



# JAGUAR XJ220



# XJ220 at 30

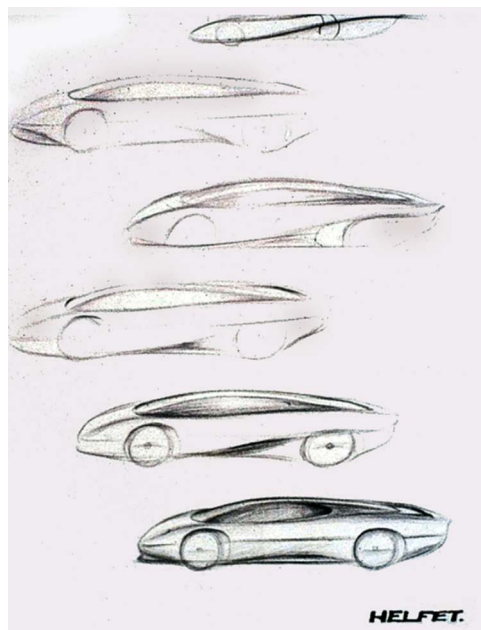
The Jaguar XJ220 will forever be remembered as the car that wasn't. Whereas really, it should be celebrated for being the car that it was. Retrospective road tests have shown that the XJ220 is an incredible piece of engineering and still one of the fastest supercars cars out there. It is a true classic.

## Conception

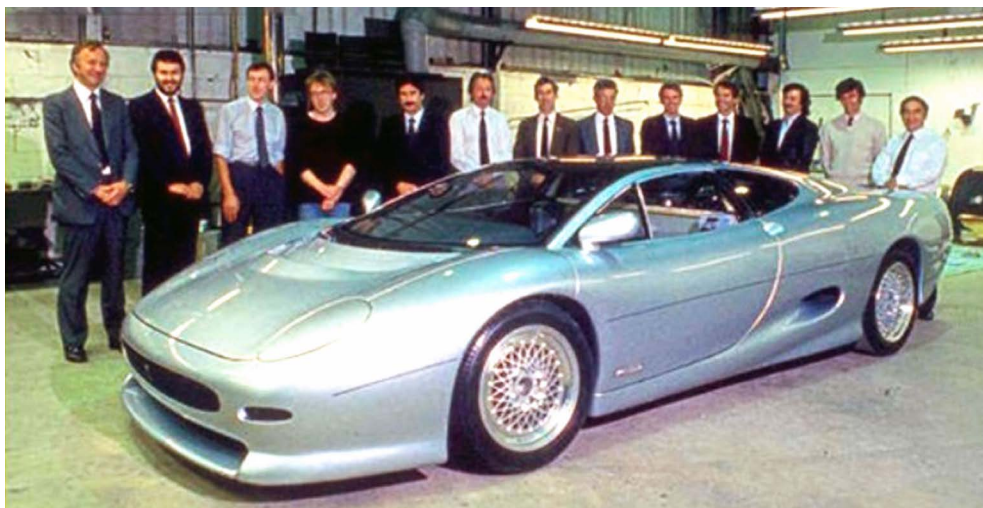
The XJ220 started as an "after-hours project" with Jaguar's Director of Engineering, Jim Randle, starting the project while on holidays. "I spent Christmas 1987 thinking about what we could do, and ended up with a CAD model, which I still have." CAD for Randle was not a computer model like we've come to know, but a 1:4 cardboard model (cardboard-assisted design).

Believing Jaguar needed something very iconic to rebuild its tarnished image, Randle set out to create a Group B supercar to take on the combined might of Ferrari and Porsche. Two mock-ups were produced by Jaguar's design studio with the design by Keith Helfet chosen as the basis of the future XJ220.

Despite the initial designs, the XJ220 project had no official support, leaving Randle no option but to put together a team of volunteers who worked evenings and weekends in their own time. Famously known as 'The Saturday Club'.



*Keith Helfet's original sketches for what became the XJ220. The design 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 the D-Type and XJ13, while the glass cover over the engine was another nod to the XJ13. The front end looked unmistakably Jaguar.*



*Jim Randle (left) with his team of 12 volunteers, who became known as "The Saturday Club"*

This small team designed and built the XJ220 Concept Car in record time.

## Design

To justify the resources used by "The Saturday Club", the XJ220 project needed to provide meaningful data for future road and race cars.

This and the FIA's Group B regulations steered the concept towards a mid-engine, all-wheel-drive layout, with Jaguar's V12 power unit at the heart of it.

The concept car itself was designed and built at very little cost to Jaguar. This was because Randle called in favours from various component suppliers and engineering companies that had supplied Jaguar in the past. Randle offered the

possibility of future contracts with Jaguar and public recognition to the companies that would help with the project.

## Drivetrain

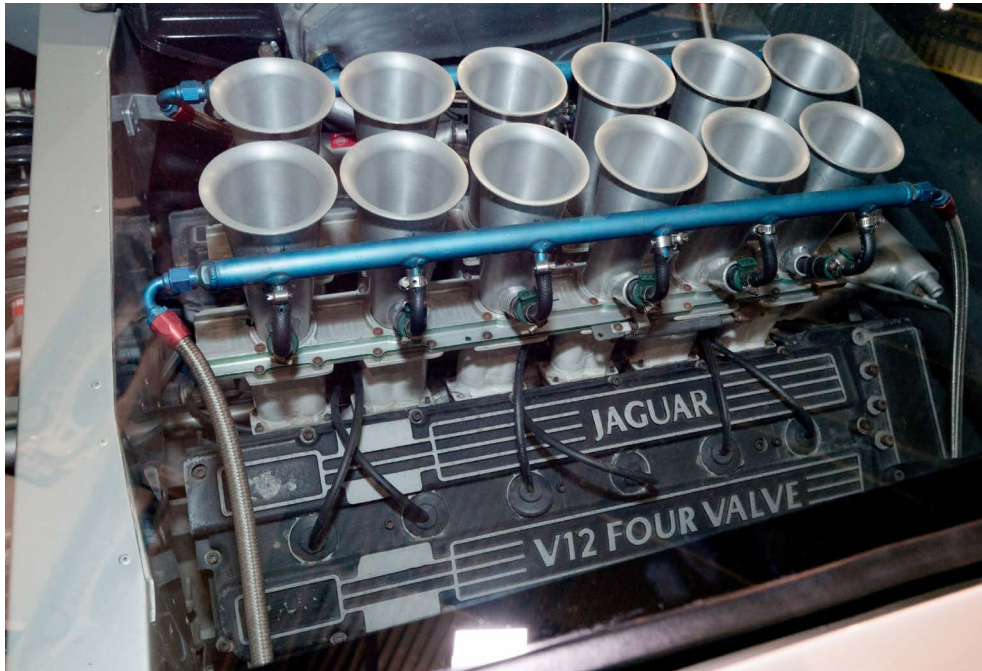
Tom Walkinshaw Racing (TWR) had manufactured a number of V12 racing engines for Jaguar in the 1980's, with a 7-litre quad-cam version of this engine featuring in the Le Mans winning Silk Cut Jaguar XJR-9.

Five of these engines still existed when the XJ220 was being designed and were chosen as the inclusion of a dry sump meant that the car could have a low centre of gravity, especially useful for a performance car like the XJ220. The displacement of the quad-cam V12 was set at 6.2 litres.



*October 14, 1991 Princess Diana unveiling the new Jaguar XJ220*





*XJ220\_V12\_quad cam engine as fitted to the project car. (Jaguar Daimler Heritage Trust)*

At the time, Jaguar had only produced rear-wheel drive cars and had very little experience with four-wheel drive systems. Randle enlisted the help of FF Developments to design the four-wheel drive system and the transmission for the XJ220. FF Developments was run by Tony Rolt, who was heavily involved in the development of the Jensen FF four-wheel drive grand tourer.

The project car featured an innovative rear wheel steering system. This complex arrangement increased stability, improved manoeuvrability, decreased turning radius and allowed smoother diagonal movement. (With the help of electronics this design concept has now been mastered and used by luxury brands such as BMW and Ferrari).

### Chassis & Body

Jaguar manufactured the XJ220's chassis from aluminium and the car was fitted with hydraulic scissors doors that swung up. The suspension design was mainly focused on road use, but a good compromise was found for racing use and the suspension height was also adjustable.

The body design was based on simple and clean designs of previous Jaguars like the E-Type and XJ13. While Jaguar limited the use of aerodynamic aids, the design of the car allowed for additional downforce when set up for racing. An adjustable rear wing that could be folded into the bodywork was also designed into the concept. The fuel tank was placed behind the centre bulkhead of the car.

### Launch and Reception

The XJ220 was finished in the early hours of 18 October 1988 and shown to the world that very day at the British International Motor Show in Birmingham, four months after Jaguar had claimed victory at the 24 Hours of Le Mans.

Reception for the new supercar was so great that Jaguar decided to put it into production, and within a short period they received nearly 1,500 deposits of £50,000 each. The list price on 1 January 1990 was £290,000, but that increased significantly in 1992 due to the indexation of contracts that took into account annual inflation.



*The Jaguar XJ220 concept car, quad-cam V12 4WD prototype, was shown to the world at the 1988 British International Motor Show (at Birmingham).*

### Reality – Production Car

As Jaguar's engineering resources were tied up with the XJ and XJS models they were unable to build the XJ220 themselves. Jaguar already had an existing joint venture with TWR, called JaguarSport Ltd, which was set up in 1987 to produce racing cars. TWR and JaguarSport formed a new company, Project XJ220 Ltd, specifically for XJ220.

While the future of the XJ220 was looking bright, the reality was anything but. The 4WD and rear-wheel-steering system was ditched for a simpler RWD layout, but the major change was yet to come - the engine.

### Circumstantial V6

The original 6.2-litre V12 quad-cam power unit was replaced with a bi-turbo 3.5-litre V6 engine. The loss of the V12 was a significant disappointment to many and led to a number of customers cancelling their orders for the car.

While the V6 certainly made sense from a weight-saving point of view, Walkinshaw's motives may not have been purely engineering based. TWR had bought the rights to the David Wood (Cosworth) designed MG Metro 6R4 engine, a naturally aspirated V6 quad-cam engine built very much with racing in mind.

Walkinshaw's team developed this engine with turbocharging to power the XJR 10 and XJR 11 of 1989 and 1990 — prototype racers aimed at the American IMSA series, and the World Sports Car Championship. These engines were



effectively outlawed by legislation for the 1991 series, so Walkinshaw had an engine design he could no longer do anything with...

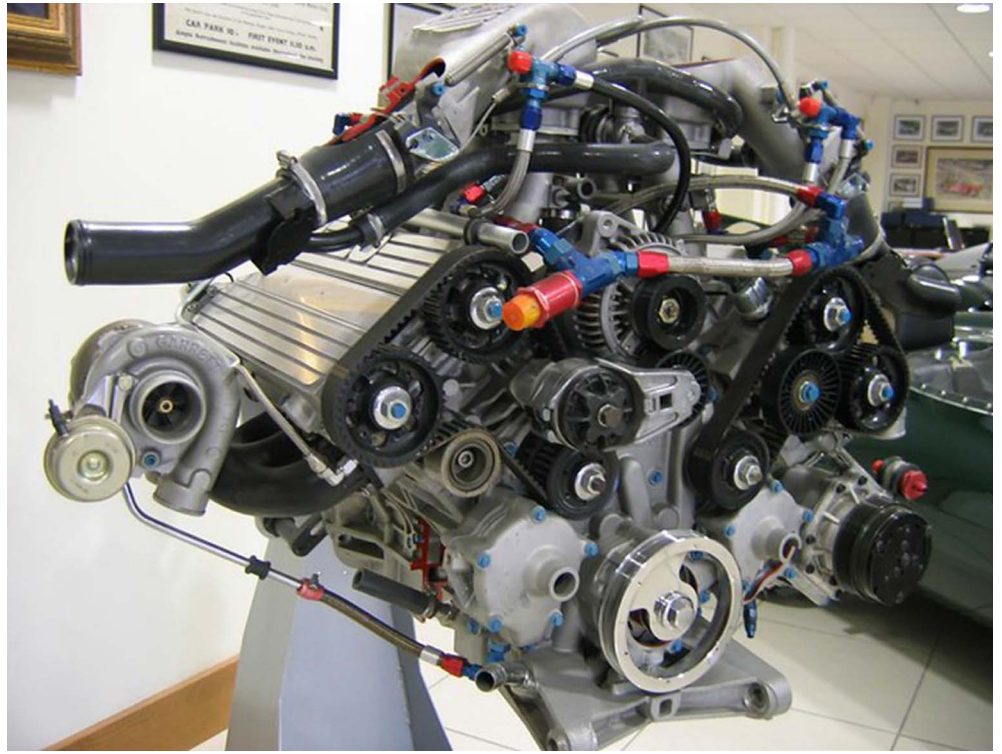
Whatever the reason this V6 engine, now named the JV6, was further redesigned for the XJ220, and developed a mighty 542bhp at 7000rpm. It was undoubtedly enough horsepower for quite remarkable levels of performance. The use of a V6 also meant that the car could have a shorter wheelbase and save further weight.

## Exterior & Chassis

As the internals of the car were radically different to the concept, the production XJ220's body received some hefty changes. While the aluminium panels remained, the scissor doors were dropped in favour of normal ones and the wheelbase and overall length was altered.

Larger air intakes were designed into the body as the turbocharged engine required two intercoolers and it was also one of the first production cars to intentionally use underbody airflow and the venturi effect to generate downforce.

While much of the XJ220 was redesigned for the production model, the Alcan bonded honeycomb chassis structure was retained. The chassis featured two box section rails which acted as the suspension mounting points and provided an energy absorbing structure in the event of a frontal impact. A roll cage was also integrated into the chassis, providing increased structural rigidity.



*Quad cam bi-turbo V6 engine as fitted to the XJ220 production car. The 3.5 litre all-aluminium V6 engine has been ranked as one of the "10 Greatest V6 Engines Ever Made".*

Jaguar not only dropped the 4WD rear-wheel steering setup, but they also removed the adjustable suspension, and active aero.

FF developments modified their original 4WD system designed for the XJ220 concept, into a RWD setup for the production car with independent suspension at the front and rear with double unequal length wishbones, inboard coil springs, Bilstein dampers.

The cars used a five-speed gearbox (but a six-speed may have helped reach 220mph).

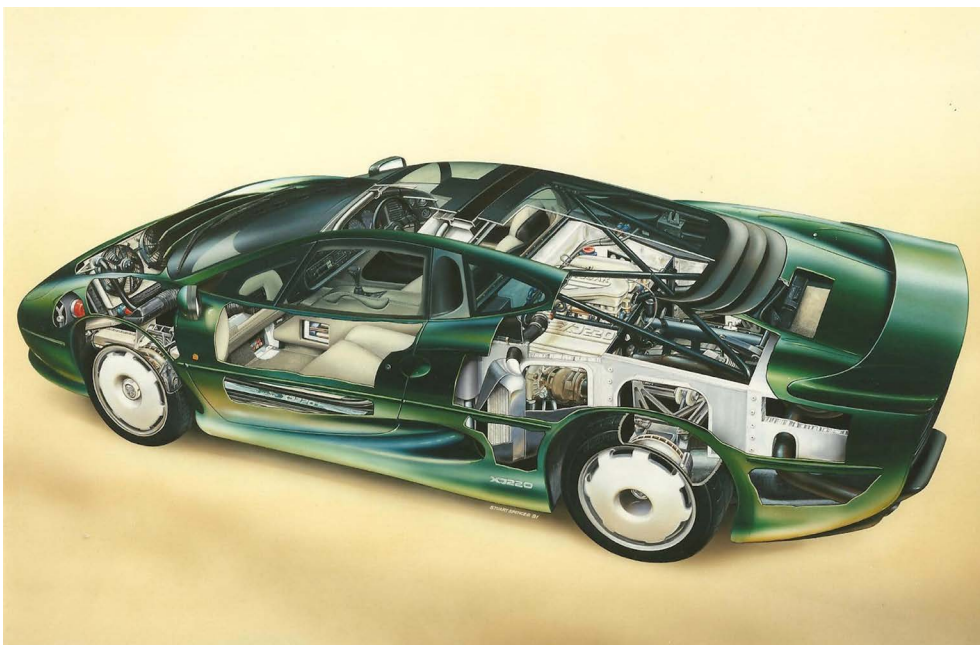
## Production & Sales

The first production car was unveiled at the Tokyo Motor Show in October 1991. Production started in April 1992, and Jaguar announced that the first customers could take delivery of their cars in June and July that year, and that a total of 350 XJ220s would be built.

But a different specification wasn't the only problem facing the car. Just months after production of the XJ220 started, the British Government was forced to withdraw from the European Exchange Rate Mechanism (ERM) after it was unable to keep the currency above its agreed lower limit. Known as Black Wednesday, it saw interest rates soaring and plunged the UK into a long recession.

As the price of the XJ220 was £450,000, Jaguar suddenly faced around 75 of its would-be customers defaulting on their contracts, refusing to take delivery of their car and even sacrificing their deposit rather than pay the full retail price. Although the courts ruled in Jaguar's favour, the company remained stuck with many unsold cars.

Production halted in April 1994 with just 281 cars produced. In 1997, a handful of XJ220's were still available and the last of these were sold for a reported £127,550. McLaren's F1 supercar suffered a similar fate with only 71 cars out of a targeted 300 produced.



*XJ220 production car cutaway.*



# XJ220 at 30 (cont)

## Wheels & Tyres

The production XJ220's were fitted with huge wheels with 9" wide x 17" diameter fronts and 14" wide x 18" diameter rear with 255/45/17 and 345/35/18 tyres respectively.

However, developing tyres for these huge rims was not a simple process. Bridgestone, making the tyres for the XJ220, explained that there was no tyre that could handle a car that heavy that could go at its targeted 220 mph top speed. If the car was going to work, it would need to be lighter and smaller.

TWR claimed that the V12 engine was considered to be too big, too long and too heavy and that the 3.5 litre all-aluminium V6 solved all those problems.

In the end, Bridgestone manufactured the tyres, but when production of the cars finished, no more tyres were produced and the moulds were not kept.

For more than 10 years new tyres for the XJ220 were unavailable and there were cases of wealthy owners buying another XJ220 car so they could obtain the tyres!

Fortunately, both Pirelli and Bridgestone now offer new rubber designed specifically for the car.

## Speed Record

The initial 341.7km/h (212.3mph) world speed record run was done at Fort Stockton, Texas. Despite this record-breaking run, Jaguar had hoped to reach 220mph with the XJ220.



*From sidecars to supercars, a beautiful photograph from Browns Lane (JDHT)*

It was decided that further high-speed testing would occur at the Nardo Ring in Italy in June 1992. Jaguar then made a number of modifications to the car that included removing the car's catalytic converters and increasing the rev limiter to 7,900rpm, resulting in a top speed pushing 350km/h (217mph). As catalytic converters were not required by European law at the time, the world record breaking XJ220 was still considered to be road legal.

The XJ220 held the record for the fastest production car in the world until the arrival of the McLaren F1 and its incredible 240mph run in 1998.

## Racing

Jaguar introduced a racing version of the XJ220 at the 1993 Autosport International motor show, named the XJ220-C. This was built to compete in FISA GT racing and the car won its first race in the BRDC National Sports GT Challenge series, at the hands of Win Percy.

The car also made multiple appearances at the 24 Hour of Le Mans, with its first race in 1993 in the Grand Touring Class. Three XJ220-C's were entered with the one driven by David Brabham, John Nielsen and David Coulthard, winning the GT class, beating Porsche by two laps. However, the celebrations were short lived, with the car controversially being disqualified for failing to run with catalytic converters.

Jaguar's XJ220 also made appearances at the Italian GT Championship and featured in some events in the United States.

## XJ220-S

A road-going XJ220-C was developed by TWR. The XJ220-S featured one-piece carbon-fibre-reinforced polymer bodywork and a tuned 690hp engine.

TWR also replaced the hidden headlamps with Perspex covered lights and the interior was stripped out to be like the XJ220-C.

Autocar's Colin Goodwin set the lap record at the Millbrook Proving Ground in 1995 with an average speed of 290.3km/h.



*The XJ220 was the brainchild of Jaguar's chief engineer, Professor Jim Randle (far right). The designer responsible for the shape of the car was Keith Helfet, Jaguar's senior sports car designer who later designed the XK180 and F-type concept cars.*



# XJ220 at 30 (cont)

## Conclusion

Maybe it was due to the marked difference between the reality of the car's specification to the concept vehicle or because of its complicated birth and mixed parentage, but by the 2000's the XJ220 was the forgotten supercar of the Nineties.

While the Ferrari F40 and Porsche 959 became collectable, their values growing accordingly, the XJ220 was at best ignored, at worst derided. (This has always been baffling given that the Ferrari

used a 2.9-litre twin-turbocharged V8 engine, built 1,315 cars and Porsche built 345 cars with a 2.9-litre twin-turbocharged flat-six).

That situation has begun to turn around as Keith Helfet's beautiful design becomes appreciated and the 3.5 litre V6 is no longer considered a drawback given that the engine was ranked as one of the "10 Greatest V6 Engines Ever Made". As recently as 2014 an XJ220 could be bought for less than £200,000, you're now looking at over £450,000 and

collectors are now reassessing the value of the car.

Jaguar's XJ220 may have faced an uphill battle when it was new, and it may have taken 30 years, but today the supercar has finally joined the ranks of the truly desirable.

*Editor: The information and photographs for this story was gathered from the Jaguar Daimler Heritage Trust (JDHT) and several other publications including UK Classic Jaguar Magazine and Jaguar World.*



*The concept car featured aerodynamic wheel rim covers similar to those being experimented by F1 race cars at the time. At high speed, they help to smooth out the turbulence created by the wheels and tyres. The production alloy wheels adopted the same profile to achieve a similar aerodynamic result. BBS alloy wheels were offered as an aftermarket upgrade.*



*In 2017 more than 40 XJ220's got together at Silverstone to mark the 25th anniversary of the launch of the car. The parade included the three cars that raced at Le Mans back when Jaguar won and lost at Le Mans in the same day. Australian David Brabham led the parade in car 50.*