4.0 litre Convertible was seen as excellent value for money, with a UK price of £39,900. Nick Scheele, Jaguar's new Chairman and Chief Executive, at the time stated:

"The new XJ-S 4.0 litre Convertible is a very important addition to the XJ-S range. It offers outstanding value for money for luxury sports car buyers here and abroad. The new car delivers significant benefits in terms of improved ride quality, transmission flexibility and fuel economy. In addition, we are launching our new optional airbag system in the new Convertible model and in the rest of the XJ-S range. During the course of this year we shall be making this airbag system available in our XJ6 saloon range as well."

A number of modifications were made for the 1993 model year XJ-S range from VIN 185820 to improve driving comfort and refinement. Cosmetic changes are shown below:

- The driver's side airbag, the same design as the steering wheel used in the USA from 1990 model year, previously fitted as an optional extra was now fitted as standard across the model range. A re-designed optional four-spoke non-air bag steering wheel was introduced as a styling enhancement. It included finger indents on the underside of the rim, the horn was located on the two upper spokes and the steering wheel centre was filled with energy absorbing foam
- The steering column was re-designed to allow more room for the driver, the steering wheel was 50mm further away from the driver
- The front seat slide rails were increased in length by 20mm rearwards which gave more leg room which ensured additional comfort for the taller customers
- A new sculptured velour trim fabric replaced the old cloth upholstery which greatly enhanced interior appearance. The centre sections of the seat cushion and backrest were upholstered in velour with the outer bolsters being trimmed in leather
- New style door handle
- A number of switch operations were transferred to fascia mounted switches. The front and rear fog lamp switches were located on the left-hand side of the trip computer, the hazard and heated rear window switches were located on the fascia to the left-hand side of the steering column. If the front fog lamps were not specified, the switch position would be occupied by the heated rear window switch and the vacant switch would be replaced by a blanking plate. The front fog lamps could be fitted retrospectively by utilising the available blanked-off switch position

Mechanical/electrical modifications included:

- The battery and alternator capacities were increased. The new Nippon Denso 120 amp alternator charged the battery quicker and kept it in a better state of charge. The new DIN 66 72AH battery held its charge for a longer period and gave improved starting
- An evaporative emission control system was introduced to prevent fuel vapour being released
- The manual Getrag 290 five-speed gearbox became an option for the 4.0 litre Convertible models in the American and Canadian markets. In all other markets, the manual gearbox was standard, with automatic optional

On the 4.0 litre Coupé, the option of a slightly softer touring suspension was introduced. This suspension package was the standard for the 4.0 litre Convertible model and the firmer sports suspension remained the standard for the 4.0 litre Coupé. A twin-track throttle potentiometer was fitted to the 4.0 litre models to improve the gearshift quality. The manual gearbox version of

the 4.0 litre Convertible was also announced as part of the 1993 model year package. A new "T" shaped shift lever was introduced on the automatic XJ-S models.

On 1 October 1992, the introduction of the 1993 model year XJ-S range was announced in Jaguar's largest market, America. The cars were competitively priced and featured a package of specification modifications. For the first time the six-cylinder XJ-S was sold in the USA, for more detail on the American XJRS please see the section titled "XJ-S Special Editions".

With regards to the XJR-S, Michael Dale commented *"We will debut the XJR-S in December, featuring a 6-litre version of the famous V12. This model, built by JaguarSport, will be limited to 100 specially-numbered vehicles. Today's luxury car consumers want more efficiency without compromising on power and elegance. By making six cylinder power and greater fuel efficiency more widely available, Jaguar will expand the appeal of the world's most stylish grand touring cars."*

Jaguar made the decision to offer a three-year warranty package on all models; this reinforced the company's commitment to offering customers outstanding value for money. Sales in 1993 improved with production of 5192 cars.

The 6.0-litre V12 model

In May 1993, approximately from VIN 188300, Jaguar introduced the 6.0 litre V12 engine for the 1993½ model year in the standard model, and at the same time discontinued the XJR-S. Together with the 6.0 litre, a new GM 4L80-E four-speed automatic transmission was introduced, with a choice of sport or normal mode.

The engine displacement for this version had increased from 5345cc to 5994cc. This had been achieved by increasing the stroke from 70mm to 78.5mm. The bore remained unchanged at 90mm. The engine underwent detail modifications to extend its reputation for providing excellent power, torque and refinement.

The other main engine changes included:

- A revised cylinder head
- New "flat top" piston design
- Reduced compression ratio
- Revised inlet valves
- New camshaft profile for added valve refinement

- A new forged steel crankshaft replaced the old cast iron version
- The under bonnet layout was revised providing a much improved cosmetic appearance with a cover plate hiding all the pipes and wiring and under-bonnet access was improved and a fluted plastic engine cover over the induction manifold
- The engine oil dipstick was relocated to the rear left of the cylinder block

In addition to the above, the new V12 models were equipped with:

- A low-loss catalyst system
- A new torque converter for improved take-off
- New twin in-tank fuel pump system
- New starter motor and alternator
- A new Lucas Marelli engine management system

The new engine provided significant improvements in power, torque and performance. Compared to the previous 5.3 litre engine, maximum power was up by 10 per cent to 308bhp (227Kw) at 5350rpm and peak torque was up by 16 per cent to 355 lb/ft (481Nm) at 2850rpm. As a result of these changes, the XJ-S Coupé and Convertible models delivered even more impressive performance. The Coupé offered the following performance:

0-60mph:	6.6 seconds compared with the previous 7.8 seconds
Top speed:	161mph (260km/h) compared with 147mph (237km/h)

The Convertible offered:

0-60mph:	6.8 seconds
Top speed:	160mph (258km/h)

Mechanical changes on the 6.0 litre also included the new GM4L80-E four-speed automatic gearbox which used the same gear sets as its predecessor, the GM400, for first, second and third gear but an extra set was added to provide the fourth overdrive ratio. This GM4L80-E gearbox had a control module which provided a much improved shift quality, this included the ability to communicate electronically with the Lucas Marelli engine management system to trigger a reduction in engine torque during shifts which enhanced the refinement. The gearbox control module had a self-diagnosing capability which recorded evidence of any malfunction. This data could be retrieved using the Jaguar Diagnostic System (JDS) at the franchised dealer network.

- The GM4L80-E was an electronically controlled unit that used the very latest technology at the time. This gave more refinement and comfort whilst ensuring the driver was in full control of the car. Additional transmission features included:
  - To improve the economy, an automatically operated lock-up clutch was contained within the torque converter
  - To accommodate the additional gear train, the overall length and weight was increased accordingly
  - The gearshift lever allowed the driver to manually select second and third gear (if necessary) as well as park, reverse, neutral and drive. The driver also had the opportunity to choose the preferred driving mode, Normal or Sports:
    - Normal – allowed the normal economical driving by causing the transmission to change up fairly early at low throttle whilst maintaining all of the potential at the top end, if required
    - Sport – allowed the driver to use the engine's full potential at all times
  - The gearbox control module governed the gearshift change quality in both modes described above. The electronic control connected to the transmission and several other sensors around the car, and would use the inputs to properly decide when to change gear in the smoothest manner possible
  - The control module could also diagnose any problems within the gearbox, interrogation of the control module and/or associated systems would be made using the Jaguar Diagnostic System

Other mechanical changes were:

- The tailpipe trim had a re-styled rectangular profile which matched the bumper aperture
- The final drive assembly and rear suspension were redesigned and one of the main features of this was the provision of outboard brakes with new callipers. The brakes were situated on the outside of the hub carriers, as opposed to the previously used ones that were inboard by the final drive. The brakes were similar to those used on the XJ6 in that the discs incorporated an internal parking brake. The benefits to this design were refined performance, commonality of components and easy access for servicing purposes

The two-plus-two Convertible

For the Convertible there was a major modification, as it became a two-plus-two. Though this name suggested room for four people, there was only room comfortably to seat children or adults of a small stature in the rear seats. The two-plus-two had a unique body-in-white created

by welding a sub-assembly on top of the existing underframe. This formed the new rear seat pan and seat back in place of the rear stowage box area on the two-seater models. As a consequence, numerous changes were made.

Internally:

- The bodyshell was re-engineered to allow for the two rear occasional seats
- The rear screen was smaller so that it could fold behind the new seats
- The hood material was changed from cloth to Ambla, which was colour-keyed to the interior trim
- New sun visors incorporated an illuminated vanity mirror and a lamp on both the driver and passenger sides
- Two rear safety belts were fitted
- New carpeting and trim
- Safety belt warning chimes on cars for all markets
- A new cruise control system was fitted
- Custom designed stereo system
- Factory fitted alarm system, operated by the remote key fob transmitter was introduced as standard on cars destined for the UK, America and Canada. It was an extra-cost option on cars for Japan, Australia and Middle Eastern. The system was fitted in the boot and offered the following features:
    - Monitoring the doors, boot and ignition
    - Passive arming
    - Alarms and warning tones
    - Emergency disarm procedure
    - Alarm re-start

  If an attempt was made to bypass the security system by disconnecting the system's electronic control module or removing a fuse, it would not be possible to start the engine. The radio frequency antenna for the alarm system was located above the rear quarter light on the Coupé and below the rear quarter light on the Convertible
- Several changes were made to the centre console which included re-designed side panels which provided easier access to the safety belt tear-loop mechanisms, rear air vent, rear console fixings, injection moulded glove box and cigar lighter
- A front passenger air bag was fitted in the glove box which had been specially designed. The first production cars with no air bag fitted had a vanity tray in the glove box lid
- Minor changes were made to the fascia, these changes made access for servicing easier

- For cars with a passenger air bag, a knee bolster was fitted under the scuttle in the passenger foot well. If no air bag was fitted, an under scuttle pad replaced the bolster. To identify cars with an airbag, an SRS logo could be found on the steering wheel centre pad together with one on the fascia. There was an air bag symbol on the VIN plate, as well as warning labels inside the car
- A new bonnet release lever was fitted in the passenger foot well, the bonnet was changed to a "slam" closing version
- The rear panel was re-profiled at each corner to obtain clearance for the adjustable bumper struts. Location tags for trim panels giving access to the electrical equipment and the fuel tank were improved. A retention strap was set in the tank board so that the owner literature pack was secured
- To accommodate the rear seats, the hood mechanism including the hydraulic pump, manual switch, electrical fuses and relays, were relocated into the boot. They were covered by a modified battery cover and the relocation did not cause any disruption to the usable luggage space
- A cellular telephone system was introduced

External changes included:

- An adjustable more attractive and "sporty" looking colour-keyed moulded energy absorbing bumper replaced the old black rubber faced bumpers, the front bumper also incorporated a new spoiler design
- To accommodate the new bumper styles, the front and rear body panels were changed (105 new or modified body panels were fitted throughout the car). Non-impact steel beams and struts were fitted to all markets excluding America, Canada and Middle Eastern markets. Cars for these markets had an aluminium alloy impact beam and movable strut. 60 per cent of the body panels were coated with zinc to reduce corrosion and ultimately weight
- Push-on, screw-off fixings were used to reduce the service and production times
- Improved welding and joint conditions, sealing operations and moulded sound insulation reduced the noise and vibration felt
- Newly styled 7in by 16in five-spoke cast alloy wheels, used as standard on all models, replaced the 6½in by 15in wheels previously fitted. For the American market, the wheels had a diamond turned finish with gold painted pockets and a clear lacquer coating
- Fog lamps were available as an optional extra on all models in all markets

These minor changes gave the exterior appearance a more contemporary look. When the two-plus-two was introduced in the USA, the sales brochure stated that customers could choose the

two-seater version as an option and small numbers of the two-seater indeed continued to be made through 1995.

Nick Scheele spoke about the scale of the changes:

"The new cars look much fresher, they are nicer to drive and the new 6.0 litre V12 installation gives a tremendous boost to the range. The V12 models now offer really outstanding performance, as well as excellent refinement at a value for money price. The availability of the new 2+2 Convertible will broaden the appeal of the range too. Overall these changes will enable us to compete even more vigorously in the world's luxury sports car markets."

Further improvements were made for the 1994 model year which started with VIN 190528, these have been identified below:

The internal changes included:

- A newly styled air conditioning control panel was equipped with additional switches that improved the operation, these included; a driver controlled demist with separate switch control, a recirculation switch that isolated the cabin from any traffic fumes and other unpleasant external odours. The air conditioning system became CFC free, the HFC 134a refrigerant replaced the previously used CFC R12
- New windscreen mounted dipping rear view mirror was introduced
- A re-styled steering column stalk operating the indicators and windscreen wiper was introduced. The new assembly incorporated a simpler cancellation mechanism, a new dimmer module, audible warning speaker harness and mounting bracket
- The door mirror memory function was deleted from the specification. As a result the automatic dip operation of the passenger side door mirror when reverse was selected was also deleted (VIN 192880)
- Analogue clock
- Fully carpeted interior

External changes included:

- Burgundy was added to the range of Convertible hood colours, this increased the range to five colours
- A space saver spare wheel was standard fitment for Japan and optional in other markets; a 3.5in by 18in alloy wheel fitted with a Pirelli T115/85 R18 tyre. The space

saver spare wheel was stowed in the same place as the standard fit full sized spare wheel and was secured with a short clamp screw. A shallow carpet cover was also fitted

- On the five-spoke wheels, the wheel nuts were longer
- A new aerial assembly was fitted which dispensed with the need for a separate system and it incorporated a time delay function in the internal circuit. The accessory socket and fuel pump relays are attached to the aerial support bracket
- A new fully sealed improved quality side repeater lamp was fitted to the front wing which gave easier access to the bulb, a push fit with spring clips

Mechanically:

- A new camshaft cover was introduced with an integral oil filler, a crankcase breather system for improved breather performance and 13 bolt fixing for improved sealing
- A new single piece cast inlet manifold with integral ram pipes together with a water heated breather restrictor
- For the American and Canadian markets, the California Air Research Board (CARB) reduced the non-methane organic gas standard from 0.334 to 0.25 grams per mile (0.155 grams per kilometre). In order for Jaguar to comply with these regulations, a new catalyst exhaust system was introduced on the 4.0 litre model

With regards to the safety features of the car, the passenger side airbag was fitted as standard. The gearshift interlock system was introduced as standard on the XJ-S models with automatic transmission. The gearshift lever could only be moved from the "Park" position if the ignition/engine was switched on and the footbrake was applied, this avoided any inadvertent use of the accelerator pedal as "Drive" was engaged.

An immobiliser was available as a dealer fitted accessory, and the design had to meet the stringent criteria of the British Insurance Industry for Vehicle Security (published in January 1993). It was designed to be fitted retrospectively to any XJ-S going back to 1992, thus upgrading the specification of cars already in the hands of customers. It was developed in conjunction with the Metropolitan Police Stolen Vehicle Squad and the Home Office to prevent the theft of the car. The four-channel immobiliser operated on all of the principal engine electronic systems (ignition, fuel system, starter motor and engine management). The engine would be immobilised automatically 15 seconds after the engine was switched off, and could be disarmed by the insertion and removal of an electronic pass key in a conveniently located socket. The electronic pass key featured a random code generator and this ensured a different system code each time it was used.

The Alpha dot system was also available as a dealer fitted accessory. The microdots were encoded with the unique vehicle identification number (VIN) of the car. It could be applied to all areas of the car including accessories such as the radio cassette player and the telephone. The alpha dots were a major deterrent against theft. It was also a highly secure method of identifying the car.

The AJ16-engined XJ-S 4.0 litre

From VIN 194775, in the summer of 1994 the AJ6 engine was replaced by the AJ16 4.0 litre engine as fitted to the new X300 saloon, the idea behind the new engine was to improve performance and fuel economy, as well as meeting stricter standards for emission control. The AJ16 engine was fitted with a magnesium cam cover; this gave a tidier appearance to the engine area, and hid the individual ignition coils for each spark plug.

The new features and modifications to the engine improved the performance, economy and refinement. Additional changes were to the engine management system, the on-board diagnostics and for the American specification cars, the exhaust gas recirculation system. The cylinder head had revised porting which improved economy and performance, with additional holes in the top deck improving oil drainage. The depth of the water jacket in the cylinder block was reduced to reduce the engine warm-up time, 15 per cent quicker. The magnesium alloy camshaft cover reduced the weight and improved sound absorption, while new valve were introduced, with a stem diameter of 7mm instead of the previously used 8mm ones; this reduction improved the noise levels and required less power to operate. With regards to the drive belts, an electric air injection pump replaced the previously used belt driven versions.

Coinciding with the 1994¾ mechanical changes, the exterior and interior was revised again. It was felt that there should be more differentiation between the six-cylinder and 12-cylinder models.

The external changes for the 4.0 litre models are detailed below:

- Colour-keyed headlamp surrounds
- Colour-keyed radiator grille
- Colour-keyed door mirrors
- New 16in five-spoke diamond turned alloy wheels with eggshell painted inner faces
- Silver "growler" badge on red wheel centres

Internal changes to the 4.0 litre models included:

- Seat panels in cloth with shallow grain leather facings

The external 6.0 litre model changes are detailed below:

- Chrome headlamp surrounds and black radiator grille
- Twin coachlines
- New badges on front wings
- New 16in 20-spoke alloy wheels with eggshell painted inner faces. Fully chromed five-spoke alloy wheels were fitted as an optional extra for the American market only
- Gold "growler" on black wheel centres
- For the American market only, the high-mounted stop lamp was deleted from the boot lid or rear windscreen and was integrated into the new boot lid spoiler

Internal changes to the 6.0 litre included:

- Autolux leather to the same design but ruched in style with contrasting piping and stitching
- Full leather centre console
- Leather door trim
- Burr walnut veneer with matchwood inlay
- Walnut gearshift lever knob

Internal changes for both models:

- New seats with integrated head rests and four horizontal pleats
- The Coupé had re-designed rear seats, similar to the convertible, for improved space
- The sun visor was trimmed in Ambla
- Bright aluminium treadplates covered the full length of the door sills
- Contrast colour binding on front footwell carpets
- The boot was trimmed in dark grey with a velour finish. A removable one-piece moulded carpet replaced the separate floor and side carpet panels. Grooves in the carpet identified the whereabouts of the spare wheel, battery and rear lights assembly covers. There was a clearance of 25mm between the carpet and the body which kept the carpets from contact with any moisture which may have entered the wells. An additional drain hole in the bottom of each well adjacent to the existing drain hose outlets prevented moisture from accumulating

- In-car entertainment – the system was substantially improved with a new radio cassette and the optional choice of a six-disc CD autochanger fitted in the boot. The system was introduced with a variety of multi-functional buttons tailored to suit individual preferences. The control panel was designed to be removed easily when the car was left unattended. The control panel also provided a visual indication of the current operational mode of either the radio, cassette or CD player
- A new cellular telephone was available for all models. The microphone was colour-coded to blend in with the interior trim

Mechanical changes for the 4.0 litre models included:

- Exhaust system – to optimise tuning, the downpipe length was increased which in turn increased the length of the outlet pipes
- Fuel pump – Nippon Denso fuel pumps replaced the previously used Walbro versions
- Automatic transmission – changes to the transmission included a new dipstick. The "flip-top" handled dipstick was introduced to complement the new filler tube and new oil levels. A compressible seal below the handle locked the dipstick in the filler tube, a cam on the handle operated the seal and went over-centre to lock the handle with the seal in the compressed condition. The handle was silver with black lettering to identify the dipstick and the locked position of the handle
- The 4.0 Convertible could have the sports suspension as a cost option (whereas the V12 Convertible could have the touring suspension as a cost option)

Sales were on the up again with 6918 cars being produced in 1994.

The sixtieth anniversary of the Jaguar name occurred in 1995, and this was an ideal opportunity to raise the profile of the XJ-S, for two reasons: Firstly, to underline the fact it had been in production for 20 years. Secondly, there were concerns that sales might fall, due to the release of the XK8 in the following year. Jaguar therefore introduced a number of feature enhancements for the 1995¼ model year cars. The features are identified and described below.

Externally:

- The Convertible hood was manufactured from an acrylic material instead of the previously used polyester. This improved strength and ageing property

Internally:

- A new parking brake was introduced and the lever was shorter with a colour-keyed gaiter. The gaiter was made from Ambla on the 4.0 litre models and from Autolux on the V12 models. The hand grip had a soft feel finish with finger contact curved contours. Improvements were made which gave a more positive feel when moving the lever to the off position and gave a high quality ratchet operation sound
- Each front seat heater system incorporated a new control module and heater elements. The heater elements had thermostats instead of thermistors to control the temperature. When selected, the heater remained on for up to 12 minutes before switching off automatically, and would not switch back on until selected by the operator

Mechanical:

- A new driveshaft was introduced on both the automatic and manual 4.0 litre models to reduce noise, vibration and harshness levels. The driveshaft on the automatic models was lengthened to compensate for the shorter engine installation. The driveshaft on the manual models was produced from a single length of tubing
- The ABS was changed to the Teves Mk IV-GI system. The control module activated the ABS when the wheel(s) rotated slower than the comparative norm
- The rear brake discs were changed to the ventilated disc type which provided additional cooling performance. The disc thickness increased from 10mm to 20mm, in addition, the calliper piston diameter increased from 36mm to 48mm

The Celebration model

In May 1995, Jaguar released a special edition of the 4.0 litre Coupé and Convertible models named "Celebration", from VIN 221855. These car were mechanically unchanged but had upgraded trim and equipment. The 4.0 litre Coupé displayed distinctive "Aerosport" diamond-turned alloy wheels with gold on black wheel centre badge, while the Convertible was fitted with optional chromed alloy wheels. The Convertible was also fitted with a trip computer, and electrically adjustable heated seats with lumbar support and memory.

External cosmetic changes were minor:

- The re-introduction of chrome on the headlamp surrounds
- Chrome door mirrors
- A black radiator grille
- Painted twin coachlines
- Chrome was added to the number plate surround

- Chrome oval exhaust pipes
- Five-spoke chrome-plated wheels (extra-cost option)
- An enamelled gold badge was fitted to the bonnet

Internally:

- Quality leather trim
- "Leaping cat" emblem embossed on the head rests
- Sapwood veneer woodwork came as part of the standard package
- Wood gearshift lever knob
- Half wood/half leather steering wheel with embossed "growler"
- Cruise control as standard

Nearly everything was included as standard, except the on-board computer and headlamp high pressure wash system. The 4.0 litre Coupé was priced at £38,950 and the Convertible was £45,950. These models reflected more than ever the unrivalled blend of Jaguar style, prestige, performance, luxury and affordability.

It is not possible to distinguish a Celebration model from its VIN prefix, and Jaguar did not keep a separate production figure for this model. Of the approximately 4790 XJ-S cars made after the introduction of the Celebration it is believed that all home market 4.0 litre cars featured the Celebration specification, as well as cars for some export markets but not the USA. It is likely that there were around 2000 Celebration models.

The V12 models were virtually discontinued at this stage and were only made to special order during the last production year. By the end of 1995 sales of the XJ-S had fallen again with 4884 cars produced. Production was being run down in readiness for the launch of the XK8 in 1996.

The American market tended to introduce the model changes a year after the launch in the rest of the world. The significant change for the American market for 1996 was the deletion of the 4.0 litre and V12 Coupés, the only XJ-S model now available in this market was the 4.0 litre Convertible. A number of changes were made to the last XJ-S models and these are detailed below.

Catalytic Converter – the 4.0 litre XJ-S had a down-pipe catalytic converter which used palladium as the catalytic material instead of platinum/rhodium which gave improved emission performance. The AJ16 models also had the palladium down-pipe catalytic converter and the palladium/rhodium underfloor catalytic converters.

For North America only, the XJ-S models had a couple of modifications, these being:

- A revised wiring harness to accommodate the installation of a dealer fit voice activated telephone system
- New front and rear passenger safety belts. Particularly on the Convertible models, the new safety belts had a reel that could be set to the emergency locking retractor or the automatic locking retractor mode. Pulling the full length of the safety belt out of the reel would engage the automatic mode, allowing the safety belt to retract fully into the reel would return the safety belt to the emergency mode. For Coupé models, the front passenger seat had the revised safety belt mechanism. However, the rear seats retained the standard reel mechanism, but had a new insertion tongue with an integral clamping device. Once the lap section of the safety belt was tightened, the clamping device would grip the safety belt, preventing the lap section from being loosened until the buckle had released. The upper section of the safety belt would still extend and retract on the reel in the normal manner

The last Jaguar XJ-S Convertible and Coupé models rolled off the production line at Jaguar's former Browns Lane assembly plant on Thursday 4 April 1996. The completion of the Signal Red, six-cylinder Celebration Convertible and the Ice Blue V12 Coupé brought to a close a remarkable production run that spanned 21 years during which 115,413 of these grand touring cars were produced. Both of these cars went straight into the Jaguar Daimler Heritage Trust collection.

Due to the concerns of being left with stocks of cars, the Marketing Department distributed letters to potential customers offering a buy-back scheme, but the fears proved groundless, whilst cars were still at the dealers when the XK8 was launched all the remaining stock was sold without any real difficulty.

The XJ-S legacy

After 21 years and sales of over 115,000 units, Jaguar finally ceased the production of this somewhat controversial model. Many sceptics gave the XJ-S a hard time and didn't really expect it to last, but you will agree that the model did Jaguar proud and was most certainly a successful model for the company. The XJ-S saw off the critics, the model returned the investment for the company and was praised for its performance, handling, ride and refinement. The model started slowly in terms of sales with poor quality and it was originally criticised for its

heavy fuel consumption and looks but Jaguar stood its ground and it paid off. New models were added and it turned into the archetypal British Grand Tourer.

And the XJ-S lived on...

The XJ-S has been used as the basis for several other cars during its history. XJ-S parts were used to produce the prestigious Aston Martin DB7 which was launched in 1994 and had a large proportion of XJ-S components which included:

- Centre floor pan (built at Castle Bromwich)
- Front and rear suspension - with unique DB7 set-up
- Electrical harness - although most had to be modified to suit Aston Martins requirements
- Electrical systems - wipers/cruise control/central locking/windows
- Air conditioning system
- Base engine (AJ16), this was also heavily modified by TWR

The DB7 had the Jaguar AJ16 6-cylinder engine, it could produce an impressive 315bhp that was capable of reaching 160mph and 0-60mph (0-97km/h) time of just 6 seconds. The DB7 was designed by Ian Callum, a renowned designer who later moved to Jaguar to continue creating beautiful motor cars. The DB7 was a sporty, contemporary car that could originally be bought for just £40,000.

As they were part of the Ford organisation at the time, Aston Martin made use of the expertise and available parts from Jaguar. The DB7 Vantage as well as the Volante continued to use the XJ-S floorpan and suspension systems. Both components were drastically modified to suit Aston Martin's particular needs. The final DB7 was built in December 2003 and this saw the end of the use of the XJ-S parts.

6. XJ-S Special Editions

JaguarSport

TWR started racing the XJ-S in 1982, and on 12 January 1984 they introduced a special sport version of the XJ-S under the name TWR JaguarSport. With the full co-operation of Jaguar Cars, the basic philosophy was to offer a package that provided the kind of hand-built craftsmanship no longer available from a production line environment. This in itself was no mean feat. In the course of their race preparation, TWR highlighted a variety of areas where minor subtle changes to the specification could result in a dramatic improvement to the aerodynamic efficiency, handing, comfort, drivability and performance.

Engine – the V12 5.3 litre had improved breathing thanks to the fitment of a high-efficiency stainless steel exhaust system and increased capacity air intakes, giving better torque and power. The full-flow expansion boxes, rear silencers and large-bore over-axle pipes terminating in four outlets were all manufactured in heavy-duty stainless steel to increase the lifespan and were designed to improve engine efficiency. It was estimated that this new system would give an increase in power of approximately 10 per cent.

The 6.0 litre engine was the ultimate road going Jaguar engine. It was built by hand, side by side with the competition engines destined for worldwide venues. Each engine was tested to 380 bhp and had specially forged pistons, a long-throw crankshaft and re-profiled valve gears. This was a superb road engine which had a vast range of power and flexibility.

Transmission – A five-speed close-ratio all-synchromesh gearbox with overdrive fifth speed was fitted to make the most of the massive amount of power available. Using the four lower ratios wisely would produce electrifying performance, whilst fifth gear set the TWR XJ-S on a course for high-speed cruising with greater economy.

Brakes – bearing in mind that the TWR XJ-S was capable of achieving a top speed of 160mph (257.5km/h), the brakes came under close scrutiny and yet again, the racing experience played a part. The braking area had increased enormously and all four discs were ventilated. On the front, the discs were 11.625in (295mm) in diameter with a total width of 1.4in (36mm) to provide sufficient ventilation. The discs were mounted on specially manufactured alloy hubs and had lightweight four-piston callipers to give maximum retardation with minimum pedal pressure. The standard solid discs fitted on the rear of the car were 10.625in (270mm) in diameter and 0.78in (20mm) wide. The braking capacity was up to the performance and weight (1700kg) of the car.

Suspension – specially developed gas-filled dampers were produced by Bilstein exclusively for TWR and were used both front and rear. The geometry had been modified to take into consideration the stiffer suspension settings and wider tread pattern of the tyres. The results of these changes were reduced body roll and a more precise turning-in characteristic, with an improvement to the power being transmitted on exiting the corners.

The combination of ride comfort and road holding had been worked on to produce the best of both worlds. At low speeds, the car had an almost docile feel with superb tractability, when driven hard, the feel and precise handling characteristics came into their own.

Wheels and Tyres – in conjunction with the suspension, 16in alloy wheels with 8in rims were designed to carry low profile high-speed Goodyear NCT Eagle 225/50 VR16 tyres at the front and 245/55 VR16 at the rear. The high-quality aluminium alloy wheels had been designed to reduce aerodynamic drag, with radial cooling ducts extracting air to the front brakes. The wider rims increased the stability of the car.

Body and Interior – TWR used a wind tunnel to research the external body fairings, the front and rear wrap-around bumpers that replaced the standard parts. At the front, the bumper and under-fairing were moulded as a single item, this reduced both drag and lift at high speeds. Special paint finishes included the changing of all bright metal parts to anodised satin black, including:

- Windows
- Headlamp surrounds
- Windscreen wipers
- Door mirrors

A similar rear bumper enclosed the rear under rail of the car with cut-away apertures for the four exhaust tail pipes. A Can-Am type rear spoiler was mounted rigidly on the boot lid and exerted just the right degree of down-force corresponding to speed. Front end lift was reduced by 60 per cent and rear lift by an astonishing 88 per cent. The body modifications improved the aerodynamic efficiency of the car by 12.7 per cent, and at the same time transformed the appearance in line with its more aggressive performance.

Internally, the TWR XJ-S had a re-trim, combining finest English leather for the front and rear seat covers with inlaid stitched panels of Scottish tweed. The interior trim was colour co-ordinated to the body exterior. Luxury pile carpets throughout and a leather trimmed, four-spoke TWR steering wheel completed the interior transformation.

The TWR Jaguar XJ-S V12 took the slogan "Race Bred to Improve the Breed" to its ultimate conclusion. The performance statistics and aerodynamics are shown below:

0-60mph:	5.8 seconds
0-100km/h:	5.9 seconds
Maximum speed:	164mph (262km/h) @ 5200rpm

The TWR Sport versions were converted from existing cars, and most TWR modifications could be applied to either six- or 12-cylinder cars. Buyers of V12 cars furthermore had the choice of two engines, the 5.3-litre, or TWR's own longer-stroke 6.0-litre version. The cost of TWR conversions on the XJ-S are shown in the table below, excluding the cost of the base car.

Description	Includes	5.3 Litre	3.6 Litre	3.6 Litre Cabriolet
XJ-S – Manual	A,B,C,D,E,F,G,H,I	£11,260	-	-
XJ-S – Automatic	A,B,C,D,E,F,H,I	£8,880	-	-
TWR XJ-S	A,B,C,F	£4,625	£4,625	£4,625
TWR XJ-S	A,B,C,F,H,I	£5,995	£5,995	£5,995

A – Low drag body kit
B – Low drag alloy wheels
C – Suspension kit
D – Brake kit
E – Engine efficiency kit
F – Steering wheel
G – Manual ZF five-speed transmission
H – Interior re-trim
I – Body trims

The longer stroke 6-litre engine was quoted separately, and locking wheel nuts were also available. If the specification didn't include one or more items shown on the list above, the customer could purchase each at an additional cost.

For existing customer-owned cars modified by TWR JaguarSport between 1984 and 1988 (or later) it is important to make the point that the modifications were not reported back to Jaguar and therefore Jaguar's records continue to show these cars simply in the form they were originally built to standard specification.

In May 1988 Jaguar formed a partnership with Tom Walkinshaw Racing (TWR); it was to be known as JaguarSport. It was a logical development of the highly successful TWR/Jaguar racing association and was dedicated to the production of high performance "sports" versions of Jaguars. In addition to its primary role as a car manufacturer, JaguarSport was also playing a

key role in the development and application of "leading edge" technology on behalf of Jaguar Cars.

The new JaguarSport XJR-S was introduced in August 1988 and was a listed production model, part-finished at Browns Lane and then sent to JaguarSport at Kidlington in Oxfordshire for completion as an XJR-S. It used the same body kit, and suspension/brake set up as the TWR Sport but the 6.0-litre engine was not offered for the first year. The XJR-S was initially launched in the UK and was priced at £38,500. The first 100 units off the line were a limited edition and were referred to as "Le Mans Celebration' models to commemorate Jaguar's 1988 Le Mans win. They all had:

- Unique colour and trim scheme of Tungsten Grey metallic paint with Doeskin interior trim and Saville Grey piping and stitching
- A unique build number stamped on the treadplate (001-100)
- Black radiator grille
- Black headlamp surrounds
- "Group C XJR9" in the purple coachline on the rear wing
- XJR-S badge on boot panel

The stainless steel treadplates discreetly carried the victory laurels of the World Sportscar Championship 1987 and Le Mans 1988, the hallmark of Jaguar's success on the racing scene. JaguarSport offered a range of additional benefits for owners of Le Mans Celebration models. These included being a guest of JaguarSport at a celebration day which took place at Silverstone Race Circuit. The emphasis was on high-speed driving techniques with expert tuition, culminating in a lap in the Le Mans winning car with one of the drivers from the Jaguar racing team. In 1989 customers were given the opportunity to attend the World Sports Prototype Championship race at Silverstone as guests of JaguarSport, enjoying the VIP facilities on offer.

Sir John Egan commented *"We formed JaguarSport to produce Jaguars which would appeal more directly to motor sports enthusiasts. I am confident that the XJR-S will do just that. Winning Le Mans again gave us the idea of a celebration version too, and I am delighted with the end result".*

The XJR-S was based on Jaguar's 1988½ model year XJ-S V12 Coupé that reached speeds of around 150mph (241km/h) in standard form. The suspension system was upgraded to enhance the handling characteristics of the standard car. It featured revised front springs which were 11 per cent stiffer than those used on the normal production car. It also had exclusive gas filled

front and rear dampers, modified suspension bushes and revised rear radius arms. The XJR-S had 15in Speedline wheels fitted with Pirelli P600 235/60 tyres. The power steering was also modified to offer greater feel and responsiveness for the more enthusiastic driver.

The XJR-S featured attractive interior trim design, incorporating leather sports style seats with electric lumbar and heating functions. The interior trim had unique contrasting piping and stitching on the seats, together with an XJR-S logo embossed on the head rests. The steering wheel and gearshift knob were colour-keyed and the tachometer and speedometer featured the JaguarSport logo.

The company planned an initial production run of 500 cars a year rising to around 2500 depending on customer demand. It was anticipated that initial production would be for the UK market only with around 20 specialist JaguarSport dealers, all of which had been sourced from within the existing franchised dealer network. Sales to Europe and America would follow after a couple of years.

Tom Walkinshaw, Managing Director, commented *"I am pleased to be able to get JaguarSport off to such a winning start through the XJR-S. In travelling the world's racing circuits this summer, I have met many sports car buyers who have expressed great interest in our new company. I am confident that there will be very significant demand for these cars worldwide".*

On the 23 August 1989 the company announced the introduction of the 6.0-litre version of the XJR-S. This reached a maximum speed of 160mph (257.5km/h) with acceleration of 0-60mph in just 6.5 seconds (0-100km/h in 6.8 seconds) and 100mph (162km/h) could be reached in 15.4 seconds, a full 3.5 seconds quicker than the previous XJR-S. The new 5993cc power unit delivered a highly competitive 318bhp at 5250rpm, 362 lb/ft (491Nm) of torque at 3750rpm. The increased displacement had been achieved by increasing the stroke from 70mm to 78.5mm; this required the introduction of a new crankshaft, pistons and liners. The compression ratio for the 1990 model year was 11.2:1. The cylinders liners were reduced in length by 0.135in to clear the con rod bolts. Steep angles matched the top inner edge to reduce the carbon build up and the bottom outer edge to aid the press fit assembly.

The car was equipped with a Zytek sequential injection and digital ignition engine management system which had been developed from Jaguar's Group C racing programme. Zytek systems were also being used on Formula 1 racing cars at that time. The gearbox was a development of the GM400 automatic, the Hydramatic division of GM designed this gearbox especially for the 6.0 litre engine. For the introduction of the 6.0 litre engine substantial further development was required to achieve the additional power and torque, Tom Walkinshaw stated:

"In developing the new XJR-S we have spent a great deal of time ensuring that the handling characteristics of the car integrate well with its increased power and torque capabilities. We would not want to simply install a 'stroked' V12 and basically leave it at that. We set out to significantly improve the performance of the XJR-S sports car in the fullest sense and I am delighted with the results".

The suspension system was upgraded to improve the response and feedback for the driving enthusiast, with the front and rear springs upgraded significantly. The newly developed XJR-S had 8in by 16in Speedline wheels with ZR high performance tyres from Dunlop, known as D-40-M2. The uni-directional D40 radial had been developed by Dunlop specifically for JaguarSport and Dunlop were also responsible for the supply of tyres to the Jaguar racing team. The XJR-S used low profile 225/50 ZR 16 inch tyres at the front to optimise the steering response and wider 245/55 ZR 16 inch tyres on the rear which improved traction. The new suspension, wheel and tyre package used had been carefully balanced to achieve outstanding handling performance. The spare wheel was fitted with a Dunlop D-7 205/70 R 15in radial tyre.

Additional mechanical changes included:

- JaguarSport distributor was used – Lucas derivative with JaguarSport internal components
- Large bore air cleaner boxes having a 54mm bore with trumpet flare inlets to aid cold air induction
- Unique cold air intake cross member to suit the air cleaner inlets

There were a number of subtle changes made to its sleek looking exterior, these included:

- GRP front and rear aprons fixed over the existing Jaguar beam and attached using screw fixings
- GRP rear boot spoiler fixed by drilling and screwing in four locations, a single boot lid gas strut was introduced later to assist with the boot lift operation. Fixing the gas strut was by twin brackets to the left-hand boot channel and the spoiler attachment fixings
- Colour-keyed door mirrors
- Twin bore stainless steel exhaust tail pipes
- A "6.0 litre" badge on the rear
- A discreet "Sport" badge on the grille
- Satin black finishes instead of chrome brightwork could be ordered as an optional extra
- Ground clearance:

- Leading edge of the front cross member – 130mm minimum
- Lowest point of the exhaust system – 116mm

- The speedometer was calibrated to suit the wheel and tyre changes, the speedometer and tachometer faces were adorned with the JaguarSport logo
- Electric aerial timer override relay connected to the boot lamp switch

Internally, the new features included:

- A colour-keyed JaguarSport four-spoke 38cm "Momo" steering wheel with twin horn push zones embossed with "Sport"
- A leather embossed information pack wallet
- New colour and trim combinations including sports seats with twin needle contrasting piping and stitching
- XJR-S embossed on head rests
- Telephone installation kit could be ordered as an optional extra
- An electric sliding roof could be requested as an optional extra
- A modified XJ-S automatic gearshift lever with an XJ 4.0 litre gearshift knob was introduced

In addition to the obvious performance developments, the new car had the already outstanding standard specification of a normal XJ-S. This included features such as:

- ABS brakes with yaw control, hydraulic power assisted four-wheel disc brakes, safety split front and rear circuits. Mechanical parking brake on the rear wheels
- Power-assisted steering with energy absorbing steering column
- Cruise control
- Limited slip differential
- Leather upholstery
- Burr walnut veneer inserts with delicate matchwood inlays
- Air conditioning
- Heated front seats
- Electric lumbar support
- Headlamp wash/wipe
- Security coded electronic stereo radio with Dolby noise reduction

The fuel economy for the 6.0 litre XJR-S was:

Urban: 12mpg (23.5 l/100km)

56mph (90km/h): 22.6mpg (12.5 l/100km)
75mph (121km/h): 20.2mpg (14 l/100km)

The 6.0 litre XJR-S went on sale to the public on 1 September 1989 at a cost of £45,500. Buyers of the new XJR-S were given the opportunity to take advantage of a Performance Driving Course which was designed to help them appreciate the full capabilities of the car. The course included advanced tuition from highly qualified professional instructors. The 6.0 litre XJR-S was a significant development for the JaguarSport team and Tom Walkinshaw commented:

"The new XJR-S puts us very much on the pace with competition such as Porsche and Ferrari. It illustrates very well our policy of producing cars which are amongst the fastest and most exciting in the world. We are setting our sights now on further improvements within the product range as well as developing overseas sales networks in key markets, having successfully established our franchise in the UK".

In May 1990, the JaguarSport range was introduced into Europe and at the time it was envisaged that the company would enter the American market during 1991 with the 6.0 litre XJR-S. The 1991 model year 6.0-litre model had the same features, with the addition of the option to purchase coachlines on Black and Brooklands Green cars.

The face-lifted 1992 model year XJR-S was launched at the Frankfurt Motor Show on 11 September 1991, later than the standard models. For the 1992 model year the body kit add-ons were designed "in-house" by Jaguar's team of designers headed by Geoff Lawson. It was powered by a catalyst-equipped 5994cc version of Jaguar's V12 engine developed by the JaguarSport engineers from the standard 5.3 litre V12.

The exterior of the XJ-S was considerably revised to create the distinctive XJR-S look. The deep front bumper treatment had been designed to match the more softly contoured rear end styling. Sculptured sill panels linked the deep moulded front and rear bumpers. The interior was also altered to give the car a distinctive feel. Soft fine Autolux leather was used extensively for the interior trim with the front and rear seat upholstery accented by hand-stitching in the contrasting colours.

The compression ratio for the 1992 model year was 11:1 instead of the previous 11.6:1. The engine's performance was perfectly complemented by a suspension system designed for taut, responsive handling and road-holding. Front and rear springs were significantly uprated with damping controlled by special Bilstein gas-filled shock absorbers all round.

There were a number of enhancements made to the XJ-S for it to become an XJR-S, these are detailed below. The external changes included:

- There were two distinctive body kits manufactured in reinforced resin injection moulded polyurethane, one for the European markets, while the 1990 model year body kit was used for the American/Canadian markets
- The front and rear aprons were fixed over the existing Jaguar bumper beams and attached to screw fixings. The cars destined for the American/Canadian markets were revised to take into account the energy absorbing bumpers and the integrated side marker lamps
- The side sill covers on cars destined for the European markets were shaped with a shallow flare to suit the style of the body kit. They were fitted with adhesive together with screw fixings, rubber seals were attached using adhesive
- On the boot lid, a spoiler was fitted and secured with four screw fixings positioned on the inside of the boot lid. The cars destined for the American/Canadian markets had spoilers that were equipped with the seven-bulb high-mounted stop-lamp unit
- In addition to the JaguarSport badges on the grille, treadplate and instrument faces, an additional JaguarSport XJR-S logo was engraved on the side rear quarter glass
- A unique JaguarSport front towing eye was fitted through the air intake duct in the front apron
- The Speedline alloy wheels were replaced with JaguarSport alloy wheels (also known as Parkfield wheels). They were fitted with long chromium plated wheel nuts. They were capped with a grey "growler" head badge and a chrome outer ring
- The XJR-S was not fitted with front fog lamps as they were not compatible with the front apron
- The aerial would be raised automatically when the radio was turned on and the ignition was in position I or II. Likewise, it would lower after 15 seconds once the radio was turned off or the boot was opened

Internal changes included:

- Cars destined for the European markets had the standard 1992 model year XJ-S seats, trimmed in Autolux leather with contrasting stitching
- The burr walnut veneer previously used on the front door casings, rear quarter casings, fascia and centre consoles was replaced with sapwood veneer inserts

There was a revised steering rack valve as well as revised rear radius suspension arm bushes, modified differential backplate for improved breathing, and an electric gate fan.

The XJR-S featured electrically operated front seats with a two-position memory for the driver's seat, improved air conditioning performance, electrically adjustable lumbar support and seat heating. The specification included a trip computer, advanced audio system with an optional six-disc CD player mounted in the boot. A driver's side airbag was also standard.

The performance and fuel economy figures for the 1992 model year XJR-S are shown below:

0-60mph (0-100km/h):	6.5 seconds (6.8 seconds)
Maximum speed:	158mph (254km/h)
Urban mpg:	13.3mpg (21.3 l/100km)
56mph (90km/h):	23.5mpg (12 l/100km)
75mph (121km/h):	20.2mpg (14 l/100km)
Maximum kerb weight:	4023 lbs (1825kg)
Gross vehicle weight:	4795 lbs (2175kg)

For the American market, Jaguar announced the introduction of a limited edition XJR-S Coupé and Convertible in 1993. This special edition consisted of only 100 cars with exclusive power train, suspension and trim features. Each car had a hand-engraved sterling silver plaque from Asprey of London (silversmiths to the British Royal family). The plaques had a unique production number identified and they were produced in Asprey of London's Fifth Avenue, New York office.

The new XJR-S combined stunning performance with luxurious interior and impeccable ride and handling characteristics. This model was only available in two body colours, these being Signal Red and Jet Black.

- Red cars had Cream Autolux interior, Barley instrument panel, Coffee carpets and Doeskin headlining – the Convertible model had a Beige hood
- Black cars had Warm Charcoal Autolux interior, Black instrument panel, Smoke Grey carpets and Saville Grey headlining – the Convertible model had a Black hood

Jaguar recognised the demand in America for more distinctly sporting variants of its range, albeit in low volumes. In describing the XJR-S, the President of Jaguar Cars Inc., Michael H Dale said *"This is a truly satisfying car to drive. The engine is turbine-like, smooth and responsive and very refined. I think Tom Walkinshaw's people have done a great job in*

extending the precise roadholding and safe handling of the XJ-S, which has excellent suspension dynamics to start with. The XJR-S is a real enthusiasts' car."

However, production of the XJR-S was discontinued in 1993 with the launch of the new 6.0 litre standard model.

Jaguar Insignia

In October 1992 Jaguar announced the "Insignia" range. This meant a bespoke service was available whereby customers could choose a more distinctive Jaguar to suit their tastes and requirements. The Insignia range for all model derivatives were produced between 1992 and 1995 and it was thought that there were approximately 300 produced in total. This service involved the co-operation of the Special Vehicle Operations (SVO) department as they were responsible for finishing the XJ-S in the specific customer chosen paint and trim colours.

Customers who chose an Insignia Jaguar could select from a range of ten exterior paint colours at an additional cost of £1,900, together with the interior trimmed in a unique range of ten matching colours of hide, at an additional £3,000. These were complemented with a choice of natural or tinted wood veneers to enhance the paint and trim finish, at a cost of £350.

The exterior body colour scheme available to customers for the Insignia was:

- Mahogany
- Primrose pearl
- Peppermint
- Lavender
- Amethyst blue
- Crystal blue
- Sandstone
- Mineral green
- Saturn orange
- White pearl

Interior colours for the Insignia included:

- Saddle tan
- Aqua
- Pale stone
- Yellow pearl
- Powder blue
- Pale mushroom
- Dark stone
- Thistle
- Dark mushroom
- Silk white

Specially designed road wheels were available to enhance the totally co-ordinated style, and a front wing badge was added to complete the look. The interior of the Insignia was trimmed in soft semi-aniline leather in a unique range of co-ordinating colours (shown above). The seats were re-designed and the piping for the seats and centre console could be specified in

contrasting hides. Jaguar's veneer buyers examined scores of different woods before they made their final selection. Complementing the interior was the introduction of a luxurious new range of deep pile wool carpeting, again, available in a unique range of colours. Even the protective binding around the carpet edge was colour-keyed to the interior colour scheme; this illustrated the meticulous attention to detail. The carpeting was extended to the boot and the customer had a wider choice of five-spoked alloy road wheels. Customers could specify other wheels available at the time and in some cases, the wheel centre was colour keyed to match the body colour.

Roger Putnam, director of Sales and Marketing commented *"An increasing number of our customers, now want a more individual approach. Insignia allows us to satisfy what is undoubtedly a growing demand for an elegant yet distinctive and personal style."*

To complete the final specification of the Insignia model range, an additional cost of between £5,500 and £6,000 was added to the base price of a car.

Le Mans V12

The XJ-S "Le Mans V12" limited edition was announced at the Birmingham Motor Show in 1990 to celebrate the 1990 win, with a production run of only 280 units. There were no mechanical changes made, the only visible difference was the trim. The limited edition XJ-S V12 had nothing to do with the 1988 JaguarSport "Celebration" version but was mechanically a standard 5.3 litre XJ-S Coupé. It had:

- American style quad headlamps (except for Germany, Sweden and Japan)
- Gold growler badge on the bonnet
- JaguarSport black radiator grille
- Twin gold coachlines
- Unique Le Mans V12 boot badge
- Sports suspension
- Forged lattice alloy wheels (7in by 16in) with 225/55 VR16 tyres
- Paint colours: Signal Red, Brooklands Green, Regency Red and Solent Blue
- Body coloured front spoiler
- Colour-keyed door mirrors
- Headlamp wash/wipe was deleted (except for Germany, Sweden and Japan)

Inside there was:

- New style seats (four vertical pleats) trimmed in Cream Autolux leather
- Contrasting colour piping on the seats, centre console and door pockets in Red, Green, Mulberry or Isis Blue
- Limestone coloured headlining
- Door treadplates etched with individual chassis number and "Le Mans V12'
- "Le Mans V12" embossed on the head rests
- High-contrast walnut veneer on the centre console, fascia, door inserts and the areas adjacent to the trip computer (the original specification used sapwood)
- Leather trimmed four-spoke steering wheel
- Leather door casings, rear quarter casing, "A" posts, upper and lower "B" posts
- Cream leather trimmed XJ40 gearshift lever knob
- Coffee Wilton carpets with a cream binding and a Rattan carpeted spare wheel cover
- Polished doorsill plate with Le Mans V12 motif, laurel and limited edition serial number

The cost for the Le Mans V12 was £38,700.

North American Specification Vehicles

Hess & Eisenhardt

It was clear that for Jaguar to achieve any real success in the American market, there needed to be a full Convertible model. Understanding that this would take a few years, British Leyland Motors Inc. (now Jaguar Cars Inc. of North America) contracted the project out to a company called Hess & Eisenhardt, who were successful coachbuilders based in Cincinnati, Ohio. The contract to develop and build the new Convertible started in 1986. It was an unprecedented decision for Jaguar to produce one of their current models in another country. It was perceived that the American sales of the Jaguar models would increase significantly if the models were available on time and this wasn't going to be the case for the XJ-S Convertible as engineering was concentrating on the XJ40 model and the XJ-S Convertible would not be ready until 1988.

Hess & Eisenhardt designers produced a Convertible model with a power operated top. The car was shown at the South Florida Auto Show in the autumn of 1986 and it was announced that the model was not only attractive but available. The cars would only be built to special orders received from the American dealers. Hess & Eisenhardt converted the original fuel tank to allow for the low folding top, this ultimately reduced the boot size and created concerns with the warranty cover. Hess & Eisenhardt produced 2000 units and they covered the warranty issues relating to the conversion together with any special parts fitted. Jaguar were still responsible for the remaining parts and any warranty issues not covered by Hess & Eisenhardt.

The easiest way to spot them today is that they still have the front quarter-light, a badge on the hood, Hess & Eisenhardt badge on the front wings together with a low folding top. The Convertible top was less shapely than the factory top and came down on top of the windscreen header rail, rather than attaching itself to the edge of the rail.

Collection Rouge

In 1989, Jaguar introduced a limited edition model produced only for the American market, the "Collection Rouge". When the Collection Rouge was first conceived, it was going to be a Convertible model, however, the Tan hood was not approved by plant quality and it had to be scrapped. Instead of dismissing the concept all together, the company decided to introduce a Coupé model and this was approved. As the name suggests, it was only available in one colour, this being "signal red". To set it off, the model had:

- A gold coachline
- Unique badges on the rear, gold finish "XJ-S" on the left-hand side and gold plated plaque plinth on the right-hand side with "Collection Rouge" in gold on a black background
- S.C.S alarm system
- Magnolia leather interior with red piping on the front seats only
- Magnolia leather covered steering wheel and gearshift lever knob
- Elm veneer woodwork
- Mink colour carpets
- Lattice alloy wheels with diamond turned rims, boss and spoke faces, with Signal Red painted inner spoke surfaces
- Black brake dust shields
- Gold plated bonnet badge
- Unique bright wheel centre badges and surrounds

The Collection Rouge cost the American customers $51,000 for the Coupé as opposed to $48,000 for the standard Coupé version. The 1990 version had a couple of slight modifications, these being:

- Champagne coloured carpets were added to the list of options
- A new air bag steering wheel rim and centre pad was trimmed in Magnolia leather

Collection Claret (never made!)

In addition to the 1990 model year special editions, Jaguar took the option to introduce the "Collection Claret" model, again only for the American market. This new version was based around the 1990 model year XJ-S V12 Coupé and production would commence during January of that year. They anticipated building around 50 cars a month.

The Claret had the same specification as the Rouge with the following differences:

- Regency Red body colour
- Magnolia interior trim with Mulberry leather piping (front and rear seats)
- Wine Red carpets
- Lattice alloy wheels with diamond turned rim, boss and spoke faces, and Regency Red painted inner spokes (carry-over from XJ40)
- Boot badging: "Collection Claret" in gold script on a black background insert on the right-hand side
- Burr elm veneer (carry-over from the standard XJ-S)
- Hand painted side stripes (dealer fit) – adhesive coachlines were deleted

The target introduction was January 1990, by March it was still not ready due to the inability to obtain the unique parts required to compliment the stylish looks intended. Jaguar Cars Inc. wanted the XJ-S Classic specification on all XJ-S cars from the June 1990 build. Therefore, Claret would only be in production for a short period of time, the decision was made not to bother at all with the Claret.

Classic Collection

The "Classic Collection" commenced production on the 27 August 1990 (Convertible) and the 3 September 1990 (Coupé). The specifications for this model were based around the 1990 model year XJ-S and the interior details are shown below:

- Champagne carpets with Magnolia interior trim, Rattan carpets with the Doeskin interior trim, and Smoke Grey carpets with Warm Charcoal or Isis Blue interior trim
- Cars with Doeskin or Magnolia interior trim could have either a Doeskin or Magnolia leather trimmed gearshift lever knob. Cars with Warm charcoal or Isis blue interior trim always had a Warm Charcoal leather trimmed gear knob
- Warm Charcoal steering wheel
- Burr elm veneer (carry-over from XJ-S Collection Rouge)

External details included:

- The specification was limited to six body colours – Black, Glacier White, Brooklands Green, Signal Red, metallic Diamond Blue and metallic Oyster
- Bright wheel centre badge and surround (carry-over from XJ-S Collection Rouge)
- Gold plated bonnet badge (carry-over from XJ-S Collection Rouge)
- Painted coachlines – dealer fit
- Boot badges: Chrome plated "XJ-S" on the left hand side, XJ40 chrome plaque shaped plinth with "Classic Collection" in gold script on a black background on the right hand side

The combinations of paint and trim are shown in the table below, together with the hood colours for the Convertible.

Body Colour	Interior Trim	Piping	Hood
Black	Magnolia	Barley	Black
	Doeskin	Buckskin	Black
	Warm Charcoal	Warm Charcoal	Black
Glacier White	Doeskin	Buckskin	Black
	Isis Blue	Isis Blue	Black
Brooklands Green	Doeskin	Buckskin	Brown
Signal Red	Magnolia	Bright Red	Black
	Doeskin	Bright Red	Black
	Warm Charcoal	Warm Charcoal	Black
Metallic Diamond Blue	Magnolia	Isis Blue	Blue
	Isis Blue	Isis Blue	Blue
Metallic Oyster	Magnolia	Barley	Brown
	Doeskin	Buckskin	Brown

All models destined for the American market were built to the Classic Collection specification. The Classic Collection was released for sale on the 3 October 1990.

Silver Jubilee

British Leyland Motors Inc. (which afterwards became Jaguar Cars Inc.) took the decision to celebrate the Queen's Silver Jubilee in 1977 with the introduction of a special XJ-S. The press release issued at the time stated:

The British are celebrating Queen Elizabeth II's Silver Jubilee in the United Kingdom this year. A visit to Auto Expo at the Coliseum April 1-10 will prove that Britons in the U.S. haven't let the Jubilee pass unnoticed. The star attraction of the British Leyland Motors Inc. exhibit at the imported car show will be a Silver Jubilee Jaguar, a $40,000 "design exercise" specially commissioned by British Leyland in the U.S. to celebrate the Jubilee year. The Jubilee Jaguar started life as a $20,250 V-12 engined XJ-S grand touring car, top of the Jaguar line. Under the supervision of noted industrial and automotive designer Albrecht Goertz of Manhattan, it's been transferred into a conveyance fit for a Queen.

The car was displayed at other automotive shows throughout the Jubilee year. The features of this car are detailed below, externally:

- 14 coats of hand rubbed silver and gold paint, gold below the waist line and up over the rear quarter of the hardtop, silver everywhere else
- Royal purple stripes separated the two colours
- The wheel centres were finished in gold paint with purple trim, they were also fitted with the official Silver Jubilee emblem
- Official Silver Jubilee badges were positioned on the hood and boot lid
- A silver leaping Jaguar was mounted on the roof just behind the windscreen, and around the Jaguar's neck was a collar studded with 3 amethysts

Internally:

- The seats and rugs were of a Champagne hue with the seat inserts upholstered in Royal Purple ultra suede, a new man-made fabric. The fashion designer Halston who dressed the celebrities had the monopoly on this Japanese fabric that imitated suede leather. Ultra suede was never used by Jaguar as it wouldn't have met the stringent fire regulations at the time of the launch of the car
- The door panels were also trimmed with Purple ultra suede
- A stereo radio and cartridge tape player were all part of the package, not just with the Jubilee but with any Jaguar

There were no mechanical modifications to this model.

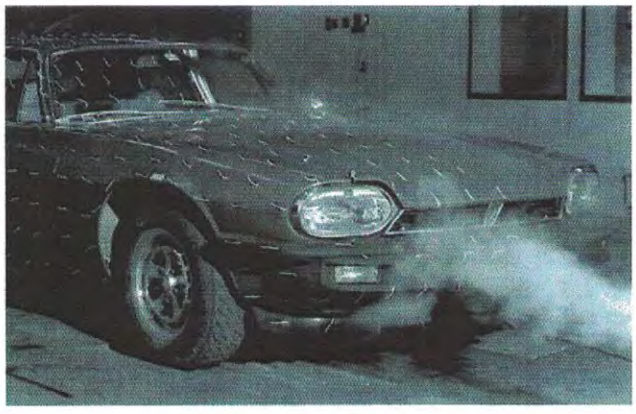
Jake Kaplan, a Jaguar dealer based in Rhode Island, asked to buy the show car and Mike Jackling, Sales Manager for Jaguar, suggested what he thought was a ridiculous price and Jake accepted without hesitation. It cost $20,000 for the car and the company paid under $10,000 for the added work, and Jake was willing to pay more than $£30,000 for it. The

1989 Collection Rouge

Special edition XJRS Convertible for the USA

XJR-S introduced in 1988

XJ-S wind tunnel testing.



company toyed with the idea of producing a small batch of 25-30 cars, as dealers were willing to pay a premium price to have the car as a show piece to draw customers into the dealership. The decision was taken not to go ahead with this plan, as it had the potential to cause some technical and legislative problems.

Appleyard Leeds ~ Jaguar XJ-S Sport

In 1980 Appleyard Leeds produced an XJ-S called simply Jaguar XJ-S Sport. It was equipped with fatter white wall edge tyres and alloy wheels, American specification twin headlamps and a fluted bonnet. The cars were finished in a range of two-tone bespoke colours. There was a large JaguarSport transfer together with a logo on the front wing, a chrome strip down the centre of the bonnet and the Jaguar "leaper" on the front.

Guy Salmon ~ Jubilee XJ-S

In 1984 Guy Salmon, the long standing Jaguar Dealer of Thames Ditton, decided to produce an alternative to the standard XJ-S for its more individualistic customers. The promotional literature for this version stated:

"At first sight it may seem presumptuous to try and vary the appearance of one of the world's super cars. Nevertheless, we decided to try it for the very good reason that having sold to many of our clients their second and even third XJ-S, we realized a time came when the most enthusiastic owner, people incidentally who are invariably highly individualistic and successful, needed a change, however reluctant they may be to forgo the effortless performance and handling of the XJ-S.

"For variations on the XJ-S theme, the Jubilee examples are based on standard Jaguar XJ-S HE and 3.6 litre Coupés and Cabriolets. Jubilee specifications can be varied to suit owners requirements. We would emphasize that our modifications are purely cosmetic. The performance and handling are of such a high standard, we are convinced few will want to try and improve it."

After some 12 months of development, trial and error, the Jubilee XJ-S evolved. Exterior features included a miniature Jaguar radiator grille, carefully contoured roof and boot spoiler, fibre-glass front, rear and side skirts, duo colour paint schemes, various wheel options, electric seat if desired, in fact as many options in combination or singly as the buyer desired.

The V12 and 3.6 litre Jubilee XJ-S were produced in 1985 and came in 11 different variations. This model range was available from Guy Salmon until 1987. The car could be produced according to the customer's individual requirements. On some cars the colour scheme was continued on the rubber-faced bumpers, door mirrors and alloy wheels. The headlamps were the US four headlamp type, and new badging was introduced.

Internally, the Jubilee came with restyled seats which could be electric if required and the door trims were in a two-tone colour scheme. The sound proofing was improved, the dashboard was finished in leather and the carpets had a deep pile. The headlining was revised and a wood finish sports steering wheel was fitted. The gearshift lever knob and gaiter surround could also be veneered.

The Coupé could be converted to a Cabriolet and this would cost the customer an additional £16,000 and £40,000 if the customer wanted the gold-plated finish. Guy Salmon also produced a one-off long wheelbase version. The first Jubilee car was produced with 24 carat gold trim along with chrome bumper bar and a pearl white paint finish. All subsequent cars were finished with the conventional chrome and paint styles.

Jaguar ~ XJ-S Long Wheelbase

The styling with the "flying buttresses" had always been a controversial issue, many were unhappy with the style and felt it was the product of the old Jaguar generation. In 1984 shortly after John Egan's arrival, Jim Randle, Director of Product Engineering, investigated the possibility of changing the shape of the XJ-S to get rid of the flying buttresses.

The investigation was not only to look at re-designing the cabin roof to eliminate the flying buttresses but to also look at improving the basic functions of the car, in particularly, increasing the leg-room which would ultimately improve the ride comfort for any rear passengers. The wheelbase was increased to 106in (2692mm) and this gave an additional 4in (102mm) for the passengers. With the additional space in the rear, as well as the leg-room, the other advantage was the increased glass area bringing more light into the rear of the car.

4-Wheel Drive XJ-S (F-Type Test Vehicle)

In January 1989 a number of XJ-S cars were produced as test vehicles for the XJ41 project also known as the F-Type. These XJ-S cars were modified using XJ41 running gear and a number of cars had four-wheel drive, turbocharged engines, AJ6 engines, V12 engines or a combination of the four-wheel drive system with one of the engine variants. The four-wheel

drive system was developed by Ferguson Formula (FF) Developments. Jaguar later took the development and design of a four-wheel drive system in-house and created its own innovative version.

Extensive development work was necessary to ensure the twin Garrett turbocharged version of the AJ6 engine could be accommodated, this meant the engine had to be moved further back in the frame. The engine was positioned upright to allow the front drive shafts to pass through the sump. As a result of the suspension system used by Jaguar, the track had to be extended by 50mm and as a consequence this meant the wheel arches were wider.

The internal project code for this vehicle was XJ71. A twin turbocharged, four-wheel drive XJ-S prototype with an AJ6 engine is now owned by the Jaguar Daimler Heritage Trust (JDHT) but the F-Type was never put into production.

Daimler ~ XJ-S

When Jaguar purchased the Daimler marque in 1960, there was a conscious effort made to have the Daimler range as the high-level specification models which included the saloon and limousine versions. The Daimler XJ-S was conceived during John Egan's reign and was put forward for consideration by the Board to widen the XJ-S audience by offering an exclusive version. The Daimler brand was not well known for producing a model with a sporty feel, however, they had actually produced a few during their history, such as the SP250.

Jim Randle and Geoff Lawson took the opportunity to develop a top-of-the-range XJ-S under the Daimler name. Geoff Lawson with the assistance of designer Fergus Pollock and Park Sheet Metal developed the idea during 1985-86. This concept was directed at the Daimler customers who wanted high performance and refinement in a smaller model than the usual XJ40. The base for this exclusive one-off car was an XJ-S V12 Cabriolet. By remoulding a Cabriolet hard top rear section in metal and doing the same with the targa top panels over the front seats, a solid roof section was made up and painted to match the body. This meant the car had a hard top with removable panels as desired.

The car was taken to Los Angeles for evaluation by American customers who were invited to attend a clinic. It was shown with the XJ-S Coupé, Cabriolet and the concept Convertible, and the Convertible gained the most interest from the customers. The traditional Daimler fluted radiator grille surround was used and some thought it was an improvement on the previously used XJ-S grille. Exterior features were:

- Colour-keyed mirrors
- Chrome window surrounds and electro-plated "B" posts
- Chrome rubbing strips along the side of the car
- Alloy wheels
- Badging consisting of a Daimler script boot badge, a Double Six script on the "B" post and a Daimler "D" on the fluted grille

The interior trim was enhanced to meet the exacting standards of the Daimler brand. Instead of the traditional elm interior, the Daimler XJ-S was trimmed in walnut with boxwood inlays. The proposed interior was never actually fitted to the concept car before the project was shelved in 1986. The single prototype was retained by the styling studio and kept under wraps for a few years and is now owned by the Jaguar Daimler Heritage Trust (JDHT).

Jaguar "Barbie'

Mattel, the toy manufacturer approached Jaguar and asked if they could produce an XJ-S model for Barbie, as they wanted to move away from the previous Mercedes and increase her "street cred" with an elegant sporty new car.

As a marketing ploy, Mattel came up with the idea to have a life-size Barbie XJ-S for promotional purposes and Jaguar were happy to oblige. The Barbie XJ-S was built by the company as a special "one-off" and was not manufactured specifically for Mattel's marketing requirements. It was a pre-production prototype that had been used for various development purposes and, therefore, was the ideal vehicle to turn into the Barbie car. It was never meant to be used and as a result, was never registered for road use. Before it became the Barbie car, this XJ-S was used for a variety of promotional photography shoots. One such shoot took place in the Caribbean and whilst the production team took a lunch break, they returned to find a freak storm had hit and the XJ-S was full of water because they hadn't put the hood up before taking their lunch break. As a result, the car was returned to Jaguar to be totally stripped to get rid of the sea weed. This wasn't the last disaster for this particular XJ-S, it went to another photography session in Yugoslavia where it was stored in a basement that was bombed and Jaguar thought the car had been destroyed – not so. It turned up at Jaguar's Browns Lane site a few months later where it was destined for the scrap heap. However, when Mattel made their request this XJ-S was repainted in Barbie pink. It was the first ever XJ-S produced with a colour-keyed windscreen surround.

The Barbie XJ-S was a V12, left hand drive model finished with standard Magnolia interior trim. The instrument panel was painted to match the upholstery, and it was brought up-to-date to

represent the cars being sold currently from Jaguar dealerships. As well as the instrument panel being updated, the styling of the rear was improved.

The Barbie XJ-S is now owned by the Jaguar Daimler Heritage Trust (JDHT) and is currently being exhibited in the Transport Museum in Coventry.

Jaguar "Police'

Jaguar made a conscious effort to broaden the appeal of its model range by introducing a Police specification XJ-S. The car was a "one-off" 3.6-litre model fitted with a Getrag five-speed manual gearbox. Special Vehicle Operations (SVO) fitted the interior of the car to the specifications identified by the Police forces and finished the car in the contemporary motorway Police patrol colour scheme.

The car was lent to a wide variety of Police forces for evaluation purposes and the drivers gave positive feedback. However, there were two major drawbacks that ultimately prevented the forces from placing any orders; the concerns were the lack of rear passenger space, and of boot space. The XJ-S Police car is owned by the Jaguar Daimler Heritage Trust (JDHT).

Burberry

Jaguar produced two cars for Burberry for use in their promotional campaigns. They were both Cabriolets, one being a six-cylinder and the other a 12-cylinder version. The cars were finished externally in a metallic Antelope paint and the interior trim was in the plaid material that was synonymous with the Burberry brand, including seats, door trims and tonneau covers.

Jaguar "Pace"

The Jaguar Pace Car was built in April 1985 and was one of the first 20 V12 Cabriolets to be made. This car was originally Sage Green and was a fleet car held by company vehicles, until it was given to the TWR racing team. The car was modified and fitted with additional features before being painted in its current two-tone metallic grey livery. This car was used during the 1987–88 racing season and was often called upon to do the lap of honour after a race with the victorious drivers riding along as passengers. The XJ-S Pace Car is owned by the Jaguar Daimler Heritage Trust (JDHT).

Bertone Ascot

The Ascot based on the Jaguar XJ-S was shown at the 1977 Geneva Motor Show. Bertone styling was more often found on cars such as Ferrari, Lamborghini and Maserati. The Ascot was seen as a model before its time, a futuristic and lavishly equipped two-door Coupé that used the standard mechanics of the V12. The Ascot was 230mm (9.1in) shorter, 80mm (3.15in) wider and 60mm (2.4in) lower than the standard XJ-S.

The Bertone press release stated "*Bertone's styling in this case is mostly concerned with elegance, sobriety and overall effectiveness, without straying into anything which might be of impact to the onlookers. The result is a refined harmony, well balanced throughout…*". Bertone chose the XJ-S as the base car as they believed it would add a prestige factor to their design. When questioned, people seemed to embrace the design and they were particularly impressed with the leather and suede interior trim.

Pininfarina Spider

Pininfarina produced the Jaguar XJ-Spider for the 1978 Birmingham Motor Show. Pininfarina stressed that the XJ-Spider was his choice of design and had nothing to do with Jaguar Cars. It was designed by Leonardo Floravanti, Sergio Pininfarina and Renzo Carli and it was the star of the show. People were heard saying "*that this was what the XJ-S should have looked like, an up-to-date E-type*".

It had been produced in only five months based around an ex-development car with a V12 engine. The designer took a hacksaw to the base car and the original body was sawn off to the floor pan, the longitudinal members were reinforced and some strong cross bracing was added behind the seats to provide adequate beam and torsional stiffness. The front and rear were constructed of impact-absorbing polyurethane. The rear of the car was extended giving a larger boot capacity which made it the perfect grand touring car. It had a convertible hood. The car was originally painted British Racing Green but after the show in Birmingham, Pininfarina decided that the dark colour exaggerated the size and changed the colour to Metallic Grey.

To meet the headlamp regulations with the sloping nose, the headlamps were of the pop-up type so that they were at the required height when raised. The interior trim was completely carried out in pigskin, with deep-pile carpet throughout. The centre console met the dashboard to form one complete structure which created a useable armrest. Within this structure was a recess containing the gearshift lever, and switches for the electric windows, lights etc. The

standard steering wheel was replaced with a Momo wheel. A limited production was planned but never carried out. Jaguar's later XJ41 bore some resemblance to the Pininfarina Spider.

XJ-S Cannonball

The "Cannonball" special edition XJ-S was produced in 1980 for Jaguar enthusiasts in Australia and was a very limited edition intended as an alternative to the standard Jaguar model. They were produced by Jaguar Rover Australia and ten made it off the production line before Jaguar found out and had the production stopped.

The first car to receive this treatment was chassis number 2W 1053, in Signal Red with Black interior trim, and was a right-hand drive car originally built in 1975. This car was designated as the Australian legislation car and once the Cannonball programme had finished with it, the car was given to John Goss, winner of the Australian Grand Prix and the Bathurst 1000 for his own racing programme. This car was raced between 1981 and 1986 and is still used by John Goss for promotions.

The Cannonball was mechanically identical to the standard XJ-S, but was modified as follows:

- Repainted in a unique range of colours, often two-tone and metallic
- Cloth inserts on the seats
- Unique steering wheel
- Computer read-out
- A numbered brass plaque on the left hand side of the instrument panel
- New wheels

Lynx Motors International

Lynx Motor International (also known as Lynx Engineering) was one company that took advantage of the XJ-S and created a variety of conversions, these being:

Lynx Spyder - their first major attempt was in 1976 with the XJ-S Spyder. This was the first serious Coupé to Convertible conversion to be properly marketed. The model had strengthened body panels which were welded in the sill and door pillar areas as well as behind the rear seats. It had an electrically operated lined mohair hood and electric rear windows that lowered completely into the rear wings. Lynx managed to retain the rear seats and there was no reduction in headroom. The Spyder was well received and Lynx continued to receive orders

even after Jaguar introduced their own Cabriolet. Only when Jaguar introduced a fully Convertible version did sales for Lynx decline.

The cost of carrying out the conversion on a customer's XJ-S was £6950 plus VAT. Alternatively, Lynx could supply the entire car including conversion, using either a second-hand or new model. Lynx finished the production of the Spyder model after producing 75 in total.

Eventer – this was an estate car launched in 1983. It became a favourite for those who wanted a fast, stylish load-carrying car. Each Eventer was hand-built to order and could be based around the customer's existing car or the customer could request a brand new model complete with conversion. The overall build time was 10-14 weeks and each car was supplied with a complete photographic record of the conversion process.

The conventional XJ-S bodyshell had to be significantly modified to achieve the estate style. The first task was to strip out the interior for modification. To avoid any build damage the car was put into a special jig which kept it taut and straight, whilst the bodywork changes were carried out. The existing roof section, buttresses and top of the rear wings were cut away and the rear bulkhead was moved back 3in (76mm) which gave additional legroom for the rear passengers. The bodyshell was re-painted externally in the original colour scheme unless a change in colour was requested by the customer. A new roof section was fitted which featured air extractors to ensure the air conditioning system operated effectively. Lynx introduced specially designed toughened rear glass windows, as the original windows tended to crack easily. The rear opening tailgate was unique to the Eventer, and in the later models the hinges were totally concealed and the system was self supporting with gas struts, similar to those used on the bonnet. A new fuel tank was fitted and located beneath the loading floor and an externally mounted fuel pump was used which reduced the noise levels. The fuel filler flap was re-positioned on the rear wing which made it very unobtrusive. The battery was located behind a trim panel on one side of the boot, allowing the other side to be used for the washer bottle and a CD autochanger (if fitted). The boot was fully carpeted and if requested, could have the Lynx script embossed into the carpet.

The rear seating and interior trim were modified to meet the requirements of an estate car. Either one or both rear seats could be folded down to increase the luggage capacity for larger items. The rear seats were upholstered to match the interior and the headlining was enhanced to recreate the look of the original Jaguar specification. The changes made to the interior trim were kept to a minimum and any changes were trimmed in the appropriate colour scheme, unless the customer requested a complete change.

The customer could have bespoke extras to finish off the car, these included colour-coded bumpers, a unique front spoiler, American style four-headlamp configuration, rear seat headrests and a rear luggage cover. The whole conversion of the XJ-S into an Eventer added 130 lbs (59kg) to the weight, but this was balanced by better aerodynamics giving an extra 3mph (5km/h) top speed and weight distribution was improved (towards the rear of the car). The last Lynx Eventer produced was number 67 and was based on a limited edition facelift XJR-S 6.0 litre model. This last car had a commemorative plate and certificate issued.

Performer – Lynx also introduced a sportier XJ-S with a choice of three models which had a range of modifications made to engine, brakes and suspension, together with a more aggressive body kit, this range was known as Performer. As with other models, the customer would supply the base car and Lynx would carry out the necessary modifications. These included a uniquely designed fibreglass body kit which had a massive boot spoiler, side skirts and wider alloy wheels. Internally, the seat were revised and covered with Autolux leather and were electrically operated. The alarm system was revised and a Lynx leather covered steering wheel was introduced. The customer could also request the interior veneer to be changed to walnut if desired.

Lister XJ-S

Ron Beatty of Forward Engineering with the assistance of Brian Lister developed a modified a V12 engine and put it into an XJ-S, known as the Lister XJ-S. Brian Lister had previously been responsible for the Lister racing cars. Ron Beatty, John Lewis and Iain Exeter formed a company called BLE Automotive Ltd to promote and sell this car. March 1984 saw the launch of the Lister XJ-S in 3 variants:

Stage 1 was fitted with a 5.3 litre V12 engine, a modified steering rack and body modifications that had been designed by Robin Statham. The body styling consisted of a front air dam, side skirts, rear valance and a rear spoiler.
Stage 2 had a modified 5.7 litre V12 engine, upgraded brakes, suspension and other modified mechanical components, as well as the stage 1 elements.
Stage 3 was identical to the stage 2 car with the exception of a 6.4 litre V12 engine.

There was very little change made to the interior trim, however, a new steering wheel was introduced for these models. The customer could opt to have a customised interior but that would obviously cost more. There was an option to have the chrome work changed to match the body colour, and there was a choice of gold, silver or white wheels. The Lister green and yellow badge was only supplied when the customer chose one of the modified engine variants.

WP Automotive was run by Laurence Pearce (established by his father) and in 1985 they started modifying the XJ-S model range for both road and racing customers. In 1987 Brian Lister granted a licence for WP Automotive to use the Lister name. In 2000 WP Automotive became Lister Jaguar Limited after they bought the name from Brian Lister.

The Lister Mark 3 had a 6.0 litre engine which produced 465bhp and 420 lb/ft of torque. It had upgraded brakes, suspension and transmission. The body was modified, in particular, the wheel arches to accommodate larger three-piece alloy wheels. They continued to develop this style over the next few years, as they produced a 7.0 litre engine with a 496bhp and 500 lb/ft torque. In 1989 they introduced a Convertible version with similar specifications to that of the Coupé and it cost around £73,000 as opposed to the Coupé that cost £55,000.

Whilst still producing the Mark 3, Listers introduced a new model range known as the Lister Le Mans. With existing Mark 3 modifications, it was easily recognised as it had a sloping bonnet, a 7.0 litre engine, wide wheels – 10in by 17in on the front and 13in by 17in on the rear. The car was to be sold for £120,000 which put it firmly in the super car class. A Convertible version was released for sale in 1990 with a price tag of £165,000.

In 1994 Laurence Pearce produced the Lister Storm. A completely new car and not a modified version of an existing model, this continued to use the V12 derived engine, and raced at Le Mans in 1995. There were 180 Lister Jaguars produced and as they were produced to order, specifications varied.

Railton Motor Company

The Railton Motor Company was formed and based in Wixford (Warwickshire). William Towns was an acclaimed stylist who introduced this Jaguar-based sports grand tourer in 1989. He had previously worked on projects such as the Aston Martin Bulldog as well as the Lagonda saloon from the 1980s and produced two models based on the XJ-S, the F28 Fairmile and the F29 Claremont. The F28 Fairmile had a sportier look with wider wheels and tyres, whereas the F29 Claremont had 1930s style rear wheel spats. Both models shared the same bodywork with newly designed front and rear wings as well as bumpers that complemented the re-skinned doors, bonnet and boot lid. Unfortunately, the Railton Motor Company didn't last very long as they went out of business a few years later.

Paul Bailey Design

Paul Bailey Design was based in Bristol during the XJ-S era and one of his car designs was commissioned for the Sultan of Brunei. He took the conventional XJ-S and totally re-designed the bodyshell, the outcome was the XJ-S Monaco which was produced in small numbers for those who could afford them.

The modifications included a race-prepared engine, a total refit of the interior as well as the unique bodyshell design. Paul built a small number of completed cars in-house and then took the decision to produce a kit version for the enthusiastic XJ-S owners to complete the modifications themselves. The XJ-S Monaco was available in fixed head Coupé, Convertible and hard top versions. The body style consisted of a combination between steel and composite panels, a projector headlamp system, spot rear exhaust boxes, alloy wheels and a revised rear window for the Coupé models.

For those customers who were willing to pay, the XJ-S Monaco could be enhanced further by opting for new interior leatherwork, race specification brakes with ventilated grooved discs on aluminium bells, upgraded ECUs, increased torque and even a 7.0 litre V12 engine. Customers could also request a full racing specification car which included a 500bhp engine, five-speed manual gearbox, limited slip differential, traction control and an RAC approved safety cage with lightweight panels and spoilers. The lighter bodyshell was complemented by a new instrument panel moulding, Momo racing seats and harness and alloy pedals. The vast majority of the Paul Bailey Design XJ-S cars were supplied to overseas customers.

Paul Banham Conversions

In 1994 Paul Banham produced an XJ-SS, a bodyshell kit for the XJ-S. For those customers who were not able to construct the car themselves, Banham offered a rapid build facility where customers could supply the basic XJ-S car and they would strip the existing XJ-S bodyshell and fit the tubular structure on which the fibreglass panels would be bolted. The front and rear sections were of a one-piece design with over-sills and new door skins used to complete the restyling. Banham used the existing floor pan, inner wings and bulkhead, and this conversion could even be done on the early pre-HE models. The mechanical aspects of the car were not chnaged and, therefore, the transformation was relatively simple. The traditional XJ-S interior was not touched unless the customer requested alterations. If the customer supplied a Convertible model, the 2+2 seating was retained as the hood would retract almost completely into the bodywork. Banham also supplied a fitted hardtop if the customer preferred it.

Koenig

Koenig Car Tuning was a German car conversion company that expanded into the UK through Creative Cars based in Essex. During 1987, one of the conversions created by Koenig used the Jaguar XJ-S but the shape differed drastically from the original model. The conversions concentrated on a number of body kits that included front and rear spoilers, skirts and an over-sized boot spoiler. The body kits allowed for the car to be fitted with 8½in by 15in front tyres and 11in by 15in rear tyres. The conversion kits also included the option for uprated springs and shock absorbers. The base cost for the conversions worked out at £7500 per car.

Arden Automobilbau

Arden Automobilbau had a number of Jaguar dealers situated throughout Germany and they were responsible for a variety of kits that included exterior body kits, interior re-trims and complete mechanical transformations of the Jaguar model range. The fibre-glass body kits incorporated a front spoiler, side skirts, boot spoiler, rear skirt and a ventilated bonnet. The Arden range was also de-chromed and badged accordingly. Jochen Arden took a particular interest in the XJ-S range where he introduced three upgraded engine sizes, a supercharged 3.6 litre engine, a V12 HE with 350bhp or a 6.0 litre engine producing 430bhp. The customer could choose an uprated automatic gearbox with reinforced drive shafts and an electronic engine speed limiter, as well as a high performance exhaust system, heavy duty braking system, suspension lowering kit and special wheels.

Internally, the customer could choose a sports leather steering wheel, Recaro electric leather seats, wood grained centre console, radio surrounds and polished brass door sill trims. Arden offered an electric sliding sunroof and they produced their own XJ-S Convertible as well as a two-door Coupé without the flying buttresses. When Jaguar introduced their own Convertible model, Arden quickly produced a rear seat conversion with Kevlar hardtops trimmed in cloth and a heated rear glass window.

These are just a sample of conversion companies that have introduced variants of the XJ-S.

7. JAGUAR IN COMPETITION

Group 44 ~ American Trans-Am

Group 44 Inc., founded by Bob Tullius and Brian Fuerstenau in the 1960s had been racing the Jaguar E-type with great success, however, with the demise of the E-types in production it was necessary for Tullius to find another potential marque. British Leyland, owners of Jaguar during this period were not interested in running a racing team of its own, but were keen for Group 44 to keep the brands such as MG and Triumph alive in the USA.

In February 1976 an XJ-S (chassis number 2W 51120) was received into the Group 44 Herndon workshop and within a few days the road car was stripped by Lawton Foushee of its equipment. 1976 was a year that also brought about change in the USA racing environment with the SCCA introducing the Trans-Am championships for drivers and manufacturers. The championship took the form of two categories, the first being for cars such as Porsche 911S, Chevrolet Corvette and the Jaguar XJ-S, the second being for cars like the Porsche Turbo and Chevrolet Monzas.

In the category that allowed the involvement of the Jaguar, teams had the ability to make certain modifications to the cars. This would include the use of 10in wide wheel rims, extended wheel arches, as well as alterations to the suspension and braking systems. This category also gave the teams a free hand over the engine to be used. Brian Fuerstenau, himself a champion in the SCCA racing forum, took responsibility for the V12 engine to be used and he avoided modifying the heart of the engine. The changes that were made consisted of scrapping the fuel injectors in favour of six carburettors and converting the to dry sump lubrication. This eliminated the problems with the oil surge.

Previously, the E-types had driven only short distance races, this was going to change for the XJ-S, so the mechanical parts of the XJ-S needed to be reliable for the proposed long distances. The production of this race-capable XJ-S engine fell to Forward Engineering run by Ron Beatty who in his infinite wisdom had already begun tuning the V12 engine as soon as it had been released onto the market. The engine in question had a 475bhp at 7600rpm with a 0-100mph (0-161km/h) time of just 10.3 seconds (recorded by *Road & Track* magazine).

Bob Tullius and the XJ-S had their debut in Mosport, Ontario on 22 August 1976, qualifying first and initially leading the pack until a problem with the oil temperature forced him to reduce speed and settle for fourth place in this category and tenth overall. The XJ-S was on its way up, Bob Tullius took the car to the Lime Rock meeting in Connecticut and was awarded best

practice time and followed this with a win in the SCCA national race. With this win and his previous wins in the E-types, Bob Tullius was eligible to return to Road Atlanta. The XJ-S took pole position but he made an error on the first corner pushing him back to twelfth place. Regaining his earlier performance he managed to pull back until a carburettor leak onto the exhaust system led to an under-bonnet fire and the end of his race. The last race of the season was the IMSA Camel GT race at Daytona and unfortunately, Bob Tullius failed once again after the cockpit overheated and he had to withdraw after running fourth throughout the race.

Even though Group 44 had failed to secure a racing foothold with the XJ-S at this point, President of Jaguar Cars Inc., Michael H Dale, commented:

"Group 44 has amply demonstrated its professional racing capability but we could not make a commitment until we had a car which would be competitive in a 'pro' series ... the car can be a winner, and we expect its success to benefit all our cars in terms of sales promotion. That, of course, is why we are in racing."

For the 1977 season, the SCCA permitted category 1 racing manufacturers/owners to modify their cars to a greater extent. The rules were similar to those of the B-production series races with the added ability to reduce the body weight considerably and make dramatic modifications to the body styling. The implications of which were to improve the aerodynamics and accommodate wider rimmed wheels. During the winter months, Brian Fuerstenau carried out an engine development programme where the result was a power output exceeding 500bhp and Lawton Foushee engineered a styling programme that meant a complete rebuild of the car.

The advertising campaign in America at the time was titled "Thundering Elegance" and it depicted two XJ-S cars, one was the Trans-Am XJ-S that was being raced by Bob Tullius and the other was a standard XJ-S. The 1977 Trans-Am racing season started for Group 44 and they used chassis number 2W 51120. With five victories in ten races, Bob Tullius won the Trans-Am category 1 championship but had insufficient points to clinch the manufacturer's title for Jaguar.

For the 1978 season, a lightweight XJ-S was built to the minimum weight limit of 2860lbs (1300kg). This was done to ensure the team remained competitive if not ahead of their competitors. This obviously had some bearing on the performance of the cars, as the team achieved seven first place positions in the initial ten races. The other three races yielded one second and one third place which was still impressive. The first race was the only race that resulted in a failure for the team, the car sustained some damage after an accident and the team only managed a ninth place. Following the final race in Mexico, Bob Tullius commented

"Of all our victories this has to be the most memorable, to achieve it with the Jaguar name behind us is the dream of a lifetime."

The team were instructed to concentrate their efforts on the TR8 and not the XJ-S during the 1979 season, but in 1981 they returned to the Trans-Am series using Jaguars XJ-S following an announcement by Graham Whitehead on 17 March. The Trans-Am rules had once again changed, permitting teams completely to change the structure of the cars. Lawton Foushee built a sturdy tubular frame to which lightweight body panels could be attached and the 525bhp engine was positioned 7½in (191mm) further back than previously. Following rumours that Group 44 would be wound up, Foushee and Tullius were the only original full-time members of staff left, and new blood was recruited to take up the challenge of the Trans-Am racing season.

The 1981 CRC Chemicals Trans-Am Championship was based around nine events and the season started on 17 May 1981. The new XJ-S attended every race and instead of "British Leyland" across the top of the windscreen, it now had "Jaguar" proudly displayed. Although 1981 was not as rewarding as 1978, Bob Tullius won three races. Over the three years that Bob Tullius had driven Jaguars XJ-S cars, he won 15 out of the 29 races that he competed in.

Sir William Lyons awarded Bob Tullius with the first International Jaguar Trophy, an award that was conceived by John Steen of Atlanta and a group of Jaguar's dedicated enthusiasts to honour outstanding contributions towards the evolution or the success of the Jaguar brand. Although this award was conceived outside Jaguar, it was later adopted by the company at a time when the employees and enthusiasts needed the morale boost.

The 1981 Trans-Am race specification XJ-S was to be raced one more time when Bob Tullius decided to enter it into the 24-hour race at Daytona, where his co-drivers would be Bill Adams and Gordon Smiley. This race was simply to test the reliability of the V12 engine over a 24-hour period, which is sometimes difficult to simulate on an engine dynamometer. The engine ran perfectly well. Bob Tullius commented: *"Then, when we got home, we took it out of the car and used it as a mule on the dyno for 10 hours, and it was still perfect"*, he also stated that *"We attained a speed of 194.46mph at Daytona – on speed tyres!"*

The XJ-S may have raced for one more season but for the untimely death of Gordon Smiley at Indianapolis on the 15 May 1982, following an accident on the first day of the qualifying session. Gordon Smiley had secured a year's sponsorship with Intermedics Inc., which would have enabled him to purchase the car from Group 44 and race under his own name. The car was retired never to race again.

Cannonball Run

The Cannonball Run was a "race" that was less well publicised. The event commemorated the great American marathon driver, E.G "Cannonball" Baker whose set a transcontinental record in 1933 at an average speed of 60mph (97km/h) in a Graham Eight. Such races were almost certainly illegal then, but in the age of safety and emission laws, they were positively criminal.

This did not deter 46 starters from leaving New York on the 1979 run, with 42 of them making it to Los Angeles. The winning car was an XJ-S whose drivers Dave Heinz and Dave Yarborough were lucky enough to dodge the police cars and completed the race in just 32 hours and 51 minutes which was an average of 87.25mph (140.4km/h).

Tom Walkinshaw (TWR Racing) ~ UK

In Europe, Jaguar cars were not being raced except in historic events but the engines were being used in speed boat racing. Jaguar's main concern and priority at the time was the survival of the company. Their destiny lay in the hands of Sir Michael Edwardes and racing was not foremost in his mind, or in the minds of those around him. Although not directly responsible, they were still trying to distance themselves from the costly BL Broadspeed fiasco which reflected badly on the marque at the time.

Bob Knight wanted to understand more about current motor racing, and in May 1976 Peter Gebbels had produced a Group 5 XJ-S proposal. During the autumn of that year, Malcolm Oliver, Development Engineer and later XJ40 Project Manager, compiled a data sheet on the aerodynamics, and arranged a series of wind tunnel testing sessions at MIRA using four different wing configurations on one of the launch cars, registered JVC 482 N.

Throughout the following year, Jaguar investigated a number of aerodynamic issues concerning the XJ-S. They found that the main problem was excessive front end lift, which they tried to reduce without success. Another problem was the fluid operating temperatures, which had been one of the issues Broadspeed identified on the XJ12C. Abbey Panels became involved with major modifications to the body structure which included a complete rebuild of one of the cars on 20 July 1977 with specific instructions from Malcolm Oliver *"For the purposes of this assessment, it has been assumed that the vehicle will be built to as competitive a standard as possible without the use of 'exotic' materials"*.

Various studies of specifications were done, and the power-to-weight ratio of competitive race cars was analysed. This led Jaguar to speculate that a Group 5 XJ-S should not weigh more

than 2541 lb (1155kg). However, the XJ-S racing project was terminated after numerous hours were spent, including drawing office time, component drawing and fabrication. The termination of the project coincided with the cancellation of BL's Broadspeed racing programme and Bob Knight's promotion to Managing Director of Jaguar Cars. Bob Knight remained with Jaguar for two years following his appointment, and retired as John Egan became Chairman. All racing activities and studies ceased at this point, the company had to look at its survival as a maker of road cars and could not spend funds on projects which did not guarantee a return that would secure the livelihoods of the workers, shareholders and ultimately supporting the customers.

Tom Walkinshaw was born just outside of Edinburgh and raced an MG Midget in 1966 aged 19. He progressed in 1968 to a Lotus 51 which had been prepared by Stan Sproat, who had previously been responsible for the preparation of the Ecurie Ecosse D-Type Jaguars. He went on to win the Scottish championship in 1969 with a Hawke, after which he moved to Hertford working for Hawke (created and run by David Lazenby). In 1970, he progressed to Formula 3 under March Engineering and signed a test drive contract, however, this was hampered when he broke his leg. He found that the single seater races didn't yield the success he wanted and eventually moved to Ford after they offered him the opportunities he craved.

Walkinshaw continued to progress in racing, and at the same time started to build his own business. In 1978 TWR moved to Kidlington near Oxford, and in 1981 Tom Walkinshaw approached Jaguar with a proposal for them to join forces for the European Touring Car Championship for the 1982 season. The new FIA Group A regulations meant that the Jaguar XJ-S would be suitable for this championship, and the resemblance to the road cars from which they derived would mean a potential sales opportunity to enthusiasts.

There were a number of changes to the regulations which included wheel arches and fuel tank capacity. The complete wheel and tyre assembly had to be covered by the original bodywork. This put an end to the over-sized wheel arch extensions that had become the "norm" in this category. The change to the fuel tank capacity was more of a concern, especially for those teams running cars that exceeded a 2½-litre capacity. Races were run either as 500km or a 3½-hour events and it became apparent that a 5.3-litre Jaguar would have to stop to re-fuel as fuel capacity was limited to 120 litres (26.4 gallons).

There were no restrictions on the transmission and braking systems. In the early days, TWR chose to use Jaguar's tough four-speed gearbox. They then opted for an AP clutch and a five-speed Getrag gearbox. AP disc brakes with four-pot callipers were used. Modifications to the engine were permitted, but there were restrictions on valve lift, and the fuel feed had to be the "original system" which meant Lucas fuel injection. During the early collaboration, Tom

Walkinshaw worked closely with Ron Beaty of Forward Engineering and used their engine testing facilities, until TWR could establish their own. The rules governing the Group A cars could have been viewed by some as restrictive, however this wasn't the case for TWR and the Jaguar XJ-S. The minimum weight limit of 1400kg (3084 lb) and homologation requirements may have been deemed unrealistic but were achievable. The interior trim was reduced to reach the minimum weight limit. For homologation the annual production figure had to be at least 5000 cars, which in fact was not achieved during the early days and was only exceeded in 1984, TWR's final season in European racing. The German opposition grumbled but Jaguar and TWR got away with it...

It wasn't just a case of TWR choosing a car to race, there was still the need to get the manufacturer 100 per cent behind the project. Although John Egan knew of Tom Walkinshaw's past victories, he was cautious when it came to putting the name of Jaguar Cars to something that might fall at the first hurdle. John Egan agreed to provide the Jaguar facilities and technical assistance, but Jaguar kept at arm's length until TWR proved themselves. Tom Walkinshaw proved a savvy businessman when he obtained a lucrative sponsorship deal with the Motul Oil company. He became the UK distributor for the products of this French oil company and although very little was sold in the UK, this was a European championship and the promotional opportunities for sales across the EU was immense. Jaguar remained a "sleeping partner" and continued to supply cars and components for this venture.

1982 racing season

In March 1982 TWR Racing's first race took place at Monza, with Walkinshaw and Nicholson on the front row of the grid together with the reigning champions Kelleners and Grano. The TWR car led the way until Walkinshaw mis-judged a chicane and damaged the underside of the car which ultimately led to his early retirement. Later in March, Walkinshaw and Nicholson raced at Vallelunga where they finished an impressive third.

April 1982 saw them at Zolder where Walkinshaw won first time for TWR although it was not an ETCC race. In the same month they didn't finish the UK race at Donnington as they damaged the radiator. Mugello in Italy was the home of round five in May, Walkinshaw took pole position but unfortunately, the car had to retire early from the race due to a valve spring failure.

June 1982 saw Walkinshaw and Nicholson win for the first time at Brno. They won despite using slick tyres during a damp spell, and they also managed to overcome a throttle response concern. At Zeltweg, Walkinshaw raced alone and managed an impressive second place finish.

Despite BMW racing in their home country with a specially prepared 528i car, Walkinshaw and Nicholson took the coveted first place at Nürburgring in July 1982. Unfortunately, the race in Spa did not go the way of the previous rounds, although for the first time TWR entered two cars with an improved Getrag five-speed gearbox. The Dunlop tyres did not suit the road conditions, so the team decided to change to Pirelli tyres on the Dieudonne, Allam and Lovett car, but both cars failed to finish the race due to night-time crashes.

In September 1982 the team was back in the UK, in the TT race at the Silverstone circuit. Again, TWR Racing entered two cars and it paid off for them, as they came first and second giving Jaguar their first TT victory since 1951. As they had done at Silverstone, TWR Racing took the front row of the grid to start the race at Zolder, and again finished first and second in this last race of their first season.

With four victories, the TWR team finished in third place in the championship. The first season's results were something to be proud of, as the only retirement that caused concern was at Mugello where the valve springs failed and caused a build up of heat in the exhaust passages. Although the Jaguar XJ-S raced against the BMW 528i, which was a worthy opponent in Group A, in the opinion of road car customers, the 528i was not seen as a rival for the XJ-S. By contrast, the BMW 635 CSi Coupé was a possible adversary, both on the race track and in the showroom. Because of the low production figures at the time, the BMW 635 at first did not meet the homologation requirements. This was about to change as in the autumn of 1982, Dieter Stappert announced that the sales had increased sufficiently enough for them to introduce this model to the European Touring Car Championship in time for the 1983 season.

With BMW officially taking an active role in this form of racing, the comparison between the two brands couldn't be clearer. BMW produced bodies and supplied them to a variety of specialists to get them race prepared in time for the season, whereas TWR was unable to claim an official Jaguar connection, until Jaguar were confident with their performance. 1983 was to be the year that changed the dynamics of the relationship between Jaguar and TWR. Neil Johnson who was a former BL Executive announced the involvement of the company and he was ultimately responsible for the budget. John Egan, Neil Johnson, Jim Randle, David Boole and Tom Walkinshaw held a press conference at the Aldwych Waldorf Hotel where John Egan commented:

"We watched and encouraged Tom Walkinshaw and his team last year when they scored four ETC victories in their first season with the XJ-S. This year they will receive our formal support, Jaguar's image owes much to the racing programme it undertook in the fifties and early sixties. In those days racing cars were directly related to the subsequent generation of road cars.

"We believe that our ETC involvement will assist in our plans for sales growth in Continental Europe, particularly Germany which is the home of our major competitors. One of these, BMW, has dominated ETC racing in recent years and we know they have been working hard throughout the winter to prepare new cars for this season. Our two Jaguars will be trying hard to win!

"Whatever the outcome I am sure that this year's ETC races will provide more spectacular interest and will be a shot in the arm for European motor sport."

The livery of the 1983 XJ-S changed from the previously used black body to white and dark green. The newly designed body structure was viewed by BMW people as controversial and even illegal, the cooling duct was a structure that was introduced to aid the rear axle oil coolers. TWR ignored the comments being made and kept the unsightly ducts for the entire season.

With the official involvement of the Jaguar company, Tom Walkinshaw found himself having to attend press and other events throughout the season. This was rather alien to him, but the financial support and technical assistance from the factory dictated that he would have to get used to this as a compulsory involvement.

1983 racing season

The 1983 season started at Monza in March, unfortunately, Calderari's debut race for the team ended in disappointment when retired with engine failure, which was blamed on poor quality fuel being used. It looked like his misfortune would spread to the other car when a securing pin on the bonnet came out, and the bonnet was flapping. The pit crew frantically sought some sticking tape to secure the bonnet and three hours later, they found they'd only lost first place by three-half seconds to finish second.

In April 1983, Vallelunga saw TWR Racing on the grid in second and third place. Walkinshaw led the pack when he crashed into the barrier, after one of his wheels sheared off at the bolts. Despite damaging his hand on the steering wheel, Walkinshaw managed to get the car back to the pits. Calderari took over once the wheel had been replaced and the slight body damage repaired. Despite his best efforts, Calderari was hit from behind and spun out of the race, into the undergrowth. When Dieudonne in the second car came in for a pit stop, Walkinshaw took his place to bring this car into third place but unfortunately, he couldn't claim the championship points because he'd switched cars.

Donnington saw the team rack up another win in May. The team worked tactically together, Walkinshaw took the decision to use the softer Dunlop tyres which were not wholly recommended in the rain but it meant that he could leave the rest behind. In the meantime, Fitzpatrick used the more conventional harder compound tyres, to hold back the pack in order for Walkinshaw to get away. A potential disaster was averted after the pits fuelled Walkinshaw's car incorrectly, they'd not put enough fuel in for Nicholson and this meant he ran out of fuel, luckily within distance of the pits where team members were able to push him back – they finished fifth. Meanwhile, things were improving for the other car, Brundle had an exceptional debut race, although he'd practiced in the XJ-S he hadn't actually raced one before. Rain was falling but Brundle had the right tyres for the job, he worked his way up the field and crossed the finish line in first place, 20 seconds ahead of the next car.

May was a busy month for the team, Walkinshaw and Nicholson scored their first points when they romped home in first place at Pergusa in Italy. Unfortunately, Calderari had a poor race when he retired with loss of oil pressure. At Mugello one week later, Walkinshaw and Fitzpatrick had to be content with a third place, after an additional pit stop for fuel was required due to their car running rich. Calderari and Nicholson were forced to retire with a broken pulley tensioner which unfortunately was a recurring problem.

In June the team was at Brno where Walkinshaw finished comfortably in first place, putting him one point ahead of his nearest rival, Quester. Calderari and Dieudonne were looking to finish in second place when they were overtaken by four BMWs, after they suffered a rear-end breakage which almost made their car unsteerable. Both cars succeeded at Zeltweg with another impressive one-two win. Walkinshaw and Brundle came in first even after there was a protest about Brundle's commitment eligibility as Brundle had moved from Formula 1.

The race at the Nürburgring did not go their way, both cars failed to finish. Walkinshaw's car suffered an ignition fault which resulted in his cockpit filling up with smoke, the second car retired due to a clutch failure. Matters improved slightly at Salzburg in July, when Walkinshaw and Nicholson came first. Their car went through two extremely fast pit stops which drew applause from the watching crowd. They took the decision to race just one car at Salzburg, leaving the second in the Kidlington workshop to rebuild it for the forthcoming race at Spa.

The last three rounds were not going to be as successful for the team, Percy was joined the team at Spa and followed Walkinshaw in the opening laps. Walkinshaw was leading when he suffered a puncture and Percy had to come into the pits when he was overcome by the heat. Calderari took over and he, Percy and Brundle raced through the night, when Brundle experienced a massive engine failure and was forced to pull out of the race. Walkinshaw and

Dieudonne continued to race but unfortunately had to retire due to a differential failure, after having lost time while the prop shaft was being fixed.

September saw them back on home turf at Silverstone, the rain started and Dieudonne had to come straight into the pits following the warm-up lap due to a belt tensioner failure, which cost him two laps. Dunlop couldn't produce a tyre that suited the conditions, and although Nicholson initially led it didn't last for long, as he spun out at the chicane and into the fence. Walkinshaw took over from Dieudonne and despite his attempts to move up the field, he only managed to finish in ninth place.

If Walkinshaw could finish fourth in the last race he'd be the champion. Percy led the race until he was sidelined by clutch failure due to a gearbox problem. Brundle was experiencing problems with the gearshift change which lost him a couple of laps, so between Brundle and Walkinshaw they could only manage an eighth place. The 1983 championship ended with Jaguar finishing second with five victories, while in the non-championship race at Hockenheim Calderari had finished first.

During a test session at the Nürburgring in Germany, Neil Johnson announced that Jaguar were looking into the prospects of establishing a new importer in Germany, to be known as Jaguar Deutschland GmbH. The 1984 season loomed and the XJ-S cockpit underwent a number of changes that were primarily for comfort and convenience, rather than for technical advancement. The wheel size increased to 17in with a 13in rim which was permitted by the regulations. The colour scheme remained white and green, however, the dominant colour was now green instead of the white as on previous models, and featured two main sponsors – Jaguar Cars and Motul Oil (although Motul was taking a back-seat to the manufacturer in advertising space). For this season, Tom Walkinshaw was joined in partnership by Hans Heyer who had previously raced with the BMW team. Win Percy became a regular driver for the Jaguar team and was partnered with Chuck Nicholson.

1984 racing season

NEW TEXT STARTS HERE

TWR Racing entered three cars in most races for this season which started at Monza in April. Brundle and Calderari suffered with a damaged radiator and lost three laps, to finish in thirteenth place. Percy and Nicholson lost a couple of belts and because they took so long to change, the car had to be withdrawn. Walkinshaw had every intention of winning this first race of the season after losing previous seasons. Heyer started and he led for a while when he had

to come in to the pits for a second scheduled stop. Walkinshaw took over with 12 laps to go and he ploughed his way through the field to achieve his goal and win the race.

The Vallelunga race was held in extremely wet conditions and the correct tyre choice was crucial. Walkinshaw started on intermediates, and was quickly passed by Percy who was on wet tyres. Calderari spun into the sand and lost three laps in the early stages of the race, the poor weather conditions meant that the cars were pitting earlier and more often, sometimes for purely speculative concerns. Percy looked as though he was holding his own against Stuck when his battery failed due to a missing belt. Walkinshaw and Heyer stayed on course and finished third, while Calderari and Nicholson could only muster an eighth place.

Things improved slightly for the team at Donington, but they did suffer some knocks due to wheel breakages and brake troubles which hampered their progress. Percy teamed up with Nicholson and they took first place, Calderari and Schlesser came fifth place, leaving Walkinshaw and Heyer back in ninth place. The race at Pergusa in May would be the best yet for the three-car team, they finished first (Calderari and Brundle), second (Walkinshaw and Heyer) and third (Percy and Nicolson) even though swarms of insects were present.

June saw them at Brno, despite Walkinshaw and Heyer having a problem with a brake caliper it did not prevent them from winning. Percy completed almost a full lap on a punctured tyre and was full of praise for the performance of the Dunlop Dunloc bead system; he still managed to finish second. Calderari finished third instead of second due to a broken gearshift lever.

At the Österreichring, Sears was out of luck when the engine lost oil pressure and he was forced to retire. Walkinshaw and Heyer continued their earlier success with another first place. Percy and Nicholson made it a double for the team with another second place.

July saw another double for the team at Salzburg, but it wasn't going to be Walkinshaw and Heyer's day, they failed to finish due to an intermittent misfire. This led to an explosive gearbox failure where parts were spread over the track. Percy and Nicholson came in first and Calderari and Sears finished second.

At Nürburgring in front of John Egan and a party of company personnel, the team managed to line up on the grid in first, second and third place. Heyer drove first but had to pit after only three laps due to a thrown belt, Sears took the vehicle out only to return a few laps later with a water leak, needless to say, they had to retire. Percy handed over to Calderari who managed to reach second place, an electrical storm put a stop to that when he found it difficult to stay out of

the way of the vehicle behind him and he had to retire. Heyer transferred to the third car forfeiting any championship points. Walkinshaw in the third car managed to finish fifth.

For the Spa 24-hour race, Walkinshaw decided to run only two cars, one for himself, Heyer and Percy and one for Calderari, Sears and Pilette. The circuit dried but only for a short period as the rain fell soaking the circuit, a lapse in concentration by Calderari meant he hit a barrier and although he managed to get back to the pits, the damage was too extensive and they had to retire. The pace car was out four times during the race. but a fine day was forecast and Walkinshaw took advantage of this. They had a three-lap lead when they suffered a puncture, however, this didn't stop them and they brought the car home in first place, Jaguar's first win in a 24-hour race since the 1957 Le Mans.

In September, the team was home, racing at Silverstone. The three cars pulled away quickly and their first scheduled stops were timely. They climbed their way through the field to the three leading positions by the half-way point. Unfortunately, their lead didn't last after the heavens opened. Heyer took a decision not to pit as he deemed it unsafe to do so, and Nicholson tried to contact the pits to say the conditions had deteriorated but got no answer, so, he stayed out. Sears did manage to reach his pit but was waved away. Nicholson spun at Woodcote and that was the end of his race. Walkinshaw lost ground when the pace car cruised around the circuit, giving BMW the edge thanks to a pit stop that allowed them to change to wet tyres and take on fuel. Sears should have won but for the decision made in the pits not to let him stop earlier.

In Zolder the heavens opened once again and this led to a number of nasty accidents. Percy had to retire when his car overheated, Walkinshaw and Heyer managed to finish third, Percy transferred to drive with Calderari and they finished in fourth place.

October saw the last race of the season at Mugello. Walkinshaw and Heyer had to retire due to suspension damage, Percy and Brundle retired following a puncture, this was after they led in first and second place once again. Brundle transferred to race with Calderari and Sears and they managed to finish fifth. In the championship Tom Walkinshaw was first overall with Hans Heyer second. Jaguar was first in the team championship with seven victories overall.

After the end of the European race season, the team took the decision to enter their car in the 95 lap race at Macau in November 1984, competing against their bitter rivals BMW. The XJ-S cars were re-painted to include their major sponsors for this race, John Player Special (JPS), the only time the cars were used to advertise the tobacco industry. In this race the reputation of Jaguar and John Player was maintained, as the cars finished first and second.

Touring car racing was important in Australia and a Group A category was included in the 1000km race at Bathurst, where John Goss had driven XJ-S cars since 1980 without success. Walkinshaw had supplied a couple of works Rover Vitesses to the Australian importer, and now teamed up with Goss for the Bathurst race. In practice for the Bathurst race Walkinshaw reached a speed of 170mph (273.6km/h) on the Conrod Straight, with a best lap of 2min 16.09sec, qualifying seventh. On race day, he let the clutch out to find the car standing still, although he raised his arm to signal there was a problem there were too many cars clamouring to move that it was inevitable that one of them would hit him – and unfortunately, John Tesoriero in his Camaro did. Walkinshaw vowed that he'd be back to race again in Australia.

The TWR team returned to Australia for the 1985 Bathurst race where three XJ-S cars were entered, and Walkinshaw secured pole position for himself and co-driver Percy, while John Goss was partnered by Armin Hahne and Jeff Allam by Ron Dickson. The Allam car soon dropped out, and while Walkinshaw led the early stages he had oil cooler problems and dropped down the field, while Goss and Hahne took the lead. They were the eventual winners, with Walkinshaw and Percy third after a BMW.

However, it was apparent that the XJ-S was coming to the end of its racing career. The relationship between TWR and Jaguar Cars on the other hand was intensifying on two fronts, not only were they about to introduce TWR JaguarSport, a company that would offer specially developed Jaguar road cars for sale to customers, but the TWR Jaguar team also entered the World Sportscar Championship for the first time with the XJR-6 in 1985.

TWR converted two cars back to right-hand drive and shipped them to Japan for the five hour Group A race at Fuji on 9 November 1986. TWR teamed up with Dunlop to check out the circuit a few weeks before the race. Unfortunately, a loss in oil pressure for one car and a problem with the differential on the other meant that the XJ-S had to bow out on this occasion.

XJ-S was given a short reprieve when Walkinshaw signed a deal with Strathmore Publishing and Investment Group based in New Zealand. The 1986-87 season would be the last for the XJ-S in its current form, as changes to homologation would push this car out of the running for the Touring Car Championships. The Group A organisers in New Zealand decided to extend the current homologation for one month to allow the Jaguar XJ-S to race once more to appease the marque enthusiasts. Two cars were entered in the Wellington race in January 1987 but Hahne crashed and the other car retired. The final race for the model was to be at Pukekohe on 1 February 1987 where Win Percy and Armin Hahne came second and this took the XJ-S to 20 victories in its short racing career.

APPENDIX 1 ~ 21 YEARS OF XJ-S COLOUR SCHEMES

1975: 10 paint colours

Exterior paint colours	Leather trim colours
British Racing Green	Biscuit
Carriage Brown	Black (extra cost option)
Dark Blue	Cinnamon
Fern Grey	Dark Blue
Greensand	Moss Green
Old English White	Olive
Pale Primrose (disc.)	Russet
Regency Red	
Signal Red	
Squadron Blue	

1976: 12 paint colours

Exterior paint colours	Leather trim colours	Cloth trim colours
British Racing Green	Biscuit	Ebony (new)
Carriage Brown	Black (extra cost option)	Garnet (new)
Dark Blue	Cinnamon	Jade (new)
Fern Grey (disc.)	Dark Blue	Navy (new)
Greensand (disc.)	Moss Green (disc.)	Sand (new)
Juniper Green (new)	Olive (disc.)	
Moroccan Bronze (new)	Russet	
Old English White		
Regency Red		
Signal Red		
Squadron Blue		
Yellow Gold (new)		

1977: 11 paint colours

Exterior paint colours	Leather trim colours	Cloth trim colours
British Racing Green	Biscuit	Ebony
Carriage Brown	Black (extra cost option, disc.)	Garnet
Dark Blue	Cinnamon	Jade
Juniper Green	Dark Blue	Navy
Moroccan Bronze	Russet	Sand
Old English White (disc.)		
Regency Red		
Signal Red (disc.)		
Silver Frost (met, new)		
Squadron Blue		
Yellow Gold (disc.)		

1978: 12 paint colours

Exterior paint colours	Leather trim colours	Cloth trim colours
British Racing Green (disc.)	Biscuit	Ebony
Carriage Brown (disc.)	Cinnamon	Garnet
Cotswold Yellow (new)	Dark Blue	Jade
Damson Red (new)	Russet	Navy
Dark Blue (disc.)		Sand
Juniper Green (disc.)		
Moroccan Bronze (disc.)		
Racing Green (met) (new)		
Regency Red (disc.)		
Silver Frost (met)		
Squadron Blue (disc.)		
Tudor White (new)		

1979: 9 paint colours

Exterior paint colours	Leather trim colours	Cloth trim colours
Cobalt Blue (met, new)	Biscuit	Ebony
Cotswold Yellow	Black (re-intro.)	Fawn (new)
Chestnut Brown (met, new)	Blue-grey (new)	Garnet
Damson Red	Chamois (new)	Jade
Quartz Blue (met, new)	Cinnamon	Navy
Racing Green (met)	Dark Blue	Sand
Sebring Red (extra cost option, new)	Deep Olive (new)	
Silver Frost (met, disc.)	Maroon (new)	
Tudor White	Russet	
	Tan (new)	

1980: 9 paint colours

Exterior paint colours	Leather trim colours	Cloth trim colours
Cobalt Blue (met)	Biscuit	Ebony
Cotswold Yellow (disc.)	Black	Fawn
Chestnut Brown (met)	Blue-grey (disc.)	Garnet (disc.)
Damson Red (disc.)	Chamois (disc.)	Jade (disc.)
Quartz Blue (met, disc.)	Cinnamon (disc.)	Navy (disc.)
Racing Green (met)	Dark Blue (disc.)	Sand (disc.)
Rhodium Silver (met, new)	Deep Olive (disc.)	
Sebring Red (extra cost option)	Maroon (disc.)	
Tudor White	Russet (disc.)	
	Tan (disc.)	

1981: 11 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Chestnut Brown (met)	Pale Bronze	Biscuit	Copper (new)
Cobalt Blue (met)	Pale Bronze	Black	Ebony
Coronet Gold (met, new)	Pale Bronze	County Tan (new)	Fawn
Garnet (new, disc., met)	Pale Bronze		
Mineral Blue (new)	Mid Silver		
Racing Green (met)	Mid Silver		
Rhodium Silver (met)	Mid Silver		
Sable Black (met, new)	Pale Bronze		
Sapphire Blue (met, new)	Mid Silver		
Sebring Red	Mid Silver		
Tudor White	Pale Bronze		

1982: 12 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Chestnut Brown (met)	Pale Bronze	Biscuit	Copper (disc.)
Claret (met) (new)	Pale Bronze	Black	Ebony (disc.)
Cobalt Blue (met)	Pale Bronze	County Tan	Fawn (disc.)
Coronet Gold (met)	Pale Bronze		
Mineral Blue (disc.)	Mid Silver		
Portland Beige (new)	Pale Bronze		
Racing Green (met)	Mid Silver		
Rhodium Silver (met)	Mid Silver		
Sable Black (met)	Pale Bronze		
Sapphire Blue (met)	Mid Silver		
Sebring Red	Mid Silver		
Tudor White	Pale Bronze		

Cars built between 5 January 1981 and 27 March 1981 used 1980 model year colours except for Quartz Blue and Cotswold Yellow.

1983: 14 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Black (new)	Gunmetal	Biscuit	Amber (new, disc.)
Chestnut Brown (met, disc.)	Gold Leaf	Black	Beige (new)
Claret (met)	Gold Leaf	County Tan (disc.)	Graphite (new)
Cobalt Blue (met)	Gunmetal		Fleet Blue (new)
Coronet Gold (met)	Oyster		
Grosvenor Brown (new)	Gold Leaf		
Indigo Blue (new, disc.)	Gold Leaf		
Portland Beige (disc.)	Gold Leaf		
Racing Green (met)	Gunmetal		
Rhodium Silver (met)	Gunmetal		
Sable Black (met, disc.)	Gunmetal		
Sapphire Blue (met)	Oyster		
Sebring Red	Gold Leaf		
Tudor White	Gold Leaf		

1984: 16 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Antelope Gold (met, new)	Oyster	Biscuit	Beige
Black	Gunmetal	Black	Fleet Blue
Cirrus Grey (new)	Oyster	Doeskin (new)	Graphite
Clarendon Blue (new)	Gold Leaf	Isis Blue (new)	
Claret (met)	Gold Leaf	Mulberry (new)	
Cobalt Blue (met)	Gunmetal	Saville Grey (new)	
Coronet Gold (met, disc.)	Oyster		
Cranberry Red (met, new)	Oyster		
Grosvenor Brown	Gold Leaf		
Racing Green (met)	Gunmetal		
Regent Grey (met, new)	Gunmetal		
Rhodium Silver (met)	Gunmetal		
Sage Green (met, new)	Gunmetal		
Sapphire Blue (met)	Oyster		
Sebring Red	Gold Leaf		
Silver Sand (met, new)	Gold Leaf		
Tudor White	Gold Leaf		

1985: 16 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Antelope Gold (met)	Available colours: Gunmetal Oyster Gold Leaf Dark Red The colour scheme was dependent on the interior/exterior colour scheme chosen	Biscuit	Beige (disc.)
Black		Black	Fleet Blue (disc.)
Cirrus Grey		Buckskin (new)	Graphite (disc.)
Clarendon Blue (disc.)		Doeskin	Parchment (new, disc.)
Claret (met)		Isis Blue	
Cobalt Blue (met)		Mulberry	
Cranberry Red (met)		Saville Grey	
Grosvenor Brown (disc.)			
Racing Green (met, disc.)			
Regent Grey (met)			
Rhodium Silver (met)			
Sage Green (met)			
Sapphire Blue (met, disc.)			
Sebring Red			
Silver Sand (met)			
Tudor White			

1986: 16 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours
Antelope Gold (met, disc.)	Available colours: Gunmetal Oyster Gold Leaf Dark Red The colour scheme was dependent on the interior/exterior colour scheme chosen	Barley (new)	Cheviot tweed (new)
Black		Biscuit	Chiltern tweed (new)
Cirrus Grey (disc.)		Black	Cotswold tweed (new)
Claret (met, disc.)		Buckskin	Pennine tweed (new)
Cobalt Blue (met, disc.)		Doeskin	
Cranberry Red (met, disc.)		Isis Blue	
Curlew (met) (new, disc.)		Mulberry	
Jaguar Racing Green (met, new)		Saville Grey	
Regent Grey (met, disc.)			
Rhodium Silver (met, disc.)			
Sage Green (met, disc.)			
Sebring Red (disc.)			
Silver Sand (met, disc.)			
Steel Grey (met, new, disc.)			
Tudor White (disc.)			
Windsor Blue (new, disc.)			

1987: 17 paint colours, an almost entirely new range

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Alpine Green (met, new)	Available colours: Gunmetal Oyster Gold Leaf Dark Red The colour scheme was dependent on the interior/ exterior colour scheme chosen	Barley	Cheviot tweed	Black
Arctic Blue (met, new)		Biscuit (disc.)	Chiltern tweed	Blue
Black		Black (disc.)	Cotswold tweed	Brown
Bordeaux Red (met, new)		Buckskin	Pennine tweed	
Crimson (met, new)		Doeskin		
Dorchester Grey (met, new)		Isis Blue		
Grenadier Red (new)		Mulberry		
Jaguar Racing Green (met)		Saville Grey		
Moorland Green (met, new)				
Nimbus White (new, disc.)				
Satin Beige (met, new)				
Silver Birch (met, new)				
Solent Blue (met, new)				
Sovereign Gold (met,new,disc.)				
Talisman Silver (met, new)				
Tungsten (met, new)				
Westminster Blue (new)				

1988: 17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Alpine Green (met)	Available colours: Gunmetal Oyster Gold Leaf Dark Red The colour scheme was dependent on the interior/exterior colour scheme chosen Sports pack – introduction of sports pack coachlines	Barley	Cheviot tweed	Black
Arctic Blue (met)		Buckskin	Chiltern tweed	Blue
Black		Charcoal (new)	Cotswold tweed	Brown
Bordeaux Red (met)		Doeskin	Pennine tweed	
Crimson (met)		Isis Blue		
Dorchester Grey (met)		Magnolia (new)		
Glacier White (new)		Mulberry		
Grenadier Red		Saville Grey		
Jaguar Racing Green (met)				
Moorland Green (met)				
Satin Beige (met)				
Signal Red (re-intro.) *				
Silver Birch (met, disc.)				
Solent Blue (met)				
Talisman Silver (met)				
Tungsten (met)				
Westminster Blue				

* - introduced for 1988½ model year.

1989: 16 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Alpine Green (met, disc.)	Available colours:	Barley	Cheviot tweed	Black
Arctic Blue (met)		Buckskin (disc.)	Chiltern tweed	Blue
Black	Gunmetal	Charcoal	Cotswold tweed	Brown
Bordeaux Red (met)	Oyster	Doeskin	Pennine tweed	
Crimson (met, disc.)	Gold Leaf	Isis Blue		
Dorchester Grey (met, disc.)	Dark Red	Magnolia		
Glacier White		Mulberry		
Grenadier Red	The colour	Saville Grey		
Jaguar Racing Green (met)	scheme was			
Moorland Green (met, disc.)	dependent on the			
Satin Beige (met)	interior/exterior			
Signal Red	colour scheme			
Solent Blue (met)	chosen			
Talisman Silver (met)				
Tungsten (met)	Sports pack lines			
Westminster Blue	were available			

1990: 17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Arctic Blue (met)	RB	Barley	Cheviot tweed	Black
Black	RB	Charcoal	Chiltern tweed	Blue
Bordeaux Red (met)	RQ	Doeskin	Cotswold tweed	Brown
Diamond Blue (met, new)	RB	Isis Blue	Pennine tweed	
Glacier White	RQ	Magnolia		
Grenadier Red (disc.)	RQ	Mulberry		
Gunmetal (met, new)	RQ	Parchment (new, disc.)		
Jade Green (met, new)	RQ	Saville Grey		
Jaguar Racing Green (met, disc.)	RQ			
Regency Red (met, new)	RQ			
Satin Beige (met, disc.)	RB			
Savoy Grey (met, new)	RQ			
Signal Red	AQ			
Solent Blue (met)	RQ			
Talisman Silver (met, disc.)	RB			
Tungsten (met)	RQ			
Westminster Blue	RQ			

1991: 17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Arctic Blue (met, disc.)	RB	Barley	Cheviot tweed	Black
Black	RB	Buckskin (re-intro. – disc.)	Chiltern tweed	Blue
Bordeaux Red (met, disc.)	RQ	Charcoal	Cotswold tweed	Brown
Brooklands Green (met, new)	RQ	Doeskin	Pennine tweed	
Diamond Blue (met)	RB	Isis Blue		
Glacier White	RQ	Magnolia		
Gunmetal (met)	RQ	Mulberry (disc.)		
Jade Green (met)	RQ	Saville Grey		
Oyster (met) (new)	RB			
Regency red (met)	RQ			
Savoy Grey (met, disc.)	RQ			
Signal Red	AQ			
Silver Frost (met, re-intro.)	RB			
Solent Blue (met)	RQ			
Tungsten (met, disc.)	RB			
Tuscany Bronze (new, disc.)	RQ			
Westminster Blue	RQ			

1992: 15 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Black	RB	Barley	Cheviot tweed	Beige (new)
Brooklands Green (met, disc.)	RQ	Charcoal	Chiltern tweed	Black
Diamond Blue (met)	RB	Cherry Red (new)	Cotswold tweed	Blue
Flamenco (met, new)	AQ	Doeskin	Pennine tweed	Brown
Glacier White	RQ	Isis Blue		
Gunmetal (met)	RQ	Magnolia		
Jade Green (met)	RQ	Parchment (re-intro.)		
Kingfisher Blue (met, new)	RQ	Saville Grey		
Meteor Red (new)	AQ			
Oyster (met)	RB			
Platinum (met, new)	RB			
Regency red (met)	RQ			
Signal Red	AQ			
Silver Frost (met)	RB			
Solent Blue (met)	RQ			
Westminster Blue	RQ			

1993: 17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Black	RB	Barley (disc.)	Cheviot tweed (disc.)	Beige
British Racing Green (re-intro.)	RQ	Charcoal (disc.)	Chiltern tweed (disc.)	Black
Diamond Blue (met, disc.)	RB	Cherry Red (disc.)	Cotswold tweed (disc.)	Blue
Flamenco (met)	AQ	Cream (new)	Pennine tweed (disc.)	Brown
Glacier White	RQ	Doeskin (disc.)		Burgundy (new)
Gunmetal (met, disc.)	RQ	Isis Blue (disc.)		
Jade Green (met)	RQ	Magnolia (disc.)		
Kingfisher Blue (met)	RQ	Parchment		
Meteor Red (disc.)	AQ	Saville Grey (disc.)		
Morocco Red (met, new)	RQ			
Oyster (met, disc.)	RB			
Platinum (met, disc.)	RB			
Regency red (met, disc.)	RQ			
Signal Red	AQ			
Silver Frost (met)	RB			
Solent Blue (met, disc.)	RQ			
Westminster Blue	RQ			

1994: 16 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Black	RB	Coffee (new)	Coffee (new)	Beige
British Racing Green	RQ	Cream	Nimbus Grey (new)	Black
Flamenco (met)	AQ	Nimbus Grey (new)	Oatmeal (new)	Blue
Glacier White	RQ	Oatmeal (new)	Regatta Blue (new)	Brown
Jade Green (met)	RQ	Parchment		Burgundy
Kingfisher Blue (met)	RQ	Regatta Blue (new)		
Morocco Red (met)	RQ	Warm Charcoal (new)		
Rose Bronze (met, new)	RB			
Sapphire Blue (met, re-intro.)	RQ			
Signal Red	AQ			
Silver Frost (met)	RB			
Steel Grey (met, re-intro.)	RQ			
Titanium (met, new)	RB			
Topaz (met, new)	RB			
Westminster Blue	RQ			
Ice Blue (met, new)	RB			

1995:17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Black	Red/Grey	Coffee	Coffee	Beige
British Racing Green	Red/Aegean	Cream	Nimbus Grey	Black
Flamenco (met, disc.)	Red/Cream	Nimbus Grey	Oatmeal	Blue
Glacier White (disc.)	Maroon/Grey	Oatmeal	Regatta Blue	Brown
Ice Blue (met)	Maroon/Blue	Parchment		Burgundy
Jade Green (met)	Maroon/Cream	Regatta Blue		
Kingfisher Blue (met)	Red/Aegean	Warm Charcoal		
Morocco Red (met)	Red/Cream			
Rose Bronze (met, disc.)	Maroon/Grey			
Sapphire Blue (met)	Red/Grey			
Signal Red	Maroon/Cream			
Silver Frost (met, disc.)	Maroon/Blue			
Steel Grey (met)	Red/Cream			
Titanium (met)	Red/Grey			
Topaz (met)	Maroon/Grey			
Turquoise (met, new)	Maroon/Aegean			
Westminster Blue	Red/Grey			

1996: 17 paint colours

Exterior paint colours	Coachline colours	Leather trim colours	Cloth trim colours	Hood colours
Black	Red/Grey	Coffee	Coffee	Beige
British Racing Green	Red/Aegean	Cream	Nimbus Grey	Black
Carnival Red (met, new)	Red/Cream	Nimbus Grey	Oatmeal	Blue
Ice Blue (met)	Maroon/Blue	Oatmeal	Regatta Blue	Brown
Jade Green (met)	Maroon/Cream	Parchment		Burgundy
Kingfisher Blue (met)	Red/Aegean	Regatta Blue		
Morocco Red (met)	Red/Cream	Warm Charcoal		
Nautilus (met, new)	Red/Grey			
Sapphire Blue (met)	Red/Grey			
Signal Red	Maroon/Cream			
Spindrift White (new)	Maroon/Grey			
Spruce Green (met, new)	Red/Aegean			
Steel Grey (met)	Red/Cream			
Titanium (met)	Red/Grey			
Topaz (met)	Maroon/Grey			
Turquoise (met)	Maroon/Aegean			
Westminster Blue	Red/Grey			

Notes: met = metallic

These tables show the years when a colour was first used ('new'), was last used ('disc.') or was re-introduced ('re-intro.').

Sports Pack coachline colour scheme:
RB – Flame Red/Pewter
RQ – Flame Red/Quick Silver
AQ – Amber/Quick Silver

Summary of Paint Colours

Colour name	Used from-to	Code	BLVC or JBC no	Notes
Alpine Green (met)	1987-89	HES	709	XJR-S 1988-89
Amethyst Blue (met)	1992 on	JGP	829	Insignia range
Antelope (met)	1984-86	AFM	322	
Arctic Blue (met)	1987-91	JFE	337	XJR-S 1988-89
Black	1983-93	PDE/PDH	373/333	XJR-S 1990 only
Black	1994-96	PDT	807	
Black Cherry (mica)	1991-93	PDP	737	XJR-S only 1991-93
Bordeaux Red (met)	1987-91	CEK	340	
British Racing Green	1975-78	HDJ	254	
British Racing Green	1993-96	HFB	753	
Brooklands Green (met)	1991-92	HED		XJR-S 1990-93
Carnival Red (met – mica)	1996 only	CFS	811	
Carriage Brown	1975-78	ADS	262	
Chestnut Brown (met)	1979-83	BDA	292	
Cirrus Grey	1984-86	LDN	335	A.k.a. Purbeck Grey
Clarendon Blue	1984-85	JER	326	
Claret (met)	1982-86	CEA	310	
Cobalt Blue (met)	1979-86	JDM	286	
Coronet Gold (met)	1981-84	GDB	306	
Cotswold Yellow	1978-80	FDE	212	Rover Turmeric
Cranberry Red (met)	1984-86	CEE	316	
Crimson (met)	1987-89	CFF	772	
Crystal Blue (met)	1992 on	JFZ/JGH	789/799	Insignia range
Curlew (met)	1986 only	AFT	704	
Damson Red	1978-80	CDG	211	Rover Richelieu
Dark Blue	1975-78	JDG	255	
Diamond Blue (met)	1990-93	JFN	743	
Dorchester Grey (met)	1987-89	LDP	342	
Fern Grey	1975-76	HDH	253	
Flamenco (met – mica)	1992-95	CFH	765	XJR-S 1991-93
Garnet	1981 only	CDN	303	
Glacier White	1988-95	NDK/NDP	721/742	
Greensand	1975-76	FDA	252	
Grenadier Red	1987-90	CEH	332	
Grosvenor Brown	1983-85	AEB	298	
Gunmetal (met – mica)	1990-93	LEH	740	
Ice Blue (met – micro)	1994-96	MDP	821	
Indigo Blue	1983 only	JEB	301	
Jade Green (met – mica)	1990-96	HEV	735	
Jaguar Racing Green (met)	1986-90	HER	705	
Juniper Green	1976-78	HDM	264	
Kingfisher Blue (met)	1992-96	HFE	779	
Lavender (met)	1992 on	JGR	833	Insignia range
Mahogany (met – mica)	1992 on	ANY	802	Insignia range
Meteor Red	1992-93	CFJ	236	
Mineral Blue	1981-82	JEJ	311	
Mineral Green (met – mica)	1992 on	HFH	790	Insignia range
Moorland Green (met)	1987-89	HET	717	
Moroccan Bronze	1976-78	BDB	267	
Morocco Red (met – mica)	1993-96	CFG	778	
Nautilus (met)	1996 only	PDV	824	'blue black'
Nimbus White	1987 only	NDJ	700	
Old English White	1975-77	NDB	250	
Oyster (met)	1991-93	SDE	751	
Pale Primrose	1975 only	FDB	251	
Peppermint Green (met)	1992 on	HFM	831	Insignia range
Platinum (met)	1992-93	LEP	775	
Portland Beige	1982-83	AEA	299	

Colour name	Used from-to	Code	BLVC or JBC no	Notes
Primrose Pearl (met – mica)	1992 on	FDH	830	Insignia range
Quartz Blue (met)	1979-80	JEA	291	
Racing Green (met)	1978-85	HDN	281	
Regency Red (solid)	1975-78	TDD	257	
Regency Red (met – mica)	1990-93	CFA	734	XJR-S 1990 only
Regent Grey (met – mica)	1984-86	LDL/LDR	315	
Rhodium Silver (met)	1980-86	MDE/MDM	396	
Rose Bronze (met)	1994-95	SDL	795	
Sable Brown			259	
Sable Black (met)	1981-83	PDF	308	
Sage Green (met)	1984-86	HEG	314	
Sandstone (met)	1992 on	AGB	763	Insignia range
Sapphire Blue (met)	1981-85	JEC/JEY	307/719	
Sapphire Blue (met)	1994-96	JGE/JHE	806	
Satin Beige (met)	1987-90	AGA	747	
Saturn Orange (met – mica)	1992 on	ANZ	764	Insignia range
Savoy Grey (met)	1990-91	LED/LEK	731	
Sebring Red	1979-86	CDJ	287	
Signal Red	1975-77	CDF	258	
Signal Red	1988-96	CFC	748	XJR-S 1988-90
Silver Birch (met)	1987-88	MDJ	716	
Silver Frost (met)	1977-79	MDD	216	Rover Platinum
Silver Frost (met)	1991-95	MDK	750	XJR-S 1990-93
Silver Sand (met)	1984-86	GDA	280	
Solent Blue (met)	1987-93	JEW/JFJ/JHG	715	XJR-S 1988-93
Sovereign Gold (met)	1987 only	GDF	341	
Spindrift White	1996 only	NDH/NDM/NEE	732	
Spruce Green (met – mica)	1996 only	HFL	823	
Squadron Blue	1975-78	JDJ	265	
Steel Grey (met – mica)	1994-96	LEV/LGB/LGF	783/873/897	
Steel Grey (met)	1986 only	LEC	708?	
Talisman Silver (met)	1987-90	MDF	336	
Titanium (met – mica)	1994-96	LFA/LGC	810/877	
Topaz (met – micro)	1994-96	SDN/SEC	820	
Tudor White	1978-86	NDC	215	Rover Pendelican
Tungsten (met)	1987-91	JEX	718	XJR-S 1988 only
Turquoise (met)	1995-96	UDB	827	
Tuscany Bronze (met)	1991 only	SDD	754	
Westminster Blue	1987-96	JEU/JFG	712	
White Pearl (met – mica)	1992 on	NDT/NDX	832/843	Insignia range
Windsor Blue	1986 only	JEV	706	
Yellow Gold	1976-77	FDD	266	

Notes: met = metallic; mica = micatellic

The Code is the three-letter codes normally found on the VIN plates of individual cars from 1978 onwards. Similar three-letter codes are used for trim colours.

The BLVC no is the number allocated to a colour under the British Leyland Vehicle Colour system which effectively continued to be used by Jaguar even after 1984, and was later renamed JBC for Jaguar Body Colour.

These codes and numbers are recognised by suppliers of automotive paints for re-finishing and can be cross-referenced to paint manufacturers' lists.

APPENDIX 2 ~ XJ-S PRICES SINCE LAUNCH

Year	Month	Price (£)	
		From	To
1975	September	£8,900	
1976	January	£9,527	
1976	July	£10,506	
1977	August	£13,200	
1978	December	£15,996	
1979	December	£19,187	
1980	November	£19,187	
1981	May	£19,762	
1982	March	£19,707	
1983	September	£20,693	
1983	October	£19,248	£21,752
1984	October	£19,248	£23,385
1985	March	£19,495	£23,995
1986	July	£20,995	£28,300
1987	February	£21,500	£29,500
1988	February	£24,700	£29,900
1989		£26,400	£38,500
1990	September	£28,000	£43,200
1991	April	£28,610	£44,140
1991	September	£33,400	£50,600
1992	September	£33,900	£50,900
1993	February	£32,544	£48,864
1993	September	£35,400	£55,300
1994	June	£36,800	£58,800
1995	December	£38,950	£58,800
1996	March	£38,950	£58,800

APPENDIX 3 ~ XJR-S PRICE AND COLOUR GUIDE

Year	Colours		Price (£)
	External Bodyshell	Leather Trim	
1988	Alpine green Arctic blue Signal red Solent blue Tungsten	Magnolia	£35,000
1989	Alpine green Arctic blue Signal red Solent blue	Magnolia	£38,500
1990	Black Brooklands green Regency red Signal red Silver frost Solent blue	Charcoal Doeskin Isis blue Magnolia Parchment Saville grey	£45,500
1991	Black cherry Brooklands green Flamenco Silver frost Solent blue	Charcoal Cherry red Cream Saville grey	£49,950
1992	Black cherry Brooklands green Flamenco Silver frost Solent blue	Charcoal Cherry red Cream Saville grey	£50,400
1993	Black cherry Brooklands green Flamenco Silver frost Solent blue	Charcoal Cherry red Cream Saville grey	£48,384

APPENDIX 4 ~ VEHICLE IDENTIFICATION NUMBERS (VIN) AND MODEL CODES

Year/ month	V12 Coupé Right-hand drive	V12 Coupé Left-hand drive
1975/Jan	2W/1001	2W/50001
1976/Jan	2W/1319	2W/51409
1977/Jan	2W/2639	2W/53329
1978/Jan	2W/4338	2W/55273
1978/May	2W/5000 – Last no. in series	2W/55915 – Last no. in series

Note: Until the introduction of the VIN system in May 1978, North American models had extra letters in front of the prefix, for example, U = US specification followed by the model year letter, therefore, UF would symbolise American 1975. The letters denoting the years for that period were:

F - 1975 G - 1976 H – 1977 J – 1978

First Chassis Numbers

Chassis	Comments
2W1001	Lavender/dark blue - 10.01.75
2W1002	Signal red/russet - McCormack race car
2W1003	KAC280N white/russet publicity car - Henly's London
2W1007	JVC485N white/russet press car - Autocar magazine test car
2W1009	JVC482N white/dark blue press car
2W1010	JVC480N signal red/black press car
2W1011	JVC484N white/dark blue press car
2W1012	JVC481N signal red/biscuit press car
2W1014	JVC483N white/dark blue press car
2W1017	Silver/black - kept by Jaguar Cars
2W51037	Signal red - Frankfurt Motor Show
2W1019	JVC810N signal red/black press car - used in brochure
2W1047	Silver/black - experiment 2X27/14
2W1050	KHP40N signal red/black – experiment 2X27/17
2W1053	Signal red/black - Australian legislation car, first cannonball car and Goss race car
2W1074	Experiment crash test car
2W1075	Signal red/black - TV Series "New Avengers" - Gambits car
2W1097	British racing green/cinnamon press car
2W1100	Primrose/black - despatched to Henly's in Coventry on 04/09/75
2W51120	Group 44
2W1138	White/cinnamon - TV Series "The Saint" ST1 updated to 1978 specification originally registered PWK530R in April 1977
2W1145	White – experiment 234
2W1154	Gold/sorrel - Earls Court 1975, special paint manufactured by Carrs Paint Ltd, Birmingham. Sorrel trim by Austin Morris

Vehicle Identification Numbers (VIN) are made up of a series of letters and numbers and for cars produced after May 1978 the meaning of each symbol would be:

First 3 letters	SAJ	Manufacturer (only from March 1981)
4th	J	Jaguar
	D	Daimler
5th	N	Standard XJ-S
	S	XJR-S
	T	XJ-S Special Edition
6th	A to Y	Depending on market specification; A indicates UK and European cars, J is Japan, while L, M, V, W, X and Y are found on North American cars
7th: Body type	C	Cabriolet
	D	Convertible
	E	Coupé
	F	2+2 Convertible
8th: Engine type	B, C, D or E	3.6L/4.0L 6-cylinder
	K, V, W, X, Y or Z	5.3L V12
	S	6.0L V12
9th: Transmission, steering	3	Automatic transmission, right hand drive
	4	Automatic transmission, left hand drive
	7	Manual 5-speed transmission, right-hand drive
	8	Manual 5-speed transmission, left-hand drive
10th: Model change	A	Original XJ-S V12 5.3L
	B	V12 HE Coupé, including XJR-S
	C	3.6L Coupé/Cabriolet; V12 Cabriolet
	D	V12 Convertible
	E	Facelift cars, from 1991 onwards

(NB: On North American cars this letter indicates model year, starting with B for 1981 and continuing up to at least N for 1992)

11th	1975-1987	C for Browns Lane manufacturing plant
	Later cars	A to T refers to emission control system

It should be noted that special VIN found on North American cars have different style prefixes from the ones decoded above.

The prefix is followed by a 6-figure number. The number series commenced with100001 in May 1978 and continued as follows, the first chassis number in each year and other important numbers being as follows:

Year	Month	Chassis No.	Comments
1978	May	100001	
1979	January	101835	
1980	January	104250	
1980	November	104146	P-digital ignition introduced
1981	January	104917	
1981	February	105048	First HE model
1981	March	105068	SAJ code added to VIN prefix
1981		105338	Start of 1982 model year
1982	January	106450	
1982	April	107311	First 3.6-litre coupé (pre-production)
1982		107969	Start of 1983 model year

Year	Month	Chassis No.	Comments
1982	June	108026	First 3.6 litre Cabriolet (pre-production)
1983	January	109919	
1983	October	112253	First 3.6 litre Coupé (production)
1983	October	112314	First 3.6 litre Cabriolet (production)
1983	September	113085	First V12 Cabriolet; for USA
1984	January	114671	
1984	September	117339	Start of 1985 model year
1985		116005	Burberry special edition
1985	January	121281	
1986	January	129079	
1986		134286	Start of 1987 model year
1987	January	138031	
1987	February	139052	1987.5 model year. Sports pack available on 3.6L
1987	April	140952	First Convertible, JDHT owned
1987		142613	Princess Diana's XJ-SC, JDHT owned
1987	September	144591	Last 3.6 litre Cabriolet
1987		144700	Start of 1988 model year
1987	December	147269	First V12 Convertible
1988	January	148000	Approximate number
1988	February	148574	Last V12 Cabriolet, JDHT owned
1988		148782	1988½ model year 5.3 litre introduced
1988		148945	1988½ model year 3.6 litre introduced
1988	August		XJR-S introduction
1988	December	157118	Start of 1989 model year 5.3 litre
1989		156989	Convertible
1989		157116	3.6 litre version
1989	January	158400	Approximate number
1989	August	165791	1990 model year XJR-S 6.0 litre introduced
1990	January	169530	
1990		175258	Start of 1991 model year
1990	September	176103	1991 model year: catalyst on UK cars
1990	September	176921	Le Mans limited edition introduction
1990	December	178707	Le Mans limited edition discontinued
1991	January	178781	
1991	March	179733	V12 HE discontinued, last pre-facelift
1991	March	179734	First facelift 4.0 litre plus few earlier
1991	March	179735	First facelift 5.3 litre plus few earlier
1991	March	179737	Facelift XJR-S 6.0 litre in production
1991		179939	Start of 1992 model year
1992	January	183501	
1992	April	184574	1992½ model year, 4.0 litre Convertible introduced
1992		185820	Start of the 1993 model year
1993	January	187159	
1993		188105	1993½ model year, new bumper style introduced
1993	April/May	188300	XJR-S 6.0 litre discontinued, standard model introduced (approximate number)
1993	September	190528	Start of 1994 model year
1994	January	192000	Approximate number
1994		194775	1994¾ model year, AJ16 engine introduced
1994		198335	1995¼ model year
1995	January	199000	Approximate number
1995	February	199999	Last number before gap in series
1995	February	221001	First number after gap in series
1995	May	221855	1995½ 4.0 litre designated Celebration

Year	Month	Chassis No.	Comments
1995		222632	Start of 1996 model year
1996	January	225000	Approximate number
1996	April	226644	Last 4.0 litre Convertible, JDHT owned
1996	April	226645	Last 6.0 litre V12 Coupé, JDHT owned

Model Project Codes

XJ27	V12 Coupé
XJ28	V12 Cabriolet
XJ57	3.6 Litre Coupé
XJ58	3.6 Litre Cabriolet
XJ67	V12 2+2 Convertible
XJ68	AJ6 2+2 Convertible
XJ77	V12 Convertible
XJ87	V12 Coupé Facelift
XJ88	4.0 Litre Coupé
XJ97	V12 Convertible Facelift
XJ98	4.0 Litre Convertible

Body Numbers

Each XJ-S had a body numbers (in fact, later cars had two body numbers, one of which was allocated by the Castle Bromwich factory), and these body numbers are often found on small tags on the lower tail panel hidden by the rear bumper. Each type of XJ-S had its own series of body numbers with different identification codes, some of which are quoted below, in chronological order of introduction.

Model	Body type	Body no prefix	From-to
V12 5.3-litre and V12 HE	Coupé	5W	1975-91
3.6-litre	Coupé	5X	1982-91
3.6-litre	Cabriolet	5Y	1982-87
V12 5.3-litre HE	Cabriolet	5V	1985-88
V12 5.3-litre HE	Convertible	5J	1987-91
XJR-S 6.0-litre pre-facelift	Coupé	6W	1989-90
V12 5.3-litre facelift model	Coupé	7W	1991-92
V12 5.3-litre facelift model	Convertible	7J	1991-92
4-litre	Coupé	7X	1991-96
4-litre	Convertible	7Y	1992-93
4-litre	Two-plus-two convertible	7K	1993-96
XJR-S facelift model	Coupé	8W	1991-93
XJR-S facelift model	Convertible	8J	1992-93
V12 6.0-litre	Coupé	9W	1992-96
V12 6.0-litre	Convertible	9J	1992-95
V12 6.0-litre	Two-plus-two convertible	9L	1993-96

Each series of body numbers commenced with the number 1001 (or 001001). The body number gives a reasonably good idea where in the production sequence a car comes, thus a car with the body number of 5W 11000 will be approximately the 10,000th 5.3 litre V12 Coupé made, and a car with the body number 5Y 001234 will be approximately the 234th 3.6-litre Cabriolet made.

APPENDIX 5 ~ ENGINE NUMBERS

The engine identification code is made up of a series of digits, both numbers and letters. The V12 engine number consisted of only 8 or 9 digits and the breakdown is detailed below.

Size	Model Year(s)	Description	Code
5.3 Litre	1975 – 1981	Original Specification	8S 1001
5.3 Litre	1981 – 1993	H.E	8S 18001
6.0 Litre	1989 – 1993	XJR-S	8W
6.0 Litre	1993 – 1996	Standard Specification	8D

Each engine number had a 2 letter suffix and the details for each code are shown below.

SA – Standard compression with grade A pistons and liners
SB – Standard compression with grade B pistons and liners
HA – High compression with grade A pistons and liners
HB – High compression with grade B pistons and liners

The 3.6 litre and 4.0 litre models were made up with a series of codes, an example of which is shown below together with a breakdown of each digit.

6-Cylinder Engine

1 – Model Identification	9 = Jaguar
2 – Engine Size	E = 4.0 litre, L = 4.0 Litre 1994¾ model year AJ16, D = 3.6 Litre
3 – Fuel Type	P = Petrol
4 – Compression Ratio	A = High, B = Standard, C = 4.0 Litre
5 – Market Variant	L = US, Japan, Sweden, Austria, Germany, Switzerland
	M = European
	N = Blank
	P = Australia, Middle East
	R = Canada
	S = Rest of World
6 – Model Year Change	E = 1987 Model Year
7-12 – Serial Number	100001 = First Serial Number Used

Appendix 6 ~ Production Figures

	3.6 Coupé	3.6 Cab.	4.0 Coupé	4.0 Con.	4.0 2+2	V12 5.3 Coupé	V12 5.3 Cab.	V12 5.3 Con.	6.0 Coupé	6.0 Con.	6.0 2+2	XJR-S Coupé	XJR-S Con.	Yearly Totals
1975						1,245								1,245
1976						3,082								3,082
1977						3,890								3,890
1978						3,121								3,121
1979						2,405								2,405
1980						1,057								1,057
1981						1,292								1,292
1982	18	5				3,455								3,478
1983	269	163				4,317								4,749
1984	451	199				5,852	7							6,509
1985	782	393				6,067	709							7,951
1986	650	194				6,641	1,567							9,052
1987	1,250	196				6,758	1,510	112						9,826
1988	2,066					5,045	70	3,175						10,356
1989	1,999					4,209		4,877				122		11,207
1990	1,285		41			2,939		4,633				328		9,226
1991	97		1,258	4		1,536		1,689				65		4,649
1992			1,181	1,049		352		744	12	11	1	249	34	3,633
1993			1,289	799	1,951	13		15	460	31	595	23	16	5,192
1994			985		4,633				242	28	1,030			6,918
1995			793		3,943				59	11	78			4,884
1996			120		1,485				1		2			1,608
Total	8,867	1,150	5,667	1,852	12,012	63,276	3,863	15,245	774	81	1,706	787	50	115,330

The production figures identified above are based on production records. However, other records have identified an additional 83 cars in total. After checking the volumes for each model variant, I've determined the missing 83 cars were Coupé models and most likely pre-production cars.

APPENDIX 7 ~ SPECIFICATION CHART

	1983 – 1987		1988 – 1991	1992 – 1994¾		1994¾ - 1996	
	3.6L Coupé	3.6L Cabriolet	3.6L Coupé	4.0L Coupé	4.0L Convertible	4.0L AJ16 Coupé	4.0L AJ16 Convertible
Engine							
- Capacity	3590cc	3590cc	3590cc	3980cc	3980cc	3980cc	3980cc
- No. of Cylinders	6	6	6	6	6	6	6
- Bore (mm)	91	91	91	91	91	91	91
- Stroke (mm)	92	92	92	102	102	102	102
- Compression Ratio : 1	9.6:1	9.6:1	9.6:1	9.5:1	9.5:1	10:1	10:1
- Fuelling System	Lucas Bosch *	Lucas Bosch *	Lucas	Lucas Bosch *	EEM **	SI ***	SI ***
- Max. Power DIN-Kw (bhp)/rpm	225/5300	225/5300	221/5000	223/4750	223/4750	237/4700	237/4700
- Max. Torque Nm (lb/ft)/rpm	240/4000	240/4000	249/4000	277/3650	277/3650	282/4000	282/4000
Transmission							
- Manual	Getrag 265	Getrag 265	Getrag 265	Getrag 290	Getrag 290	Getrag 290	Getrag 290
- Automatic	N/A	N/A	ZF 4HP 22	ZF 4HP 24	ZF 4HP 24	ZF 4HP 24	ZF 4HP 24
Performance							
- Max. Speed (mph)	142 (M)	137 (M)	142 (M) / 140 (A)	141 (M) / 138 (A)	139 (M) / 138 (A)	147 (M) / 147 (A)	145 (M) / 145 (A)
- 0-60mph (secs)	7.4 (M)	7.2 (M)	7.4 (M) / 8.1 (A)	7.5 (M) / 8.6 (A)	7.8 (M) / 8.6 (A)	6.9 (M) / 7.6 (A)	7.2 (M) / 8.0 (A)
- Max. Speed (kph)	224 (M)	217 (M)	224 (M) / 221 (A)	223 (M) / 218 (A)	220 (M) / 218 (A)	237 (M) / 237 (A)	234 (M) / 234 (A)
- 0-100kph (secs)						7.6 (M) / 8.1 (A)	7.8 (M) / 8.4 (A)
Fuel Consumption							
- Urban (mpg)	14.9 (M)	14.9 (M)	18.6 (M) / 18.2 (A)	16.9 (M) / 19.8 (A)	16.9 (M) / 19.8 (A)	18.8 (M) / 21.7 (A)	18.8 (M) / 21.7 (A)
- 56mph (mpg)	36.2 (M)	36.2 (M)	37.1 (M) / 36.4 (A)	34.9 (M) / 35.8 (A)	34.9 (M) / 35.8 (A)	37.2 (M) / 37.9 (A)	37.2 (M) / 37.9 (A)
- 75mph (mpg)	29.4 (M)	29.4 (M)	32 (M) / 30.6 (A)	28.5 (M) / 28.8 (A)	28.5 (M) / 28.8 (A)	29.5 (M) / 28.6 (A)	29.5 (M) / 28.6 (A)

* - Digital Fuel Injection, ** - Electronic Engine Management, *** - Sequential Injection

(M) – Manual, (A) - Automatic

	1975 – 1979		1980	1981 - 1988	1988 – 1991		1988 - 1991	
	5.3L Pre-HE		5.3L Pre-HE	5.3L HE	5.3L V12 Catalytic Coupé	5.3L V12 Catalytic Convertible	5.3L V12 Non-Catalytic Coupé	5.3L V12 Non-Non-Catalytic Convertible
Engine								
- Capacity	5343cc		5343cc	5343cc	5343cc	5343cc	5343cc	5343cc
- No. of Cylinders	12		12	12	12	12	12	12
- Bore (mm)	90		90	90	90	90	90	90
- Stroke (mm)	70		70	70	70	70	70	70
- Compression Ratio : 1	9:1		10:1	12.5:1	11.5:1	11.5:1	11.5:1	11.5:1
- Fuelling System	Lucas Bosch *		DEFI **	DEFI **	MIEFI ***	MIEFI ***	MIEFI ***	MIEFI ***
- Max. Power DIN-Kw (bhp)/rpm	285/5500		295/5800	299/5500	273/5250	273/5250	280/5550	280/5550
- Max. Torque Nm (lb/ft)/rpm	294/3500		317/4000	320/3250	298/2800	298/2800	306/2800	306/2800
Transmission								
- Manual	4-Speed		N/A	N/A	N/A	N/A	N/A	N/A
- Automatic	BW12/GM400		GM400	GM400	GM400	GM400	GM400	GM400
Performance								
- Max. Speed (mph)	153 (M)	154 (A)	145 (A)	152 (A)	148 (A)	144 (A)	150 (A)	145 (A)
- 0-60mph (secs)	6.9 (M)		7.6 (A)	7.5 (A)	8.1 (A)	8.4 (A)	7.7 (A)	8 (A)
- Max. Speed (kph)	242 (M)	245 (A)	229 (A)	240 (A)	238 (A)	232 (A)	241 (A)	234 (A)
- 0-100kph (secs)		8.9 (A)	8.0 (A)		8.5 (A)	8.8 (A)	8.1 (A)	8.4 (A)
Fuel Consumption								
- Urban (mpg)	10.8 (M)	11.4 (A)	12.7 (A)	15.6 (A)	13.7 (A)	13.1 (A)	15.2 (A)	14.8 (A)
- 56mph (mpg)	21.4 (M)	19.8 (A)	21.9 (A)	27.1 (A)	25.4 (A)	24.8 (A)	26.7 (A)	26.2 (A)
- 75mph (mpg)	18.6 (M)	17.2 (A)	18.6 (A)	22.5 (A)	21 (A)	20.8 (A)	22.4 (A)	22.2 (A)

* - Digital Fuel Injection, ** - Electronic Engine Management, *** - Sequential Injection

(M) – Manual, (A) - Automatic

	1991 – 1993		1993 – 1995	
	5.3L V12 Catalytic Coupé	5.3L V12 Catalytic Convertible	6.0L V12 * Coupé	6.0L V12 Convertible
Engines				
- Capacity	5343cc	5343cc	5994cc	5994cc
- No. of Cylinders	12	12	12	12
- Bore (mm)	90	90	90	90
- Stroke (mm)	70	70	78.5	78.5
- Compression Ratio : 1	11.5:1	11.5:1	11:1	11:1
- Fuelling System	EEM *	EEM *	EEM *	EEM *
- Max. Power DIN-Kw (bhp)/rpm	290/5750	280/5550	308/5350	308/5350
- Max. Torque Nm (lb/ft)/rpm	309/3150	306/2800	355/2850	355/2850
Transmission				
- Manual	N/A	N/A	N/A	N/A
- Automatic	GM400	GM400	GM4L80E	GM4L80E
Performance				
- Max. Speed (mph)	147 (A)	143 (A)	161 (A)	160 (A)
- 0-60mph (secs)	7.8 (A)	8.1 (A)	6.6 (A)	6.8 (A)
- Max. Speed (kph)	232 (A)	226 (A)	260 (A)	258 (A)
- 0-100kph (secs)			6.9 (A)	7.2 (A)
Fuel Consumption				
- Urban (mpg)	14.2 (A)	13.7 (A)	13.2 (A)	13.2 (A)
- 56mph (mpg)	25.7 (A)	26.6 (A)	26.4 (A)	26.4 (A)
- 75mph (mpg)	21.1 (A)	21.9 (A)	22.6 (A)	22.6 (A)

* - Electronic Engine Management

(M) – Manual, (A) - Automatic

APPENDIX 8 ~ WHEELS AND TYRES

Year	Model Size	Wheel Type	Tyre	Manufacturer	Std.	Opt.
1975 – 1980	V12 Coupé	6" x 15" – GKN Kent Alloys	205/70 VR15	Dunlop SP Super	☑	
1981 – 1988½	V12 Coupé/Cabriolet, 3.6L Cabriolet	6½" x 15" – Starfish Alloys	215/70 VR15	Dunlop/Pirelli	☑	
1984 – 1987	3.6L Coupé	6" x 15" – Pepperpot Alloys	215/70 VR15	Dunlop/Pirelli	☑	
1987½ – 1991	3.6L Coupé, V12 Cabriolet/Convertible/Coupé	6½" x 15" – Sports Lattice Alloys	235/60 VR15/P600	Dunlop/Pirelli	☑	☑
1989	V12 Coupé/Convertible	6½" x 15" – Starfish Alloys	235/60 VR15 P600	Pirelli		☑
1990	Le Mans	7" x 16" – Forged Alloys	225/55 ZR16	Pirelli	☑	
1991½ – 1993	4.0L Coupé/Convertible, V12 Coupé/Convertible	6½" x 15" – Cast Sports Lattice Alloys	235/60 VR15	Pirelli	☑	
1991½ – 1994	4.0L Coupé/Convertible, V12 Coupé/Convertible	7" x 16" – Forged Sports Lattice Alloys	225/55 VR16 P600	Pirelli		☑
1993½ – 1994	4.0L Coupé/Convertible, V12 Coupé/Convertible	7" x 16" – 5-Spoke Alloys	225/55 ZR16 P600	Pirelli	☑	
1993½ – 1994	V12 Convertible, 4.0L Convertible	7" x 16" – 5-Spoke Alloys	225/60 ZR16 P4000E	Pirelli	☑	
1994	4.0L Convertible	7" x 16" – Forged Sports Lattice Alloys	225/60 ZR16 P4000E	Pirelli		☑
1994½	4.0L Coupé	7" x 16" – 5-Spoke Diamond Turned Alloy	225/55 ZR16 SP2000	Dunlop	☑	
1994½	4.0L Convertible	7" x 16" – 5-Spoke Diamond Turned Alloy	225/60 ZR16 P4000E	Pirelli	☑	
1994½	V12 Coupé/Convertible	7" x 16" – 20-Spoke Diamond Turned Alloy	225/55 ZR16 SP2000	Dunlop	☑	
1994½ – 1995	4.0L Coupé, V12 Coupé/Convertible	7" x 16" – 5-Spoke Chrome	225/55 ZR16 SP2000	Dunlop		☑
1994½ – 1995	4.0L Convertible	7" x 16" – 5-Spoke Chrome	225/60 ZR16 P4000E	Pirelli		☑
1995	4.0L Coupé	7" x 16" – 5-Spoke Diamond Turned Alloy	225/55 ZR16 SP2000	Dunlop	☑	
1995	4.0L Convertible	7" x 16" – 5-Spoke Diamond Turned Alloy	225/60 ZR16 P4000E	Pirelli	☑	
1995	V12 Coupé/Convertible	7" x 16" – 20-Spoke Diamond Turned Alloy	225/55 ZR16 SP2000	Dunlop	☑	
1996	4.0L Coupé/Convertible	7" x 16" – Aerosport Diamond Turned	225/55 ZR16 Sports	Dunlop	☑	
1996	4.0L Coupé/Convertible	7" x 16" – 5-Spoke Chrome	225/55 ZR16 Sports	Dunlop		☑

APPENDIX 9 ~ TOYS AND MODELS

The list below identifies some of the models and toys available for the XJ-S model range.

Miniature XJ-S					
Maker	Ref. No.	Year	Model	Colour(s)	Description
Alezan	017		XJ-S	White and Green	1:43, Resin kit - Bob Tullius Group 44 XJ-S Coupé
Alezan	127		XJR-S		1:43, Resin kit - TWR 6.0L road car
Alezan	161		XJ-S Estate		1:43, Resin kit - XJ-S by Arden Germany
Alezan					1:43, Resin kit - Koenig XJ-S Coupé with body kit and rear spoiler
Anker			Coupé	Red	Plastic
Bandai			Coupé		1:16, Plastic kit
Bellini-Piccolino			XJ-S	White and green	1:76, TWR, race #1 – 1983/4
Bellini-Piccolino			XJ-S	Green and white	1:76, TWR, race #12 – 1984
Corgi			Coupé	White or yellow	1:76, Diecast Hockey Series – 7 different teams
Corgi – Classics	57404	2000	XJ-S	White with saint logo	Saint figure
Corgi – Classics	57405	2000	XJ-S	Red	New Avengers with Gambit figure
Corgi Toys	318	1981	XJ-S	Blue/cream body with red line	
Corgi Toys	318	1988	XJ-S	Pale blue body, beige seats	
Corgi Toys	318/8	1990	XJ-S	Blue body, white seats	
Corgi Toys	C319	1978-82	XJ-S	Metallic plum/black body	Opening doors, suspension, 128mm
Corgi Toys	C318	1985	XJ-S	British racing green with white band	Race #12
Corgi Toys		1985	XJ-S	Green	Race #12, Deutschland logo, export issue
Corgi Toys	C314	1982	XJ-S	Black body, red or tan interior	1:36, opening doors, Supercat HE, 118mm
Corgi Toys	C320	1978-81	Saint XJ-S	White body	1:36, standard or dished whizz wheels
Corgi Toys	B318-2	1983	Coupé	black with red and white decals	1:36, Diecast - Motul race car
Corgi Toys	B318-3		Coupé	Metallic dark green	1:36, Diecast - a promotional version was also made with white roof with Corgi logo
Corgi Toys	B318-4		Coupé	Light grey	1:36, Diecast
Corgi Toys	B318-5		Coupé	Metallic blue with dark blue roof.	1:36, Diecast - rare possibly trial model
Corgi - Gift Sets	C38	1980	XJ-S	White and red with Carlsberg logo	1:36, Diecast set - contained an XJ-S and silver trailer with red and white powerboat
Corgi – Junior	E72-2	1979-83	XJ-S	Silver, red, dark blue, maroon, bronze, yellow, white, metallic light grey	1:76, Diecast - cars come in different styles of box
Corgi – Junior		1982	XJ-S	Red body with white motorshow logo	1:76, Diecast HE – Earls Court Motor Show
Corgi – Junior	J18	1984-85	XJ-S	White, silver or green	1:76
Corgi – Junior	E32		Saint XJ-S	White with saint logo	1:76, Diecast - The Saint
Corgi – Junior			Coupé	Silver Tiger Stripe	1:76, Diecast - Kellogs promo

Miniature XJ-S					
Maker	Ref. No.	Year	Model	Colour(s)	Description
Corgi - Oddities			XJ-S	White	1:24, Plastic - The Saint radio control includes plastic gun
Corgi - Oddities			XJ-S	British racing green	Facelift, remote alarm sensor that operates the convertible hood
Corgi - Twin Packs	1372	1981-82	XJ-S		
Crown Industries			Coupé		1:38, Plastic kit - TWR Sports XJ-S road car
Danbury Mint	JAG8		XJ-S	Pewter	1:43, Convertible
Detail Cars	8005		XJ-S	Blue	
Detail Cars	8011		XJ-S	Red	
Detail Cars	D1003		XJ-S	Metallic red	Convertible, hood down, limited edition
Detail Cars	D130		XJ-S	Green	Coupé
Detail Cars	D131		XJ-S	Blue	Convertible, hood down
Detail Cars	D132		XJ-S	Silver	Convertible, hood up
Detail Cars	D133		XJRS	Red	Coupé
Dinkum			Coupé	Green & white	1:24, Resin - TWR Bathurst car 1985, car no. 8, 9 and 10
Dinkum			Coupé	White & Blue	1:24, Resin - John Goss Bathurst car 1986, Citibank car no.10
Dinkum			Coupé	Yellow or Black	1:43, Resin - road car
Dinkum			XJ-S	Yellow	Bathurst
Edocar			Coupé	Metallic Burgundy	1:64, Diecast
Entex	9047		XJ-S	Red	1:16, Plastic
Gwilo			3 car set	Gold plate	E-type, XJ220, XJ-S on wood base
Hasegawa			XJ-S		1:24, Plastic kit, TWR race car
Hasegawa	CA001: 1500		XJ-S V12		1:24, Plastic kit
Hasegawa			Coupé		1:24, Plastic kit – XJRS
Hasegawa			Cabriolet		1:24, Plastic kit
Heller	183		XJ-S	Red	1:43, kit
Heller	80152		XJ-S	British racing green	1:43, kit, Spa 1984
Heller	80183		XJ-S	British racing green	1:43, kit
Heller - Humbrol	HK43003		XJ-S		1:43, Plastic kit
Hi-Speed (New-Ray)			Convertible	Black	1:64, Diecast - A twin set including a E-type and XJ-S also available
Jaguar		1990	XJ-S Junior	British racing green	1:2, children's petrol driven
Jielge	44B	1986	XJ-S-C		1:43, Resin
Jielge		1981	Convertible		1:43, Resin – Lynx
Jielge			Cabriolet		1:43, Resin - UK and French versions
Jielge			Coupé		1:43, Resin - TWR race versions
Lledo Collectables	CO3801		3 car set	Gold plate	E-type, XJ-S and XJ220, remaining stock from Gwilo International

Miniature XJ-S

Maker	Ref. No.	Year	Model	Colour(s)	Description
Maisto	15099		XJ-S	British racing green	1:64, Diecast - blister pack card motor works series
Majorette	1001	1990	XJ-S	Blue or green	1:60, opening doors
Marque Models	2151		XJ-S	Pewter	1:57
Mattel			XJ-S	Pink	Barbie car
Mattel - Hot Wheels	2012	1978	XJ-S	Dark brown metalflake, white, grey metalflake, blue, gold	21 different wheel and trim versions
MC Toy			XJ-S-C	Metallic blue	1:40, V12
Milestone Miniatures	GC47		XJ-S	Dark blue, metallic red or metallic gold	
Minichamps			Coupé	Red	1:43, Diecast
Minichamps			Coupé	Black	1:43, Diecast - limited edition of 2,160
Minichamps			Convertible	White	1:43, Diecast
Minichamps			XJ-S	Green & white	1:43, Diecast - TWR XJ-S, winning car from SPA in 1984, the drivers were Percy/Heyer - a limited edition of 2,544
New-Ray	48849	1997	XJ-S	Silver	1:43, Diecast kit
New-Ray			Convertible	Met. Light blue	1:43, Diecast
Piccolino		1983			1:87, Motul version
Piccolino		1984			1:87, TWR version
Pirahna			Coupé	White & Green	1:43, White metal kit of the Bob Tullius Group 44 XJ-S, this car won the Trans Am Championship in 1978
Piranha			Coupé	Black and gold	JPS race car
Polistil – Politoys	2266	1990/1	XJ-S	Red	1:25, Top up
Polistil – Politoys	2267	1990	XJ-S	Blue	1:25, Top down
Provence Moulage	1176		XJ-S		JPS Macau GP, #7 or 8 – 1984
Provence Moulage	1186		XJ-S	White	Daytona – 1982
Provence Moulage	1224		XJ-S	British racing green with white stripe	Group A – 1984
Provence Moulage	1288	1988	XJ-S		V12 Convertible
Provence Moulage	1293	1983	XJ-S-C		Targa roof
Provence Moulage	1294		XJ-S Estate		Lynx Eventer
Provence Moulage	1306		XJ-S	Black, red, white	Motul Group A – 1983
Provence Moulage	GPM001	2002	XJ-S	White	Motul Group A
Redbox			XJ-S	Red	1:64
Revell		1979	XJ-S	White	Saint plastic kit
Robustelli	KR8		XJ-S	British racing green	1:43, Resin, TWR #12
Robustelli	KR8		XJ-S		1:43, Resin, Motul – 1982
Robustelli	RBP01A		XJ-S		1:43, Resin, Monza – 1983
Robustelli	RBP01B		XJ-S		1:43, Resin, Monza- 1984
Schylling		1988	XJ-S V12	Silver	

Miniature XJ-S

Maker	Ref. No.	Year	Model	Colour(s)	Description
SMTS	CL71		XJ-S		Convertible
SMTS	CL72		XJ-S		Cabriolet
SMTS	CL73		XJR-S		
SMTS	CL74	1991 >	XJ-S		Coupé
SMTS	CL75	1991 >	XJ-S		Convertible
SMTS			XJ-S		1:43, Pre-HE kit
SMTS	RL48A		XJ-S Racer	White with green stripe	1:43 – 1983
SMTS	RL48B		XJ-S Racer	Green with white stripe	1:43 – 1984
Starter			Coupé	Black/gold	1:43, Diecast - JPS logo – Macau – 1984
Tomica – Tomy		1993	XJ-S	Green and white	TWR, race #52
Welly	8670		XJ-S	Metallic green, others	1:36
Western Models	WP120		XJR-S		1:43
Western Models	WP115		XJ-S V12		1:43, Coupé
Western Models			Coupé	Red / Black interior	1:43, White metal road car – pre-H.E
Western Models			Convertible	Dark Metallic Blue / Light Grey interior	1:43, White metal – road car – lattice wheels
Western Models			Cabriolet	Light Metallic Blue / Light Tan interior	1:43, White metal – road car – starfish alloys
Western Models		1991 >	Coupé		1:43, White metal – road car
Western Models		1991 >	Convertible		1:43, White metal – road car
Western Models			Coupé	White / Green stripe	1:43, White metal – TWR Motul car #7 – 1983
Western Models			Coupé	BRG / White stripe	1:43, White metal – TWR car #3 – 1984
Western Models			Coupé	Black & Gold	1:43, White metal – Macau – TWR JPS car #8 - Tom Walkinshaw - 1984
Yatming			Coupé	Metallic Red, blue, white & gold	1:18, Diecast
Zee International	D86		XJ-S		

APPENDIX 10 ~ BROCHURES

The list below identifies some of the brochures available for the XJ-S model range.

M.Y.	Code Number	Variant	Description
1975		V12 Coupé	N registration number, super cover and BW model 12 transmission
1978	3294	V12 Coupé	S registration number, no flowery story on page 1, body colour boot panel, no super cover. GM400 transmission
1978	3294/A	V12 Coupé	S registration number, flowery story page 1, body colour boot panel, super cover. GM400 transmission
1978	3294/B	V12 Coupé	S registration number, change to super cover on specification sheet change to words on back cover
1979	3294/C	V12 Coupé	S registration number, new layout of text, addendum on page 1 and on the engine page, automatic box only
1980	3294/D	V12 Coupé	S registration number, addendum on page 1
1980	3294/E	V12 Coupé	A4 cream sides saloon & XJ-S fronts
1981	3501	XJ Series III and XJ-S HE	A4 cream sides saloon & XJ-S fronts, different fuel consumption figures
1981	3501/A	XJ Series III and XJ-S HE	A4 cream sides saloon & XJ-S fronts – XJ6 3.4L section re-written
1982	3501/B	XJ Series III and XJ-S HE	A4 white with green line border and silver leaper bottom corner
1983	J69	XJ Series III and XJ-S HE	A4 white with green line border and black leaper bottom corner. Includes fuel consumption figures.
1983	J69	XJ Series III and XJ-S HE	A4 landscape, green, black bonnet – **Overseas** English
1984	J/EU/OS/6	HE Coupé 3.6L Cabriolet/3.6L Coupé	The Legend Grows. A4 landscape, green, black bonnet
1984	J/UK/84/2	HE Coupé/3.6L Cabriolet/3.6L Coupé	A4 landscape, green, black car front view – **Overseas** English
1984	J/EU/OS/84/5	XJ-S HE	The Legend Grows. A4 landscape, green, black bonnet
1985	J/UK/85/010	3.6L Coupé/3.6L Cabriolet/HE Coupé	A4 dark green with gold leaper
1986	JAG 86/01	XJ Series III and XJ-S and Limousine	A4 dark green with gold leaper – **Overseas** English, no limo or XJ6 3.4L
1986	JAG 86/05	XJ Series III and XJ-S	White square, white embossed leaper
1987		3.6L and V12 Coupé and Cabriolet	White square grey leaper, automatic for 3.6L
1987½	JAG/87/62	3.6L and V12 Coupé and Cabriolet	White square, 3 car profile (red, white, blue)
1988	JAG 88/7	3.6L/V12 Coupé and V12 Cabriolet	A4 landscape, 4-sided card
1988		XJRS V12 Celebration	A4 landscape, 2-sided card single sheet, 4 colours, red car
1988		XJRS 5.3L	White square, silver leaper and green line square
1988½	JAG 88/26	3.6L/V12 Coupé and V12 Cabriolet	White square, silver leaper and green line square
1989	JAG 89/20S	3.6L/V12 Coupé and V12 Cabriolet	White square, silver leaper, embossed Jaguar
1990	JAG 90/20S	3.6L/V12 Coupé and V12 Cabriolet	A4 landscape, 2-sided card single sheet, 5 colours, black car
1990		XJR-S – 6.0L	White square, silver leaper, embossed Jaguar
1991	JAG 91/XJ-S 1	3.6L/V12 Coupé and V12 Cabriolet	Limited edition, large square white, red square with gold growler
1991	JAG XJ-S/Le Mans	XJ-S Le Mans V12	Large white square, pink centre square
1992	JAG 915/10J	Facelift 4.0L/V12 Coupé and V12 Convertible	Large square black, light green square
1992	XJR-S/92/GB	XJRS	Large square black, dark green square
1992	XJR-S/92/GB	XJRS	Large white square, pink centre square, introduction 4.0L Convertible
1992½	XJ-S 92.5 ENG	4.0L/V12 Coupé and Convertible	Green card folder/envelope
1993	XJ-S 93/1/E	4.0L and 5.3L Range	Gold car, introduction 2+2
1993½	XJ-S 93.5/1/E	4.0L and 6.0L Range	White, grey growler
1994	JLD/10/01/03/40 /94	4.0L and 6.0L Range, inc. Insignia	White, green growler different specification page
1994½	JLD/10/01/03/40 /94.5	4.0L and 6.0L Range, inc. Insignia	Mailer – order test drive, card fold-out
1995		Celebration	Landscape red bonnet, white background – colour chart
1996	JLD/10/01/03/96	4.0L Coupé and Convertible (Celebration Models)	Small booklet mailer for buy back scheme
1996		4.0L Celebration	

APPENDIX 11 ~ GROUP 44 TRANS-AM SERIES RESULTS

1976 – XJR 2

Destination	Drivers	Chassis No.	Position
Watkins Glen, New York	Tullius	2W51120	DNS
Mosport, Ontario	Tullius	2W51120	10th
Lime Rock, Connecticut	Tullius	2W51120	1st
Indianapolis	Tullius	2W51120	DNS
Road America	Tullius	2W51120	DNF
Daytona	Tullius	2W51120	DNF

1977 – XJR 2

Destination	Drivers	Chassis No.	Position
Kent Raceway, Seattle	Tullius	2W51120	1st
Westwood, British Columbia	Tullius	2W51120	1st
Portland, Oregon	Tullius	2W51120	19th
Nelson Ledges, Ohio	Tullius	2W51120	8th
Watkins Glen, New York	Tullius/Fuerstenau	2W51120	4th
Hallett, Oklahoma	Tullius	2W51120	1st
Brainerd, Minnesota	Tullius	2W51120	2nd
Mosport, Ontario	Tullius/Fuerstenau	2W51120	1st
Road America – Race 1	Tullius	2W51120	DNF
Road America – Race 2	Tullius	2W51120	1st
St. Jovite, Nr. Montreal	Tullius	2W51120	3rd

1978 – XJR 3

Destination	Drivers	Chassis No.	Position
Sears Point, California	Tullius	44-1	9th
Westwood, British Columbia	Tullius	44-1	2nd
Portland, Oregon	Tullius	44-1	3rd
St. Jovite, Nr. Montreal	Tullius	44-1	1st
Watkins Glen, New York	Tullius/Fuerstenau	44-1	1st
Mosport, Ontario	Tullius	44-1	1st
Brainerd, Minnesota	Tullius	44-1	1st
Road America, Wisconsin	Tullius	44-1	1st
Laguna Seca, California	Tullius	44-1	1st
	Fuerstenau – used XJR 2	2W51120	3rd
Mexico City, Mexico	Tullius	44-1	1st
	Fuerstenau – used XJR 2	2W51120	8th

1981 – XJR 4

Destination	Drivers	Chassis No.	Position
Charlotte, North Carolina	Tullius	44-4	2nd
Portland, Oregon	Tullius	44-4	1st
Lime Rock, Connecticut	Tullius	44-4	DNF
Road America	Tullius	44-4	DNF
Brainerd, Minnesota	Tullius	44-4	1st
Trois Riviéres, Quebec	Tullius	44-4	DNF
Mosport, Ontario	Tullius	44-4	1st
Laguna Seca, California	Tullius	44-4	5th
Sears Point, California	Tullius	44-4	DNF

Appendix 12 ~ Group A - ETCC Results

1982

Destination	Drivers	Chassis No.	Position
Monza, Italy	Walkinshaw, Nicholson	001	DNF
Vallelunga, Italy	Walkinshaw, Nicholson	001	3rd
Zolder, Belgium *	Walkinshaw	001	1st
Donington, UK	Walkinshaw, Nicholson	001	DNF
Mugello, Italy	Walkinshaw, Dieudonne	001	DNF
Brno, Czechoslavakia	Walkinshaw, Nicholson	001	1st
Zeltweg, Austria	Walkinshaw	001	2nd
Nurburgring, Germany	Walkinshaw, Nicholson	001	1st
Spa, Belgium	Walkinshaw, Nicholson, Percy	001	DNF
	Dieudonne, Allam, Lovett	002	DNF
Silverstone, UK	Walkinshaw, Nicholson	001	1st
	Allam, Lovett	002	2nd
Zolder, Belgium	Walkinshaw, Nicholson	001	1st
	Allam, Dieudonne	002	2nd

* - Not a European Touring Car Championship race

1983

Destination	Drivers	Chassis No.	Position
Monza, Italy	Dieudonne, Calderari	002	DNF
	Walkinshaw, Nicholson	003	2nd
Vallelunga, Italy	Walkinshaw, Calderari		DNF
	Walkinshaw, Nicholson, Dieudonne		3rd
Donington, UK	Fitzpatrick, Calderari, Brundle	002	1st
	Walkinshaw, Nicholson	003	5th
Pergusa, Italy	Walkinshaw, Nicholson	003	1st
	Calderari	002	DNF
Mugello, Italy	Walkinshaw, Fitzpatrick	003	3rd
	Calderari, Nicholson	002	DNF
Brno, Czechoslavakia	Walkinshaw, Nicholson	003	1st
	Calderari, Dieudonne	002	6th
Zeltweg, Austria	Walkinshaw, Brundle	003	1st
	Calderari, Dieudonne	002	2nd
Nurburgring, Germany	Walkinshaw, Nicholson	003	DNF
	Calderari, Dieudonne, Walkinshaw	002	DNF
Salzburgring, Austria	Walkinshaw, Nicholson	003	1st
Spa, Belgium	Walkinshaw, Dieudonne	003	DNF
	Percy, Calderari, Brundle	002	DNF
Hockenheim, Germany*	Calderari	002	1st
	Walkinshaw	003	DNF
Silverstone, UK	Nicholson, Dieudonne	003	DNF
	Walkinshaw, Dieudonne	002	9th
Zolder, Belgium	Percy, Dieudonne, Calderari	002	DNF
	Walkinshaw, Brundle, Percy	003	8th

* - Not a European Touring Car Championship race

1984

Destination	Drivers	Chassis No.	Position
Monza, Italy	Walkinshaw, Heyer	007	1st
	Brundle, Calderari	006	13th
	Percy, Nicholson	004	DNF
Vallelunga, Italy	Walkinshaw, Heyer	007	3rd
	Calderari, Nicholson	006	8th
	Percy, Schlesser	004	DNF
Donington, UK	Percy, Nicholson	004	1st
	Calderari, Schlesser	006	5th
	Walkinshaw, Heyer	007	9th
Pergusa, Italy	Calderari, Brundle	006	1st
	Walkinshaw, Heyer	007	2nd
	Percy, Nicholson	004	3rd
Brno, Czechoslavakia	Walkinshaw, Heyer	007	1st
	Percy, Nicholson	004	2nd
	Calderari, Sears	006	3rd
Osterreichring, Austria	Walkinshaw, Heyer		1st
	Percy, Nicholson		2nd
	Calderari, Sears		DNF
Salzburgring, Austria	Percy, Nicholson	004	1st
	Calderari, Sears	006	2nd
	Walkinshaw, Heyer	007	DNF
Nurburgring, Germany	Nicholson, Walkinshaw, Heyer	004	5th
	Heyer, Sears		DNF
	Percy, Calderari		DNF
Spa, Belgium	Walkinshaw, Heyer, Percy	004	1st
	Calderari, Sears, Pilette	006	DNF
Silverstone, UK	Calderari, Sears	006	2nd
	Walkinshaw, Heyer	007	DNF
	Percy, Nicholson	004	DNF
Zolder, Belgium	Walkinshaw, Heyer	007	3rd
	Calderari, Percy	006	4th
	Nicholson, Percy	005	DNF
Mugello, Italy	Brundle, Calderari, Sears		5th
	Walkinshaw, Heyer	007	DNF
	Percy, Brundle	005	DNF
Macau GP, Hong Kong*	Walkinshaw	005	1st
	Heyer		2nd

* - Not a European Touring Car Championship race