

THE ENCYCLOPEDIA OF

# Supercars

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# 39

## LANCIA STRATOS

1977 SOUTH AFRICAN GP: TRIUMPH AND TRAGEDY

CLASSIC SUPERCAR A-  
JUAN MANUEL FANGIO

AGELESS CHAMPION



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# THE MASTERPIECES



# Lancia Stratos

Whether the 500 cars required for motorsport homologation were ever built is debatable, but the Stratos won three World Rally Championships and became one of the most desirable, if least practical, sports coupés of all time.

**A**s a road car, the Stratos was a short-lived but spectacularly individual creation that frankly looked more like a stylist's dream car than almost anything else that ever reached production. As a competition car, it marked the beginning of a new and more sophisticated era for top-level rallying, as one of the first purely purpose-built homologation specials – although there was also evidence that Lancia did, for a while at least, intend the car to be a bigger-scale production model too.

From its first win, as a prototype in Spain in 1973, through successive World Championships in 1974, 1975 and 1976, and until as late as 1979 when it scored a final, remarkable, Monte Carlo Rally victory, the Stratos became one of the most successful rally cars of all time. Yet beneath all the glamour and performance, the Stratos was a usable road car, as fine a bit of opportunist engineering as you could wish to find anywhere –

a parts-bin special of the ultimate kind. It was conceived in the early 1970s, largely by Lancia's then competition director, Cesare Fiorio, to replace the successful but ageing Fulvia and start a head-on attack on the Special GT category of the Group 4 rallying format. That gave a far degree of freedom in designing the car, but it did demand a minimum production figure of 500 examples, which was a fine balance to achieve on an acceptable budget – and, of course, guaranteed that the majority had to be sold as road cars.

In the end, the trigger for the Stratos came from a rather odd source; it was inspired by a Lancia-powered show car that had been built by Bertone for the Turin Motor Show of November 1970 and which was also known as the Stratos.

This futuristic, wedge-shaped creation was ultra-low, the only way to get inside it was by hinging up the whole of the front windscreen. Bertone had built the chassis, and the body, but

**Above:** Bertone's unique, stubby wedge styling gave the Stratos a tough, almost menacing, personality, and the few examples seen on the road have always looked dramatic.

**Inset:** Lancia-badged, the Stratos was a hybrid product of the Fiat-Ferrari-Lancia union.

power came from a 1.6-litre Fulvia V4, longitudinally mid-mounted ahead of a five-speed gearbox. The car was driveable, but was obviously not a commercial proposition.

## A world-beating rally car

As Turin in 1971 Bertone unveiled another show car, the Stratos HF, which looked close to the Stratos as it eventually went into production. It had Ferrari's Dino V6 engine, transversely-mounted uprights. It sat on the same stubby, 65.5-in. wheelbase as the first show car, but it was almost 10 inches taller, with real doors and windows. The promising blend of running gear was made possible by the fact that near-bankrupt Lancia had been absorbed into the Fiat empire in October 1968, alongside Ferrari, where Fiat had

actual competition debut was even earlier, back in November 1972, when a 230-bhp version retired from the Tour de Corse.

Early indications were also that the Stratos might prove quite versatile, when it finished second in the gruelling Targa Florio road race in May 1973, behind just one Porsche, and a year later Lancia went one better and won the Sicilian classic. In reality, however, although very specialised (often turbocharged) versions were entered in selected races over the next few years (including Le Mans in 1976 and 1977), the Stratos's main successes came, as expected, from rallying.

## Status as a rare and desirable classic

The Stratos went on to win every major rally except the RAC and the Safari. Overall, it scored over 80 international wins, including 14 in World Championship events, and took three successive World Championships for Makes, in 1974, 1975 and 1976, plus numerous drivers' titles around Europe.

The Stratos's overrated fame after it was supposedly ousted by newer cars. That was also, sadly, after former Grand Prix driver Mike Parkes (who had taken over the development role from Gian Paolo Dallara) had been killed in a road accident in August 1977, and after Fiat had switched all the works efforts to their own cars. One of the Stratos's greatest exponents, Bernard Darniche, took an inspired last-gasp win against

**Below:** The RAC was one of the few big rallies the Stratos never won – Markku Alen and Ilkka Kivimäki (here) did not finish in 1978.



**Right:** The Stratos was, above all, a rally homologation special, designed from scratch to win. This car is in the works team colours.



**Above:** As well as rallies, the Stratos won classic road races like the Targa Florio.

all the odds in the 1979 Monte Carlo Rally; he won by just six seconds, having driven like a man possessed throughout the final night.

By then, the Stratos was an old car, outdated for competition and out of fashion for the road. Like a lot of cars at the time, though, it had become something of a victim of circumstance. While it was a rally winner, it was fashionable enough to outweigh its crudeness as a road car, but it all ran head-on into the early 1970s fuel crisis, and that was probably the end of any plans for non-conventional production. It was also, of course, the perfect foundation for the Stratos's future status as a rare and desirable classic...

# THE MASTERPIECES



**Above:** Responsive handling and traction were Stratos design priorities. The car's Ferrari-derived V6 engine and transmission were transversely mid-mounted, and it had exceptionally wide-track, short-wheelbase proportions and compact overall dimensions (it was about the same length as a Ford Fiesta), with minimal bodywork overhang.

**Inset:** Although tested in 1972, the Stratos didn't gain rally homologation until October 1974.

## Driving the Stratos: raw and nervous

Remember that the main purpose of the Stratos was competition, and you will understand much of its nature. The cabin is tight, the pedals are pushed into the centre by big front arches, three-quarter rear vision is almost zero, and the diving position is typically Italian – long-armed and short-legged. In road trim the exotic-sounding V6 is pleasantly docile and pulls strongly from low speeds. The gear change is stiff, the brakes are solid and very effective, but the steering is light. Twisty handling is dictated by the short-wheelbase, mid-engined layout, and becomes even more nervous if the car is not set up

absolutely precisely regarding suspension geometry and tyre pressures. A Stratos will first understeer strongly when pushed hard, but lift off suddenly and it will rear sharply sideways, and you must react very quickly and correctly to catch it. Now is the grip very great by modern standards, on the relatively high-profile tyres. It is better to drive smoothly through corners and exploit the traction and power away from them. This power is impressive, and the Stratos, with its underlying nervousness, feels quicker than its 0-60 mph time of around 6½ seconds and top speed of just over 140 mph might suggest.

# Lancia Stratos Data File

**B**efore the Stratos, Lancia's reputation was firmly established as a maker of very finely engineered sporting (rather than sports) cars. Cars like the Fulvia were good enough to be turned into competitive rally cars, but when rallying became rarer, advanced with the advent of Group 4 in the early 1970s Lancia needed something dramatically different to compete. The Stratos marked a departure for Lancia in that it did not use a Lancia engine – the V6 was a Ferrari engine (Ferrari and Lancia having become part of the Fiat empire) – and it was also the first Lancia to use glassfibre bodywork. In fact it was – and was also the first Lancia to use glassfibre bodywork. In fact it was – and was also the first Lancia to use glassfibre bodywork. In fact it was – and was also the first Lancia to use glassfibre bodywork.



**Above:** Bertone's 1970 Turin Motor Show styling exercise provided at least a hint of inspiration for the real Stratos rally car.



**Above:** Side-on, the Stratos's chunky wedge shape is accentuated; it still looks striking now, but in 1972 it was sensational.

**Styling**

In 1970, Bertone showed the Stratos 'kissed car' in Turin. Wedges were in fashion, and as was the mid-engined layout, both thanks to racing. In 1968, Lombardini had put mid-engines on the road, with the Bertone-styled Miura, alongside the first Stratos. Bertone showed a Lamborghini prototype called the Countach. Wild as it was, the Countach was the one that went into production – the show Stratos was even more outrageous. It was angular, with a flat nose-line and an amazingly low profile. There were no side door access via the windscreen, which hinged up from the top edge. The mock-up interior was typically futuristic – an electronic dash and mirror switches were in the huge pillar to the driver's left, and the pedals sat high up by the bottom edge of the tilting windscreen. Pulling back on the steering wheel closed the front hatch. The driving position was exaggeratedly forward, with one's feet positioned ahead of the front wheels. The compact longitudinal V4 was aimed far enough back to allow space for the fuel tank and near-horizontal space was wheel between it and the steeply



**Above:** Even in a roadgoing Stratos, the interior was strictly functional.



**Left:** A spoiler fitted close to the rear of the roof proved an important aerodynamic aid.

reclined seats. The flanks had deep recesses for airflow (and styling), but the only glass was located ahead of the driver, above and below the windsteer.

This first car was driveable, but it obviously wasn't practical. A year later, the second Stratos looked almost exactly like the car as it went into production. The wheelbase was the same as on the first show car, but this version was taller and the driver sat further back. The wedge was just as severe, but now it was topped by a narrow cabin, with a steeply-raised windscreen sweeping up into dramatically-curved side windows, to give it an open-roofed, stubby look. In production, very little changed: proper windscreen pillars appeared, the front loaves became analgesic but more numerous, there was one window instead of two, the arches were integrated rather than bolted on, and the rear end was properly defined, but the car still looked much as it had at Turin in 1971.

**Below:** One of the Stratos's most distinctive external features was its radically-curved windscreen.



**Right:** Bertone probably selected the round rear lights for the Stratos from the Ferrari parts bin.



**Below:** Rear bodywork, including the leaved engine cover and the roof spoiler, was a one-piece assembly.

PERFORMANCE & SPECIFICATION COMPARISON											
	Engine	Displacement	Power	Torque (lb ft)	Max speed	0-60 mph	Length (in/mm)	Wheelbase (in/mm)	Track (front/rear)	Weight (lb/kg)	Price
Lancia Stratos	V6, quad-cam	2416 cc	156 hp/112 kW 7100 rpm	160 lb ft 223 km/h	140 mph 226 km/h	8.8 sec	146.1 in 3711 mm	85.5 in 2172 mm	57.5 in 1461 mm	2160 lb 978 kg	£7,000 (\$7,700)
Alfa Romeo Montreal	V6, quad-cam	2592 cc	200 hp/147 kW 6500 rpm	173 lb ft 230 km/h	137 mph 220 km/h	8.1 sec	168.0 in 4216 mm	92.5 in 2350 mm	54.3 in 1378 mm	2911 lb 1320 kg	£4,300 (\$4,700)
Ferrari 308 GTB	V6, quad-cam	2927 cc	288 hp/211 kW 7700 rpm	210 lb ft 260 km/h	154 mph 248 km/h	6.5 sec	166.0 in 4229 mm	94.1 in 2390 mm	67.9 in 1725 mm	2870 lb 1302 kg	£11,997 (\$12,970)
Lamborghini Urraco S	V6, quad-cam	2463 cc	220 hp/162 kW 7100 rpm	188 lb ft 250 km/h	143 mph 230 km/h	8.5 sec	167.9 in 4249 mm	96.5 in 2451 mm	67.5 in 1715 mm	2984 lb 1354 kg	£9,385 (\$10,174)
Maserati Merak	V6, quad-cam	2465 cc	200 hp/147 kW 6800 rpm	169 lb ft 230 km/h	143 mph 230 km/h	7.7 sec	170.9 in 4298 mm	102.2 in 2596 mm	67.9 in 1724 mm	3060 lb 1389 kg	£18,367 (\$19,911)

# Lancia Stratos

**S**triking as the Lancia Stratos still seems, it was less radical than the show cars from which the design was developed. The very first Stratos appeared on the Bertone stand at the 1970 Turin Motor Show, with the designer having no thought of creating a production version. The next Turin Show saw a car much closer to the Stratos as it appeared in production, but by that time the requirements of international rallying had yielded a more practical design. Although principally intended as a rally car (one which won the World Rally Championship three times), the Stratos was adaptable enough to win the Targa Florio road race and be a usable roadgoing supercar.



**Removable bodywork**  
Quick-rod work allows the engine and gearbox to be fitted in a matter of minutes. The front and rear sections of the Stratos shell were removable. If necessary, these bodywork sections could be removed by using a special tool.

**Very short wheelbase**  
Mid-engine cars are very stiff and uncomfortable for the driver and more expensive than rear-engine cars. The Stratos was more expensive than most cars in its class. The very short wheelbase was a compromise between the need for a short wheelbase and the need for a car that was easy to drive.

**Central wing**  
Although the Stratos had a very simple and elegant design, it also featured a central wing. This wing helped to provide increased downforce. The rear wheel arch was positioned above the wing.

**Ferrari Dino V6 engine**  
The Dino V6 engine was developed by Ferrari and used in the Ferrari Dino sports car. It was a 2.4-liter, 16-valve, iron-blocked engine. The Stratos used a modified version of this engine. The engine was mounted in the rear of the car, behind the rear axle. The engine was a 2.4-liter, 16-valve, iron-blocked engine. The Stratos used a modified version of this engine. The engine was mounted in the rear of the car, behind the rear axle.

**Gearbox below engine**  
Although the Dino engine appeared as a conventional engine in the Ferrari Dino, in the Stratos it was mounted in a different position. The gearbox was located below the engine. This was a common design for a mid-engine car.

**Washbone front suspension**  
The very low, sloping nose of the Stratos demanded the use of a washbone front suspension. The washbone suspension was a common design for a mid-engine car. It provided a simple and effective way to support the front of the car.



**Front-mounted radiator**  
The low nose of the Stratos required a front-mounted radiator. The radiator was mounted in the front of the car, behind the front grille. This was a common design for a mid-engine car.

**Sheet-steel chassis**  
The sheet-steel chassis was a common design for a mid-engine car. It provided a simple and effective way to support the car's weight. The chassis was made of sheet steel and was welded together.

**Glassfibre body**  
The glassfibre body was a common design for a mid-engine car. It provided a simple and effective way to support the car's weight. The body was made of glassfibre and was bonded to the chassis.

**Ventilated discs all round**  
The Stratos used ventilated discs on all four wheels. This was a common design for a mid-engine car. The ventilated discs provided better braking performance than solid discs.

**Strut rear suspension**  
The Stratos used a strut rear suspension. This was a common design for a mid-engine car. The strut suspension provided a simple and effective way to support the rear of the car.

## Engine

The final appearance of the Dino V6 was in the Ferrari Dino, but in the Stratos, it was a different story. The Stratos used a modified version of the Dino V6 engine. The engine was mounted in the rear of the car, behind the rear axle. The engine was a 2.4-liter, 16-valve, iron-blocked engine. The Stratos used a modified version of this engine. The engine was mounted in the rear of the car, behind the rear axle.



**Below: The engine chosen for the Stratos was the 2418-cc iron-blocked built development of the two-litre aluminium Ferrari quad-cam V6 originally designed for Formula 2 racing and then used in the Dino 206. In standard form it had two valves per cylinder and breathed through three 24mm 40-mm twin-choke Weber carburetors. It was used both in Ferrari's 2400 series and in Fiat's own Dino, but by the time the Stratos was homologated in 1974, neither was in production.**

## Chassis and body

The chassis and body of the Stratos were designed by Bertone. The chassis was made of sheet steel and was welded together. The body was made of glassfibre and was bonded to the chassis. The chassis and body were designed to be as light as possible while maintaining structural integrity. The chassis and body were designed to be as light as possible while maintaining structural integrity.



**Above and left: Front and rear bodywork (all glassfibre) hinged up for easy access.**



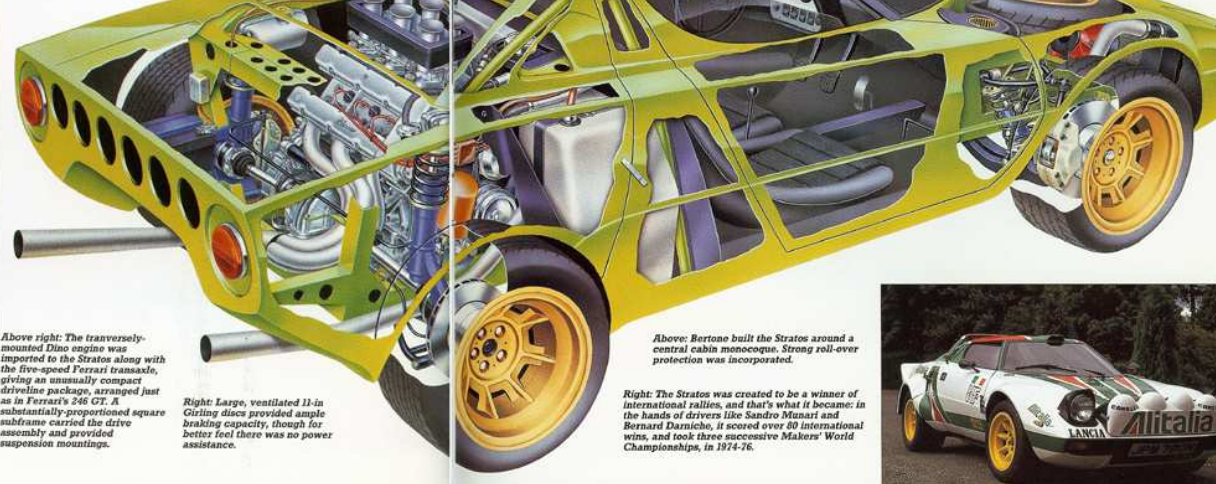
**Above: The 'Dino' logo tells the story of the Stratos's power unit: the four-cam V6 was the 2.4-litre version of the Ferrari/Fiat engine.**

## Suspension

The suspension of the Stratos was designed by Bertone. The front suspension was a washbone design, and the rear suspension was a strut design. The suspension was designed to be as simple and effective as possible while maintaining structural integrity. The suspension was designed to be as simple and effective as possible while maintaining structural integrity.



**Above: Stratos prototypes had washbone suspension all round; this was retained at the front, but the rear design (left) was changed to struts for the sake of strength.**



**Above right: The transversely-mounted Dino engine was imported to the Stratos along with the five-speed Ferrari gearbox, giving an unusually compact driveline package, arranged just as in Ferrari's 246 GT. A substantially-proportioned square subframe carried the drive assembly and provided suspension mountings.**

**Right: Large, ventilated 11-in Girling discs provided ample braking capacity, though for better feel there was no power assistance.**

**Above: Bertone built the Stratos around a central cabin monocoque. Strong roll-over protection was incorporated.**



**Right: The Stratos was created to be a winner of international rallies, and that's what it became: in the hands of drivers like Sandro Munari and Bernard Darniche, it scored over 40 international wins, and took three successive Makers' World Championships, in 1974-76.**



## SPECIFICATION

### 1974 Lancia Stratos

#### ENGINE

<b>Type:</b>	V6, quad-cam, transversely mid-mounted
<b>Construction:</b>	cast-iron block and light-alloy cylinder heads
<b>Bore x stroke:</b>	92.5 mm x 60 mm
<b>Displacement:</b>	2418 cc
<b>Compression ratio:</b>	9.0:1
<b>Valve gear:</b>	two valves per cylinder, operated by double chain-driven overhead camshafts per bank of cylinders; valves angled at 46 degrees
<b>Fuel system:</b>	three Weber 40DCF twin-choke downdraught carburetors
<b>Ignition:</b>	Marelli electronic
<b>Maximum power:</b>	190 bhp (DIN) at 7,000 rpm
<b>Maximum torque:</b>	166 lb ft (DIN) at 5,500 rpm

#### TRANSMISSION

<b>Type:</b>	five-speed manual with gearbox mounted below engine
<b>Ratios:</b>	1st 3.07:1 2nd 2.21:1 3rd 1.52:1 4th 1.25:1 5th 0.86:1
<b>Final drive ratio:</b>	4.7:1 (five other optional ratios)

#### RUNNING GEAR

<b>Steering:</b>	rack and pinion
<b>Suspension:</b>	front: independent with double wishbones, coil springs, telescopic dampers and anti-roll bar rear: independent with MacPherson struts, single lower reversed wishbone plus radius arm, coil spring/damper strut unit and anti-roll bar
<b>Brakes:</b>	Girling ventilated discs front and rear, 11-in (279-mm) diameter
<b>Wheels:</b>	bolt-on Campagnolo cast-alloy, 14-in diameter
<b>Tyres:</b>	205/70 VR14 Michelin XWX or Pirelli Cinturato CN36 radials

#### DIMENSIONS AND WEIGHT

<b>Length:</b>	146.1 in (3711 mm)
<b>Width:</b>	68.9 in (1750 mm)
<b>Height:</b>	43.3 in (1100 mm)
<b>Wheelbase:</b>	85.5 in (2172 mm)
<b>Track:</b>	56.4 in (1433 mm) front, 57.5 in (1460 mm) rear
<b>Kerb weight:</b>	2,160 lb (980 kg)

#### PERFORMANCE

<b>Acceleration:</b>	0-30 mph 2.6 sec 0-40 mph 3.5 sec 0-50 mph 5.0 sec 0-60 mph 6.8 sec 0-70 mph 8.8 sec 0-80 mph 11.5 sec 0-90 mph 14.1 sec 0-100 mph 17.6 sec 0-110 mph 23.5 sec
<b>Maximum speed:</b>	140 mph (225 km/h)
<b>Overall fuel consumption:</b>	20 mpg
<b>Price (1975):</b>	£7,000

Lancia Stratos kindly supplied by Martin Cliff

#### Four-valve technology

The Stratos appeared as a racing and rally car as well as a road car. For racing and rallying, far more power than the standard 190 bhp could be extracted from the engine; for the Targa Florio in the early 1970s, four-valve heads were fitted to give 300 bhp.