

Alfa Romeo



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ALFA ROMEO "ES 30"

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1. Alfa Romeo ES 30

This prototype, presented at the 59th Geneva Motor Show under its project name "ES 30" (Experimental Sports Car 3000), is a coupé that harks back to Alfa Romeo's traditions in the field of sports cars.

A suspension system descended directly from Alfa racing expertise, tyres specially prepared by Pirelli and the high C_z values obtained using "ground effect" enable the ES 30 to offer a lateral acceleration that has never before been achieved in a road-going model.

This is no mere design exercise but the prefiguration of a vehicle that could be manufactured in a limited run of about a thousand.

Here, in brief, are the Alfa Romeo ES 30's salient features:

. engineering/design: for the first time, computerised technologies (C.A.D.) have been given the task of fully developing the car right from the drawing board stage, making the transition from idea to prototype possible in just 19 months. The "ES 30" was designed by Centro Stile Alfa Romeo in collaboration with Zagato.

. aerodynamics: for the first time in a sports car designed for road use an aerodynamic line has been adopted mainly to point up the C_d (0.30), using the "ground effect" to get C_z levels capable of neutralising the body's negative lift.

- . construction: bodywork built in composite materials bonded to a steel frame;
- . mechanical layout: "transaxle", with front-mounted V6 engine, rear gearbox/diff assembly and de Dion axle.

The "ES 30" is much more than a return to the high performance coupé earmarked for specialists.

With the "ES 30", a procedure has been established capable of uniquely telescoping the time-scale between idea and finished product without skipping any of the steps inherent in traditional processes.

This is the real link between the "ES 30" and the Alfa Romeo tradition. It is not a simple citation of the shape but an attempt to maintain intact those features of imagination, flexibility and immediacy that have always been the hallmark of Alfa Romeo design centres.

Design

On the design level the intensive use of C.A.D procedures right from the drawing board has brought a significant reduction in the project schedule: just 19 months from idea to working prototype.

This is an achievement with wider implications for the building of new models as it meets the current and future strategic requirements of a market that demands increasingly prompt but also increasingly well pondered answers to cope with mounting production investments.



The telescoping of project times means broadening the choices available and consequently improving decision-making processes.

Given equivalent development times, the techniques used in the design of the ES 30 therefore enable new models already in prototype form to be evaluated, much to the benefit of rational decision making.

Production

As for production itself, the body in plastic material reinforced with fibre glass is made using a low pressure injection system that reconciles craftsmanlike quality and structure with costs and output levels compatible with a standard, albeit limited, production run.



2. Alfa's traditions and involvement with motor sport

With the ES 30 Alfa Romeo is offering a coupè that merges high performance (top speed around 250 km/h) with roadholding and manoeuvrability capable of giving very experienced drivers outstanding results over mixed surfaces.

A car whose sporting behaviour would be seen more clearly on the road and not just through its performance against the clock.

Achieving this result meant obtaining a very well balanced construction that harked directly back to the experience accumulated in competition.

The chassis of the 75 group A, star of the 1987 World GT Championship, and winner in 1988 was the "laboratory" on which engineers from Alfa Romeo and Alfa Corse crafted the "ES 30".

And it was in competition that the functional testing of the mechanical assemblies also took place: the 3 Alfa Romeo 75 "IMSA's" that won the 1988 Italian Car Tour were all forerunners of the "ES 30".

3. Structure and materials

The bearing structure consists of a steel chassis with notable features of torsional and flexural rigidity.

A skin of cold-injection-pressed composite materials consisting of ICI "Modar" thermosetting metacrylic resin and fibre glass is bonded on to the frame.

The composite body supplements and contributes to the rigidity of the whole.

The use of composite plastic materials rather than more traditional thermoplastics makes it possible to build a structure of limited weight but great strength due also to the possibility of varying its thickness according to the strain each part is required to bear.

With the "ES 30", a technology has been developed that enables a process to be industrialised that up to now could only be achieved through craftsmanship.

Fundamental to this process is the low-pressure injection of resin into a mould where a pre-formed fibre glass mattress has already been inserted.

The resin used is characterised by the following:

- . good mechanical workability and high quality pressing;
- . outstanding surface finish;
- . great mechanical strength;
- . unaffected by climatic factors;
- . good paint holding capability.

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In the case of the "ES 30" the paint is applied to the shell already prepared with an appropriate base for plastic baked at 80°C for 60 minutes.

Undershell and boxed parts are treated with anticorrosion materials.



4. The mechanicals

The aim of Alfa Romeo's engineers was to imbue a road-going car with levels of lateral acceleration normally found in a racing car, and so high speeds on bends.

The "ES 30's" mechanical and aerodynamic configuration has been laid out to obtain the best performance that the specially prepared Pirelli PO tyres can provide.

In particular, thanks to the adoption of the hydraulic stability variators on the dampers allowing a road clearance of just 6 cc, the centre of gravity has been significantly lowered and beneficial effects have also accrued to the aerodynamics.

The transaxle layout mounts a front lengthways-mounted, three-litre V6 engine and rear-wheel drive with clutch and gearbox in the rear train, thus providing good load distribution on the two axles.

The total kerb weight (1260 kg) is split, 56% over the front axle and 44% over the rear.

The suspension system, offspring (like the brakes) of the Alfa Romeo 75 IMSA, is of independent wheel type with transverse wishbones, coil springs and coaxial dampers at the front and a De Dion axle in the rear.

Exclusive to the De Dion axle is its negative camber value and a forward toe-in.

All the body-suspension joints are guaranteed by the "uniball" system ensuring more accurate wheel wobble management while driving and absolutely constant setting.



5. Aerodynamics

The Alfa Romeo "ES 30" is the first production vehicle endowed with "ground effect".

The adoption of computational aerodynamic methodologies together with traditional wind tunnel tests and the specially designed lower section of the car have made it possible to achieve "Cz" levels capable of neutralising the car's natural lift.

All this with a Cd of the order of 0.30. An outstanding figure as it has been obtained in a vehicle just over 4 metres long with short overhangs.

The backward position of the centre of thrust with respect to the centre of gravity makes it largely indifferent to cross winds.



6. Specification and performance

Engine	V6 (60°) of 2,959 cc.
Maximum power output	210 bhp-DIN at 6200 rpm
Length	4.06 m
Kerb weight	1,260kg
Top speed	245 km/h
Acceleration 0-100 km/h	7 seconds