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THE SPORTS CARS



he century-long history of Jaguar makes a fascinating story and there's no better way to tell it than through the development of the brand's sports cars, the success of which often even took the remarkable William Lyons by surprise.

Issue six in the Jaguar Memories series begins not with the Jaguar brand but with the SS marque at a time when Jaguar was still a model name. The SS Jaguars soon made a name for themselves before production was inevitably halted in the late 1930s.

Despite the chaos of wartime Coventry however, development continued in the background, with the legendary XK engine rumoured to have been drawn up while Lyons and his key designers were on fire-watching duties.

It would be the first public appearance of this new engine in 1948 which would spearhead a new wave of sports cars now wearing the Jaguar marque: the XK120.

Worked up purely as a glamorous concept to showcase the new engine, the XK120 proved to be a smash hit, providing racing car pace -the 120mph top speed from which it took its name - with a price tag the merely wellto-do rather than the super-wealthy could afford.

The success of the car would ensure that the XK line-up continued through three generations, only being replaced when the stunning E-Type appeared on the scene.

Impossibly elegant, with blistering performance reinforced by a string of motorsport victories, the E-Type became a national treasure and remains an icon today.

Its replacement, the XJ-S grand tourer couldn't have been more different but was a perfect example of Jaguar reinventing itself to suit current thinking and was destined to live a long life, standing comparison with many much more modern designs even in its twilight years.

Replacing the XJ-S was no easy feat, but a newly revitalised Ford-financed Jaguar company managed it with the return of the XK badge, the XK8 marrying hightech V8 power with curves hinting at the E-Type.

The XK8 would in turn evolve into the aluminium-bodied XK, and from there into the F-Type which flies the Jaguar sports car brand today.

We've delved into the development history of all these iconic Jaguar sports cars, plus the XJ220 supercar and the intriguing concepts which didn't make production, so wherever your ideal vintage of Jaguar sports car sits in its 100 years of history we've got something for you.

Enjoy the issue everyone, and keep safe.

Paul Sander Editor, Jaguar Memories

THE SPORTS CARS

A look at the cars and development stories of some of the most iconic Jaguar sports cars.

















JAGUAR MEMORIES

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he 1938 SS100 Coupé is an important car for several reasons. It is the only closed SS100 built by Jaguar, which makes it a complete one-off. Built for the 1938 Earls Court Motor Show, it was designed to impress. It did just that, selling on the stand. But, it's the story of how it came to be that is the really important bit.

William Lyons had always had a sharp eye for styling, making the leap from sidecars to motor cars with great success. SS was gaining a reputation for style, that had only been reinforced by the rakish SS1 and the pretty SS100 roadster. While others did the crafting, they did so under the beady eye of Lyons, often adjusting and correcting several times until he was happy. The key person in this part of the story is Cyril Holland, who joined SS in Blackpool in 1928. Holland was a master fabricator, but he could also design and sketch. It was his sketch for a rounded, boat-

tail body that led to the designing of the first Austin Seven Swallow. As the Lyons/Holland relationship grew, so did the reputation of SS. Perhaps the ultimate pre-war demonstration of this relationship was the new saloon range of 1935. This was easily one of the most beautiful saloons of the era, yet it wasn't the work of a specialist coachbuilder but the fruit of the Lyons/Holland relationship.

The following year, the SS90 and SS100 sports cars joined the



range, again displaying beautiful lines that were a cut above most of the competition. But Lyons was fast learning that beautiful show cars could create a real splash at a motor show. For 1938, he planned something special.

He and Holland began work on a sleek coupé, that would naturally follow the same 'aluminium over ash' construction as the roadster, but offer something very different. Far more than just being an SS100 with a roof, the car was restyled in pretty much every area. Only the grille was retained.

The car was completed and displayed at the 1938 motor show as planned. It was sold to Leo March, and existing SS customer, who gifted the car to his 17-year old son, Gordon. Nicknamed 'The Grey Lady,' the SS100 was registered EHP 111. After the Second World War, during which it spent most of the time in storage, the car was sold to a John J Sheehan.

By this time, it was sporting a pair of air horns and disc covers for the front wheels, but it was then sold to a film producer, who foisted even worse upon the car. It was repainted in bright red, fitted with XK120-esque bumpers and a radiator mascot.

The fourth owner managed to talk a Police Officer into doing a speed check on EHP. Apparently, the grey lady managed an impressive 105mph.

After a spell in the USA, EHP finally came back to England and was

SS100 COUPÉ

restored by noted SS expert David Barber. Finally, EHP was returned to its correct grey. The car then visited Pebble Beach in the late 1980s with another spell of American ownership.

Tom Zwakman and one of his customers took ownership of EHP in 1999. "It was more or less like it is today," recalls Tom. "We did repair the front springs, and locate them correctly, and carry out some maintenance to the brakes. We also refitted the original engine. It came to us with a MkIV engine, because when it was originally restored, it wasn't really possible to rebuild these engines. I was very fortunate that SS Restorer David Barber sold me several engines amongst a stock clearance some two decades before we bought the SS. We discovered that the SS coupé's original engine was amongst this stock, so I had the engine many years before the car. It also still has its original gearbox. We completed a rebuild on the engine, with a full balanced crankshaft, six months ago."

Yet, for all its exciting history and impact 80 years ago, this car would not lead to the start of SS coupé production. There are several reasons for this, with the Second World War being just one of them. But, 1938 was also a tricky year for SS, with the move to all-steel bodywork on the saloon range. This would have kept Lyons and his team very busy, as



Beautiful interior is in superb condition, and very cosy.

many problems were encountered, so now was not the time to be taking on new production headaches. That leaves EHP as an intriguing one-off. It's time for a closer look.

IN THE METAL

Walking into the Zwakman workshop, the SS Coupe is surrounded by several SSs, an XKSS and an XJR-15. Hallowed surroundings, and it fits right in. What isn't clear in photographs is just how petite the car is, being far smaller than similar-era coachbuilt Bentleys or Rolls-Royces.

The front end is dominated by the enormous Lucas headlamps which, combined with the grille, offer perhaps the only clue of the SS100 underpinnings. The flowing, open wings of the SS were replaced by stylish wrap-around items, but it is perhaps the roofline that is most pleasing. The way it plunges down and meets the rump of the car is pure Jaguar. It links to the saloon range, and is a styling feature that Jaguar was still trying to replicate with the second S-Type of the 1990s. It's especially pleasing how the body sweeps up over the rear wheels to meet the roof, giving it something of a lowered hot rod vibe - something you also see with the SS1 coupés. They almost look so extreme as to be Custom Shop created.

There are no running boards, so the front wings elegantly taper to a finish ahead of the doors, while the rear wheels are fully enclosed to ensure a sleek line. The rear aspect of the side view certainly brings the MkVII to mind, but Holland and Lyons also did a good job of converting the flat windscreen into the flowing curve of the roof. The gentle profile also allows a decent amount of headroom.

The rear wings don't fully blend into the body along their trailing edge, but instead converge into a dainty finishing line that is also very pleasing to the eye. 'Modern' 1950s rear lamps are a sensible modification



4500rpm red line is a sign of the times.



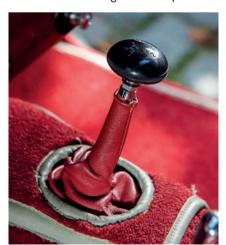
and these standard Lucas lamps don't look horrendously out of place. There's even joy in the way the bootlid unfolds, with a separate compartment beneath it for the spare wheel.

The interior is in stark contrast to the austere SS, something also reflected in the post-war fixed head





versions of sports cars. To Lyons, clearly someone who wanted a roof was also after a little comfort and luxury, so there's a beautiful wood veneer dashboard, similar door cappings and a good dose of leather trim. There's a small handle to open the windscreen for ventilation, though both door window glasses drop



Windscreen opens for ventilation (top left) while behind the seats is an intricate stowage area (left). Right: Stubby gearlever falls nicely to hand.

and there's a pull-back sunroof too. The large steering wheel dominates, and it's pleasing to see that it isn't immaculate. It has some sign of use that it has collected over the decades.

Whereas a standard SS has the gearlever hidden beneath the dashboard, the stubby lever falls more readily to hand here. It has a very wide gearknob, while the handbrake sits to the passenger side of the tunnel.

Behind the seats, there are two delightful cubby boxes, one of which has a lift-out tray for oddments. It's a reminder that carpentry was a key skill at the Foleshill factory when this car was built. There would have been no need to send out for such skills. There's a good deal of ash under that smooth aluminium-clad exterior, so these interior appointments would have been an amusing distraction.

Under the slide-lifting bonnets is the 3-5-litre Standard-based straight-six, with its Weslake-

SS100 COUPÉ









designed overhead valve arrangement and a pair of carburettors. Zwakman Motors, current custodians of the car, have carried out a complete engine rebuild. They know their way around these engines, and a number of improvements have been made, including far superior crankshaft balancing that allows the engine to rev in a way it never would have back in the day. That said, the engine work was only carried out a few hundred miles ago, so a gentle foot will be required on the throttle.

The changes are mostly internal, so to all intents and purposes, it looks pretty much as it should do. We love how both the chassis and engine plates show signs of a great deal of polishing over the years. There is no body number. There doesn't really need to be for this complete one-off.



It all looks wonderfully fresh, and is capped off by a working underbonnet lamp on the nearside.

BEHIND THE WHEEL

Clambering aboard is quite tricky, though aided by the suicide doors. The footwells are not overly-generous in size, and I'm glad I chose sensible shoes that are fairly slim. You almost wear the enormous steering wheel, though I actually find it easier to slide my legs beneath it than say in an XK120. With the door shut, it's certainly snug and a further reminder of the car's compact dimensions.

That said, I'm not cramped and can actually stretch my legs out. I try to put myself in the position of an excited 17-year old, taking his first drive almost 80 years ago. The engine fires very promptly into life, and





it's a pleasure to snick the stubby gearlever across and into first gear. As we ease away, I'm mindful to avoid stressing the engine too much, as it is still very much in the running-in phase. Despite that, it pulls well up to our imaginary red line of 3000rpm, making a beautiful, lustful noise as the carburettors drink in the fuel and air. There are no filters to dull the intake roar, but the fact we're in a closed coupé means the noise isn't over-bearing. Just very pleasant.

The car steers very well, which is a credit to the work done on the front suspension. Sure, it doesn't have the poise of independent front suspension, but as we thread our way through the streets of Alkmaar in The Netherlands, it feels very manageable. There are some nerves here, as I contemplate modern traffic from the wheel of this priceless gem, but the brakes offer reassuring power when called upon. Over-the-shoulder visibility is not that good with those broad body sides and small rear window, but the wing-top mirrors help.

The ride isn't bad at all for the simple beam axle suspension design, but what really surprises is the transmission. It's an absolute delight, whether going up or down the gears. No crunching, no unpleasant noises, just a tight feel that allows you feel the mechanical precision at work and a beautiful whine as you ease away in first gear. In fact, so confident am I with this transmission

that I risk a double-declutch into first gear as we pass through a rather congested town centre. The gearlever slots in perfectly.

While we naturally couldn't test the outright performance of this car, nonetheless it was able to prove entertainingly brisk through the gears. By 1930s standards, this really is a quick car, able to top 100mph with no problem. As it's heavier than the roadster, we suspect the acceleration is a little slower, but it feels lively in a way most 1930s cars do not.

Being behind the wheel isn't so much about how the car drives though, it's an experience to be savoured – driving an 80-year old beauty with so much history behind it. Naturally, it garners plenty of attention on the road, but how many passers-by know just how special this car is?

It isn't just the fact that it's a oneoff show car. It's the way, for me at least, that it seems to bridge the gap between the pre- and post-war sports cars. It seems remarkable that it would be another 13 years before Jaguar built another fixedhead sports car, but the DNA is clear to see here. Also, the car was built largely because Jaguar had no new cars to launch in 1938. That Lyons knew that a sleek sports car would be a great way to generate attention must surely have affected the decision to build the XK120 show car, and that was a vehicle that definitely would not remain a one-off.

So, while this car would ultimately be seen as a dead-end, it certainly was not a wrong turning. This is one birthday girl who remains very special indeed.



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The Jaguar Collector's Resource



ineteen forty-eight was an important year for the British motor industry. Although only three years had passed since the end of World War Two, manufacturers were already starting to recover, developing new cars for the crucial export market. Three of the most

significant made their debut at the British Motor Show at Earls Court: the Land Rover, the Morris Minor and the Jaguar XK 120. The latter was undoubtedly the star of the show. Not only were its beautiful and voluptuous lines unlike anything currently produced by any British

manufacturer but, thanks to an all-new straight-six engine, it could reach 120mph, which was an almost unheard of figure for the time.

Yet those who lingered to admire the car on Jaguar's stand would have been surprised to learn it began life as a stop-gap model, developed in a



hurry to show off a new engine. The engine had, if fact, been intended for a new saloon, the eventual Mk VII, but with Jaguar struggling to convert its factories back to car production after their wartime use repairing bombers and building sections of wing, the car's development fell

behind schedule. So, a compromise was reached.

While the new chassis would be used, the stop-gap car would be clothed in a traditional body, similar to the pre-war Mk IV that had been put back into production when hostilities ceased. That car - the Mk V [see p68] - was powered by the existing pushrod 2.5- and 3.5-litre engines that had been bought from Standard before the war because the new XK engine was considered too good to put into an old-fashioned body.

However, Jaguar still wanted to publicise its new engine at the 1948

XK120

British Motor Show (the first since before the war), so it was decided to develop a sports car that could be produced in small numbers.

Jaguar's founder and chairman, Sir William Lyons, told the magazine's Paul Skilleter during a 1975 interview, "Such a car with the XK engine could not fail to become outstanding, as it would easily out-perform everything else on the market by a wide margin, irrespective of price."

With only a few months left before the show, Jaguar's engineers immediately set to work – and by using parts intended for the new Mk VII, the car came together relatively simply. The Mk VII's chassis was shortened by 18in and an X member bracing used for the saloon was replaced with a boxsection cross member. Other than some adjustment to compensate for the sports car's lighter body, the suspension was kept the same.

Most of the work centred on designing a suitable body. Lyons, as

Jaguar's chief stylist, had designed a pretty little two-seater sports car in 1946-47 and, although the exercise wasn't taken any further, its soft, swooping lines were clearly the inspiration for the new car. It took just two weeks to complete.

"It was done more quickly than anything before or since, and I could compare weeks, almost days, with years," Lyons told Skilleter.

When Lyons was happy with the design, a single body (number F1001) was formed from aluminium by coachbuilder JH Cooke & Sons at its Nottingham workshop, before being delivered to Jaguar's factory in Foleshill, Coventry. It was then mounted onto a chassis (660001) and painted in metallic bronze. The interior was lavishly trimmed for the time in biscuit leather upholstery, while the central dash was comprehensive, incorporating several dials. The first production version of Jaguar's new 3.4-litre engine, number W1001/7 (the 7

denoted the 7:1 compression ratio) was under the bonnet.

Jaguar originally planned on two versions – the XK 120 with the 3.4 and the XK 100 with a 2.0-litre, four-cylinder. Prototypes of the smaller engine were built and Jaguar even produced sales and marketing literature for both models, but the 2.0 was found not to be powerful or refined enough and, at the last minute, the idea was dropped. It took Jaguar another seven decades before it finally had a four-cylinder sports car.

When the XK 12O was revealed at the 1948 British Motor Show, it was a huge surprise. Although Lyons had hinted at a new sports car at an event to introduce the new Mk V in September 1948, no one was expecting to see it a mere month later at Earls Court. The press were all complimentary about it, with Autocar saying in its October 29 issue, "A well-proportioned body gives the new Jaguar super sports two-seater very fine lines," while the Motor said the car







was, "One of the most interesting new models to be seen at the show."

They were especially positive about the car's price. At £1,263 3s 11d, the XK 120 was incredibly good value for a 100mph-plus sports car. Its nearest rival, the Aston Martin DB2, was a whopping £650 more.

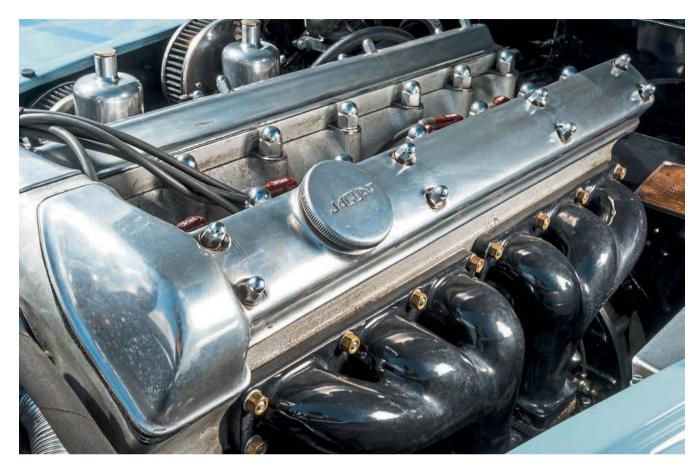
When Charles Hornburg, Jaguar's distributor for America's west coast. visited the show, he offered to take the first year's worth of production. It comes as no surprise then that Lyons described the event during an interview with broadcaster Richard Dimbleby as, "An unqualified success."

The XK 120's speed was proven the following May in front of a crowd of assembled journalists: Jaguar's test driver, Ron 'Soapy' Sutton, reached a remarkable 132.596mph driving a standard example on the long straight motorway near the Belgian town of Jabbeke. Although it was a new model with little development behind it, Motor magazine noted in its 1 June 1949 issue how easily the car was able to reach the speed, and "A very notable feature of the car was its absolute steadiness at minimum speed and also its quietness."

The first customer XK 120 - chassis 660002 - left the factory on 21 July 1949. It was right-hand drive and went to a dealer in Australia. The export market was instrumental in Jaguar's post-war survival, and it wasn't until the following September that the car was finally available in the UK.

Orders for the XK 120 began pouring in; orders Jaguar could not meet easily. The aluminium bodies were handmade and slow to produce, creating a bottleneck that had to be freed if production were to improve. So, not long after the car's debut, Jaguar began designing a steel version. It had a couple of visual differences: the headlight nacelles of the steel car were longer and the rear wings not as full.

There were further changes under the skin, including a new front bulkhead that featured redesigned



bonnet hinges, while the sills were produced from steel instead of wood. The rear part of the body was also supported by a steel substructure. It took 20 months before the new body entered production, not arriving until spring 1950, but it did speed up the build process.

Although not designed for motorsport, the XK 120's flexible, torquey engine and stiff chassis made an excellent racing car. Its first foray into competition came as early as August 1949 when the British Racing Driver's Club held a one-hour event at Silverstone for production cars. Although Lyons had always been circumspect of circuit racing - he preferred gruelling rallies to prove the reliability of his cars - he was also aware it would appear suspicious if a car didn't race, so three examples were entered. Facing stiff opposition from Frazer Nash and Allard, two of the Jaguars finished a remarkable first and second place, a fine result

for the burgeoning company. As Motorsport magazine said in its September 1949 issue, "The British Jaguars looked and sounded superb."

As a covert way to enter motorsport, Jaguar handed over six works-prepared XK 120s in 1950 to private entrants, who would compete in a variety of events. These included the Targa Florio, Mille Miglia and Le Mans 24 Hours, where Leslie Johnson and Bert Hadley were on course for a podium position before succumbing to clutch problems just hours from the end. Despite the disappointment, it was the start of Jaguar's long and, eventually, happy association with the French race.

lan Appleyard was the most successful of the six XK 12O drivers. The son of a Leeds Jaguar dealer, he was given his XK 12O – a cream-coloured car, registered NUB 12O – on the strength of having been reasonably successful at the 1948 Alpine Rally driving an out-dated SS 10O. That he

was married to Lyons' eldest daughter, Pat, might also have been a factor. However, with his wife acting as navigator, Appleyard became the face of the XK 120's success in the Fifties, gaining a coveted Coupe des Alps for meeting all the target times at the 1950 Alpine Rally, and the first Alpine Coupe d'Or in 1952 for doing so three times in a row.

Other big early success stories came at the hands of a young Stirling Moss at the 1950 Tourist Trophy at Dundrod, Northern Ireland. In appalling conditions and driving Tommy Wisdom's XK 120, registered JWK 988, the 20-year-old won his – and Jaguar's – first international race. It was this victory above all others that persuaded Lyons to officially enter motor racing with a factory-backed team and a racing car based on the XK 120 – the eventual C-type – the following year.

The XK 120's range was increased in March 1951, when Jaguar introduced



a handsome fixedhead coupe with a rounded roofline that bore a close resemblance to a one-off closed SS 100 from 1938. Performance remained the same as the open two-seater's, but it was slightly more luxurious; wind-up windows, wooden door caps and veneer coverings for the fascia, plus a glovebox and sun visors, were added to the specification.

Jaguar's speed and reliability came to the fore in August 1952 when a team of four, led by Leslie Johnson and including Stirling Moss, drove a bronze XK 120 FHC - registered LWK

707 - for seven days and nights at the Autodrome de Linas-Montlhéry outside Paris. By averaging in excess of 100mph, the team broke nine international speed and distance records to further enhance the car's reputation.

The third XK 120 model arrived in April 1953. The drophead coupe had a similar specification to the closed car's - including winding windows - but featured a folding roof that kept the shape similar to the fixedhead coupe's.

The XK 120's final hurrah came in April 1953 when Jaguar returned



to Jabbeke with its new test driver. Norman Dewis, who reached an incredible 172.412mph over the flying mile. Admittedly the car - registered MDU 524 - featured several modifications, including a more aerodynamic Perspex canopy, a very high 2.92:1 final drive and part of the radiator grille was blanked off, but it was further proof of the car's abilities. Yet, as Jaguar's then competition manger, FWR 'Lofty' England, said years later, "We'd have been quite happy with 155mph."

The XK 120 was finally replaced by the XK 140 in autumn 1954. The two looked similar, but the new car featured several improvements over its predecessor, including rackand-pinion steering to replace the recirculating ball type, stronger torsion bars, optional overdrive and more power under the bonnet - up to 190bhp for the standard unit and 200bhp for cars with the Special Equipment extra-cost option.

More than 12,000 XK 120s were produced in five years (7,612 open two-seaters, 2,678 fixedhead coupes and 1,765 drophead coupes), 85 percent of which were exported - a fine number for a car that was a last-minute stop-gap model never intended for serious production. However, the XK 120's impact on Jaguar is more than how many units were sold. As a beautiful sports car favoured by Hollywood stars - Clark Gable owned one, as did Humphrey Bogart - it raised Jaguar's profile more than the Mk V or even the eventual Mk VII, which arrived in 1950, while the car's many motorsport successes proved Jaguar's ability for speed and reliability. The mix of performance and style has come to define Jaguar's sports cars. The XK 120 and current F-TYPE are 70 years apart in Jaguar's history, but, as I'm about to discover firsthand, they share the same spirit.

The gorgeous Pastel Blue car I've arranged to drive is typical of the early steel models that left the Foleshill





production lines from spring 1950. Made on 4 December the same year, this genuine British car still wears the standard colour-coded steel wheels and rear spats. The more popular wires weren't an option until the early Fifties as part of the Special Equipment package, which also included high-lift cams, a dual exhaust system and 8:1 compression ratio.

The pale colour highlights the car's beautiful voluptuous lines and soft tapering curves. Even now, in the car's 70th year, it's still easy to understand how this sleek Jaguar came to make such an impact at the British Motor Show alongside the dull family cars that were displayed elsewhere.

This car was restored ten years ago by marque specialist Twyford Moors. Twyford's Harry Rochez says XK 12Os remain highly useable with minor changes to make them more practical, as proven by the many owners who enjoy touring in them. These include the electric fan, front disc brakes

and electronic power steering that are fitted to this car. They may be important changes, but none can be spotted from the exterior.

The interior also looks as standard. The simple leather-wrapped central dash, dominated by the huge speedo and rev counter, has more style than any modern instrument panel, but with a huge steering wheel that wouldn't out of place in a lorry, it's not easy for me to squeeze behind it and position my big feet in front of the pedals. Once I'm in, and with





the tiny door is shut, it is reasonably comfortable, although I'm sure if I took it on a long tour I'd lose feeling in my extremities.

The 3.4-litre XK engine bursts into life on the press of a button, and settles down to a familiar throaty



thrum. With 160bhp, acceleration is rapid for a car seven decades old and I soon need to change up. The standard gearbox by Moss doesn't have a great reputation, but, by taking my time, it snicks into place easily and smoothly. I wonder if owners



still want a modern five-speed unit conversion. Harry later tells me that some do, but many prefer to learn to use the standard transmission since its part of the experience of driving an XK 120. It's a sentiment I can understand; completing a perfect gear change without crashing the gears is a genuine moment of motoring pleasure.

The electronic power steering is less vague than that of a standard car, offering a little more accuracy as I cut through corners, although it still needs constant corrections to avoid wandering into the opposite lane. The grip from the skinny tyres is a perfect match for the engine's torque, though.

I'm sure the XK 120 remains as enjoyable to drive in 2022 as it was 70-odd years ago. Dial in the aesthetic effect of those beautiful curves and it's understandable how the car became the blueprint for all future Jaguar sports cars, from the E-type to the current F-TYPE.



The XKSS story

We tell the story of how Jaguar's original supercar came to be, how fire destroyed nine of them, and how Jaguar is now going to replace them. Words: Ian Seabrook



hese days, it's very hard to imagine a world where a Le Mans-winning racecar could conceivably be fitted with a windscreen and sold to the public as a road car. But back in 1957, that's exactly what Jaguar did. Twenty five XKSSs were due to become road cars until nine met with a fiery end.

The story begins with the D-Type, Jaguar's second attempt to build an all-conquering Le Mans racer. Having won at Le Mans in 1951 and 1953. there was a real appetite for further success. The race team was run by service director Raymond 'Lofty' England, who would go on to succeed Sir William Lyons himself in 1972 albeit for only two years.

Jaguar had assembled quite an engineering team just before, during and after the Second World War, and the XK engine was conceived during fire watch duties. Lyons, Claude Bailey, Bill Heynes and Wally Hassan filled the hours by discussing a new, all-Jaguar engine. Prior to this, SS Cars (Jaguar's pre-war name) had been using modified Standard engines, with an overhead valve conversion. With Jaguar able to build its own engines, this relationship soured somewhat, and inspired Sir John Black of

XKSS

Standard to buy Triumph and create what he hoped would rival Lyons' revitalised company.

Sadly for Triumph, Jaguar unveiled the gorgeous XK12O in 1948, against which the new Triumph Roadster stood no chance. The XK12O wasn't just pretty though, it was powered by an all-new, double overhead camshaft engine that produced quite extraordinary performance for the time.

LE MANS SUCCESS

Class success at Le Mans allowed the idea of a more focussed racing machine to take hold, and the XK12OC was developed. The C-Type won twice before being replaced by the even sleeker D-Type, with its dramatic tailfin. The sleek lines of both cars were tailored by aerodynamicist Malcolm Sayer, who would also shape the E-Type. It helped explain the remarkable performance of race cars that boasted a mere 260bhp (SAE) or so.

Some small hatchbacks boast more than that today.

The D-Type wasn't all-conquering from the start. It came frustratingly close to victory on its debut in 1954, but was pipped to the post by just 105 seconds after a full 24 hours of racing. 1955 was better, though victory was tainted by the worst accident in motor racing history – Pierre Levegh's Mercedes-Benz 300SLR careered off a slower Austin-Healey and into the packed grandstand. Pierre and more than 80 spectators were killed.

1956 was a poor year for the factory D-Types, with two crashing within minutes of the start. Thankfully, Scottish team Ecurie Ecosse was on hand to deliver victory with its independent D-Type. The following year, with Jaguar having withdrawn from direct motorsport, Ecurie Ecosse returned for claim the D-Type's hattrick. For 1958, Le Mans imposed a 3-Litre maximum engine size, ending the 3.4-litre D-Type's winning ways.

But, Jaguar still had a large number of D-Type monocoques taking up space in the factory. It was therefore decided to convert them to road specification. This consisted of little more than fitting removable side screens, bumpers and a hood, though the latter item meant the loss of the iconic tail fin. The same dry-sump XK engine was installed, with around 260bhp. Performance was truly exceptional for the time, with a top speed of 150mph and 60mph coming up in fewer than six seconds. By comparison, an XK150 took around eight seconds for the same dash.

Interest was keen, especially in the USA, but when a fire devastated a large section of the new Browns Lane works in February 1957, the focus was very much on getting regular production back up to speed – something they managed in just two days. The nine destroyed XKSS bodyshells would not be replaced. Immediately, that is.



Devastation inside the factory, with MkVIIIs and XK150s all destroyed.



A Mk1 is foremost here. Some cars were driven out, but even they were scrapped.

There can be a little confusion about XKSS survivors. It is thought that two were converted to race specification, ie back into D-Types, while at least one D-Type was later converted to XKSS specification. Chassis number 716 is one such example, which started life as a D-Type in 1955, but was converted to XKSS specification in 1957. Later on, it was converted back to D-Type specification, only to be returned to XKSS specification in recent years. Either not all XKSSs were based on unused monocoques, or Jaguar had D-Type chassis sitting around for some years.

With so few produced, it is at least fairly easy to keep tabs on survivors. All 16 originals are still known to various people within the Jaguar world with the majority either in the USA or the UK.

RACING AND THE ROAD

The XKSS was intended as a road car, though chassis number 757 (numbers were not sequential) was



Chassis 719, probably in 1971. Initially sold to the US, it lived in the UK between 1969 and 1977.

DEWIS DOESN'T GET THE SALE

Jaguar legend Norman Dewis, who was instrumental in testing Jaguars during the 1950s and 1960s, caused upset amongst the royal security guards when he took Prince Philip onto the banking at MIRA in an XKSS in 1957. He had been told to go at no more than 80mph, but Prince Philip wanted a proper demonstration, so they hit 135mph. Then

Prince Philip himself had a go, which upset the security people even more. Later, Dewis was assessing the driving of the Duke of Kent (pictured in the passenger seat) in the hope that he might purchase a Jaguar. Lyons was apparently not very impressed when he went and bought an Aston Martin instead.



exported to Hong Kong and won the Macau Grand Prix twice in 1959 and 1960. Most remained in road trim however, including chassis number 713, twice owned by screen star Steve McQueen. He purchased his XKSS from a movie contact in the early 1960s – allegedly for just \$5000. His exploits in the car, which he regularly drove around the Los Angeles area, are the stuff of legend. Certainly, McQueen was not afraid to explore the substantial performance of his car on the road, much to the annoyance of the local Police force.

McQueen sold his car to a museum in 1967, but managed to buy it back in 1978 for considerable extra expense. After McQueen's death in 1984, the car was sold to a friend and neighbour, before being

sold to the Petersen Museum in LA in 1992. Remarkably, and very pleasingly, this car is maintained in running condition by the museum, and was the subject of a video by chat show host Jay Leno in 2015 – worth seeking on YouTube.

Other survivors are similarly well cared for, and now command prices in the millions. This has allowed Lynx Engineering, and others, to market recreations – often based on E-Types. This racing legend turned road car has inspired quite a following.

While undoubtedly a race car, what sets the XKSS apart from other supercars is the fact that it can be remarkably docile. That's a key ingredient with the XK engine. It isn't just powerful, it's also astonishingly

tractable. Many powerful engines are just horrible to drive at anything other than flat out, but reports suggest that the XKSS is no more difficult to drive than any other Jaguar sports car. Remember, this car was developed at a time when racing had a far more direct impact on regular production cars than it does today. Disc brakes were tested by Jaguar first on the race track, before they were applied to road cars, and improvements were made to engines to boost reliability on track, which also brought benefits to the road cars. There are few times in history that road cars and race cars have had such a thin line between them, and that's all part of what makes the XKSS so special to the world of motoring.



XKSS REBORN

All the fervour around the 16 original XKSS Jaguars helps explain why Jaguar Classic has taken the incredibly bold step of building nine more. Following on from the success of its Lightweight E-Type project,

where six brand new continuation cars were built, Jaguar Classic has proudly announced that the nine 'missing' XKSS cars will be replaced.

Preliminary work is now underway, and construction is due to start later in 2016. Completed cars should be

ready for their lucky owners during 2017. Needless to say, we will be keeping a very close eye on proceedings. Of course, while no figures are

being circulated, it's safe to say that one of these recreations will not be exactly cheap. Also, unlike the original, they will not be road legal from the factory. That's because there is no way to make a brand new XKSS meet current road regulations without seriously compromising the original design. If a new owner wishes to go to the extra effort to make the car road legal themselves, then obviously they are welcome to.

Really, these new cars will be just as collectible as the originals and so are rather unlikely to clock up many miles. That makes it all the more impressive to see the Petersen Museum allowing people like Jay Leno to take to the streets in a car that even with Jaguar's latest attempts, remains one of the most incredible and valuable cars money can buy. The XKSS Story



Nine new XKSS cars will be built.

E-Type evolution

With the legendary E-Type enjoying numerous updates during its lengthy career, we pay tribute to Jaguar's most famous sportster – and investigate its many highlights

Words: Jim Patten

f there's one car that's appeared in more 'Best of British' or 'Most Beautiful' listings than just about any other, it's the Jaguar E-Type - a machine so stunningly elegant that even Enzo Ferrari remarked upon its aesthetic perfection. Intriguingly though, the E-Type's sleek lines - surely its most famous asset were the result of a function-first approach, its final shape being dictated by applying aerodynamic principles to automotive design. The primary purpose of the E-Type was to go fast, and designer Malcolm Sayer - who had already given the world the C- and D-Type - employed his experience with aerodynamics to good effect, using mathematical principles to create the car's shape. The end product was, of course, undeniably beautiful... but also very fast, exactly as intended.

To complement its aerodynamic efficiency, the E-Type needed an impressive power source, which naturally meant Jaguar continuing with its hugely successful and highly competitive XK engine. The twin-cam straight-six had become increasingly more powerful over the years, with the original 160bhp provided for the XK120 (helping it to be become the world's fastest production car) growing to 220bhp – and 3.8-litre capacity – by the time

of the XK150. The XK had produced even more power in racing guise, with the success of the C- and D-Type demonstrating its ultimate potential.

Malcolm Sayer had joined Jaguar in 1950 after a decade at the Bristol Aeroplane Company and had been responsible for the bodywork of the C-Type, which won at Le Mans in 1951 and '53. Leading the team that would produce the E-Type was Bill Heynes, Jaguar's technical director, who had been with the firm since its pre-war days. The story of the E-Type begins with Heynes's XKC project, a one-off exercise designed to investigate monocoque construction, resulting in the D-Type racer.

The first E-Type prototype dubbed E1A for E-Type number one, aluminium – was largely derived from the D-Type in construction, while in terms of size it sat between the D-Type and the production E-Type. Where it differed from the D-Type was at the back, where an elegant new independent rear suspension had been developed, a concept that would last Jaguar well into the 1990s. Power came from the 2.4-litre incarnation of the XK motor (plucked from what we now know as the Mk1 saloon), and even with just 120bhp the prototype went well. The E1A was joined in 1958 by a second prototype, with a third being built up in '59. The







following year saw the unveiling of a sports-racer under the tag E2A, based on the D-Type but with styling cues that are recognisably E-Type.

In the end, the production version of the E-Type featured Sayer's curving monocoque bodywork, beneath which was found the iron-block, alloy-head XK engine in 3.8-litre form. Breathing through triple SUs, it was rated at an optimistic 265bhp and powered the rear wheels via a four-speed Moss gearbox. The rear end featured the newly developed independent rear suspension while the front relied on torsion bars.

LAUNCH SUCCESS

The E-Type unveiling was scheduled to take place at the Geneva Motor

Show in 1961, with Jaguar having provided two cars beforehand to The Autocar and The Motor magazines. A car for the show stand was duly transported to the Parc des Eaux Vives in Geneva, but such was the demand for demonstration runs that William Lyons realised a second car would be required, and so instructed PR man Bob Berry to bring another to Switzerland. The quickest way to do it was to simply drive the E-Type from Coventry to Geneva, which Berry duly did, spearing through the night in 9600 HP - the now-famous first production version of the E-Type FHC, owned by Jaguar historian Philip Porter for the last four decades. After throwing a bucket of water over it at the local Jaguar dealer in Geneva, 9600 HP was subsequently presented

to the world's media, resulting in the iconic photograph of Lyons stood next to it, hand in jacket pocket.

Two different E-Type models were initially available: the roadster and the coupé, the latter with its side-opening rear tailgate. Just as attention-grabbing as the E-Type's styling, meanwhile, was the newcomer's highly competitive pricing, which saw the open-top version listed at £2097 and its coupé cousin at £2196. This made the headline-grabbing new Jaguar vastly cheaper than anything else with comparable performance.

The media reaction to the E-Type's Geneva debut was overwhelmingly positive. Those pre-launch press cars had clearly been well prepared at Browns Lane, with The Motor recording





The Series I was launched as a 3.8, uprated to a 4.2-litre by 1964.



The enticing interior of an immaculate E-Type Series I.

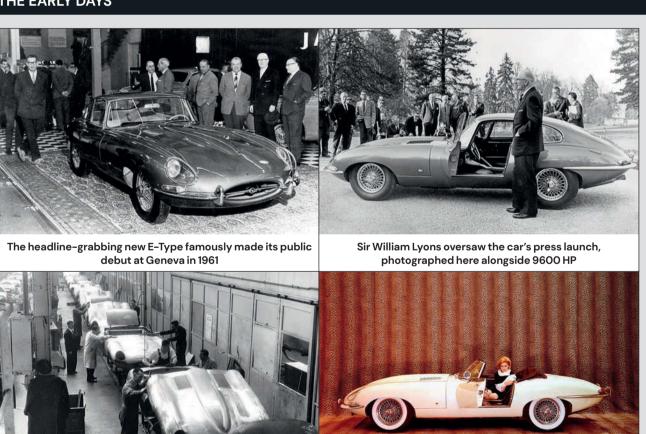


"Production cars were generally reckoned not to be as powerful as the carefully prepared press cars"

STORY OF THE E-TYPE







The svelte new E-Type was described by many as the most

beautiful sports car of its time

The E-Type got off to a flying start, with Jaguar initially

struggling to keep pace with demand



0-60mph in just 7.1 seconds and a top end of 149mph, while The Autocar managed to crack the magic 150 barrier with 9600 HP, reaching 60mph along the way in just 6.9 seconds.

FURTHER DEVELOPMENT

It wasn't all perfect, of course.

Production cars were generally reckoned not to be as powerful as the carefully prepared press cars, and the E-Type was criticised for its lack of interior space, marginal brakes and heavy oil consumption. Any doubts about the production E-Type's ability to crack 150mph were silenced,

however, by the installation of the 4.2-litre version of the XK engine in 1964. The official power output remained the same (at 265bhp) but was arguably a more honest figure this time round, while the larger engine also benefited from increased torque. Electrics, seating and other



STORY OF THE E-TYPE



details were revised at the same time, while Jaguar's four-speed gearbox complete with synchromesh on first gear - was adopted in place of the previous Moss unit.

While Jaguar's biggest news of 1966 was its integration into the mighty BMC organisation, the same year saw the launch of a more versatile E-Type in the shape of the 2+2, again launched at the Geneva Salon. Available only as a coupé, it was built on a wheelbase that was nine inches longer than before, whilst also adding a taller screen, longer doors and, of course, a small rear seat. In a nod to the likely market for the car, the 2+2 was also offered with optional Borg Warner automatic transmission.



By E-Type standards, the Series III's interior was bordering on the luxurious.

E-TYPE V12: SPORTS CAR OR GT?

The appeal of the E-Type when it was launched in 1961 was obvious. Here was a true sports car, a machine that offered supercarmatching thrills and performance at a vastly cheaper price. Powered by the 3.8-litre XK engine, it was tuned to produce 265bhp and offered a claimed top speed of 150mph. By 1964, that straight-six engine had been stretched to 4.2 litres to provide a useful amount of extra torque, while the following year saw the arrival of the 2+2 fixed-head coupé - by which time the E-Type's reputation was firmly established in the sports and racing scene.

Ten years after the unveiling of the original E-Type, however, came the Series III - a model that featured numerous major changes. It had flared arches, a wider track and an additional two and a half inches in width across its bodywork. The front suspension featured anti-dive geometry to help keep the front end level under harsh braking, the brakes were uprated via a bigger servo and an extended handbrake lever, and power steering came as standard. But it was under that vast bonnet where the Series III's biggest difference lay.

The legendary six-cylinder XK engine had been replaced by Jaguar's new 5343cc all-aluminium V12, a unit inevitably destined for the XJ saloon line-up (as well as the Daimler Double-Six) but also deemed suitable for the E-Type, transforming the formerly raw sports car into a true grand tourer.

With a compression ratio of 9:1 (or 7.8:1 for American-bound models thanks to emissions regulations) the V12 produced 272bhp, which in itself wasn't much of an advance over the previous six-pot. Where the V12 scored, however, was via its torque figure of 304lb.ft. at 3600rpm, enabling the latest E-Type to become a low-revving, high-performance touring machine. It could still manage 0-60mph in under seven seconds and achieve well over double the UK motorway speed limit when driven flat out, but it was the way in which such performance was delivered that marked the change of direction. In Series III guise, the E-Type found a new level of high-power sophistication and, as a result, appealed to a subtly different customer base.

The Series III remained on sale through to the 1975 model year, by which time 15,287 V12 E-Types had been sold worldwide - 7297 of them being the 2+2 version. The Series III's timing wasn't ideal, of course, given the fact that a global energy crisis began during the early part of its career. Interestingly, however, the V12 E-Type's transformation into a true grand tourer also helped to prepare the way for its eventual successor - the XJ-S - and Jaguar's next generation of sportsters.





The next major revision to the E-Type came in 1967, when the cars now usually referred to as the Series 1½ were launched, featuring changes dictated by impending US legislation. Jaguar claimed some 21 updates were made, including the removal of the Perspex headlamp covers, with the lamps themselves having moved forwards by 2.5 inches.

A particularly important year for Jaguar was 1968, which saw not only the debut of the crucial new XJ6

saloon but also the announcement of the Series II E-Type, the latter featuring chunky bumpers wrapping further round the bodywork, repositioned tail lamps, as well as a bigger front intake allowing greater air-flow to suit cars with newly-available air conditioning. Power steering was now available, while the 2+2 gained a more raked windscreen to give it a less ungainly appearance. All versions also gained a safety-inspired interior, with rocker switches instead of the rows of sharp toggles.

These changes undoubtedly helped to keep the E-Type competitive, especially for the all-important American export market, where power steering and air conditioning were deemed essential; but by motor industry standards, the design was getting on in years and Jaguar was already looking at various design proposals for the E-Type's eventual successor. Until that was ready

STORY OF THE E-TYPE

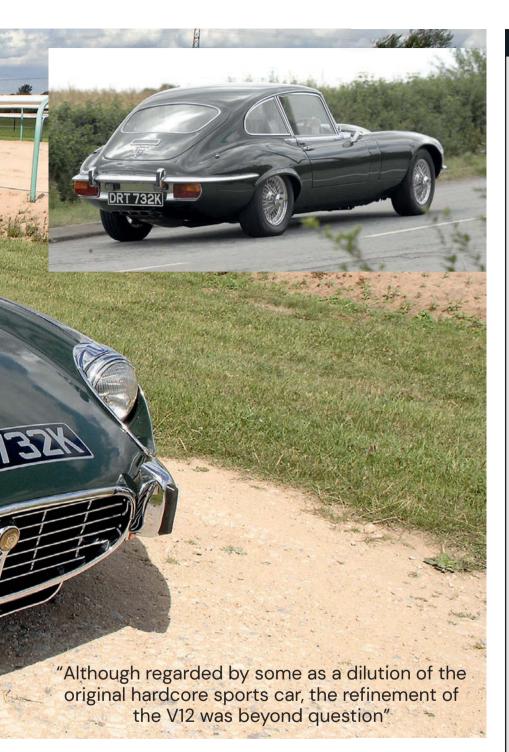


for launch, however, the firm saw potential in its new V12 powerplant, a unit under development for the XJ saloon but one that could also give the E-Type some added appeal for its final few years on sale. After much re-engineering work to make it fit, V12-powered prototypes were up and running by 1969, with the production

version being launched in March 1971 as the E-Type Series III.

Although regarded by some enthusiasts today as a dilution of the original hardcore sports car, the refinement of the V12 was beyond question, its effortless power ensuring that the latest E-Type was a superb high-speed cruiser. The Series III was

available solely with 5.3-litre V12 power and was built on the longer wheelbase of the 2+2; it gained a chrome grille in place of the open intake of earlier cars, and wider pressed steel wheels that demanded flared arches in order to house them. A wider track was also employed, alongside uprated vented discs and modified dampers.



The V12-engined E-Type had many strengths, but fuel economy wasn't one of them - and at an average of around 15mpg, it was inevitably hit hard by the global energy crises of the early 1970s. Nevertheless, it soldiered on and remained in production through to June 1974 – although the number of unsold cars in stock at dealerships

meant Jaguar was able to keep quiet about the axe falling for a few more months. The final fifty cars were labelled as commemorative models. with 49 finished in black and a single car in British Racing Green. The curtain had fallen on a British legend, bringing to an end the most famous Jaguar sports car of all time.

FACTS & FIGURES



SERIES I 3.8

Dates: March 1961 - October 1964 Engine: 3781cc; 265bhp @ 5500rpm;

triple SU carburettors

Transmission: Moss 4-sp manual

Max speed: 149mph **0-60mph**: 7.1 secs

SERIES I 4.2

Dates: October 1964 - December 1967 Engine: 4235cc; 265bhp @ 5400rpm Transmission: Jaguar 4-sp all-synchro manual

Max speed: 149 mph **0-60mph:** 7.1 secs

SERIES 1½ 4.2

Dates: July 1967 - October 1968 Engine: 4235cc; 265bhp @ 5400rpm

Max speed: 143mph 0-60mph: 7.2 secs

SERIES II 4.2

Dates: October 1968 - September 1970 Engine: 4235cc; 265bhp @ 5400rpm Transmission: Jaguar 4-sp all-synchro manual; Borg-Warner 3-sp auto

Max speed: 143mph **0-60mph:** 7.2 secs

SERIES I½ & SERIES II 2+2

Dates: March 1966 - September 1970 Engine: 4235cc; 265bhp @ 5400rpm Transmission: Jaguar 4-sp all-synchro manual; Borg-Warner 3-sp auto Max speed: 139mph (manual) **0-60mph:** 7.6 secs (manual)

SERIES III

Dates: March 1971 - June 1974 Engine: 5343cc V12; 272bhp @ 5850rpm Transmission: Jaguar 4-sp all-synchro manual; Borg-Warner 3-sp auto

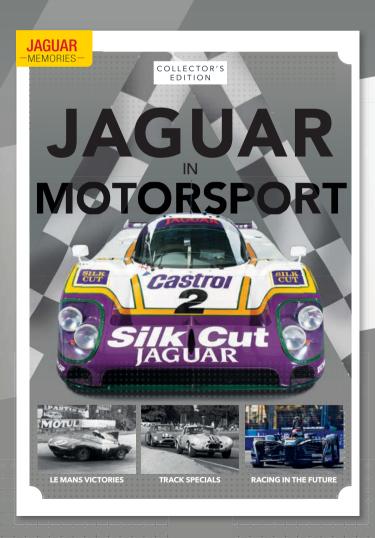
Max speed: 145mph

0-60mph: 6.4 secs (manual)

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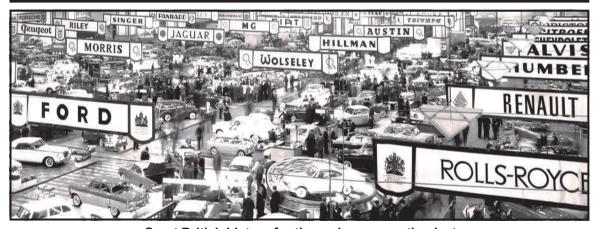
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Sporting great

Any car tasked with replacing the E-Type was always going to face major challenges. We take a look at development of the Jaguar XJ-S – the initially controversial coupe that eventually silenced its critics.

Words: Paul Guinness





hen motoring historians describe a particular make and model as legendary, you sometimes wonder whether they're overstating the case. But not when it comes to the E-Type, Jaguar's aspirational sports car that wowed the crowds at Geneva in 1961 and went on to enjoy a lengthy career. The E-Type was the ultimate automotive sex symbol, achieving cult status overnight. And, of course, it remains one of the most revered car designs of all time.

coupé guise for its first eight years

The problem with that kind of success, however, is... what comes next? In much the same way that a best-selling debut author might have trouble writing their second book, or a successful singer might dread the prospect of their second album being panned by critics, whichever car came along to replace the E-Type faced one of the biggest challenges in the motor industry.

Wisely, Jaguar left a gap in the timeline between the E-Type and its successor, with the final example of its sporting legend rolling off the line in 1974. Its effective successor - the XJ-S - wouldn't be announced until September of the following year, by which time the E-Type's demise would be less of a headline news story. Jaguar was keen to ensure there were no retro references to the E-Type at its XJ-S unveiling, making the period between the two models something of a handy hiatus.

STYLING TRAITS

It was inevitable, however, that comparisons would be drawn, hence the controversy that surrounded the official launch of the XJ-S in 1975. It didn't help that the threat of American safety legislation ensured Jaguar's latest sportster was available only as a hard-top coupe. And not everyone appreciated the

newcomer's styling, particularly those trailing buttresses running down the rear wings from the back window - even if they meant the XJ-S at least stood out from the crowd. Then there was the fact that the XJ-S would feature Jaguar's lessthan-frugal 5.3-litre V12 engine, and





no alternative - at a time when the most recent world energy crisis and soaring oil prices were fresh in the minds of just about everyone

Against such a backdrop, surely there couldn't have been a worse time for launching an upmarket V12engined coupe? Well, maybe. But at least the XJ-S came with the latest version of Jaguar's biggest power source, which for 1975 - in the XJ12 saloon - had been re-engineered to accept a Lucas-designed fuelinjection system, resulting in a substantial improvement in economy despite offering extra power.

Even so, the XJ-S was faced with a number of challenges, summed



The XJ-S featured a suitably stylish interior for a modern grand tourer



up succinctly by Jeff Daniels in his famous 1980 book, British Levland: The Truth About the Cars. Daniels explained: "Alongside the revised XJ12 there was soon to appear the XJ-S coupe, which... was intended to inherit the mantle of the E-Type. There was, however, a sense of unease that it should be regarded this way. For one thing, it was not a convertible. For another, it was far more expensive, even allowing for a year's roaring inflation, than the E-Type had ever been. Even more to the point, its styling did not excite the same admiration that had been enjoyed by the older car."

Some critics went further.

damning the XJ-S for its hardtoponly approach, as well as for its overall appearance. Compared with the original and perfectly proportioned E-Type, also styled by former aircraft designer Malcolm Sayer, the XJ-S arguably looked awkward. And this was a point not lost on Jaguar historian Philip Porter, writing in his Jaguar XK8 book in 1996: "No-one could deny that the XJ-S was technically excellent, but it committed one cardinal sin, especially for a Jaguar. It lacked great beauty. Compare it with the XK120 and the E-type - Jaguar threw away all of its wonderful styling heritage. It may have been a factor that by this

time Lyons was of advancing years and Sayer was not a fit man..."

In fact, Sayer would die tragically young - at the age of just 54 - as early as 1970, a full five years before the launch of the XJ-S. And yet the car's styling was already decided upon at that early stage, even though the new man in charge of the project after Sayer's death - Doug Thorpe wasn't convinced by the controversial buttresses that so dominated both the profile and the rear-end styling of the newcomer.

LYONS' INFLUENCE

Development of the XJ-S continued in earnest throughout the early 1970s,

THE XJ-S STORY



against a backdrop of industrial strife and financial disaster at British Leyland. And in the early stages the plan was to offer both hardtop coupe and convertible versions of the newcomer, codenamed XJ27 and XJ28 respectively, to ensure a model range befitting of an E-Type successor. However, the likelihood of new legislation being introduced in the USA - which would have prevented any new convertibles from being sold there - saw the XJ28 project cancelled. And by the time that threat of a ban on convertibles subsided in 1974, it was too late for the XJ-S: Jaguar's crucial new model would be launched in hardtop guise only.

Yet still the question remained: why did this upmarket new coupe have to look quite so controversial? Part of the answer lay in Jaguar's desire to make the XJ-S the most aerodynamic car in its class. Jaguar founder Sir William Lyons explained: "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."

But there were legislative reasons behind certain aspects of the XJ-S's styling as well, said Lyons, which meant numerous restrictions compared with the early '6Os and the launch of the Sayer-inspired E-Type: "We originally considered a lower bonnet line but the international regulations on crash 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".

The rear buttresses added both strength and aerodynamics to the

XJ-S, and proved to be a major talking point throughout the car's early career. Interestingly, Lyons also claimed that at any customer clinics where prototypes were shown without those buttresses, the results were less than favourable. It seems that despite initial reactions, the XJ-S's most talked about styling feature was more beneficial than many pundits gave it credit for.

OFF WITH ITS TOP

The fact that proposed American legislation banning the sale of convertibles had been cancelled the year before the XJ-S hit the streets makes the following fact rather shocking: it took Jaguar a full eight years to launch an open-top version, with the new XJ-S Cabriolet (badged as the XJ-SC) finally going on sale in 1983. Had the wait been worthwhile? Well, with targa-style removable hardtop panels and a fold-down rear window, the result was pleasing enough



and went a long way towards satisfying demand for open-top Jaguar motoring. But many enthusiasts still craved a full convertible.

Their prayers were eventually answered in 1988, when the logicallynamed new XJ-S Convertible arrived

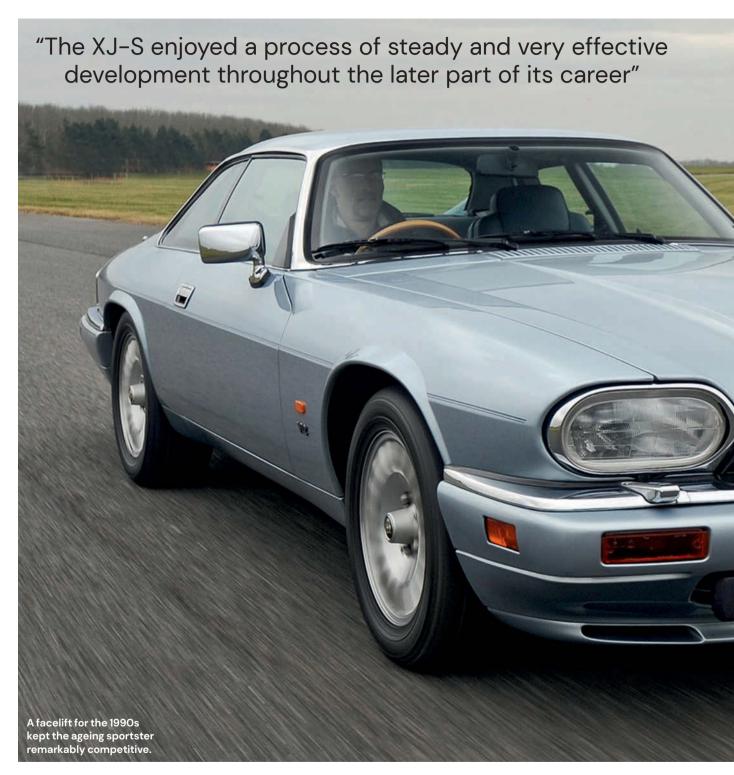
to replace the XJ-SC, bringing with it a newly strengthened bodyshell to ensure extra rigidity. And what an impressive looking vehicle this was, finally providing XJ-S fans with one of the most elegant soft-top experiences of the time. In fact, with

its hood down, even previous critics of the XJ-S largely agreed that the Convertible was a stunner. At long last, what many had perceived to be an ugly duckling thirteen years earlier had matured into the proverbial handsome swan. But there was more. The XJ-S - in both coupe and ragtop guises -

enjoyed a process of steady and very effective development throughout the later part of its career, with new derivatives coming on stream to broaden its appeal. Indeed, it was when the Cabriolet was unveiled in 1983 that one of the most important announcements was made: the launch of a brand new engine. No longer was the awesome 5.3-litre V12 the only power option, with the all-new 3.6-litre 24-valve AJ6 straight-six unit helping to boost sales significantly. And while the V12's power output of up to 295bhp (for the 1983-on HE model) was always the ultimate, the AJ6's initial 228bhp



The V12 was the only engine choice until the AJ6 six-pot arrived



was powerful enough for most buyers' needs.

Various minor restyles and further engine upgrades (to 6.0-litre V12 and 4.0-litre AJ6) kept the XJ-S going until the arrival of the all-new XK8 in 1996, which meant this initially

much-maligned model enjoyed one of the longest production runs of any Jaguar. But it was only with the help of regular updates and enhancements that the XJ-S survived so long – and, hampered by the financial state of British Leyland in

the '70s, these didn't get under way until the next decade.

In fact, after just five years on sale and with Michael Edwardes now in charge of the whole British Leyland empire, the XJ-S was in danger of being dropped from the range.



Annual sales had fallen from an early peak of 3890 cars in 1977 to just 1057 in 1980, putting the XJ-S on the critical list - with no funds available for a major redesign.

The decision was made to improve the basics, with a push towards

greater quality and reliability together with the launch of a heavily updated version of the V12 engine, now featuring a Michael Maydesigned split-level combustion chamber for greater efficiency. The effect was dramatic, with an

increase in power being a welcome bonus alongside an all-important improvement in fuel economy. In fact, the V12-engined XJ-S (now badged as the XJ-S HE for 'High Efficiency') was suddenly capable of up to 20mpg on a run, making it

THE XJ-S STORY

a far more viable proposition to most potential buyers.

Combine its extra efficiency with major improvements to fit, finish and equipment levels (including – at last – the arrival of that Jaguar tradition, wood veneer trimmings) and you had a car that was now genuinely prestigious and aspirational. And as the 1980s progressed, so XJ–S sales began to increase considerably, aided by the soft-top and six-cylinder derivatives mentioned previously. After coming perilously close to extinction by the end of the '70s, Jaguar's much-talked-about sportster was finally on a roll.

THE E-TYPE EFFECT

In truth, of course, the XJ-S wasn't actually a sports car. Not in the stripped-out two-seater sense, it wasn't. But did that matter? Well, according to some of its critics... yes. They accused it of being too much of a grand tourer, a car capable of effortlessly dealing with pan-European jaunts but without the thrills of such rivals as the Porsche 911. And even in the XJ-S's later years, the old complaint that it was 'no E-type' would still crop up in conversation.

A fair point? Frankly, no – because anybody who criticises the XJ–S for that is ignoring what the E–Type itself had become during its own career. There's no denying that the original Jaguar E–Type of 1961 was a raw machine with real sports car credentials and the excitement of a headline–grabbing 150mph top speed. But by the time it had evolved into Series III guise in 1971, it was a V12–engined grand tourer available as a 2+2 coupe or a convertible. Crucially, the latest E–Type was bigger, heavier and softer than its predecessor of a decade earlier.

In reality then, the new XJ-S of 1975 was replacing a machine remarkably similar in concept. And while many fans will always prefer the last-of-the-line E-Type to the earliest XJ-S, not least when it comes to styling, the conceptual differences between the two cars are perhaps far fewer than many people assume. If only the XJ-S could have been offered as a full convertible from day one, the public's initial reaction might have been quite different.





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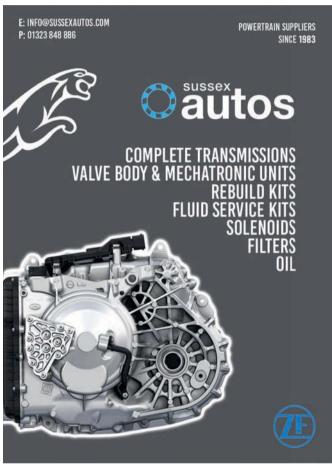


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The XJ220 story

This remarkable super car came within a gnat's wing of never being shown to the public at all. We uncover the incredible history of this stunning machine.

Words: Ian Seabrook

aguar's independence, after years of difficult British Leyland ownership, saw a brightened mood descend upon the workers of Jaguar's factories. Somehow, amidst this wave of positivity, plans were formed to create a new legendary sports car, akin to the original XK but with motorsport success firmly part of the plans from the start.

Jim Randle headed up the engineering department at Jaguar, having replaced the legend that was

Bob Knight on his retirement in 1980. Randle had been working as Knight's assistant since 1965, so was well versed in the ways of Jaguar, and the engineering ethos Knight had worked so hard to protect during the British Leyland years. As such, Randle was heavily involved with the development of the new XJ4O as well as production improvements for the XJ-S.

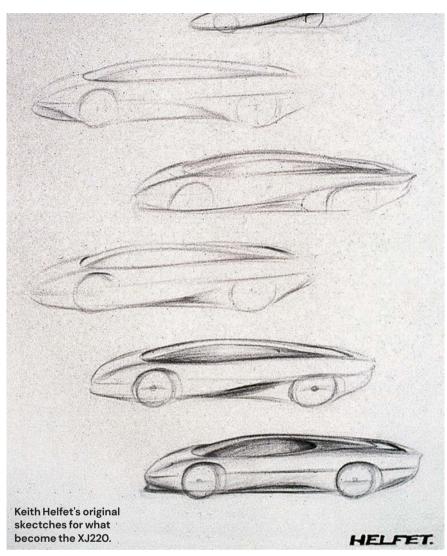
At some point in 1986, Randle began to think about a new sportscar project - something which could use the exciting Group B regulations to create a formidable road/race car. Randle assembled a team of willing volunteers, who turned the new project into an out-of-hours study. This 'Saturday Club' included Keith Helfet of the Jaguar Styling Department, who produced a series of sketches we see here that hint very strongly indeed at the final car.

This was a project led by engineering first and foremost, with few other distractions. The



team worked quickly, establishing a mechanical package that included a V12 engine and four-wheel drive. Thanks to the Audi quattro, four-wheel drive had become the dominant force in the world of rallying, and manufacturers rushed to include it in their own production cars. Even humble machines such as the Ford Sierra, Vauxhall Cavalier and Peugeot 405 spawned all-wheel drive versions. Randle called in favour after favour with major engineering companies around the UK, even though this was still very much a pet project. FF Developments, formed from the company that worked with Jensen to create arguably the first four-wheel drive production car (rather than utility vehicle), saw potential here, and was quick to get involved.

Triplex also signed up early on, with its glass-forming expertise an essential





part of the XJ220's smooth shape. Everything proceeded very quicky, with little in the way of paperwork, and the car very much taking shape around Helfet's sculptures and the mechanical package being designed by the engineers.

ELABORATE DRIVETRAIN

It really was quite an elaborate system too. At one stage, it was thought the propshaft to the front wheels would need to pass through the interior in an offset manner, allowing for triple seating. Then, the idea of sending drive through the engine was chosen, using the redundant jackshaft space that would have originally driven the distributor. New technology meant

a distributor would not be needed, so there really was a shaft from the gearbox, that ran straight through the vee of the engine.

In time, thoughts turned to the 1988 Birmingham Motor Show, though this was never intended to be a mere concept. From the start, the team was aiming to have a running, driveable prototype ready for the show.

The ridiculous thing was that there was still no management approval for this project. It was still very much Randle's pet project and staff were working in spare time, weekends and even holidays to make it happen. Furthermore, Randle had two teams working on styling, with a separate design being headed up by another Jaguar stylist, Cliff Ruddell.

Helfet's car managed to be a sublime homage to earlier Jaguar cars. The wingline had a very typical Jaguar curve to it, that could be seen in D-Type and XJ13, while the glass cover over the engine was another nod to that dead-end racer. The front end deliberately took inspiration from the still-live XJ41/42 project, but somehow looked unmistakeably Jaguar.

On the other hand, rather like the E-Type after the XKs, Ruddell's design owed absolutely nothing to what had gone before, and only looked ahead. It was very much of its time, with a two-half look to the profile that was very Pininfarina in conception. The front end was more aggressive, the tail longer, with a huge, flat rear deck.



Randle had the difficult decision to make about which to proceed with, ultimately preferring Helfet's smoother shape. In Philip Porter's book on the XJ220, written while the cars were still being built, Randell says, "You can see the 13 [XJ13] in the 220. That was what I wanted in the styling. It was a delightful piece of work."

This styling decision was made in April 1987, with Park Sheet Metal commencing work on the prototype body shortly after. A wooden 'egg crate' former was created, and aluminium panels shaped on these. Meanwhile, thoughts turned to the body itself, with flat aluminium panels used to create an 'origami' structure that certainly looked very different to



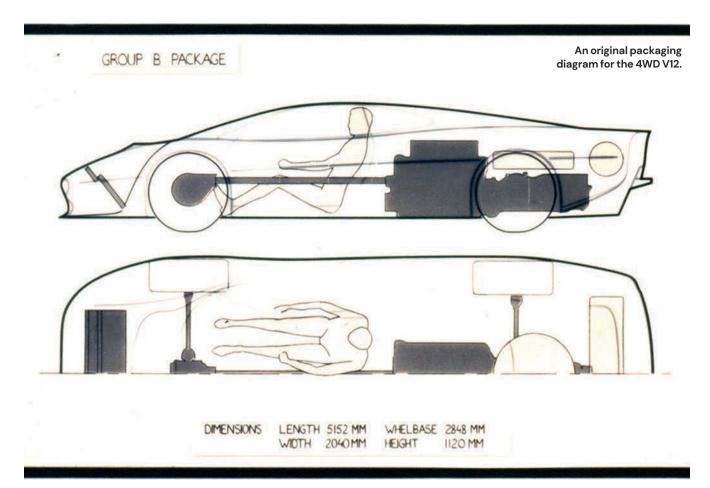


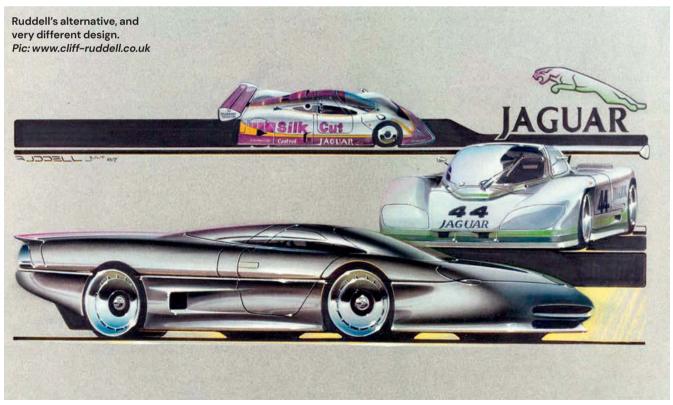


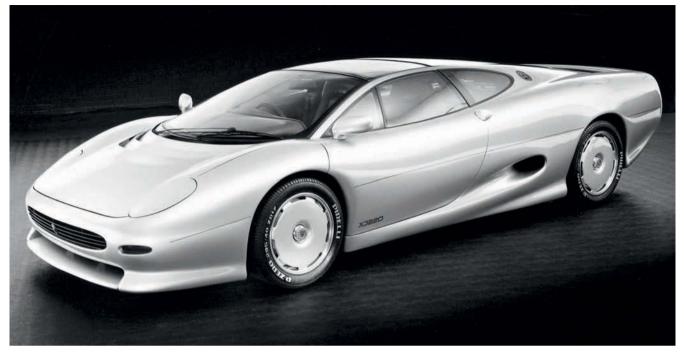
Top to bottom: Plain interior close to production. Different rear lights for concept. 25 years of the XJ220.



STORY OF THE XJ220







Publicity shot for the original concept, a beautiful design.

the curvaceous body. The aluminium panels were bonded, which required the under structure to be cured in an oven. A roll cage was attached to this structure before the bonding 'cure' took place in Banbury.

BUILDING THE CONCEPT

Now, the panels formed by Park Sheet Metal could be added to the structure, so the final form

of the car could start to be seen. Triplex delivered glass, which was laid in place for assessment. The biggest challenge here had been the windscreen, which was extremely raked at 71 degrees from the vertical. The general limit at the time was considered to be 65 degrees.

Meanwhile, FF developed the four-wheel drive system, while a suspension system was developed to deliver maximum flexibility for race or road. It used four coil-over-spring units at the rear, just like Knight's Independent Rear Suspension system for the road cars. The main difference here was that the units were mounted above the driveshafts, with rocker arms transferring the load from the hubs. This left the springs above the gearbox unit but avoided the need for strut towers. There was simply nowhere else for the springs to go, but it remains a very neat solution.

The Group B requirements were dropped, as that form of motorsport was banned after a number of deaths on rally stages around the world. It left a lot of manufacturers with cars developed for the sport, but no longer relevant - Ford's RS200 being one of them and, ironically, the MG Metro 6R4 being another. We'll get to the relevance of that later on.

Nick Hull was tasked with designing the interior, opting for something that was more luxurious than many rivals, but still uncluttered. The glass roof and rear canopy meant air conditioning was an essential aspect, but Hull also wanted to include elements from the D-Type, such as



From sidecars to supercars, a beautiful shot from Browns Lane.

STORY OF THE XJ220



the wrap-around dashboard and soft padding attached to the transmission tunnel. In the end, the dash would lack the D-Type distinctive curve, but there was the unusual addition of a set of gauges to the door.

Work continued apace during 1987, but even as late as 22nd September, with the Motor Show mere weeks away, the car was still in primer, still had no glass fitted and was a long, long way from being completed. Even worse, it still hadn't been seen by management, even though a canny Randle had suggested to Sales and Marketing that they might want to keep a special space on the stand this year...

Finally, on 10th October, the week before the show, John Egan, then chairman, finally saw the car. He arrived with Tom Walkinshaw, who had worked with Jaguar on its successful XJ-S race series, and was currently hunting for Le Mans success with the XJR-9 prototype racers. Walkinhaw was also working with Jaguar on JaguarSport, taking regular production cars and making them a little more exciting.



Jim Randle, who managed to develop the XJ220 against all the odds.

THE FINAL PUSH

It was a tense time for the team, but Egan did give the concept car the goahead for the show. Now it needed to be finished! That ran well to the wire, with the car arriving at 11pm the night before the show's press day was due to open. So late was its arrival that it had to be hoisted onto the stand,

which had already been completed. The next morning, Egan and Randall pulled off the covers, and the world got its first glimpse at the XJ220.

That name was chosen at the last minute. Randall preferred XK220, it being forty years since the XK legend had begun. However, Sales and Marketing preferred XJ220 for its



"Egan soon tasked Walkinshaw with assessing how the XJ220 could be made a production reality"

rather sensible nod to the current XJ and XJ-S production cars. 220? Well, that was considered an exciting idea for the top speed of the car...

Naturally, the XJ220 created a huge impact at the show, causing the Jaguar exhibition staff some real headaches, such was the clamour to see the new car. I well remember it myself. I was there, at my first motor show, as a very-excited ten year old. It was astonishing. John Egan told Classic Jaguar, "The interest shown by the public was phenomenal. The price was irrelevant, and the idea of a limited edition on sale to the public was born. I was adamant that we would not build the car in house, we were far too busy for that. Tom



XJ220 production took place at Bloxham, near Banbury.

STORY OF THE XJ220



TWR built a handful of XJ220S versions.

Walkinshaw was extremely keen to complete design and build the car."

It must have been rather upsetting for Ferrari, who had brought an F4O to the UK for the first time. It barely got a glance. Instead, the XJ22O utterly stole the show. As a statement of intent, it was enormous, and must have had a bearing on Ford's decision to buy the company lock, stock and barrel.

More difficult decisions awaited, but Egan soon tasked Walkinshaw with assessing how the XJ220 could be made a production reality. Walkinshaw quickly discovered that weight and complexity were the main issues, which is how the V12 engine got ditched for a V6, and four-wheel drive replaced with just two.

Put simply, the V12 was too large and too heavy, even if it could probably be coaxed up to 500bhp. Walkinshaw had already discovered that it was better to use a V6. In fact, conveniently, Walkinshaw now owned the rights to the V6 engine used in the MG Metro 6R4, which he was developing for the XJR-10 and 11 prototype racers. These cars ultimately didn't have much success, being built to the new 3.5-litre engine limit, but using turbocharging to boost the power. However, if Jaguar wanted big power for a road car, this seemed a sensible place to start. It

also linked those race cars with an actual, road-going Jaguar.

NOT MG METRO POWER

Don't be fooled into thinking that the XJ220 simply used an MG Metro 6R4 engine though, for it really did not. The engine was reworked considerably for production, using two turbochargers to boost power to a rather astonishing 542bhp@7200rpm. Maximum torque was a meaty 475lb ft@4500rpm, but the engine was already producing 200lb ft at just 1000rpm, as the turbochargers eased into life. Zytek electronic multi-point fuel injection and electronic ignition looked after the engine management, sending power through a five-speed gearbox to the rear wheels. Enormous 345 section tyres did their best to put that power down.

Rear-wheel drive saved cost and weight, and allowed the car to be reduced in size, with some eight inches removed from the wheelbase over the concept car, and a further two inches from the tail.

Amazingly, JaguarSport had its first running prototype by June 1990, which was a remarkably short timescale and proof of Walkinshaw's remarkable abilities as an organiser. Prototype OO2 was running by September, and achieved 186mph in a test two months later.



These first prototypes were built before the design work had even been finished! They were more proof of concept than proof of design, with 001 mostly being used for engine development, and 002 doing brake tests. 003 was the first fullyengineered prototype, doing a wide range of testing and also doing the famous high-speed run and passing the stringent emissions tests. 004 was the hot weather test car, first in silver paint, then Regency Red when it became a gearbox test bed. 005 was used for high-speed testing, and at one point covered over 1200 miles in one day at Nardo in Italy, averaging 140mph!

006 completed 25,000 miles of durability testing, often on mockcity facilities at Millbrook Proving Ground, 007 was left-hand drive and



the engineering sign-off car before production, such as it was, could begin.

The bold aim was to construct 350 examples, with over 1600 people expressing keen interest at first. A global recession would see that number diminish considerably, with fewer than 300 XJ220s finally being built when production ended in April 1994.

SPEED RECORDS

As for the top speed, a standard car hit 212mph, but then had the catalytic converters removed and the engine rev limiter turned up to 7900rpm. In this form, F1 driver Martin Brundle was able to hit 217.1mph, which Guinness Records stated was the fastest speed achieved by a production car. The

deletion of the catalytic converters was allowed as this car had been built in 1992, when they were not required by European legislation. A bit of a fudge perhaps, but even 212 was pretty quick.

For buyers who wanted even more, Walkinshaw was never one to disappoint, and six XJ220-S road cars were developed with a specification closer to the XJ220C competition cars, which had been developed for Le Mans in 1993 - a story we'll cover another day.

Incidentally, it is claimed in some sources that customers cancelled their contracts due to the change in specification. Given how different the final cars were to the concept in that respect, an easy conclusion to draw. However, while some customers did indeed try to get

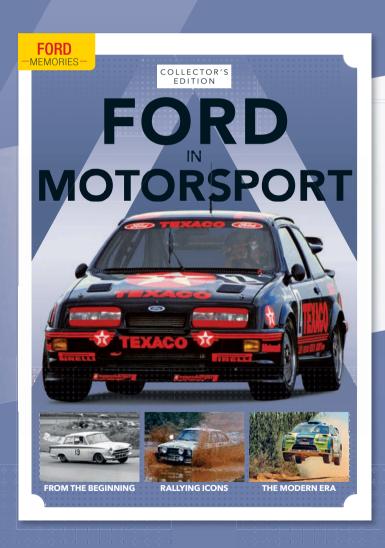
their deposits back by claiming so, the truth was that Jaguar presented the specification of the final cars when it took deposits, so no buyer was getting something they weren't expecting. Nonetheless, after the clamour of over 1000 people wanting an XJ220 in 1990, even the restricted total of 350 proved a pipe dream. Just 273 XJ220s were built.

The XJ220 story rather fizzled out as the global recession hit, and we've certainly never seen the likes of this remarkable machine from Jaguar since, even though it now produces some formidably quick versions of its current cars. However, the XJ220 parade at the 2017 Silverstone Classic, where 41 XJ22Os took to the track at the same time, rather proved that excitement for these cars is just as strong as it ever was.

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X100 XK8 DEVELOPMENT





History matters

We take a look back at the history of the XK8, from its origins in the early Nineties and reaching production in 1996, to the last example to leave the production line

Words Paul Wager

he XJ-S is now accepted, without question, as a fully fledged classic Jaguar, but for much of its lifespan it lived in the shadow of the E-type. The boldly modern, forward-looking XJ-S may have been technically superior to the E-type in every way, yet its grand touring focus took the marque in a different direction to the older car, one more in tune with changing times. Yet, by the early Nineties retro was all the rage and, with the XJ-S itself ageing, a replacement was needed.

Work on replacing the sports coupe in Jaguar's line-up made several false starts. The company developed the adventurous, Keith Helfet-designed XJ41, which was essentially a coupe

version of the XJ4O saloon clothed in a modern interpretation of the curvaceous E-type styling, complete with turbocharged six-cylinder engines and, later, four-wheel drive. The XJ41 had its roots in the early Eighties, a time when the XJ-S really did look like its future was limited. However, when Ford took over Jaguar, the XJ41 - by then already dubbed 'F-Type' by an excited press - was dropped from the Jaguar line-up (in 1989) because investment was instead concentrated on overhauling the ancient production facilities at Browns Lane. The effort wasn't wasted, though, because elements of the ill-fated XJ41 were adapted to suit the XJ-S platform and used to create the Aston Martin DB7.



Twin-turbo four-wheel drive XJS was an initial prototype for the proposed XJ41.

X100 XK8 DEVELOPMENT

It was decided that the XJ-S would need to soldier on for a few more years while a replacement was developed. It was this stay of execution that justified extensive engineering work to produce the 1992 facelift cars (now XJS-badged; the hyphen dropped).

At the same time, work began on a new sports car project to be built on the XJS floorpan and powered by the new AJV8 engine, a project known inside Jaguar as X100. An internal design competition was established, with designs submitted from all over the Ford empire: its American Dearborn studio; Ghia, in Italy; and Jaguar's team in Coventry. Unsurprisingly, it was the Jaguar design – again penned by Keith Helfet – that was chosen as the winner, with its curving lines and prominent snout, reminiscent of the E-type.

Keith recalls, "After designing two other sports cars [XJ41 and XJ220] I knew exactly what I wanted. In fact, the shape of the side windows was very similar to the XJ220's." But, worried about internal politics over the car between Ford and Jaguar management, Keith turned down the job of taking the design into production. Instead, it became the work of his colleague, Fergus Pollock.

Fergus continues, "The philosophy behind that car was that it should look traditional, like it had been handbuilt on an English wheel.

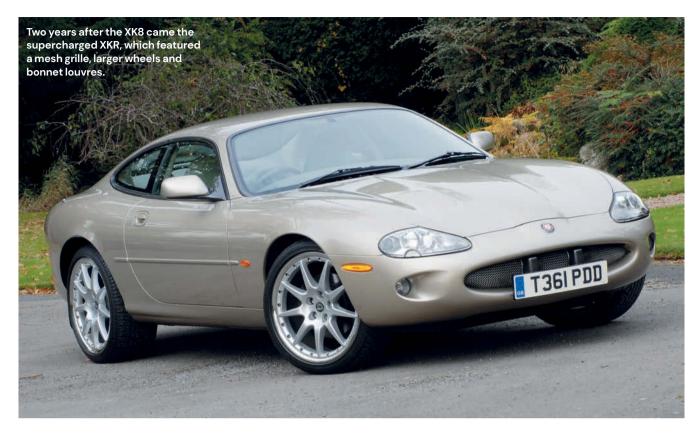
"Everyone who came into the studio thought it was stunning, and said we had to make it."

With the project given the goahead in December 1993 and a launch date set for the Geneva Show in 1996 – chosen to coincide with the 35th anniversary of the E-type's launch – the pressure was on. Bob Dover – who joined Jaguar in 1988 after stints at Massey Ferguson and Land Rover – was installed as the programme's chief engineer, and furious work ensued, with XJS mules soon running V8 engines to test the drivetrain and suspension.

The front suspension used a new design based around unequallength double wishbones carried on a lightweight die-cast aluminium subframe, with springs mounted directly to the body and hydraulic mounts between the subframe and engine. At the rear, the long-serving Jaguar independent set-up derived from the XJ saloons was used, with the driveshaft acting as the upper link and the assembly mounted on a rubber-mounted subframe. This was effectively the rear-end set-up as used on the X300 generation of the XJ saloon.

The bodyshell used 30 percent fewer panels than the XJS, yet offered torsional rigidity that was 25 percent better and, in coupe form, borrowed a trick from German manufacturers by raising and lowering the door glass a







little when the handle was operated, to slot it under the sealing rubber.

The electronics on the new car used a sophisticated Controller Area Network (CAN) set-up that was capable of extremely fast data communication between the various control modules.

Due to the constraints of the XJS platform, the convertible model wasn't engineered with a covered stowage compartment for the folded roof, a soft tonneau cover being provided instead, although few owners fit them regularly. The XK8 did, however, retain a 2+2 seating layout, making it a nominal fourseater - although the rear seats are very much for children and, even then, short journeys only. Still, it was an important marketing point and significantly widened the car's potential audience.

"To produce a new car that had a new engine and gearbox was, even by industry standards, a brave thing to do. Most companies will keep the engine or change the body, or keep the body

and change the engine. To do both was almost unheard of" said Fergus.

The car made its 1996 Swiss deadline and was unveiled to a positive reception, with many orders received from potential buyers in advance of its official on-sale date of the British Motor Show later that year. Its traditional Jaguar styling attracted buyers away from the more brutally styled, squareedged German margues, while the ride comfort and refinement lured owners into trading in their XJSs.

The new 4.0-litre V8 engine developed 290bhp, which meant performance was more than a match for its rivals, and the package was a success, reinvigorating the Jaguar brand. Curiously, while pundits mocked the Aston DB7 for its XJSderived underpinnings, nobody much saw fit to mention it where the XK8 was concerned. At launch, the range was simple: the XK8 came in any flavour you liked so long as it was a 290bhp 4.0-litre V8, in either coupe or convertible form.

X100 XK8 DEVELOPMENT



Dashboard style was referred to as the 'Spitfire wing' within Jaguar.

The XKR was added in 1998. With an Eaton supercharger – first used in the X300 XJR in 1994 and followed by the X308 XJR in 1997 – power was hiked to 370bhp, making it the most powerful Jaguar sports car since the XJ220.

The cars were facelifted in 2000 for the 2001 model year, receiving new 'jewel-style' tail lights with chrome surrounds, a restyled rear bumper and faired-in front fog lamps, together with a chrome plinth with external release for the boot handle, and 18in wheels. The supercharged XKR also received larger tailpipe finishers and, inside, the seats were restyled and given electric adjustment, along with seat-mounted side airbags with the advanced 'ARTS' airbag deployment system to avoid firing the airbags unnecessarily. The supercharged engine was also upgraded with a new engine management system, reducing CO2 emissions by 12 percent and incorporating an engine oil temperature sensor, plus a drive-bywire electronic throttle and exhaust gas recirculation.

A 320-watt Alpine sound system was on the options list, and the

standard-fit immobiliser gained a rolling code transponder for improved security. The six-disc CD changer became standard on all models, as did the 8x17 'Lamina' style wheel.

The car received a further facelift in 2002 for the 2003 model year. The changes were more extensive and Jaguar's marketing people referred to the model as the 'new generation' XK8. The big change was stroking the AJ28 version of the AJV8 from its original 3,996cc to 4,196cc, in which form it was known as the AJ34. The new 4.2-litre engine was good for 300bhp with 310lb ft torque, or 400bhp and 408lb ft torque in supercharged form. A new ZF sixspeed 6HP26 transmission was paired with an electronic control system that 'learned' the driver's style and continually adjusted the shift pattern to suit. Like previous Jaguars, the shift used the company's traditional J-gate selector. The new gearbox was reckoned to be lighter and more compact than the previous five-speed 'box. The final-drive ratio was also changed to accommodate the new transmission. Brembo brakes from the 'R' options range became standard on the XKR.





X100 XK8 DEVELOPMENT



The XKR engine, with its Eaton supercharger and in 4.2-litre guise was good for 400bhp and 408lb ft torque.

External changes involved new badging and the addition of new Xenon headlamps as standard on the XKR and optional on the XK8. New paint and trim colours were introduced and three new wheel styles were added.

At the same time Jaguar introduced its 'R' options packages, which included Recaro seats, Brembo brakes and interior details. Coupe models could also be ordered with an uprated 'R' performance suspension.

The 2003 cars also gained the full array of up-to-date traction and stability aids, including dynamic stability control (DSC), which takes the car's lateral movement, steering wheel position and speed into account and applies the brakes or reduces engine torque to stabilise the car if it isn't travelling in the intended direction, and emergency brake assist (EBA), which detects a panic-braking manoeuvre and automatically applies the full force of the braking system. While cruise control became standard across the range, adaptive cruise control (ACC), a clever system that uses microwave technology to maintain a set distance from the car in front, was made optional.

The facelifted models gained new, sculpted Growler badging on the



nose and the leaping Jaguar motif on interior panels.

The XK8 was refreshed again in 2004, with a revised nose section with a deeper mouth for the front air intake, new sill lower covers, plus an updated rear bumper and rear spoiler.

Other than a limited-edition, runout model (the 4.2-S), the XK8 range remained unchanged until 27 May 2005, when the final car – a Zircon Blue XKR coupe – rolled off the production line. In nine years, Jaguar produced 90,064 X100s, making



it the company's second most successful sports car after the XJ-S.

Jaguar had already revealed the car's replacement, or rather a concept version - the Advanced Lightweight Coupe – in January 2005, at the Detroit Motor Show. The

production model made its debut at Frankfurt in September before going on sale in early 2006. Codenamed X150, but officially known as the XK (the 8 being dropped), it looked similar at first glance, but with more sharply chiselled lines courtesy of

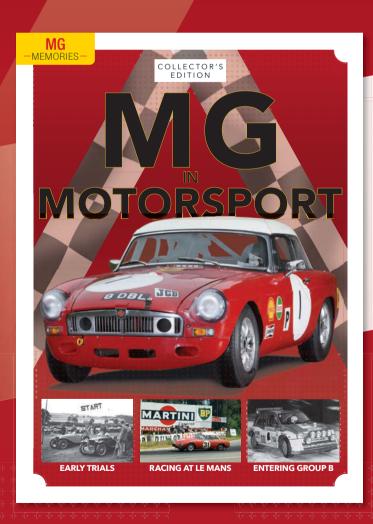
Jaguar's design director at the time, Ian Callum.

The X100 XK8 may have reached its 25th anniversary, but, while interest continues to grow as more people discover the car's many strengths, its history is far from finished.

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The Crossroad

The X150 generation of XK represents a crossroads in the company's recent history. It was the first production Jaguar designed under lan Callum, yet remained influenced by previous iconic past models. We explore the XK's history and explain why it continues to impact on today's cars.

Words: Paul Walton

very automotive manufacturer has a car that's a watershed moment, a car that either reinvents the brand or comes to define an entire genre. For Volkswagen, the original Golf from 1974 set the blueprint for all future hatchbacks, while Ford's sharperedged Focus from 1998 reinvigorated the company's image following the ugly and unpopular Escort Mk 6. Jaguar has had many such cars throughout its long history, but the most important from the last two decades is the second generation of XK. As a traditional two-door coupe and convertible, it may have shared many similarities with its immediate predecessor, but its sharper design and sportier performance marked a new direction for the company, one it still follows.

As the first production car designed from start to finish under former Ford, TWR and Aston Martin designer Ian Callum, the XK started a radical new approach. From the moment he took up his position as design director in 1999, Callum pushed to move the designs of Jaguar's cars forward. Although the X300/X308 XJs and S-TYPE had been commercially successful, Callum felt that Jaguar was no longer as innovative as it once had been and was now too reliant on previous designs.

The X-TYPE saloon and X350 XJ had already been signed off by the time Callum started, so he began his quest to move Jaguar forward

with two prototypes: the R-Coupe from 2001 and the 2003 RD-6. The first production car, which would really show what we could expect during his tenure, though, was the replacement for the now ageing XK8.

Callum and his team knew two things from the outset. Firstly, due to the popularity of its immediate predecessor – the X100 XK8 – the design would be an evolution rather than a revolution. "The current XK – the styling of it is pretty good, isn't it?" said Callum in 2005. "It's accepted. People still say, 'Wow.' It ain't broke, that car, so we're not going to try and fix it." This also meant the car would retain the familiar XK moniker, although the 8 was dropped.

Secondly, the X350 XJ had shown the weight advantages of using aluminium and so the new sports car would follow suit, using the same chassis as the saloon. This meant the front axle was further forward than on the X100's chassis to allow the cabin to sit more centrally, thereby improving proportions and interior room. The final car would have 54mm more front leg room, 31mm more front headroom and 32mm greater shoulder room. At 4,791mm long and 2,070mm wide it was slightly larger than the outgoing model, yet the lightweight material meant the coupe was only 90kg heavier and the convertible was an incredible 140kg lighter.

Work on the car – internally known by its codename, X150 – started in July 2000. Several design themes





X150 XK

were explored, culminating in five quarter-scale models by September 2000, which were whittled down to three by 2002 - W, X and Y - that were made into full-scale models, each with subtle differences to the proportions and body section. Theme W had a clean, dihedral body section, a strong haunch and a low tail featuring slim tail lights, X had a softer feel with a less pronounced haunch, and Y was somewhere in between. W was chosen to go forward. "Our overall aim was to give the car a more incisive, contemporary language than the old car, with horizontal power lines along the flanks to give speed and movement," said Jaguar's senior design manager, Giles Taylor, in 2006.

Because the team wanted the convertible's hood mechanism to be packaged under an electrically rising, solid tonneau cover, rather than the X100's dated and awkward-looking hood stack above the belt line, the convertible actually arrived before the coupe. Three full-size models

were ready by December 2001, including a study for a retractable hardtop, fashionable at the time. This was soon abandoned, though, due to the compromises required on style and interior space.

The final design for both the open and closed cars was signed off in September 2003 and it featured a profile similar to the older model's, although its oval radiator grille, central bonnet hump and Perspex-covered headlights harked back not just to the X100 but to the E-type. Although in many ways it is a very modern car, its heritage is as obvious as that of any generation of Porsche 911.

Yet, it was also very different from what had come before. Its lines were crisper, sharper and more chiselled than the voluptuous X100 and, with the X350's chassis having a wider track, it had a lower, more aggressive stance. The coupe was also a hatchback that offered room for two sets of golf clubs, a key requirement for the important American market.

The use of riveted and bonded aluminium didn't make it easy for the design team to achieve the look they were after. "The rear fender and haunch were particularly difficult," explained Taylor. "The draw is very deep [depth of part exceeds its diameter] and the elliptical DLO [or daylight opening – a fancy way of saying window] also added to the complications, but we finally arrived at a very good result."

Production of the X100 was set to end in May 2005, so the finished car wouldn't be revealed until the autumn the same year. But it was important to let prospective buyers know a new model was on the way to stop them from swapping their XK8 4.2s for the recently announced 997-generation 911, so Jaguar revealed a concept that was heavily based on the car at the Detroit Motor Show in January 2005. Crucially, the Advanced Lightweight Coupe (ALC) was more than just a sneak peak of what was to come; it was a battle cry for Jaguar's future.











L-R: two early sketches for the X150; a disguised XK during testing; the Advanced Lightweight Coupe concept after being revealed at the Detroit Motor Show in January 2005



"That's why it is important for us to be here in Detroit with a very real statement of the vision of the future for Jaguar product," said Bibiana Boerio, Jaguar's then managing director.

Other than a handful of small details, the ALC was as per the finished design. Although the engine under its bonnet wasn't connected, the car had a small electric motor that allowed Callum to drive it onto the stage. "This is Jaguar design moving on as it should do," he said during his presentation. "The new look is about power and elegance using clear, pure surfaces. Look at all our great cars in the past and they were muscular and taut, as well as subtle and curvaceous."

The car was warmly greeted. "I knew when I got out of the car and went to start reading from the autocue that we'd got it right," wrote Callum in the March 2006 issue of BBC Top Gear. "There was a big cheer. I could see that the place was packed - far, far more than the 3,500 we were expecting to show up - and they just kept on cheering."

When the production version was revealed at the Frankfurt Motor Show in September 2005, Callum answered critics who had compared the new car to one of his previous designs, the Aston Martin DB9, by arguing that any similarity was a reflection of modern safety legislation. "If you take the set of rules we work to, by default you end up with the same profile. It's inevitable." Part of this was making sure the car was pedestrian-friendly. "There's a legal European line for the bonnet so you can't bring that up. You can make it different by making it not as pretty, but I won't do that, and if it means I've got to take a bit of flak because it looks like something else, then fine, because it's there for a reason. That's something I'm not prepared to compromise on."

There were no surprises when it came to what was under the bonnet because it was powered by Jaguar's familiar 4.2-litre V8. Interestingly, between 2005 and 2008, Jaguar also built 1,274 XKs with the 3.5-litre V8; nothing is known about the cars' destination or market, nor if any still exist.

The X150's 4.2-litre differed from the X100's by its use of multi-hole injectors that changed the spray pattern in the combustion chamber to improve both power and fuel efficiency. The car's sports car characteristics were delivered using a full drive-by-wire electronic throttle control, with no mechanical connection between the accelerator and the throttle body. Power remained the same at 300bhp, but the dash to 60mph was slightly improved - 5.9 seconds compared to the XK8 4.2's 6.1.

The XK8 4.2's six-speed ZF automatic transmission was reused, but featured Jaguar's sequential shift system to allow the driver to change gear using new steering wheel-

X150 XK

mounted paddles. A first for Jaguar, it replaced the J-gate gear selector that had been used in every one of its cars since the XJ40 from 1986.

Following the closure of Jaguar's Browns Lane factory in May 2005, production of the XK began at Castle Bromwich, joining the XJ and S-TYPE, with the first example rolling off the line on Monday, 19 December.

With modern good looks and impressive performance, the car was initially relatively successful, with 5,385 coupes and 6,565 convertibles produced in 2006 and 2,100 supercharged XKRs that arrived later the same year. But sales would never again reach such dizzying heights. The figures soon started to tumble; from the initial 14,050, they fell to 11,258 in 2007, 7,249 in 2008 and 4,530 in 2009. Although the introduction of Jaguar's Gen-III 5.0-litre V8 in 2009 saw a slight increase - 5,601 in 2010 - figures tailed off again over the following three years, no doubt impacted by the introduction of the F-TYPE. In 2013, the car's final full year of production, a mere 2,860 were made, taking the total number of X150s produced to just 54,549, a little more than half of the X100 XK.



Looking at this very early coupe, that lack of sales is hard to understand. The model might be 15 years old, but the clean profile and taut lines still look fresh; add a bigger set of alloys and perhaps an update of the slightly fussy, old-fashioned detailing, and it's not too hard to imagine the car in production today.

Although the X150 would become much faster, first with the supercharged XKR 4.2 version and finishing with the race-bred XKR-S GT in 2014 (see p34 for a full list of X150 models), for me, the original 4.2 is the purest of them all. Without the huge wings and over-the-top aero aids of the later models, this car's perfect proportions are clearer to see.

The X150's interior was also new and again illustrated Callum's desire to move the brand forward. Not only was there less wood than in previous Jaguars – the X100 especially – but other veneers were more prevalent, such as the aluminium in this example. A touch screen to control the infotainment systems reduced the need for as many buttons as the X100, and clean, simple and easy-to-

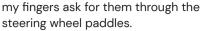




read dials make the cabin much more modern, both visually and to operate.

Another feature to be introduced with the XK and used continuously by Jaguar ever since is the starter button on the centre console. I've driven plenty of modern models with one (including my own XF Sportbrake 2.2D), but it always feels more special in the XK as I hear and feel that big V8 rumble into life.

The performance is as modern as the design. The responsive 4.2-litre produces power cleanly and smoothly: it arrives in one, easy-tocontrol, linear arc. It sounds great, too. The X150 was the first Jaguar to have the sound of the engine acoustically tuned using an active exhaust, which varies the flow of exhaust gases through the main, large silencer box, depending on the pressure on the system. It's not as theatrically loud as the later 5.0 models, but a deep, boomy growl still fills the cabin when the throttle is pressed hard. The automatic 'box works as well as any modern unit when in manual override mode, the gears banging into place as quickly as



From the outset, the XK was designed to have a sportier feel than the X100. The coupe is 30 percent stiffer, the convertible a whopping 50 percent more, and Jaguar's familiar, but now updated, computer active technology suspension (CATS) was able to adjust all four dampers separately, rather than in front and rear pairs. The XK also uses Jaguar's familiar Servotronic 2 steering system, reengineered with a faster ratio for a better, quicker response.

The result of it all is that the XK feels much smaller than its dimensions might otherwise suggest. The way the steering reacts to every command - darting left or right immediately - is reminiscent of a sports car half its size and weight. With huge amounts of grip from the fat tyres, plus controlled body roll, corners are to be sliced through confidently, and need only small movements of the wheel. Yet the car has a dual personality: if you leave it in drive and let the 'box do all the work, it is also a comfortable, civilised and easy-to-drive luxury GT.

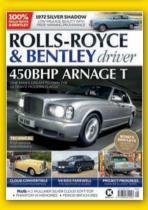
With only 50k sold, it would be easy to believe that the car had little impact on Jaguar, although I'd argue that it's as great as the Mk X we test on p44 that influenced the XJ6 Series 1 and beyond. The XK's sharp, crisp lines still define a Jaguar from the Ian Callum era. The X250 XF that followed in 2007 was different from all of Jaguar's previous saloons, but it clearly has the same parentage as the XK. The same can be said for the X351 XJ, F-TYPE, XE and every model up to and including the I-PACE. The X150's sportier image set the tone for future models; the current F-TYPE R and its 575PS (567bhp) is a direct result of the XK's harder-edged performance.

The X150 might not be the company's most successful model, but, like the original Golf hatchback is to Volkswagen, the XK is to all modern Jaguars.



















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King of the hill

To illustrate 50 years of progress, we compare an E-Type 4.2 against the brand new F-Type V6 S AWD on the confined twists and turns of the famous Shelsley Walsh Hill Climb.

Words Paul Walton



ne of mankind's greatest qualities is its desire for progress – not just to invent, but to redefine and improve. Take the humble wheel. It, alone, is one of our most important inventions and if we had left it there that would have been good enough. But, we didn't, and following the creation of

the combustion engine – another good day for man – bright sparks such as Carl Benz decided to bring the two together. And with that the automobile was born.

Once again, we couldn't leave things as they were: in 75 years, we made the gigantic leap from the Benz Patent-Motorwagen to the Jaguar E-Type. Perhaps only medicine and aeronautics can boast a similar rapid progress – just 66 years separates the Wright brother's Flyer 1 from Neil Armstrong's own giant leap.

So how about today? How has technology moved on over the last 50 years? To find out, I'm going to compare the modern all-wheel-drive



F-Type V6 S Coupé with an 1965 E-Type 4.2. I'm going to be timed driving both cars up the daunting Shelsley Walsh Hill Climb, one of the world's oldest motorsport venues.

This is my first visit to Shelsley Walsh and I almost missed it. I'm more used to larger motorsport venues with their massive signs, huge car parks and unmissable presence, so I initially drove past the entry to the hill climb, which is off a quiet Worcestershire road. But with a history this long, Shelsley can afford to be understated.

The track was first laid down by the Midland Automobile Club (which still manages the venue to this day)

in 1905, making it the first purposebuilt motor sport venue in history and the oldest event to have been staged continuously - wartime excepted - on its original course. Originally 992yds (907m) in length, it was standardised to 1,000yds (914m) in 1907, which it remains today.

The traditional stone buildings

F-TYPE AWD vs E-TYPE

















and wooden sheds are considerably different from the modern pit lane at the Navarra track in Spain, where I once tested the XE 3.0 S, but Shelsley has much more charm and history. Anyone who is anyone in British motorsport has raced here, from Raymond Mays to multiple European Touring Car Champion Andy Priaulx.

With its modern and crisp lines, the Ammonite Grey (a £700 option) F-Type V6 S Coupé I've driven here looks incongruous among Shelsey's wooden sheds. But, since this is a allwheel-drive version, the hill climb's tight corners and steep incline make it a perfect place to put the newer car's improved grip to the test.

The AWD versions receive a deeper central power bulge in the bonnet, giving the car an even more purposeful appearance and, unsurprisingly, the car receives plenty of admiring glances on my arrival. However, the car that is receiving the most attention, and deservedly so, is SNG Barratt's beautiful 1965 E-Type 4.2 that a lucky few will be driving up the hill climb. The car was restored for SNG Barratt by AJ Autocraft for the E-Type's 50th anniversary celebrations in 2011, using parts available from the Bridgenorth-based specialist. With the body panels and chrome being a mixture of new and old, the Connaught Green E-Type

(the paint applied by Body Beautiful) has the appearance of a brand new car and I know from past experience that it drives like one, too. The perfect example, then, to compare the F-Type with and discover the impact 50 years of progress has made.

My plan is simple - to drive both cars as fast as I dare on this daunting hill climb and compare times. I choose the F-Type first and drive over to line up on the start line and wait for the all clear from the marshals. Although the V8 R also has the option of all-wheel drive, I have chosen to use the V6 S version for two reasons. Firstly, its 375bhp (380PS) is closer to the 265bhp of the E-Type's 4.2 straight six than the 542bhp (550PS) of the supercharged V8. Secondly (importantly) it should be easier to manhandle up the tight track than the occasionally scary R.

Thanks to Shelsley's formidable reputation, my heart is hammering as I wait for the red light to change, the only comfort coming from the familiarity of the F-Type's interior. I love the three rotary dials with a row of switches beneath, a modern interpretation of a classic design.

Heart beating faster, I put the car into Dynamic mode, which sharpens the throttle response, increases steering weighting and performs gearshifts quicker and at higher

F-TYPE AWD vs E-TYPE

engine speeds. It also prevents automatic upshifts when the gearbox is in manual mode. As the light changes to green, I press the throttle pedal and the car accelerates with the ferocity of a great white shark at feeding time. I can already feel the benefits of the AWD system and I'm only yards into the course. It is, of course, more stable, more confident than the rear-wheel-drive versions and it's easier to get power down.

The system shares many of the driveline modules with the existing XF and XJ AWD, but whereas the focus for the saloons is on traction, for the F-Type it is on ultimate performance and dynamics. Under normal driving conditions, 100 percent of engine torque is sent to the rear axle. When required – such as driving on a steep and twisty hill climb – the electromechanically actuated coupling in the transfer case enables smooth transfer of torque to the front axle.

The heart of the AWD system is the intelligent driveline dynamics (IDD). Developed in-house, it is based around a high-level controller that manages the interaction of AWD, the mechanical limited-slip differential in V6 S models and the dynamic stability control system (DSC). The system is cleverer than Einstein's dog. Algorithms within the IDD controller continuously estimate road surface friction, while detailed monitoring of the vehicle's dynamics enables optimised torque distribution across the front and rear axles. So, as I start to turn the wheel for the first corner, the IDD senses the change of direction and more power is sent to the front wheels. Not that I am aware of it; I all sense is that the car feels spookily stable, despite the corner getting tighter. Even with my foot firmly to the floor, there's not the tiniest hint of oversteer. Yet I have a nagging feeling that the AWD derivative has lost some of the standard car's nimbleness, making it more like a larger GT. Still, it does weigh an extra 80kg over the rear-wheel-drive model (1,674kg over



1,594kg). It doesn't sound like much, but it's the equivalent of lugging 80 bags of sugar around.

The F-Type range also comes with EPAS (electric power-assisted steering) as standard, offering more feel than the previous mechanical setup. It's quick, too: as the corner tightens, its responses are immediate. Almost kart-like.

The corner starts to unwind, revealing Shelsley's long, straight, middle section. I demand more, and push the throttle pedal harder, the car accelerating solidly as I do. It might weigh more than standard, but the V6 S is fast, reaching 62mph in just 5.1 seconds, a mere 0.2 seconds slower. It is not as violent as the V8, but its impressive performance and has the ability to shock if you're unprepared.

Following a slight left, I barely need to lift for there's a much tighter left that rises sharply, followed by a tight right that rises even more. With diminished light due to the surrounding trees, this section of Shelsley Walsh is notoriously unsettling and many get caught out here. With all four wheels working together, the F-Type's grip is always maintained. I do sense a slight slip





coming out of the first corner, but it is easily controlled. And fun.

I roar out of the last corner, through the trees and back into the light. I accelerate hard up the final straight, pulling the copper-coloured righthand gear selector. The eight-speed Quickshift gearbox is an integral part of the car's performance and the change is fast and instant. I'm touching 100mph as I race under the finish banner, an impressive figure for such a short space, and then I stamp hard on the brakes to avoid running into the fields that surround the finish. I'm pleased with my 38 seconds, until I later discover that the record, set by Martin Groves in 2008, is 22.58sec. How will the E-Type fair?

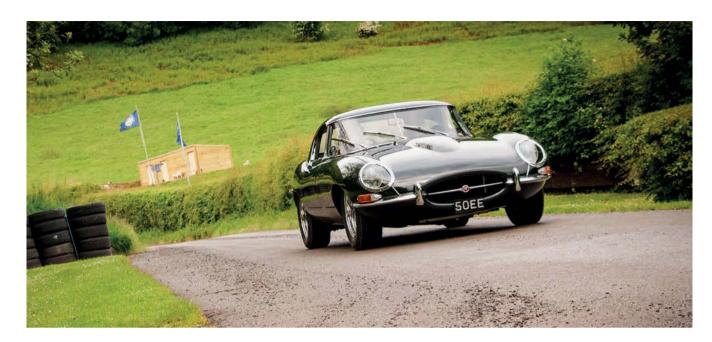
It is good to be back behind the wheel of SNG Barratt's 4.2 E-Type.



F-TYPE AWD vs E-TYPE









The things I liked about the car in 2012 haven't changed. Although totally restored using many new parts, it hasn't been modified or modernised in any way. I know that as I grasp the thin, wooden, steering wheel, the dash I'm looking at, consisting of classic white on black dials, appears exactly as it would have when it left the Browns Lane factory 50 years ago. It is a classic design with arguably more style than the F-Type.

I twist the ignition key and press the starter button to ignite the straightsix engine. It bursts into life with enthusiasm and soon settles down to a low, constant thrum. I line up on the start line for the second time and wait for the light to change before letting out the clutch and powering away. Even following the madness of the F-Type, acceleration from the 4.2-litre engine still feels crisp and enthusiastic, and the car pulls away smoothly.

It doesn't have the precision of the F-Type, but, if lined up correctly, the E-Type's unassisted steering is still sharp, and I scythe my way through the first corner before flicking up a gear and accelerating hard on the straight. Slight bends that I barely noticed before have to be negotiated a little more carefully, the car dancing on its skinny tyres. The E-Type is much lighter than the F-Type,

and it is easier to throw around on this narrow track, feeling the purer sports car.

I brake earlier for the tricky tightright section than I did in the newer car before flicking down a gear, the lever clicking its way into position with the accuracy of a Swiss timetable. It doesn't climb the steep incline as keenly as the F-Type, but with 283lb ft torque at my disposal, it still scales the summit like a rat up a drainpipe.

I pass the trees and zoom into the light. With the finishing line ahead, I gun the car for one final time, picking up speed enthusiastically. It doesn't have the same kind of performance as the F-Type, but its more mechanical experience keeps me feeling connected to the car.

My eventual time in the E-Type was 58 seconds, 20 more than in the F-Type, representing an improvement of 0.4 seconds for every year that separates these two cars. Not bad considering the E-Type's pedigree, although I reckon there is more to come from the F-Type in the right hands.

One thing is clear, though: just as the E-Type was the pinnacle of sports cars in the Sixties, the F-Type V6 S AWD is today. With its incredible levels of grip and fabulous performance, the car is an astounding machine, better in my opinion than the standard F-Type.

C-X75 HYBRID SUPER CAR





C-X75 HYBRID SUPER CAR

aguar's drivers say that this is the fastest car ever tested at Gaydon, Jaguar Land Rover's test track facility in Warwickshire. If you are quick enough out of the final corner, the C-X75 reaches 200mph before the end of the 1.25-mile main straight and it still feels as if it is accelerating.

In December 2012, Adrian Hallmark announced that JLR had decided. reluctantly, not to produce its hybrid supercar C-X75 after all. The company, Hallmark said, 'didn't feel comfortable launching a million-dollar supercar at a time of austerity' and thought it unlikely that it would make a return on the investment. Hallmark put on a brave face to emphasise that JLR had learnt a lot about hybrids, carbon composites and aerodynamics that would be of value for future mainstream cars. He also said that the development of the five C-X75 prototypes would be completed and that those who had been following the project closely would have a chance

to drive them before they were consigned to the museum...

READY TO ROLL

So it was that at the end of June we ventured out on to JLR's test track at Gaydon with prototypes 3 and 4, painted in odd shades of grey and blue but mechanically complete, festooned with test equipment and a full safety roll-cages.

The idea was that C-X75 would be both an ultra-high performance car and a docile form of transport, with an all-electric mode for city use. To prove this, our first laps were on the twisty handling circuit in EV mode, where the petrol engine will only start if battery charge is low.

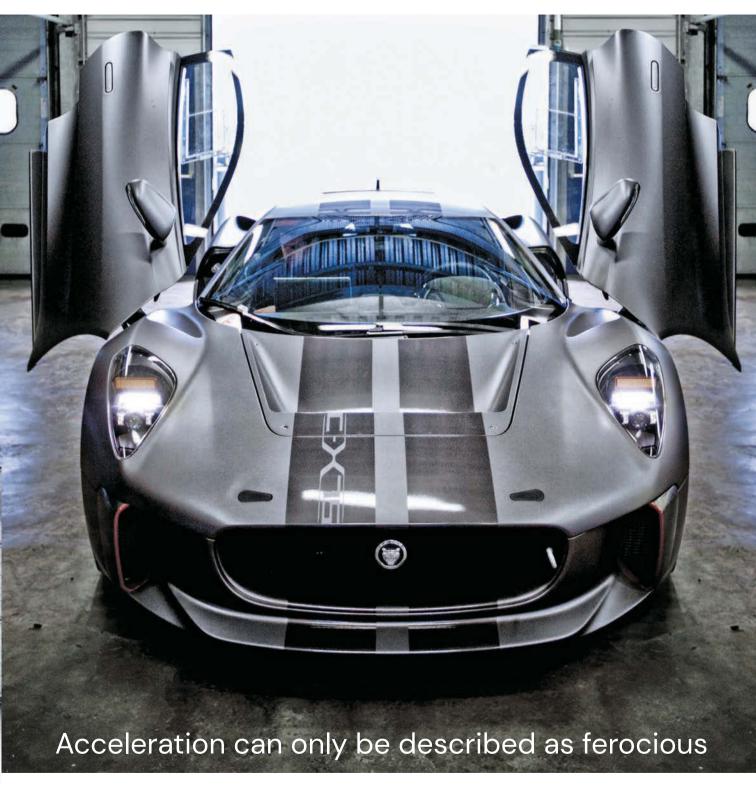
Like all electric cars, the stepoff from rest is brisk but this one runs seamlessly up to 100mph and produces enough power (the two electric motors each develop 195bhp) to spin the rear wheels in the lower gears. Handling balance and cornering grip is impressive, thanks to wide

tyres and four-wheel drive; one motor is mounted alongside the engine at the rear and the other drives the front wheels through a fixed ratio, equivalent to sixth gear in the rearmounted seven-speed gearbox.

Electric cars are often eerily quiet but this one is the opposite. A noise generator inside the car produces a whooshing like a jet plane which rises and falls in response to the throttle. The engineers reckon that this is needed to give the driver an additional indication of speed in what is still a very fast car. Or it might simply drive you mad...

The noise in parallel hybrid mode is something else. We switched to the Gaydon high-speed circuit for the full C-X75 experience - dynamic mode with the petrol engine and the two electric motors in concert, 890bhp of combined power. Even wearing a helmet, the wail of the highly-tuned engine is even more intense inside the car than it was in the dyno room. The accompanying acceleration,





as the engine runs to 10,000rpm between fingertip gear-shifts, can only be described as ferocious. You feel yourself being pushed back in your seat, even though you are tightly belted in a six-point harness.

Even more impressive is the car's stability at these extreme speeds. The aerodynamicists at Williams (of Formula 1, who partnered JLR in the project - see overleaf) have done their job well; the deployable

rear wing is said to generate 200kg downforce at 200mph.

Driving prototypes usually means making compromises; don't worry about the odd noises and vibrations, this or that will be different in the

C-X75 HYBRID SUPER CAR



final car. These two C-X75s felt finished and all-of-a-piece. Of course, the engine makes a lot of noise - intentionally - but the transitions between its various operating phases were so smooth as to be imperceptible and there was little vibration through the chassis. The robotised manual seven-speed transmission is operated by paddles behind the steering wheel (there is no automatic mode) and is sweeter than many of its kind; the electric motors maintain the torque level during gearshifts and there is only a sharp jolt if you are clumsy enough to run up to the rev-limiter at 10,200 rpm.

POWER TO THE PROTOTYPE

The Jaguar/Williams development

engineers are satisfied with these cars' performance and dynamics but because C-X75 will not be produced for sale they have not given them all the finishing touches. They have not optimised the stability control and braking system to give torque vectoring to aid high-speed cornering and energy regeneration when braking isn't enabled. Charging the batteries of these prototypes requires plugging into the mains.

Accommodating more than 200kg of lithium-ion batteries low down in the centre of the carbon-fibre chassis structure was a major challenge. The petrol engine nestles among the battery packs in the side members of the carbon-fibre monocoque, directly behind the cabin. The fuel tank is sited in the

central tunnel, between driver and passenger, and, further in the interests of weight distribution, the engine and transmission radiators and the cooling system for the batteries and electronics are all at the rear of the car. It is pretty crowded back there, even with the specially designed super-compact gearbox which, to save space and weight, has no reverse gear; backward movement is provided by reversing the rotation of the electric motor alongside it.

The key to operation and regulation of the hybrid system is an electronic box-of-tricks called the Vehicle Supervisory Controller, adapted from the control system of a Williams Formula 1 car.

Programme director Paul Newsome



says that C-X75 has met all its targets and is confident that the technologies can be used in other applications. More than 100 patents have been applied for, mostly concerning the high-voltage side of the hybrid system.

And while the whole point of the development was to fit this mighty powertrain within the envelope of the original C-X75 concept car, Jaguar's designers effectively had to start again. Although the size, proportions and overall shape were maintained, every surface and radius is slightly different from the show car. It has been given a front air intake like the new F-TYPE, and the long conventional doors have been replaced by dihedral 'scissor' ones like the McL aren 12C's.

PUBLIC SERVICE

The show car's wild interior, with its seats formed by the contoured floor and adjustable pedals and instrument panel, has been re-done in a more conventional, and more ergonomically-efficient, way. The fifth and final prototype has been finished in detail and painted a rich blue the definitive colour for Jaguar's RS models. It will be used for exhibition purposes and was the first C-X75 to actually take to the streets when it ran in a cavalcade in London as part of the Coronation Festival at Buckingham Palace.

So, rather than hiding it away, Jaguar has decided to get as much publicity as it can for the milliondollar supercar that might have been. It knows that there will still be those



HISTORY

For 2010, Julian Thomson, head of Jaguar's advanced design, had been given the rare opportunity to start with a clean sheet of paper to create a spectacular show car celebrating 75 years of Jaguar design (going back to the 1935 SS).

To reflect the mood of the moment, the concept had to be a hybrid. Strolling through the advanced engineering department adjacent to his Whitley studio, Thomson spied a miniature gas turbine that had been sent for evaluation by its maker Bladon Jets. A pair of those mounted at the back of C-X75, each producing 94bhp, could generate the electricity to run the electric motors that he planned to position at each wheel.

The car's shape could then have more balanced proportions than conventional mid-engined supercars: a longer front and a shorter tail. Design critics compared the C-X75 with the legendary 1966 Lamborghini Miura (which achieved its styling balance by mounting the V12 engine transversely). Inevitably, some wealthy enthusiasts enquired about buying one. But although the car was designed to be feasible for production, engineers explained that Bladon's lightweight micro-turbines were being investigated as part of JLR's research into hybrids but were a long way from a practical application. And, as Julian Thomson pointed out, there was no room for a conventional V8 or V12 powertrain within the body shape.

C-X75 HYBRID SUPER CAR

who will want to buy one but it is sure that the decision to suspend production was correct. Some wise heads in the company remember how Jaguar caught a cold with the XJ220 in 1989.

The market for insanely expensive supercars is, once again, in danger of overheating. The C-X75 and Porsche's (less expensive) 918 hybrid supercar have very similar specifications: both have combined max power of just under 900bhp, around 1,000Nm torque, and quoted weights of 1,700kg, so their performance is more-or-less the same. But with only six months to go before the first deliveries, Porsche had sold only 40 per cent of its planned production run of 918 cars. And now the rather different but perhaps more exotic hybrid McLaren P1 and La Ferrari have appeared to tempt the world's wealthiest enthusiasts.

TEAMING UP FOR PRODUCTION: JAGUAR AND WILLIAMS

So engineering director Bob Joyce was not expecting the call from Carl Peter Forster, then JLR chairman and the chief executive of its owner Tata Motors, instructing him to find a way of turning C-X75 into a production car. Forster had just returned from the Tata Motors board meeting in



December 2010 where Ratan Tata had personally endorsed the idea.

JLR already had some contact with Williams F1, which was keen to expand its engineering business outside racing. Williams had the experience that that JLR lacked - in working with carbon-fibre, highspeed aerodynamics, even hybrid systems (the F1 KERS). There was the added attraction that, at that time, Formula 1 was expected to require 1.6 litre four-cylinder engines in 2014. Such a super-compact, highly developed engine could be answer

to the space problem within the C-X75 silhouette.

A joint JLR-Williams engineering team was set up, led by Paul Newsome of Williams and working mostly at its premises in Grove, Oxfordshire. The go-ahead for C-X75 was announced by Adrian Hallmark, Jaguar's global brand director, in May 2011, promising that an unspecified (but small) number would be made, priced around £700,000, and delivered to collectors and enthusiasts from the end of 2013.







Four targets were set: it had to resemble the show car, have 0-100mph acceleration to match the Bugatti Veyron (6 seconds), the CO² output of a Toyota Prius (89g/ km), and the electric-only range of the Chevrolet Volt (40 miles). The technologies used must be

applicable to JLR's future business.

Sharing a Formula 1 engine, which had seemed such a good idea, couldn't happen as the F1 rulemakers had changed their minds and specified V6 engines for 2014 instead. So a Jaguar team led by Gary Reid – also responsible for

the design and development of the new JLR engines to be made in Wolverhampton – started a crash programme to produce the most advanced four-cylinder engine ever used in a road car. Just 1.6 litres displacement, it would have to produce 500 bhp if, together with two electric motors, it was to give C-X75 the required performance.

We witnessed a bench test of that remarkable engine. It has a lightweight aluminium cylinder block and head and dry-sump lubrication. There are two sets of fuel injectors, four in the inlet ports and four direct to the combustion chambers, two gear-driven camshafts, and variable timing for its 16 valves. A mechanical supercharger delivers boost from idle speed and a big turbocharger takes over beyond 5,000 rpm. It is designed to rev over 10,000 and we saw it run up to maximum speed on the dynamometer, wailing like a race car with the turbo glowing cherry red.

At that stage, most of the components had been assembled but the engine and the two axial-flux electric motors had not been fitted to the car itself. The first prototype was to run a month later, in August 2012. Jaguar and Williams could be proud of the speed of its development, which was more akin to a race car programme than the project of major motor manufacturer.

But as we now know, there was no need to rush.

VISION FOR THE FUTURE?

JLR will continue to work with Williams on unspecified projects. It already has a dedicated research department for hybrid powertrains, will launch a diesel-electric version of the Range Rover later this year and expects to have 'performance hybrid' Jaguars in its future model range.

Jaguar also claims that C-X75 has developed its expertise in

aerodynamics, and composite materials. The prototypes presented particular challenges about cooling and airflow management that can be put to good use elsewhere and their body construction has shown how carbon-fibre could be incorporated with the aluminium structure of future production models. JLR will also have its own four-cylinder engines for new and smaller Jaguars



but no-one is suggesting that those will have compound supercharging and run to 10,000 rpm...



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THE SPORTS CARS

A look at the cars and development stories of some of the most iconic Jaguar sports cars.

Ask a stranger to think of an iconic British sports car and the chances are that they'll come up with the Jaguar E-Type, but in fact Jaguar's history with sports cars began way before the legendary E-Type arrived in 1961 and would continue long afterwards.

Issue six of Jagaur Memories charts the Jaguar sports car story which kicked off with the SS Jaguars in the pre-war period, before being revived in 1948 with the XK120 which wowed motor show visitors with its 120mph top speed and would spawn a line of XK models which would last until the dawn of the Sixties.

The E-Type then took the game to the likes of Ferrari and Porsche before the company embraced a new way of thinking with the long-legged XJ-S which would live on into the late '90s before being replaced by the high-tech XK8, a car which combined hints of the E-Type with very modern performance, especially in supercharged XKR form. The XK8 would evolve into the high-tech aluminium-bodied XK before being replaced by today's F-Type. As well as covering these modern classics, we feature the XJ220 supercar and those half-forgotten concepts which so nearly made it to production.

The evolution from SS to F-Type is the perfect way to illustrate Jaguar's 100 years of history and whether you're a fan of straight-six and side screens or V8s and superchargers, it's a fascinating tale.

