

BRIAN LONG

PORSCHE

911

THE DEFINITIVE HISTORY  
1987 to 1997



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# Introduction & Acknowledgements

This is the fourth book in a planned five volume set covering the full history of the evergreen 911 series and its derivatives. It will ultimately build into a comprehensive reference work taking in the best part of 1000 pages, with contemporary photography and advertising - most of it in colour - used throughout.

This project is a very special one for me, as I've always harboured a soft spot for the 911 ever since I was a young child. In this particular book, covering all of the world's major markets, looks at each of the 911 models and their derivatives from 1987 (1988 MY) up to and including the 1998 model year. This volume continues the story of the 3.2 litre Carrera series, briefly covers the 959 production car, and then looks in depth at the last of the air-cooled 911s. It also deals with the various specials and competition cars from the period.



This book - and all the Porsche titles I've written before it - would not have been possible without the help and support of Klaus Parr, the custodian of Porsche's archives in Stuttgart. As a symbol of the friendship we have built up over the years, I would like to dedicate this five volume series on the 911 to Klaus and his charming wife, Ursula.

Most of the illustrations have been sourced from the factory, as I am a firm believer in using contemporary material. That way, the reader is not just presented with a selection of stunning pictures, but a useful reference guide for restoration and authenticity, too. Period advertising, mainly from the author's collection, adds interest.

In addition to Klaus Parr, I would like to sincerely thank his able assistants, Jens Torner and Dieter Gross, and acknowledge the superb research facilities at the Japan Motor Industry Federation building in Tokyo.

Thanks also to the staff at my uncle's Porsche garage in Chiba - Nobel (formally known as K3 Works) - for coming to the rescue on the technical side.

**Brian Long**  
**Chiba City, Japan**

# Chapter 1: A brief history of Porsche

During his career Professor Ferdinand Porsche had worked for Lohner, Austro-Daimler, Daimler (which soon after became Daimler-Benz) and Steyr, and had an unrivalled reputation in Germany as a designer.

After leaving Steyr, Ferdinand Porsche felt the time had come to establish his own company. Registered in April 1931, a design studio was set up in Stuttgart with a team of handpicked engineers and designers. This team included Porsche's son, Ferry, who was then just 21.



*Porsche advertising linking the Stuttgart marque to the Volkswagen Beetle and the highly-successful Auto Union racers.*



*Ferry Porsche (centre left) discussing the finer points of design with his father.*

Ferry Porsche inherited much of his father's natural flair for engineering, although he wanted to become a racing driver. His father soon put a stop to his ambition, perhaps fortunately for, without him, the Porsche company, as it exists today, would never have evolved, and neither would the vehicles recognized as the 'true' Porsches.

As Germany's Chancellor, Adolf Hitler was naturally very supportive of German industry, and financed the Mercedes-Benz and Auto Union racing programmes to show the world the strength of German engineering. The highly successful Auto Union V16 Grand Prix car was a Porsche design, of course, but it was the Volkswagen project that provided the basis for the Porsche success story. The Volkswagen was also financed by the Nazi Party; a blessing at the time which caused problems later.

Just as Hitler was passing the final plans for the Volkswagen, the Second World War broke out. During the hostilities, Porsche and his team were moved to the Austrian village of Gmünd, where they produced many designs, including those for a number of tanks. Because of his 'links' with the Nazi leader, Professor Porsche was arrested and interrogated by the Allied authorities after the war, but was promptly released. He went to Renault and, whilst there, Porsche and his son-in-law were arrested and imprisoned by the French on war criminal charges, with a ransom of one million francs.

(Ferry Porsche had also been imprisoned for a short time, but his sister had managed to negotiate his release.)

However, the Porsche offices in Stuttgart were occupied by the United States Army, and Ferry Porsche had little chance of raising the ransom money by repairing ex-Army Volkswagens. By an amazing stroke of luck, Porsche was approached by Carlo Abarth (the famous engine tuner) and Piero Dusio, a rich Italian industrialist who, among other things, wanted to build a Grand Prix car.

The Cisitalia, as it was known, drew heavily on prewar Auto Union designs, and was very complex. Sadly, the project was destined to fail, as escalating costs put a potentially successful car out of the reach of even Dusio's wealth. It did, however, provide Ferry Porsche with enough money to free his father. The Professor was allowed back to Austria in August 1947, but died less than four years later. His health was never the same following imprisonment, but at least he was able to see his son develop a new car bearing the family name.

### **The legendary 356**

Design work on the Type 356 sports car had begun in Gmünd after Ferry Porsche decided that his small company should construct a vehicle based on Volkswagen components. Fortunately, the British had managed to revive the VW factory after the war, and the first drawing was dated 17 July 1947, just one month after the project was instigated.



*Porsche Number One. While this roadster was mid-engined, the closed car that followed adopted the traditional VW rear-engine layout, with the gearbox and transaxle in front of the powerplant. This was a key feature of the Porsche road car line for many years.*





*An early 356 coupé, dating from 1951. Note the bumper mounted on the body and the split windscreen. The 356 quickly established itself in competition, although, interestingly, the works always used the alloy Gmünd coupés as they were lighter than the Stuttgart-built machines.*

The first chassis was completed in March 1948 and fitted with a prototype open body two months later. The spaceframe chassis on Number One was well designed, but unsuitable for cost-effective series production as it was very labour intensive to build.

The engine was a tuned 1131cc Volkswagen unit, mounted back-to-front to give good weight distribution, but occupying too much space to allow for any more than two seats. A number of other problems were encountered with this set-up and, from the second car, the engine was mounted in traditional Volkswagen fashion on a sheet steel platform chassis.

Number One was taken to the European Grand Prix in Switzerland to allow journalists to try it, and it was at this meeting that Porsche met Rupprecht von Senger, who was particularly enthusiastic. Von Senger and his partner agreed to buy the next four cars, and also proved very helpful in getting supplies from Wolfsburg to Gmünd.

The second car was a coupé, completed in August 1948. Aerodynamics were very good and, combined with the lack of openings at the front and the

seamless construction of the body, meant the Porsche was capable of some very high speeds for such a small-engined car.

Announced during the summer of 1948, the car's public debut was scheduled for the Geneva Show in 1949. It wasn't long before a 1086cc capacity was chosen, allowing the cars to compete in the 1100cc Class at international level. In the meantime, in mid-September 1948, Porsche sealed a deal with Volkswagen securing the supply of parts (VW was now back in German hands, headed by the capable Heinz Nordhoff), as well as the use of the Volkswagen dealer and service network.

The Gmünd cars were completely handbuilt, their aluminium bodies beaten into shape as there simply wasn't the money available to tool up. According to Ferry Porsche, 46 cars were built at Gmünd between June 1948 and March 1951. However, figures vary wildly between sources, with most quoting 50 or 51 vehicles.

Serious production began early in 1950 when the firm moved back to Stuttgart. The Porsche site was still being used by the Americans at the time, so the factory belonging to Porsche's neighbours - the Reutter body works - was used initially. Reutter had already been given the contract to build new steel bodies for Porsche in November 1949, and an area was set aside for the motor manufacturer.

The first steel-bodied Porsche was completed in April 1950. There were a number of small differences to the Gmünd alloy cars, but they were indeed subtle. In fact, mild and constant updating was to become a feature of Porsche production through the years, with the company preferring to introduce new models that were evolutions of the outgoing vehicle. Even competition Porsches were largely based on production cars during these early days.



*A 356 on the 1953 Monte Carlo Rally. Although the split screen had disappeared by this time, note the subtle vee left in the roofline, which was smoothed out with the introduction of the next generation 356.*

At the 1950 Paris Show, an ailing Ferdinand Porsche held talks with Max Hoffman and others to try and get the 356 into America. By the end of 1950, he was gravely ill, and died a national hero in January 1951.

In December 1950, a small design and management office was purchased near the Reutter works, and a racing shop was attached with just enough room for two cars and four mechanics. It was at this stage in the proceedings that the company was registered as Dr Ing. h.c. F. Porsche KG. The Stuttgart concern had a staff of 108, with planned production of around ten cars per month. In the event, this target was easily doubled, and nearly 300 Porsche 356s were built in the year. The 500th German-built 356 was driven out of the works in March 1951, and just five months later the 1000th 356 left the factory.

By March 1951, 1283cc engines were available, and a 1488cc unit followed in October. Although the 1100 engine continued until the end of 1954, there were fewer sales of the smaller capacity models, especially in America, a market that was already very important to the company.



*Stunning photograph of an early Speedster - one of the many legendary cars developed by the Stuttgart marque.*



*A contemporary shot of the 356A coupé, this example being loaded with optional extras.*

In September 1952, the 1500 gave a refined 55bhp, while the roller bearing engine - giving 70bhp - became known as the 1500 Super. Other important revisions carried out during 1952 included dropping the old two-piece windscreen, although the distinct V-shape remained until 1955. Stronger bumpers, now moved further away from the body, were also a feature.

The original Porsche factory was supposed to have been handed back in September 1950 but, due to the alert caused by the Korean War, the American

authorities held on to it. With no sign of the old factory being returned, another works was built in 1952, next door to Reutter. By November 1952, the first cars were starting to roll out of Werk II.

From November 1953, a roller bearing version of the 1300 was made available and called the 1300 Super. Launched at the Paris Salon, this 60bhp unit was shortlived, remaining in production for just six months: all pushrod roller bearing engines were phased out by the end of 1957.

Dr Ernst Fuhrmann began designing the powerful Carrera engine during 1952. In order to keep its size down, he devised an ingenious system incorporating no fewer than nine shafts, fourteen bevel gears, and two spur gears to operate the dohc per bank arrangement. The beauty of this system was that the engine's overall dimensions were little changed from the standard unit. The first engine was up and running in April 1953 and was right virtually from the start. Testing took place in the new Porsche 550 at the Nürburgring in August.

A Carrera engine was installed in one of the works Gmünd coupés, and entered for the 1954 Liège-Rome-Liège Rally, held that particular year in August. Ferry Porsche's theory was that if the unit could survive such a tough event, it could be put into a production car; the decision was made easier after Herbert Linge and Helmut Polensky won outright.

In 1954, the staff increased to 493, but only 1934 cars were produced, 44 less than in the previous year. However, on 15 March 1954, the 5000th German-built Porsche was constructed (two years later the figure reached 10,000) and exports now accounted for 60 per cent of production. Interestingly, VW in Wolfsburg was by now employing over 20,000 people to make an average of 670 cars a day. In August 1955 the one millionth Beetle was produced.

John von Neumann, Porsche's West Coast distributor, was the inspiration behind the Speedster. The Speedster was exactly what Hoffman needed to boost sales Stateside, selling at \$2995 in basic form. Based on the cabriolet but with minimal equipment, such as a cheap hood, a low and flimsy windscreen, and detachable side-screens instead of wind-up windows, it was introduced into America in September 1954. In all, a total of 4854 Speedsters were produced (both 356 and 356A types together), and it became the darling of the racing set.

At the 1951 Earls Court Show, two Porsche 356s - a coupé and a cabriolet - were displayed by Connaught Cars Ltd, becoming the first German cars shown in England since the end of the war. Before long, AFN Ltd of Isleworth (the concern behind Frazer-Nash) became an agent, with imports starting seriously in 1954. Prices ranged from £1842 to £2378; quite expensive, given that a Jaguar XK120 cost around £1600, and the almost unlimited choice of even cheaper British sports cars.

The 356A was introduced at the Frankfurt Show in September 1955. There were subtle changes to the body, and suspension improvements made the car feel more stable going into corners. The 356s were still being used successfully in rallying, with the Liège-Rome-Liège becoming a Porsche benefit. The racing side of competition was left almost exclusively to the Spyderys, although there were Class wins on both the Mille Miglia and Targa Florio.

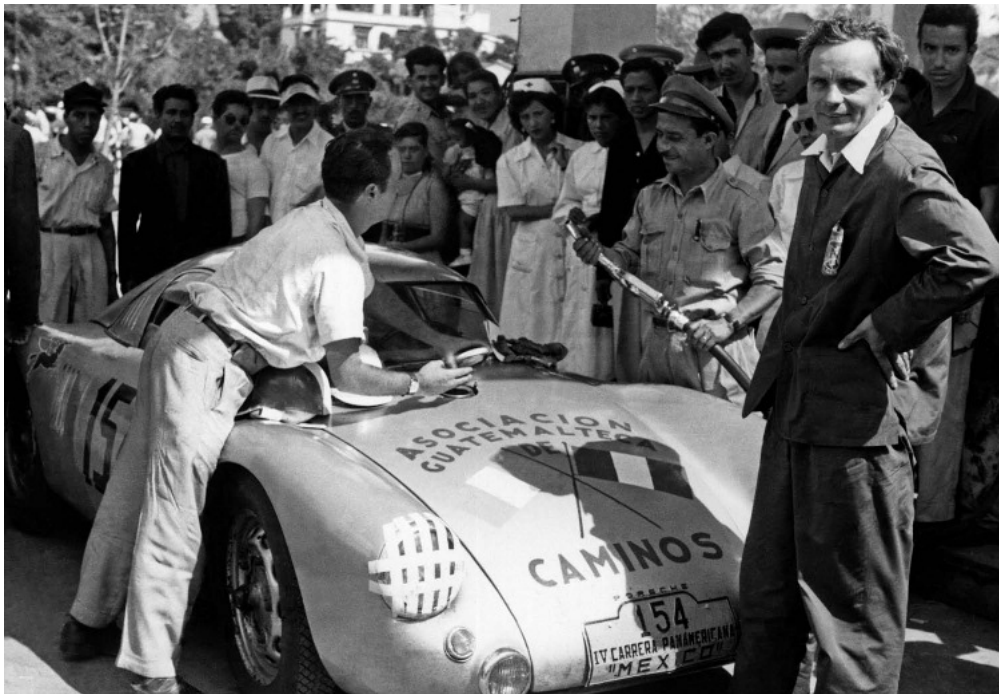
The 1582cc engine arrived in 1955 in two guises, the 1600 and 1600 Super giving 60bhp and 75bhp respectively. The 1300 and 1300 Super continued unchanged in most markets, but had been dropped in America earlier in the year and phased out completely by the end of 1957. The 1500GS Carrera engine was made available for the new 356A range and, like the other power units, could be specified in the updated coupé, cabriolet or Speedster bodyshells.

On 1 December 1955, the old works was at last handed back to its rightful owner. Called Werk I, the management, along with the Design, Experimental and Racing Departments, moved there, as did the Repair Shop. Towards the end of 1955, three out of every four cars produced by Porsche (which, by now, had around 600 employees) were exported, the majority finding their way to America.

There were fewer changes to the cars now as production increased: teardrop tail lights replaced the twin round ones in March 1957; but by far the biggest changes came when the T-2 body was introduced at the 1957 Frankfurt Show. Following the show, the Carrera became available in two versions - a De Luxe (GS) model with different carburation and an improved heater, and the GT. The 110bhp GT was available only as a Speedster or coupé mainly for competition.

In August 1958, the Speedster was superseded by the Convertible D (the D was added in recognition of the coachbuilder, Drauz of Heilbronn) with a

more serviceable hood, a better windscreen, padded seats, and wind-up side windows; much more in line with Ferry Porsche's ideals.



*A 550 Spyder stopping for fuel on the 1953 Carrera Panamericana.*



*Umberto Maglioli hustling the Type 718 racer at the Nürburgring in 1957.*

### **Porsche in competition**

Based on the original Porsche Number One, the Type 550 made its debut in May 1953 for the Eifelrennen at the Nürburgring. On this occasion, the mid-engined car was powered by a 1500 Super unit, and narrowly beat the Borgwards to take a maiden Class victory. It provided the Porsche concern with the foundation stone on which to build a racing legend.

By the early part of 1954, the first customer cars were being completed by Wendler of Reutlingen. The 1500 Super engine was used, but tuned to bring

the power up to around 100bhp. The official designation was 550/1500RS, but Max Hoffman coined the name Spyder, and it was this that stuck in the public's mind. Excellent results at Le Mans, on the Carrera Panamericana, the Mille Miglia (the 1954 event was the international debut of the 550 Spyder with the Carrera engine), the Tour de France Automobile, Tourist Trophy, and numerous tracks across Europe and America secured the Spyder a place in racing history.



*The Porsche Formula One car of 1961 vintage. The company's exploits in this field of competition were largely unsuccessful, although the marque did manage to notch up one win, thanks to Dan Gurney.*



*The 356B cabriolet. This car has the T-6 body style, readily distinguished by the squarer front compartment lid.*

The Wendler-bodied 550A had been introduced in April 1956. Gone was the ladder chassis of the old Spyder, replaced by a lighter but stiffer spaceframe, and it incorporated a low pivot swing axle rear suspension. The



550A gave Porsche its first taste of victory on the Targa Florio, and there were many Class wins.

The Type 718 prototype was built up over the winter of 1956/57. Based on the one-off Type 645, it was a lighter machine again, built around a spaceframe chassis and some 125mm (5in.) lower than the old 550 Spyder. An improved suspension, superior braking, and 142bhp resulted in a far better car. The mid-engined 718 RS became the 718 RSK through further suspension changes; these were later changed back, but the RSK name stayed.

Formula Two returned in 1957, the new regulations dictating that 1.5 litre engines running on pump fuel would form the basis for the series. Porsche entered a couple of races, and actually won the F2 Class at the Nürburgring Grand Prix with a 550A.

The RSK had made only two appearances at the race track in the 1957 season, but by the early part of 1958, the definitive 718 RSK had arrived. On the 1959 Targa Florio, Edgar Barth and Wolfgang Seidel took Porsche's second victory on the classic event, followed home by three other Porsche drivers.

As early as 1953 Ferry Porsche had hinted that Porsche may become involved in Grand Prix racing. During October 1958, the CSI announced that Formula One would run with 1.5 litre cars with a minimum weight of 500kg for 1961 - the rules seemed ideally suited to Porsche. In the meantime, the company continued to field the RSK in Formula Two races. A programme was instigated so that Porsche would have an open-wheeled F2 car for 1959, using it as a test-bed for the proposed F1 machine for 1961. It was running by April 1959, and was very much the same as the Type 718 under the skin, save for the new narrow chassis frame and detail changes that this necessitated.

The car was improved as the season progressed and Stirling Moss was impressed enough to test it, with the result that Rob Walker was loaned one of the new works F2 cars for Moss' use during the 1960 season. Porsche won the 1960 Formula Two Championship.

The company's F1 debut came at Brussels on 9 April 1961, but the cars consistently failed to achieve the desired results. Dan Gurney's victory in the 1962 French Grand Prix was Porsche's only win in a World Championship event. Formula One proved too expensive, and, despite having invested a

small fortune in developing the flat-eight engine, Porsche decided to cut its losses and withdraw gracefully from the Grand Prix arena.

To tackle the ever-increasing threat from Alfa Romeo and Lotus, Porsche exploited FIA rules to the limit, and had a new Carrera made ready to keep its position at the top of the 1600 Class. 25 chassis were reserved by Porsche for the Abarth-Carrera project, although eventually only 20 of the lightweight, Zagato-bodied cars were built. Four or five were made ready for works drivers in 1960: Class wins came at Le Mans, on the Targa Florio, at Sebring, and the Nürburgring.

The RS60 had a larger windscreen than the old RSK to comply with new FIA regulations for 1960, but, otherwise, was basically similar to the 718, except for the slightly longer wheelbase and more powerful engine. The similar-looking RS61 followed for the 1961 season.

### **356 developments**

The 356B made its public debut at the 1959 Frankfurt Show, distinguished by the higher position of the headlights in a new wing line, and higher and stronger bumpers. The standard 1.6 litre, 60bhp engine of the 356A was retained, as was the Super, but this was now known as the Super 75 to differentiate it from the new Super 90. This 90bhp unit was available from March 1960, and was considered powerful enough to render the Carrera model unnecessary. For the time being at least, a Carrera was not listed.

The 356B was initially catalogued with three body styles: the Convertible D was renamed the Roadster, and the coupé and cabriolet made up the range. In August 1960, they were joined by the shortlived Karmann hardtop coupé. A third factory (Werk III) had been built at Zuffenhausen towards the end of 1959 to cope with the workload, and by 1960 annual turnover was around 90,000,000 DM.



*The 356C was outwardly similar to the last of the 356Bs. One of the main differences was the adoption of disc brakes, seen here in this production shot. The 356C was short-lived by Porsche standards, as the 911 and 912 were waiting in the wings.*

At the Frankfurt Show in September 1961, the T-6 body made its debut. A number of new features distinguished the latest model, such as the larger front and rear windows on the coupé, a new engine cover with two grilles fitted across the range, and a larger front hood featuring a squarer-shaped leading edge (which gave more luggage space).

At the same time as the T-6 356B was introduced, the Carrera returned to the line-up. Named the Carrera 2, it had a two-litre version of the Carrera engine, and was sold to the public from the following April. The Carrera 2 introduced disc brakes to the Porsche marque for the first time, and, with 130bhp on tap, a top speed of 124mph (200kph) was possible. The 50,000th German-built Porsche left the line in April 1962, but shortly afterwards the Karmann hardtop coupé and the Roadster were discontinued due to falling sales.

Introduced in July 1963, the 356C was basically a stopgap model until the new 911 became established. More refined than its predecessors, the body was very much the same as that of the 356B (offered in coupé and cabriolet forms, with the option of a detachable steel hardtop for the latter); the main changes were mechanical.

There were new 75bhp and 95bhp engines, a modified rear suspension, and disc brakes were standard across the range. However, the basic layout of

four air-cooled cylinders, horizontally opposed in pairs, remained unchanged throughout the 17 year lifespan of the 356. The body altered little, but all the time it was being brought up-to-date, regularly acquiring features tested in the field of motorsport.

Porsche intended that a white cabriolet, completed in September 1965, was going to be the last 356, and it was, officially. But then the Dutch Police placed a special order for ten vehicles in 1966, which were initiated in March. The total number of 356s built came to 76,313.

Despite the demand for the 356, it was obvious that the model wasn't going to last forever, and Porsche began to prepare for its replacement in the late fifties. Ferry Porsche wanted the new car to be slightly bigger and a true 2+2. The Type 695 project began in 1959, but was later rejected in favour of a new coupé design from Butzi Porsche - the Type 901.

## Chapter 2: The early 911 models

The 356 was never going to be an easy vehicle to replace. It had a fanatical following that few other cars enjoyed, and the long production life of the series meant it was synonymous with the Porsche name. The racers came and went, but the 356 continued year-after-year as an ambassador for the marque. However, it was obvious that the 356 could not go on forever - a new car was needed to take Porsche into a new era.

The 1963 Frankfurt Show saw the debut of the 901, the very machine that would carry the torch for the German company in the future, but its appearance was somewhat premature. At least the leading features of the 901 gave a good idea of what enthusiasts could expect to see in the showrooms in the coming seasons.

In its report on the premier German motor show, *MotorSport* observed: “The car on the stand at Frankfurt was ‘the only one we’ve got’ or words to that effect, and as they have no intention of making any for at least a year, one wonders why they didn’t wait until the next Frankfurt Show to introduce it, unless it was to forestall the more sensationally-minded continental newspapers.

“However, its specification is interesting for it uses an intriguing new flat-six, air-cooled engine of two-litre capacity with single overhead chain-driven camshafts for each bank, which gives 130bhp (DIN) at 6200rpm. The new engine, which uses an eight main bearing crankshaft and is, of course, the first Porsche to eschew gear-driven camshafts, is mated to an all-new, five-speed gearbox/final-drive unit.

“The car is not a full four-seater but the two occasional rear seats should remain comfortable for a little longer than the usual ‘legless dwarf’ variety. The car itself remains unmistakably a Porsche in appearance except for its longer wheelbase and different front and rear end styling.



*The Type 901 as it appeared at the 1963 Frankfurt Show.*



*The Type 695 design study brought about some interesting and varied proposals, including this one from the studio of Albrecht Goertz. Pininfarina was also consulted.*



*Following on from the Type 695 proposals, work on the Type 754 body (seen here) began in late 1959, ultimately giving rise to the T-8 coupé - the origin of the 911 series.*

“The front suspension is similar to the MacPherson principle except that torsion bars are used as the springing medium, while the rear suspension retains trailing arms and transverse torsion bars. Disc brakes of Porsche/Ate construction are fitted on all wheels.

“Porsche claim a top speed of 120mph [192kph] and a standing start quarter-mile in 16.4 seconds. No prices have been announced, but it is likely to cost around £2000 in Germany.”

## **The Type 901**

The Type 901 started life as the Type 695. Work began on this project in late 1959, with the body receiving the T-7 designation; interesting, considering that the first 356B had a T-5 shell, whilst the later 356B, and 356C each had a T-6 type. The front of the T-7 proposal would be carried over to the Type 901, but the roofline, glasshouse, and rear-end were all modified over the next few years.

The wheelbase was a key factor in all this. A longer wheelbase had been chosen to provide better accommodation in the rear, but internal wrangling and a last minute decision to stick to a proven formula of providing 2+2 seating (rather than a full four-seater) resulted in a wheelbase slightly longer than that of the 356, but an awful lot shorter than that specified for the 695 styling proposal (which duly became the Type 754 running prototype in 1960). Ultimately, it was listed at 2211mm (87.0in.) in the catalogue, and the roofline was adjusted to suit the new arrangement, forming a gentle curve that ran down from the top of the windscreen to the tail.

Compared to the 356, the 911 was slightly longer (mainly due to the longer wheelbase employed on the six-cylinder car) and lower, but narrower, despite the track dimensions being far greater. The now classic lines of the 911 were penned by Butzi Porsche (officially Ferdinand Alexander Porsche, Ferry's oldest son), while Erwin Komenda did the engineering side of the bodywork in conjunction with Reutter, the latter ultimately being bought by Porsche before production of the new car began.

The powerplant was also all-new, although its roots could be traced back to the eight-cylinder Grand Prix engine. The flat-eight F1 unit was first run in December 1960, and gave Porsche its first - and only - Grand Prix win at the 1962 French GP. It also formed the basis for the Type 771 unit used in the contemporary sports-racers fielded by the factory.



*A T-8 prototype, and its designer, Ferdinand Alexander 'Butzi' Porsche. Nowadays, Butzi runs Porsche Design - a highly-successful design office.*

A number of designs were tried before the flat-six was given the green light for series production. The definitive engine, which, like the rest of the new car, also carried the Type 901 designation, first appeared in the autumn of 1963. Overseen by Hans Tomala, it was a two-litre, air-cooled unit with a chain-driven, single overhead camshaft per bank. To overcome oil surge during hard cornering, it had dry sump lubrication.

With a bore and stroke of 80 x 66mm, cubic capacity was 1991cc; this produced 130bhp at 6100rpm, giving a specific output of 65bhp per litre. All early production engines had aluminium alloy castings and a two-part crankcase. The cylinders used Biral construction (cast-iron barrels surrounded by finned aluminium castings for cooling), and the cylinder heads were of light alloy. Originally three single-choke downdraught Solex carburettors were used on each bank, but these were later replaced, from the beginning of 1966, by triple-choke Webers.



The five-speed gearbox-cum-transaxle was developed jointly for the 901 and the 904 racer (more on which later). It featured a dog-leg first, down and to the left against a spring, with second through fifth being in a traditional 'H' pattern to the right of it. The gearing was very long-legged, with overdriven fourth and top.

In its final form, the front suspension consisted of a lower A-arm and MacPherson strut combined with a 19mm (0.75in.) diameter longitudinal torsion bar on each side; a 13mm (0.51in.) anti-roll bar was fitted up front. This new arrangement not only improved control, but also freed up valuable luggage space.

At the back, a trailing arm ran off a transverse torsion bar (23mm in diameter, or 0.90in.) towards the wheel, while another tubular link, with a pivot point near the nose of the gearbox, located the hub and formed what amounted to a trailing wishbone. The telescopic shock absorber (sourced from Koni, as were the front dampers, and incorporating progressively acting rubber buffers for enhanced control) was fitted as far away from the torsion bar as possible in order to give it the maximum amount of travel.



*An early 912 from the Porsche press fleet.*

The rack-and-pinion steering came from ZF, and was unusual in that it featured central attachment of the steering column to enable Porsche to produce lhd and rhd cars with equal ease. The braking system was much the same as that employed on the 356, with discs up front and the novel disc/drum arrangement at the rear. Surprisingly, the skinny wheels and tyres were also carried over from the earlier model.

Inside, the feeling of light and space was the biggest difference compared with the 356, otherwise, there was a lot that would have been familiar to a Porsche fan, especially the seats. Incidentally, the two gauges seen on the dashboard of the 901 prototypes were replaced by five dials on production models; this became something of a 911 signature.

Porsche changed the 901 name to 911 following a complaint from Peugeot regarding the use of “their” numbering system (although Bristol had similar model designations, and the Porsche racers were left unchallenged), before it went on sale to the public in September 1964. Introduced at DM 21,900, it was a touch cheaper than the 356-based Carrera 2, but with such a relatively high price, it was obviously aimed at connoisseurs rather than fleet buyers.

### **One era ends, another begins**

Although America had begun receiving 911s a few months earlier, the first right-hand drive cars were delivered to the UK in May 1965. Shortly after, there was a change in the gearing, with slightly lower ratios than before; the same gearbox (Type 902/1) was also employed for the 912 series.

The 912 was introduced in May 1965. The body, suspension, steering, and braking system was identical to that of the six-cylinder 911, but the 912, launched with a price of DM 16,250, was far closer to the 356 in that it used a slightly modified version of the four-cylinder, Super 90 (known as the 616/16 in its ultimate 95bhp form) power unit.

While the 356 soldiered on in America for a few more months, the 912 replaced it in Europe with immediate effect. Powered by the 616/36 unit, which boasted a 1582cc cubic capacity and developed 90bhp DIN, the 912 came with either a four- or five-speed manual transmission.

The 912 proved very popular and, in order to keep up with demand and reduce pressure on the overstretched Reutter works, some bodies were built at Karmann.

### **Racing news**

Ferry Porsche gave the go-ahead for the new, mid-engined 904 competition car at the end of 1962. The lightweight glassfibre body (this material was chosen to speed up production, as four or five cars had to be built each day if the new model was to be homologated for the 1964 season) was bonded to the chassis for extra strength. Records show that 120 were built: 104 were

made and sold with the four-cylinder Carrera engines and, of the 16 904s retained by the factory, ten had six-cylinder engines and six had the eight-cylinder unit.

The new model's first major race was at Sebring in March 1964, where it ran as a prototype: it was eventually homologated in April. Shortly after, the 904, driven by Colin Davis and Antonio Pucci, won the 1964 Targa Florio, with Linge and Balzarini finishing second. Ultimately, the 904 dominated two-litre sports car racing during the 1964 and 1965 seasons.

Ferry Porsche had already approved production of another 100 904s for the 1966 season, but then Ferdinand Piech took over the Research & Development Department and, therefore, the Competition Shop. Piech (the son of Ferry's sister, he'd joined the company in 1963) had grander ideas, and from now on Porsche's philosophy on racing changed, with the cars moving further and further away from their road-going counterparts. Piech set the marque down the road of producing pure racers, culminating in the all-conquering 917.



*Porsche at the 1965 Frankfurt Show. The Targa model (just in view, to the left) made its debut at the event, though it was some time before it entered series production.*



*Contemporary French advertising for the Targa model.*

Among numerous outstanding victories, Porsche won the Targa Florio in 1966, 1967, 1968, 1969, and 1970 (all with different drivers), and again in 1973. However, in September 1971, Ernst Fuhrmann returned to the Porsche camp following a tenure at the Goetze piston ring company and duly took Piech's place as the head of engineering. It's interesting to note, given the close bond between race and road machines in the 356 era, that Fuhrmann considered the current breed of racers too far removed from the road vehicles to be of any real use in marketing. It will be remembered that not long after his new appointment, a whole range of sporting machinery stemmed from the 911 and, once again, the Porsche road and racing cars were unequivocally linked.

### **The Targa model**

The 1965 Frankfurt Show saw the debut of the Targa model, although, like the coupé it was based on, it was some time before production models filtered through to the dealerships. (Indeed, it wasn't until the end of 1966 that the first Targas left the lines at Zuffenhausen.)

Nonetheless, the press was excited at the prospect of this new variation, which brought open Porsche motoring back after the departure of the 356 cabriolet. *Auto Topics* noted in its January 1966 issue: "The new Porsche

features a roll bar, and offers a new way of top down-top up driving in comfort. Roll bars so far have been used only in Grand Prix cars and prototypes, but Porsche now becomes the first automobile manufacturer to make it a production feature.



*The picture that accompanied the press release which announced the arrival of the 911S.*

“A detachable roof in matching finish converts the car into a hardtop, and with easy to operate snap fasteners attached to the roll bar and windshield the conversion is completed without effort. The soft-top version is equally easy to operate, stretching from roll bar to windshield. With the rear window closed and the top down, you have your own sunroof.”

An open car had always been an essential part of the Porsche line-up, so it was not surprising that a 911-based version was built. The Targa was, however, something of a compromise. Butzi Porsche had wanted all-new panels for the rear but, due to cost limitations, the old metalwork had to be incorporated into the design. With the need to keep rigidity in the bodyshell (always a problem with closed cars converted into open ones), the Targa roll-over bar was put forward and duly developed.

As announced at the Frankfurt Show, there was a reinforced plastic panel for the roof section, augmented by a fabric cover that could be used when the former was not in place. However, no amount of experimental work could stop the fabric from ballooning at speed, and this idea was eventually shelved. What resulted was a single folding roof panel that fitted neatly in the luggage compartment when not in use.

Early press pictures had padding on the box-section stainless steel roll bar, but for production models this was changed to a natural brushed finish. One thing that was carried over from the show car was the removable rear

window. Produced in heavyweight clear plastic, the owner could unzip it when wished.

By an amazing stroke of luck, the Targa was put forward before the Federal proposal that effectively outlawed open sports cars in the States. While the Targa would have met the safety requirements outlined, many manufacturers - and particularly those in England - were thrown into a state of panic by this bombshell. Ultimately, the ruling was never passed. Its announcement, however, was to influence car design for the best part of a decade.

The Targa body was available for both the 911 and 912, incidentally. As it happens, the 100,000th Porsche was actually a 912 Targa, ordered by the Baden-Württemberg police force, and built on 21 December 1966. Early Targa production was restricted to left-hand drive - a situation that did not change until the 2.4 litre cars arrived in the early 1970s.

## **The 911S**

Announced in August 1966, the 911S was given a 160bhp version of the flat-six, and a unique five-speed gearbox with a taller top ratio to endow the car with 140mph (225kph) performance. The S stood for Super, and this was probably a fair description of the vehicle.

In line with the hike in performance, the suspension and braking system was updated, with adjustable Koni shocks, a rear anti-roll bar to go with the beefier one at the front, and ventilated discs. Fuchs forged aluminium alloys also came as part of the package.

The trim was slightly different on the S - inside and out - although all cars were subject to numerous changes for the 1967 season. The most obvious changes included new badging, revised dashboard trim, the adoption of an Ebonite steering wheel (leather covered on the S), and gauge revisions. On the mechanical front, the driveshaft design was changed to incorporate Rzeppa joints, the 130bhp engine was given milder cams, and the heat exchangers were modified to improve exhaust flow and longevity.

The 911S brought back the three-tier Porsche line-up of the past, with the 912 providing an entry level model, the strict 911 in the middle, and the 911S taking care the sector once covered by the Carrera. And, of course, the Targa gave the buyer the alternative of open car motoring.



*Porsche production in 1967.*

### **Progress of the 911 series**

The 1968 model year saw the introduction of the A-Series 911s (earlier cars were known by the O-Series designation). For Europe, the 911T (T standing for Touring) was introduced, with 110bhp coming from its less exotic two-litre six. At the same time, the standard 911 became the 911L (Luxus), whilst the 911S and 912 continued unchanged.

Compared to the other six-cylinder models, the 911T was quite basic, but did inherit the wider wheel rims and dual-circuit brakes introduced that year. It was also available with the new Sportomatic transmission option, a semi-automatic version of the four-speed gearbox, which received some fairly mixed reaction from the motoring press.

Numerous detail changes were applied to the range, many introduced in order to satisfy Federal regulations. Amongst other things, instrument bezels became black (while calibrations changed from green on black to white on black); there were new mirrors inside and out, new door handles, and revised trim on the doors and dashboard. In addition, the S got new sill covers, and a fixed glass rear window became optional on the Targa.

The Americans had a different line-up for 1968. There was no S, and no 911T. Instead, two 130bhp models were listed (the 911 and 911L) alongside the 912, using air injection (AI) to overcome emissions laws, and featuring revised headlights (distinguished by the wide chrome rim) and side markers on the body (although the latter was for 1968 only, as the reflectors were incorporated in the combination lights for the following season).

Meanwhile, the 911 proved itself to be an excellent rally car, with Gunther Klass winning the 1966 European Rally Championship; Porsche drivers Vic Elford and Sobieslav Zasada duly won the two ERC titles available in 1967, with 'Quick Vic' driving a 911R on occasion. The 911R was a lightweight machine modified by Karl Bauer. Featuring a 210bhp engine bored out to give 2247cc, this was the direct link that gave rise to the RS/RSR series of later years. Only 22 were built, but the 911R has a very special place in history.

1968 saw Porsche win in Sweden, Monte Carlo, San Remo, East Germany and West Germany, with Pauli Toivonen lifting the ERC trophy at the end of the year. By this time, the 911R had been tried with a new 916 racing engine, and Porsche had entered the London-Sydney Marathon with a reasonable degree of success.

On the racing front, as well as the long-distance races, the 911 series excelled at the shorter SCCA meetings in the States. By the end of the decade, the 911 had picked up Class victories in almost every major event in Europe and America. What was even more impressive was the way the model was able to challenge for overall honours on a number of occasions.



## The B-Serie models

Development of the 911 continued at quite a pace, with the 1969 models being of particular importance. Not surprisingly, given Porsche's policy of constant evolution, a new generation 911/912 (the B-Serie) was launched in September 1968, with a 57mm (2.2in.) longer wheelbase and flared wheelarches covering wider wheels and tyres.

Fuel injection was added to the 911E (the replacement for the 911L, with E standing for *einspritz*, German for injection) and 911S, giving cleaner emissions yet allowing 10bhp more to be extracted from each unit at the same time. This enabled both engines to qualify for the American market, and both grades went on sale alongside the 911T and 912 for 1969; in other words, the line-up was once again the same all over the world.

In addition to the fuel injected engines, the other big news for 1969 was the longer wheelbase. This was achieved by lengthening the trailing arms at the rear; the engine and gearbox didn't move. As such, the wheels were simply shifted rearwards, driven by different halfshafts with bigger Rzeppa joints to allow for the extra stress involved with the shafts being angled backwards, and the suspension and bodywork modified to suit. Thus, the overall length of the car remained the same.

Other features for this season - the last in which the 912 was sold - included a new ZF steering rack and steering wheel, larger brake pads, adoption of hydropneumatic self-levelling struts for the front of the 911E (optional on other cars), magnesium alloy crankcases (transmission casings were also produced in this lightweight material later on), capacitive discharge (CD) ignition for the injected models, twin batteries on six-cylinder cars to replace the single item used previously, improved gearboxes with revised ratios, a new heating and ventilation system, and modified trim inside and out - again!



*One of a series of superb publicity shots taken at Schloss Solitude to announce the long wheelbase models of 1969. The car nearest the camera is fitted with US-spec lights, incidentally.*



*The 914 was the result of a joint project with VW. Replacing the 912 in the Porsche line-up, it was hoped that the 914 would provide the company with a volume seller. This is a four-cylinder model.*

New combination lamps were used, with new horn grilles up front and reflectors added at the rear. The Targa also received a revised roll-over bar design and the fixed rear window was declared standard (along with tinted glass); front quarterlights retained their opening facility on the Targa, even though they became fixed on the coupé from this point in time.

Porsche won in Monte Carlo again in 1969, with ERC victories following in Sweden, Greece and Corsica; Gerard Larrousse and Maurice Gelin provided a highlight on the racing calendar by winning the Tour de France Automobile in an ultra lightweight 911R.

With production now up to 70 cars a day (the figure would increase again soon, largely thanks to a great deal of expansion at Zuffenhausen), a total of 15,292 Porsches were built in 1969, but less than 6000 made the journey across the Atlantic to America. Compared with recent US sales performance, especially if taken as a percentage of production, this has to be considered rather disappointing.

### **A joint project with VW**

The history of Porsche and Volkswagen had been entwined since the foundation of both great concerns, and it's fair to say that, without one, the other would not have existed, as Professor Porsche designed the VW Beetle, and it was this car that provided the basis for Ferry Porsche's roadster after the war.

After signing an agreement in 1948, as well as allowing Porsche access to components and the use of the Volkswagen sales and service network, VW's Heinz Nordhoff had provided the Stuttgart firm with a constant stream of commissions.

In view of the vast history shared by Porsche and Volkswagen, it was, perhaps, inevitable that the two companies should at some stage produce a joint project. That time came in the mid-1960s when both concerns were faced with a dilemma: the Stuttgart firm needed a new entry level machine, and VW needed a replacement for the Karmann Ghia.

Eventually it was agreed that a new sports car would be developed by Porsche, with two versions being built: a VW four-cylinder model and a Porsche variant powered by the familiar flat-six. Both concerns were happy, as Volkswagen got Porsche's expert input in a field in which it had little experience, and Porsche got bodies cheaply, as VW would pay for the tooling and development costs. The result was the 914 series.

Ferry Porsche and Heinz Nordhoff had enjoyed a splendid working relationship for many years, but Nordhoff was due to retire in 1970. In preparation, Kurt Lotz was brought in as Nordhoff's deputy to gradually take over the reins in mid-1967. However, Nordhoff became seriously ill shortly

after, giving the newcomer no time at all to learn of Nordhoff's arrangements regarding the 914.

On 1 March 1968, the first prototype 914 was driven, but then, a few weeks later, Professor Nordhoff died. Lotz knew nothing of the 'gentleman's agreement' for the supply of 914 bodies from Karmann. Although this wasn't unusual, as the two men often worked on a verbal deal, quite naturally, Lotz wanted to see something in writing. Eventually, after much negotiation, an agreement was reached whereby Porsche and Volkswagen would form a separate company, both partners having a 50 per cent holding. The plan was announced in January 1969, and in the following April, VW-Porsche Vertriebsgesellschaft GmbH (or VG for short) was established in Stuttgart with a working capital of DM 5 million. This new concern would be responsible for the marketing and distribution of the VW-Porsche 914 series and the 911 in most markets with the notable exception of America, which would have its own sales organization.

Although on the face of it, this seemed a rather dramatic move, it was, in effect, little more than making a previous arrangement official, as Porsche cars were distributed through VW outlets everywhere except Britain and France. Nonetheless, the announcement sent rumours around the globe about a possible merger until they were quashed by a blunt Stuttgart press release.



*The impressive Porsche stand at the 1971 New York Show, including a selection of 911s, and the mighty 917 racer.*

Approximately 30,000 912 Porsches were produced from 1965 to 1969, before its place in the line-up was taken by the 914. As mentioned earlier,

there were to be two different models. The Volkswagen version, the 914/4, would be powered by the 1679cc, air-cooled, flat-four engine from the 411E model using VW's new electronic injection system, allowing it to meet all American emission requirements (including those for California). The Porsche model, known as the 914/6, would be equipped with the classic six-cylinder, air-cooled engine from the 1969 model year 911T, chosen for the 914/6 as this kept the new model at two litres.

Part of the agreement with Volkswagen stipulated that the 914 range would be badged as a VW-Porsche. The only exception to this rule was in America, where all models would be Porsches, regardless of the powerplant.

### **The 2.2 litre cars**

The major changes applied to the 1969 model year 911s were carried over to the C-Serie cars of 1970, although the 912 was dropped and the six-cylinder engine was bored out to give 2195cc. Introduced in September 1969, the 2.2 litre machines came with power outputs, now quoted at 125, 155, and 180bhp DIN respectively for the T, E, and S grades.

A number of engine and drivetrain changes accompanied the bigger bore dimension (up from 80 to 84mm), giving the latest Porsches greater flexibility and a far more refined level of performance. In addition, to cope with the extra power, ventilated discs were fitted across the board, although the 911T had cast-iron calipers rather than the light alloy ones fitted to the 911E and 911S.

Cars were now sold in the States via the newly-formed Porsche+Audi sales organization, with VWs distributed through separate showrooms for the 1970 season. However, the stronger economy in Germany led, in turn, to a weaker dollar, making cars like Porsches very expensive.

The value of the deutschmark had risen steadily against the dollar after the 914 was launched (by early 1972, the deutschmark stood at DM 3.2 to the dollar - it had been DM 4.0 in late 1969). Not only did it make imported cars more expensive, but, if a price was retained in America, it also gave less return for the manufacturer in dollar sales.

In fact, by the close of 1970 VW-Porsche's financial results were so bad that it seriously considered abandoning the entire 914 project. After all, a loss of DM 200 million, is not something to be taken lightly. Despite

reservations, the decision was taken to continue developing the 914, and a number of detail improvements were duly made.

Compared to previous years, the 1971 model year 911 series had very few changes. The 150,000th Porsche was a 911S coupé, incidentally, built during the summer of 1970. Like so many of the Stuttgart thoroughbreds, it went to a buyer in the States.



*A poster celebrating Porsche's success at Monza in 1971.*

## **Porsche in competition**

Porsche had a reputation to uphold. The company won the Manufacturers' Championship in 1969, and, in May of that year, built 25 cars known as the Type 917. The model's first victory came in a minor race at Zeltweg towards the end of 1969, but a revised version called the 917K arrived in time for the 1970 Daytona 24-hour race. At Le Mans that year, the Porsche marque dominated the legendary 24-hour race to take the first of many overall

victories at the Sarthe circuit. Porsche veteran, Hans Herrmann, and Britain's Richard Attwood took their Austrian-entered 917K to victory, and were followed home by two other Porsches. There was no looking back, as the 917 totally dominated the racing scene for the next four years.

As far as the 911 was concerned, it continued its versatile career in racing and rallying, winning the Monte Carlo Rally for the third time in a row in 1970, thanks to Bjorn Waldegaard. Waldegaard won again in Sweden and Austria, with Porsche taking the ERC title at the end of the year.

Sobieslav Zasada was declared European Rally Champion again in 1971, but the 911's heyday was over. On the race tracks, too, it was clear that the whole racing circus had become a more professional affair, and the days of challenging the top runners in a virtually standard 911 were numbered.

Porsche failed to contest the 1972 World Championship as the new regulations, which introduced a three-litre engine capacity limit, didn't suit the German firm. Instead, it turned its attention to the Can-Am series, the works cars proudly displaying the Porsche and Audi names side-by-side on the coachwork. It won the series easily in 1972, and then repeated this success the following year.

### **The 2.4 litre range**

The 2.4 litre range was introduced at the 1971 Frankfurt Show. The bore size was carried over, but the stroke was increased, thus giving a larger, 2341cc displacement. More power was the result, although, just as importantly, emissions were cut and fuel consumption reduced. There were three engine options, giving 130, 165, and 190bhp DIN in European guise (the entry level US power unit had 140bhp, thanks to the adoption of fuel injection).

A new five-speed gearbox, with a more conventional shift pattern featuring fifth outside the traditional 'H', was also adopted, signalling the end of the dog-leg first layout. The four-speed unit was based on this new transmission, and the four-speed Sportomatic continued to be offered as an alternative.

The quickest way to recognize a 1972 model is via the oil tank filler on the offside rear wing, following the relocation of the tank itself, although this arrangement lasted only one season. A front spoiler was adopted on the 911S (initially an option on the T and E grades), and black trim became more

prominent. Apart from a few other minor detail differences, it was pretty difficult to tell a 1972 coupé from a 1971 vehicle.

## **Corporate matters**

A new five-man steering committee had been established in April 1971, with members that included Ferry and Butzi Porsche, Ferdinand and Michael Piech, and Heinz Branitzki (the gentleman who looked after the firm's finances following the retirement of Hans Kern).

In the background, though, trouble was brewing. Ferry Porsche realised that the sheer number of Porsche and Piech family members involved in top positions within the company was definitely going to cause severe problems, if the rivalry that was starting to set in escalated. Corporate moves were announced that effectively allowed everyone to withdraw with honour, and signaled the return of Ernst Fuhrmann to Porsche late in 1971. This was only the beginning.

On 1 March 1972 the Porsche company was reorganized. Three concerns - Dr Ing. h.c. F. Porsche KG in Zuffenhausen, the VW-Porsche VG in Ludwigsburg, and the Porsche Konstruktion KG in Salzburg - came under the control of a holding company, Porsche GmbH, registered in Stuttgart. Ferry Porsche and Louise Piech were Managing Directors, with Ernst Fuhrmann responsible for engineering, and Heinz Branitzki appointed Finance Director. The Development Manager was Helmuth Bott (who reported directly to Fuhrmann), the Sales Director was L. Schmidt, H. Kurtz was named head of production, and K. Kalkbrenner was in charge of the Personnel Department.

As far as the car business in Zuffenhausen was concerned (Porsche *per se* in the eyes of the public), all of the members of the Porsche family withdrew officially, with Fuhrmann (appointed Chairman) and Branitzki in charge. The reorganization was completed when Porsche became a joint stock company: Dr Ing. hc. F. Porsche AG.

After the family split, Butzi Porsche formed Porsche Design (a highly successful consultancy), and Ferdinand Piech went to VW-Audi, helping to develop Audi's 4wd system which led to the world-beating Audi Quattro. Before too long he was the head of the German firm. Both men left a legacy at Porsche; no-one will ever forget the racing cars, especially the 917, nurtured by Piech, whilst Ferdinand Porsche III gave us the classic lines of the 911.



A total of 14,265 911s were built in the 1972 calendar year (as opposed to the 1972 MY), a significant increase on 1971, when the company was hit by a poor home economy and a series of strikes. Of this total, six out of every ten were coupés, with 60 per cent being Ts, 16 per cent Es, and 22 per cent Ss.

In the meantime, important events were taking place at Volkswagen. VW had once again lost money in 1971, and the following year Opel overtook it as the leading German manufacturer in terms of output. Lotz resigned in September 1971, with Rudolf Leiding taking his place. Leiding was a production specialist, and it was obvious that he supported the new direction brought about by the K70. Originally an Audi-NSU prototype, it catapulted VW into the world of fwd water-cooled machines. Introduced as the VW K70 in 1971, it spelt the end of the NSU marque, casting doubt on the potential future of an air-cooled, mid-engined vehicle.



*Dr Ernst Fuhrmann played an important role in Porsche's early development, and, on returning to the company after a tenure with the Goetze piston ring concern, was duly named as the new Chairman of Porsche in 1972; a position he held until 1980.*



*A 1973 911 Targa, readily distinguished from the 1972 version by the black edging on the combination lamps. The ATS alloys were also new for the 1973 season.*

## **914 developments**

Initial sales of the 914/6 had looked promising, but demand quickly tailed off. In the first year, 2657 were built - well under the expected 6000 sales worldwide. During the second year, it was obvious that the six-cylinder machine wasn't going to sell, and production was cut back dramatically for the 1972 model year. In fact, only 229 cars were constructed.

Plans to introduce a bigger-engined, six-cylinder model at the 1971 Paris Salon were duly shelved, the stillborn 916 remaining nothing more than a series of promising prototypes. The 914/6 didn't appear in the 1973 model year line-up, and total production for the type amounted to just 3318 units.

With no 914/6, a new 100bhp, two-litre, four-cylinder model was introduced to take its place; to meet ever stricter emissions regulations in the USA, there was a new 1.7 litre unit for the American market.

Thanks to the new two-litre 914, and general improvements made to the range, the 1973 model year was the 914's most successful sales period, with annual production ending just 10 per cent short of the original target of 30,000 units. With most of the cars going to the US, this was no mean feat, as the exchange rate was now less than DM 2.5 to the dollar.

The Volkswagen Type 412 had been introduced for the 1973 model year. The 412 power unit went to 1795cc for 1974 in the heavier four-door and estate models, and it was also used in the Transporter light commercial series. For 1974, the same engine replaced the 1.7 litre lump for the 914 series, as well.

When the new generation of 911s with impact bumpers was launched in September 1973, it was noted that engine sizes had been increased again, this time to 2.7 litres for the mainstream cars, with three-litre powerplants for the top models. This took them even further away from the 914 series in terms of performance and refinement.

A number of 914 limited editions and specials were announced, but sales still fell. In America, the subject of pricing again raised its ugly head. In the July 1974 issue of *Road Test* magazine, it was noted: "The 914 was branded 'overpriced' when it was \$2000-\$3000 cheaper than it is now, which

supposedly elevates it into the outrageously overpriced category, and the 911, which costs about twice as much, into the scandalously overpriced bracket.” There was nothing that could be done - after all, exchange rates dictated the price, and the Porsche range was barely in line with them.

### **A 911 update**

While the standard 1973 model year 911 range was much the same as it had been in the 1972 season, there was an important introduction at the 1972 Paris Salon: the 2.7 litre Carrera RS. With a capacity of 2687cc (90 x 70.4mm), the 210bhp Carrera RS was a stripped out road racer with a lightened body, featuring a rear spoiler, flared arches covering a wider wheel and tyre combination, and an uprated suspension.

The RS came in three different specifications: the DM 33,000 Sport version (M471); the more civilized M472 Touring variant (with 911S style trim), or racing guise (the 2.8 litre M491, better known as the legendary RSR). In reality, this was Fuhrmann’s vision of the future Porsche racing programme. To qualify for Group 4, a minimum of 500 units had to be sold, and, while the RSR was the weapon of choice for top level competition, the RS would make up the numbers, providing the owner with either a fast road car, or a less potent racing machine.

The RS/RSR series quickly established itself as the car to beat in all corners of the world, with Peter Gregg winning the SCCA Trans-Am and IMSA GT titles, and Porsche taking 23 of the 27 podium places available in the 1973 European GT Championship.

The International Race of Champions (IROC) provided an interesting branch of 911 racing history, as the three-litre, normally-aspirated IROC racers were basically the first of a new breed of RS/RSR models, 15 of them delivered late in 1973 for the American series.

Meanwhile, new Federal requirements changed the look of the 911 forever. Proposed 1974 bumper regulations were actually postponed until the following season for sports cars. However, while the 914 took advantage of the reprieve, the 911 was ready, and a new generation was launched at the 1973 Frankfurt Show.

The traditional T, E, and S designations were dropped in favour of a basic 911 grade, a new 911S, and a Carrera topping the line-up. These all had 2.7

litre engines, the Carrera unit being carried over from the 1973 RS, and the other two coming with Bosch K-Jetronic fuel injection.



*The star of the 1973 model year line-up was the Carrera RS (left), seen here with its racing stablemate, the RSR.*

The Carrera had the same bulging wings as its predecessor, but all cars gained new safety bumpers to comply with US regulations. It was actually a very neat piece of design work, bringing the vehicle up-to-date without losing too much of the character. With the bumpers now in body colour, more black trim was added, and a number of changes were applied to the interior, including new, high-back seats, new steering wheels, and a new fascia panel with revised switches and vents at each end.

### **Stark reality**

In 1974, Volkswagen had been forced to cut back its workforce, despite the launch of the new Passat/Dasher. Other new generation water-cooled cars like the Golf/Rabbit (and the Audi range) eventually pulled the company out of trouble, but, for a moment, there was a serious danger that the business would fail and have to close its doors permanently.

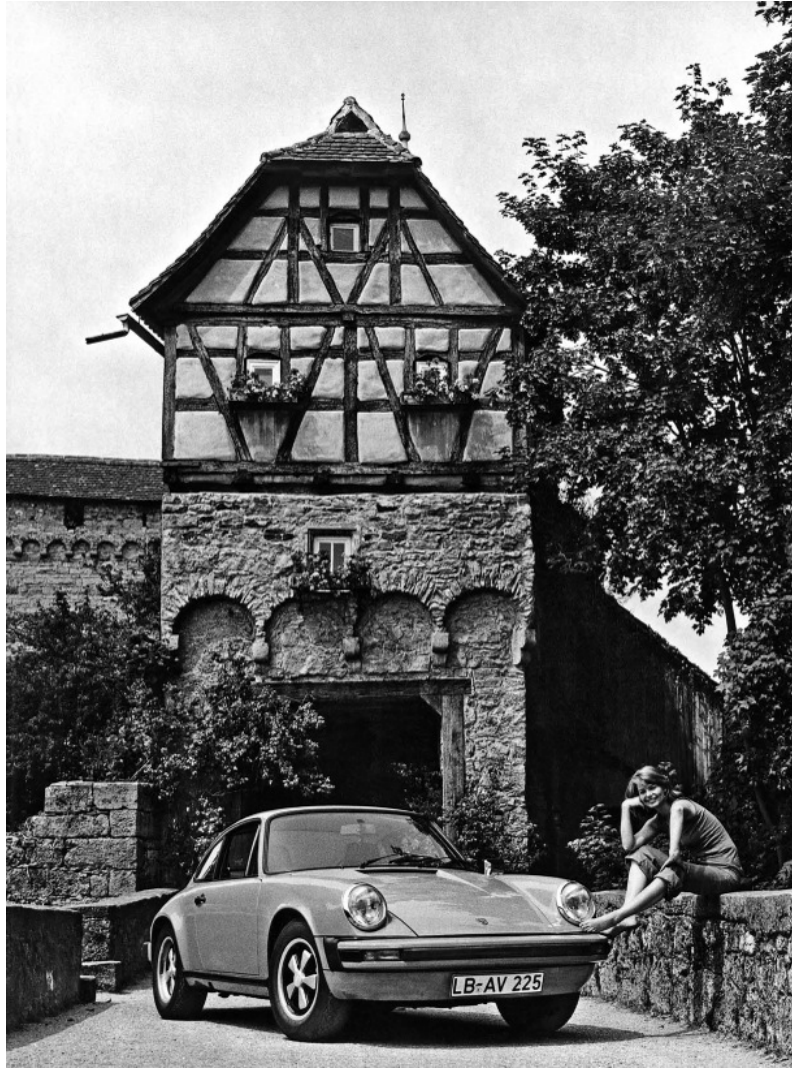
By July 1974, when Karmann Ghia production finally ceased, over 360,000 coupés and more than 80,000 cabriolets had been built. The Karmann Ghia was replaced by an altogether more modern vehicle - the Giugiaro-styled Scirocco.

As Ferry Porsche stated in his book, *Cars Are My Life*: “This complete change of policy by VW naturally called into question the existence of the joint distribution company, the break-up of which had already been recommended by members of the VW supervisory board. Finally, on 8 May 1974, an agreement to that effect was signed. We acquired VW’s stake and moved our sales department into the VG building in Ludwigsburg.”

The agreement was retroactive to 1 January 1974, and brought to an end a very uneasy partnership in which both parties seemed to be pulling in opposite directions. Full control of the 914 shifted to Porsche, although a clause in the agreement ensured that, from the outside, it would seem as though nothing had changed. Interestingly, a number of development contracts were cancelled, although Volkswagen and Porsche did not entirely forsake their long-running alliance.

911 sales were slow for Porsche in the first part of 1974, but, fortunately, picked up as the season progressed. There was a new three-litre RS/RSR series for 1974 (based on the IROC racers, and built as an 'Evolution' of the earlier models). With the standard range priced at between DM 29,250 and DM 41,950, the new 2993cc RS was extremely expensive, commanding the best part of DM 65,000.

The new RS/RSR was basically a customer racer (Group 3 or Group 4), while the works entered Group 5 with a 2142cc turbocharged model; with the FIA multiplying the displacement by 1.4 due to forced induction, it took the car right up to the three-litre limit. The latest cars dominated the European GT Championship and the IMSA series, and the Martini sponsored Group 5 monsters provided the basis for Porsche's assault on the World Championship of Makes, due for inauguration in 1975, but ultimately delayed until the following year.



*Delightful shot showing the 1974 model year Carrera coupé. Note the latest style bumpers, introduced to comply with American safety requirements.*

### **A turbocharged future**

In 1975 revised gearing was introduced to reduce engine revs, plus a new three-speed Sportomatic transmission for the majority of models (adopted across the board for 1976). But the big news was the Turbo. As Ferry Porsche explained: “The exhaust gas turbocharger is capable not only of achieving considerable increases in performance, but also of improving the efficiency of the engine and thus saving fuel. The technology involved was nothing new to us when we came to use it in competition cars, since we had already used it during the war in our air-cooled diesel engines for tanks.

Having been subjected to rigorous tests in our competition cars, the turbocharger then found its way into our production cars.”

A prototype Turbo had been shown at Frankfurt in 1973, but the 1974 Paris Salon saw the debut of the real thing. Not only was this the quickest road car to come from the Stuttgart factory during this period, it was also the most expensive; at DM 65,800, the 2993cc machine was literally twice the price of a 911 coupé (then listed at DM 32,350 in March 1975). However, despite a hefty price tag and the relentless rise in fuel costs, within 18 months of its launch, Porsche had sold twice the number originally expected.

With bulging wheelarches, a massive whaletail spoiler, luxury trim, and stunning performance, the 260bhp Porsche Turbo stole sales from the Italian exotics, with deliveries beginning in earnest after the 1975 Geneva Show.

### **End of the 914**

Changes to the 914 for 1975 were headed by a different bumper design to meet the latest US regulations, and a modified two-litre engine for the States to satisfy even stricter emissions laws, including a catalytic converter and extra anti-pollution equipment for California, making the cars costlier to produce.



*Action from the 1974 Safari Rally. This gruelling African event was one of the few that eluded the Stuttgart marque.*

In Germany, the price was held on standard models, but in America, the exchange rate and additional costs involved in meeting emissions regulations pushed even the basic 914-1.8 to \$6300. Add options to this, and it became a very expensive car.

The two-litre 914 was priced at \$7250, compared with \$10,845 for the 912E - a fuel injected revamp on the old 912 theme to keep American dealers happy until the 924 arrived on US shores. While the latter could hardly be classed as cheap, it should be borne in mind that the 911S coupé was \$13,845 at the time, and the Targa-bodied version no less than \$14,795.

On 10 February 1975, Toni Schmucker, an ex-Ford man, took over from Rudolf Leiding at Volkswagen. Carrying on from where Leiding left off, the 1795cc VW engine was stopped for the 1976 MY in the VW range when the Transporter series (the only model other than the 914 to still use it) went to two litres, using basically the same engine as that in the larger of the two 914s. For this reason, only the 914-2.0 was offered for 1976.

Markets were either shrinking, disappearing, or becoming increasingly difficult to satisfy legally. Because of this, the decision was taken to run down production to an absolute minimum, and sell the 914 series only in America for 1976 - it was about the only country where any sort of demand still existed, at least at a level where a profit could be made.



*Publicity shot of a 1975 2.7 litre coupé.*

The last cars were completed in Karmann's Osnabruck works during the early part of 1976, with final sales taking place in the spring. No announcement was made, the 914 was simply allowed to fade away. Although the 914 wasn't quite the sales success that Porsche had hoped for, almost 120,000 were built over the model's six year production run.

## **The 924**



The 924 project was originally a design commissioned by Volkswagen under the number EA-425. Almost from the moment the 914 was launched, Volkswagen had been considering the details for its more conventional successor, and the Type 924 was it.

However, at the last minute, just as the machine reached the pre-production stage, the management at Volkswagen cancelled it. Due to a combination of political wrangling and the energy crisis, the consensus at VW was that it would be too expensive to produce. Porsche was given the opportunity to buy back the design to put it into production itself, which it did.



*The 911 Turbo prototype that was displayed at the 1973 Frankfurt and Paris Shows. The production model was exhibited at the 1974 Paris Salon, with customer deliveries beginning the following spring.*



*The 934, seen here at speed at the Norisring in June 1976, was one of three cars introduced by Porsche for the 1976 racing season. The 934 competed in Group 4, the 935 was the works Group 5 warrior (later released to customers as well), and the 936 was campaigned as a Group 6 model.*



*The 1977 line-up, including the 911 Turbo, the Carrera 3.0 coupé, 2.7 litre versions of the Targa and coupé, and the elegant 924 (which replaced the 914).*

The 924 was exactly what Porsche needed in the hard economic times of the 1970s. Sales had fallen considerably, and just 9424 cars were produced in Stuttgart in 1975. However, sales soon picked up with the introduction of the low-priced 924 in November 1975. At last, Porsche had the entry level machine it had originally been trying for with the 914.

The 924 was a great departure from traditional Porsche practice. The engine was a water-cooled, 1984cc, four-cylinder unit mounted at the front, with rear-wheel drive through a transaxle system (i.e. a gearbox combined with the rear axle). With an overhead camshaft and K-Jetronic fuel injection,

the two-litre unit developed a modest 125bhp, but powered the car to 125mph (200kph), and gave excellent fuel economy.

The elegant body was designed by the Dutchman, Harm Lagaay, under the supervision of Tony Lapine. It was a wedge-shaped 2+2 coupé with smooth lines and a large glass hatch at the rear - even today, it looks surprisingly modern, thanks to some fine detailing.

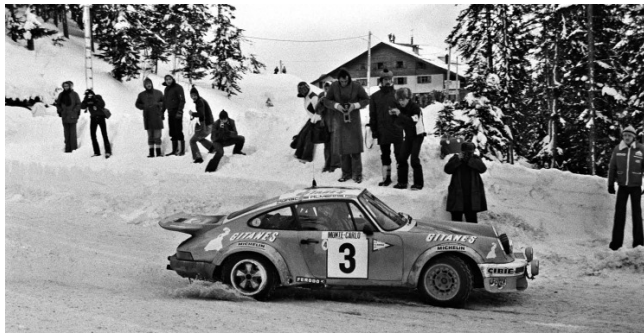
Naturally enough, as the 924 was going to be part of the VW-Audi range, it used a large number of parts sourced from that organisation (including the engine block, suspension components, and many interior fittings), and was actually assembled at the old NSU factory. The 924 made it into America as an early 1977 model year car, superceding the 912E in spring 1976. At just \$9395, it was some \$4600 cheaper than a 911S coupé, and more than \$1000 cheaper than the short-lived model it replaced. The car was an instant hit, accountable for more than 13,500 of the 20,000 Porsche sales made in the States that year.

### **The 911 line matures**

With the 2.7 litre cars undergoing a few detail changes only, and the Turbo, as a new car, being treated much the same, it was the Carrera that received the most attention for 1976. Not available in the States, the Carrera was basically a normally-aspirated version of the Turbo, and with 200bhp on tap, it was an interesting alternative, more than DM 20,000 cheaper than the Porsche supercar.



*The 1978 range, with the 911SC in the foreground, the 911 Turbo beyond it, the 924 (finished in bronze), and the stunning 928. Note the larger rear spoiler on the 3.3 litre turbocharged car.*



*Jean-Pierre Nicolas on his way to victory on the 1978 Monte Carlo Rally.*



*The 911SC Targa. The Targa was the closest thing Porsche buyers had to an open car for many years, although that situation was to change a couple of years after this photograph was taken.*

## THE WINGFOOT RADIAL

**Its heritage comes from some of the fastest cars in the world.**

Its heritage comes from some of the fastest cars in the world. Its heritage comes from some of the fastest cars in the world. Its heritage comes from some of the fastest cars in the world.

*Wingfoot radial tire - provides superior road holding, maximum steering precision, outstanding tread wear.*  
*Special motorized rim - provides the extra resistance to shock and handling.*  
*Wide body of Wingfoot Radial - for improved handling.*  
*George Coker's Porsche 911: One of the most famous cars in history's development program at the 12 weeks of Salzburg!*

GOODYEAR

*The 911 was still quite competitive on the tracks as well, as this piece of Goodyear advertising clearly shows.*



*The 924 Carrera GT prototype, first displayed at the 1979 Frankfurt Show, gave a good clue to the direction the 924 series was going. It would be developed into a competitive race and rally car, and provided the basis for the 2.5 litre 944.*

Refinement was the order of the day, with more emphasis placed on comfort rather than outright performance, and all the time there was growing concern about the environment to keep in mind. Porsche was already looking at stratified-charge and lean-burn engines, but it also supported a full racing programme in order to develop new technologies.

For 1976, Porsche had the 934 (the Turbo RSR), the 935, and the 936. Ultimately, Porsche won the World Championship for Sports Cars (using Group 6 models), and the World Championship for Makes (for Group 5 Silhouette Sports Cars) in 1976. More effort was directed towards the Group 5 series in 1977, enabling the Stuttgart marque to easily retain its title. The 935 was a memorable machine in a memorable era.

A few detail changes were applied to the 911 range for 1977, with 16-inch wheels for the Turbo, minor engine and gearbox modifications for the 2.7 litre cars, and a few interior revisions on all models.

A new Porsche was announced at this time: introduced in February 1977, the 928 made its public debut at the following month's Geneva Show. It was a member of the same family as the 924, with a front-mounted, water-cooled engine and transaxle to give good weight distribution. The engine, in this instance, however, was a V8 unit of 4.5 litres designed to tempt customers

who traditionally bought from the likes of Jaguar and Mercedes-Benz. The brainchild of Dr Fuhrmann, it was immediately voted 'Car of the Year.'

In actual fact, work on the 928 had started before the 924 project, as, at one point, it was put forward as the possible successor to the 911 range. However, when the Type 924 passed to Porsche ownership, because the need for a cheaper car was greater, it was the smaller-engined model that went into production first.

Shortly after the 928 made its debut, the cost of 911 motoring increased yet again, with roughly DM 1400 being added to the range. The Turbo now stood at DM 70,000 - some DM 15,000 more than the 928 at the time of its announcement.

A total of 19,896 Porsches were sold in the States during 1977, but only 6226 of these were 911s (517 Turbos), the rest were 924s, as the 928 did not appear in America until the 1978 season. By this time, a new 911 series had made its debut.

### **The 1978 model year**

For 1978, the NA 911 series became known as the 911SC (the SC standing for Super Carrera). This was a similar machine to the European Carrera offered in 1976 and 1977, powered by a three-litre engine, but revised to give 180bhp and a smooth flow of mid-range torque. This was the only unit offered for all markets, linked to a five-speed manual gearbox with a new clutch with a rubber insert (although the three-speed Sportomatic continued to be offered for a while, it was dropped in mid-1979).

The SC was available as a coupé or a Targa, with a body and interior very similar to that of the three-litre Carrera. There were, of course, a few detail changes, but, without seeing the '911SC' badge on the tail, it took a connoisseur to tell the 1977 and 1978 model year machines apart.

As well as the new SC series, the 1977 Frankfurt Show also witnessed the debut of the 3299cc Turbo. The larger capacity was obtained via a slight increase in both bore and stroke, but with an air-to-air intercooler added to the specification list, the fuel injected unit now developed 300bhp in European trim (265bhp for the US). With an uprated four-speed manual gearbox, the latest Turbo was capable of speeds in excess of 160mph (255kph). Naturally, this level of performance called for superb brakes, and the Turbo had them in the form of four-pot calipers acting on ventilated and

cross-drilled discs. However, one has to pay for racing technology, and by early 1978, the 911 Turbo commanded a mighty DM 79,900; a far cry from the DM 21,900 asked for the very first 911s.

In competition, the 935/78 upheld Porsche's honour on the tracks, the 850bhp machine enabling the Stuttgart marque to hold onto its World Championship crown; the 935 also dominated the IMSA series in the States. Meanwhile, in the field of rallying, Jean-Pierre Nicolas won the 1978 Monte Carlo Rally in a 911, and Porsche came second on the Safari.

### **The evergreen 911**

The 924 Turbo was introduced towards the end of 1978, giving rise to yet more speculation that the 911 was nearing the end of its reign. While the 928 was not selling at expected levels (due to the state of world economy rather than any failing in the car), the 924 Turbo filled the gap between the strict 924 and the larger, V8 machine, both in terms of price and speed - it was a touch cheaper than the 911SC coupé and offered a similar level of performance. Despite this, the 911 series continued almost unchanged into the 1980 season, and helped Porsche retain its WCM and IMSA titles in 1979. For 1980, the European markets gained a more powerful engine for the SC (rated at 188bhp), enhanced equipment levels, and a new exhaust system for the Turbo, readily distinguished by its twin pipes.

In America, the 1980 models came with a Lambda-sond sensor, improving efficiency by constantly varying the air/fuel mixture to give a more effective burn in the combustion chamber. Combined with a new three-way catalytic converter, emissions were also reduced, and the unit (Type 930/07) duly qualified for use in all 50 states.

On the other hand, the Turbo was dropped from the US line-up at the end of 1979, and did not return to that market until the 1986 season. The 935 racer had also run its course, with the 924 as the factory's weapon of choice in competition during 1980. Perhaps, at last, the 911 was being pushed into the background, although the rear-engined model still managed to shine in the IMSA and SCCA Trans-Am events, and took rally pilots to victory on the Tour de Corse, and in the European Rally Championship.

European-spec cars were given another power hike for 1981 (taking maximum output to 204bhp), silencing the critics who had often pointed out that the SC unit was down on power compared to the 200bhp Carrera of

1976-1977. With a new five-speed gearbox and re-adoption of a traditional clutch, there were also detail changes to the suspension and interior, and European-spec cars also gained side indicator repeaters on the front wings. In the States, the engine remained unchanged, although US buyers did at least get the latest transmission and suspension modifications.

## **Company politics**

Ernst Fuhrmann, Porsche's Chairman and designer of the first Carrera engine, was eventually ousted from office in November 1980. Ferry Porsche later said he felt that Fuhrmann had trouble understanding the market (he did come from an engineering rather than commercial background, after all), but there was a definite underlying personality clash, too.

Peter Schutz became Chairman on 1 January 1981, hand-picked by Ferry Porsche. Born in Berlin in 1930, Schutz spent most of his life in America, before moving to the Deutz engineering concern in 1978 to take up the position of Director of Powertrain R&D.

Whereas Fuhrmann had almost ignored the 911 in recent years, preferring to put the company's resources into the 928 and the forthcoming 944, Schutz made it his mission to revive the legendary air-cooled model and give it the development needed to keep it competitive. Schutz went on record as saying: "So long as there's demand for a certain model, we'll go on making it." It was exactly what Porsche enthusiasts wanted to hear.

The Schutz era began promisingly, with a great deal of investment pumped into new production lines, and a computerized parts centre at Zuffenhausen. Four-wheel drive was being assessed for the 911, which confirmed the new man's stated intention to keep the rear-engined car in the line-up, and the factory restoration shop did its first of many slant-nose conversions.

Based on the Turbo, the first slant-nose model was completed on 16 July 1981 (chassis number 619). With front bodywork resembling that of the early 935 racer (complete with low-mounted front lights and cooling vents), sill kit, wider rear arches (with air ducts for engine and brake cooling, plus the oil cooler which had been moved rearwards), and a traditional Turbo rear wing, it was built as a special order at this time, although the conversion was listed as an official factory option a few years later.

## **The 944**



The gap between the 924 and 928 was narrowed for the 1982 model year by the appearance of the 2.5 litre, four-cylinder 944. Although clearly based on the 924 both visually (there was a striking resemblance to the Carrera GT) and in mechanical layout, the 944 used less VW-Audi sourced parts, and was much quicker.

Although the 928 went into production with a 4.5 litre V8, the plans for the original engine proposed a five-litre unit. Basically, the 944 powerplant was half that of the prototype V8. With a 2479cc displacement, it developed a healthy 163bhp, contra-rotating balance shafts helping to keep it smooth.

Writing for *Classic Cars*, Roger Bell noted at the time of the new model's UK launch: "So excellent are the qualities that really matter - performance, economy, refinement, comfort, build quality, finish - that the 944's few deficiencies seem rather trivial ... Even at £13,000, the five-speed manual does not appear to have a competitor in sight."

### **A new star at Frankfurt**

The 1981 Frankfurt Show saw the debut of the 'Studie' concept car - Porsche's first true convertible since the mid-1960s. But the Studie, based on the Turbo body and running gear, was far more than just an attractive drophead, as it also featured four-wheel drive. Although 4WD was not adopted on production cars for some time, the 911SC cabriolet, with its traditional wingline rather than the bulging metal of the Turbo, duly made an appearance at the 1982 Geneva Show and went on sale at the start of the 1983 season.

Meanwhile, a few revisions were made to the 1982 911 models, such as painted centres on the ATS alloys (to make them look like the Fuchs forged items), a new rear spoiler, and new markings on the gauges and switchgear.

For 1983, the SC was much the same, apart from the introduction of the cabriolet, of course. This was because a new, normally-aspirated model was waiting in the wings, although the Turbo was given a new exhaust with a different wastegate outlet system, recalibrated Bosch injection and a stiffer crankcase. Power remained unchanged on the turbocharged car, but torque was increased to a healthy 317lbft.

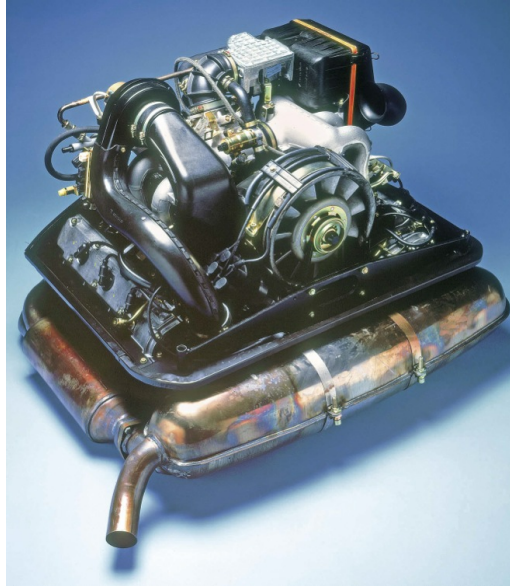
The big news in 1984 for Porsche fans was the introduction of the four-wheel drive 959 supercar, first shown at the 1983 Frankfurt Show. The twin-turbo, 2.8 litre engine produced no less than 450bhp, endowing the six-speed

Group B monster with a 0-60 time of 3.9 seconds, and a top speed approaching 200mph (320kph). However, priced at DM 420,000, it was nearly ten times the price of a contemporary 944! For those in the real world, the next best thing on a realistic budget was a new Carrera ...



*A prototype 911 drophead was displayed at the 1981 Frankfurt Show, with the production version of the 911SC cabriolet making its debut at the following year's Geneva Show. Sales began at the start of the 1983 model year.*

# Chapter 3: The 3.2 Carrera & contemporary Turbo



*The DME system worked well with the Porsche engine, delivering fuel and adjusting ignition timing within fine operating tolerances to enhance efficiency. The 3.2 litre Carrera unit, which took two years to develop, delivered 73bhp per litre - a very good figure considering that the contemporary turbocharged flat-six could muster only 91bhp per litre in road trim.*

Making its debut alongside the 959 concept vehicle at the 1983 Frankfurt Show (which ran from 15-25 September), the normally-aspirated 911 range acquired a new name - the legendary Carrera appellation. Usually reserved for short run, thinly-disguised racers, the Carrera tag was, on this occasion, given to the cheapest models in the 911 range: the basic machine had progressed to such an extent, that the marketing people had no qualms about using this fabled name on the entry level 911.

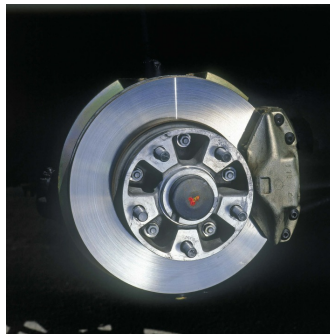
## **The new Carrera**

A revised 3.2 litre, flat-six engine (said to be up to 80 per cent new) bestowed upon the evergreen rear-engined Porsche substantial gains in all-round performance.

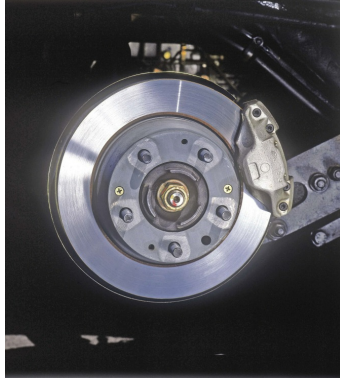


*The 3.2 litre Carrera was introduced for the 1984 season, taking the place of the SC series. It was available as either a closed coupé (as seen here), or with a Targa or cabriolet body for those who preferred al fresco motoring. The main differences between the Carrera and the SC body was the flush-fitting foglights of the former, and, when fitted, a new rear spoiler.*

With a bore and stroke of 95 x 74.4mm (the increased stroke made possible by using the 8-bearing, forged steel 930 crankshaft), the new power unit (Type 930/20 in European guise) displaced 3164cc; a capacity previously seen on only a few of the turbocharged racers. New forged pistons ran in Nikasil barrels with the same bore as used on the SC. Above the pistons, the valves were carried over - 49mm (1.93in.) inlets, 41.5mm (1.63in.) diameter on the exhaust side - but were operated by a new camshaft (still only one per bank); the ports were enlarged, and there was a revised inlet manifold and combustion chamber shape.



*The offside front (above) and rear brakes of the Carrera.*



A key feature, however, was adoption of the Bosch Motronic DME (Digital Motor Electronics) engine control system to augment the new L-Jetronic injection. This measured operating temperatures via a ceramic sensor in the cylinder head, and monitored ignition and injection settings to accurately deliver a lean mixture on a light throttle, or a higher ratio of petrol in response to driver input.

As well as having a fuel shut-off on the overrun, the DME system prevented over-revving, cutting fuel at 6520rpm, so there was no longer a separate device in the distributor. It also allowed a higher compression ratio, and while this brought with it a requirement for 98-octane fuel on the 930/20, economy was enhanced yet again, said to be up to 10 per cent better compared to the last SC.

In addition, oil pressure fed timing chain tensioners were a vast improvement (these maintenance-free items could be retro-fitted to earlier flat-sixes), and the cylinder head gasket was deleted, as on the Turbo. The air pump was also dropped, and, with no air box on the fuel injection system, there were no more unexpected - and expensive - bangs if the warm-up regulator decided to play up. The package was completed by a quieter exhaust system incorporating double-skinned heat exchangers, and a new alternator with a higher, 1260W output to charge the 88Ah battery (previously an option on NA cars).

Weighing in at 220kg (484lb) and with a 10.3:1 compression ratio, the 930/20, as used in Europe and Australia, delivered 231bhp DIN at 5900rpm (a jump of 27bhp over the already increased 1981 MY outputs), and 209lbft of torque at 4800rpm. This unit would run on leaded or unleaded fuel, as there was no cat.

American-spec engines (Type 930/21) ran on a lower c/r (9.5:1), allowing the use of 91-octane unleaded fuel. With a three-way catalytic converter and Lambda sensor, it delivered 207bhp DIN at 5900rpm, and 192lbft of torque at 4800rpm; in SAE nett terms, this was the equivalent of 200bhp and 185lbft.

The 915/67 five-speed gearbox was specified for European and Australian Carreras, with the 915/68 five-speed for the US, Canadian, and Japanese market versions. The clutch was carried over and the final-drive ratio remained at 3.875:1 on both types, but a gearbox oil cooler was now added to the spec sheet, based on Porsche racing technology; a ZF lsd was available as an option.



*The crowded engine bay of the 3.3 litre Turbo.*

Compared with the SC, the main difference on the body was the way in which the foglights were mounted; now a standard fitment on all cars (driving light lenses could be fitted if required), they were mounted flush on the front airdam. In addition, the Carrera's whaletail rear spoiler (option M473) did not have the upturned edges of the version on the turbocharged car, and sat a touch lower. As always, a front spoiler was needed if a rear one was specified, as it balanced the negative lift.

As with the SC series, the Carrera was available as either a coupé, Targa or cabriolet. Eventually, the so-called 'Turbo Look' body package (known as

the Carrera Sport Package in Germany, or SE/Super Sport in the UK) was added to the line-up, initially for the NA coupé only, although the Carrera Targa and cabriolet could be specified with the package by the 1986 season. It included Turbo body panels, the Turbo's uprated suspension and brakes, and the larger wheel and tyre combination. This option (number M491) naturally added weight (and aerodynamic drag) but no power, so was of cosmetic value only.

Meanwhile, for standard Carreras, the suspension and steering was carried over (torsion bar and anti-roll bar diameters were the same as those of the 1981 MY 911SC, whilst the rack-and-pinion steering, with a 17.8:1 ratio, dated back to the 1969 season), but at least all Carrera models gained a new braking system to keep the extra horses in check. Measuring 282mm/11.1in. at the front and 290mm/11.4in. at the rear, the discs were made thicker and given better ventilation to enhance cooling. The calipers were a modified version of those fitted to the SC, but the brake pressure regulator from the 928 was adopted to prevent the wheels locking, and the servo was now the same as that fitted to the 911 Turbo. At the same time, a pad wear indicator was added to the centre of the dash, augmenting the handbrake and seatbelt warning lights.

New 'telephone dial' cast aluminium alloy wheels replaced the ATS rims. These were 6J x 15 up front (shod with 185/70 rubber) and 7J x 15 at the rear (with 215/60 tyres). A Fuchs 7J x 16 front (with 205/55 VR-rated Goodyear NCT or Pirelli P7 covers), 8J x 16 rear (with 225/50s) combination was available as an option.

These new Carrera models perfectly complemented the 3.3 litre Turbo. At the same time, the standard 928 was dropped in the reshuffle, with the higher-powered 928S carrying the mantle for the series.

Performance was certainly not a dirty word in Zuffenhausen, and Porsche engineers, for so long tied up with the Group C racers, turned their attention to a new rally car - the three-litre 911SC/RS. As an evolution of the discontinued 911SC, only 20 were needed to meet homologation requirements, and the lightweight 255bhp machine had no shortage of buyers, despite the DM 188,100 price tag. The model did well in the Middle East Championship and the ERC, and Rene Metge won the 1984 Paris-Dakar event with a four-wheel drive 911. There was even a return to F1 at this

time, as Porsche built the TAG engines that powered the contemporary McLarens.

## **The mighty Turbo**

The Turbo hardly changed from the 1983 model year, although it did inherit the latest chain tensioners and the bigger alternator employed on the Carrera. It also used the same foglight arrangement as its NA brethren, and acquired the same air conditioning switch revisions as the Carrera, along with a pad wear indicator in the centre of the dash.

For the 1978 model year, the Turbo (Type 930) had been given a larger cubic capacity of 3299cc, obtained via an increase in the stroke - up from 70.4 to 74.4mm - and an extra 2mm on the bore, which now measured 97mm. Naturally, this meant new cylinders and a fresh crankcase for the new crankshaft, the latter featuring larger bearing faces.

In addition to the hike in engine displacement, the racing programme led to the adoption of an air-to-air intercooler, cooling the air/fuel mixture before it entered the combustion chamber, increasing efficiency and releasing more power as a result. Breakerless CD ignition was another new feature; there were also a number of refinements in the camshaft drive, crankpin design, and cooling and dry sump lubrication systems.

All turbocharged engines had an air pump (which mixed fresh air with exhaust gases to reduce emissions), and continued with the proven K-Jetronic CIS set-up. With a 7.0:1 compression ratio and just under 12psi of boost for the KKK turbocharger, the 930/60 unit for Europe delivered 300bhp DIN on 98 RON fuel - an increase of 40bhp compared to the three-litre Turbo.

Although the Turbo had received a modified exhaust with twin pipes for the 1980 season, the 1983 models had a new engine (Type 930/66), which featured another revised exhaust (with a different wastegate outlet system), recalibrated Bosch injection, tweaks in the distributor (to give better control over the advance/retard settings), and a stiffer crankcase. Ultimately, power output was identical, but there was a 13lbft increase in torque (now up to 317lbft at 4000rpm), enhanced fuel consumption, and a notable reduction in noise.

A four-speed manual gearbox (Type 930/34) was used for all Turbos, with first through fourth in a traditional 'H' pattern; a 4.222:1 final-drive was specified, with a limited-slip differential classed as an option.



In a bid to keep the Turbo's power in check, the servo-assisted, split circuit braking system was uprated via four-pot alloy calipers acting on ventilated and cross-drilled discs on all four corners - 304mm (12.0in.) diameter up front, with 309mm (12.2in.) items at the rear, the latter again featuring an integral drum for the handbrake.



*The mighty Turbo, seen here in slant-nose guise (left) and regular coupé form (centre). A standard 3.2 litre Carrera is bringing up the rear, providing an ideal view of the different wing profiles used on the turbocharged and NA cars, and the unique panels employed on the flat-nose conversions.*



*The offside front (above) and rear (above right) brakes of the Turbo. Comparison with the brakes of the NA car (illustrated on page 39) will reveal a number of significant differences between the two systems, not*

*least the leading-trailing set-up of the turbocharged model (the Carrera had both calipers on the leading edge of the discs).*



*Beautiful publicity shot of the Carrera cabriolet taken at Schloss Solitude.*

Suspension and steering was much the same as that on the three-litre Turbo, with 19mm (0.75in.) front and 26mm (1.02in.) rear torsion bars, and 22mm (0.87in.) front and 20mm (0.79in.) rear anti-roll bars being specified for the new model. Forged 7J x 16 Fuchs alloys played host to 205/55 VR-rated Pirelli rubber up front, while 8J x 16s shod with 225/50s were specified for the back.

German 911 prices started at DM 61,950 when the 3.2 litre Carrera was announced, but went up to DM 63,950 for the basic coupé early in the new year. The Targa was then quoted at DM 67,050, with the cabriolet commanding another DM 4150 on top of that.

The Turbo was in another league, however, listed with a starting price of DM 105,300. That price was for a standard car; the specially-commissioned, slant-nose Turbos were far more expensive, although no fewer than 108 were delivered between 1981 (when limited production started) and the end of 1984.

## **Corporate news**

In the USA, the long-running marketing agreement, which resulted in Porsches and Audis being sold alongside each other under the auspices of Volkswagen of America Inc., finally came to an end on 31 August 1984. From now on, Porsche was on its own, with offices in Reno, and the new distribution system utilizing 40 so-called 'Porsche Centres' across the States. Eventually, after a great deal of opposition from existing dealers, this

innovative plan was watered down somewhat, but, amidst all the upheaval, American sales fell slightly in 1984, down from 21,831 to 19,611 units.

For 1985, Americans received a 32v, five-litre version of the 928S, rated at 288bhp. By summer 1986, this model was offered in all markets, now known as the Series 4 and with a useful 320bhp on tap, giving the luxury GT a top speed approaching 170mph (272kph).

A spokesman for the company stated there was to be heavy investment in the Zuffenhausen facility, allowing production to increase from 80 to 120 cars a day over the following year or so. Ironically, most of this extra capacity was allocated not to the 928, but the 911, which was now almost guaranteed another ten years without major change.

Meanwhile, while the 944 Turbo was making its debut in mid-1985, production of the two-litre 924 came to an end. With it disappeared the last traces of VW-Audi content in a Porsche car, although the model did continue for a short while in 924S guise, powered by the 944 engine. The much talked about small Porsche, intended to slot into the range below the 924 (and possibly available in coupé, Targa, and convertible forms), simply failed to materialize ...

### **The 1985 911s**

For the 1985 model year Carrera, fuel tank capacity increased to 85 litres (18.7 Imperial gallons), oil cooling was improved, and the aerial was now embedded in the windscreen, which came with a green tint as standard.

Inside, gearshift travel was reduced, thanks to a new gearlever (finished with a leather boot and bringing about new transmission codes); a new, four-spoke, leather-trimmed steering wheel became the standard fitment, and power adjustment was added to the new seats.

Although the seats looked similar to the 1984 items, they were a touch taller, and the seatback release button was moved further up the outer side bolster, with a second release added on the inner section. Three seat styles were available: basic, comfort, and sport. The sport version (optional for all cars) had bigger side bolsters and basic power adjustments, and all three could be supplied with internal heating, if required. Other new options included central locking, and electrically heated windscreen washer jets (the latest nozzles were wider and flatter than before).

The Turbo inherited many of the Carrera improvements, including the latest seats and steering wheel (also adopted on the 944, incidentally), the aerial embedded in the windscreen, and larger fuel tank. It also gained central locking as standard (a switch on the centre console locked both doors), heated seats, and a new brake master cylinder to reduce pedal effort.

As a matter of interest, 44 slant-nose Turbos were delivered in 1985, taking the running total to 152 units. Although there had previously been a few cars with this arrangement, now all slant-nose models came with pop-up headlights as standard, the mechanism sourced from the 924/944 series.

### **Export markets**

The Americans still had to do without the 930 Turbo, but the Carrera was a fast machine by any standard and, given the speed limits in the USA, probably a far more practical proposition. For 1984, the Carrera coupé had a \$31,950 sticker price; the Targa was only \$500 more at \$32,450, while the cabriolet was listed at \$36,450. The Turbo Look body and suspension mods, available from February and on the closed car only for the time being, added \$11,390 to the invoice. Leather trim, air conditioning, dual power mirrors, and electric windows were standard on all US cars.

In addition to the Turbo coupé, British buyers had the choice of six Carrera variants: the Carrera coupé & Targa (£21,464), the Carrera Sport coupé & Targa (£23,366), the Carrera cabriolet (£22,553), and the Carrera Sport cabriolet (£24,340). The Sport package followed the established pattern, adding Fuchs alloys and wider rubber, front and rear spoilers, and uprated shocks (although the latter was left off the cabriolet). Leather front seats were standard on all UK cabriolets, however, as was a sunroof on the coupés, and a four-speaker Panasonic radio/cassette was fitted to all 911s sold in the British Isles.

### **The 1986 model year**

For once, there was some good news; the anti-corrosion warranty period was extended to ten years, and oil prices plummeted in 1986. Unfortunately, 911 prices kept on going up, with roughly DM 5000 added across the range for 1985, followed by a DM 74,190 starting price for the 1986 season. When Germany's latest emissions regulations came into force in January 1986, stipulating a requirement that all new vehicles use three-way catalytic

converters to avoid a hefty pollution tax, the cost of Porsche motoring climbed once again.

In many ways, the 1986 season was an important one in the history of the 911. Granted, there were no groundbreaking changes for the engine, transmission, and running gear, but the Turbo returned to America and the 'Turbo Look' body and chassis package was now available on all NA cars. It could be specified without the spoilers if the customer wanted, giving just the wider body (most Turbo Look models came without the giveaway 'Carrera' badge, by the way).

Probably just as important was the fact that Porsche, at last, addressed the problem of poor ventilation by introducing a new dashboard with larger side and face-level vents. The new dash was available in a variety of colours (the steering wheel and gearshift gaiter could be ordered to match the top and bottom roll and centre console) and, although the five standard gauges on the dash were carried over, it featured an all-new switchgear layout with revised knob designs. A new centre console was added at the same time; front seats were lowered slightly, and sport seats (now also with power height adjustment) were available as a no-cost option.

There were a few mechanical changes for the Carrera, too. Boge dual-tube gas shocks became standard equipment, allowing the front anti-roll bar diameter to be increased from 20mm (0.79in.) to 22mm (0.87in.), while the rear one went up from 18mm (0.71in.) to 21mm (0.83in.). At the same time, while the front torsion bar remained at 19mm (0.75in.), the rear one went from 24mm (0.94in.) up to 25mm (0.98in.) in diameter.

Transmission ratios were still the same as they were at the start of the Carrera series, although the codes were up to Type 915/72 and 915/73 respectively by this time. Gearlever travel could be shortened, again via an option package, although the standard gearknob was still a black plastic item at this stage in the proceedings.

The automatic heating system became available for the cabriolet, incidentally (previously, the open car had had to make do with the traditional pair of levers between the seats), and eventually a power top was offered as an option, too, becoming standard in certain markets in 1987, and readily identified by its smaller rear window.

Both the Carrera and the Turbo got the option of an uprated windscreen washer system (M286), which had special cleaning fluid stored in a separate

reservoir in the front compartment (which was now trimmed with carpet that matched that of the interior).

Now with central locking fitted as standard for all markets, the Turbo (and Turbo Look) cars were given a wider 9J x 16 Fuchs wheel for the rear, shod with 245/45 VR-rated Dunlop rubber. (The front combination remained the same, however - 205/55 VR16s on a 7J rim.) Transmissions were revised, too, with the 930/36 for Europe and the 930/37 for the US, although both retained the ratios specified for the 3.3 litre model in September 1977.

A total of 52 slant-nose Turbos were delivered in 1986, taking the running total to 204 units. European models came with a higher powered version of the 3.3 litre blown engine (Type 930/66S), the extra power made possible by new camshafts, a larger capacity turbocharger and intercooler installation, and a modified exhaust system sporting four tailpipes. With 330bhp at 5750rpm and around 340lbft of torque, this helped propel the slant-nose Turbo to just over 170mph (272kph), with the 0-60 time quoted as 5.2 seconds; a limited-slip differential was a no-cost option on this model.

### **US & UK updates**

The big news for American enthusiasts was the return of the Turbo, this time known simply as the 911 Turbo. In US guise, the 3299cc unit (Type 930/68), with a 7.0:1 compression ratio and 10.2psi maximum boost, developed a healthy 282bhp SAE at 5500rpm, and 287lbft of torque at 4000rpm. Like the European model, the American Turbo retained the older K-Jetronic injection (rather than the L-Jetronic system used on the Carreras), but combined it with the DME ignition system. Fitted with a catalytic converter and oxygen sensor, it required unleaded petrol, but easily met Federal emissions requirements.

Sporting the same running gear as the European models - including the latest rear wheel and tyre combination - the return of the official Turbo stopped the grey import market overnight. Perhaps expectations were too high, though: at \$48,000 (plus a \$500 Gas Guzzler Tax), a number of contemporary articles questioned the value, especially when American driving conditions were taken into consideration.



*Interior of a 1986 model year Turbo for the UK market. Note the new headlight switch, now next to the ignition barrel, as the hazard switch was moved to the revised centre console, with new air conditioning switches below (if fitted). The rear screen heater switch also moved to the console (a front foglight switch took its previous position, with rear fogs becoming separate and taking the place vacated by the front fogs, if fitted - otherwise the hole was blanked off). A central locking switch was in the centre console, either below the hazard switch, or the air con controls, when fitted. There was a new heat sensor for the auto heating, located near the centre of the instrument panel for more precise control, otherwise heater controls were much the same. The glovebox knob was changed to match the switches and, naturally, a new ashtray was introduced to suit the revised bottom roll on the dash. As before, the horn pad was in the centre of the steering wheel, and the rearview mirror was the same as that first introduced on the SC series. The stereo, incidentally, is a Blaupunkt Toronto unit.*

Interestingly, when *Road & Track* brought together a 911 Carrera cabriolet, a 911 Turbo, a 928S, a 944, and a 944 Turbo, its staff voted the 911 Turbo the least attractive proposition, regardless of price. Yes, it was good for thrills, but it was a car the writers felt would be harder to live with than the front-engined, water-cooled models. The cabriolet didn't fare much

better, as it happens, beaten by both 944s, but offering fractionally better value than the 928S.

The 928S was \$50,000 at this time, with the cheapest car in the range the 944 at \$22,950. In-between these were the Carreras (the coupé was listed at \$31,950, the Targa \$33,450, and the cabriolet \$36,450).

To comply with the latest Federal regulations, US cars acquired a third brake light for 1986. Eventually, a total of 30,471 Porsches (all models) were sold in the States over the year, easily setting a new annual sales record; around 8000 of these were 911 variants, including no fewer than 1384 Turbos. This performance was all the more remarkable given the weaker dollar, the stronger DM, and the subsequent price increases this brought about during the period.

Meanwhile, in Britain, the Porsche stand at the 1985 Earls Court Show was truly spectacular, as a slant-nose Turbo (now called the Turbo Sport Equipment and a standard model in the PCGB price list rather than a special order), sat next to a cabriolet with Sport Equipment, the UK's name for the Turbo Look body and chassis package for the Carrera.

For 1986, the Carrera coupé and Targa were priced at £25,302 (central locking, a self-seek stereo, and passenger-side door mirror fitted as standard on all UK cars, although the latter remained an option in parts of Europe), the Carrera SE coupé and Targa at £34,044, the Carrera cabriolet at £26,917, and Carrera SE cabriolet at £35,659. The standard Turbo was £39,300, and the Turbo SE a whopping £73,985.

## **The 1987 model year**

When Porsche announced its 1987 model year line-up, yet another round of changes was outlined for the 911 series, including a new gearbox for the Carrera, a more powerful NA engine for the States, and a whole host of minor revisions.

The new five-speed gearbox was sourced from Getrag, the famous transmission specialist, and provided a better shift feel through a revised linkage and a stronger, Borg-Warner synchromesh system.

A different shift pattern was introduced at the same time. With four planes (reverse at the top left, then first-second and third-fourth in an 'H,' and fifth on a dog-leg to the right), this allowed the engineers the option of adding a



sixth speed in the future. Naturally, a new gearknob had to be made, which could be trimmed in leather to match the interior.

There were two versions: the G50/00 for 231bhp cars (with internal ratios of 3.500 on first, 2.059 on second, 1.409 on third, 1.074 on fourth, and 0.861 on fifth), and the G50/01 for cars with a catalytic converter. The latter had the same cogs on first through third, but fourth was listed at 1.125, with 0.889 on fifth. Both gearboxes had a 3.444:1 final-drive (a limited-slip differential was available as an option, incidentally), and featured a bigger clutch. At 240mm (9.4in.) it was the same diameter as that used in the Turbo, but came with hydraulic actuation for the first time.

Although the Getrag gearbox didn't need an oil cooler, parts of the suspension - including the rear torsion bar - had to be altered to accommodate the new transmission. As a result, the torsion bar cover design was changed, now visibly bigger. The brake fluid reservoir in the front compartment was also enlarged, after it had had the clutch hydraulics tacked on.

The 231bhp 930/20 engine continued for most of Europe, but the US, Canadian, and Japanese markets got a remapped 930/25 unit, reducing the power difference by quite a significant amount. With a 9.5:1 compression ratio, this latest version produced 217bhp DIN at 5900rpm, and 195lbft of torque at 4800rpm on unleaded fuel. All NA cars with a catalytic converter had a thermostatically-controlled fan on the front oil cooler.



*A 1987 model year Carrera cabriolet. The new Getrag gearbox required a larger hole and cover for rear torsion bar access (a useful identifying feature on cars from this period); 1987 marked the last year of the so-called 'telephone dial' alloys.*

All Carreras adopted a wider front tyre size (up to 195/65 VR15, although mounted on the same rim), and the rear reflector strip was revised on all 911s to include dual rear foglights (the 'Porsche' script was red on red, rather than black on red).

The cabriolet hood was powered as standard, and fully automatic, naturally calling for a redesign of the internal mechanism, although it was still necessary to unzip the rear screen in order not to crease it. The rear window was smaller than the original, and could no longer be removed (only zipped up or down).

By this time, the cabriolet hood had been given better seals (also adopted on the Targa, along with an improved locking mechanism). A matching tonneau cover was available for the cabriolet (rather than just black), and a new hardtop was listed. The latter was never popular, however, as the hood had to be removed in order to fit it, it was not interchangeable with earlier cars, and it was very costly (about \$9000 in the States).

Moving inside, a rectangular switch impression appeared next to the headlight switch. This was to mark the position of the headlight aim adjuster (standard in the UK and Italy, optional elsewhere, although, strangely, not available in the USA). Also, the toggle switch on the door capping, used to adjust the power mirrors, was larger than before.

In Germany, at the start of the 1987 season, the Carrera coupé was listed at DM 76,825. The Turbo, its engine and transmission carried over from the previous season, was now DM 125,000.

The Turbo had not been offered with an open body in the past due to worries about the torsional rigidity of the Targa-based shell combined with 300bhp. However, extensive testing proved the concerns were unfounded and turbocharged versions of the Targa and cabriolet were announced in Germany in February 1987.

Introduced at DM 132,000 for the Turbo Targa and DM 145,000 for the cabriolet, prices were quickly increased in April, taking the 911 range from DM 78,455 for the Carrera coupé to DM 147,850 for the turbocharged cabriolet.

A total of 33 slant-nose Turbos were delivered as special orders in early 1987, making a total of 237 units (nine Carreras had received the slant-nose treatment by this time, although none were built after 1987). But with the arrival of the open turbocharged models, the slant-nose became an official

option, given the numbers M505 for the USA (where it was known as the 930S), and M506 for the rest of the world.

The UK had listed the slant-nose coupé since the 1986 model year, of course, but the conversion was now available for all countries and on all body variants. Ironically, having been a leading light in getting the model accepted, British buyers had to wait until the 1988 season before receiving the open slant-nose models, and even had to wait for the open Turbos with a more traditional front-end.

### **The situation abroad**

As noted earlier, the US-spec Carrera engine had a remapped engine management system, taking power from 207bhp DIN (200 SAE) up to 217bhp DIN (214 SAE), and maximum torque output from 192lbft DIN (185 SAE) to 195lbft DIN (192 SAE). Combined with the Getrag gearbox, all-round performance was vastly improved.

The front of US-spec cars had a different appearance, as the headlights now looked much the same as those on European models, complete with H-5 bulbs and slimmer, painted trim rings. In the cockpit, a Blaupunkt 'Charleston' radio became standard on the Carrera, with the 'Reno' radio/cassette unit optional (the latter was standard on the Turbo).

From spring, the turbocharged open cars joined the line-up, and the slant-nose option on the Turbo also became a mainstream model. Known as the 930S, the conversion added an extra \$23,245 to the price of a regular Turbo.

At that time, the Carrera coupé had a \$38,500 sticker price, with the Targa at \$40,500, and the cabriolet at \$44,500. As for the Turbos, the coupé was listed at \$58,750, the Turbo Targa commanded \$69,300, and the turbocharged cabriolet a hefty \$76,500.

However, despite the much wider choice, US sales fell dramatically in 1987 - just 23,632 units were sold, almost 7000 less than the previous year. Pricing (there were no fewer than four price hikes in the year due to currency fluctuations), plus a doubtful world economy, were cited as reasons.

Meanwhile, there was some shuffling on the UK price lists, which now featured 11 distinct 911 models, each coming with power seats and headlight beam adjustment as standard. The Carrera Sport signalled a return of the traditional Sport package, with last year's SE becoming known as the Super Sport; the Turbo Sport had the slant-nose body.

For 1987, the Carrera coupé and Targa were listed at £32,849, the Carrera Sport coupé and Targa were £35,086, the Carrera Super Sport coupé and Targa were £44,027, the Carrera cabriolet was £35,995, the Carrera Sport cabriolet was £38,598, the Carrera Super Sport cabriolet was £47,172, the strict 911 Turbo was £49,428, and the 911 Turbo Sport a massive £90,753.

Meanwhile, by the end of the 1987 model year, over 250,000 six-cylinder 911s had been built, along with 32,399 four-cylinder 912s. In all, including prototypes, 284,803 cars from the 911 series had been produced, and there was still a lot of life in it yet ...

### **The 959 project**

The 959 had been announced at the 1983 Frankfurt Show (as the 'Gruppe B'), but it was not until September 1986 that deliveries of the first 250 (the figure was upped from the original 200) production cars were scheduled. Ironically, the works rally raid entries had come to an end following a convincing victory on the 1986 Paris-Dakar, Group B rallying had ended (the 1987 season was campaigned by Group A machines) and, although the Type 961 was being developed, most of the serious, high-budget racing teams were competing in Group C.

Anyway, with a bore and stroke of 95 x 67mm, the flat-six had a capacity of 2848cc. With an 8.0:1 compression ratio, Bosch MP-Jetronic fuel injection, and twin, water-cooled sequential turbos (a unique feature for a road car at that time) and intercoolers, the 959 engine developed 450bhp at 6500rpm.

The six-speed gearbox transferred power to a computer-controlled, variable split, four-wheel drive system with four switchable modes. This virtually killed the handling traits associated with the 911 since birth - the throttle could be closed during cornering with only a trace of oversteer as a consequence instead of a vicious swing of the tail. Suspension was via double wishbones all-round, with a computer-controlled ride height system acting on a pair of gas dampers in each corner.

The body - more swoopy and aerodynamic than that of the 911 - had a steel monocoque, but the bolt-on panels were either aluminium, polyurethane, carbonfibre or Kevlar. With a bonded-in windscreen and no rain gutters, it had a Cd figure of just 0.31 with zero lift, and, thanks to the lightweight

materials employed, the whole thing weighed in at 1450kg (3190lb) in standard trim, or 1350kg (2970lb) in ultra rare Sport guise.

The Sport was lighter, thanks to deletion of the automatic ride height system, air conditioning, rear seats, some of the soundproofing, and the passenger-side door mirror, and by replacing the standard front seats with lightweight versions. Otherwise, the interior would have been quite familiar to the driver of a 1986 911, apart from the 340kph speedo and torque split indicator in place of the clock.

In its review of the 959, *MotorSport* made an interesting observation: “The Porsche 959 is an enormously competent car which represents great investment, both in terms of engineering expertise and customer investment. Were all this to be done for merely 250 customers it would, unquestionably, have been a folly of the grandest proportions, but of course that is not Porsche’s way. This is the pot pourri of technical exercises that will be applied to the range over the next ten years. Nothing goes to waste at Weissach ...”



*The 959 in action on the gruelling Paris-Dakar rally raid.*



*The 959 at speed. This is one of the early press cars.*





*Three pictures from the 1988 catalogue showing the Turbo cabriolet (with hood down and erected), and the Turbo Targa.*



*The 1988 model year Carrera in Targa guise, seen here sporting 15-inch Fuchs alloy wheels with white centres.*



*Dashboard of the Carrera Club Sport for the European mainland. Note the rectangular impression next to the lights switch, which marked where the headlamp levelling switch was fitted in some markets for 1987. (1987 models also acquired a new symbol on the cigarette lighter, incidentally.) Note also the unique markings on the tachometer, red-lined at 6600rpm on the CS model instead of the usual 6200.*



*The Club Sport in action. It is just possible to make out the optional decal on the nearside wing on this German car (some markets used the same*



*sticker, whilst others had graphics on the doors and luggage compartment lid).*



*Rear of the Club Sport. Most examples were finished in white, and all but one were fixed-head coupés. Note the lack of rear badging on the CS model.*

## **The 1988 season**

The 930/20 and 930/25 continued as the main Carrera power units, the former for Europe, with the latter catering for the US, Canadian, Australian, and Japanese markets (Sweden still used the 231bhp 930/26 engine with an air pump and extra noise reduction equipment, but no catalytic converter). As before, the 930/20 engine was linked to the Getrag G50/00 five-speed gearbox, while the 930/25 was matched up with the G50/01 transmission; a limited-slip differential was available as an option via order number M220.

The biggest change for 1988 was adoption of Fuchs forged alloys as standard on the Carrera, meaning the end of the so-called ‘telephone dial’ wheels for the 911. These had a 15-inch rim (shod with the familiar 195/65 VR-rated rubber at the front, and 215/60s at the rear), although many buyers opted for the 16-inch diameter rims with fatter tyres. The rim on the spacesaver spare was available in steel or aluminium alloy (it was usually finished in silver, although some countries - the UK included - required it to be painted red); the compressor used to inflate the spare tyre was changed at the same time, supplied in its own carrying case.

Porsche being Porsche, the wheels were far from the only change. While already standard in some markets, all European Carreras now came with a passenger-side mirror (M261), headlight washers (M288), heavy duty screen wash (M286), and central locking (M341), plus a full range of power

adjustment on the driver's and passenger seat (including additional lumbar support), and a leather gearknob and gearshift gaiter as standard. Soft, gathered leather trim became possible (option code M980), and cars could be pre-wired ready to accept a carphone (M195).

Turbos got heated seats (optional on the NA models), plus eight speakers (although only six were fitted on the cabriolet due to space restrictions). This set-up was an option on the Carrera, which usually came with just four speakers. Home market buyers had the choice of the Blaupunkt 'Ludwigsburg,' 'Bremen' or 'Berlin' stereos; America continued with the 'Charleston' and 'Reno' pairing, while other markets - the UK included - listed the 'Boston' and 'Toronto' units. An Alpine CD player was available as an option (M691).

All parts, such as clutch and brake linings, seals etc., were asbestos-free. A manual crank was supplied for the windows in case of power failure, with the stud accessed behind the smallest of the door speakers. In addition, the interior light on the Targa was eventually moved from the roll-over bar to between the sunvisors, as it had been on the cabriolet since its introduction.

### ***Standard coachwork colours (1988)***

*Black, Grand Prix White, Guards Red, Carmine Red, Caramel Beige, Summer Yellow, Turquoise, and Dark Blue.*

### ***Special coachwork colours (1988)***

*Silver Metallic, Cassis Red Metallic, Nougat Brown Metallic, Espresso Brown Metallic, Lagoon Green Metallic, Granite Green Metallic, Diamond Blue Metallic, Venetian Blue Metallic, and Marine Blue Metallic.*

### ***Cabriolet top colours (1988)***

*Black, Burgundy, Mahogany, Dark Brown, Grey-Green, or Dark Blue.*

### ***Trim colours & materials (1988)***

*Black, Linen Grey, Burgundy, Marine Blue, Mahogany or Grey-Green vinyl, with Black, Linen Grey, Burgundy, Marine Blue, Mahogany or Grey-Green leather as an option; special leathers included Lipstick Red, Silver-Grey or Champagne. Seat inserts came in matching leather or cloth (striped or with Porsche script), or in pinstripe velour. Carpets came in Black, Grey, Burgundy, Blue, Brown or Grey-Green velour pile (with*

*Silver-Grey, Red or Champagne as an option). The customer could also supply a sample to have unique leather trim and carpet.*

Chancellor Helmut Kohl was re-elected in early 1987, although unemployment was becoming a serious problem in Germany, rising from 4 per cent to 10 per cent over the decade. Despite this, Porsche prices continued to rise, and were in the region of DM 6000 up on 1987 model year levels at the start of the season, before another increase in the spring of 1988. This price rise took the Carrera coupé up to DM 83,575, while the Turbo coupé was listed at DM 133,500 (the turbocharged cabriolet commanded a massive DM 155,000). Part of these increases was doubtless to cover the cost of a new body plant, which opened at Zuffenhausen in 1988; it cost the company DM 125,000,000. Still, although 959 production was due to end in mid-1988, Schutz expected Porsche prices to continue climbing rather than decrease: the marque was going even further upmarket. Daily production at Zuffenhausen was around 102 cars a day at the start of the 1988 model year (a good 75 per cent of these were 911s), with NSU's old Neckarsulm plant producing the four-cylinder 924s and 944s.

### **The Club Sport**

By now, the 911 range was very extensive, with standard and Turbo Look versions of the three main body types, slant-nose models, and a choice of two extremely refined powerplants, which were available with up to 330bhp in some cases. However, prices had increased dramatically over the years, and some of the raw appeal of the original models had been lost. Enter the Club Sport.

In the November 1987 issue of *Road & Track*, the news from Europe section reported: "Porsche has at last done something to stop the ever-increasing weight of its cars. Now, 911 fans have the choice between a fully equipped Carrera or a Club Sport. The fully equipped model comes complete with electric window lifts, electrically adjustable seats and an automatic heating system (to which air conditioning can be added). The Carrera Club Sport comes without rear seats, without power-adjustable front seats, without electric window lifts, with highly simplified door trim (and no lid to the side boxes), and even without a passenger sunvisor, and weighs about 200lb less.

“Almost all soundproofing material has been left out, resulting in a car that is at least as noisy as a 911SC/RS. It is back to the noise levels of the earliest 911 models with 91 decibels measured in the cockpit at 125mph, compared to 82 in the current standard Carrera. Because decibels are on a logarithmic scale, this nine-point numeric differential makes an enormous subjective difference.

“The Club Sport will easily out-accelerate a normal Carrera, taking half a second less to 62mph (in 5.9 seconds), 1.1 seconds less to 100 (14.2), and 0.4 seconds less for the quarter-mile (14.1).

“But surely, it had to be done, even if only for those few prepared to accept some sacrifice for the sake of pure performance and fun, those for whom the 911 was originally designed.”

An engineer from Weissach explained: “We feel that the true character of the rear-engined evergreen has lately been diluted. Air conditioning, leather seats, power windows, door locks, and other goodies may have enhanced the car’s boulevard appeal, but at the same time the extra hardware has added weight, thus robbing the 911 of some of its zest and agility. The Club Sport model is a back to basics machine which tries to recapture the spirit of the unforgettable 1973 RS Carrera.”

According to the factory, although the Club Sport was announced in the July 1987 issue of *Christophorus*, a total of just 11 Club Sport models were built in the 1987 MY (H-Serie) run; the car was not officially available until the 1988 season, introduced to the public at the 1987 Frankfurt Show.

The so-called Club Sport model was a Carrera specified with option M637, which effectively reduced weight by deleting a number of items. Without the optional decals, only the missing sunroof (an option in some countries, anyway), foglights, and the lack of headlight washers and a rear wiper gave a clue to the car’s identity from the outside. Simplified bumpers, a rear reflective panel minus the foglight, and a manually-adjusted door mirror were proposed in a bid to reduce weight still further, but these ideas were later rejected for one reason or another.

Moving inside offered much more obvious clues. The Club Sport had a much simpler interior, thanks to deletion of the rear seats (a carpeted parcel shelf with storage boxes underneath took their place), air conditioning and/or automatic heating system (signalling the return of a pair of heater levers by the handbrake), and dropping of power windows, central locking, the

passenger-side sunvisor, coat hooks, the door storage box lids, and audio equipment (a radio with two door speakers was available as an option, otherwise grilles covered the holes where speakers would normally be). A locking front compartment release was now standard on all cars, not just open models, but was left off the Club Sport, as was the glovebox lock. There was simplified trim on the rear compartment sides and firewall; Sport seatbacks, with their heavy side bolsters, were added to basic base units without power adjustment.

There were thinner carpets, no lights in the front compartment or engine bay, no bumper recoil pistons, and a simpler wiring harness. Added to this, the reduced soundproofing (only that around the engine and in the roof stayed), and undersealing all helped to get the machine's weight down by around 70kg (155lb). However, it must be said that many cars - and particularly those in the UK - had underseal applied (otherwise the body warranty was reduced to just two years) and this, combined with an alarm system, significantly reduced the difference in weight between the CS model and the standard Carrera.

Mechanically, the Club Sport had a higher rev limit (upped to 6840rpm, thanks to a new engine management chip and hollow intake valves), although power output remained at 231bhp. In line with the increase in maximum engine revolutions, the red line was marked at 6600rpm on the CS, rather than the usual 6200. Up-rated engine mounts were used, and there was a short-throw gearshift (formally available as an option). To complete the picture, the Club Sport adopted harder Bilstein gas-filled sport shocks to improve roll resistance. There were no other mechanical changes.

Although there wasn't a badge on the engine lid, fancy graphics, aping those of earlier lightweight 911s, were listed as an option. Two styles were available: a grey 'Club Sport' decal on the left front wing, or a red 'Carrera CS' version for the doors (the latter usually came with a small 'CS' sticker on the nearside leading edge of the front lid).

Fuchs alloy wheels were standard, with the centres finished in either black, white, or red to match the decals. 6J x 15 fronts (shod with Pirelli P6 195/65 VR-rated rubber) and 7J x 15 rears (with 215/60 VRs) were standard for 1988, although many cars were fitted with the 7J x 16 front and 8J x 16 rear combination (with, respectively, Dunlop D40 205/55 and 225/50 VR tyres). An alloy spacesaver rim - identified by holes on the inner face rather

than slots, and usually reserved for the Turbo and Turbo Look cars - was supplied as standard equipment, complete with an electric compressor to inflate the temporary tyre, although the locking wheelnuts were left off to save a few grammes.

After 11 cars were built in the 1987 model year, a total of 338 CS models were made over the official two year run, with roughly 50 going to UK. Most were produced in the 1988 season (148 ROW, 82 USA), although 1989 saw 90 ROW deliveries, and seven to the States before sales came to an end in autumn that year. Although virtually all Club Sport models were finished in Grand Prix White, it is known that some were produced in different colours, and at least one Targa was built to Club Sport specification.

That so few Club Sports were built probably reflects the state of the market at that time. Porsche had concluded, even in the late 1970s, that the average Porsche buyer of 1977 was quite different to that of 1965. The SC series introduced more refinement to the rear-engined line, and, judging by the sales performance of the Club Sport, it was probably the right direction for the Stuttgart company to take, at least from a marketing point of view.

## **The American market**

A big price increase hurt sales in the States, although the stock market crash also had a lot to do with this, and its long-term effects would be felt for many years to come.

For some time, a six-speed gearbox and auto suspension had been predicted for the 1988 model year. In reality, apart from the detail changes introduced in Germany, and the arrival of the Club Sport, there was little difference between a 1987 car and one from the next season.

Regardless of this, the 911 Carrera was included in *Road & Track's* 'Ten Best Cars In The World' listing, as was the 928 S4. The same magazine also compared a 911 cabriolet with the Cadillac Allante, Mercedes-Benz 560SL, Ferrari 328GTS, and Chevrolet Corvette. For daily use, the Porsche won easily, while for high days and holidays, the 911 placed just behind the Ferrari, but still a country mile ahead of the others in the group.



*Catalogue picture of the US-spec Carrera for 1988. Note the power seat switches, and the tiny horn symbol added to the steering wheel centre pad on American cars.*



*The American slant-nose Turbo in cabriolet guise.*



*Three-point rear seatbelts were adopted for the 1988 season.*

For 1988, although the steering wheel was carried over, a horn symbol appeared in the lower part of the centre pad on US cars, and three-point rear seatbelts were adopted, replacing the lap belt used previously. In addition, the central brake light was situated at the top of the rear screen on coupé and Targa models, regardless of whether or not a spoiler was fitted.

The Carrera coupé was listed at \$45,895, with the Targa costing \$48,230, and the Convertible a hefty \$52,895. American Carreras came standard with 15-inch diameter Fuchs alloys, air conditioning, a 'Charleston' radio/cassette with four speakers and balance control, part leather trim on the seats (complete with power height adjustment), leather trim on the steering wheel, electric windows with tinted glass, a heated rear window (except the cabriolet), central locking, power mirrors with heaters, and front foglights.

Options for the Carrera included a limited-slip differential (\$823), 16-inch wheels and tyres (\$748), sport shocks (\$297), shortened gearshift travel (\$1016), an alarm (\$260), heavy duty washers (\$289), an upgraded audio system (\$332, plus an extra \$153 for the 'Reno' stereo), cruise control (\$439), automatic climate control (\$603), sport seats (\$276 each), full power seat adjustment (\$470 per seat), leather trim with vinyl beltline (\$1703, or \$1444 on the cabriolet), interior with variations of standard trim (\$2652, or \$2016 on the cabriolet), leather/cloth trim (\$1279), leather headlining (\$765), cloth door trim panels (\$150), a power sunroof (\$1307), power hood for the cabriolet (\$2524), front and rear spoilers (\$1780), a rear wiper



(\$302), and \$13,970 for the Turbo Look package (or \$12,799 without spoilers).

Options shared with the turbocharged car included custom trim (\$3765 on the NA coupé and Targa, \$2997 on the NA cabriolet, or \$1469 on the Turbo), soft leather (\$332 extra), leather on all knobs, switches, levers, gaiters, grilles, seat piping, horn pad, and the steering column casing, a raised hub on the steering wheel (\$65), three-spoke steering wheel (\$408, or more if leather horn pad and enamelled Porsche crest specified), wood dash trim (\$3832), leather dash trim (\$1283), lumbar adjustment (\$515 per seat), entrance panels (\$2192), floor mats (\$504), black velour trim in the luggage compartment (\$168), full carpet in luggage compartment to match interior (\$1464), a CD player (\$900), a passenger-side vanity mirror (\$685), centre console variations other than standard, an outside temperature gauge (\$480), voltmeter (\$210), a cassette storage box (\$1090), metallic paint (\$855, but no charge on the Turbo), special paint (around \$2000), white wheel centres (\$295), air ducts in the rear wings (\$5360), mobile phone preparation (\$1617), and a tonneau cover for the cabriolet (\$906, or \$2136 in leather).

The Turbo continued with all three body variations (listed at \$68,670, \$77,065, and \$85,060, respectively), as did the slant-nose option, priced at \$29,559 over and above the cost of the base car. The Turbo came with all the Carrera goodies plus 16-inch alloys, front and rear spoilers, leather trimmed seats with full power adjustment, automatic heating control, an eight-speaker 'Reno' stereo (although the cabriolet came with six speakers), an alarm system, headlight washers, a heavy duty windscreen washer, and a rear wiper for the coupé and Targa. In addition, coupés came with a sunroof, and the cabriolet had a power top. Options specifically for the Turbo included gravel protection (\$65, although free in 1989), and deletion of the sunroof (no charge).

As noted earlier, the Club Sport did not sell well. Towards the end of the 1988 season, the CS was priced at \$45,895 in America - the same as a standard Carrera, despite the lack of equipment and, due to the same gearing, an identical top speed (quoted at 149mph/238kph). This was doubtless part of the problem, as only a real diehard enthusiast could see the point in going without so many of the luxuries that were becoming expected on a 911. Factor in the fact that a fully loaded Chevrolet Corvette Z51 was only

\$29,480, and it's obvious why the Club Sport was never that popular in States.

But surely the 911 could outperform the Z51? *Car & Driver* set out to prove which was the best in a test that took in the race track, an autocross course, and public roads. It noted: "The 911 showed its whaletail to the Vette in the 0-60 sprint, beating the Chevy 5.6 seconds to 6.0. It remained ahead at the quarter-mile stripe, posting a 13.9 second elapsed time at 99mph, versus the Vette's 14.2 second, 98mph run. Only at the top end did the Vette pull ahead, reaching 152mph - 5mph faster than the 911.

"The 911 went on to nip the Vette in the slalom run, [but] the Vette countered the Porsche's slalom victory with a 172 foot stop from 70mph, 15 feet shorter than the 911 could manage.

"If autocrossing were a contest of fun alone, we'd have another draw on our hands. But it's not. Speed counts, too, and on that score the Vette is the clear winner, posting a 53.1 second time through our course, versus the 911's 54.3."

At Willow Springs, the more forgiving chassis of the Corvette made a big difference. The twitchy 911 posted a lap of 1:44.2, but this was a long way off the Chevrolet's best time of 1:41.0. Meanwhile, on the road: "Driven according to the slow-in, out-fast philosophy, the 911 was agile, communicated well, and felt safe. No tail fakes, no untoward moves. Its unassisted steering was an upper-body workout but was pleasantly direct. Its brakes were sure. Treated with respect, the 911 never bit." However, "Not only was the Vette easier to drive quickly, but its power steering and air conditioning made it more comfortable."

The magazine concluded: "We have arrived at the moment of truth, and truth does not favour the Club Sport. Don't misunderstand: this Porsche is a delightful automobile, the nicest 911 we've ever driven. It has a sweet, mechanical disposition and a rev-me-forever engine. Its exhaust note is an exotic cross between the world's largest Hoover and a Group C race car. But when you reach for the air conditioner, it's not there. When you want some music, it's not there. When you want to pop open the sunroof, it's not there. The Club Sport is an interesting experiment, but it pales under the harsh light of common sense. Its performance advantage over the standard Carrera is anything but clear, so what's the point? Only an inside-out Porsche nutball would pony up the price of a Carrera for a 911 lacking major comfort items."

But this was the ‘cars as investments’ era, and, as *Road & Track* pointed out: “The \$46,000 price tag may seem like a bargain one day.”

## **The UK in 1988**

At least when the Club Sport was introduced to the UK at £34,390 it was the cheapest 911, undercutting the basic Carrera coupé price by around £1200. The Carrera coupé was £35,575, as was the Targa, while the 3.2 litre cabriolet was £39,200; the Sport package added £1745 to each model, and the Super Sport, also available for the three body styles, cost £11,650 over and above the base car.

*Autocar* looked at the Club Sport in May 1988, and enjoyed the car’s “slingshot acceleration and charisma,” but was less enamoured of the “Spartan interior and unforgiving handling.” As the testers noted: “The 911 has always demanded respect from the driver and the CS is no exception. Its cornering capabilities are phenomenal but it’s a car that won’t suffer fools gladly.” They thought the seats offered fine support, with the driving position marred only by the offset pedal layout, and concluded: “This is a real thoroughbred and an instant classic.”

September 1987 saw the first listing of the Turbo Targa and Turbo cabriolet in the United Kingdom, priced at £54,363 and £59,479 respectively (the Targa was the same price as the coupé). One had to wonder how such expensive machines would sell, as, up until 1988, only 20 slant-nose Turbos had been sold in Britain - and all of them were fixed-head coupés.

The first Turbo cabriolet with Sport Equipment (the UK’s nomenclature for the slant-nose) to arrive in Britain was a PCGB press car, with a rather special £4858 paint job selected from the Porsche Exclusive catalogue. Priced at a whopping £102,781 on introduction (£5116 more than the coupé and Targa, and without optional extras, of course, such as the paint scheme featured on the press car), Darren Styles tried the first Turbo cabriolet with Sport Equipment in the country for *World Sportscars*, and said: “It would be churlish to comment overlong on the price tag of this particular example [of the 911 breed]; there is no denying £112,000 is ‘loadsamoney’ and could buy an awful lot of lesser possessions, but without doubt little else would offer such continued pleasure. Yes, there are lesser cars, yes, there are lesser Porsches and yes, there are even lesser Porsche Turbos. But lesser is what they are. Exclusivity, style, class, performance ... the virtues of this Candy

Apple Glory Red chariot roll on. If ownership is beyond you, then ignore them all and dismiss the whole episode as frivolous and best left to the poseur. If it isn't, then I suspect the attraction could well be fatal ...”



*Part of Porsche's headquarters in the Zuffenhausen area of Stuttgart, viewed from Porschestrasse (the works straddle both sides of the road). All looked calm from the outside, but inside, trouble was brewing ...*

This car had a three-spoke steering wheel finished in black leather, with a gold Porsche crest in the centre. This elegant wheel had been a feature on many of the slant-nose 911s, available through the Porsche Exclusive catalogue.

Although the range remained the same, there was a price increase in the spring of 1988, taking the entry level 911 up to £37,086 and the top model up to £107,143.

Incidentally, the UK, served by 31 dealers, was one of the few countries left that still shied away from the catalytic converter; around 85 per cent of Porsches leaving the line were equipped with one by this time.

### **Boardroom drama**

In America, sales of all German cars suffered in 1987. Although figures for the 924S, for instance, were down by only 3 per cent compared with 1986, this was actually a disaster, as the model was sold for only half of 1986. The main reason for this poor showing was the strong deutschmark, the value of which had increased by 23 per cent against the dollar in just 12 months.

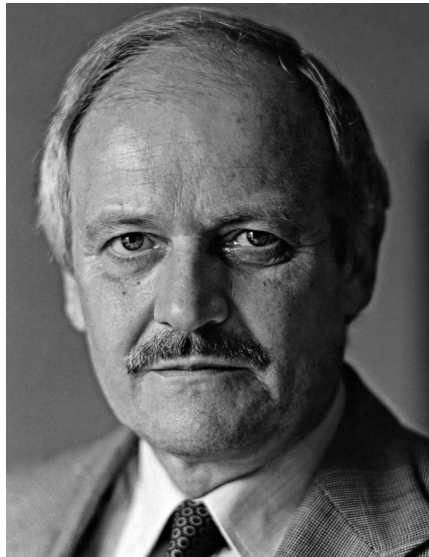
At the end of 1987, in the wake of dwindling profits (although the currencies had shifted 23 per cent, prices in the States would only sustain a

14 per cent increase), a press release stated: “The Supervisory Board of Dr Ing. h.c. F. Porsche AG has announced that Mr Peter W. Schutz and Porsche AG have mutually agreed that Mr Schutz will resign from his position as Chairman of the Executive Board, effective 31 December 1987.

“Mr Heinz Branitzki, Deputy Chairman of the Executive Board since 1976, was elected by the Supervisory Board yesterday [16 December] to be the new Chairman of the Executive Board as of 1 January 1988.”

Schutz was determined to save the 911, which he did very successfully, but he also allowed the company to become almost reliant on the American market. Although the US market had always been immensely important, Ferry Porsche had quite deliberately kept its share of production under 50 per cent, as he didn't want to rely too heavily on sales in one country. Over 60 per cent of production was destined for America by the end of Schutz's tenure, and, with an unfavourable exchange rate, this was a disastrous situation which happened to coincide with the stock market crash, an additional problem for the luxury car maker.

As for the state of world economy, no-one could blame Schutz for that; it's worth noting that the events of October 1987, were twice as bad, at least in percentage terms, of those of the Wall Street Crash of the late 1920s. And we all know what that led to ...



*The 1972 shake-up of Porsche management resulted in this man, Heinz Branitzki, being put in charge of the company's business and finance administration. Having joined the Stuttgart firm in 1965 from Carl Zeiss,*

*following Schutz's departure, he was appointed Chairman in 1988; Walter Gnauert took over as the new head of finance.*

The future looked grim, but Ferry Porsche was positive there was still a market for the Stuttgart thoroughbreds. Ferry Porsche was also fair when it came to reviewing Schutz's performance. In his wonderful book, *Cars Are My Life*, he noted: "Of course Peter Schutz rendered very valuable services to the company. For example, he halted the decline of the 911 by building a cabriolet and remained adamant that the 911 should not simply be allowed to die, and I say quite openly that we would be in a very bad position today if the 911 had been discontinued. I am absolutely clear in my mind about that. On the other hand, however, he did not develop a range for the future, preferring to rely totally on the 911 and 928."

Interestingly, rumours of Schutz's departure had been circulating for some time, and in some quarters Ferdinand Piech was being suggested as a possible replacement. Ironically, despite his close links with Porsche through previous experience and family bloodlines (as the son of Ferry Porsche's sister), Piech was officially made Chairman of Audi on the same day as Branitzki took up his new position.

### **The Silver Anniversary model**

In 1988, Porsche released an 875-off limited edition to celebrate 25 years of the 911. This car was finished in Diamond Blue Metallic with matching centres on the Fuchs alloy wheels. Inside was dark blue leather trim (slightly ruffled and with Ferry Porsche's signature on the front seat headrests), and matching carpets. There was also a plaque on the glovebox lid featuring 26 dates (1963 to 1988) at the top and bottom, the Porsche badge next to Ferry Porsche's signature, and suitable script (which read *Jubilaums Sonderserie 25 Jahre Porsche 911*) to indicate that the vehicle was special.

Based on the Carrera with a short-throw gearshift, the 'Celebration' or 'Silver Anniversary' model was available in all three body styles. Of the 875 cars built, 300 went to America, made up of 120 coupés, 80 Targas, and 100 cabriolets. 250 cars stayed in Germany, 50 were shipped to the UK, and the rest were scattered throughout Porsche's other export markets.

For an anniversary year, however, there was little to celebrate. After a 23 per cent decline in US sales in 1987, sales fell another 32 per cent the

following year to just 15,737 units. Interestingly, it was the four-cylinder models that suffered the biggest drop in demand, while 928 sales held steady (at least in percentage terms), and the 911 accounted for a greater share of sales, up from 27 per cent to 37 per cent of the total.

As part of a major management shake-up in the US operation, Brian Bowler was given the post of PCNA's new President, but in reality John Cook (the ex-BMW of North America boss who had headed the Reno office since its inception) could hardly be blamed for the poor exchange rates and the general downturn in world economy.

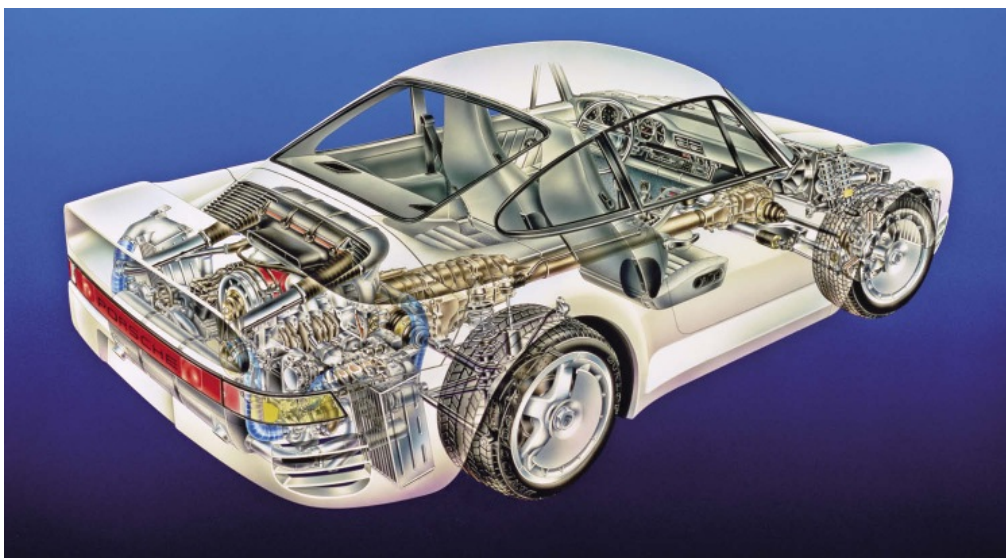
The outlook was bleak in the UK, too: following Black Monday and the subsequent demise of the Yuppie, the question was, how much longer could Porsche trade on its name? Enthusiasts of the marque would always provide the Stuttgart manufacturer with a strong customer base, but the average Yuppie (with inflated income acquired through share dealing at the height of the boom) just wanted a status symbol with which to impress friends. When the market crashed, the demise of the Yuppie was as swift as a 911 Turbo. The end of the breed was no great loss to society, but the aftereffects - a sharp downturn in sales - were sorely felt at Porsche and BMW dealerships.

### **959 update & a new 4WD car**

As noted earlier, deliveries of the 959 supercar began at the start of the 1987 model year, much later than originally expected, although the model still managed to generate a great deal of enthusiasm in the press. Also, more were built than originally forecast: including the prototypes, a total of 283 959s had been produced by the time the last one rolled out of the Zuffenhausen workshops in mid-1988, most of them standard cars, as opposed to the lighter Sport specification, and most of them built in 1987 (chassis numbers account for 254 being constructed that year).

The people at the EPA and DoT ensured the 959 would not be sold in the States in its original guise. But instead of bowing to the legislators, the men at Zuffenhausen decided it was not worth going to the trouble of certifying the model, especially in view of demand elsewhere, which was enough to guarantee homologation. A few did make it to America, however, but only one was ever officially shipped, and that was for display in a museum. It could not be used on the road.

The 959 continued to be listed for some time after production ended. Indeed, its picture and specification appeared in the UK's 1988 Motor Show catalogue - the real thing, finished in metallic grey, was on the PCGB stand. It was a magnificent era for sports car fans, especially wealthy ones. In addition to the 450bhp 959, there was the limited edition Aston Martin Zagato, and soon after the Jaguar XJ220 made its debut at the 1988 Motor Show at the NEC. This inspired McLaren to up the ante in due course, and all manner of sensible supercars appeared at the end of the 1980s and early 1990s - the Z32-type Nissan 300ZX, Honda NSX, and Mazda's FD-style RX-7 being perfect examples of the new breed. Meanwhile, development of the 911 - the epitome of the practical supercar - continued ...



*Cutaway drawing of the high-tech 959*

In its issue dated 4 May 1988, *Autocar* published a photograph of a new Carrera and its 4WD drivetrain, and noted: "Porsche has released official pictures of its new all-wheel drive 911. The car, which is called the 911 Carrera 4, will be launched this August, with sales starting in September.

"Porsche says the price will be about DM 100,000 to DM 120,000 (£32,000 to £38,000) in Germany. UK prices are likely to be significantly higher. A limited statement from Porsche confirms the specification exclusively revealed in *Autocar* four weeks ago. The Carrera 4 has an all-wheel drive system with a fixed 75% rear torque split. The flat-six engine



has been enlarged to 3.6 litres and equipped with a twin spark system to produce 250bhp.

“Front suspension is all new to incorporate both anti-lock brakes and power steering. The small spoiler above the engine retracts flush with the body at low speeds, and the new softer shape is complemented by deep rounded bumpers front and rear, and slight sill extensions.

“The interior has been updated and ventilation improved. Airbags will be fitted in the US. The release also hints at further development of the Carrera 4, and Porsche’s next model is known to be a replacement for the 911 Turbo, which will fall between the Carrera 4 and the 959.”



*The first official pictures of the four-wheel drive Carrera 4.*



*Another piece of Japanese Kremer advertising. This is from Art Garage of Tokyo, and lists a selection of the many parts available from the German tuners. Other big name tuning companies from this time included Gemballa, Strosek, Rinspeed, Dage Sport, Koenig, and Ruf. The narrow-bodied, five-speed Ruf Turbo was one of the fastest cars in the world, breaking through the standing-quarter in 12.5 seconds, before going on to a timed top speed of 187mph (299kph).*



*Dr Ulrich Bez was brought into the Porsche fold by Branitzki in anticipation of Bott's retirement. His reign at Weissach was to be short-lived, however.*

*World Sportscars* added: "Currently code numbered 964, the four-wheel drive 911 derivative on the horizon is to be known as the Carrera 4 when it becomes available in right-hand drive form in summer 1989. Porsche are at pains to advise that this model will be in addition to the current 911 range, and that they have no intentions of dropping any existing models from the catalogue."

As noted earlier, 1988 witnessed the 25th anniversary of the 911, and the Type 964 Carrera 4 was the perfect way to mark the occasion. According to Ferry Porsche, the Carrera 4 was basically a variant of the 959. The 959 road car gave the Porsche engineers a great deal of useful data, and the many discoveries and refinements brought about by the project were then incorporated into the new four-wheel drive model.

The 4WD system incorporated a Ferguson viscous-coupling, epicyclic central differential (with rearward biased distribution, meaning that the character of the 911 essentially remained the same), and, thanks to a completely new chassis, ABS braking was offered for the first time on the 911 range. The extra weight was dealt with by more power, with 250bhp

delivered by a brand new 3.6 litre, normally-aspirated flat-six, and better aerodynamics. The latest body was not only cleaner through the air, largely due to adoption of a retractable rear spoiler, it was also easier and cheaper to build, offsetting some of the costs of the high technology components.

The Carrera 4 went on sale alongside the other 911s for the 1989 season, but the whole rear-engined range duly adopted this facelifted body and new engine over the next year or so, receiving the Type 964 designation along the way. All of the 3.6 litre cars, including those sold in the 1989 model year, are covered in detail in the next chapter.

### **Matters of the moment**

The 924S disappeared at the end of the 1988 season. Was another ‘cheap’ model the way forward? A Porsche official noted: “It’s a vicious circle. We want to build an affordable sports car. That means big volume and lots of proprietary parts. But as soon as you do that, the quality and prestige of the products suffer. We learned our lesson with the old Volks-Porsche 914, and with the original 924. Today, the management won’t accept any car unless it’s 100 per cent Porsche.”

Although prototypes were built, ultimately, the amount of investment needed to get such a project off the ground - not just in terms of R&D, but also a new factory to handle the level of production necessary to make it viable - simply didn’t make commercial sense. A deciding factor was the strong deutschmark; having been around 3.5 DM to \$1 at the start of 1985, three years later it stood at less than 1.7 DM. In this price-sensitive end of the market, too many compromises would have to be made to keep costs down. In 1988 official confirmation was received that plans to produce a two-seater costing less than \$20,000 had been dropped, at least as far as production in Germany was concerned.

As the deutschmark continued to strengthen, Porsche decided to adopt a policy of going even more upmarket; unfortunately, in order to see any kind of profit on cheaper models, prices in export markets had risen to such an extent that the cars were rendered uncompetitive. Although, for the vast majority, the decision to concentrate on the top end of the market took away the chance to realize a dream of Porsche ownership, in reality, it was the only logical answer.

Helmuth Bott, Porsche's technical supremo, retired in September 1988. Professor Bott was replaced as Technical Director by Dr Ulrich Bez (Bez had been a Porsche employee in the past, but had spent much of his recent career with BMW). At the same time, while Tony Lapine remained head of styling, it was announced that Horst Marchart had been made responsible for road car development, Wolfhelm Gorissen (Bott's former assistant) now dealt with outside consultancy work, and Rainer Frock was put in charge of the Weissach facility.

### **Competition news**

The WSPC was dominated by Group C machinery, so there were no 911s at Le Mans in 1988 (at least the Joest Porsche team came third to keep the marque in the public eye). In America, although Porsche won the IMSA GTP title (its top driver came third), the German manufacturer failed to make an impact in the SCCA Escort Trans-Am championship. In addition, the Indycar project was not a success - a fourth place in Nazareth was the best result in the March-Porsche's first full season.

The 911 made no impression whatsoever in the rally arena. The modern WRC circus was a different world, compared to that of the 1960s and 1970s when the rear-engined model was still able to shine. Even the European Rally Championship and Middle East Championship failed to provide any trophies for the Stuttgart marque. Porsche regular, Bernard Beguin, moved to the Prodrive BMW camp, Robert Droogmans teamed up with Ford, and former MEC champion, Saeed Al Hajri, campaigned an Audi Quattro. Rallying was now a specialized, big budget sport, with little room for the gifted amateur in a virtually standard road car.

In the 1989 World Sports-Prototype Championship, the Joest and Brun teams trailed the Sauber-Mercedes outfit. In America, the 911 drivers kept a low profile in the SCCA and IMSA events (Nissan won the GTP title), and the CART Indy programme simply yielded yet more disappointment. Although there was a win at Mid-Ohio, and a few pole positions captured over the season, offering a glimmer of hope, fans had a right to expect more from the legendary Stuttgart marque.

### **The 1989 season**

If the all-new Carrera 4 is ignored for the time being, the biggest changes for 1989 were reserved for the Turbo. While the 3.3 litre engine remained the same, the four-speed gearbox - a feature of the Turbo since its introduction - was replaced by a five-speed unit.



*A Carrera coupé shod with 16-inch Fuchs wheels, made standard for 1989.*



*The 1989 Carrera cabriolet for mainland Europe.*



*The Turbo, which acquired a five-speed gearbox for the 1989 season. Like the Carrera, fifth was on a dog-leg to the right, outside the usual 'H' formed by the first four gears; reverse was on a dog-leg to the left of the H.*

As noted in *Fast Lane*: “When the new generation G50 gearbox with Borg Warner synchromesh was developed, as currently used in the Carrera, care was taken to make it strong enough to meet the torque characteristics of current and future Turbos. It is an altogether nicer 'box to manipulate than the old four-speed, its lever having a shorter travel and a crisper action. The operation of the clutch pedal is lighter than before, thanks to an hydraulic actuation, which now replaces the cable. Though the new gearbox hardly makes a difference to standing-start acceleration times, it makes the car much more relaxing to drive, as there is no need to rev the engine to near the red line to keep it 'on song' when the next higher gear is selected. With third good for nearly 100mph, speed rises to 130mph before top is needed. The gears are now nicely stepped, fourth being very useful for quick autobahn overtaking, while a drop to third will provide scorching acceleration on give-and-take roads.”

The Type G50/50 was basically an updated version of the G50/00 transmission, linked to a hydraulic clutch, just like the other Getrag five-speed used on the Carrera. Ratios were quite different, however, with 3.154 on first, 1.789 on second, 1.269 on third, 0.967 on fourth, and 0.756 on fifth listed for all markets; the final-drive ratio was 3.444:1.

There were suspension changes for the turbocharged car, too. The rear anti-roll bar went from 20mm (0.79in.) to 18mm (0.71in.) diameter, while the diameter of the rear torsion bar increased from 26mm (1.02in.) to 27mm

(1.06in.); new Bilstein shock absorbers were employed at the same time, giving softer damping reactions to small wheel movements (to enhance the car's low-speed ride), but stronger damping on large wheel movements to improve handling.

There were no engine or suspension changes for the Carrera, although the wheel rim diameter increased. 16-inch Fuchs alloys became standard on the Carrera - 6J x 16 (shod with 205/55 VR rubber) at the front, with 8J x 16s (combined with 225/50 VR tyres) at the rear. These could be supplied with the regular black centres, or GP White, Pearl White or colour-keyed centres; it was also possible to supply the centre cap with a coloured Porsche crest. In addition, worn shaft bearings on the early Getrag gearboxes resulted in new ones for the 1989 season. These bearings could be retro-fitted to update and upgrade earlier versions of the five-speed transmission.

Cars with seat heaters now had a temperature adjustment facility, and the automatic heating system received some minor improvements. The alarm (standard on the Turbo, but otherwise available as option M533) was now integrated with the central locking system, a tiny red LED showing that it was armed. Cabriolet models could also be purchased with an interesting remote control system that automatically closed the windows and hood, locked the doors, and set the alarm at the flick of a switch.

### ***Standard coachwork colours (1989)***

*Black, Linen Grey, Grand Prix White, Guards Red, Apricot Beige, Murano Green, and Dark Blue.*

### ***Special coachwork colours (1989)***

*Black Metallic, Silver Metallic, Linen Grey Metallic, Stone Grey Metallic, Slate Grey Metallic, Pearl White Metallic, Velvet Red Metallic, Cognac Brown Metallic, Forest Green Metallic, Coral Metallic, Diamond Blue Metallic, and Baltic Blue Metallic.*

### ***Cabriolet top colours (1989)***

*Black, Burgundy, Mahogany, or Dark Blue.*

### ***Trim colours & materials (1989)***

*Black, Linen Grey, Burgundy, Marine Blue, Mahogany or Cashmere Beige vinyl, with Black, Linen Grey, Burgundy, Marine Blue, Mahogany or*



*Cashmere Beige leather as an option; special leathers included Velvet Red, Silk Grey, Slate Grey, Caramel or Venetian Blue. Seat inserts came in matching leather or cloth (studio check or with Porsche script), or in pinstripe velour. Carpets came in Black, Grey, Burgundy, Red, Blue, Brown or Beige velour pile. The customer could also supply a sample to have unique leather trim and carpet.*

For 1989, the home market strict Carreras (i.e. not including the Carrera 4) ranged in price from DM 85,275 for the coupé, up to DM 95,775 for the Cabriolet. The Turbo line-up, meanwhile, started at DM 135,000 and went up to DM 156,500 for the drophead version. Pearl paintwork could be supplied as a special order from now on, although it cost nearly ten times the price of the listed metallic shades.





*Two pictures showing the slant-nose Turbo being built. European versions of the slant-nose Turbo were powered by the 930/66S engine. With a 7.0:1 compression ratio, this developed 330bhp at 5750rpm, and 344lbft of torque at 4500rpm.*

### **Another legend revived - the Speedster**

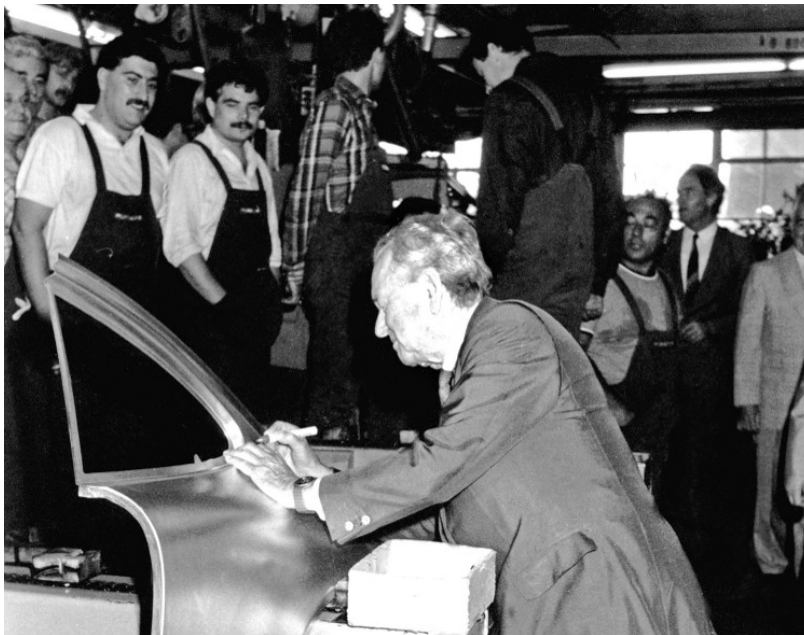
The 911 Speedster was first displayed at the 1987 Frankfurt Show. *MotorSport's* report on the event stated: “Emotively the star of Porsche’s stand should have been the 911 reincarnation of the Speedster, but the appearance in fully-cowled form, minus windscreen, was redolent of a misshapen and low-line Beetle.

“On the other hand, with its re-raked windscreen lying back at a further five degrees over standard, the Speedster appears functional in the Porsche tradition. Recalling a weight loss of more than 140lb, we can expect its standard 231bhp to prove exceptionally effective, provided the customers do not all start putting in the luxuries that Porsche deleted ...”

Georg Kacher drove the prototype for *Car* magazine, but, overall, failed to be impressed: “If Porsche had positioned the new Speedster in the same niche of the model hierarchy as the 1954 original, it would have been much easier to excuse the weak design and the drawbacks which result from it. But instead of making this most basic 911 also the least expensive, the Zuffenhausen management have decided to price it at the same level as - or even above - the 911 cabriolet. And that is hard to justify because the Speedster is a less complete car than its brethren.”



*A slant-nose Turbo nearing completion for an American customer. In fact, the lighting suggests that all of these cars were destined for US shores (UK vehicles required a tiny sidelight on the inside of the front indicators, incidentally). Note the larger brake master cylinder to allow for fluid for the hydraulic clutch.*



*Ferry Porsche was on hand to witness the end of traditional production methods in the old Reutter works. With the birth of the 964 series, body production moved to Werk V - a modern, purpose-built facility with the very latest lines and equipment.*



*A Speedster prototype taking centre stage at the 1987 Frankfurt Show. Note that the car is shown in this picture in single-seater guise with the full tonneau cover in place. Note also the racing-style mirrors used on the early design study vehicles.*



*For those of you wondering how the driver got in and out of the Speedster with the proposed full tonneau fitted, this picture is worth a thousand words ...*



*Two earlier Speedster prototypes: one based on the wider Turbo body, and the other on the regular Carrera shell.*

In addition, Kacher seemed to prefer the original design study he'd seen, passed by Peter Schutz during the winter of 1982-1983, but eventually dropped on a technicality - the extremely low wraparound screen would never have met Federal regulations.

Thoughts then turned to a conservative conversion based on the cabriolet, and a second option with an aero-screen and a driver's seat only, surrounded by a rigid tonneau cover. Ultimately, the latter idea was also dropped, and, designed by Tony Lapine and engineered by Friedrich Bezner, the Speedster eventually went on sale in January 1989.



*Publicity shots showing the front and rear of the Speedster. Both of these pictures show the car with 15-inch Fuchs alloys, although production models inherited the 16-inch rims of the other Carreras. Deletion of the rear badge was a no-cost option.*

The Speedster was basically a Carrera cabriolet specified with the M503 option. The Speedster had a cut-down windscreen, sharply raked, and housed in a black anodized aluminium alloy frame. The frameless side windows were also shorter, with manual cranks to lower and raise them. The manually-operated lightweight hood was very rudimentary (unlined and not even guaranteed 100 per cent weatherproof), although it was usually hidden by the composite material cover. This cover hinged backwards (it was not removable), although both it and the hood could be replaced by an optional hardtop, complete with a heated rear window. Either way, visibility was very restricted if the hood was erected or the hardtop fitted.

Inside, there were few luxuries. The Speedster came with a manual heater (meaning a return to control levers between seats), simpler power seat controls (with the seats lowered by 20mm/0.79in. to accommodate the lower roofline), no rear seats (a storage box with lockable lids was listed as an option), no interior lights, no radio (at least not on European models), no cruise control, no alarm, and smaller sunvisors.



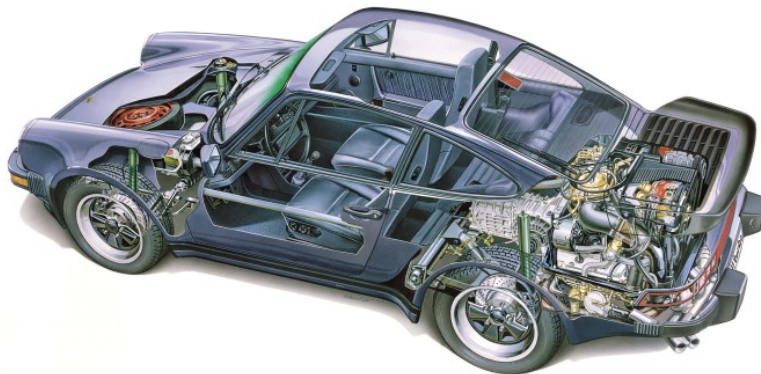
*Despite numerous changes in the boardroom, Ferry Porsche remained a figurehead of the company, and an excellent ambassador for the German motor industry. He's seen here in the Turbo Look Speedster.*



*The Speedster with the Turbo Look body. This was a very popular option in the States, although, with only nine months of sales, the model's full potential was never properly realized. Many US cars had full leather trim and power seats, boosting the price of the vehicle by around \$3000, or 10 per cent more again if supple leather was specified.*



*The Speedster was well-received in the States. This example sports the Turbo Look body and chassis package.*



*Cutaway drawing of the 911 Turbo. This is a US-spec car, by the way, readily identified by its larger rear overriders and lighting arrangements. Turbo front wings were a one-piece stamping by this time, incidentally.*



*A beautiful car in a beautiful setting: the US-spec Carrera cabriolet.*



The Speedster was 50kg (110lb) lighter than the cabriolet, and could be specified with the Turbo Look body. Available from January to September 1989 only, a total of 2065 units were built, 1894 having the Turbo Look body. Of the 2065 cars, 823 went to the States, and 63 were sold in the UK.

### **American update**

1989 was the year Republican Ronald Reagan stepped down from office, with George Bush (former Vice-President) taking his place as the new President of the United States, although the Democrats retained control over Congress. Within months of entering the White House, Bush held talks with China and Russia, helping to bring the Cold War to an end.

In US Porsche showrooms, as in Europe, the Turbo gained a five-speed gearbox for 1989, while the strict Carrera now came equipped with 16-inch wheels and tyres. In addition, American Carrera buyers were treated to an electrically-operated sunroof for all coupés, cruise control, a Blaupunkt 'Reno' radio/cassette for all cars (a CD player was still an optional extra), heated windscreen washer nozzles, and a combined central locking/alarm system. A limited-slip differential remained on the option list, however, priced at \$855.

The Carrera 4 became available in the States from January 1989, as did the Speedster, which *Motor Trend* so aptly described as an "expensive toy." The Speedster, incidentally, was listed in the States in Turbo Look guise as standard, with air conditioning a \$2665 option. At that time, the US price list looked like this:

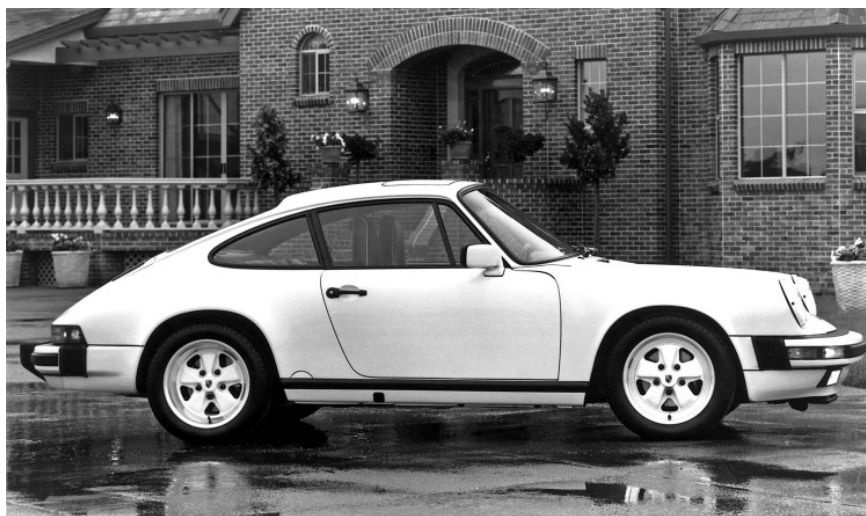
- 911 Carrera coupé:** \$51,205
- 911 Carrera Targa:** \$52,435
- 911 Carrera cabriolet:** \$59,200
- 911 Turbo coupé:** \$70,975
- 911 Turbo Targa:** \$77,065
- 911 Turbo cabriolet:** \$85,060
- 911 Speedster:** \$65,480
- 911 Carrera 4:** \$69,500

A gas guzzler tax of \$850 had to be added to the Turbo, by the way. Regarding the five-speed Turbo, *Car & Driver* observed: "Almost equalled in straight-line performance by the Carrera 4, which sells for less, the Turbo

no longer makes much of a case for itself. Especially in situations where the 4WD car's instant power and stable handling make a mockery of the old thriller's doggy throttle response at low revs and dodgy chassis response at high gs. Unlike the Carrera 4, however, the Turbo is available in all three classic 911 body styles. Each style is also available with a slant-nose package."

A total of 9479 Porsches were sold in the States during 1989, a disappointing figure when compared to the high of 30,471 only three years earlier. 823 of these were 911 Speedsters, virtually all of them with Turbo Look bodies.

In reality, given the size of the market and the choice of vehicles on offer, American sales were pitiful in 1989. Heinz Branitzki said at the time: "This is undoubtedly the most difficult year we have ever had in America. Hopefully, the worst is behind us." But it wasn't - sales fell again the following season.



*A Carrera coupé for America's 1989 season.*

Branitzki had become Chairman following the departure of Peter Schutz, but he wanted to retire. Only after Ferry Porsche asked him to stay did he decide to continue, at least until a suitable replacement could be found. Having done a sterling job in a difficult situation, in March 1990, Branitzki finally managed to hand over the reins to Arno Bohn, a young high-flyer who'd made his name in the computer world.

## **The rhd markets**

The UK line-up for 1989 was carried over from the previous season, with 911 prices ranging from £37,973 to £109,078. To put this into perspective, the 944 was available from £25,990 at this time, while the 928 S4 commanded £55,441.

Having driven the Carrera cabriolet, Gordon Cruikshank noted: “Unlike some opened-up coupés there is little sign of any body flexing, but it can be hard to see over the shoulder at junctions. Otherwise the 911 continues to ignore its critics and delight its fans.”

*Autocar & Motor* sampled the £57,852 911 Turbo coupé in March 1989. The magazine praised the car’s performance, the latest gearchange, and terrific grip, especially in the dry. It was not so pleased with the amount of turbo-lag the engine displayed, or the gear ratios, and there were still worries over the “edge-of-oblivion” handling.

However, in the summary, it was noted: “A sympathetically driven Turbo can be rewarding almost beyond belief. No car has more informative steering and, in the dry, grip verges on the staggering. Best of all, no other supercar packs so much pace into such a stylish, compact and agile package. The 911 Turbo, despite its age, remains a very special car indeed.”

The five-speed Turbo was also reviewed in *Fast Lane*, which observed: “Those beefy tyres and the highly-g geared manual steering combine to demand good arm muscles for parking, even if the front wheels do carry only 37% of the car’s total weight, while six degrees of castor keep your arm muscles busy during fast cornering. Steering feedback never leaves the driver in doubt about front wheel grip and road conditions. Some may like it, for the faster you drive, the more feedback and information you want. But some may find it tiring and wish for power steering.

“The racing-type brakes are quite heavy in operation, too, in spite of the eight-inch diameter servo, but they certainly do stop the car quickly if you push hard enough. This comparative heaviness allows excellent modulation, which is just as well, as anti-lock brakes are not available and 911s have a tendency to lock their front wheels in the wet in an emergency.”

While it was noted that features like PAS and ABS were in the pipeline for the new Turbo based on the Carrera 4, “... that is still at least a couple of years ahead, and meanwhile the new five-speed Turbo is surely not a bad investment. It still ranks very highly among the practical and affordable ultra-high performance cars available today.”

The Speedster was added to the line-up near the beginning of the 1989 season, priced at £52,851, and then, in April 1989, the Carrera 4 coupé became available (introduced at a reasonable £47,699). All other models remained in the range at the same price until September 1989, when the 964 series took over completely in the showrooms.

Meanwhile, *Autocar & Motor* tried a Turbo Look Speedster in Germany, and noted: “Today, civilized sports cars have become respectable even among gentleman who once would have scoffed at proper levels of comfort. Entertainment value and coarse manners need not be synonymous ... as the Carrera 2 will no doubt prove. The bathtub is dead: let there be no more of this nonsense.”

The original 1989 sales forecast predicted 3000 units (all Porsches) for the UK, against 3150 for 1988, so total sales of 3339 cars was something of a bonus. Interestingly, only 63 Speedsters were sold.

Australia listed only NA models for 1988 and 1989, now powered by the 930/25 unit used in the US market and Japan. For 1988, the Carrera coupé was priced at \$146,123, with the Targa version at \$152,624, and the cabriolet commanding \$168,756. Although there was a price reduction for the 1989 season, taking the coupé down to \$132,500, by the end of the year, prices were just above 1988 levels.

Japan was becoming a very important market, and had a far more extensive range as a result. In 1988, it started with the 5,350,000 yen 924S. The cheapest 911 was the Carrera coupé, priced at 9,950,000 yen, with the Targa body adding 1,000,000 yen, and the cabriolet a further 1,050,000 yen. The 928 S4 was listed at 15,000,000 yen, which was 1,900,000 yen cheaper than a Turbo coupé. The Turbo Targa commanded 1,850,000 yen, while the drophead version was 20,500,000 yen. Japan also listed the slant-nose coupé, which had a 27,500,000 yen sticker price.

For 1989, the range of three Carreras and four Turbos (including the slant-nose model) were carried over, with prices virtually the same, joined by the 10,950,000 yen Club Sport and 11,400,000 yen Speedster; the Speedster could also be bought with the Turbo Look body for an extra 2,000,000 yen.



*One of the last Carrera Targas with top in place. Note the alarm sticker, and that the windscreen trim was now a one-piece plastic item (the rear screen trim became a one-piece moulding halfway through the 1988 season on most cars). This car sits on high-performance Bridgestone tyres, available via option number M167, although some vehicles from this period were fitted with ZR-rated rubber from BF Goodrich.*

Everything changed in Japan in mid-1989 when the Carrera 4 arrived, and prices were reduced quite significantly. The Carrera coupé was now 8,500,000 yen, with the Club Sport and Targa costing 1,000,000 yen more; the Carrera cabriolet was listed at 10,500,000 yen. As for the Speedsters, the standard car was 10,000,000 yen, with the Turbo Look version 11,700,000 yen - 300,000 yen more than the Carrera 4. The Turbo coupé was dropped, with only the slant-nose having a fixed roof. This exotic turbocharged model was 23,600,000 yen, whilst the regular Targa and cabriolet were 15,900,000 and 17,600,000 yen, respectively.

### **The last 3.2 litre models**

And so we come to the end of another era. In fact, the new era had already arrived in the shape of the Type 964, and this had two distinct consequences: some were happy to wait for new variations coming in the 1990 season, whilst others scrambled to secure one of the last of the 'classic' Porsches. With limited supplies, the Speedster provided the collector with an obvious choice if the latter objective was the reason for acquiring one. As *Motor*

*Trend* noted: “What we have in the Speedster is a bit of an anomaly: It’s built on the old 911 chassis, yet even at list price, costs about the same as the much more advanced Carrera 2 cabriolet available this winter. Consider the Speedster’s drawbacks: it’s got less displacement, less power, no ABS, no power steering, no back seat, it leaks in the rain, and it has an awkward manual top. Yet the people who pay well over list price for the car know exactly what they’re buying into. The Speedster is an instant classic - likely to hold or even gain in value. It strikes a chord with some buyers that’s simply irresistible.” With a list price of just over \$65,000 in the States, it’s known that a number changed hands for the best part of \$90,000 before sales ended.

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*The glamorous image of the Porsche 911 was as strong in 1989 as it had been twenty or so years earlier, as this American advert for BBS wheels clearly illustrates.*



*These three pictures of some of the last 3.2 litre Carreras being built, show that making a Porsche was still a very labour-intensive exercise, even in 1989.*



*For his 80th birthday, Ferry Porsche was presented with the 'Panamericana' - a quite stunning piece of automotive sculpture based on the Carrera 4.*



*The 'Panamericana' in the process of being built.*

The Turbo also had its fans, and with the turbocharged model likely to disappear from the 964-based line-up, there was also something of a panic to secure one of the last of these cars. As *Autocar & Motor* noted in June 1989: "Porsche 911 Turbo prices are going through the roof as buyers scramble for the last of the cars before production ends next month. Dealers and



enthusiasts are offering up to £200,000 for the £57,000, 156mph rear-engined classic.”

The appeal was obvious. As *Road & Track* said: “Although the 3.3 litre flat-six has plenty of torque, it gets caught out when the revs drop and the turbo comes off boost. With only four gears, that happens often. [The] extra gear ... makes a big difference on the road. The Turbo hurls itself uphill and down dale like a stallion at speed. And those who can hang on are in for one helluva ride!” The magazine recorded a 5.1 second 0-60 time, and 13.6 seconds for the standing-quarter.

Turbo sales officially ended in September 1989, although it was still listed in a number of export markets into the new year, by which time the Carrera 2 (a rear-wheel drive version of Carrera 4) had made its debut. In addition, both C2 and C4 models now came with all three major body options, bringing the 3.2 litre Carrera era to an end. Interestingly, the last few Turbos sold in the UK were given the more powerful 330bhp engine, and sold as the 911 Turbo Limited Edition.



*Designed by Harm Lagaay and developed by Ulrich Bez, the 'Panamericana' made its public debut at the 1989 Frankfurt Show, and was then shipped off to Japan for the Tokyo Show. These pictures were taken at Makuhari Messe. (Courtesy Hideo Aoki)*

## Chapter 4: A new breed

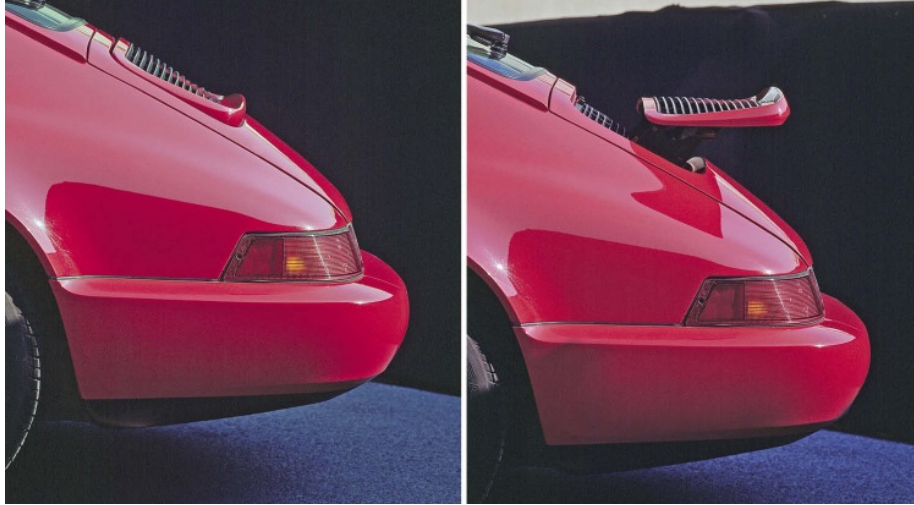
“In a world ruled by stylists and accountants, no motor manufacturer could possibly hope to wring a quarter of a century out of a design, no matter how good it was. Fortunately, there is another world which is ruled by engineers and enthusiasts, for whom time has less meaning, and Porsche’s 911 model is at its centre. Hardly a year has gone by without some significant improvements being carried out, and at the start of its next 25-year life, the Zuffenhausen company has prepared what is virtually a new model, 85% new anyway, with an entirely new chassis, four-wheel drive, ABS braking, a worthy heating/ventilation system, and a 3.6 litre air-cooled engine developing 250bhp.” - *MotorSport*, January 1989.

### The Type 964

The new 911 - christened the Type 964 - made its debut in spring 1988, badged as the Carrera 4. For many years - since 1974, at least - the biggest changes in the NA 911 range had occurred under the rear lid. The passing seasons had witnessed a string of new engines, new transmissions, and, most recently, a new dashboard. This time around, however, the body was strikingly different - far smoother than before.



*The classic 911 profile was retained, but the 964 was an altogether more modern interpretation of Porsche’s most famous model. As well as having cleaner lines than its predecessor, the 964 was also more crashworthy than earlier 911s.*



*The automatic rear spoiler was an excellent compromise, keeping drag to a minimum at low speeds, and increasing stability in line with the car's pace at higher speeds. A button under the engine cover allowed the rear spoiler to be erected for cleaning and servicing. For 1990, however, the manual override switch was moved to the centre console, allowing the driver to raise the spoiler whilst sitting in traffic. It was found that a few early Carrera 4s had overheated in summer months, even in temperate Germany. Raising the spoiler allowed more air into the engine bay to keep everything cool.*

It has to be said, the styling revisions for the latest body were very sympathetic; the classic profile of the 911 was left virtually untouched (it was what customers said they wanted in the company's numerous enquête replies), but the bumpers and detailing brought the design right up-to-date. It was an exercise comparable with that of the Jaguar XJ, when Pininfarina retouched the Series 2 to bring us the Series 3 of 1979; the lines of the original remained intact, but there was no doubt that the car was far more modern-looking than its immediate predecessor.

The roof, doors, side panels, engine compartment cover, front lid, and front wings were all carried over from the last model, and the rear wings were basically the same, apart from a few minor details. However, 4WD and a new suspension called for a completely revised floorpan and inner structure, while the need for improved heating and ventilation, and more luggage space further complicated the matter, given the retention of so many key panels. As before, the unit construction body was built up from

galvanized steel, enabling Porsche to offer a ten-year anti-perforation warranty.

The bumpers were made of aluminium-backed, colour-coded moulded thermoplastic, their smoother profile cutting through the air with far greater efficiency than the old-style guards; smoother sill covers were employed to match them. Naturally, these revised bumpers called for new front light clusters, now including the fog/driving lights and similar to the old US indicator/reflector arrangement, wrapping around the side on all cars, although there was still a repeater on the front wing on European models.

A novel feature was the retractable rear spoiler, which automatically rose into position at speeds over 50mph (80kph); it went back down again when speed was reduced to 6mph (10kph). This was an excellent compromise, giving a cleaner shape through the air at lower speeds, and enhanced stability as the pace quickened. And although the air conditioning condenser (when fitted) had to be moved as a consequence, it also allowed more air into the engine intake as speed increased, doubling the air intake area once erect.

To enhance aerodynamic efficiency, there were smoother rain gutters, and the windscreen was bonded in place. These changes had been successfully applied to the 944 in the mid-1980s, so it was only a matter of time before the 911 received them. In addition, an undertray was used on the engine and, in conjunction with the flat floorpan, this smoothed airflow underneath the car. Eventually, the Cd figure was reduced to 0.32, and there was virtually zero lift.

As noted earlier, the front indicator lens was different to the earlier 911s - much larger and with rounded edges - although the headlights were the same, coming complete with colour-keyed trim rings. There were black wipers (a rear wiper was optional), plus black window trim, black door handles, and the same colour-coded door mirrors as used on the previous generation of cars.

Around the back, although the rear lights looked similar, they were angled slightly to smooth out the tail profile (the old lights were upright when viewed from the side). The rear reflector panel running between them was modified to suit, with built-in foglights and outline 'Porsche' script moulded in.



*One of the early Carrera 4 press cars. (The press launch was in the South of France, incidentally.) Unlike some of the earlier 911s, the majority of scribes reported that the car had very good stability, and sidewinds had little affect.*



*This shot of an American-spec C4 clearly illustrates the fresh rear-end styling. Note the third brake light, mounted at the top of the rear screen (a necessity for the US market), and the elegant 'Carrera 4' badge on the engine cover.*



*Dashboard and fascia of the Carrera 4, seen here in home market guise. Note the single rotary dial by the gearlever, used to lock the differentials; it was joined by a second, similar-looking switch for the 1990 season, which allowed manual operation of the rear spoiler. Note also the latest bank of five meters ahead of the driver, with a request for unleaded petrol on the fuel gauge of this German model (US cars usually had a sticker in the same place, stating that only unleaded gas should be used). Acoustic panels were fitted under the carpets to reduce noise, and the new front lid release was handed for lhd and rhd vehicles, with a lock on open cars.*



*Driver's eye view of a 1989 model year Carrera 4 dashboard.*

Sporting the same 2272mm (89.4in.) wheelbase as the 3.2 litre Carrera and its turbocharged stablemate, the Type 964 was a touch shorter at 4250mm/167.3in. (against 4290mm/168.9in. for the old car). It was the same width (1652mm/65.0in.) and height (1320mm/52.0in.) as the old Carrera, and had the same 120mm (4.7in.) ground clearance. The track measurements were quite different for the new car, listed at 1380mm/54.3in. up front, and 1374mm/54.1in. at the rear.

Moving inside, everything looked very familiar. There was the same leather-covered, four-spoke steering wheel as before, with indicators, plus high beam, on the left-hand stalk behind it, wipers on the right, for all markets, the same seats front and rear, the same door trim, and virtually the same dash panel. However, the pedal angles became more user-friendly, as did the shorter gearlever. The handbrake was relocated further back than before, and the latest heater was a vast improvement on its predecessor.







*Front and rear seating arrangements in the Carrera 4. The seats looked very familiar to Porsche enthusiasts, and were available with power adjustment and heating (those seen here have the full range of electrical adjustment), or in sportier Recaro guise. As before, the rear seats could be individually folded to give additional luggage space.*

It has been said that three years' work went into the heating system. The heater controls were borrowed from the 944 (although the outer switches were swapped over for the 911), and the heated rear window switch moved up from the console to take the place of the old warning light cluster above the radio. An automatic heating and air conditioning system was available by specifying option M573.

The familiar bank of five meters was still very much in evidence, with fuel and oil level, plus warning lights on the left, oil temperature and pressure, plus the main set of warning lights next to it, a central 7600rpm tachometer (red-lined at 6800rpm), a speedometer to its right (calibrated to either 300kph or 180mph, depending on the market), and an analogue clock on the far right, its face containing even more warning lights. These latest instruments were back-lit, with white on black markings and red needles.

The Carrera 4 came with a switch to lock the centre and rear differentials on the low centre console. This was for pulling away on snow and ice, and automatically disengaged at 25mph (40kph). Above this were three rocker

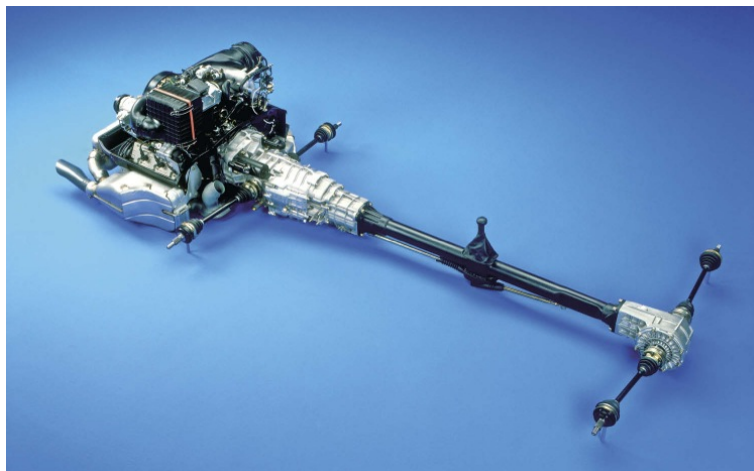
switches, including hazard lights on left, central locking in the middle, and one to cancel a warning light after it had been spotted by the driver.

Compared with the majority of contemporary cars, the ergonomics were quite poor, with the scattered switches at odds with the otherwise excellent layout of the main gauges. As Larry Griffin said at the time: “Porsche rarely upgrades secondary controls, tacking on new odds and ends wherever they’ll fit, relative logic be damned. Nowhere is Stuttgart’s dedication to excellence less apparent.”

### **Mechanical details**

Development work on the 964 project began in March 1984 under the direction of Friedrich Bezner. One of the main features of the Carrera 4 was its full-time four-wheel drive system, developed directly from the 959 programme.

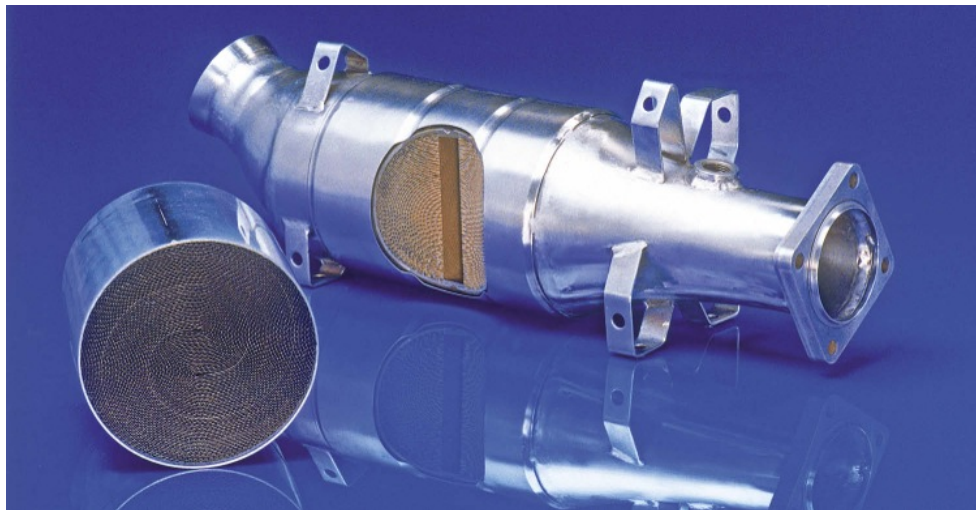
Drive was taken through a five-speed gearbox (based on the G50 unit) to the rear wheels, in the usual 911 fashion, but also to a front differential via a central propshaft running in a rigid tube, bolted at each end to form a solid drivetrain. The idea was not new to Porsche, as the regular FR models (the 924, 928 and 944) had employed something similar when taking drive from the front-mounted engine to the rear axle, and the Cabriolet prototype (the ‘Studie’) had been equipped with 4WD three years earlier. As with the FR cars, the propshaft was supported by bearings.



*The Carrera 4 drivetrain. The centre differential was housed in an aluminium alloy casing, bolted to the nose of the gearbox.*



*Below: The base engine of the 964 models - the M64/01 unit. It featured a very broad power band, with more than 70 per cent of maximum torque available between 1700 and 6600rpm. Note the twin ignition; the two distributors were driven from a common shaft.*



*A three-way catalytic converter with a metallic core was considered standard, although it could be deleted if the owner lived in a country with a poor supply of unleaded fuel. In any case, power was the same, regardless, listed at 250bhp DIN.*

Bolted to the nose of the gearbox (and therefore placed between it and the front differential) was a central planetary gear differential, which split torque 69 per cent to the rear and 31 per cent to the front in normal conditions,

although the ABS brake sensors were employed to detect wheelspin or a lack of traction, signalling the computer to direct up to 100 per cent of the available engine torque to whichever set of wheels had the most grip. This was done via a hydraulically controlled multi-disc clutch developed by Porsche, which reacted to the aforementioned computer commands within one-tenth of a second.

Proven on the 1984 Paris-Dakar rally raid, the torque split system was different to that of the 959, in that the centre differential did most of the work in the 964, with the clutches only coming into operation in extreme conditions. In addition, the 964's system was fully automatic, doing away with the driver presets found on the 450bhp machine. The Carrera 4 also came with another clutch on the rear differential, governed by a lateral g sensor, and this had the ability to lock the differential all the way up to 100 per cent in response to cornering forces.

For once, the engine was pushed into the shadows, although it, too, was completely new. The M64/01 unit had a bore and stroke of 100 x 76.4mm, giving 3600cc. This was a far cry from the 1991cc engine of 1964 (80 x 66mm), but, essentially, the leading features were very much the same.

For starters, it was a dry sump, all-alloy, air-cooled flat-six with a single, chain-driven overhead camshaft on each bank operating two valves per cylinder. However, twin sparkplugs (arranged one each side of the valves in the centre of the hemispherical head) gave a cleaner burn. The twin ignition employed a pair of distributors (running off a common drive), but was actually based on Porsche's aviation rather than racing experience.

The Bosch DME engine control system and port fuel injection was carried over, albeit in modified form, but the intake manifold now had two plenum chambers connected by a passageway. At engine speeds below 5500rpm, the passage was sealed off by a valve, but at higher speeds, the valve opened, uniting the two chambers, thus altering their resonance characteristics, enhancing engine breathing, and improving performance at the two extremes of the rev range.

The inlet valves were 49mm (1.93in.) in diameter, the same as before, but now hollow, while the lightweight exhaust valves were 42.5mm (1.67in.), larger by 1mm (0.4in.). A four-valve head had been considered, but the efficiency of air cooling was limited in a rear-engined road car. One will remember that the 24v 911 racers had water-cooled heads to overcome the

problem, but this added weight and expense that was difficult to justify on a production model. For this reason, a two-valve per cylinder arrangement was retained.

Ceramic port liners reduced heat transfer from the exhaust passages to the cylinder head, while the new exhaust (which now exited on the offside rather than the nearside) allowed a freer flow of gases and improved the heater system at the same time. Incidentally, option M150 allowed the deletion of the standard all-stainless steel three-way catalytic converter and oxygen sensor for countries with limited availability of unleaded fuel.

At the bottom end, the crankshaft, still running in seven main bearings, plus an outrigger but in a new crankcase, was lighter than before, and fitted with a vibration damper. New connecting rods were attached to the forged pistons (which had dished crowns), dual knock sensors allowing a high compression ratio of 11.3:1, even on 95 RON unleaded fuel.

With a new 12-blade cooling fan (the oil cooler remained tucked away under the offside front wing), brand new hydraulic tensioners on the duplex timing chains, and an updated 1610W alternator, the M64/01 unit weighed 238kg (524lb) - 19kg/42lb more than a 3.2 litre engine, but 31kg/68lb lighter than a Turbo lump.

250bhp DIN was quoted for all markets, regardless of whether or not a catalytic converter was fitted. The more powerful engine cancelled out the extra weight caused by the 4WD system and the car's complicated electronics: Peak power was developed at 6100rpm, 700rpm shy of the cut-out point, while maximum torque output - 228lbft - came at 4800rpm, although the additional cubic capacity gave a touch more urge at the bottom end of the rev range.

The Carrera 4 officially weighed in at 1450kg (3190lb), distributed 43 per cent at the front, 57 per cent at the rear. This means that the new car had to pull around 5.8kg/12.8lb for every horsepower the engine developed, compared to around 5.5kg/12.1lb for the 3.2 litre Carrera. However, the slippier shape and superior poor weather traction levelled the playing field.

Fuel consumption was said to be lower than before - an added bonus - although the EPA figures quoted 15/22 for the 3.6 litre model, against 18/25 for the 3.2 litre car, and 16/22 for the Turbo. However, in the real world, *Car & Driver* observed 17mpg with the Carrera 4, 15mpg with the Club

Sport, and 13mpg with the Turbo, so it appears Porsche's claims were justified.

Most contemporary reports noted how much quieter the Carrera 4 was, compared to its predecessors, and this was due, in part, to the partial encapsulation of the engine. William Kimberley stated back in 1990: "While there is that distinctive sound above 5000rpm which gives away the fact that at the heart of this unit is a racer trying to get out, anything less and the whole thing becomes so much more civilized, one might almost say dignified."

However, writing for *Supercar Classics*, Roger Bell thought the latest engine was "surprisingly cammy, lacking a bit in mid-range bite." Bell was not the only person to mention this, although it has to be said that just as many contemporary articles praised the unit's flexibility, and quoted a smooth flow of power throughout the rev range.

The five-speed G64/00 gearbox was fitted to the Carrera 4 in all major markets, although, due to local regulations in some countries (such as Switzerland), there was a subtly modified unit with revised ratios on the top two gears in the interest of reducing noise. The regular G64/00 transmission came with the following internal ratios: 3.500 on first, 2.118 on second, 1.444 on third, 1.086 on fourth, and 0.868 on fifth; a 3.444:1 final-drive was specified.

The gearshift was a vast improvement over old 911s - similar to that of the 944, which is not surprising, given the layout, with the gear selector sat atop the torque tube, as in the FR car. The transmission tunnel allowed a stubbier gearlever, and thus gave the impression of shorter shifts (the shift pattern was the same as that on the 3.2 and 3.3 litre models). The clutch, hydraulically operated and 240mm (9.4in.) in diameter, was said to be a touch heavy, but very user-friendly compared to those of yore. In addition, at last, a proper space was provided to rest the left foot when not being used.

## **Suspension & brakes**

A totally new suspension was called for to accept the four-wheel drive system and ABS brakes. Up front, the torsion bars disappeared, giving way to coil springs over tube shocks. Light alloy transverse arms formed a lower wishbone, with the MacPherson struts angled slightly forwards and inwards for optimum control. A 20mm (0.79in.) diameter anti-roll bar was employed, whilst the various bushes were designed to reduce road noise transmission.

As a result of this new suspension and the front differential, luggage space was reduced from five cubic feet to just under four in the front compartment, although the rear seats (which could still fold independently), added an extra 13 cubic feet of carrying capacity if it was needed.

At the rear, there were cast light alloy semi-trailing arms, with coil springs over shocks (angled slightly inwards, with pick-up points just behind the axle line). An 18mm (0.71in.) diameter anti-roll bar was used, and directional main bushes minimized toe-out if the throttle was closed suddenly, and allowed around 1mm (0.4in.) lateral movement to generate toe-in during fast cornering - a simple form of 4WS.

The rack-and-pinion steering was given power assistance, and a quicker 18.5:1 ratio (taking 2.8 turns lock-to-lock, instead of 3.1). PAS was deemed necessary because of the extra weight of the 4WD system, while the geometry was changed from a positive to negative scrub radius to better meet the demands of the ABS. *Car & Driver* said: "The power steering may be the world's best. It's so direct you cannot detect its assistance. It speaks as straight as it tracks, without kickback."

The four-wheel, electronically-controlled, anti-lock brakes made the 911 an altogether more forgiving vehicle. Sourced from Bosch, the servo-assisted ABS system employed new four-pot alloy calipers (on the leading edge, front and rear), and ventilated discs all-round. The discs were 298mm (11.7in.) in diameter and 28mm wide (1.1in.) up front, and 299mm (11.8in.) in diameter at the rear. Slightly narrower than those at the front, at 24mm (0.9in.) wide on the braking surface, the rear discs continued to incorporate an integral drum for the handbrake.

The dual-circuit brakes were hidden by a new seven-spoke alloy wheel with the Porsche crest in the centre. These 16-inch cast alloys, given the 'Design 90' moniker, had a five-bolt fixing, with 6J rims specified up front, 8J at the back. They were shod, respectively, with 205/55 ZR16 and 225/50 ZR16 rubber (Goodyear Eagles were fitted on the majority of early cars), and signalled the end of the Fuchs wheel that had become synonymous with the 911; 928- and 944-style forged alloys were offered as an option. The spacesaver spare sat up front with the single battery, ahead of the plastic fuel tank. The fuel tank had a capacity of 77 litres (equivalent to 17.0 Imperial gallons or 20.3 US gallons).



*Cutaway drawing of the C4, clearly showing the suspension, brakes, and general layout of the vehicle.*



*The front of the Carrera 4, with a good view of the new, seven-spoke alloys used for the 964 series. Unfortunately, like so many fast cars of the era, the lights were not really up to the job at high speeds, and, as can be seen from this shot, luggage space was minimal. Door mirrors had an aluminium shell with hard rubber surrounding the glass, incidentally. Note the heavy duty washer reservoir location (with red cap showing), which swapped sides with the clutch and brake fluid reservoir on rhd cars (the standard washer filler was still next to the fuel filler neck, under the lid on the nearside front wing); the air conditioning condenser went under the nearside front wing (when fitted), with the oil cooler on the opposite side. Note also the headlight washers, and the small red box in the pouch; this contained a hazard warning triangle, required by German law.*



## **Sales in Germany**

Porsche's Chairman, Heinz Branitzki, said at the press launch of the new model: "It is a completely new car but we didn't want it to look completely different; styling clinics convinced us that we should keep the shape familiar, so as not to shock our old friends. It is the 911 for the next 25 years, the concept that will help our favourite model to reach its 50th anniversary."

The last price increase applied to the old 911 range had taken place in April 1989. The Carrera coupé was listed at DM 87,575 at that time, while the Turbo Cabriolet commanded a hefty DM 160,900. The Carrera 4 was priced at DM 114,500 on introduction, so, in real terms, it offered pretty good value, given the performance and drivetrain/chassis refinements.

On the performance side, the new car was certainly no slouch. Germany's premier motoring journal, *Auto Motor und Sport*, timed the Carrera 4 at 162mph (259kph); the 0-60 dash was covered in 5.2 seconds, with the standing-quarter dismissed just 8.4 seconds later. These figures were comparable with the 928 S4, and even Italian exotica like the Lamborghini Countach and Ferrari Testarossa, off the line.

### ***Standard coachwork colours (1989)***

*Black, Linen Grey, Grand Prix White, Guards Red, Apricot Beige, Murano Green, and Dark Blue.*

### ***Special coachwork colours (1989)***

*Black Metallic, Silver Metallic, Linen Grey Metallic, Stone Grey Metallic, Slate Grey Metallic, Pearl White Metallic, Velvet Red Metallic, Cognac Brown Metallic, Forest Green Metallic, Coral Metallic, Diamond Blue Metallic, and Baltic Blue Metallic.*

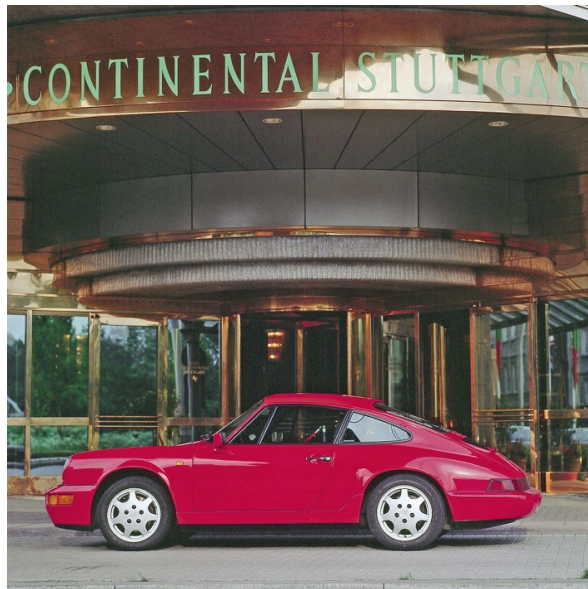
### ***Trim colours & materials (1989)***

*Black, Linen Grey, Burgundy, Blue, Mahogany or Cashmere Beige vinyl, with Black, Linen Grey, Burgundy, Blue, Mahogany or Cashmere Beige leather as an option; special leathers included Velvet Red, Silk Grey, Slate Grey, Caramel or Venetian Blue. Seat inserts came in matching leather or cloth (studio check or with Porsche script), or in pinstripe velour. Carpets came in Black, Grey, Burgundy, Red, Blue, Brown or Beige velour pile.*

When *Road & Track* first made acquaintance with the C4, it was said: “In addition to all-wheel drive, the Carrera 4 has ABS, and this combination makes the latest 911 nearly invincible. Blast down the road toward a corner, nail the brakes, turn in and lay into the throttle. The 964 makes it as easy to do as it is to say. Power-assisted rack-and-pinion steering helps a lot, and if you think this system is for wimps, try driving a normal 911 with the same abandon. Bring steroids.”

Unfortunately, not everyone was in awe of the latest machine from Stuttgart. Although left in no doubt of the benefits of 4WD in poor conditions, journalist, Mel Nichols, was nonetheless lukewarm about the new car: “Below 4000rpm in third, there’s not quite enough oomph out of bends or, more importantly, for overtaking. On the other hand, second runs out a little too soon.”

Nichols continued: “For anyone expecting the stature, flawless grip and handling of the 959, the Carrera 4’s dry-road handling is mildly disappointing. The sheer roadholding is very strong indeed, and when you’ve got the car well set-up in a bend with the power cranked on it feels wonderful. However, it has poor response to throttle steering, resolutely holding a wide line even when you’ve backed off deliberately because you want it to tighten.



*An early Type 964 model for the home market.*

“That’s essentially safe. But there’s an entirely unexpected aspect to the Carrera 4’s behaviour: it can push into very strong understeer with power off or on - enough to be a problem in a tight bend, especially uphill. In faster bends, it can be deflected by bumps into slight understeer, and if you’re relatively low in the rev range there doesn’t seem to be the power to screw the tail around.

“All this means that the car doesn’t have a precise feel to it, and it requires some road space because if it’s going to do anything, it’s going to run wide at the front. On a dry road, it’s all but impossible to lose the tail. With the anti-lock system you can salvage a nose slide by braking and steering it back, but the fact that there’s so little throttle-steer available will surprise and disappoint keener 911 and 944 drivers.”

So, after years of people complaining it was too easy to lose the tail of a 911, the rear-engined car had been tamed perhaps too much. Still, Bezner stated that the front suspension settings could be changed to reduce understeer for more advanced drivers, and, in any case, wet conditions tended to induce a touch of oversteer.

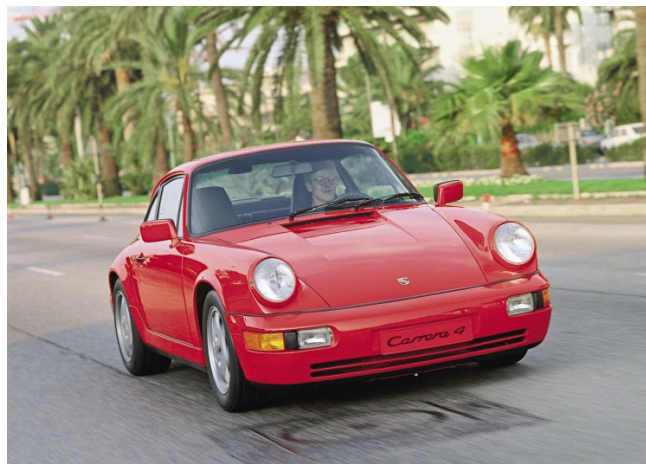
Mike Cotton covered the launch of the new car for *MotorSport* and declared: “The 911 classic has inevitably been softened by increasing sophistication, but that really doesn’t concern the purists so long as the rear-drive car continues to be available, perhaps in more sporting guise in the future. Perhaps the 964 does lack the sharpness, the *pur sang*, of the 911 despite a top speed of 161mph, and a time of 5.9 seconds for the dash from standstill to 62mph. Perhaps it is sanitized and modernized, but above all it retains the essential character of the 911, is far more practical for all-season use, and has banished the anachronisms that weren’t all lovable. It is, too, a car that should help Porsche to survive as an independent concern, something else which the purists should think about.”

## **The US market**

While the 1989 model year started in September 1988 for the States, the 4WD Carrera 4 did not become available until four months into the season, in January. As in Germany, the 3.6 litre model augmented the existing range, priced initially at \$69,500.

American magazines tended to quote maximum power as 247bhp SAE nett, but it was basically the same power unit as used for the home market. There

were a few detail differences, however. For instance, the overall length was 4275mm (168.3in.) on US cars, due to an extension of the rear bumper around the registration plate (housing the number plate lights, which were located to the sides instead of above the plate on US cars), and the bumpers themselves were mounted on tiny shock absorbers instead of deformable structures. A rubber insert was placed in the front light cluster (where the sidelight would normally be), and there was no repeater on the wing. The rear light cluster was predominantly red, and there was a third brake light at the top of the rear screen. In reality, though, the Carrera 4 was as close to being a ‘world car’ as was possible at the time.



*A Carrera 4 for the American market. Note the different front combination lamp arrangement for US-spec cars.*

American cars came with PAS, ABS, power windows and mirrors, central locking, a sunroof, air conditioning, cruise control, a Blaupunkt ‘Reno’ radio/cassette with six speakers (the ‘Bremen’ was used in mainland Europe), and heated rear window as standard.

*Car & Driver* clocked a top speed of 157mph (251kph) with the Carrera 4. The standard 0-60 yardstick was covered in a blistering 5.1 seconds, with the standing-quarter coming up in 13.6. These times kept the 4WD machine in touch with the 911 Turbo, and, whilst ultimate roadholding was not quite up to the standard of the old warrior, braking and fuel consumption were vastly superior in the NA car.

Larry Griffin declared himself happy with the handling. He noted: “Hustle into a corner and you find understeer. Push deeper and the handling goes

neutral. Punch the throttle and add some steering lock and the tail steps out a smidgen - just about perfect. If you lift or add throttle, the four-wheel drive system apportioned engine drag or power to avoid unwanted oversteer. The result is bullet-like stability when you bury the throttle and reassurance when you reluctantly lift at the last minute.”

Griffin’s colleague at *Car & Driver*, Nicholas Bissoon-Dath, was also impressed: “The Carrera 4 is the ultimate production 911. It is blindingly fast, it puts its power down regardless of road conditions, and its chassis remains absolutely faithful even during surprise course corrections.

“The 3.6 litre flat-six is simply fantastic. Extremely torquey, it responds instantly to the throttle and pulls fiercely right up to the red line.

“The Carrera 4’s gearbox is direct and positive, and the ratios are perfectly spaced. The clutch is smooth and progressive. The brakes are powerful and fade-free. And the steering is wonderfully communicative.

“The Carrera 4 has a few faults. It understeers too much, its ride is too firm, the seats are supportive enough, and the centre high-mounted stoplight blocks the rear view. Then again, in this car you’ll probably never have anything behind you.”

## **The 1990 model year**

There were no longer any of the 3.2 or 3.3 litre models available at this time, although the Carrera 4 was augmented by the rear-wheel drive, 3.6 litre Carrera 2 in September 1989. In addition, the 3.6 litre cars were now available with coupé, Targa or Cabriolet bodies, the latter coming with a power-operated hood as standard.

The Carrera 2 used the same engine as the Carrera 4, with a three-way catalytic converter as standard for all markets. Both five-speed models adopted a rubber-damped, dual-mass flywheel from this point in time, but, while the C4 continued with the G64/00 transmission, for the vast majority of countries at least, the rear-wheel drive car was specified with the G50/03 gearbox. Naturally, with the C2 not requiring drive for the front wheels, one would expect the gearbox to be physically different, although the ratios were modified slightly, too. First was the same as the Carrera 4 at 3.500, but second was taller at 2.059, as was third (1.407), while fourth and fifth stayed the same at 1.086 and 0.868 respectively; the 3.444:1 final-drive was also carried over, with a 40 per cent lsd classed as optional.

*Car* magazine stated: “The new five-speed manual ’box is so much nicer than the old Carrera’s transmission. The tall, spindly black lever is much more co-operative than before: it actually assists you in finding the right ratio instead of behaving like a stubborn steel antler, it moves through the gate with commendable ease and speed, and it operates a set of (still whining and grinding) cogs which are ideally spaced for maximum entertainment and minimum hesitation.”

The staff at *What Car?* were also impressed: “The gearchange is now so light, slick and precise that you might think it came out of a Toyota.”



*The Carrera 2 range made its debut at the 1989 Frankfurt Show, which ran from 14-24 September. Targa and Cabriolet bodies were made available to augment the existing coupé shell, taking the 964 line-up from one to six variants.*

Other differences included the adoption of two-pot calipers on the rear brakes (the Carrera 4 had four-pot units), although the ABS system and coil spring suspension was retained. Both cars now had 20mm (0.79in.) front and 21mm (0.83in.) rear anti-roll bars; the heavier rear bar was introduced to reduce understeer, although it was soon adjusted to 20mm (0.79in.) to balance out the shorter, harder springs that were adopted for packaging reasons.

Regarding the ABS, Peter Robinson noted at the time: “It is impossible to overstate the significance of anti-lock brakes in taming the 911. The pedal is still heavy, like all the car’s controls, but the brakes are progressive and very powerful.”



*A Carrera 2 Cabriolet in action. This was, perhaps, the most practical open 911; if the roof panel from the Targa was stored in the front compartment, it left very little luggage space, unfortunately.*



*Comparison tests between the C4 and new C2 revealed quite different characters for the two Porsches. Wheels magazine said at the time: “If the Carrera 4 needs less initial steering lock than the 2, it is more difficult to drive at the very limit and lacks the ultimate responsiveness of the Carrera 2.”*



*The Carrera 4 inherited an extra dial switch for 1990 to control the rear spoiler. It sat next to the diff lock switch on C4s, or was centralized on its own on C2 models. Occasionally, a few Carrera 2s left the factory without this latest gizmo.*



*Rear view of the C4 Cabriolet with hood erected.*





*The Carrera 4 was now available with three body styles: cabriolet, Targa, and coupé. For the first season, only the closed car was listed.*

From the outside, only the badging could distinguish one car from the other. The C2 used the same wheel and tyre combination as the 4WD model, although a number of 1990 model year cars were fitted with the optional disc-type forged alloys from the 944. Bridgestone was the tyre maker of choice for 1990 Carreras, with tyre pressures the same for both the C2 and C4.

Inside, the two 964 variants were very similar, although the Carrera 2 did not have a differential locking switch. However, in its place was a new but similar-looking one that allowed the driver to select the rear spoiler mode (always down to the left, automatic in the centre, and always up to the right), otherwise there was just a small storage box for oddments. Carrera 4s with both of these controls had the two sitting next to each other on the same switch panel.

The rear-wheel drive model was 100kg (220lb) lighter than the C4 (weight was distributed 40 per cent front/60 per cent rear on the C2). As a result, combined with the taller intermediate gears, overall fuel consumption

improved by 3 per cent, and performance was said to be identical, according to Porsche's own figures. Independent tests made interesting reading, though, showing the Carrera 4 to be quicker off the line until 50mph (80kph), due to the superior traction afforded by 4WD, but then the power-to-weight advantage of the Carrera 2 started to show, more so as speeds reached 100mph (160kph) plus; the standing-quarter time and top speed were virtually the same.



*The C4 Targa for 1990. Note the black 'Targa' badge on the roll-over bar, carried over from previous generations.*



*An early C2 Cabriolet in the works dispatch area. Note the 959s in the background.*

*Car & Driver* went to Germany to try the Carrera 2, which was DM 13,000 cheaper than its 4WD brethren, and declared: “This chassis tends to understeer in most situations, but it becomes more and more neutral as speed builds. Of course, it’s still possible to break the rear tyres loose with a heavy dab of power in a slow bend or by lifting off abruptly in a high-g corner, but the tail never steps out alarmingly. The Carrera 2 can be driven at the limit with none of the sweaty-palms theatrics required by older 911s.

“If you’ve ever looked longingly at a 911, you now have even more fire for your lust. The Carrera 2 is the newest generation of the age-old 911 concept, and it may just be the most exciting yet. Not only does it build on the traditional appeal of the 911, but it is faster, gutsier, more stable, and more satisfying. The Carrera 2 has all the unmistakable 911 flair and style - without all of the old car’s vices.”

This opinion was shared by *Car* magazine. “Blast the new Carrera 2 into a fast, demanding corner,” it said, “and the Porsche goes through with a perfect blend of excitement and efficiency. That explosive rear end will still flick out when called upon, but the balance between go and gone is now reassuringly wide ...

“Perhaps the biggest asset of the C2 chassis is the almost total absence of the frightening pendulum effect which could catch you in the old car just when it seemed that the worst was over. Although there is no doubt that the Carrera 2 will, like its stablemates, eventually resort to oversteer, it is very easy to live with this unambiguous handling characteristic since the rear-engined coupé has at last stopped playing nasty tricks.” Its writer concluded: “There’s no doubt: this is the most entertaining version yet of the 26-year old chassis.”

For the start of the 1990 season, the C2 line-up ranged from DM 103,500 to DM 118,000, while the C4s went from DM 116,600 to DM 131,000. However, prices went up by around 3.5 per cent in February, taking the cost of entry to Porsche motoring up to DM 107,100.

### ***Standard coachwork colours (1990)***

*Black, Linen Grey, Grand Prix White, Guards Red, Apricot Beige, Murano Green, Marine Blue Metallic, and Dark Blue.*

### ***Special coachwork colours (1990)***

*Zermatt Silver Metallic, Pearl White Metallic, Cassis Red Metallic, Granite Green Metallic, Lagoon Green Metallic, Oak Green Metallic, Turquoise Metallic, Violet Blue Metallic, Tahoe Blue Metallic, Venetian Blue Metallic, and Satin Blue Metallic.*

*Cabriolet top colours (1990)*

*Black, Burgundy, Mahogany, or Dark Blue.*

***Trim colours & materials (1990)***

*Black, Linen Grey, Burgundy, Blue, Mahogany or Cashmere Beige vinyl, with Black, Linen Grey, Burgundy, Blue, Mahogany or Cashmere Beige leather as an option; special leathers included Velvet Red, Silk Grey, Slate Grey, Caramel or Venetian Blue. Seat inserts came in matching leather or cloth (studio check or with Porsche script), or in pinstripe velour. Carpets came in Black, Grey, Burgundy, Red, Blue, Brown or Beige velour pile.*

The US 1990 model year started in October 1989, with Targa and Cabriolet bodies arriving the following month with the Carrera 2. All cars had ABS, the automatic rear spoiler, and dual front airbags (the latter calling for a new four-spoke steering wheel - actually the same as that used on the contemporary 944, with horn buttons on the upper two spokes). Naturally, the installation of the passenger-side airbag called for a revised dashboard. When fitted, the airbag was located in the old glovebox position, so a new glovebox was provided under the dash. Cars with this new arrangement had a different ashtray, located in the same area, but underneath the kneebar.

Popular options included forged alloys, a limited-slip differential, rear wiper, headlight washers, the heavy duty windscreen washer system, leather trim, electrically-adjustable seats (only power seat height adjustment was standard), sport seats, heated seats, a CD player, a mobile phone installation kit, and metallic paint.

Once the season got under way, the Carrera 2 coupé (with fuel consumption rated at 16/24 by the EPA, incurring a \$500 Gas Guzzler tax instead of the \$850 levied on the C4), was priced at \$58,500, with the Targa and Cabriolet variants priced at \$59,900 and \$66,800 respectively. The Carrera 4 coupé remained at \$69,500, with the open models costing \$70,900 and \$77,800. The Carrera 4 Cabriolet was actually the most expensive car in

the Porsche line-up, at \$3255 more than the 928. The range was completed by the 944 S2 coupé and convertible.

*Road & Track* tried the C2 Targa, and declared: “The new twin-sparkplug engine is impressively torquey at low rpm, powerful at high rpm, and provides excellent acceleration despite the Carrera 2’s tendency toward axle hop off the line.

“Though filled with amenities, the Carrera 2 retains the purposeful feel necessary in a great sports car. Driven forcefully, its steering, shifter action and brakes show refinement while still being aggressively direct and sensitive.”

*Car & Driver* pitted the Carrera 4 Cabriolet against four of its rivals: the Honda [Acura] NSX, the Chevrolet Corvette ZR-1, Ferrari 348ts, and the Lotus Esprit Turbo SE. The Italian car was the most expensive in the group, being almost \$25,000 more than the Porsche, and the Lotus was about \$4000 more than the Stuttgart machine. The Japanese and US cars came in at less than \$60,000, representing a saving of almost \$20,000 on the price of the Porsche.

In the 0-60 sprint and standing-quarter times, the Chevy and the Lotus led the way, with the Porsche edging out the Ferrari to take fourth spot. The Honda had the best brakes, while the Modena car, with the worst brakes of the bunch, performed the best on the skidpan. In the eco-wars, the Stuttgart thoroughbred returned the best gas mileage.

Patrick Bedard observed: “The shifter, before always a vague long-distance connection to the gearbox back in the tail, now feels like a local call. It’s clear and direct. And the steering has lost its kickback when traversing the rough stuff. Now it just steers, slowly at first as you turn off centre, then intuitively and reliably as you increase the angle. The chassis feels honest and forthcoming in this car.”

Ultimately, the Porsche came second to the Honda, which scored 93 points to the 911’s 87, but the Corvette only managed to score 81, and there was then a big gap before the Ferrari and Lotus came into view (on 69 and 66 respectively).

Joe Ruzs said of the Carrera 4: “It’s still the quintessential driver’s car, but with the spirit and manners of a thoroughbred, not a wild stallion. It’s the best 911 yet.” But despite the good press reports, a total of just 9139 Porsches were sold in the States in 1990.

## The right-hand drive markets

At the 1988 British Motor Show, PCGB had displayed a red Carrera 4, complete with 7J/8J disc-type forged alloys from the 944. By the time the doors closed at the National Exhibition Centre in Birmingham, there were already 400 firm orders for the 3.6 litre machine in the UK, despite delivery not due to begin there until August 1989.

Provisionally priced at around £48,000, Porsche GB's MD, Peter Bulbeck, was not worried that the price might put people off: "Perhaps 50 out of the 1000 plus 911s we sell are base coupés; they represent only 0.6% of 911 turnover. Since the average price of a 911 is already well into the £40,000 range, we don't see the Carrera 4 at £48,000 being a problem."

The £48,000 estimate turned out to be fairly accurate, but was all the fuss and commotion justified? *Autocar & Motor* tried the £47,699 Carrera 4 coupé against the ill-fated Panther Solo and the Lotus Esprit Turbo in October 1989, and noted: "Its famous flat-six purrs with a deep metallic resonance that, once heard, is hard to get enough of." Incidentally, all UK cars now had a catalytic converter, requiring unleaded fuel.

While the Solo set a "new standard for grip and neutrality," the magazine was also pleased with the Porsche's handling: "Yes, the Carrera does understeer a little too much but its grip, poise and stability are nothing short of staggering."

The star on stand C6 at Earls Court - the one occupied by Porsche - was undoubtedly the Carrera 4 Cabriolet. Priced at £52,893, the drophead Carrera was joined at the 1989 Motorfair event by a Carrera 2 coupé, a couple of 944s, and a 928 - now back as the flagship model in the Porsche line-up.

Regarding the Carrera 2, Mike McCarthy at *Autosport* noted: "Arguably the biggest changes previous 911 owners will notice is that the clumsy, over-centre clutch now works with impeccable smoothness and weighting, and the gearchange has been improved out of all recognition."

Following its test of the Carrera 2, *MotorSport* said: "Our only serious reservations about the handling today concern the rather dead feel of the accurate rack-and-pinion (not so bad in the 4x4 example, which has more weight over the front axle), and the sheer amount of understeer that has to be overcome before neutrality and final oversteer can be prompted. There are

other disappointing niggles outside the handling, such as the poor cockpit layout, the ease with which the small screen mists without air conditioning, and a rocky, nervous ride below 35mph, but nothing serious enough to inhibit purchase.”

McCarthy was also surprised that Porsche did not take the opportunity to improve the cockpit’s ergonomics. While the seats were praised, the minor switchgear was singled out as being a long way from perfect, and the dials were often hidden by the steering wheel. However, the respected scribe summed up his article thus: “The Porsche 911 is a car that has been improved consistently and correctly throughout its life. The Carrera 2 is the latest manifestation of this, and is the best yet. No argument.”

*Autocar & Motor* added: “The Carrera 2 offers an alternative set of compromises to its all-drive counterpart with more agility and feel but less ultimate security. The result, though, is an even more thrilling and involving driving experience with performance, grip and steering in the starring roles. The downside is a poor ride (suspension is firm to the point of harshness) and terrible road noise, but the Carrera 2 is the best 911 yet.”

At last, the front lid release was handed: on the left on lhd cars, on the right on rhd ones; positioned by the lower door hinge. As before, a headlight levelling facility was standard in the UK, as were headlight washers and a rear wiper. (Incidentally, the rear wiper was mounted directly on the glass rather than the engine cover on the 964 range.) Other standard equipment included ABS, the automatic rear spoiler, an alarm connected to the central locking, power windows (tinted) and door mirrors, automatic heating control, electric seat height adjustment, a rear screen defroster, and an eight-speaker Blaupunkt ‘Toronto’ radio/cassette and embedded aerial.



*Press day at the 1990 Geneva Show.*

The Carrera 2 ranged in price from £41,504 for the coupé to £46,699 for the cabriolet, so it was around £6200 cheaper than its 4WD counterpart across all three body variations. Contemporary competitors included the Lotus Esprit Turbo SE at £44,900, the Ferrari 348tb, Renault GTA, Honda's new NSX, the latest Mercedes-Benz SL range, and the Z32-type Nissan 300ZX at £34,500.

Although the new line-up had obvious appeal, a mid-season price increase meant that the cost of Porsche motoring rose by about 10 per cent. In increasingly difficult financial times, this must have had a bearing on the fact that only 2801 Porsches (all cars) were sold in the UK during 1990 (538 units down on the previous year, despite dealer numbers increasing to 39), and the figure was even lower in 1991.

Australia first saw the 964 models in spring 1990. Initially, C2s were the first to hit the showrooms, with the coupé priced at \$152,992, the Targa at \$159,600, and the cabriolet at \$170,453. When the C4 range appeared shortly after, the four-wheel drive cars were \$17,310 more than their rear-wheel drive stablemates.

In Japan, the Carrera 2s went on sale in the new year, having made their debut at the Tokyo Show. The C2 coupé was priced at 9,300,000 yen, with the Targa version at 10,000,000 yen, and the Cabriolet at 11,000,000 yen; Tiptronic transmission added 600,000 yen to these prices. As for the C4s, the



coupé remained at 11,400,000 yen, with the open 4WD cars 2,100,000 yen more than their rear-wheel drive counterparts. This meant the Carrera 4 Cabriolet cost about the same as a 928.

### **The Tiptronic gearbox**

Porsche had not offered anything other than a manual transmission for the 911 since the official demise of the Sportomatic gearbox in 1979. However, January 1990 saw the launch of a brand new concept in gearshifting - the Tiptronic, with its Intelligent Shift Programme (ISP). As Jerry Sloniger pointed out at the time: “The employment of 4WD and now automatic transmission with optional manual selection are ways to make the 911 something different. In the case of Tiptronic, Porsche is presenting a car for people who want to be seen in a 911 without actually having to drive one ...”

Available on the Carrera 2 only at this point, the four-speed overdrive Tiptronic unit (Type A50) was the first fully automatic gearbox to be offered on the 911 series, but, for enthusiastic drivers, it was an interesting alternative, as manual gear selection was still available, albeit without a clutch pedal.

Though commonplace nowadays, at that time, transmissions like the computer-controlled Tiptronic were still something of a rarity - leading-edge technology. Born out of the PDK gearbox used on the 962C racer, the gearlever could be left in the left-hand plane for fully automatic operation (with PRND321 positions), or moved to the right of its traditional selector plane (through the ‘D’ position); from there moving forwards or backwards to go up or down the gearbox. A gear indicator was placed in the lower part of the speedometer to keep the driver informed.



*The Carrera 2 making its Japanese debut at the 1989 Tokyo Show.  
(Courtesy Hideo Aoki)*

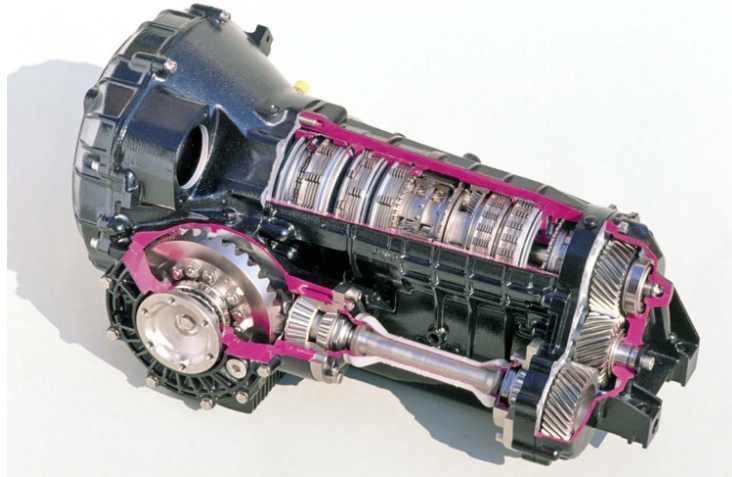
But that wasn't all, as the Tiptronic also adapted to driver input via one of five computer programmes, selected by the ECU based on engine speed, longitudinal and lateral acceleration, and throttle position and movement. Linked to the car's ABS, a lateral g sensor prevented the gearbox shifting gear during high-speed cornering, while another sensor calculated the road speed and delayed the selection of a lower gear if it would take the engine revs over the red-line. Likewise, if the driver was too slow in selecting a higher gear, the computer would signal the transmission to automatically shift up. The programme would hold onto gears longer for sporting drivers, and upshift quicker for those with a lighter right foot, taking off in second for gentler starts. In addition, even in manual mode, the gearbox automatically dropped into second once the vehicle came to a standstill (second gear reduced the tendency for the car to creep).

As *MotorSport* observed: "Even in the straight automatic mode it is an exceptional, co-operative transmission, one that adapts to your driving style electronically to shift gearchange points according to your prevailing driving pattern. Each gear can also be locked into place and retained, so what is the attraction of the second gate? Simply that you flip forward for higher ratios and back for lower, swift selections made in the straight-line logic that motorcyclists will find particularly attractive."

Sloniger added: "Pick-up through the gears - even letting the 'box override you at the red line - is totally smooth and seamless, since power flow is continuous. The best feature is the super-fast upshifts, since no more than centimetres of forward motion at the lever are required - foot right to the floor. There is no lurch on hard downshifts, either, thus no tendency to break wheels loose, going into slippery hairpins. There is no kickdown as such, in the right plane."

Built by ZF with control systems jointly developed by Bosch and Porsche, the Tiptronic system was based on a planetary gear unit with torque converter lock-up in the higher gears. Internal ratios were listed as 2.48 on first, 1.48 on second, a direct third, and 0.73 on the overdrive fourth; the final-drive was 3.67:1.

It was acknowledged that there was a fair gap between the gears, and a five-speed version was in the pipeline to silence the critics that felt the ratios should be a touch closer. Meanwhile, despite a 30kg (66lb) weight gain, the Carrera 2 Tiptronic was capable of covering the 0-60 sprint in a remarkable 6.1 seconds, according to *Car & Driver*, although official paperwork quoted a conservative time of 5.7 seconds for the manual car. Top speed was said to be 158mph (253kph).



*The workings of the Tiptronic gearbox, available as an optional transmission for the Carrera 2 models.*



*The novel gear selector of the Tiptronic cars. A lack of detents between gears in the traditional PRND321 plane deterred spirited shifting. However, with the +/- selector to the right, Joseph Petersmann and his team at Porsche had done a good job in creating a transmission that satisfied all types of user, not just dyed-in-the-wool sports car enthusiasts, even if it did "... mask the engine's razor-sharp personality."*



*To advise the driver of mode and gear selection, an indicator was added to the lower section of the speedometer. A trip computer was usually placed in the face of the tachometer, although this could be deleted at the time of ordering if not required.*

Even 911 racer Tony Dron was impressed with the “ingenious” new gearbox. He said: “Though I have not previously been a great enthusiast of automatic transmission in sports cars, I have to admit that I enjoyed driving the Tiptronic models on my recent trip to Germany.” And as *Road & Track* pointed out, it offered an excellent alternative for households where one driver loved a manual gearbox, but the other preferred two-pedal driving.

Vehicles with the Tiptronic transmission usually came with an onboard computer that calculated average speed, distance travelled, fuel consumption, and outside temperature; the control lever was under the indicator stalk, while the read-out was placed in the lower section of the tachometer. However, this computer could be deleted via option M659 if the customer did not require it. One thing that was common to all Tiptronic cars, though, was a 19mm (0.75in.) rear anti-roll bar, and, naturally, the brake pedal was a

touch bigger, too. Engines linked to the Tiptronic gearbox were given the M64/02 code, by the way.

## **The Carrera Cup models**

The Porsche Turbo Cup was a factory-run racing series introduced in 1986, employing no fewer than 40 944 Turbos in that initial season. The one-make series developed nicely over the ensuing years, but for 1990, the 944 was replaced by the Carrera 2 as the base car, and the various rounds, usually support races at larger events, now made up the Carrera Cup. Herbert Linge was in charge of the ten-round series, which used much lighter C2s with a touch more power, competing on mainly German tracks.

Bodyshells were shipped from Werk V straight to Wilfred Matter in Bruchsal. Matter then welded in the rollcage before the cars were returned to Zuffenhausen to be built up. The engines, which retained their catalytic converter, were selected at the factory for identical power output, and with a modified exhaust and no air filter or PAS pump to drive (the racers had an unassisted rack with a quicker ratio), they developed 265bhp at 6700rpm. All control units were then sealed to avoid people tampering with them.



*Legendary Porsche figure, Herbert Linge, with a prototype Carrera Cup C2 racer.*

As already mentioned, the cars were based on the C2 - rwd being considered much better for track work - so the G50 transmission was used. The dual-mass flywheel was deleted, but otherwise things were pretty much standard. Naturally, a racing clutch and limited-slip differential were used, but all the ratios were the same as those of the road car.

The ABS braking system was retained, albeit reprogrammed to suit the vehicle's weight, working on cross-drilled discs from the forthcoming Turbo. The suspension was 50mm (1.97in.) lower than usual, and used stiffer springs, Bilstein shocks, adjustable anti-roll bars, and a front strut brace. The forged alloy wheels had a rim that was designed to retain the tyre even after a blowout. Made by Speedline and shod with Pirelli racing rubber, they became known as 'Cup Design' rims, and measured 8J x 17 for the front of the car, 9.5J x 17 for the rear.



*Action from the Hockenheim round of the Carrera Cup.*



*The Carrera Cup at Zeltweg, 1990. Note the proper five-spoke wheels used for the series.*

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*Gemballa advertising from early 1990. The company offered a full range of tuning parts and body kits for Porsche, as well as the full conversions seen here.*



*Arno Bohn, Porsche's new Chairman, following the retirement of Heinz Branitzki. Taking the helm at Porsche in spring 1990, Bohn joined the company from the Nixdorf computer concern.*



*The new Turbo, revealed to the world at the 1990 Geneva Show. Porsche stalwart, Paul Hensler, was in charge of drivetrain and chassis development on the new Turbo, and the entire project was overseen by Friedrich Bezner.*

The Carrera Cup models were much lighter than standard (weighing in at only 1120kg/2464lb), largely thanks to the stripped-out interior: Inside, there was just a single Recaro seat, a simple heater, manual windows, and a fire extinguisher. An aluminium front lid reduced weight still further, however, and this covered the regular 77 litre (17 gallon) fuel tank. The rear wing was kept as standard, although aerodynamic door mirrors became a feature.

In all, 50 Carrera Cup cars were built, with 40 sold to customers, priced at DM 123,000 apiece - about DM 20,000 more than a standard Carrera 2 - after final preparation had been made at Weissach. The remaining vehicles were retained by the factory; three of them used for guest drivers. Olaf Manthey was declared *die Meister* in 1990.

Interestingly, the factory also converted a few Carrera 4s into lightweight versions suitable for club racing. With an aluminium front lid and doors, a fibreglass engine cover (complete with a fixed rear wing), perspex windows, and a stripped-out interior, the Weissach engineers managed to reduce the weight to 1100kg (2420lb). With the five-speed Type 953 transmission - as used in the Paris-Dakar machines - and 265bhp on tap in such a light vehicle, performance was devastating. Using unique chassis codes, numbered from 964-001 onward, Porsche planned to build 20 C4Ls, priced at DM 285,000 each.

Meanwhile, in the big league, the Joest, Kremer, and Brun teams failed to shine in the WSPC (Sauber-Mercedes won again). There was also little to celebrate in the SCCA and IMSA world in the States (Nissan retained the



GTP title), but perhaps the biggest disappointment was the announcement that the Indycar project was to be abandoned, following a run of poor results. Porsche had now attempted to take the Indy circuits by storm on two occasions (once in the late 1970s, and again in the late 1980s), both without success ...

## **A new flagship model**

While 1990 may not have been a good year for the Stuttgart marque in motorsport, in March there had been plenty for Porsche fans to celebrate, for the 964-bodied Turbo made its debut at the 1990 Geneva Show.

Predictions of a 24v, twin-turbo model with a 959-style tail proved premature, for the new Turbo was powered by a 3.3 litre, all-alloy flat-six with two valves per cylinder and a single KKK turbocharger. The bore and stroke measurements were carried over from the previous Turbo (giving 3299cc), although the unit now produced 320bhp at 5750rpm and 332lbft of torque at 4500rpm, despite retaining the same 7.0:1 compression ratio. This increase was largely due to the use of a larger intercooler, revised K-Jetronic fuel-injection, and new intake manifolds. The exhaust, with pipes exiting on both sides of the tail, featured a ceramic-free catalytic converter.

True, the men in Weissach had been working long and hard on a 24v turbocharged version of the 3.6 litre engine for the Type 965 (said to be good for 370bhp), but the project was cancelled at the end of 1988, and thoughts of adopting 4WD had almost been abandoned. With rear-wheel drive, the five-speed gearbox had the same ratios as the 1989 car (including the final-drive), but a dual-mass flywheel, ABS brakes - suitably uprated, along with the C2-based suspension - and power-assisted steering were all new entries on the spec sheet.

Said to be capable of 168mph (269kph), the coupé featured the familiar flared wheelarches and fixed whaletail rear spoiler. The co-efficient of drag was greater than the first 964s, at Cd 0.37, but at least there was zero lift. The prototype had US-style rear bumpers (although the design was later changed for European cars, once production got under way), and Carrera Cup-style wheels (7J at the front, shod with 205/50 ZR17 rubber, while the rears sported 9J rims with 255/40 ZR17s).

The interior was similar to that of the Carrera 2 and Carrera 4, for which there was already a long waiting list by this time, but air conditioning was

standard. With production beginning in autumn 1990, the next chapter starts with the 1991 model year, and the welcome return to Porsche showrooms of the Turbo ...

## Chapter 5: The 964 continues

*Autocar*'s report on the 1990 Geneva Show said: "One can't help but get the impression that this is something of a stop-gap model until Porsche has perfected a multi-valve 3.6 litre boxer engine that mates successfully with its four-wheel drive system.

"After establishing a supercar benchmark with the 959 - a car that in many people's opinion has yet to be equalled - the new Turbo seems something of an enigma. There will be no doubting its explosive performance nor the welcome improvement in dynamics. Many, if not most, of the flaws in the old Turbo have obviously been eliminated, yet Porsche appears to have taken a most expedient approach to keeping a Turbo 911 in its catalogue."

Regardless of whether or not the new Turbo was a stop-gap vehicle, the fact is that enthusiasts everywhere welcomed the return to the line-up of the turbocharged 911. Having made its debut in Switzerland, production models were readied for the 1991 season ...



*The Turbo was added to the 1991 season line-up in most countries. The old-style rear wing was necessary because the intercooler took up all the space beneath the lid. As a result, the co-efficient of drag was quoted as Cd 0.37.*

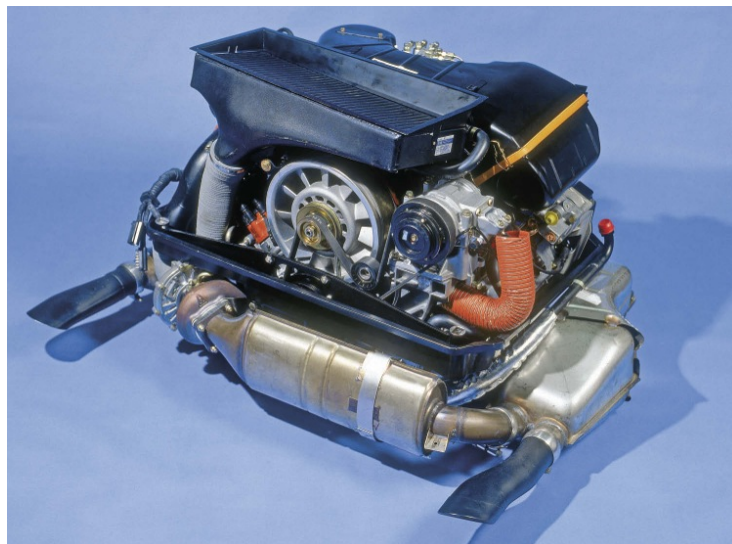
### **A new Turbo**

Formally introduced in September 1990, the new Turbo had to meet three key objectives before public release: the engine had to deliver more torque and power than 1989 levels in Europe; the ability to pass the world's strictest exhaust emission and noise regulations was of paramount importance (a 'world' car was required to keep production costs in check, ruling out

different engines for the various markets), and finally, the marketing people called for vastly improved, safer handling.

Getting more power from an engine is rarely a problem. What causes a headache for the engineers is that this power has to be delivered in a fairly linear manner, and environmental concerns.

For speed (development work didn't begin until 1988), the new Turbo's engine was based on that of the old 3.3 litre Turbo, rather than the latest 3.6 litre unit. Given the M30/69 code, the 3299cc engine's Nikasil cylinders had the same 97 x 74.4mm bore and stroke measurement as the 1989 flat-six, and, as before, the KKK turbocharger sat in the lower nearside corner in the rear of the bay. However, the blower was larger on this latest engine (type K27), and the intercooler was almost half as big again as the one originally employed, with much greater throughput as a result.



*The all-aluminium alloy engine of the new Turbo. Like the 3.6 litre Carrera, the new Turbo had a 12-blade cooling fan, although the design was quite different, with flatter blades.*

There were still twin exhausts, but now with a single tailpipe exiting on each side of the vehicle, and a separate catalytic converter was fitted on the wastegate, bypassing the main system to reduce back pressure. The main three-way cat was of all-metal, honeycomb construction, like that of the latest Carreras, and was designed to reduce back pressure by as much as 30 per cent, compared with a 1989 exhaust.

The Bosch K-Jetronic fuel injection system was carried over, but improved gas-flowing, better piston cooling, and computer-controlled ignition, was enough to release 320bhp at 5750rpm; 20bhp more than the old European unit could muster, and, in DIN terms, 35bhp more than the old cat-equipped, American-spec engine could deliver. Torque output was also enhanced, with 332lbft extracted from the unit at 4500rpm - a massive jump of 45lbft compared to the last US-spec engine.

Hydraulic engine mounts reduced NVH, while the dual-mass flywheel also gave the car greater refinement. However, contemporary reports noted a fair amount of turbo-lag, even though the compressor wheel was 20 per cent lighter than before. Boost was developed from as low as 1800rpm, but the full 10psi didn't really make itself felt below 3000rpm.

A five-speed manual gearbox was the only transmission option available. The G50/52 unit, with its Borg-Warner synchros, had internal ratios of 3.15 on first, 1.79 on second, 1.27 on third, 0.97 on fourth, and 0.76 on fifth; a 3.44:1 final-drive was selected. Four-wheel drive was not an option, so the Turbo had the traditional rear-wheel drive set-up on the 911s of yore. The Turbo came with the option of a special mechanical limited-slip differential, however, with anything from 20 per cent lock-up under power to 100 per cent lock-up on the overrun.



*A Turbo on display at the 1991 Geneva Show, one year after the car made its debut there.*



With regard to the need for improved handling, this was fairly easily accomplished, as the engineers simply adopted the latest suspension from the 964 models. This gave the required improvements in ultimate handling characteristics, and, just as importantly, added a far higher level of security near the limit. The Turbo was equipped with harder springs and dampers, 21mm (0.83in.) front and 22mm (0.87in.) rear anti-roll bars, and ride height adjustment, but otherwise the suspension was similar to that of the Carrera 2 with the M030 package.

The ABS braking system employed four-pot calipers working on 322mm (12.7in.) diameter drilled and ventilated discs up front, and 299mm (11.8in.) versions at the rear. These later proved to be some of the best brakes on any production car.

The power-assisted steering was carried over from the Carrera 2 and 4, but a 17-inch wheel and tyre combination was specified to suit the larger front brakes. The 'Cup Design' cast aluminium alloys, 7J at the front and 9J at the rear, were shod with 205/50 and 255/40 ZR-rated rubber respectively, sourced from either Yokohama, Bridgestone or Pirelli. A new spacesaver spare was required to clear the larger brakes.

The new suspension system, with its uprated rear arms and bushes, and hefty tyre print, took 911 roadholding into a world far removed from that of 1974, when the first Turbo took a bow - one magazine recorded an exceptional 0.88g on the skidpan. Naturally, there was a penalty in ride quality and noise suppression, but few enthusiasts complained.

As with the earlier turbocharged cars, the wings were given a heavy flair at both ends of the vehicles to allow clearance for the tyres. As a result, the

new Turbo was 1775mm (69.9in.) wide, which is 123mm (around five inches) wider than a 964 Carrera, but the same as the turbocharged model of 1989. The extra width allowed a 1435mm/56.5in. front track measurement, and one of 1494mm/58.8in. at the rear. It was also a touch lower than the Carrera, listed at 1310mm (51.6in.) like the previous Turbo. Otherwise, dimensions were the same as those of the normally-aspirated machine.

The front and rear bumpers were modified versions of those fitted to the latest Carreras, as were the side skirts. However, new resin door mirrors, which slipped through the air far more efficiently than their predecessors, were used, and the fixed whaletail was the same as that on the 1989 Turbo.

Inside, the gauges were similar to those of the Carrera 2, with no separate boost gauge (a digital read-out was provided in the trip computer at the base of the tachometer), but a different red-line, marked at 6600rpm on the Turbo. In fact, about the only major cockpit difference, compared with the NA cars, was air conditioning as a standard feature.

Interestingly, the EPA rated the Turbo at 13/21 against 16/22 for the old model. The higher fuel consumption came despite better aerodynamics (cleaner bumper and mirror shapes, and an engine undertray to smooth airflow and reduce noise), but the extra petrol costs (the 77 litre/17 Imperial gallon tank required filling with Premium unleaded fuel, by the way) was a small price to pay for the stunning performance.

Porsche figures claimed that the 1488kg (3274lb) Turbo was capable of covering the 0-62mph/0-100kph dash, and then braking to a standstill again in less than eight seconds - very impressive; top speed was quoted by the factory as 168mph (269kph). As always, the figures released by the people in Stuttgart proved conservative, and the 4.8 seconds quoted for 0-60 was about half a second slow in independent tests, while the standing-quarter could be covered in 12.7 seconds.



*Stylish publicity shot of the Carrera 2 Targa of 1991.*

Paul Frere observed: “The new 911/964 Turbo is certainly not the car the world expected from a company of Porsche’s reputation for advanced technology. Its engine is a quick rehash of the 1977 model’s, dictated only by marketing considerations. In the last 14 years, turbocharging technology has made enormous progress, mainly thanks to electronic control, but the new car makes no use of it.”

Although Mr Frere was obviously disappointed with the specification, *Sports Car International* summed up this latest 911 with the following: “The Turbo is a better car than just about any exotic you can name. If you value tradition and performance over trendiness and convenience, and pride yourself on your ability to drive a high-performance car to its limits, then the 911 Turbo is your only choice.”

*Autocar & Motor* added: “By and large, the new Turbo [is a peach]. What it shares with its predecessors is a disappointing amount of lag and lethargy at low revs and overlong intermediate ratios that merely exacerbate the problem. But so good is its chassis, so smooth and strong the engine, you can forgive it these foibles.”

### **Other 1991 MY news**

No major changes were made to the existing NA range for 1991, although the Carrera 2’s selector mechanism was refined to give smoother shifts. The model also received an optional Sport suspension package (code M030),



with Boge dampers and updated, rising-rate springs; the front anti-roll bar diameter was increased by 2mm (0.08in.) to become 22mm (0.87in.), although the rear one remained the same at 20mm (0.79in.).

The leather dash option was revived for all of the so-called hot countries at this time, with dual airbags standard on all lhd cars from spring 1991. Meanwhile, the top seal on the rear combination lights gained vents to allow the release of heat (in heavy traffic Tiptronic drivers would naturally have their foot on the brake for long periods), and to stop condensation forming. In addition, a delay switch was introduced for the interior lighting, the central locking was modified to stop the alarm going off if the front lid was opened, and, once the 1991 season got under way, the release buttons on the rear seats were changed, moving from the lower hinge to the top of the backrest bolsters.

***Standard coachwork colours (1991)***

*Black, Grand Prix White, Guards Red, Rubystone Red, Mint Green, Signal Green, and Maritime Blue.*

***Special coachwork colours (1991)***

*Black Metallic, Polar Silver Metallic, Slate Grey Metallic, Pearl White Metallic, Amethyst Metallic, Coral Red Metallic, Amazon Green Metallic, Oak Green Metallic, Cobalt Blue Metallic, Midnight Blue Metallic, and Horizon Blue Metallic.*

***Cabriolet top colours (1991)***

*Black, Burgundy, Mahogany, or Dark Blue.*

***Trim colours & materials (1991)***

*Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue vinyl, with Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue leather as an option; special leathers included Matador Red, Carrera Grey or Sherwood Green. Seat inserts came in matching leather or cloth (studio check or with Porsche script). Carpets came in Black, Grey, Red, Blue, Green or Beige velour pile.*





*The Carrera 4 coupé for the 1991 season. From this angle, it's easier to spot the faint Porsche script in the rear reflector panel.*

**CARRERA 4.  
SOMMA DI VALORI**

Dal laboratorio tecnologico 909 deriva direttamente la Porsche 911 Carrera 4. Con le sue elevatissime prestazioni sportive legate in modo indissolubile alla più perfetta sicurezza attiva, Carrera 4 si afferma come la rivoluzione su strada degli anni 90. Le sue prestazioni sono uniche e vi invitiamo a provarne tutta la seduzione presso i nostri concessionari esclusivi. Gli indirizzi si trovano sulle pagine gialle.

Porsche-Italia, C.so Stati Uniti 35, Camin-Padova, Tel. 049/8292911






**PORSCHE**  
EMOZIONI TECNOLOGICHE

**PER CAPIRE IL FUTURO  
BISOGNA PROVARELO.**

Il futuro è il nuovo cambio Tiptronic, il capolavoro della tecnologia vincente Porsche. Tiptronic Porsche, automatico e manuale insieme, trasferisce esperienze ed emozioni della pista sulla strada per una sportività sempre più intelligente. Conocerlo dal vivo presso i nostri concessionari esclusivi varrà più di qualsiasi discorso. Gli indirizzi sono sulle pagine gialle.

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**PORSCHE**  
EMOZIONI TECNOLOGICHE

*Two pieces of Italian advertising from spring 1991.*

In Germany, C2 prices ranged from DM 108,920 to DM 124,025, with equivalent C4 models being DM 13,680 more expensive. The Turbo was introduced at DM 178,500, but quickly went up to DM 182,000. Carrera

prices remained unchanged until spring 1991, when the C2 coupé commanded DM 112,420, and the Turbo a hefty DM 183,600.

The Porsche 911 also provided the basis for one of the ultimate performance machines - the Ruf 911 CTR. Boasting 469bhp and 408lbft of torque, the 0-60 dash was dismissed in 3.9 seconds, with the standing-quarter coming up just eight seconds later. *Road & Track* noted that it was not a car for the inexperienced, but in an acceleration run, "... the explosive CTR is a genuine thrill. It fires off the line and snaps its tach needle to red-line so quickly you can barely shift fast enough in the first two gears."

## America

By 1991, the US range and model specifications had settled down. All American 911s came with halogen headlights, foglights, heated windscreen washer nozzles, a pair of heated power mirrors, a sunroof (coupés only), ABS, PAS (with leather-wrapped steering wheel), cruise control, dual airbags, air conditioning, an alarm system linked to the central locking, power windows with tinted glass, an eight-speaker radio/cassette (cabriolets had six speakers), and velour luggage compartment trim (usually in black). The cabriolet had a power top as standard, and, whilst Carreras had partial leather trim and power height adjustment on the seats, the Turbo's seats had full leather trim and a full range of electrical adjustment.

Prices started at \$61,915 for the C2 coupé, with \$63,445 asked for the C2 Targa, and \$70,690 for the C2 cabriolet. The equivalent C4 models cost \$73,440, \$74,970, and \$82,215 respectively. Tiptronic transmission added \$3010 to the price of a Carrera 2, and the Turbo commanded a substantial \$95,000.

List prices were increased by around 2 per cent in the summer of 1991, and, as well as having to fork out for purchase tax (usually around 5 per cent, although each State had its own levy) and Gas Guzzler Tax, Americans also had to contend with a 10 per cent tax on cars costing more than \$30,000. This pushed up the price of Porsche motoring even further, so the \$95,000 Turbo was, in reality, closer to \$110,000 off the forecourt - before options!

These included metallic, pearl and custom paint; a hardtop and tonneau cover for the cabriolet (the hardtop was priced at \$8582); forged alloys (\$1612, but only suitable for the Carrera); colour-keyed wheels, with the Porsche crest as an option; sports suspension (\$618, but standard on the

Turbo); a limited-slip differential (\$891); headlight washers and a rear wiper (both standard on the Turbo, although a rear screen wash was optional for all grades); deletion of the Porsche emblem on the front lid and the model designation on the engine cover; an Exclusive Package (costing over \$2500 if specified in full, it basically covered all knobs, switches, bezels, gaiters and grilles in leather, although virtually everything could be covered with leather in the individual options listing); wooden dashboard trim (plus a matching gearknob/selector); sport seats; heated seats; full power adjustment for the Carrera seats; power lumbar support; special leather (including two-tone) or cloth seat trim, plus special piping and stitching, and soft leather; full cloth, cloth inlay or leather door trim panels; headrests with the Porsche crest stamped in; different coloured headlining and carpeting (standard colours, or from a prior season); an on-board computer (\$412, but standard on the Turbo), and an Alpine CD player.

*Road & Track* listed the Carrera 4 in its 'Ten Best' for 1991, but there's no doubt that the return of the Turbo, after a one-year hiatus, was the big news in the States. Rated at 315bhp SAE nett, only 600 were allocated to the US market. Amazingly, just 417 were sold! This can be partly explained by the political climate.

The Bush administration basically continued Reagan's policies, so there was consistency, and, following the war in Kuwait, Bush's popularity was at an all-time high. However, America slipped into recession in 1991, allowing Democrat Bill Clinton to take the presidency the following year.

Naturally, the recession did not help sales of expensive sports cars. In fact, only 4400 Porsches were sold in the States in 1991; around three-quarters of these were 911s, of which, about 40 per cent of the Carrera 2s had Tiptronic transmission. There's no doubt that Frederick J. Schwab, PCNA's new President (he served as VP for many years), certainly had a tough battle on his hands in the years ahead ...

## **The UK market**

Margaret Thatcher, elected for a third term as Prime Minister in 1987, handed over the reins to John Major in November 1990. Meanwhile, the British Motor Show had taken place (running from 22-30 September), with Porsche's stand featuring a rhd Turbo, drophead versions of the Carrera 2

and 944 S2, and what was billed as “a race-prepared version of the 911 Carrera 2.”

At this time, the C2 coupé was listed at £47,198, and the C4 coupé commanded £54,166. The Turbo arrived in the UK in January 1991, priced at £72,993, but there was a slight increase across the board shortly after. The timing could have been better, given the petrol price rises in the wake of the Gulf War. In the UK, for instance, the price shot up from just under £2.00 a gallon (4.5 litres) to £2.40 a gallon within days of the conflict flaring up, and prices remained high for many months after the war ended.

UK Turbos had a limited-slip differential and sunroof as standard, the latter usually a £1412 option. Following its appraisal of the turbocharged car, *MotorSport* said: “A good cruising speed can be hopeless unless affiliated to a good chassis, and this the 911 Turbo has. While the old model had an evil reputation, especially in the wet, the new car is predictable and stable, more stable in fact than even some four-wheel drive cars. The steering, which is power-assisted, is precise and the gearchange smooth, both items which have received attention from Porsche engineers. It is the sure-footed handling, however, which remains most indelibly printed in the mind ... There can be no doubt that this new model has given the 911 Turbo a new lease of life.”

The “race-prepared” car was the new, 260bhp Carrera RS. Making its world debut on the PCGB stand (number 322) and finished in pink, the RS was then displayed in Paris. It was some time before it went into production, but at least enthusiasts of the marque knew what to expect in the summer months. Initial production schedules allowed for 1800 lhd cars, and 150 with rhd, by the way, most of the latter bound for UK shores.



*The Dutch Police Force has had a long allegiance with Porsche, as this picture clearly demonstrates; indeed, the last 356s ever built were ordered*

*by Holland's traffic police. To the left is one of its 356 dropheads, photographed alongside a 964 Targa acquired in 1991.*

Interestingly, the Tiptronic gearbox was specified on one in five 911s sold in the UK. The automatic gearbox was becoming increasingly acceptable in Europe (Americans had preferred the AT option for some years), but to have so many 911s equipped with this form of transmission pointed to a number of things: AT technology had improved immeasurably over the years, the Tiptronic obviously offered a good compromise for daily commuters stuck in increasingly heavy city traffic, and Porsche's customer base had shifted somewhat from the hairy-chested days of the mid-1960s. The SC range started the trend towards comfort and luxury, but the 1990s customer wanted even more refinement, and levels of performance and handling that could match the hot-hatch contingent without the need for lashings of effort or extraordinary skill behind the wheel. Times had changed.

*MotorSport* tested the C2 Tiptronic, and said: "The 911 deserved to live on. The Carrera 2 reincarnation, especially with Tiptronic transmission, is probably more attuned to the conditions of today than any 911 in that honourable production history."

During its time with the magazine, the Tiptronic model averaged 18mpg, which is probably more a reflection of test conditions than actuality, as a rival magazine averaged 22mpg with a C4 on long-term loan. Long-term tests often give the reader a better insight into a potential vehicle than a single report. Regarding the C4 coupé, *Autosport* noted: "The engine, of course, is the heart of the car. It hasn't been flawless - it occasionally misfires and tends to stall at idle - but when it's on song it's magnificent.

"What was unexpected is how quiet it is. Porsche paid attention to noise levels in the redesign, and it shows. Mind you, there's still that familiar and spine-tingling growl from behind you when you use full throttle.

"The brakes are simply sensational, with no fade whatever, even after long fast drives where they are used to the full. The gearchange is very smooth and easy, but there's no detent or obstruction between first and reverse, which makes it far too easy to get the wrong gear, usually at the wrong time.

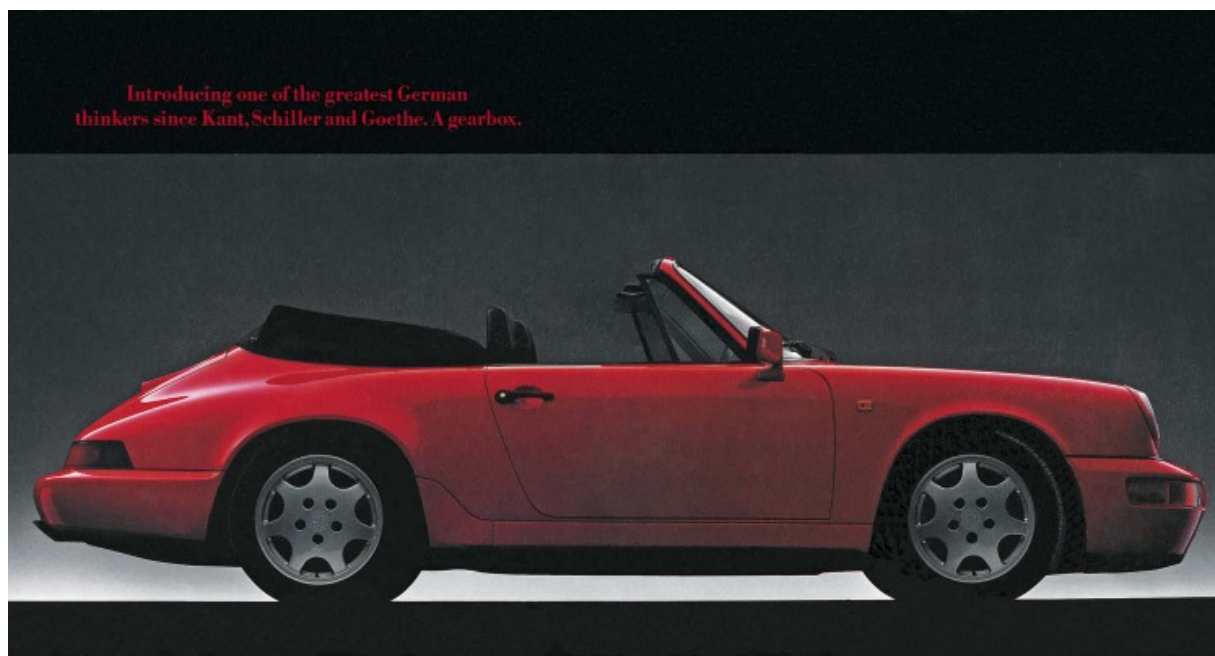
"Another surprise is how light the clutch is, considering the power it has to transmit. And at last there's a left foot brace, tucked under and between the clutch and brake."

UK cars came with the Blaupunkt Symphony radio/cassette with screen-embedded aerial as standard, although complaints about the stereo were voiced on both sides of the Atlantic. Heated seats cost £227, sport seats with power height adjustment were priced at £553, full leather trim was £2205, a trip computer for MT cars added £322 to the invoice, and a tinted band on the front screen was £64 extra.

## Japan & Australia

In Japan, Porsche's distributor, Mitsuwa Motors, changed its name to Mizwa. Only the spelling was different, however, as the organization behind it remained the same. For the 1991 season, the price list was as per the table on page 108, with the Turbo becoming available from spring.

The prices shown are for lhd models; oddly, considering that the Japanese road system is the same as that in Britain, not Germany, rhd models (where available) were actually 180,000 yen cheaper. For many years, left-hand drive has added kudos to a car in Japan, as it is obviously an imported vehicle! In a fashion-conscious country like Japan, prices tend to reflect this.



Introducing one of the greatest German thinkers since Kant, Schiller and Goethe. A gearbox.

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Can some of Germany's most renowned thinkers actually be compared to a gearbox?

Yes, sir!

Kant believed in the freedom of Man to make his own choices. Likewise the new Tiptronic gearbox on the Porsche Carrera 2.

For the first time on a production car, the driver has a choice of using either four speed classical manual or fully automatic gear selection. Move the gear lever into manual and you can effortlessly change gears up or down simply by slipping the lever forwards or backwards.

Do the car's own choice use of five automatic programmes. (Five? Well, it's a Porsche.)

By monitoring the car's speed, over, coasting, starts, even how vigorously you use the throttle, it decides what kind of driver you are. Then it matches the timing of

the gear selection to your driving style. In a word, the Carrera 2c always works on the driver's behalf in quite accurate 'Shower selection' is how our magazine described it.

Schiller, in his poem "Ode to Joy," might easily have included a few lines about the Tiptronic trans-

mission if he were writing it today. After all, the gearbox allows the driver to feel excited whether in an urban city traffic or on a road on the open road.

However, Porsche engineers haven't forgotten that the Carrera 2 Tiptronic is still very much a 911.

As if to make their point, they have endowed the Carrera 2 with the most powerful, naturally-aspirated engine ever put into a 911.

And thanks to the retractable rear spoiler and the smooth-cut under floor panels, it is even more aerodynamic than its predecessors.

Goethe's main theme was Man's quest for happiness. Pay the toll around to see drive the car!

Put simply, the Carrera 2 Tiptronic is a car well worth driving about. Although this is a word of course, the car has already made up your mind for you.

The 911 Carrera 2 Tiptronic (335CV) is 1st September 1990. For details contact your Official Porsche Centre in India or Japan.

Alternatively, send your business card to Porsche Cars Great Britain Ltd., Freepost, Reading RG2 1BB. Or you can telephone 0734 329900.

*British advertising from around the time of the 1990 Motor Show, held that year at the NEC, near Birmingham.*



*A UK-spec Carrera 4 interior trimmed in Matador Red.*



*The Turbo making the front cover of Japan's Car Graphic magazine.*



プロフェッショナル・エリートの新しい刺激。911 Carrera シリーズ

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● Carrera 2 Coupé 4速MT ● 1000cc 空冷直列4気筒 ● 最高出力200PS/6000 ● 最高回転速度2000rpm  
 ● Carrera 2 Coupé 4速AT ● 1000cc 空冷直列4気筒 ● 最高出力200PS/6000 ● 最高回転速度2000rpm

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*Japanese advertising from the end of the 1991 season.*

1991 price list for Japan				
Model	Body	Transmission	Steering	Price (yen)
Carrera 2	coupé	MT	lhd	10,350,000
		Tip	lhd/rhd	11,350,000
	Targa	MT	lhd	11,100,000
		Tip	lhd/rhd	12,100,000
	cabriolet	MT	lhd	12,200,000
		Tip	lhd/rhd	13,200,000
Carrera 4	coupé	MT	lhd/rhd	12,100,000
	Targa	MT	lhd/rhd	12,900,000
	cabriolet	MT	lhd/rhd	13,900,000
Turbo	coupé	MT	lhd	16,500,000

In Australia, the C2 line-up ranged in price from \$174,499 to \$197,117 (with manual gearboxes), while C4 models started at \$194,658 and went up to \$215,956. To put this into perspective, the 944 was available from \$126,276, and the contemporary 928 S4 was priced at \$236,791. The Turbo was not listed Down Under until the 1992 season.

Motorsport news

The WSPC became known as the World Sportscar Championship in 1991; Jaguar won, but storm clouds were gathering. Proposed new regulations, and a lack of support from the major manufacturers, called into doubt the future of the series before the 1992 season even started.

While Porsche continued to simply make up the numbers in the main IMSA categories (coming fourth in GTU, with less than half the points of Nissan and Dodge), at least the new Supercar GT Class gave the Stuttgart maker a fresh chance to shine. The 1991 IMSA Bridgestone Supercar series saw the return of the Brumos Porsche team, made famous many years ago by the late, great Peter Gregg, and with Hurley Haywood at the wheel, the 911 was immediately back in the winner's circle after a long, dry spell.

The Carrera Cup continued, becoming a high profile series, with prize money totalling DM 800,000, and even supporting a number of Grands Prix. Roland Asch won the big one, but there was also the Carrera Trophy in Germany to encourage younger drivers, and a series in France, too. The UK had the long-running Pirelli Porsche Cup Championship, of course, which welcomed all models.

### **Another Formula One project**

Surprisingly, given its poor performance in the American CART Indy series (at least by the standard expected of Porsche), after an approach from Footwork, in February 1990, the Stuttgart company once again returned to the F1 arena. This time, however, the situation was a little riskier as the 3.5 litre V12 cam covers proudly carried Porsche insignia, putting the Zuffenhausen concern firmly in the spotlight, and the Footwork Arrows chassis it was destined to be installed in was certainly a lot less competitive than that of the McLaren.

Max Welti, former Sauber-Mercedes Group C Team Manager, was appointed head of the F1 programme at Weissach. His brief was to ensure that the Milton Keynes-based Footwork team had at least ten engines available for each race in the 1991 season.

Early testing was marred by a series of problems, and, sadly, things didn't improve on the track. Early hopes for 700bhp at 14,000rpm by the end of the first season were dashed (official figures quoted 650bhp at 12,000rpm), and the unit was found to be far too heavy to be competitive. This was a very disappointing chapter in Porsche history - the only finishes recorded during

1991 were when the Footwork chassis was fitted with a Cosworth engine, and even then no points were scored. In the end, the joint project was formally abandoned on the eve of the Japanese Grand Prix. The Footwork équipe signed up with Mugen-Honda for 1992.

Porsche's boss, Arno Bohn, responded: "In the case of CART, we were the victims of rule changes from the organizers that made our chassis less competitive overnight. In F1, we thought it would take three years to win anyway. Obviously both these programmes did not help us, but we remain committed to motorsports ..."

## **The Carrera RS**

Having made its debut in England in autumn 1990, the first magazine articles on the new, C2-based model began to appear the following summer after a press launch at Zolder. Priced at DM 145,000 (about the same price as a C4 cabriolet), the intention was to get 1000 cars built before the end of 1991, thus allowing Porsche to homologate the lightweight RS in the FIA GT category.

To reduce weight, Porsche followed its traditional pattern, giving the car basic trim. Out went the power-assisted steering, the central locking, electric windows, power seat and mirror adjustment, headlight levelling facility, alarm, and air conditioning. The front seats were lightweight, leather-trimmed Recaro buckets with fixed backs (making the rear shelf virtually redundant), while those at the rear were replaced by carpet-covered indentations in the floorpan.



*Action from the Nürburgring 24-hour endurance race of 1991.*



*The Nürburgring round of the Carrera Cup series, April 1991.*



*The Carrera RS of 1991 vintage being hustled around the track*



*Spartan interior of the Carrera RS.*



*Tail of the C2-based Carrera RS, the latest in a long line of 911s to carry the legendary 'RS' moniker.*

Door panels, and their related furniture, were simplified, including nylon straps for door pulls (colour-keyed with the body, with matching seatbelts), and the airbags were deleted. The earlier steering wheel was retained but with a different centre pad carrying 'RS' script rather than the Porsche name. The rear firewall also had identifying script - 'Carrera RS' picked out in the carpet.

The wiring harness was simplified, the regular 75Ah battery was replaced by a 36Ah one (covered by cheaper, lightweight carpet, and with a cut-off switch above it), and sound deadening material was reduced to a minimum. The fuel tank was also different, with a 92 litre/20.3 Imperial gallon capacity.

Bodily, there wasn't that much difference to the Carrera 2, although the shell was seam-welded, the Turbo's door mirrors were adopted (with manual adjustment on the RS), there were dummy foglight lenses, and the rear bumper was of a different pattern to the other cars; lighter, and with number plate lights to the side of the registration plate. In addition, the steel luggage compartment lid was replaced by an aluminium one, and the rear and side windows were thinner than standard. Otherwise, without seeing the 'Carrera RS' badge on the tail (which could be deleted anyway), one could easily be fooled into thinking this was a run-of-the-mill model with Turbo wheels: even the retractable rear spoiler remained.

Those wheels, by the way, were slightly different to those of the Turbo, to the same design, but made of cast magnesium alloy. The 7.5J x 17 fronts were a fraction wider, too, although the rears were the same at 9J; the ZR-rated tyres, usually Yokohamas, were carried over from the turbocharged model.

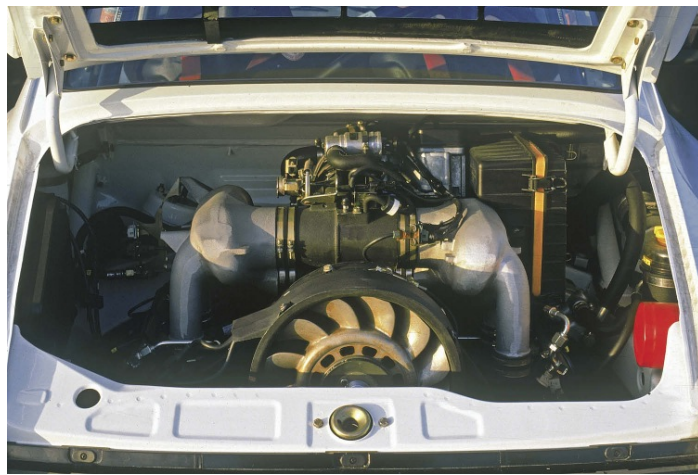
Behind the wheels was an updated and lowered suspension (the RS sat 40mm/1.6in. lower than a regular C2), with stiffer springs (three times harder than those of a Turbo up front, and twice as firm at the rear), dampers and bushes, and adjustable anti-roll bars (24mm/0.94in. diameter at the front, 18mm/0.71in. at the rear) but no strut brace. In the braking department, the same system as that used on the Carrera Cup racers, complete with ABS and cross-drilled discs, ensured top-class stopping power. With the PAS gone, the RS used a manual rack, this one having a variable ratio of 19:1 to 24:1.

The Carrera RS, classed as a 1992 model, was not only 130kg (286lb) lighter than a Carrera 2 (at least in Sport guise), it also had 10bhp more at the wheels thanks to its modified M64/03 engine, red-lined at 6800rpm and attached to the chassis with solid mounts. Although a three-way catalytic converter was retained, with a single exhaust pipe, a new ECU boosted power up to 260bhp at 6100rpm on 98-octane fuel, whilst maximum torque output was increased by 12lbft to give 240lbft at 4800rpm.

With a lightened flywheel, but the same final gearing as the strict C2, albeit with a Turbo-spec, limited-slip differential more suited to track work, plus tougher synchronizer rings and slightly taller ratios on the first two cogs in the gearbox (3.154 and 1.895, bringing the ratios closer together, and prompting a new designation - G50/10), Porsche claimed a 0-60 time of 5.3 seconds, and a top speed of 162mph (259kph).

As *Autocar* noted: “The new Carrera may not have the explosive mid-range punch of the Turbo, but it compensates with instantaneous throttle response, relentless urge and an exhaust note that gave me goose bumps for a week. The gearchange is short and snappy, the pedals are heel-and-toe heaven, the brakes awesome and the stripped-down simplicity of the package just perfect. Best of all, though, is the way it handles ... Since the RS is almost certainly quicker than the Turbo point-to-point and a whole lot more fun to drive, it could be the most sought-after Porsche for years.”

Meanwhile, *Performance Car* enthused: “What the RS has done is take the technical brilliance of the latest Carreras and put back the missing excitement of some earlier, less pampering generations.



*The RS was not the only lightweight 964 model Porsche built in 1991 - it also produced this one-off Carrera 4 competition prototype - the C4L described on page 97. However, it was the C2-based models that ultimately represented the marque on the world's race tracks.*

“We’ve praised the Carrera 2 and Turbo as probably the best-handling 911s to date, but the RS adds yet another dimension of drivability, killing so

much of the initial understeer and adding a feeling of front-to-rear balance that you'd never have dreamed of in a 911 even a couple of years ago ... When Porsche talks of the new RS as 'the rebirth of a legend,' don't scoff. It has every chance of going down as one of the all-time greats."

This viewpoint was echoed by Porsche 924 and 911 racer, Tony Dron, in *Classic Cars*: "In brief, this is not the raw, noisy and tiring monster you might expect from its lack of sound deadening. Subjectively, it seems quieter than the recent 911 Club Sport model; it would be relaxing to drive fast for long periods and I am convinced that 911 enthusiasts will take to it."

The lightweight - or Sport - version, was the standard Carrera RS model, although specifying the M002 option resulted in the Touring variant. The Touring basically put back most of the goodies, such as power windows and sports seats, C2 interior trim (minus the rear seats), an eight-speaker radio/cassette (a basic two-speaker stereo was offered as a no-cost option on the Sport model), and proper soundproofing. This was at the cost of 70kg (154lb) of extra weight, but, unless the optional sunroof and air conditioning were requested, the car was still a fair bit lighter than a normal C2, and had an extra 10bhp.

Of the 2391 Carrera RSs built, 1916 of them were Sport models (72 of which had right-hand drive); the remaining 76 road cars (11 with rhd) were built to Touring specification. Those good at mathematics will have spotted a shortfall of 399 units; these cars were made into Carrera Cup racers (112 of them), or the M003 FIA GT competition model.

## **The 968**

Prototype pictures of the 968 started to appear in magazines during mid-1991. It looked very similar to the 944, but disguise panels around the headlights and tail kept the final details out of reach of the long lens brigade until the car was launched at that year's Frankfurt Show.

Mechanically similar to the 944 S2, it was powered by a development of the four-cylinder S2 unit, and linked to either a Getrag six-speed manual or four-speed Tiptronic semi-automatic gearbox. The three-litre, twin-cam 16v engine featured 'Variocam' (Porsche's variable inlet valve timing system), pushing power up to 240bhp.

Like the 944, the 968 was available in both closed coupé and cabriolet form. The body styling, executed by Harm Lagaay (returning to Zuffenhausen



in 1989 after spells with Ford Europe and BMW, Lagaay was now the head of Porsche's styling department, following Tony Lapine's retirement), was a cross between the 944 and 928, although 80 per cent of the panelwork was new.

### **The 1992 911s**

The new 911 Carrera RS was joined by the usual array of C2 and C4 models for 1992, plus a newcomer: the Carrera 2 Turbo Look cabriolet. Launched at the 1991 Frankfurt Show, where Porsche displayed a Turquoise Metallic example with matching interior, the Turbo Look model followed the same pattern established with earlier 3.2 litre versions. In other words, it was a normally-aspirated car with the body (albeit minus the whaletail rear spoiler), wheels, brakes, and suspension of the Turbo, as well as the automatic heating system of the coupés. The Tiptronic gearbox could be specified on this new Turbo Look model, incidentally, and, as with the regular cars in the Carrera 2 range, a different rear anti-roll bar was used, which was slimmer by 1mm (0.04in.).

European engines and transmissions were carried over from the previous season, although there were, as usual, a few detail changes. The most obvious was the adoption of five-spoke 'Cup' wheels to replace the old 16-inch 'Design 90' items, although the latter were still available as an option, either with a natural finish or with painted centres and a polished rim. The new wheels were similar to the 'Cup Design' versions, but with 16-inch rims and slightly narrower spokes. Measuring 6J up front (shod with 205/55 rubber) and 8J at the rear (with 225/50 covers), not only were these new wheels lighter, they also improved brake cooling. In addition, all cars gained the resin, Turbo-style door mirrors.

The power steering was modified slightly to include steering stops for use with the optional, Turbo-style, 17-inch wheels, American C2s had revised gearing, and the Turbo's spring-assisted clutch pedal was fitted to the NA models. In addition, the heater received some attention, and the luggage compartment carpet was now secured by magic tape instead of press-studs.

### ***Standard coachwork colours (1992)***

*Black, Grand Prix White, Speed Yellow, Guards Red, Rubystone Red, Mint Green, Signal Green, and Maritime Blue.*

***Special coachwork colours (1992)***

*Black Metallic, Polar Silver Metallic, Slate Grey Metallic, Pearl White Metallic, Amethyst Metallic, Coral Red Metallic, Raspberry Red, Amazon Green Metallic, Oak Green Metallic, Wimbledon Green, Cobalt Blue Metallic, Midnight Blue Metallic, and Lavender Blue Metallic.*

***Cabriolet top colours (1992)***

*Black, Magenta, Cobalt Blue, or Dark Blue.*

***Trim colours & materials (1992)***

*Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue vinyl, with Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue leather as an option; special leathers included Matador Red, Carrera Grey or Sherwood Green. Seat inserts came in matching leather or cloth (studio check or with Porsche script). Carpets came in Black, Grey, Red, Blue, Green or Beige velour pile.*

German prices increased again, taking the strict Carrera 2 cabriolet up to DM 135,090, and the Carrera 4 version up to DM 147,955. The new Carrera 2 Turbo Look drophead was DM 169,300, and a hardtop DM 12,550 for all convertible models.

New options for 1992 included the Turbo's alloy wheels for the Carrera, a remote CD autochanger, additional interior footlights, a wooden handbrake sleeve (to match the optional wooden dash and gearknob, and wood/leather-trimmed steering wheel), and a rear storage compartment.



*The Porsche stand at the 1991 Frankfurt Show. While the new 968 holds centre stage, the 911 Turbo can be seen nearest the camera, with the 928 next to it, and another debutante beyond that: the C2 Turbo Look cabriolet.*



### **A Stateside viewpoint**

In the States, 1992 model year prices ranged from \$63,900 to \$98,875. This takes account of the limited edition 911 America Roadster, which was basically a C2 Turbo Look cabriolet with a few detail changes. Powered by the standard 247bhp, 3.6 litre flat-six linked to either a five-speed manual or four-speed Tiptronic transmission, it differed from the regular Turbo Look

drophead only in its unique badging on the tail. A total of 250 of these leather-trimmed, \$87,900 machines were built, with sales ceasing at the end of 1992. By this time, all US convertibles were two-seaters with storage boxes in the rear, as it was not possible to find a suitable solution that complied with Federal requirements regarding a three-point seatbelt for rear occupants.



*A rather unusual view of the Carrera 2 Turbo Look cabriolet. By the way, the cassette/CD holders in the rear of the centre console were given new latches, for 1993 to prevent them opening if the driver's arm happened to touch the lids. Cars with remote central locking had a tiny red LED in the top of the door button to advise the driver that the alarm had been set.*

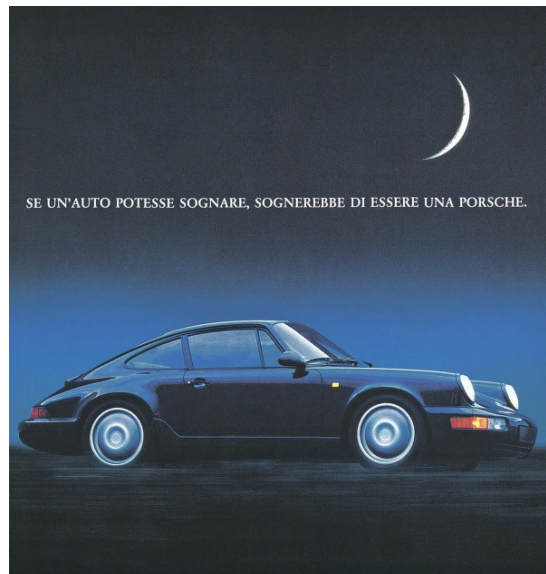


'92 PORSCHE  
911 Turbo

MIZWA 



*The regular C4 cabriolet proudly displaying the latest five-spoke 'Cup' wheels.*



Se un'auto potesse sognare, sognerebbe di avere, come la Carrera 2, il nuovo cambio Tiptronic, per essere davvero all'avanguardia. Poi vorrebbe un sistema frenante straordinariamente potente ed efficace, e l'Airbag di serie anche per il passeggero, perché la sicurezza non deve avere limiti. Sognerebbe un catalizzatore metallico a tre vie, per rispettare l'ambiente. E una vita eccezionalmente lunga e felice. Se un'auto potesse sognare, vorrebbe essere tanto splendida da diventare leggendaria. E tanto saggia da offrire al compagno della sua vita ogni garanzia: per esempio, dieci anni contro la ruggine passante, tre per la verniciatura, due per tutto. Se un'auto potesse sognare, sognerebbe di essere il massimo. E sarebbe una Porsche. Carrera 2 e Carrera 4 nelle versioni Coupé, Targa e Cabriolet. Gli indirizzi dei concessionari esclusivi Porsche sono sulle Pagine gialle. Porsche-Italia, corso Stati Uniti, 35 - Camin-Padova, tel. 049/8292911.

**PORSCHE**  
EMOZIONI TECNOLOGICHE

*Italian advertising from the spring of 1992.*



*An American-spec Carrera 4 coupé with the optional Turbo-style wheels.*

Although internal ratios were unchanged, American Carrera 2s with manual transmissions had a revised 3.33:1 final-drive (prompting the Type G50/05 code, as opposed to the G50/03 five-speed transaxle used in most markets), while US cars with Tiptronic now had a 3.56:1 final-drive (Type A50/03; Europe had the A50/02), and came with Keylock/Shiftlock. This meant that the engine had to be running and the brake applied before the lever would move from the 'P' position on the selector; this latter feature was specified for all markets in the following season. The gearing was unchanged for non-US markets.

1992 was the year *Road & Track* brought together ten contemporary sports cars to find which had the best handling. The 911 Turbo was included in the group, and racer Danny Sullivan had this to say about it: “This is the only car I had trouble with going into the sweeper flat-out. I occasionally would come in a little sideways, then hit the bumps and have even more difficulty. The average driver, on typical road conditions, will find the Turbo to be a little bit of an understeering car. Steering is light, turn-in is very good, and the braking is also very good, with excellent stability. Porsche has improved the balance of the car substantially. It squats when accelerating and dives under braking as Porsches always have, but the body rolls much less than I thought it would.”

In braking, the 911 came out tops, followed by the Honda NSX, and the new Mazda RX-7. In turn-in response, the RX-7 was the sharpest, followed by the NSX and the 911, which tied for second place. In steady-state cornering, the NSX ruled the roost, with the RX-7 and Chevrolet Corvette LT1 sharing second, and the 911 next in line. Only on the exit of a corner did the 911 fall down, coming seventh; the RX-7 and NSX tied for first.

Judging by this, the NSX would have scored 38 points on a basis of ten for first, nine for second, and so on. The FD-type RX-7 would have got 37, and the 911 a lowly 30, despite having the best brakes. Interestingly, though, the Mazda clocked the fastest lap times, with the 911 second, the Mitsubishi 3000GT VR4 third, and the NSX fourth.

In the final analysis, three of the six testers went for the FD-type RX-7 (a car the author owns and will never, ever sell!), whilst one went for the 911, another for the NSX, and the last one couldn't decide between the 911 and NSX. Sullivan's choice - the 911 Turbo.

A new performance model was in town by now, though: the RS America. PCNA called it “... a new 911 that redefines the pure fun of driving a high-spirited sports car.” Would the press agree?

### **The RS America**

Introduced in January 1992 as an early 1993 model, the RS America, priced at \$53,900, became the US market's entry level 911. Classed as option M504 on the C2 coupé, it was sold only in North America to make up for the fact that the Carrera RS was not available in the States; it simply failed to comply with Federal safety and emission codes. The RS America used the regular

M64/01 engine linked to the G50/05 transmission, whereas the European RS used the M64/03 unit matched up with the G50/10 gearbox. This allowed the car to pass exhaust tests, while dual airbags, standard glass and door beams allowed it to clear crash tests.



*The US-spec C4 interior from the time.*



*The 1992 model year C2 cabriolet shod with regular 16-inch alloys. Alloy wheels usually came with a natural finish, although they could be supplied painted or buffed. In addition, the 964 series wheel centre crests could be plain (embossed with no highlighting), with black highlights, or in full colour.*



*A Carrera 2 Targa from America's 1992 season.*

Like the Turbo, the RS America sat 10mm (0.39in.) lower than a Carrera 2. It had the M030 suspension (usually a \$620 option), and pressure cast aluminium alloys - 7J x 17s up front (with 205/50 rubber) with 8J x 17s at the back (shod with 255/40 tyres), which were usually a \$1352 option. It also came with a fixed rear wing.

Despite not having air conditioning, power steering, sunroof, stereo, rear seats (there was a parcel shelf in the rear, with doors to access the bins underneath), and little in the way of sound insulation, the car was still a touch heavier than a European RS model. The safety equipment had a lot to do with this, and, while the car had basic door furniture and manual mirror adjustment like its European cousin, the US vehicle had power windows and central locking, adding more weight. Standard-looking seats were trimmed in black corduroy fabric and vinyl, and had power height adjustment.



# Starting from "a clean sheet of paper" is fine. If you have nothing worth keeping.

You hear a lot of boasting these days about automotive engineers starting from scratch, with a clean sheet of paper. And, if it takes them three years to turn out a new car, that's what you get. The product of three years of thinking.

The new Porsche 968 is a result of quite the opposite philosophy. A new car which, by no accident, appears strikingly familiar. The product of over 40 years of fine tuning.

In 1948, Professor F. Porsche brought to life his dream car. Heralded then as, "The newest creation of one of history's most brilliant designers of sports and racing cars... a challenge to all designers," it began a legendary evolution.

Every day since, this band of idealistic engineers has practiced what they call "polishing the diamond." The 968 is the most current iteration of this timeless process.

Reaping the technological and performance harvest of 15 new patents, the 968 melds the Porsche essence with every last ounce of today's engineering potential. Imbued with unmistakable lines, it brings the classic family features forward with futuristic aerodynamics.

By introducing the racebred concept of "internal aerodynamics" to a production car, meticulous sculpting of chassis details now speeds air through the body and suspension, reducing drag and lift while cooling racing caliber components such as the massive, internally vented disc brakes with ABS.

From that first, handbuilt car, the visceral Porsche character, power and agility have historically set benchmarks for other cars of the era.

The 968 employs the patented new Porsche VarioCam™ to again set such standards.

Continuously varying valve timing to burn fuel more precisely and thoroughly, torque is boosted to the highest of any 3 litre engine in the world, with instantaneous throttle response.

A stunning new catalytic converter with thin, rare metal inner walls increases airflow for still more power. Yet, resourcefully, the VarioCam and converter efficiency also lower emissions a dramatic 22%.

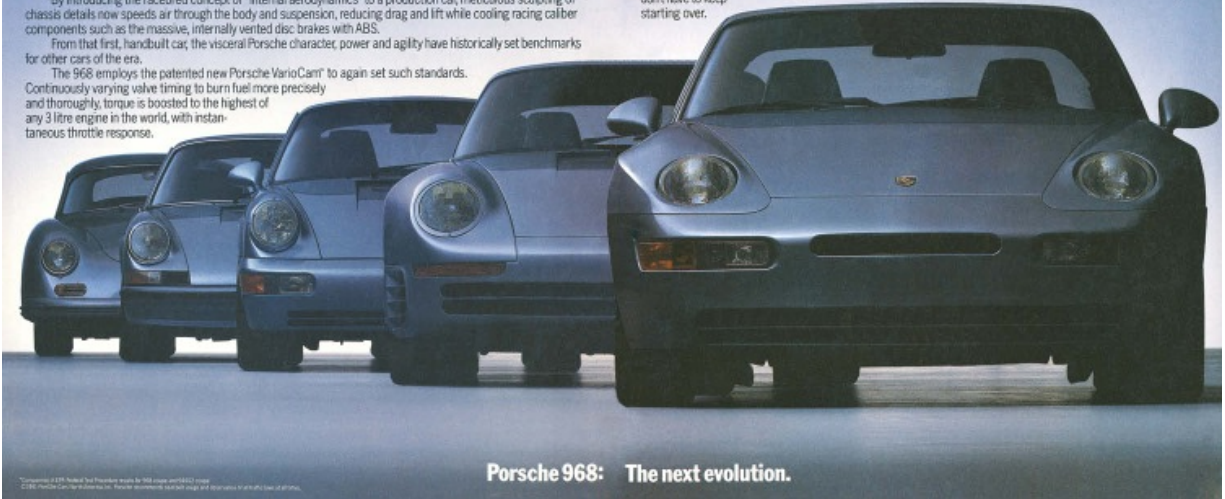
Handling is heightened and refined as well. The famed transaxle platform with near perfect 50-50 weight balance is further buttressed for the added performance, yet detail changes have actually increased comfort.

If you were to drive an original Porsche 356, then climb behind the wheel of the new 968, the feelings and stimulations would be much the same. Merely enhanced, with ever more potential and a feeling of confidence to use it.

The bloodlines would be clearly intact.

It's the type of marquee personality that has become regrettably rare today. Left behind in an age when cars reflected their creators. An age being kept alive at Porsche, and in the 968.

Call 1-800-252-4444 for more information or to arrange a personal viewing at your authorized Porsche dealer. A new Porsche doesn't come along every day. But then, when you start without compromise, you don't have to keep starting over.



Porsche 968: The next evolution.

*American advertising from early 1992.*

Available only in Black, Grand Prix White, Guards Red, Polar Silver Metallic or Midnight Blue Metallic, the car had 'RS' badging where the rear torsion bar covers used to be on the older 911s, and 'RS America' script on the tail.

Introduced at a price of \$53,900, just five options were available: metallic paint (\$1015), air conditioning (\$2673), a sunroof (\$1906), a stereo radio/cassette (\$963), and a limited-slip differential (a \$895 option on all rwd 911s). Initially, it was thought that only 200 would be produced, but this figure later proved far too conservative, and sales were not capped as a result (PCNA needed all the sales it could muster).

Meanwhile, *Road & Track* timed the RS America at 5.3 seconds in the 0-60 dash, while the standing-quarter was dismissed in 13.8 seconds. It noted: "As usual, the 911's braking distances are terrific, a natural consequence of its rear weight distribution, fat tyres and quick-pulsing ABS. And at less than emergency conditions, pedal feel is superb.

“Lift off the throttle while circling the skidpan and the RS America will spin, something few cars do. However, these days, 911s rotate quite slowly, and it’s relatively easy to catch them.

“The RS America’s slow steering ratio and lack of power assist can hamper quick handling corrections. On the other hand, the steering feel is excellent.

“In keeping with the RS America’s muscle-building steering, this Porsche also displays a firm ride. Let’s note, however, that it’s not jarring and, most important, it’s the one concession you make to sporty handling.”

Despite establishing the Porsche Credit Corporation, to make buying or leasing a Porsche easier, and the introduction of new models, US sales continued to fall, with 2354 normally-aspirated 911s and 351 Turbos helping to make up the 1992 total Porsche sales figure of 4133 units.

### **The right-hookers**

The 911 range was quite extensive in UK at this time, with the £78,319 Turbo, the Carrera 4 line-up (priced from £55,344 to £61,388), the Carrera 2 (in its familiar, narrow-bodied guise, with prices from £50,243 up to £56,553, or as a £70,398 Turbo Look cabriolet, Tiptronic transmission adding a further £2708), and the £63,544 RS, available in lightweight Sport or more civilized Touring form.

*MotorSport* tested a Carrera RS (in lightweight guise), and a 911 Turbo in its January 1992 issue, and lamented: “The RS Lightweight has such a sternly strapped down chassis that only the committed heart of our readership - or those with extensive vintage experience - are likely to be able to stomach its rural ride in everyday use.

“The low speed ride is truly awful, and I was not impressed at first, especially as the engine kept hunting and stalling around idle. I was also unimpressed by the brakes. I am sure these RS brakes are better when truly hot, but in Britain the pedal feedback is not so good.”

However, if “... you believe the whole Porsche creed, and nothing but the Porsche creed, the RS is for you. The RS Lightweight is a truly memorable driving experience in a world full of increasingly bland motor cars.”



*The RS America captured at speed.*



*The rear shelf and storage bins that were fitted to the RS America.*

Regarding the turbocharged car (PCGB planned to import 80 Turbos for the 1992 season), the article said: “The turbocharged car is now truly tamed, but remains magnificently muscular, an enticing proposition to use over any public road. The Turbo is the best all-rounder in the Porsche range - significantly more civilized at higher speeds than the 250bhp ‘entry level’ 911.

“In current road conditions, the writer did not think the 911 Turbo provided a £28,076 advantage over the cheapest 911 coupé. Yet he did feel that those in the position of choosing between this Porsche and the more obvious supercars from Lamborghini and Ferrari would vote for the former if they wanted to use it regularly. We would still unhesitatingly recommend the 911 Turbo to those who must have the top of the range model.”

Interestingly, prices were reduced slightly in mid-1992. The C2s were a touch cheaper (now starting at £48,311), the C4s were about the same, and

the Turbo was listed with a £75,306 sticker price.

The press release for the 1991 Tokyo Show stated that 270 Carrera RS models had been allocated to Japan for the 1992 season. If this figure seems high, bear in mind that 4557 Porsches were sold in the 1991 model year; the Japanese economy was still buoyant at this time, allowing the Land of the Rising Sun to claim the third largest market for the sports cars from Stuttgart.

Japan's prices for 1992 were carried over from the previous season, but obviously there were some additions. The Carrera RS was new, for instance, and cost 13,300,000 yen in basic guise, or 13,800,000 yen in Touring form. In both cases, the RS was available in left-hand drive only. The other newcomer was the Turbo Look cabriolet, which cost just over 15,000,000 yen with rhd, or 15,200,000 yen as a left-hooker.

The Turbo made its Australian debut in time for the 1992 season, immediately becoming the most expensive Porsche in the line-up, priced at \$264,226. The three body variations on the C2 and C4 made up the seven cars sold in Australia at the start of the year, but then one more came along. Initially, Australia was not going to import the Carrera RS, but eventually relented after doing a deal with the factory that allowed PCA to charge only \$15,510 more than the standard C2 coupé's \$167,179 price. Even so, only six cars were allocated for 1992, all complying to Sport specification.



*A most unusual photograph of the Carrera 4, but one that clearly shows the amount of detail work on the underbody of the 964 series.*

## **The Turbo S**

Introduced at the 1992 Geneva Show as a bright yellow concept car, the Turbo S was lightened in much the same way as the Carrera RS, but was powered by a tuned version of the 3.3 Turbo unit. Known as the M30/69SL engine, it gave 381bhp at 6000rpm on 98 RON unleaded, and 362lbft of torque at 4800rpm. This power enhancement was thanks to high-lift camshafts, some careful gas-flowing in the ports and intake manifolds, and increased boost (up to 11.3psi).

To help transmit the power, the Turbo S had a stronger clutch, while four-pot calipers (painted red and acting on massive cross-drilled and ventilated discs) helped keep it in check. The suspension was suitably uprated (although ride quality was said to be not quite as harsh as that of an RS), featuring a front tower brace over the 92 litre (20.3 Imperial gallon) fuel tank, while the wheels, polished on most cars, were Speedline three-piece items. The front of the vehicle had 8J x 18 rims (shod with Pirelli P Zero or Dunlop SP8000 235/40 ZRs), and the rear had 10J x 18s with 265/35 rubber. With no PAS, parking became something of a workout!

To save weight, the Turbo S featured thinner glass, a lightweight rear valance (like that of the RS in the centre), the rear wiper was deleted, soundproofing and underseal was reduced, and composite material (carbonfibre-reinforced resin) was employed for the doors, front lid, and rear spoiler; the whaletail was slightly different to the standard one, as it happens, with less upturn on the outer edges. Air ducts took the place of the front foglights, serving the brakes and oil coolers, while scoops in the rear wings helped to cool brakes at the back.

As Paul Frere noted: “Despite the extensive use of composites, the build quality of the Turbo S is impeccable. It is impossible to detect which body panels are original and which are made of lightweight plastic, so perfect is their surface finish and so good is their fit. But then, if you pay \$180,000 for a car, you have some right to be exacting.”

Other weight-saving measures included a stripped-out interior similar to that of the RS. Air conditioning was optional, there were no airbags, no central locking, no power windows, and no rear seats. The Turbo S had a three-spoke steering wheel, the centre-pad of which, like the door pulls and seatbelts, was sometimes co-ordinated with the body colour. The Recaro seats were also colour-keyed.

‘Supercar Champion - IMSA’ decals (as seen on the show car) were added to the sills, although they could be deleted at the customer’s request. Customers were few and far between, however, and only 81 were built to special order. The Turbo S wasn’t sold in the States, and not officially in the UK, either, although six were privately imported with right-hand drive at a cost of £128,000 each, including one for golfer, Nick Faldo.

Lighter than a standard Turbo by 190kg (418lb), the standing-quarter time, at 12.4 seconds, was one second quicker than that posted by the regular Turbo. The S had a maximum speed of 180mph (288kph).





*The lightweight 3.3 litre Turbo S, with separate views of its highly-tuned engine and businesslike interior. Only 81 were built to special order*

## **Racing news**

The WSC survived for 1992, but only just, becoming known as the SWC in the process. Peugeot won that series, but Hurley Haywood retained his IMSA Supercar title with the 3.3 litre Turbo. Porsche also won the Grand Sports division of the IMSA Firehawk Endurance Championships for the second year in a row. Nick Ham and Rick Moskalik took a 944 S2 to victory in six of the eight rounds, handing Porsche the manufacturers' title. However, Porsche could only manage fifth in the IMSA GTP title chase, and fourth in the GTU category.

1992 Carrera Cup cars were now based on the RS (although they used different chassis numbers), priced at DM 148,000 apiece. A combination of 275bhp in a 1120kg (2464lb) vehicle was enough to give the latest Cup models a top speed of 173mph (277kph). Uwe Alzen won the title (he was also runner-up in the first Supercup) and, like some of the other Cup entrants, went on to greater things.

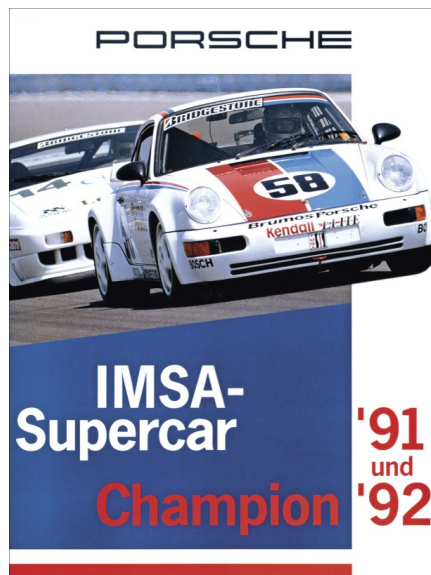
Actually, 45 Carrera Cup cars had been built for an American race series, which, unfortunately, failed to get off the ground. Standard US coupés were used, with regular chassis numbers, and then converted to Carrera Cup spec by the famous Andial race shop (which looked after both Porsche and Nissan racing interests in the States). However, the vehicles were later converted back to road cars after the series was cancelled. With around 15bhp more than usual, and Turbo front brakes, they were given a dash plaque to

distinguish them from regular models. Virtually all of them were finished in white (one was painted in red), with black interiors.

Interestingly, the 3.3 litre, \$98,875 Turbo could be bought with the S2 package in the States, which was essentially introduced to give Porsche an advantage in the IMSA Supercar series. At the heart of the \$10,065 S2 upgrade was a more powerful engine; a larger intercooler, revised KKK turbocharger, and wilder camshafts bringing performance up to Turbo S levels. *Car & Driver* clocked one at 178mph (285kph), but only 20 were built - just enough to satisfy IMSA's requirements.

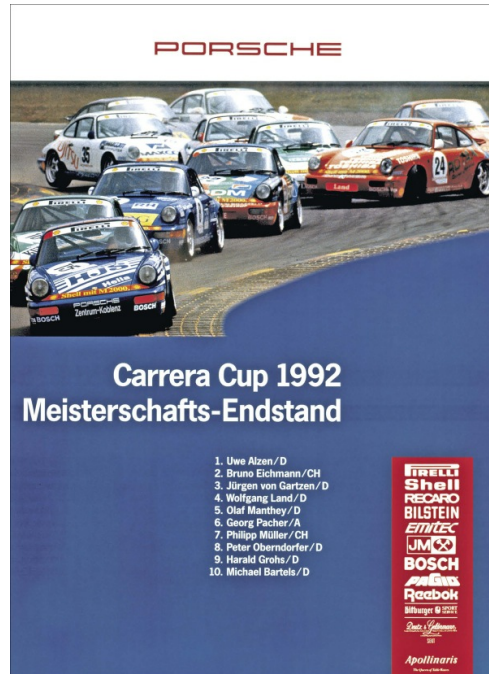
### **The 1993 model year**

Engines and transmissions were carried over from the previous season, but all 911 engines were now filled with Shell 15W/40 synthetic oil at the factory, and, by this time, a cylinder head gasket was being fitted again. CFC-free refrigerant was used in the air conditioning system, and water-based paints continued the eco theme. The four-pot rear calipers from the C4 were used on the C2 as well, and all right-hand drive cars gained a driver's-side airbag. At the same time, the 92 litre (20.3 Imperial gallon) fuel tank specified for the Turbo S became optional for all 911s, as did a mobile phone, leather-trimmed centre console, and door pocket lighting.



*Porsche advertising to commemorate the success of the Brumos 911 in the States. It won the IMSA Supercar title in 1991, and retained it the following season.*





*A Porsche poster showing the placings at the end of the 1992 Carrera Cup race series.*

***Standard coachwork colours (1993/94)***

*Black, Grand Prix White, Speed Yellow, Guards Red, Mint Green, Signal Green, and Maritime Blue.*

***Special coachwork colours (1993/94)***

*Black Metallic, Polar Silver Metallic, Slate Grey Metallic, Pearl White Metallic, Amethyst Metallic, Raspberry Red, Amazon Green Metallic, Oak Green Metallic, Wimbledon Green, Violet Blue Metallic, Cobalt Blue Metallic, and Midnight Blue Metallic.*

***Cabriolet top colours (1993/94)***

*Black, Grey, Magenta, Cobalt Blue, or Dark Blue.*

***Trim colours & materials (1993/94)***

*Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue vinyl, with Black, Light Grey, Classic Grey, Magenta, Cashmere Beige or Cobalt Blue leather as an option; special leathers included Matador Red, Carrera Grey or Sherwood Green. Seat inserts came in matching leather or*

*cloth (studio check or with Porsche script). Carpets came in Black, Grey, Red, Blue, Green or Beige velour pile.*

These colour and trim options were carried over for cars sold in the first part of the 1994 season; the 993 had its own set of colour schemes, although special orders meant virtually anything was possible! The Targa was virtually dead by this time: while it continued for 1993, it did not make it into the 1994 season ...

## **Zuffenhausen blues**

Porsche bid farewell to Arno Bohn at the end of 1992, as well as 1850 factory workers (about 20 per cent of the staff) as the company hit hard times. Bohn had struggled to fit in with the old regime in Stuttgart, and his place in the Chairman's office was taken by Porsche's production specialist, Wendelin Wiedeking.

Facing a record loss of DM 239,000,000, Wiedeking made it his mission to cut costs by up to a third within three years, a policy that would affect both white-and blue-collar jobs (not to mention setting the axe in motion on the eight-cylinder, Type 989, four-door saloon project, and its two-door sister car), but - long-term - it was the only way forward.

Interestingly, Ulrich Bez, who had replaced Helmuth Bott on his retirement, also departed from the scene. Bez's office at Weissach was now occupied by Horst Marchart - a proper Porsche man who'd joined the company in 1960.

In the background, East and West Germany had been reunited at the end of 1989 with the fall of the Berlin Wall, but financial problems associated with the reunification (made official in October 1990) were making themselves felt. With Porsche relying on home sales almost as much as those in the States, this was another difficult issue for the company to deal with. At least prospects in the major export markets were improving; or were they?

## **The US market**

Bohn had done his best to reassure the press, and, more importantly, American dealers, that Porsche was going to remain independent, developing new products that were more in touch with the needs of a changing customer base.

Meanwhile, sales were worse than ever, with only 3714 cars finding new homes in the States (including 2091 NA 911s and 314 Turbos). Had PCNA's decision to offer a one-year warranty on cars built after 1985 (as long as the mileage was no greater than average for the year) backfired? No, not really; Porsche's move further upmarket had coincided with a lull in the US economy. And, in reality, the 928 was long in the tooth, the 968 simply wasn't the sales success it had been hoped for, and the new 911 - well, it was no longer new.

1993 model year prices ranged from \$64,990 for the C2 coupé, up to \$66,600 for the C2 Targa, and \$74,190 for the C2 cabriolet. The equivalent C4 models cost \$77,050, \$78,660, and \$86,250 respectively. The RS America continued at \$54,800, and the America Roadster was still listed in September 1992, the last few selling for \$89,350.



*A home market Carrera 2 with Tiptronic transmission and exotic trim from the Exclusive catalogue.*



*Having made its debut at the 1963 Frankfurt Show, 1993 marked the 30th year of the 911. This picture shows Ferry Porsche with his son, Butzi, the designer of the Type 901 and 904. The Carrera 4 still had the distinctive 911 shape drawn all those years ago by Butzi Porsche, but a new model was on the horizon.*

## **The UK situation**

PCGB displayed a Carrera 2 coupé and cabriolet, a Carrera 2 Turbo Look cabriolet, 968 coupé and drophead models, and the impressive, 350bhp 928 GTS at the 1992 British International Motor Show (stand 505).

However, sales in the UK were certainly hard to come by: PCGB lost 22 per cent of its authorized dealers during the year, and prices fell once again. Although the line-up was carried over, the C2 range started at £46,378, C4s from £53,133, and the 3.3 litre Turbo continued to be listed, at least until stocks ran out, at £72,294 - cheaper than when introduced to the UK in January 1991.

The slump in sales was certainly not because of the cars. As *Autocar* noted whilst testing the Carrera 2 cabriolet: “[The brakes] perfectly match the character of the car - immensely powerful and solid, even heavy, with an anti-lock system taken for granted.

“For all its endless ability to rev to the 6800rpm red-line, the fabulous boxer engine remains flexible and torquey, with an instantly responsive throttle action linked to an enormously wide power band.

“The gearchange complements the brakes in being heavy, really too hefty on the way into and out of first and second, and utterly precise. Likewise, the meaty, exact steering, though occasionally on mountain roads you wish it were more direct.”

It's fair to say the 911 had been developed into something very special, so it's therefore hard to blame it for the downturn in sales. No, the financial climate was the root of the problem: a global recession, and the fact that sports cars were starting to fall from favour generally. However, Porsche, despite a workforce reduced to less than 7000, continued to field new models as if the world was enjoying an economic boom ...

### **More new models**

Two new models were announced in October 1992: the 3.6 litre Turbo, and the C2 Speedster. However, it was a few months before either went into production, and both were ultimately classed as early 1994 models.

The Turbo 3.6 entered production in January 1993, powered by the M64/50 engine, which was 38kg heavier than the M64/01 unit. However, the weight penalty was a small price to pay, considering the M64/50 was good for 360bhp (355bhp SAE) at 5500rpm, and peak torque was increased to 383lbft at 4200rpm. (The 332lbft peak torque produced by the last of the 3.3 litre turbocharged sixes was developed at just 2400rpm, aiding drivability.) Based on the Carrera 3.6 litre engine (but with a single sparkplug in each cylinder, uprated cylinder barrels, Turbo S camshafts, and better cooling for the head, achieved by reducing the thickness of the cooling fins), the latest Turbo had a slightly higher 7.5:1 compression ratio, but the same KKK turbocharger, and K-Jetronic EFI, as the M30/69 unit.



*Wendelin Wiedeking took Arno Bohn's place in the Chairman's office, instigating sweeping changes to the way Porsche cars were built. As a production specialist, he knew that the only way to turn around recent losses was to become more efficient.*



*As well as Bohn, Bez also left the company. Horst Marchart, who had been with Porsche since 1960, was a man moulded in Bott's image, and, together with Wiedeking, he set about putting the company on the road to recovery.*

While the gearbox was carried over from the 3.3 litre model, the clutch, lsd, and driveshafts were suitably uprated to handle the extra horses. The front brakes had a larger pad area, featuring the red, four-pot alloy calipers first seen on the Turbo S on all four corners, and the wheels would have been familiar to the Turbo S owner, too: lightweight, three-piece items measuring 8J x 18 up front (shod with 225/40 ZR Yokohamas), and 10J x 18 at the rear, equipped with 265/35 ZR rubber. The wheel centres came with 'Turbo' script, incidentally.

The ride height was lowered by a further 20mm/0.79in. (although this had to be done at dealerships in the US, due to minimum bumper height regulations). The suspension had harder bushes and springs, uprated Boge shocks, and a front tower brace; the anti-roll bar diameters of the 3.3 litre car were retained.

The 92 litre (20.3 Imperial gallon) fuel tank of the Turbo S could be specified as an option, but the new model had a tiny splitter on the bottom of the front apron, the Turbo S rear valance, and a new 'Turbo 3.6' badge for the tail as well.

Inside, 'Turbo 3.6' was cut into the back of the rear seats, and while the 180mph speedo was carried over, those markets that worked in kilometres had a new 320kph unit; with an official top speed of 174mph (278kph), the recalibrated speedometer was far from a meaningless statement; those big numbers on the clock were a necessity. Coming fully loaded, in the Turbo tradition, the 3.6 litre model was introduced to the US market at \$99,000 in May 1993, going on sale as an early 1994 model.

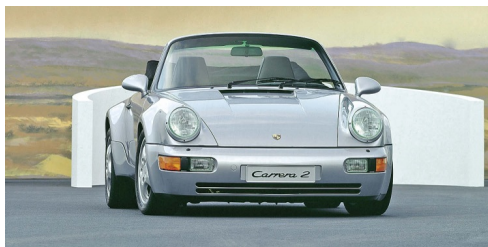
The Speedster was shown at the 1993 Detroit Show, alongside the new Turbo and the Boxster concept car, and, following the press launch in Italy (the Turbo was launched in the South of France); it went on sale in the spring as an early 1994 model year vehicle.



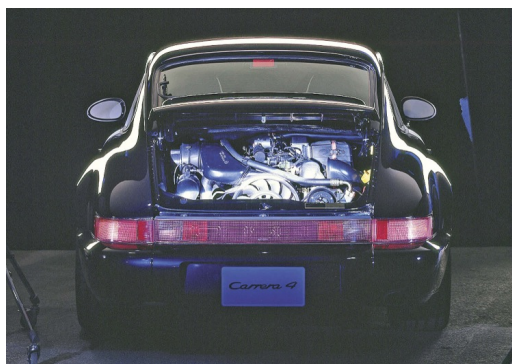
*Morale was at an all-time low, but at least the lines kept moving, and better days were just around the corner ...*



*Dashboard of the American C2, complete with trip computer in the tachometer, and Tiptronic gear indicator in the speedo.*



*The US Carrera 2 Turbo Look cabriolet.*



*Stunning publicity photo showing the tail and engine bay of the American Carrera 4 coupé.*

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*Advertising from the Strosek concern - one of many famous tuning companies that transformed Porsches bodily and mechanically. This 1993 advert features the 964 type 911 and the 928 Grand Tourer.*





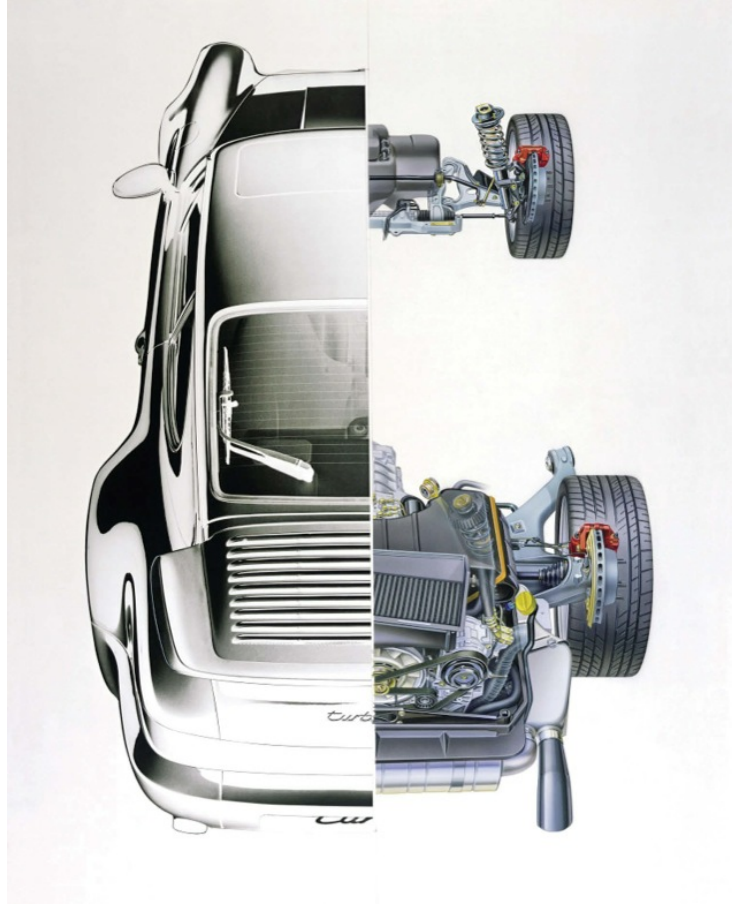
*The Ruf BTR series, seen here in a Japanese Dunlop advert. Alois Ruf, a dedicated Porsche enthusiast, made some of the fastest cars in world.*



*The new 3.6 litre Turbo. Note the three-piece alloy wheels, and red brake calipers just visible through the spokes.*



*Interior of the latest Turbo. Note the 320kph speedometer, and the red-line marked up at 6400rpm on the 3.6 litre turbocharged models.*



*Partial cutaway of the 3.6 litre Turbo, giving a clear view of the suspension and braking system.*



*Powerplant of the 3.6 litre Turbo.*

Actually, the Speedster was option M503 on the C2 cabriolet. As such, the engine and transmissions were the same as the regular Carrera 2 (including

the choice of a manual or Tiptronic gearbox); a limited-slip differential was available as an option.

Weight-saving measures included RS bucket seats and door trims (but with the option of sport seats, standard C2 items, or those with full power adjustment, and electric windows as standard), and manual RS door mirrors. Numerous parts were colour-keyed, including the meter panel, the gearknob and gaiter on the gear selector, the rear of the seatbacks, and the door pull. A three-spoke steering wheel was standard in most markets, although the Americans needed to retain the original design to keep the driver's-side airbag. Options included air conditioning, a radio/cassette, and cruise control.

As before, the hood was hand-operated, and usually hidden under the familiar glassfibre cover (although similar at first glance, the latest design was a touch deeper than its predecessor). To raise the hood, one had to hinge the double-bubble fairing up and back, lift and secure the hood in position, secure two latches on the screen rail, and then lower the cover again to seat the hood at the rear and pull it tight. It was not 100 per cent watertight.

US Speedsters came in red, white or black. Red and white cars had body-coloured wheels (17-inch Cup Design alloys), with a plain silver finish as a no-cost option. Black cars had silver wheels as standard.

The new Speedster, with its shorter screen (it was the same design as the earlier Speedster but with added reinforcement), was naturally much lower than a regular drophead. Measuring just 1280mm (50.4in.) in overall height, this prompted the Cd to drop to 0.31 with the hood up, and, combined with the vehicle's reduced kerb weight, it meant the C2 Speedster was a seriously quick machine. Scuttle shake was virtually non-existent, but there was some quite heavy buffeting in the cockpit.

Despite the original model having the Turbo Look body option, it was not offered on the 1994 model. This seems odd, given that the C2 cabriolet had a Turbo Look derivative, and America gained a C4 Turbo Look coupé in 1993 (priced very reasonably at \$78,450). Anyway, there wasn't one, and that was that. Introduced at \$66,400 in the US, the Speedster was far cheaper than a C2 cabriolet, but it did not take off. Although Porsche planned to build 3000 units, only 1050 were built.

Spring 1993 saw the launch of the 911 'Celebration' model to commemorate the 30th anniversary of the world's favourite sports car. Based

on the Carrera 4 coupé with a Turbo Look body, but with standard suspension and brakes, it came with the larger fuel tank, and a special badge on the rear parcel shelf, matching that on the engine cover ('911' script underlined by a '30 Jahre' bar). Finished in Violet Metallic or Black paint with Rubicon Grey leather, rather fittingly, 911 were built.

### **A new RS/RSR**

With a flurry of new models, it was easy to overlook the latest RS/RSR. The project was headed by Roland Kussmaul, and was very important, as it featured a new 3.8 litre engine (actually, at 3746cc, the M64/04 unit was closer to 3.7 litres, but the 3.8 designation was chosen by the factory, so that is what we shall use).



*A more conventional look at the tail of the new Turbo, this example sporting the standard exhaust system with a single pipe exiting on each side of the vehicle. Before the 964 series came to an end, it was possible to order a four-pipe system for the Turbo from the Exclusive catalogue. Note the 'Turbo 3.6' badge under the traditional rear spoiler.*



*Tail of the new Speedster. Note the script on the engine cover, the fairing behind the seats, the colour-keyed wheels, and the interior treatment.*



*Interior of the home market 964 Speedster.*



*The 911 'Celebration' model offered a rather different interior to that of the Spartan Speedster. Finished in Rubicon Grey leather, the body was painted in either Violet Metallic or Black.*



*An interesting shot showing a selection of the last of the 964s. The Turbo (with optional four-pipe exhaust) is at the rear, with (from left to right): the Speedster, the 911 'Celebration' model, and a Carrera cabriolet in front. Note the special badge on the tail of the C4-based 'Celebration' coupé, and the extra one on the rear parcel shelf.*



*The Porsche Exclusive programme allowed a flat-nose version of the 3.6 litre Turbo to be built, as seen here alongside a standard turbocharged model. A traditional slant-nose conversion, with pop-up headlights and slits along the top of the wings, was also available, as were the matching side and rear modifications. Note the rear spoiler, which was similar to that employed by the forthcoming 993 Turbo, and the cut-outs in the rear wings (like those often found on the Turbo S).*





*Front and rear views of the Carrera RS 3.8.*

This increase in capacity was achieved by taking the bore out to 102mm - an increase of 2mm over the standard Carrera's bore measurement. New lightweight pistons (with shorter skirts) were used, along with lighter connecting rods. There was a new crank damper, lightweight rocker arms and modified valves (still two per cylinder) to give sharper throttle response, a new intake system with hot-film air metering, and the Bosch Motronic 2.1 engine management system to keep everything under control.

With an 11.3:1 c/r and twin-exhausts (one exiting from each side at the rear of the Turbo Look body), the RS powerplant developed 300bhp at 6500rpm, and 260lbft of torque at 5250rpm. The G50/10 gearbox was carried over from the 3.6 litre RS, with a limited-slip differential as standard.

The Turbo Look body came with an aluminium front lid and doors, while the rear spoiler was made of carbonfibre; it had two blades, the top one being adjustable, with six positions. The Turbo 3.6 front apron and rear valance were used, although the foglights were replaced by air intakes to cool the brakes and feed the additional oil cooler. Thinner glass was employed for the side and rear windows, and there was no underseal.

Underneath were uprated Bilstein dampers with carefully matched springs. Adjustable anti-roll bars were used (with five positions up front, and three for the rear), and there was a front strut brace over the 92 litre (20.3 Imperial gallon) fuel tank. There was also an electrical cut-out switch under the front lid, showing the car's competition aspirations.



The brakes were borrowed from the Turbo 3.6, so featured ABS and four-pot calipers painted red. These were covered by three-piece Speedline five-spoke light alloy rims similar to those found on the Turbo S and 3.6 Turbo - 9J x 18 at the front (with 235/40 ZR rubber), and 11J x 18 at the rear (with 285/35 ZR tyres).

Inside, was a three-spoke steering wheel (although the standard wheel with airbag could be specified) to operate the manual rack, leather-trimmed front bucket seats, and carpet elsewhere ('RS 3.8' script was present on the rear firewall carpet). With an interior similar to that of the previous RS, this helped keep weight down to 1210kg (2662lb). A combination of light weight and 300bhp gave the new RS a 0-60 time of 4.9 seconds, and a top speed of 170mph (272kph).

Available in Guards Red, Grand Prix White, Maritime Blue, Speed Yellow or Black, and priced at DM 225,000, originally 100 cars were to be built, including the RSR version; ultimately, 129 vehicles were completed.

The RSR had a different engine air intake system, minus air filters, and was good for around 325bhp. The five-speed gearbox was the same as that used in the Le Mans racers, linked to a racing clutch. Competition brake pads were part of the package, with centre-lock wheels, extra brake cooling equipment, and optional air jack system. Inside, there was a full rollcage, a racing seat, and a fire extinguisher system. With the help of the RSR and the one-off, 480bhp Turbo S LM, Porsche was once again set to exert its authority in the motorsports arena ...

## **The racing world**

The Sportscar World Championship - or what was left of it - allowed GT Supercars to run, signalling a welcome return for the 911 in top-flight racing. The 1993 season was something of a disaster, though, with Le Mans the only major event.

For 1993, Le Mans accepted contemporary and earlier Group C cars, IMSA GTP and GTO models, LM and national Prototypes, and GT cars with national type approval. The field was varied once again, and Porsche 911 drivers eventually returned to the scene in droves. The decision was not without controversy, however ...

The lightweight, semi-works 911 Turbo S LM (driven by Walter Rohrl, Hans Stuck, and Hurley Haywood) crashed out of the 24-hour classic after

coming into contact with a backmarker. The Carrera 3.8 RSR of Jurgen Barth, Joel Gouhier, and Dominique Dupuy couldn't match the fast pace of the Jaguar XJ220. The Coventry car took the GT Class by two laps, but was later excluded on a technicality, handing victory to Barth and his team. The RSR also took the flag at the Nürburgring and Spa: it was like a return to the old days ...

Meanwhile, in America, Rohrl, Stuck and Haywood used the lightweight Turbo S LM to win the GT Class at Daytona and Sebring. Running in Brumos colours, it evoked memories of the highly-successful Peter Gregg/Hurley Haywood partnership of the early 1970s. In addition, Hans Stuck won seven races in a row with his 911 Turbo to claim the IMSA Bridgestone Supercar Championship. The Brumos car was actually featured in German Bilstein advertising.

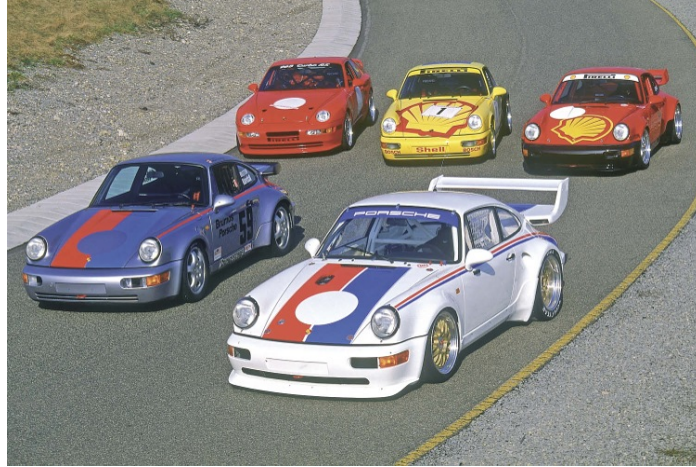
In fact, like the SWC, the IMSA organization had been in turmoil at the start of season. Everything came together in the end, but Porsche had little to celebrate in the regular IMSA categories. The Stuttgart marque came second in GTP, although a long way down on Toyota. There was nothing else to write home about.

The Carrera Cup was renamed the Supercup for 1993, with the Carrera Cup becoming a domestic series. The same cars were used, however, with over DM 1,000,000 in prize money at stake. The Supercup even supported the Monaco Grand Prix, with F1 star, Mika Hakkinen, driving as a guest: the former World Champion duly won the race. But Hakkinen did not win the Supercup championship -, that honour went to Altfred Heger.

## **End of the line**

The 993 coupé was unveiled at the 1993 Frankfurt Show: the end was imminent for the 964 series. C2 and C4 models received some chassis reinforcement, with thicker metal used in key structural areas.

By November 1993, PCNA listed only the Carrera 2 coupé, cabriolet and Speedster, the Carrera 4 Turbo Look coupé, the 3.6 litre Turbo, and the RS America coupé. Prices ranged from \$54,800 for the lightweight RS, up to \$99,000 for the turbocharged model. Within two weeks of the new year celebrations, the new, Type 993 Carrera coupé and cabriolet had arrived, with prices ranging from \$59,900. In other words, the 993 coupé, classed as an early 1995 model, was more than \$5000 cheaper than the 964 version.



*Porsche's competition cars of 1993. From back left, clockwise: The 968 Turbo RS, the Supercup (nee Carrera Cup) racer, the RSR 3.8, the Turbo S LM GT, and the Brumos entry in the IMSA Supercar series.*



*Mika Hakkinen with the spoils of victory in the Supercup race that supported the 1993 Monaco Grand Prix.*



*Action from the ADAC GT round at Zolder.*

**PORSCHE**



**24 Stunden Daytona**  
1. R. Meizer/E. Caldera/G. Pagotto/  
S. Angeliotti  
Porsche 911 Carrera 2

**24 Stunden Le Mans**  
1. D. Dupuy/J. Barth/J. Guichet  
Porsche 911 Carrera RSR 3.6

**12 Stunden Sebring**  
1. W. Röhrl/W. J. Stuck/H. Heywood  
Porsche 911 Turbo S - Le Mans GT



**Weltmeisterliche  
GT-SIEGE '93**



**24 Stunden Nürburgring**  
1. A. de Rozovs/F. Konrad/O. Wirthlein/F. Kathofer  
Porsche 911 Carrera RS  
2. E. Doeren/M. Imgartz/W. Kaufmann  
Porsche 911 Carrera RS

**24 Stunden Spa-Francorchamps**  
1. U. Alzen/Ch. Fetsipadi/J. P. Jarier  
Porsche 911 Carrera RSR 3.6




**1000 km Suzuka**  
1. D. Kill/J. Rakocz/P. Albano  
Porsche 911 Carrera RSR 3.6



*The Porsche 911 was certainly back to its winning ways ...*





いじらしい人びとの 営みの積み重ねが、  
私たちの「今」に収斂し、  
未来への礎となっている。  
古きを踏んで 新しきを知ること  
わが伴も歴史の旗人となる

温故知新………THE PORSCHE

94 ポルシェ テクノロジーフェア  
と き：6月11日(土)、12日(日) 10:00~6:00  
と こ：商業ショールーム

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東京都品川区東品川1-1-1 品川本ビル5F  
東京都中央区新富1-1-1 新富本ビル5F  
東京都目黒区目黒1-1-1 目黒本ビル5F  
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ショールーム 〒105 大塚市西目黒1-1-1 西目黒ビル5F  
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ポルシェのスペシャリスト  
商業ショールームは年中無休  
お問い合わせ  
ポルシェも取り扱っております

*Two pieces of Japanese advertising from 1994: one announcing the end of the regular 964 coupés (it was therefore the last chance to buy a traditional-looking 911), and the other promoting the Turbo, which continued alongside the 993 for the 1994 season.*



*And then, even the new Turbo disappeared just as quickly as it had arrived. The 993 series was launched at the 1993 Frankfurt Show, ushering in a new era ...*

In the middle of 1993, UK prices rose once again, taking the Carrera 2 coupé up to £50,450; the Targa was £2329 more than the basic coupé (and a similar price to the Speedster), with the cabriolet commanding £56,682, and the Turbo Look cabriolet £70,356. The Carrera 4 cost an extra £3638 on top of the equivalent C2 model's price, while the 3.6 litre Turbo was listed at £80,499. Come February 1994, the 993 model was the only 911 in the PCGB range.

Australia still listed a full C2 and C4 line-up for 1993, along with the \$295,000 Turbo. The range was reduced over the year, with only the Carrera 2 coupé and Targa, the Turbo, and the Carrera 4 Targa in the line-up. The C4 model was dropped by the end of 1993, and, by the following spring, the 993 coupé was the only 911 on sale Down Under.

In Japan, all prices were reduced by around 350,000 yen at the start of 1993. The RS was no longer listed, but the new 3.6 litre Turbo made its debut (in lhd form only), priced at 18,500,000 yen. Everything remained the same then until a complete reshuffle of the range in time for the 1994 model year. For 1994, Japan listed only the 3.6 litre Turbo, the new Carrera coupé (10,650,000 yen, or 11,650,000 yen with Tiptronic transmission), the C2 cabriolet (13,450,000 yen in Tiptronic guise only until the 993-type cabriolet arrived in the new year), and the 11,850,000 yen Speedster.

Despite the limited range in 1994, 993 sales outstripped those of the 964 series four to one! It signalled the end of another era, and, with the exception of the Speedster and Turbo (both introduced late in the previous season), production of the old model finished in spring 1994. The 993 series duly took on the hallowed 911 mantle.

# Chapter 6: 993 – a truly modern 911

“The Porsche 911 Carrera 2 is one of the best sports cars money can buy, but the new model is quite definitely an all-round better car. It handles better, it is more comfortable, it is quieter, it has a superb six-speed gearbox - and it is more powerful and faster with no increase in fuel consumption.” - *Road & Track*, February 1994.

## The Type 993

Introduced at the 1993 Frankfurt Show and developed under Horst Marchart and Bernd Kahnau, the 993 was an altogether more modern interpretation of the 911 theme. The still-familiar shape was far smoother at the front and rear, with neater bumpers, and a revised front wing line, made possible by the new Bosch ellipsoid headlamps.

Nuova Carrera 911: nuovo il design, l'asiale posteriore a bracci multipli, l'ampianto frenante potenziato dal sistema ABS 5. A richiesta, il differenziale autobloccante elettronico.

Nuovo il motore, potenziato a 272 cv e dotato di cambio a 6 marce o Tiptronic a scatto. Come la passione, la nuova 911 Carrera non si spiega, si prova.

Non rinunciate al piacere di provare il piacere del più vicino concessionario Porsche. L'indirizzo è sulle Pagine Gialle Porsche Italia, corso Stati Uniti 35, 35020 Padova.

**PORSCHE**  
Così si fa un'auto sportiva.

**Nuova 911 Carrera.  
E' come la passione. Non si spiega, si prova.**

*Italian advertising announcing the arrival of a new 911 series - better known to Porsche enthusiasts as the 993. The new car was styled under Harm Lagaay, although Briton, Tony Hatter, had a lot to do with the design. The front end was reminiscent of the 959, and very similar to the more recent 968.*





*Tail of the new 911. The badge on the engine cover was familiar, but missing the '2' suffix. As with previous generations, it was possible to delete exterior model badges.*

This was much more than a simple facelift, however, as engineers claimed the car to be 80 per cent new. This had been said before, after the launch of the 964, but it was much easier to accept this time around. The floorpan was a new stamping, designed to take a fresh suspension set-up and enhance the car's packaging; torsional stiffness was improved by 20 per cent, and luggage space was increased by a similar degree. And while the roof, front lid, and doors were carried over (with door beams and new colour-keyed door handles to match last year's mirrors), virtually everything else was new.

The bumpers were made to look more integrated by extending the front and rear wings further over them, so the distance between the lighting finishing and the top of the bumper blade was greatly reduced. The H1-powered headlights, by the way, gave stronger illumination, a much better spread of light, and greater distance, too, and came with washers underneath (now mounted on the wing rather than the bumper).

The front bumper, with its softer profile, featured wraparound front indicators with built-in foglights sitting next to them in the same cut-out. This combination lamp looked very similar to the 964 one, but was, in fact, slimmer and a slightly different shape, and the new-type foglamp matched the headlights. There was a gaping air intake under the registration plate, with ducts at each end to vent air, "blocking lift-creating cross-flow under the car's nose." Splitters were placed underneath, also positioned close to the wheels, to control airflow beneath the car.

At the rear, the full-width lighting of earlier models remained, albeit in a narrower, modified form (with smoother, rounded edges, and a steeper rake

to make the line from the engine cover to the centre of the bumper appear almost continuous when viewed from the side), and with discreet 'Porsche' script in the centre section. There were two exhausts exiting from the lower part of the valance; one on each side of the shallow number plate housing. As before, for markets that required them, such as America, impact absorbers were mounted behind the bumpers, although they could be specified as an option in all countries.

The rear spoiler was still of the pop-up variety, first seen on the 964s, but it was now larger, helping to enhance directional stability and cooling once in the erect position. With a no-better-than-average drag coefficient of Cd 0.33, the key to the new 911's aerodynamic efficiency was in the way air moved underneath the vehicle. With its cleverly positioned air vents and shaped floorpan/engine undertray, the car possessed what amounted to ground effects, helping to keep it firmly stuck to the road.

Other aspects of the design pointed to more careful attention to detailing. The windscreen - whilst carried over - had new, slimmer seals that pushed the glass 3mm (0.12in.) further outward, reducing wind noise and increasing visibility from within the cockpit; the wipers were relocated at the same time to give better coverage, although the mountings still sat proud of the scuttle (the washer nozzles were also relocated, near the top of the front lid). The rear side windows were now bonded 7mm (0.27in.) further outward, almost flush with the body, and again reducing wind noise. On the early press vehicles, the rear window was given a trim piece on the trailing edge of the roof to make air flow smoother over the top of the car. This was not used on production models until the advent of the new Turbo in 1995 (and subsequent Turbo Look coupés), although some NA cars, such as those for America, had a hoop placed before the rear spoiler to house the third, high-level brake light.

While the five-spoke alloys looked the same as earlier rims, they were, in fact, new (designated Design 93 by the factory), with the centre no longer dished. And although the two new wheels also looked similar, the standard 16-inch wheels had concave sections in the spokes, while the 17-inch versions did not.

Styled under Harm Lagaay, the 993 model kept the familiar wheelbase measurement of its predecessors, but was a fraction shorter at 4245mm (167.1in.), midway between the Carrera and Turbo in width (at

1735mm/68.3in.), and, despite keeping the same ground clearance, also a touch lower, listed at 1300mm (51.2in.). The track measurements were 1405mm (55.3in.) up front, and 1444mm (56.9in.) at the rear. The shell was still galvanized, incidentally, allowing Porsche to give customers a ten-year anti-perforation warranty to go with the two-year mechanical one.

The interior was a blend of old and new. The seats were completely new, with fewer pleats (making them easier and therefore cheaper to produce), more padding and support, and a different pivot. As before, backrest release buttons were on both sides of the seat, positioned close to the bottom of the built-in head restraint, and gave access to the matching rear seats. The rear seats could also be tilted over to provide luggage space, with buttons on the top of the inner bolsters giving individual control over each side, should three people plus baggage need to be carried. *Car & Driver* rated the latest seats as “excellent” in the general comfort and lateral support stakes, and “good” with regard to fore-and-aft support.

The dashboard would have looked very familiar to a 964 driver. The fascia panel was the same, complete with identical gauges (with a red-line at 6800rpm on the 7600rpm tachometer, and a speedo marked up to either 300kph or 180mph); an onboard trip computer was standard on Tiptronic cars, and optional on those with a manual transmission. The air conditioning panel was virtually the same as the 964 unit, but the rotary switches were modernized, and there was a new setting for serious cooling of the cockpit; a pollen filter was included in the new, electronically-controlled heating system.

The central bank of fascia switches were the same as those on the 964, although with white symbols on the 993. The two-stage heated rear window gained a timer. As with the 964, the order was reversed for lhd and rhd vehicles so that the cigarette lighter was always the furthest from the driver. The light switch, vents, and glovebox were carried over, although the headlight leveller was of a new, more modern design, and the column stalks were also brought up-to-date.

Dual airbags were standard for all markets, with the driver’s one housed in a new, leather-wrapped, four-spoke steering wheel, and the passenger’s in the dash (where the glovebox used to be) as before. Other safety features included door beams and seatbelt pre-tensioners for all markets. The steering wheel was still not adjustable, by the way.



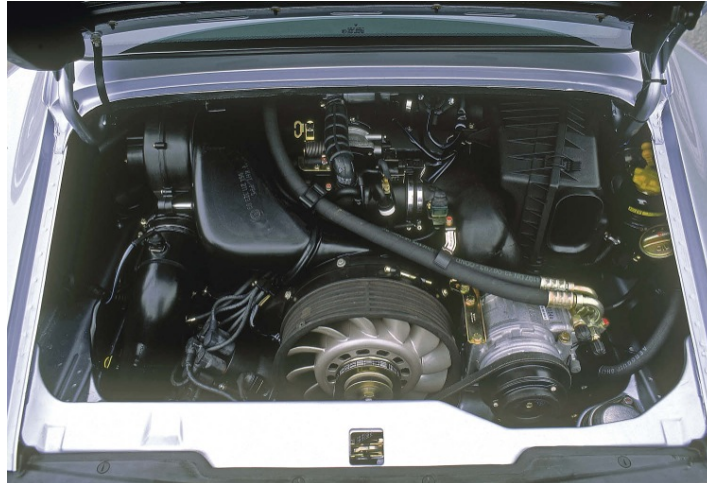
*Although some elements of the 993 interior would have been familiar to 911 drivers of old, the new seat design, steering wheel, and door furniture gave the latest car a more modern feel. It was less Teutonic, too, with organic shapes giving the cockpit a friendlier ambience.*

The last item to cover on the dashboard is the radio. European 993s were generally supplied with the Blaupunkt Paris or Bremen radio/cassette unit with six speakers (the latter could have an optional CD changer linked to it). The Blaupunkt London radio/CD unit was also available, and there was the option of a ten-speaker system on the coupés (eight for the cabriolet) with an amplifier and DSP (Digital Sound Processing).

The door seals were revised, and the inner trim panels completely different. Granted, the carpeted storage box was carried over, but the door pull handle was more shapely, there was less pleating in the panel (to match the new seat design), a more modern-looking tweeter speaker next to the old windows lifts, and the mirror selector switch was moved up next to the smaller power mirror adjustment toggle. The round door lock knob was deleted, no longer necessary due to the latest locking arrangement, although the strike plate on the B-post was the same as earlier models. The rear side trim panels were similar to those of the 964 on both the coupé and the cabriolet. By the way, the alarm system, which was linked to the standard central locking system, now incorporated an engine immobilizer.

Moving down, the same pedals were used (ditto the releases for the trunk, petrol flap, and engine cover), and the centre console was much the same. However, the rocker for the hazard lights was now red (the other two switches were carried over), and the rotary knob for the rear spoiler was replaced with a rocker in a second bank of switches (that also included one for the cabriolet top and rear wiper, when fitted). The rest of the console was left untouched, along with the gearlever design (although it needed a new shift pattern indicator roundel to suit the latest six-speed transmission), Tiptronic selector, handbrake, and rear storage arrangement.

As Kevin Smith wrote in *Car & Driver*: “Everyone talks about tricky handling caused by the pronounced rearward weight bias, but there’s little mention of astonishing packaging efficiency. What is in fact a very small car (the wheelbase of a [Mazda] Miata, the length of an Alfa Spider) manages to contain an airy cockpit with real - if kid-sized - back seats, plus a big fuel tank and ample luggage space. For a sports car, the 911 makes a helluva touring car.”



*With 272bhp DIN on tap, the new, normally-aspirated Carrera engine packed more punch than the first 930/50 turbocharged unit, and soon received modifications that allowed the release of even more power.*

### **The 993's mechanism**

The 993 was powered by a development of the 964 unit, and shared the same basic specification in terms of construction, the bore and stroke measurements of the Nikasil-coated, pressure cast aluminium alloy cylinders, cubic capacity, an aluminium alloy two-valve per cylinder head with dual ignition, and compression ratio.

However, the latest engine (the M64/05 was the base unit) had lighter pistons and rods, a stiffer crank (although the harmonic damper was deleted after revisions to the counter weights), lighter valves and valvetrain, hydraulic valve lifters (reducing noise and cold-start emissions, and eliminating the need for adjustment, thus cutting servicing time and cost), revised cam timing and engine management (the latter now employing a hot-film sensor to measure airflow), and a composite intake manifold to reduce weight. The rocker covers and chain covers were also made in composite materials, and magnesium alloy was used for the 12-blade cooling fan and a few other parts to cut weight.

The 993 also received a new exhaust system with reduced back pressure. This was achieved by having a three-way catalytic converter for each exhaust pipe (two tailpipes exited at the rear, one on each side of the number plate), yet noise was also reduced through advanced design techniques.

Regarding the engine, *Complete Car* noted at the time: “There is now enormous torque instantly at hand but as the needle dances rapidly up that big rev counter dial it suddenly discovers a new lease of life as it hits 4000rpm and sings round to its 6800rpm red-line.

“Despite the neck-wrenching savagery of the performance - we found 60mph in 4.8 seconds, 100mph in 12.0 - it is all delivered with beautiful smoothness; it feels as though it wants to spin up to its red-line. Yet poodle around town, even in a high gear, and it’s perfectly happy and subdued. A masterpiece of an engine. And considering the vast performance, our average fuel consumption of just over 20mpg [20.3mpg to be exact] is quite respectable.”

Delivering 272bhp DIN at 6100rpm (plus 244lbft of torque at 5000rpm) on 98 RON fuel (although 95 RON was acceptable), the engine was matched to either the four-speed Tiptronic unit, or a new six-speed gearbox. The manual transmission (designated G50/20 for the US, and G50/21 for other markets) had lower ratios to improve response, but a longer top gear to give better fuel economy and reduce noise whilst cruising. New dual-cone synchros were employed on first and second, significantly reducing shifting effort, and the clutch was lighter, too.

The G50/20 came with internal ratios of 3.818 on first, 2.048 on second, 1.407 on third, 1.118 on fourth, 0.921 on fifth, and 0.775 on sixth; final-drive was listed as 3.444:1. The equivalent ratios on the G50/21 unit were 3.818, 2.150, 1.560, 1.242, 1.027, and 0.821 respectively, with the same 3.444:1 final-drive.

The shift pattern was that of a double-H, with reverse outside, up and to the left. As *Classic & Sportscar* observed: “The six-speed ’box means there is the facility for the really good driver to be in precisely the right gear at all times (and for a poor one to be caught as many as three gears wrong). Then there is the flexibility: this Porsche has a fourth gear which will slingshot it from 10mph to 110mph in 27.4 seconds, accelerating harder as it goes. And all the time, right to its 6800rpm red-line, it feels smooth and unburstable.”

The 993 was available with a regular mechanical limited-slip differential (simpler than the previous lsd, with 25 per cent lock-up under acceleration, and 40 per cent coasting to provide a touch of understeer to counter the oversteer usually experienced after abruptly lifting off the throttle) as an option (MP08), and manual cars could be upgraded via a new ABD

(Automatic Brake Differential). This rear axle device (M224) worked with the lsd to direct power to whichever wheel had the most grip, using the ABS sensors to gather information, and applying the brakes in varying degrees to best get the car off the line. It was particularly useful on snow (it stopped working after 44mph/70kph), and gave the new 911 a simple form of traction control.

The weight reduction programme applied to the engine (which saved about 6.5kg/14lb) was also applied to the gearbox, with the result that the aluminium alloy six-speed unit weighed the same as the old five-speed one. With a manual gearbox, the top speed of the new Carrera was officially quoted as 168mph (269kph), with the 0-60 dash dismissed in 5.6 seconds, and the standing-quarter coming up 8.3 seconds later.

The four-speed Tiptronic gearbox now had remapped shift points to improve both performance and economy (the torque converter locked-up more often to also improve fuel economy), and sensors were added to determine heavy braking and uphill or downhill travel, instructing the computer to change gear accordingly. The A50/04 for Europe and the majority of export markets (linked to the M64/06 engine) had revised ratios of 2.73 on first, 1.63 on second, 1.10 on third, 0.80 on fourth, and the same 3.67:1 final-drive as before, while the A50/05 for the US retained the familiar internal ratios of 2.48, 1.48, 1.00, and 0.73; the final-drive was also carried over, listed at 3.56:1.

## **Chassis details**

The biggest change with the 993 chassis was the adoption of a multi-link rear suspension, for which Porsche coined the LSA designation: lightweight, stable, and agile. Derived from the 928 system, it was essentially a double-wishbone set-up with an extra link (a tie rod that varied wheel camber during cornering, allowing a small amount of passive rear-wheel steer). Each side was completed by a central coil spring over a gas-filled shock absorber, and an 18mm (0.71in.) anti-roll bar was specified.

Porsche engineers admit they would have liked to adopt the new rear suspension earlier, perhaps for the 964 series, but money and development time were not available. Ironically, it was designed for the 989 saloon, but at least its use in the new 993 justified the good chunk of budget that was wasted on the stillborn four-door model.



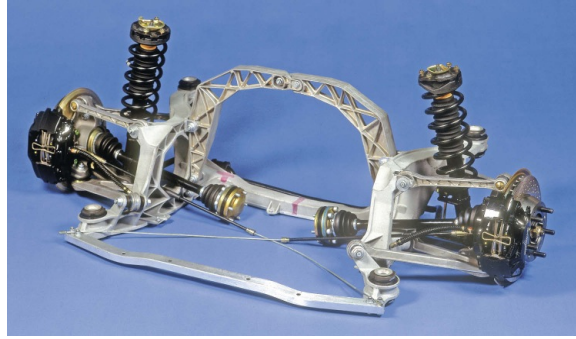
The rear suspension was mounted on an alloy subframe, allowing the entire system to be built up off the car, and then attached to the body at four rubber-bushed points and the top shock mountings. Extensive use of cast aluminium parts meant it was light, and allowed a massive reduction in NVH levels, compared to the earlier semi-trailing arm arrangements.

Handling was improved, too. As *Top Gear* pointed out: “Sure, if you deck the throttle going around a sharp bend, the back end can break away. But nothing like as seriously as in the old car - and, boy does that seem old compared with this one. Now, you dictate what happens, when and for how long. It’s taken the company 30 years, but Porsche has finally managed to bury the tail-happy handling reputation of the 911.”

Up front, the 964 suspension was carried over with detail revisions. As well as having new mounting points, the system was lighter, thanks to the greater use of aluminium, and the geometry modified to improve stability and reduce kickback through the steering; a 21mm (0.83in.) anti-roll was specified. The steering had a revised 16.5:1 ratio, incidentally, giving just 2.5 turns lock-to-lock. As before, a sport suspension package (M030) was available, with 17-inch wheels, shorter springs, harder shocks, and uprated anti-roll bars.

The brakes were improved via the highly responsive, fifth generation Bosch ABS three-channel, anti-lock system, and greater front pad swept area. Larger vented and cross-drilled discs were specified for the front (at 304mm/12.0in. they were 6mm/0.24in. bigger in diameter, and 4mm/0.16in. thicker), while those at the rear remained at 299mm (11.8in.). Four-pot calipers were used at both ends, and a new brake linkage gave a more linear response to pedal effort.

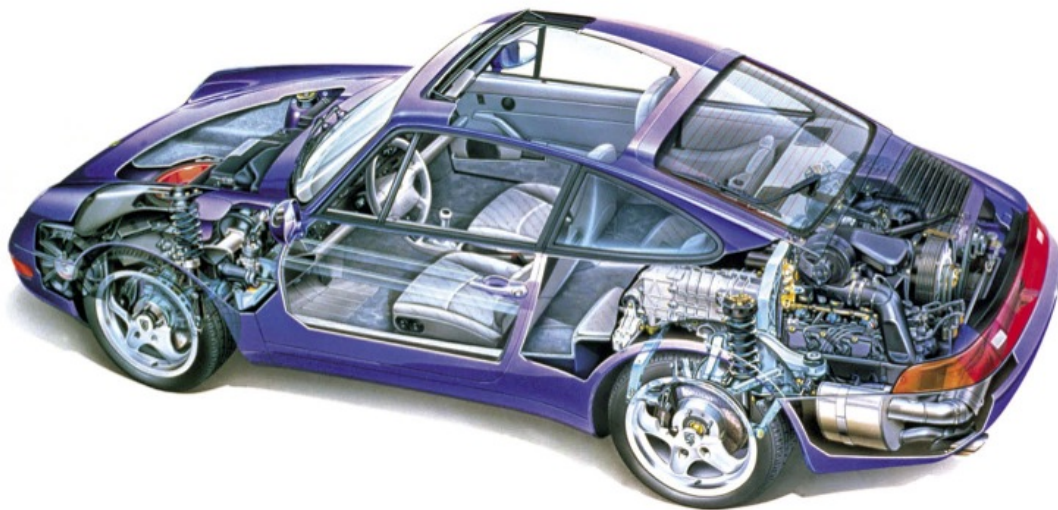
While underbody ducts directed cooling air to the brakes, the newly-designed wheels also helped keep them cool, as the spokes were designed in such a way that they allowed heat from the brakes to dissipate more quickly. Lighter than before, the standard pressure cast aluminium alloy wheels were 7J x 16 at the front (shod with 205/55 ZR rubber), and 9J x 16 at the rear (with 245/45 ZRs). Wheel centres carried the Porsche crest in black, with a colour version classed as an option. Lightweight 17-inch Cup Design alloys (M398) were available as an option, with the same rim widths as the 16-inch wheels, but equipped with 205/50 ZR and 255/40 ZR tyres.



*Rear suspension of the 993, which Porsche christened the LSA system.*



*Front suspension, along with the brakes and steering set-up. The forthcoming Carrera 4 version would naturally include a differential and driveshafts.*



*Layout of the 993. The luggage compartment held the fuel tank, spacesaver spare, tyre compressor, warning triangle, toolkit, and 75Ah battery (charged by a 1610W alternator). It was fully carpeted, usually in black. A*

*92 litre/20.3 Imperial gallon tank was available as an option (M545) to replace the standard 73.5 litre/16.2 Imperial gallon version.*

***Standard coachwork colours (1994)***

*Black, Grand Prix White, Speed Yellow, Guards Red, Riviera Blue, and Amaranth Violet.*

***Special coachwork colours (1994)***

*Black Metallic, Polar Silver Metallic, Slate Grey Metallic, Pearl White Metallic, Aventura Green Metallic, Iris Blue Metallic, and Midnight Blue Metallic.*

***Cabriolet top colours (1994)***

*Black, Marble Grey, Classic Grey, Chestnut Brown, or Dark Blue.*

***Trim colours & materials (1994)***

*Black, Classic Grey, Chestnut Brown or Midnight Blue vinyl or cloth, Black/Marble Grey or Midnight Blue/Marble Grey vinyl, with Black, Classic Grey, Chestnut Brown or Midnight Blue leather as an option; special leathers included Flamenco Red, Cedar Green, Provence Blue/Black or Provence Blue/Midnight Blue. Carpets came in Black, Grey, Red, Green, Blue, Brown or Beige.*

Aiming to provide the customer with greater refinement, less noise, and user-friendly handling, the new Carrera coupé was introduced at DM 125,760 - DM 82,120 cheaper than the contemporary, 964-based Turbo model. Judging by Georg Kacher's report on an early model driven in Germany, Porsche's engineers succeeded in their objectives: "From the outside, the 272bhp engine doesn't sound as raucous and shrill as the previous generation unit, but from the driver's seat, the acoustics are as spine-tingling as ever ... Strange noises have all but disappeared, and tyre noise is well muffled, too.

"[The new car's] prime appeal is its ability to play the old tricks so much better than its predecessor. It provides all the fun and drama without biting back."

The 993 was available only as a rear-wheel drive coupé initially, so the C2 cabriolet survived a bit longer, along with some of the C4 range, while

the Speedster and the 3.6 litre Turbo continued for the rest of the 1994 season.

Thanks to Weideking's purge on production costs, and the introduction of Japanese-style working practices, the new Carrera took 40 hours per car less to build. At the same time, quality was improved, and the 'just-in-time' system (dictating that parts were ordered and delivered as they were needed) helped ease cashflow and saved on valuable space at the Zuffenhausen plant. Actually, build quality was a moot point: whilst some contemporary commentators were disappointed by the number of "irritating little faults" not usually found on a Porsche, others were quick to praise the latest 911 in this subjective area.

### **The new cabriolet**

The 993-type cabriolet was unveiled to the press in Italy in January, but made its public debut in March. A silver example with a brown leather interior took centre stage at the Geneva Show, sporting a redesigned top that was stiffer and - thanks to new screen seals - more watertight than before, with a luxurious lining that reduced noise, and a new rear window. Although the latter was a touch smaller than before, the flexible backlight was now bonded in place rather than sewn for quicker and easier replacement. With the engine running and handbrake on, it took 13 seconds to drop the hood from the closed position to fully open.



*The 993 was built in a far more efficient manner than its predecessors. These pictures show engines being put together, and front suspension units for the rear-wheel drive Carreras on the production lines in the background.*



Another new feature for the cabriolet was the windblocker, made available as an option. Invented by Mazda for the FC-type RX-7 cabriolet, in the raised position it dramatically reduced buffeting in the cockpit caused by backflow. In the Porsche application, it automatically stood up once the hood was dropped, but could also be folded down independently, or removed completely, to allow use of the rear seats when the top was closed.

Reinforcements were minimal, with only extra metal at the bottom of the A-posts and slightly thicker gauge steel in the sills. This allowed the convertible 911 to weigh in at 1370kg (3014lb) - exactly the same as the new coupé. Yet, as Paul Frere observed at the time of the press launch: “There was never the slightest hint of scuttle shake or the faintest body rattle.”

This view was echoed in *Motor Trend* and *Complete Car*. The latter magazine said: “This car surely has the stiffest shell of all convertibles. On any surface it feels as rigid and shake-free as the coupé. Nor does it suffer a weight penalty; Porsche says this is because the coupé is a cabrio with a top, not vice versa, so the stiffness is integrated into the design.”

The taut monocoque combined with shattering performance and the latest chassis modifications to produce a very desirable machine. As Brian Laban said after driving the car: “With soft-top versatility and a (vaguely) real-world price tag, it puts other supercars into unflattering perspective.”

## **The US scene**

The 993 coupé went on sale in the States in January 1994 as an early 1995 model, with the cabriolet following in April. Powered by the M64/07 engine (or M64/08 for the Tiptronic cars), the coupé was priced at \$59,900, while

the drophead was introduced at \$68,200; the semi-automatic transmission added \$3150 in both cases.

Whereas European cars had amber indicators with fog or driving lights next to them, and sidelights nearest the number plate, American cars had a rubber buffer splitting the indicator/running light and driving light. Around the back, the amber turn signal lens became all red, and, again, it had the dual purpose of indicator/running light. At the same time, rubber buffers surrounded the rear number plate, increasing overall length to 4260mm (167.7in.); they also rode a touch higher, with an overall height of 1315mm (51.8in.).

The cabriolet had rear seats again, thanks to a rather ugly appendage mounted between the tops of the two backrests. This held the upper link of the three-point seatbelts, and was enough to satisfy Federal regulators, albeit at the cost of losing the folding facility. The windblocker was made available for the 993 cabriolet, priced at \$344, making an already refined Grand Tourer even more comfortable.

Other options for the 993 series included a sport suspension package for the coupé (at \$2017, this included the 17-inch wheels, or they could be purchased as a separate \$1378 option), a limited-slip differential, ABD, a rear wash/wipe, an onboard computer, sport seats, leather and heated seats (with or without full power adjustment and lumbar support), the Porsche crest stamped into the headrests, contrasting seat stitching, inlays and piping, leather trim on virtually all interior components (including the headlining, and available separately or as a package), light or dark wood dash panels (plus matching gearknobs and handbrake lever, and part-wood trim for the steering wheel), floor mats (two versions), a storage box to replace the rear seats, luggage compartment carpeting (in a colour that matched the interior, or a different shade), a remote CD player or combined radio/CD unit, CD storage in the door panel, a mobile phone, and deletion of the rear model badging. In addition, special paint and trim could be specified, along with painted wheel rims, and a coloured Porsche crest for the wheel centre.

A number of magazines compared the new 911 coupé to the Honda/Acura NSX. On the test track, it was virtually impossible to split the two in acceleration, braking and handling, although the Japanese car was slightly quicker through the slalom. *Motor Trend* noted a "... definite improvement in low- and mid-range lunge ..." in the latest 911, and "... the new rear

suspension is designed to provide slight toe-in during hard cornering, thereby reducing the dreaded trailing-throttle oversteer that's plagued 911s since Hans Stuck was in grade school. The traditional low-speed understeer is delightfully reduced and meshes with Porsche's perfectly weighted steering to bring a deftness of control unknown in any previous 911."



*The new cabriolet was launched in spring 1994. This is a European-spec car photographed next to its fixed-head stablemate. Prices in France started at FF 520,000 for the coupé, and FF 570,000 for the cabriolet; Tiptronic transmission added FF 20,000. To put this into perspective, the 968 was available from FF 275,000, while the 928 GTS was a hefty FF 652,000.*



*Interior of one of the first cabriolets - a manual car for mainland Europe.*

Yet, opinion still differed. Jeff Karr stated: “What the Acura NSX lacks in history and olde world charm, it makes up for in greatness.” C. Van Tune replied: “At over \$10,000 more expensive than the Carrera, the NSX just isn’t as smart a buy.” Who would have thought the tables could have turned so much by the 1990s - a Japanese car losing out to a Porsche 911 because it cost more!



*A US cabriolet with windblocker erect. Note the small buffers around the rear number plate on the American-spec cars, and the high-mounted rear brake light in the hoop atop the engine cover.*





*While most countries had regular rear seats in the drophead model, Federal law required different seatbelts. For this reason, a central structure was added, allowing a three-point harness to be fitted (lap-belts were usually sufficient).*

Anyway, sales recovered in 1994, up from less than 4000 units in 1993 to 5824 in the following year. The 911 was responsible for much of this upsurge in demand, with no fewer than 4362 NA variants finding new homes, along with 112 964-based Turbos. Incidentally, *Road & Track* determined that the 911 Turbo 3.6 was the fastest car on the market from zero to 100mph (160kph) and back to standstill, so the forthcoming 993-based machine would have to be something very special indeed.

## **The UK**

PCGB occupied stand M6 at Earls Court. The catalogue for the event declared: “Porsche Cars Great Britain Ltd welcomes you to the London Motor Show 1993. This year is particularly special for Porsche as the legendary 911 celebrates its 30th birthday - three decades of pure driving excitement, racing success, and technological innovation. Porsche also welcomes onto centre stage the next generation of 911, the new 911 Carrera, first unveiled at the Frankfurt Motor Show in September.

“The new Porsche 911 Carrera is proof of the model’s remarkable development potential and timeless design. It incorporates a completely new design for the chassis, with a multi-link rear axle (LSA), giving improved

active driving safety, plus enhanced handling to make driving more enjoyable.

“Included for the first time is the ‘ABS 5’ braking system with optimized control programming, while the 3.6 litre, six-cylinder boxer engine has undergone extensive mechanical and electronic development, increasing performance to 272bhp, and also improving fuel consumption.

“The 911 will be joined on the stand by a range of other thoroughbred sports cars from the Porsche stable, [including the] 968 coupé, 968 cabriolet, 968 Club Sport, 928 GTS, the 911 Carrera 4 Anniversary, 911 3.6 Turbo, and two of the new 911 Carreras.”

PCGB expected the 911 to account for half of its sales for 1994, with the 968 taking about 40 per cent, and the 928 the remaining 10 per cent. By February 1994, apart from the £80,500 Turbo, the 993 coupé was the only 911 listed in Britain. Priced at £53,995 (or £56,860 with Tiptronic transmission), it was listed alongside the 968 and 928. This situation remained unchanged until the cabriolet arrived at a shade under £60,000.

UK cars had partial leather trim, and power height and bottom cushion angle adjustment as standard. Leather seats added £1530 to the invoice, while full leather trim was listed at £3270. At the same time, full power adjustment was £555, with lumbar support adding £570; heated seats were another extra. An electric sunroof, headlight washers and levelling facility, foglights, a rear wiper, alarm, power windows (with tinted glass) and mirrors, and a radio/cassette, all came as part of the package, along with central locking, although upgrading the system to remote control was £855 extra. A trip computer, standard on Tiptronic models, cost £355 on manual cars, air conditioning was £2375, cruise control £520, and a CD player a hefty £1055. Finally, the sport suspension was available for £1610, and came complete with 17-inch wheels and tyres.

Trying the new coupé for size, *MotorSport* mentioned “... the seamless throttle response,” and was very pleased with the new six-speed gearbox: “The change of the new gearbox rewrites supercar standards. It needs careful warming, but then operates like a well-oiled precision instrument.” However, according to the writer, Peter Dron, although a lot of noise had been eliminated, there was still quite a lot of transmission whine at cruising speeds.

Meanwhile, *Top Gear* noted: “By ridding the 911 of its pendulous handling and making the hundreds of other detail improvements, Porsche has finally created a supercar that can be a rewarding drive - and a mighty fast one at that - for anyone with a driving licence, not just a relatively select band of motoring enthusiasts.”

*Autocar* tested the new cabriolet in June 1994, praising its “... stunning performance, rigidity and gearbox.” It was less enamoured with rearward visibility once the hood was erected (a common problem with most soft-top vehicles), but was happier with the new roof profile that gave the car a more elegant look. In summary, the magazine described it as “... the finest sports convertible of all,” and duly gave it a rare five-star rating.

## **Japan & Australia**

Japan introduced the 993-type coupé at 10,650,000 yen (with Tiptronic transmission adding 1,000,000 yen to the invoice). When the cabriolet arrived in the new year, it was actually cheaper than its predecessor, listed at 12,500,000 yen (or 13,500,000 yen in Tiptronic guise), augmenting the 964-based Speedster and Turbo models, at least for the rest of the 1994 season. For 1995, it was all change in the Land of the Rising Sun.

From spring 1994, the 993 Carrera coupé was the only 911 listed in Australia. Priced at \$179,000, it joined the 968, the 968 Club Sport, and the 928 GTS in the Porsche line-up, which then stayed the same until the following spring.

To give the new model a proper workout, *Wheels* tackled the Targa Tasmania in a six-speed 993. It declared: “What impresses most is that the new 911’s front and rear ends work far more closely together. Its most loved-or-loathed characteristics exist within a much narrower margin now. It is at once faster, and more forgiving. And, damn it, more desirable than ever.”

## **1994 competition news**

WSC experienced a new dawn that pleased Porsche’s competitions chief, Max Welti. The BPR organization, based in Paris and led by Porsche stalwart, Jurgen Barth, put together the makings of a GT championship for 1994, but, once again, Le Mans was the jewel in the crown. The initial Le Mans proposal listed three categories: GT (560bhp/900kg), GT1 (650bhp/1000kg), and GT2 (400bhp/1050kg). The latter included the 911,

and these augmented the WSC and Prototype categories. However, the event was slightly different, with LMP1, LMP2, LM GT1, LM GT2, and IMSA GTS classes eventually prevailing. Porsche won the 24-hour classic with a 962 LM, evoking the glory days, while Dominique Dupuy, Jesus Pareja, and Carlos Palau Mallol won the GT2 category (eighth overall) in a Carrera RSR: RSRs were also placed ninth and tenth.

In the other big races, the Brumos Porsche 911 led at Daytona for a while before a problem with the fan belt forced its retirement; Franz Konrad's RSR had the same trouble, incidentally. Although Nissan won, Porsche 911 RSRs came second, third and fourth, claiming LM-GT honours along the way; there was a Class win at Sebring also (fifth overall). The Paul Ricard four-hour event saw a 911 driver on the top spot of the podium, and 911 LM Turbo S won at Suzuka, while Jarama was a 911 benefit. In the IMSA title chase, Porsche came third in the GTS category, and second in GTU, only ten points down on Nissan in the latter.

1994 was the first year of the Japanese Grand Touring Championship (JGTC), and, while there were three 911s running in GT1, Porsche was strongest in the GT2 category. Indeed, the Korg Kegani 964 of Sakae Obata won the Class.

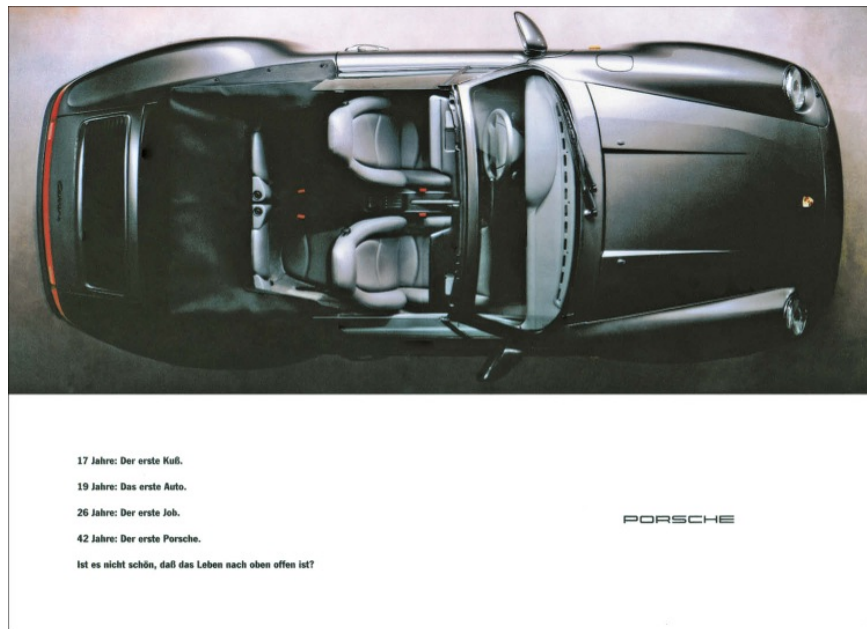
By 1994, Porsche had a number of 911s homologated. The three-litre Turbo was still homologated until the end of the season (Group B no. 208), as was the 3.2 litre Carrera (Group B no. 282). The C4 and C2 had been homologated in September 1990 (Group B no. 294 and no. 295 respectively), with their papers good through 1997. The 3.6 RS was given Group B status in March 1992 (no. 296), with the 3.3 litre Turbo (classed as 5608cc by the FIA due to the turbocharger) following in April 1993 (no. 298). The 3.8 RS, incidentally, was homologated in GT2 in August 1995, the second car to be granted this status (no. G2-002), the first being the Jaguar XJ220.

Porsche had a 911 Supercup racer on display at the 1993 Earls Court Show in a bid to tempt drivers from the UK into the series, although, in reality, it was probably popular enough as it was. The 1994 Supercup cars used the 3.8 litre engine from the 964 RS, tuned to give 315bhp on an 11.6:1 compression ratio (numbers started at 63R80001) linked to a six-speed Type G50/30 gearbox. With this much power in a 1100kg (2420lb) body, it's no surprise that the Cup 911s were capable of 175mph (280kph), and 0-60 in 4.7 seconds. With uprated brakes and suspension (the springs were much

stiffer than those of the 1993 version), this latest car rode on 18-inch wheels and tyres. The 1994 champion was Price Cobb, incidentally.



*A 993 coupé with the wood and leather options from the Exclusive catalogue. Note the red-line on the tachometer, marked at 6800rpm, just before the cut-out was set to activate.*



17 Jahre: Der erste Kuß.  
19 Jahre: Das erste Auto.  
26 Jahre: Der erste Job.  
42 Jahre: Der erste Porsche.  
Ist es nicht schön, daß das Leben nach oben offen ist?

PORSCHE

*Tasteful German advertising for the cabriolet.*



*The Porsche dream team, from left to right: Hurley Haywood, Hans Stuck, and Walter Rohrl, with their Brumos Turbo at Daytona. Unfortunately, the belt on the cooling fan failed, causing their retirement whilst leading.*



*Jean-Pierre Jarier, Bob Wollek, and Jesus Pareja on their way to victory at Jarama in a Turbo S LM GT model.*



*Above: Advertising poster for the 1994 Supercup. Below: a couple of shots from that year's races. Older cars were allowed to run alongside the new 993-based machines.*







# Chapter 7: The end of another Porsche era



*Japanese advertising announcing the arrival of the Tiptronic S transmission. The Tiptronic gearbox added 25kg (55lb) to the car's kerb weight, incidentally (weight distribution was typically 41 per cent front, 59 per cent rear on the 993 Carrera). Unlike the earlier Sportomatic cars, there were no external badges by which to identify Tiptronic models.*

Ironically, given that the 911 was scheduled for replacement on numerous occasions during its three decades of sales, in early 1995, 911 production was increased to 92 cars per day (up from 86), as the number of 968s built was reduced, and 928 production was cut from four cars per day to just two!

The last of the 964-based models had disappeared by this time, and the 993-type Carrera was to be joined by a new Carrera 4. With the introduction of the 408bhp Turbo at the 1995 Geneva Show, the line-up was complete once again. It's sad to reflect that this chapter is the last instalment in the air-cooled Porsche story; the next book starts with a new era of water-cooled machines. Meanwhile, fortunately, there were enough exciting developments

on the air-cooled model to keep even the most diehard 911 enthusiast happy ...

### **The 1995 model year**

The rear-wheel drive 993 Carrera was continued pretty much unchanged (it was introduced as an early 1995 model, after all), although the front crossmember was revised, as were the front and rear wheel hub and housing, and the ABS control unit was updated. The DME control unit was also upgraded (and continued to be as each season passed), while the engine came with a modified crankshaft (plus connecting rods), oil filter, and intake manifold. Fifth gear was revised (changed to 1.024 on the G50/20, and 0.928 on the G50/21 gearbox), as was the clutch pedal, and lhd cars gained a new 92 litre (20.3 Imperial gallon) fuel tank design. A new headlight leveller had appeared by this time (introduced towards the end of the previous season, and readily identified by numbers in the rotary switch itself rather than to the side). There was also a new heated rear window switch.



*The Tiptronic S transmission in use. The steering wheel on cars equipped with Tiptronic S was essentially the same as that used on manual vehicles, but the upper spokes had 'perfectly located' buttons to select an upshift or downshift. Regardless of steering wheel colour, the selector buttons were always finished in black.*



*The drivetrain and underpinnings of the new Carrera 4. The C4's steering felt a touch heavier, with the extra weight over the front wheels, and had a little less feedback through the wheel. However, Volvo later used the 911's 4WD system for its 850 AWD model.*

Another new feature was the Tiptronic S transmission, which had the facility to change gear via buttons on the upper spokes of the steering wheel, Formula One style, or the regular Tiptronic selector, although earlier 993 models could be converted to accept it. Actually, the Tiptronic gearbox was proving extremely popular, not only in the States, but in Europe, too, a reflection of modern driving conditions, perhaps.

As *Motor Trend* pointed out at the time: "The system is a bunch of fun to use, and it gives you some of the visceral thrill of a manual when you feel like romping on a twisting road. To really get into it, however, the system needs another ratio: The 911's four broadly spaced cogs have a lot of ground to cover.

"In a way, the Tiptronic's full auto mode is the biggest deterrent to going manual, simply because it's so smart. The Tiptronic S works well at making the best of the four ratios available, so much so that you soon realize that the microchips have you beat ... If you're a manual transmission lover at heart, but have to do the majority of your driving in congested urban areas, you owe it to your tired left leg to check out the Tiptronic S."

In England, both *Complete Car* and *Top Gear* also felt that the Tiptronic unit needed an extra gear, the shortcoming all the more apparent with the manual transmission having six forward speeds. The latter magazine stated: "Because changing gears is so easy and so much fun using the wheel-mounted buttons, you want to do it a lot, and the four-speeder doesn't really encourage it." According to *Top Gear*, there were two bonuses, however. One, the Tiptronic S system cost no more than the original, and, two: "The floor-hinged pedals don't seem so bad when there are only two of them."

Apart from the lack of internal ratios, *Complete Car* liked the instant gearshifts, with no need to lift off the throttle. It also appreciated the fun element, allowing drivers to ape their favourite F1 pilot, and the fact that Porsche did not attach a premium to the improved transmission. The magazine summed up the S version with the following words: "In the previous Tiptronic, after you'd played with the manual shift for a few miles

the temptation was to use the gearbox as a conventional automatic, which rather defeated the object. In Tiptronic S, however, the system is transformed.”

While the basic Carrera engine was carried over, there was also the option of a more powerful version in Europe - the 3746cc M64/05S and M64/06S units (actually variations on a detuned M64/20 powerplant) - giving a healthy 285bhp. Unlike the Tiptronic gearbox, this modified engine was available on the rear-wheel drive Carrera or the new Carrera 4.

As before, apart from the 4WD system, the C4 was virtually the same as its 2WD counterpart. However, Porsche took the opportunity to upgrade the drivetrain, with the new four-wheel drive system weighing about half as much as the computer-controlled one used on the 964 models. There was a viscous centre clutch (running in silicone fluid) to send power to the front or rear wheels - whichever had the most traction, with very little going to the front to reduce understeer and keep turn-in reactions sharp, progressively increasing up to the 30 per cent limit in poor conditions, or if the driver lifted off the throttle - and the mechanical limited-slip differential and ABD that were optional on the rwd Carrera. Another advantage of the front drive having less work to do was that it allowed the engineers to make it lighter and more compact, and did not encroach on luggage space.

With reduced friction in the driveline and a weight saving of around 50kg (110lb), this brought the new C4 to within 50kg (110lb) of its simpler stablemate. Combined with a six-speed gearbox and better traction, performance was said to be identical.

The Carrera 4 was equipped with either the G64/20 or G64/21 manual gearbox, by the way. The former was used on US cars, with the latter reserved for most other markets. Internal and final-drive ratios were the same as those specified for the latest G50/20 and G50/21 transmissions for the rear-wheel drive car.

The Carrera 4 came with the 17-inch wheel and tyre combination as standard (optional on the strict Carrera), with ‘Carrera 4’ script in the centre. Behind the wheels, the brake calipers were silver (a shade known as titanium at the factory) rather than black, although both carried ‘Porsche’ script. (Incidentally, the braking system employed a hydraulic servo as front compartment packaging ruled out a traditional vacuum one.)

As for other cosmetic details, the badge on the tail was in silver rather than black, and European cars had clear front indicator lenses and red turn signals at the rear (although, strangely, the repeater lens on the front wing remained orange). Moving inside, the C4 had a titanium plate atop the gearknob instead of a plastic one.

***Standard coachwork colours (1995)***

*Black, Grand Prix White, Speed Yellow, Guards Red, Riviera Blue, and Amaranth Violet.*

***Special coachwork colours (1995)***

*Black Metallic, Polar Silver Metallic, Slate Grey Metallic, Pearl White Metallic, Aventura Green Metallic, Iris Blue Metallic, and Midnight Blue Metallic.*

***Cabriolet top colours (1995)***

*Black, Marble Grey, Classic Grey, Chestnut Brown, or Dark Blue.*

***Trim colours & materials (1995)***

*Black, Classic Grey, Marble Grey, Chestnut Brown, Cashmere Beige, Cedar Green or Midnight Blue vinyl or cloth, Black/Marble Grey or Midnight Blue/Marble Grey vinyl, with Black, Classic Grey, Marble Grey, Chestnut Brown, Cashmere Beige, Cedar Green or Midnight Blue leather as an option; special leathers included Flamenco Red, Provence Blue/Black or Provence Blue/Midnight Blue. Carpets came in Black, Grey, Red, Green, Blue, Brown or Beige.*



*The new Carrera 4. Note the clear indicator lenses, and the 17-inch wheels with silver brake calipers lurking behind them. Wheels usually came with a natural finish, although painted centres were available, as was a coloured Porsche crest to replace the standard one with black highlights.*



*The 'Carrera 4' badge was one of the few distinguishing features at the back of the car. The 'Carrera' badge on the engine cover of the rear-wheel drive cars was finished in traditional black; the new 'Carrera 4' badge had a bright finish. Incidentally, a new rear window and frame was used for the 1995 season.*

New options for 1995 included two Aero Kits; oval tailpipes in chrome; flared rocker panels; metal treadplates; red or yellow seatbelts; an aluminium finish on the instruments (or painted, usually white, with leather bezels); aluminium gearknob and handbrake; carbon trim (with carbon effect door inserts and lower dash panels, gearlever, handbrake handle, and steering wheel trim); wood door inserts; dashboards, steering wheels, seats, beltlines, headlinings and carpet welting in deviating colours, A- and B-pillars in a different colour leather; and a hardtop and cloth tonneau cover for the cabriolet. Later in the year, the new Turbo's 18-inch five-spoke alloy wheels were added to the list (fitted with slightly narrower rear tyres to clear the wheelarches), as were the Litronic headlamps.

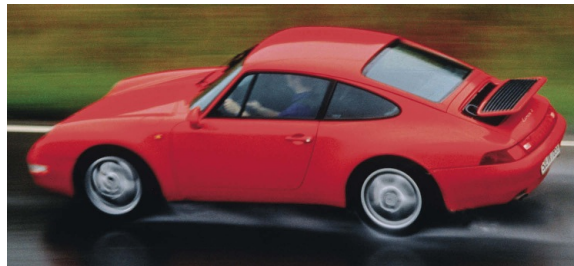
### **Press comment about the C4**

Reporting on the C4 coupé, *Top Gear* said: "The Carrera 4 [feels] more stable and better composed than the two-wheel drive. Over a bumpy road the 911's chassis stamps its authority; no matter how unfriendly the road conditions, the 911 sears its way through with devastating grip and composure. But that would be of little value if all the feeling and fun of the

two-wheel drive had gone. It hasn't because, with this car, the four-wheel drive system allows only its benefits to be shown, not its deficits."



*The Carrera 4's amazing ability was demonstrated to the press by Walter Rohrl in a rock quarry in Germany. Rohrl, ex-World Rally Champion and accomplished track racer, also undertook a lot of Porsche's test driving. This picture shows another WRC hero, Carlos Sainz (complete with his Subaru overalls), trying the C4 for size.*



*The C4 at speed in the rain. The wipers now covered a lot of the windscreen twice, but were still derided by some. One Car & Driver staffer was particularly disappointed.*

*Motor Trend* added: "This new C4 acts much like the rear-drive Carrera, only its responses to directional changes are better damped, and you can lay down obscene amounts of the available 270 horsepower without spinning crazily off course ... The 911's steering and throttle let you adjust the car's handling balance at will. Understeer almost never appears in any bulk quantity unless the vehicle is completely mishandled, and oversteer is beautifully damped.

"The engine is a source of great pleasure, from its breathy, aggressive howl to its seamless power delivery. The firmly gated, accurate shifter lets

you romp through six perfectly staged gears - the top ratio of which isn't a tall fuel saver, but a genuine top speed cog, as we were happy to confirm and reconfirm on the *autobahn*.

“Instead of being simply a more docile, predictable alternative to the classic rear-drive 911, one that gets a measure less respect and admiration than its high-strung two-wheel drive stablemate, the new C4 is the best road car in the 911's long history. And, more important, it ranks among the best sports cars in the world ... With prices sharply down and sales of the new-generation 911 sharply up, Porsche is back with a vengeance.”

*Road & Track* was also happy with this latest incarnation of the C4. It said: “With its front wheels driving only selectively, the new Carrera 4 feels agile and sporty and not at all like the old 4WD 911, which constantly delivered 31% (or more) of its output through its front wheels.”

*Complete Car* observed that this was “... yet another better 911,” with massive performance and an “... incredibly exploitable ...” chassis. The only complaint: it became “... harder than ever to choose between the two Carreras.”

*Autocar* sampled the convertible version of the C4, recording a 0-60 time of five seconds dead, before blasting past the quarter-mile marker 8.7 seconds later, a top speed of 155mph (248mph), and an average fuel consumption of 19.1mpg during the test. The verdict: “This is one brilliant car. No chassis in history has had so much time spent on its balance, and when you drive the Carrera 4 it shows. Porsche built the car to be safer in all conditions, and finished up making it quicker, too. All the 911 virtues endure: lovely engine, surprising packaging, top quality. As for the cabrio part, there are no compromises on chassis rigidity; it's as solid as a rock. If it's all-year pace you want, no car comes close.”

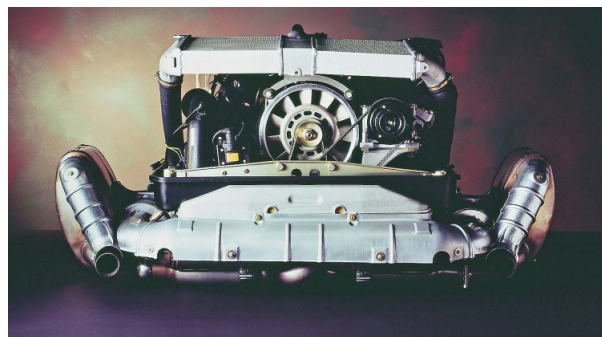
There was a warning, however, in *Auto Motor und Sport*, not to attempt lengthy drives on compacted snow. Compared to some of its competitors, the C4 struggled up slippery inclines, although, in its defence, Porsche said: “Traction was not our top priority. We were concentrating on first-class handling.” In this respect, there were few complaints ...

## **The 1995 Geneva Show**

The new-look Turbo made its debut at the 1995 Geneva Show, sporting four-wheel drive, twin-turbos, and more subtle body modifications than those



applied to its predecessors. It featured a slightly deeper, more attractive front valance with three separate intakes, directing air towards the brakes, oil cooler, and air conditioning evaporator. The front wings were identical to those of the Carrera (helping to keep the Cd down to 0.34), but the turbocharged car came equipped with the latest Bosch Litronic HID headlights. As with the Carrera 4, the front indicators had clear lenses (those at the back were red to match).



*The Turbo engine minus its top cover (a black frame), and tailpipe trim. The Geneva Show display unit had a natural finish on the intercooler, as*

*did the first press cars, although most production models had an all-black finish. The turbocharged six was once described as "... one of the sweetest musical instruments devised by man," but this was not its only attraction.*

*As Tony Dron noted: "This engine pulls like hell, instantly."*

The rear wings were wider, and the sills had to be modified to suit. The rear bumper was also different, not only to allow for the bulging wings, but also to give clearance for the exhaust system. The roof extension piece seen on some of the early press cars was brought back, serving as a housing for the third, high-level brake light in countries that required one. In addition, the 'Turbo' script on the whaletail spoiler (with low sides and a gentle curve across the trailing edge when viewed from the rear) received a bright finish. Incidentally, the one-piece rear spoiler was actually 40 per cent lighter than earlier versions, thanks to the RTM (resin transfer moulding) process.

The 993-based Turbo had wider front and rear track measurements (listed at 1411mm/55.5in. and 1504mm/59.2in. respectively), calling for an increase of around 60mm (2.4in) in the bulging rear fenders. It was also lowered a fraction, having an overall height of 1285mm (50.6in.). At 1500kg (3300lb), it weighed 80kg (176lb) more than a C4, but was only a fraction heavier than the previous Turbo, despite the four-wheel drive system.

A key interior difference was the speedometer, marked up to 200mph, or 320kph, depending on the market, otherwise it was pretty similar to the Carrera 4 cockpit. However, as ever, the engine was at the heart of the beast. The Turbo was powered by the 3600cc (100 x 76.4mm) M64/60 unit, and, with 11.6psi maximum boost, developed 408bhp DIN at 5750rpm in all markets, along with 398lbft of torque at 4500rpm, 2100rpm before the red-line.

Although the oversquare bore and stroke dimensions were familiar, the M64/60 was basically a brand new unit. With twin, low-inertia KKK K16 turbochargers in place of the single K27 blower (the smaller, lighter turbine blades could spool up quicker than a single, heavier one) and placed closer to the combustion chambers, two integrated wastegates, a pair of massive intercoolers (in a single housing atop the engine), hydraulic valve lifters, four oxygen sensors (one each end of the two, metallic core three-way catalytic converters), and an air pump, the latest Turbo was immensely powerful, with virtually no turbo-lag and far more linear power delivery; it also had a

longer service interval than its predecessor, and easily cleared even the strictest emissions regulations.

In detail, the reinforced head retained its single sparkplug and two valves per cylinder, operated by a single overhead camshaft per bank layout, but the old Bosch K-Jetronic fuel injection and solid-state ignition was dropped in favour of the latest DME engine control system: the Bosch Motronic version M5.2 with port injection.

The M5.2 management system brought with it hot-film air-mass metering, and monitored throttle-valve position, engine revolutions, boost air temperature, ambient pressure, and detonation, allowing Porsche engineers to endow the unit with more precise fuel delivery and raise the compression ratio from 7.5 to 8.0:1 on either 95 or 98 RON petrol; it also came with OBD II onboard diagnostics. Cylinders were forged instead of cast, and the piston crowns and connecting rods were strengthened. At the same time, cooling was improved by enlarging the oil jets underneath the pistons, increasing the speed of the magnesium alloy fan, and machining the fins on the cylinder barrels to make them thinner.

No less than 83 per cent of the engine's torque was available from 2500rpm to 5500rpm, and, as noted earlier, power delivery was less 'all or nothing' than before. *Motor Trend* stated: "This isn't a peaky, finicky powerplant, but instead an incredibly powerful, fast-revving, torque-making brute that can also survive urban gridlock without bucking, stalling, overheating, or exhibiting any other symptoms of duress. It's not only the most impressive six-cylinder production powerplant in the world, but ranks as one of the greatest engines of all time."

Writing for *Car*, John Simister said: "Here I am in a car which is capable of propelling itself from one speed to a much higher one - apparently without passing through any speeds in between. Put your foot down - in any gear, it doesn't matter which, fourth is good - and whoosh! Job done.

"If you were expecting tales of turbo-lag followed by a manic torrent of torque just when you'd stopped needing it, tales that tell of the old 911 Turbo's challenging little ways, you won't read them here."

Refined it was, but as *Car & Driver* observed, there was still something of a dual personality lurking at the back of the car: "The Turbo now feels almost bereft of the wonderful mechanical sound of the normally-aspirated Carreras. Yet at 3500rpm, with the thrust surging urgently as the two turbos

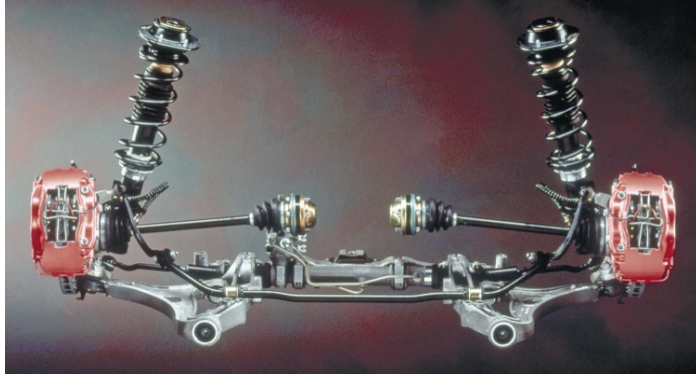
extract even more torque from the engine, the Porsche erupts. So although the boost is no longer clearly 'on' or 'off,' there are still two modes of operation."

The gearbox was mated to a dual-mass flywheel, and was suitably updated for the new model. The G64/51 six-speed transmission came with internal ratios of 3.818 on first, 2.150 on second, 1.560 on third, 1.212 on fourth, 0.973 on fifth, and 0.750 on top; a 3.444:1 final-drive was specified. The limited-slip differential, ABD and four-wheel drive system were taken from the latest Carrera 4. In the case of the Turbo, however, while only 5 per cent of the power was transferred forwards in normal driving, up to 40 per cent of the drive was allowed to go to the front wheels in extreme conditions.

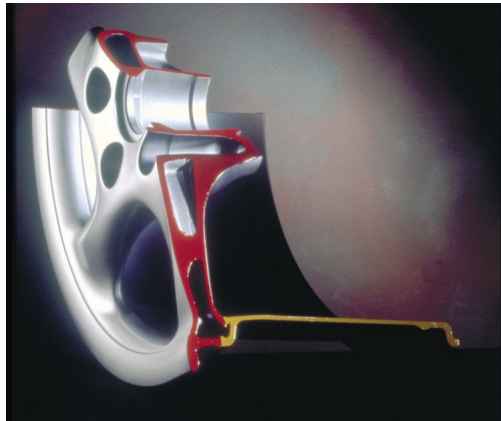
*Road & Track* was one of several magazines that felt the system worked well: "The new Turbo still behaves very much like a rear-drive car - the front wheels work as a safety net, helping to pull the chassis back to its intended line when a combination of lateral loading and throttle over-exuberance blows the tail loose. In most situations, the balance is nearly neutral, with sheer grip and unflappable composure being the overriding sensations. Never before has 400 horsepower been more easily or efficiently channeled to the ground."

The steering and suspension was also based on that of the C4, but with stiffer springs surrounding the Boge gas shocks, and beefier anti-roll bars (22mm/0.87in. up front - the same as the M030 sway bars, and 21mm/0.83in. at the rear - up 1mm/0.04in. on the Sport package bars). Although European commentators said the ride was quite acceptable for a sports car, a few Americans felt the car was still a touch hard, but they were more concerned with tyre noise, tramlining, and the way the front end tended to hunt under hard braking on uneven surfaces.

The wheels were quite novel, with pressure-cast hollow spokes (something first seen on the 959) saving around 2.7kg (6lb) per wheel. The two-piece rims were friction welded together, allowing different widths to be manufactured quickly and easily, and at reasonable cost. For the Turbo, they were 8J x 18 at the front (shod with 225/40 ZR rubber), and 10J x 18 at the rear (with 285/30 ZRs). As with the Carrera, these new wheels were available with a Porsche crest in the centre ('Turbo' script was the norm), and could be painted to match the car's body.



*Front suspension and drive system, showing the Turbo's uprated brakes and red calipers, plus the novel wheel design for the turbocharged car.*





*A European Turbo with the latest Exclusive interior option, featuring carbonfibre and aluminium trim. Note the 320kph speedometer.*



*The Turbo at speed. Note the oval tailpipes of the turbocharged car, which had a stainless steel exhaust system.*



*One of the Aero Kits available for the Carrera through the Exclusive programme.*

With an official top speed of 180mph (288kph), and a 0-60 time of just over four seconds (easily beaten in independent tests, although some still struggled to overcome axle tramp, and *Auto Motor und Sport* recorded a much slower time), the Turbo needed good brakes. The system consisted of four-pot Brembo aluminium alloy calipers (usually red, but silver or black could be specified), and asbestos-free pads working on 322mm (12.7in.) cross-drilled and ventilated discs all-round, with a front/rear split circuit and ABS 5 to keep things in check. As with the C4, both the brake and the clutch required less pedal effort because of a hydraulic servo fed by an electric pump.

All told, the car had exceptional acceleration, cornering, and stopping power (setting braking distance records in a number of publications), but there was a price to pay at the service station. The EPA fuel consumption rating of 13/19 gave the new Turbo a limited range on its standard tank

(borrowed from the Carrera), although the optional 92 litre (20.3 Imperial gallon) unit would have added about an extra 60 miles (100km) between petrol stops.

Announced at DM 212,040 (the Carrera line-up started at DM 125,760, the same price as that quoted at introduction), Turbo deliveries began immediately. Porsche expected around 2000 to be built annually over the following 30 months or so, before a new generation was launched.

Options were basically the same as those of the Carreras, although several items were already part of the Turbo package. Standard Turbo features included alloy wheels, PAS, ABS, front foglights, headlight washers, a rear wiper, cruise control, automatic air conditioning, a trip computer, leather upholstery and door trims, a leather-wrapped steering wheel, full power adjustment on the seats, power windows (with tinted glass), power mirrors, a ten-speaker radio/cassette, and an alarm system linked to the remote control central locking.

Arch Porsche enthusiast, Tony Dron, was concerned when he read the spec sheets, but quickly fell for the 1995 Turbo after his first drive. He noted: “Frankly, I still wondered whether it would combine the worst features of previous Turbos with the ghastly feel of the early Carrera 4. The answer is an emphatic ‘no:’ it is, without question, the finest Porsche Turbo yet, streets ahead of its ancestors - an absolute revelation.

“Like the current Carrera 4s, the new Turbo handles like a good rear-wheel drive car when driven hard. It understeers at first, shifting to stable oversteer as cornering force approaches the limit. This car will not lead the ignorant into any traps but it will satisfy the experts, particularly those with 911s in their blood.

“Conclusion: if you have £91,950 to play with, put your name down for a new right-hand drive 911 Turbo immediately. You will not be disappointed.”

*Car & Driver* compared it with the Ferrari F355, Honda/Acura NSX-T, Lotus Esprit S4S, and Dodge Viper RT/10, and declared it the winner, thanks to its “... effortless velocity and astounding brakes.” Calling it “... probably the planet’s most practical supercar,” it scored 96 points, compared to 93 for the NSX, 91 for the F355, 83 for the Viper, and 81 for the Esprit.

In another supercar shoot-out, *Complete Car* brought together the 911 Turbo, Aston Martin DB7, Ferrari F355, and Lotus Esprit S4S, and took them for a spin on the Hockenheim short circuit. The Porsche recorded the



quickest time, beating the Ferrari by 1.2 seconds (the Aston was more than eight adrift). While the Italian car had more passion, it was noted: “The 911 Turbo has finally got the four-wheel drive that its massive power and rear-engined format has always demanded. Its performance is even more shattering than before, but is now combined with safe, predictable handling.”

It is such a shame that Ernst Fuhrmann - originator of the first Porsche Turbo - died the same year as the new model made its debut. He would have been so pleased with the reception that the latest in the line was given ...

### **The main export markets**

In America, 911 prices ranged from \$60,625 at the start of the 1995 season. The Carrera 4, rated at 16/23 by the EPA (against 17/25 for the strict Carrera), offered exceptional value. Introduced at \$65,900, allowing for the bigger wheel and tyre combination and standard limited-slip differential and ABD, the difference between the two cars was closer to \$2500; a small price to pay for the added security for those living in areas that often experience poor weather conditions. Naturally, the sport package was much cheaper on the C4, as the 17-inch wheels were usually included.

By the middle of the year, the Carrera coupé was listed at \$61,100 in manual guise, with the C4 version priced at \$67,200. The rear-wheel drive drophead cost \$69,600, with the 4WD system adding \$6100 to the invoice. The new Turbo had been launched in the States in April 1995 as an early 1996 model. Listed at \$99,000, it was the same price as the last Turbo, introduced two years earlier.

American 1995 CY sales held steady on the previous year, with 4656 normally-aspirated 911s and 655 Turbos helping to make up the 5771 total.

In the UK, the new cars went on sale in October, having been introduced at the 1994 Motor Show in Birmingham. The Carrera coupé commanded £54,995, with the cabriolet version coming in at £59,995 (Tiptronic transmission adding £2925 to both). The C4 coupé was introduced at £58,245, with the cabriolet £5000 more.

By spring 1995, the Carreras had gone up in price by an average of around £1600, and were joined by the 3.6 litre Turbo. Announced at £91,950, its price was confirmed after Geneva, and UK sales began in April. By this time, PCGB were also the UK's official Lamborghini importer.

In Japan, the Carrera coupé was 9,800,000 yen in manual guise (Tiptronic added 1,000,000 yen), although there was also a special, 1995 only, basic version, available for 9,100,000 yen; the cabriolet was 11,400,000 yen, or 12,400,000 yen with Tiptronic. The C4 coupé was listed at 11,850,000 yen. Apart from the lack of the cheapest Carrera, things remained the same in Japan for 1996.

Australia received the C4 coupé in spring 1995, augmenting the rear-wheel drive model. The latter was up by \$900 on the previous season, while the C4 was introduced at \$201,400. Shortly after, as summer approached, the 911 Turbo was added. Priced at \$265,000, it was \$25,000 more than the 928 GTS, although, by the tail-end of summer (Australia's winter), a hefty price increase took the turbocharged model over the \$300,000 mark.

**La 911 fait reculer  
les limites du temps**



**la 911 Carrera 4 fait reculer  
les limites du possible**

Répartir la puissance d'une Porsche sur ses 4 roues, c'est multiplier le plaisir et la sécurité, par tous les temps, dans toutes les situations et sur toutes les routes. Avec la nouvelle 911 Carrera 4, Porsche fait progresser la transmission intégrale. A tel point que maintenant, c'est la route qui colle à la voiture. Tout a été mis en oeuvre pour en faire une référence en matière de sécurité routière : système de freinage à antiblocage (ABS 5<sup>ème</sup> génération), différentiel Auto-bloquant, double soc gonflable, nouvel essieu arrière optimisant l'adhérence en courbe, renforts de portière, appuie-tête intégrés aux sièges... A ce niveau, la transmission intégrale est un concept qui tient la route. Intégralement Porsche préconise Mobil.  
Informations au 30 15 PORSCHE (1,27€/mn).

**PORSCHE**

*French advertising for the new C4. Some early adverts, like this one (and the odd publicity shot from later on, too), showed the car with 16-inch wheels: all production Carrera 4s had 17-inch rims as standard. A silver C4 cabriolet was displayed at the 1994 Paris Salon (which ran from 6-16 October).*



*A 1995 cabriolet with Exclusive trim and digital sound processing (DSP). As in 1994, US stereo options included the CR-1 and CDC-2 units, now augmented by the 7807 set. For Europe, the combined radio/cassette/CD player was the Blaupunkt Munich unit (it was standard equipment in some UK models), the radio/cassette was the Bremen, and the final choice was the Dusseldorf or CR-10. From 1996 on, stereo options included the CR-11, CR-21, CR-31, and CDR-21 for Europe, and the CR-210 and CDR-210 for America.*

Bob Hall compared the \$203,621 Carrera cabriolet with the Honda NSX-T, but with semi-automatic transmissions, in *Wheels*. Interestingly, both cars gave better 0-60 times when left in the fully automatic 'D' mode than changing up manually via the +/- gate, and both had very similar performance. Which one did Hall choose? He concluded he'd have been happy with either, but with a manual gearbox.

*Autocar* couldn't resist the same comparison in the UK, and agreed entirely with what Hall had said - preferring the manual cars - but added: "If a clutchless transmission is a must and you don't favour the character of one over the other, take the Porsche. It's hugely cheaper and has a 'box that comes closer to providing the thrill of a manual without the hassle of clutch-pumping in traffic. It's also the more enjoyable for more of the time."

Interestingly, the same article continued: "This is the first time we have tested a new 911 on standard 16-inch wheels and tyres, and with the regular suspension rather than the firmer sport set-up that automatically accompanies the optional 17-inch wheels. And the difference is far from subtle. Together, these changes wreak considerably more damage on the 911's handling balance than removal of its roof."

*Motor Trend* carried out exactly the same test in the States. Again, the manual models were preferred, but in automatic form, the Honda just got the nod. The NSX covered the standing-quarter in 14.3 seconds, against 14.5 for the 911, although the terminal speed of the latter was higher, indicating greater mid-range punch. Braking was almost identical, the Honda bettering the Porsche as speeds increased, but the 911 pulled 0.93g on the skidpan compared to 0.89g for the Japanese car. The Honda was much quieter at idle, but the decibels rose to match those of the 911 when cruising. EPA fuel consumption figures were similar, too. However, the Stuttgart machine was priced at \$71,350, whilst the Tochigi two-seater cost \$84,500.

The Carrera was a fast car, for sure, but, for those who thought that even the new Turbo wasn't quick enough, there was always the Ruf 911 BTR, clocked at 205mph (328kph) in an independent test. There was also a new RS and the GT2 to choose from in Porsche showrooms...

## **The GT2 & a new RS**

Porsche unveiled the 430bhp GT2 at the Essen Show on 17 November 1994. Officially quoted as having a top speed of 183mph (293kph), and a 0-60 time of 4.4 seconds, both road and race models were available. Granted, the GT2 was not cheap, but as it said in *Complete Car*: "If a more exhilarating road car exists for under £200,000, wheel it on."

Based on the new Turbo, the GT2 was instantly distinguished by its plastic wheelarch extensions (rivetted in place, making the car a touch wider), the aggressive front spoiler (with upturned sides), which sat below the NA-style

intake, and a rear spoiler with two blades and intercooler ram scoops on the outer edges. Orange front and rear indicator lights were used; there was a black '911 GT' badge on the engine cover, and a GT logo embossed in the cover on the side of the rear spoiler, which hid the adjusting screws that gave the top blade one of eight positions. Incidentally, the road car usually ran with the upper rear wing flat.

Weight-saving measures included an aluminium front lid and door skins, thinner glass, and deletion of the air conditioning, power windows and mirrors, central locking, rear seats, and a lot of the sound insulation. In addition, the airbags were removed (the GT2 came with a Momo three-spoke steering wheel with a Porsche badge in the centre), and lightweight bucket seats replaced the luxurious items fitted to the Turbo. Options included dual airbags (bringing back the standard wheel), air conditioning, and a radio.



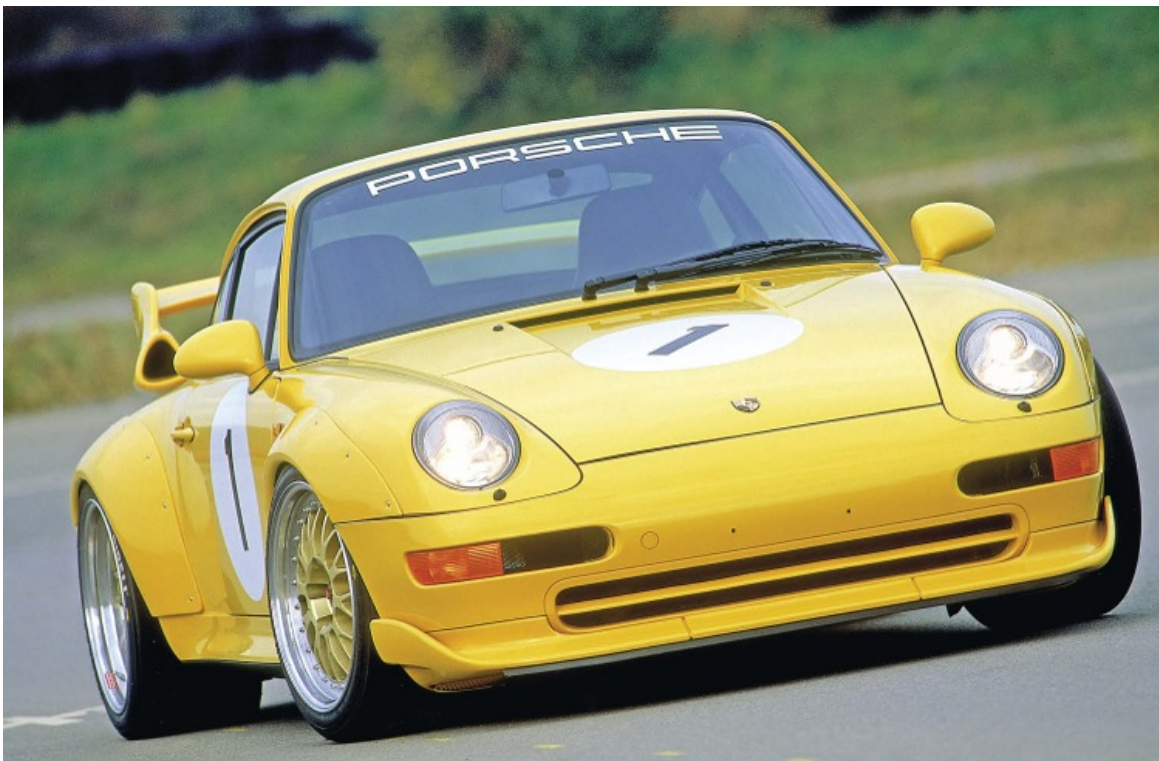
*The GT2 road car and its interior.*



The DM 268,000 road car had a tuned version of the M64/60 engine (the M64/60R), and went on sale from April 1995. Developing 430bhp at

5750rpm, and 422lbft of torque at 4500rpm, the more powerful unit was ultimately made available for the regular European Turbo under the Werks-Tuning programme. To get the extra power, the GT2 engine was given a new ECU and slightly higher boost pressure, although it remained extremely tractable. The catalytic converters were ditched in the interests of weight reduction, offsetting the weight of twin oil coolers, the extra one added to deal with the heavy duty use expected in a high-performance 911. The G50 six-speed transmission was linked to a limited-slip differential and ABD, and came with the same ratios as the Turbo.

Brakes were sourced from the Turbo, while the suspension was updated, lowered, and adjustable. Solid mounts were used at front and rear, with the front end also acquiring a strut brace, new alloy uprights, and redesigned steering arms (PAS was retained, by the way). Wheels were five-spoke Speedlines, 9J x 18 up front (with 235/40 ZR rubber), and 11J x 18 at the rear (shod with 285/35s).



*The competition version of the GT2.*

The Club Sport package was optional (including a rollcage, six-point harness, racing seats, a fire extinguisher, and battery cut-off mounted where

the headlight leveller usually was), taking the GT2 road car closer to the pure racer it was built to help homologate. Judging by contemporary press reports, it was probably close enough already, with lightning responses to driver input and superb levels of handling and straight-line performance; not surprising, given its 430bhp in a lightweight, 1290kg (2838lb) body.

The DM 398,500 GT2 competition car was powered by the M64/81 unit. This had new KKK K24 turbochargers, larger intercoolers, high-lift camshafts, an uprated valvetrain, and a modified exhaust system to give 465bhp at 5700rpm. The G50/54 gearbox had closer ratios (ranging from 3.154 to 0.829), and power was put down on the road through racing rubber mounted on 11J x 18 BBS three-piece alloys (10J x 18 items up front). The interior was completely stripped out, and a 100 litre (22 Imperial gallon) fuel tank fitted in the front compartment.

There was another competition car, too. While a silver Turbo took centre stage on the Porsche stand turntable, a Carrera RS Club Sport was also on show at Geneva. The Club Sport (called the RSR in the UK), was the sister car to a new 3.8 litre RS. The RS was actually an interesting vehicle, not only because of the famous RS moniker, but its Varioram intake system, which would soon be adopted on all NA 911s.

The 3746cc engine was based on the earlier Renn Sport unit (the M64/04), but this latest six had a completely new top end. Bigger valves and an uprated valvetrain were only part of the story, as the M64/20 powerplant was the first 911 engine to feature what Porsche called Varioram, which enhanced low- to mid-range torque by altering the length of the intake tract.

Racing hero, Peter Brock, explained: “The key to this new intake system is its sliding upper runners. Each intake port features fixed-length runners cast into the lower plenum of the intake manifold. But the Varioram also incorporates an upper intake plenum with moveable intake tubes positioned above these ports. Under the proper low-rev conditions, these tubes automatically descend to align and seal with the fixed lower runners to create a longer - and thus more torque-producing - intake tract. As the revs come up, the tubes retract back out of the way, and finally a large butterfly valve opens in the lower plenum to bypass the upper hardware completely.



*The RS (nearest the camera) and RS Club Sport. The RS sat 30mm (1.2in.) lower than the regular Carrera.*

“All this action lets the Varioram engine avoid the torque-versus-horsepower compromise of a fixed length intake system. The result combines all the free-breathing top-end power of a regular 911 with the copious low-end torque of the costlier 911 Turbo.”

Both the RS and the RS Club Sport used the same engine, which, with an 11.3:1 c/r, developed 300bhp at 6500rpm, and 262lbft of torque 1100rpm lower down the rev-range. The RS used the G50/31 transmission, with a 240mm (9.4in.) clutch and internal ratios of 3.154 on first, 2.000 on second, 1.522 on third, 1.242 on fourth, 1.024 on fifth, and 0.821 on sixth. The CS model, in addition to having an uprated clutch plate, used the G50/32 six-speed unit, which had different cogs but similar ratios on the top three gears, with top listed at 0.829; final-drive was 3.444:1 in both cases, coming with a limited-slip differential and ABD.

The bodyshell was based on that of the NA vehicles, but seam-welded for additional strength, and with a few detail changes. An aluminium front lid was specified, there were subtle splitters on the outer edges of the front apron, tiny black side skirts, and a colour-keyed whaletail spoiler without the base of the one fitted to the Turbo; thinner glass was used to reduce weight. The Club Sport model had different spoilers; the front one like that of the GT2, whilst the rear one was a taller version of the GT2 item, with two blades. Front and rear indicator lenses were in orange, and the ‘Carrera RS’ badge on the tail in black.

The Club Sport had basically the same suspension, brakes, and steering as the GT2 (the strict RS was supplied without a strut brace). The new RS came



with Bilstein shocks and adjustable anti-roll bars: 23mm (0.90in.) in diameter at the front and with five positions, and 19mm (0.75in.) at the rear, with three positions. The three-piece, five-spoke alloys were of a similar design to those fitted to the old 3.6 litre Turbo/Turbo S, but with concave sections in the spokes and a polished rim only. Up front, 8J x 18 rims were specified (with 225/40 ZR-rated tyres), while 10J x 18s were fitted at the back, shod with 265/35 ZR rubber; the wheel centres carried the RS logo in black.

The 172mph (275kph) RS weighed in at 1270kg (2794lb). To get the car down to this weight, Porsche engineers took the now traditional Stuttgart route, deleting items like power windows and mirrors, rear seats, central locking, airbags (the Momo three-spoke steering wheel found on the GT2 was standard), some of the interior lighting, rustproofing, and sound insulation, and giving the power seats manual adjustment (lightweight Recaro buckets were also available, and were standard on the Club Sport variant). In addition, the headlight washers were dropped (allowing a smaller washer bottle to be fitted), as were the intermittent wipers, the two-stage rear window defroster, and the radio and speakers. This meant that a smaller 36Ah battery could be used, which sat ahead of the 92 litre (20.3 Imperial gallon) fuel tank.

The 'Carrera RS' script on the floor mats and rear bulkhead carpet, seat backs, door pulls on the simplified door panels, and the seatbelts, all matched the body colour, incidentally (grey/black, red, yellow or blue script and accessories were shared amongst the various paint options), and the RS was equipped with a beautiful aluminium gearlever to complete the detailing. The red-line was marked at 6800rpm on the tachometer, and the speedo was calibrated up to either 300kph or 180mph. Like the Club Sport version of the GT2, the RS Club Sport had a battery cut-out next to the headlight switch.

Options for the RS included airbags, air conditioning, the Club Sport's front and rear spoilers, the Club Sport's front strut brace, and a top tint on the windscreen. These cars were always going to be rare. For instance, the UK was allocated just 20 RSs, two RS Club Sports (aka the RSR) and three GT2s for the 1995 season, against 800 Carreras and 65 Turbos. All UK cars had right-hand drive, incidentally, with the 3.8 RS priced at £65,245, and the 3.8 RSR at £71,495; the GT2 was introduced at £110,000.

The RS road car got a mixed reception in Britain. Georg Kacher of *Car* said: “Everywhere except on the track, the aggressive-looking 911RS is inferior to the standard Carrera.” The cost - or rather, the value - was certainly a big part of the problem as so much equipment had been deleted, yet the price had gone up, “... and that smells of rip-off.”

Kacher also noted: “While the four-piston fixed-caliper brakes are excellent - the RS takes just 2.7 seconds to slow from 62mph to a standstill - the steering is not as good as the Carrera’s. Turn-in is extremely brisk, but instead of sticking religiously to the chosen line, the RS always wants to tuck in a little more. Since it keeps pulling at the wheel, driving at the limit is a bit like straddling a razor blade: turn a touch too far to the left or to the right, and it’ll hurt.”

The lack of proper sound insulation around the engine was the last straw, even though it saved 11kg (24lb) in weight. According to *Car*’s writer: “Porsche claims that the sporty engine note is in tune with the car’s character, but only those who habitually sit next to the speakers at Motorhead concerts will enjoy it.”

On the other hand, Ian Kuah, writing for *Sports Car International*, said: “The grip of the huge tyres and the progressive torque make it a breeze to balance the RS on the throttle. Clear the apex and it simply rockets out ...”

Tony Dron added: “Anyone who has done a bit of competition driving will find this an easygoing, everyday road car which can respond instantly to a change in the driver’s mood and deliver great satisfaction. It feels alive and responsive but doesn’t dart about on bumpy roads like the RS models of only a few years ago.”

## **Competition update**

European GT racing came of age in 1995, with the birth of the Global Endurance GT Series, run by the BPR concern. However, the McLaren F1 was the car to beat, with the 911s dominating the GT2 category.

While Uwe Alzen won the German ADAC GT Cup with a GT2, Le Mans was not so kind to the 911 pilots: the GT2 of Guy Kuster, Karel Dolejsi and Peter Seikel came 15th overall, but could not defeat the Honda NSX in its Class. In the Honda’s home country, however, the Stuttgart marque had its revenge when the 911 won the GT1 category of the JGTC.

In the States, the yellow GT2 of Hurley Haywood, Jochen Rohr, David Murray and 1994 Carrera Cup winner, Bernd Maylander, came fourth at Daytona, followed home by an RSR. In the SCCA World Challenge, David Murray took the honours in his 911 GT2, and Jorge Trejos won the IMSA GTS2 title with another GT2 racer.



*Uwe Alzen on his way to victory in the ADAC GT Cup in Germany.*

「フアクトリー」の決断

レースである以上勝たなければいけない。つまり勝利にしか価値はない。フアクトリーチームにおいては、それは目標ではなく絶対的な使命。ついにスペック以上のパフォーマンスを要求され、少しづつ進化をみせるレーシングマシン。機能的には小さな変化だが、勝利にむけては大きな一歩である。この積み重ねがやがて勝利への道標を生み出し、その道標には自信があふれた。それでも、常にさらなる進歩が求められ、マシンをより向上させていこうとすることがある。百戦錬磨の彼らが導いてきたのは、万全を期すために信頼できる乗物だけも選べないことでのみ可能な道である。95年、ル・マン、ポルシェから引いたGT2エボリューションを託されたラブレ・コンパニオン、マシンのもつポテンシャルを極限の状態で24時間稼働しなければならぬ。ラブレ・コンパニオンが選んだのはモチュール。豊富な実績データに裏付けされた。信頼できるモチュールの存在が不可欠だということを知らなければならない。モチュールはついに、その道を彼らに教える役目を果たした。

**300V COMPETITION**  
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**300V POWER RACING**  
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**300V POWER RACING**  
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**MOTUL**

**TECHNOIL Japan K.K.**

The GT2 Evolution of Jean-Pierre Jarier, Jesus Pareja, and Erik Comas, seen here in a Japanese Motul advert from late 1995.



The Supercup circus pictured in 1995.



*The Targa making its debut at the 1995 Frankfurt Show. The 993 had a strange wind deflector on the coupé's sunroof, first seen on the 964 series; the idea was later carried over to the new Targa.*



*The new NA engine, with its new induction system, air filter, timing chain covers, and exhaust tailpipes. It also had a new oil reservoir and pipework.*

Incidentally, the 1995 Supercup racers were based on the RS Club Sport (or RSR), with that car's deeper front spoiler and bi-plane rear spoiler. The Carrera Cup racer had a type M64/70 engine (rated at 315bhp at 6200rpm, plus 273lbft of torque at 5500rpm), linked to a six-speed G50/30 manual transmission. The 1995 model weighed in at 1120kg (2464lb), and took Jean-Pierre Malcher to victory at the end of the season. In the German series, it was Harald Grohs who lifted the Carrera Cup trophy.

### **The 1996 model year**

Ironically, given that it had been intended as a replacement for the 911 some 15 years earlier, the 928 did not appear in the 1996 model year line-up, and neither did the short-lived 968. Although a handful of water-cooled models were sold in 1996 (leftover stock), officially, this left just the 911 in Porsche showrooms until arrival of the Boxster. To try and plug some gaps, a couple

of new 911s were added to the line-up with the advent of the T-Serie. When the 1995 Frankfurt Show opened its doors on 14 September, on display was a new Targa, a Carrera 4S variant, and a redesigned, normally-aspirated engine.

The M64/05 base engine gained Varioram for the 1996 season, the computer-controlled three-stage resonance-tuned induction system first seen on the RS. Combined with the bigger valves of the RS - both increased by 1mm/0.4in (the inlets now 50mm/1.97in. in diameter, and the exhaust valves 43.5mm/1.71in.) - and sitting each side of the twin sparkplugs, new camshafts, revised timing, and M5.2 DME engine management, there was enhanced torque at lower revs, and an improvement in emissions and fuel consumption, due to a cleaner, more efficient burn.

As *Road & Track's* Joe Ruzs said: "What you get is a broader torque curve, especially at high rpm. What you hear, at about 5000rpm, is a deep throated roar as all those chambers open up and the engine spins merrily to its 6800rpm red-line. What you feel is a lot of oomph, especially in the upper rev ranges where the previous powerplant got a bit winded."

The new engine was given the M64/21 designation (or M64/22 with Tiptronic) for most markets, and M64/23 (or M64/24 with Tiptronic) for the USA. It developed 285bhp DIN (282 SAE) at 6100rpm, and 251lbft of torque at 5250rpm. For Europe, the Type M64/21S and 22S units (basically a 300bhp RS engine) were optional, whilst the Turbo continued with the M64/60 powerplant (or optional GT2 unit) with a new cooling fan.

Transmissions were carried over for all cars, although the lsd was sourced from GKN rather than ZF, the Tiptronic selector lever mechanism and control unit was changed (although it looked much the same to passengers), and C4s gained revised front driveshafts. The steering rack was also revised for 1996, incidentally, along with the crossmember, and the upper and lower control arms on the rear suspension.

As for the new models, it was the rear-wheel drive Targa that made the headlines, displayed upright at Frankfurt to give a good view of the car - the first completely new 911 body variation since introduction of the Speedster way back in 1989.

This latest Targa bore little resemblance to its earlier namesake, as it did not feature a roll-over bar and lift out panels. Instead, it was more like a coupé with a full-length glass sunroof. The Panamericana concept car had

given many styling cues for the 993 series, and it's interesting to note the shape of the rear side window (with its sharper trailing edge), and the way the roof was constructed on that vehicle: the similarities between the Panamericana and the new Targa are too strong to disregard. It is reasonable to assume that the Targa moniker was chosen simply because Porsche owned the rights to the name.

Anyway, the key component in the Targa design was its retractable glass roof. The 100 per cent UV-cut glass was in two pieces: the smaller front section rose to deflect wind, and the second piece slid back to sit inside the rear window. Electrically operated, the switches were housed in the lower bank of rockers in front of the gear selector. The middle switch moved the black roller blind forward towards the windscreen header, and then the one to its left was pressed once to position the wind deflector, and twice to retract the roof panel to the desired opening. This was a much easier system than that of the old Targa, and the roof could be opened or closed on the move; a distinct advantage over earlier cars with the same name.

The body was based on the cabriolet shell, and had a completely new aluminium top section, developed jointly with Webasto. Shipped to Zuffenhausen as a complete module, with the three electric motors and all the 7mm (0.3in.) glass already in place, the new roof offered excellent roll-over protection, and added just 30kg (66lb) to the weight of the vehicle.

Although not quite as rigid as the other 911 bodies, the suspension was given softer settings to disguise the fact. Of course, this also improved ride quality, and further refinement was achieved by paying much attention to airflow over the body. Ultimately, the Targa was quieter with glass retracted than was a coupé with the sunroof open. As *Complete Car* noted at the time of the launch: "There is no harshness, no jarring. Control and damping are hugely impressive ... The Targa remains remarkably free from buffeting up to about 90mph." Others confirmed this viewpoint, although above that kind of speed, wind roar became quite pronounced.



*Above & below: The Targa roof mechanism in detail. The opening speed of the roof's front section was strictly controlled, as it caused a substantial difference in cockpit air pressure once deployed. Some testers noted it made their ears pop as the first crack appeared, but it was a vast improvement on the original Targa design.*





*The Carrera 4S gave the Turbo body combined with the normally-aspirated engine. Some articles spoke of the Turbo being much quieter than the Carrera, although the C4 had virtually identical interior noise measurements, and the regular Carrera was only a touch noisier, with 69dB quoted at 50mph (80kph), compared to 68dB for the Turbo, rising to 76dB versus 74dB as speed increased up to 80mph (130kph).*



*A European Turbo with a number of features available through the Exclusive programme. The Turbo S of later years looked very similar up front*



*Beautiful publicity shot of one of the first Targas.*



*Ferry Porsche was on hand to commemorate the one-millionth Porsche being built. It was one of several 993s supplied to the German Police Force.*



*The 1996 model year line-up, including (clockwise from back left): the Carrera cabriolet (complete with revised sunvisors, top folding mechanism, and windblocker); the C4 coupé; the RS; Targa; Carrera 4S, and Turbo.*

Several magazines observed that rear visibility was quite poor with the roof retracted, as the heavy tint combined with the tint on the rear screen to give a 'murky' view. And, as *Top Gear* pointed out: "Rear visibility is not good - even worse if you're wearing sunglasses. Reversing your brand new Targa straight into a bollard while waving to the babes would not be cool at all."

Close inspection revealed the lack of rain gutters, the rear side window profile mentioned earlier (to allow the taller roofline to blend in more readily), black 'Targa' script on the tail, orange indicator lenses front and rear, longer rear wiper (when fitted), and vents on the top of the rear side trim, which directed fresh air onto the side windows. Much easier to spot were the new, 17-inch alloy wheels, a cast two-piece, five-spoke design (bolted together rather than friction welded), with 7J rims up front, 9J at the rear, and a Porsche crest in the centre; the tyres were the familiar 205/50 ZR17 and 255/40 ZR17 rubber that was standard on the C4. This new wheel and tyre combination was available as an option on the other Carreras.

The Carrera 4S was another debutante at Frankfurt. The C4S was essentially a 4WD Turbo Look model following the practice established on earlier versions, with Turbo body panels, brakes (including red calipers, although a silver finish was available), and wheels, but not the whaletail rear spoiler - or the suspension, in this case. In fact, the standard C4 springs were used with slightly softer dampers and anti-roll bars to give a noticeable improvement in ride quality. In addition, to say that the C4S had Turbo wheels is not exactly correct, as, although they looked the same (but with a '4S' logo or Porsche crest in the centre), they had solid spokes, making them heavier and cheaper than the real Turbo rims.

Featuring a clear front indicator lens and a red one at the rear, like the Turbo and the regular C4, there was a Carrera 4S badge on the tail - the 'Carrera 4' of a bright finish, with the large 'S' in a dark grey. Inside, the C4S came fully loaded with ten-speaker stereo, trip computer, air conditioning, leather trim, and full power adjustment for the seats.

Peter Brock said of the car: "It's hard to fully appreciate a Porsche 911 without savoring it in its native environment. Here, the interior remains unruffled and secure as you scream down the autobahn at 160-plus. There's no sense of stress on any component no matter how fast the car is driven, and

even on the damp surface of our drizzly day in Germany, the chassis feels fully confident.”

The C4S's value was questioned in a number of enthusiast publications, however, especially as the 30kg (66lb) of extra poundage, and a less aerodynamic body made the car fractionally slower. Ironically, both *Autosport* and *Complete Car* felt the basic Carrera was the best car in the range. This has often been the case with 911s over the years, with the cheapest variant voted the most entertaining and balanced package overall.

For those with bigger budgets, the Turbo still occupied a special place in the hearts of Porsche fans. The 911 Turbo was still the car to beat in the punishing 0-100-0 test (dismissing it in just 14.0 seconds in 1996), but it offered much more than devastating figures on paper. Tony Dron enthused: “Virtually every mile in the old 911 was white-knuckled. How different now: more speed, more response, more thrills, more of everything - except turbo-lag and prematurely white hairs.

“If the 911 Turbo isn't quite the world's price-no-object ‘ultimate road car,’ it's hard to think of anything that gets remotely close for the money. It isn't just the staggering performance that makes the Turbo so special, but its accessibility. As a driver-friendly car with ultra-high performance, it has no equal.”

### ***Standard coachwork colours (1996)***

*Black, Grand Prix White, Speed Yellow, Guards Red, and Blue Turquoise.*

### ***Special coachwork colours (1996)***

*Black Metallic, Polar Silver Metallic, Pearl White Metallic, Arena Red Metallic, Aventura Green Metallic, Turquoise Metallic, Iris Blue Metallic, and Midnight Blue Metallic.*

### ***Cabriolet top colours (1996)***

*Black, Marble Grey, Classic Grey, Chestnut Brown, or Dark Blue.*

### ***Trim colours & materials (1996)***

*Black, Classic Grey, Marble Grey, Chestnut Brown, Cashmere Beige, Cedar Green or Midnight Blue vinyl or cloth, Black/Marble Grey or Midnight Blue/Marble Grey vinyl, with Black, Classic Grey, Chestnut Brown, Cashmere Beige, Cedar Green or Midnight Blue leather as an*

*option; special leathers included Rubicon Grey, Flamenco Red, Provence Blue/Black or Provence Blue/Midnight Blue. Carpets came in Black, Grey, Red, Green, Blue, Brown or Beige.*

New options not already mentioned for the 1996 season included footwell and door courtesy lights; rear seat inlays and leatherette door trim in a contrasting colour; an extended centre console, and automatic volume control for the stereo. There was also a new Aero Kit for the C4S, with a subtle front spoiler, and an attractive two-tier version of the Turbo's whaletail at the rear. Still with the C4S, the model's 18-inch wheels later became available for the other Carreras, too.

On 15 July, the one-millionth Porsche rolled off the line - a Carrera for the Swabian Police Force. Ultimately, Porsche built around 21,000 911s in 1996, a record for the model, despite having been launched over 30 years earlier. Granted, the 911 had changed dramatically over the passing seasons, but the concept was still exactly the same ...

### **Export overview**

In America, Porsche prices ranged from \$63,750 up to \$105,000; no 968s or 928s were listed, only 911s. The line-up included the Carrera (in coupé, cabriolet, or \$70,750 Targa guise), with either manual or Tiptronic gearbox; the Carrera 4 (as a coupé or cabriolet); the \$73,000 C4S coupé, and the flagship Turbo coupé.

The new Carrera Targa, timed by *Motor Trend* at 13.5 seconds for the standing-quarter, with 0-60 covered in five seconds dead, was not particularly popular in the States. Nevertheless, sales recovered noticeably in the US, with 7152 cars sold in 1996, all but 11 of which were 911 variants, including 883 Turbos. This helped keep the wolf from the door in Stuttgart, with Porsche recording a very healthy profit for the 1996-1997 financial year, despite the sports car market being 50 per cent smaller than it was five years earlier.

In the UK, the Targa was added for 1996, priced at £64,250, with the other 911s starting at £58,995 and going up to £93,950 for the Turbo. The C4S went on sale from November, commanding a hefty £74,795; £12,300 up on the regular Carrera 4.

The Honda NSX-T was suggested as a rival for the new Targa, and, despite being around £8000 more expensive, *MotorSport* gave the Japanese car the nod. A number of "... irritating little faults ..." were present on the 911, a usually very rare occurrence on a Porsche. Interestingly, *Road & Track* also brought the two cars together, along with a Ferrari F355 Spider. The result on that occasion was a three-way tie.

In another comparison test, *Complete Car* pitched the Lotus Esprit V8 against the 911 Turbo. This particular example had the 430bhp GT2-type unit, which cost an extra £6148, but reduced the 0-60 time to an observed 3.6 seconds! Incredibly, it returned an average of 16.7mpg, quite respectable, given the performance, and better than the 354bhp Lotus, to boot. Another interesting observation relates to its braking: Whereas the Lotus' stopping distances increased as the brakes became hot, the Porsche's reduced. *Complete Car* declared the Stuttgart machine the winner, saying: "The Porsche lacks some of the Esprit's dynamic finesse, but its performance, roadholding and ruthless approach to covering ground rapidly is phenomenal. The GT2 engine has incredible grunt. A car with a clear identity, massive ability and core quality. One of the greats."

Apart from the addition of the RS and Targa, there were no major changes in Japan. In the spring of 1996, however, Australia received its first open cars, and the RS, although the 911 was now the only Porsche listed. The Carrera coupé was listed at \$181,900 (Tiptronic adding \$7100), the cabriolet was \$203,900 (or \$211,900 with Tiptronic - the same price as a C4 coupé), the C4 cabriolet was \$223,900, the RS \$219,000 (or \$209,000 for the RS Touring), the Targa was introduced at \$196,900, and the Turbo commanded \$299,500.

### **1996 competition notes**

Homologation papers for the GT2 came through in January 1996 (no. G2-003), while those for the 993-type RS 3.8 followed three months later (no. G2-004). Meanwhile, on 20 November 1995, Porsche unveiled the 'works' GT1, prepared for the 1996 Le Mans 24-hour race. With around 600bhp from the 24v twin-cam 3164cc M96 unit, it was much longer and wider than a normal 911, with a longer wheelbase, and truncated rear end. The body, made by Zakspeed, was mostly carbonfibre and Kevlar, built up over a

standard 911 front end, a special centre section, and subframes for the mid-mounted, water-cooled engine and six-speed transmission.

Jurgen Barth gave the 1000kg (2200lb) GT1 its first shakedown at Weissach in mid-March. The following month, testing at Paul Ricard revealed the GT1 to be two seconds a lap quicker than the McLarens, and it was no less impressive during its public debut at the Le Mans shakedown in April.

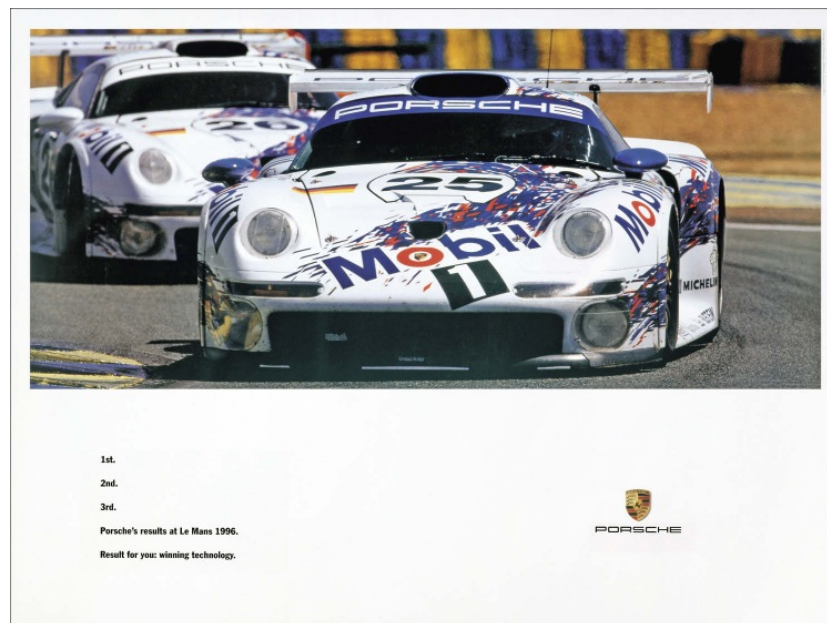
After suffering a qualifying accident, Le Mans was ultimately very good for Porsche, with an open Joest TWR Porsche WSC95 taking the chequered flag. The GT1 of Bob Wollek, Hans Stuck, and Thierry Boutsen was only one lap down, taking second overall and a convincing win in its category, while another GT1 came third after the second WSC95 dropped out of the running. The GT2 Class went to the Rook 911 GT2 of Ralf Kelleners (the 1996 Carrera Cup winner), Bruno Eichmann, and Guy Martinolle (12th overall, and some 36 laps down on the 'works' GT1 car).



*The US Turbo with Exclusive goodies, including cut-outs in the leading edge of the rear wings (not visible from this angle).*



*Striking advertising from Showa Auto of Japan. Incidentally, the Litronic lighting option was updated from version 2.0 to 2.1 for the 1997 season.*



*Advertising produced after Porsche's success at Le Mans in 1996.*

Despite some excellent results, Porsche had to admit defeat to McLaren's Ray Bellm and James Weaver at the end of the BPR season. This was not due to the BMW-powered car's dominance, but because the GT1 was not entered



in all of the races. The GT1 had been stunning in the events it had competed in, however, and 1997 certainly looked promising for the Stuttgart marque. So good, in fact, that it was strongly opposed by the McLaren camp, which claimed that not being able to buy a road car version of the GT1 was a breach of the rules. Porsche's Norbert Singer (in charge of the GT1 project) countered that anyone could order a GT1, they'd just have to wait until the autumn of 1997 to take delivery. Indeed, there was a road car in the paddock at Le Mans, at which venue Porsche confirmed the vehicles would be built. Ultimately, at the end of 1996, the people at BPR forced Porsche into bringing delivery dates forward, and the argument was settled.

The GT1 eventually got its homologation papers through in March 1997 (no. G1-003), when it was listed alongside the Jaguar XJ220, McLaren F1, Panoz GTR, Lotus Esprit and Elise, and the Mercedes-Benz CLK-GTR. A number were built for customer use during the winter (15 were ordered), ready for the 1997 season.

By now, there was a GT2 Evolution model, powered by the beefier (480bhp) 3.6 litre M64/83 engine. Porsche was very successful in the GT2 category of the BPR series, with Le Mans hero Bruno Eichmann and his 911 GT2 claiming Class honours on no less than seven occasions during the season. This was more than enough to secure the GT2 crown. In Japan, Keiichi Suzuki and Morio Nitta won the GT300 Class in the JGTC, although the GT500 category fell to McLaren.

In the Supercup, won by Emanuel Collard in 1996, the RSRs now used the 3.8 litre M64/80 engine, which developed 340bhp at 7000rpm. This was linked to the G50/34 six-speed transmission, and, in a car weighing only 1110kg (2442lb), provided exceptional levels of performance. The 1996-spec cars sold for DM 238,500 apiece.



*The first GT1 road car. It was parked in the paddock at Le Mans to prove that a street version of the racer had been built, and featured in several*

*magazine tests.*



*The GT1 pictured during testing.*

### **Links with a Stuttgart neighbour**

In early 1992 rumours of a cheaper convertible and coupé - supposedly significantly lower in price than the 968 - surfaced again. Some even suggested a link between the drophead model and Mercedes-Benz, an idea quickly dismissed as rubbish by the venerable Paul Frere, who had a closer relationship with staff at the Zuffenhausen factory than most.

The Boxster arrived in late 1996 (making its debut at the 1996 Paris Show ready for the 1997 model year), but a price tag of \$40,000 meant it could hardly be classed as cheap. At that time, a closed version was not planned. Frere's comments were proved correct as the months passed; not surprising, really, given that the management wanted Porsche to remain a specialist, rather than a volume, producer.

There was, however, a link between Porsche and Mercedes-Benz, with the two companies sharing convertible roof technology, and Porsche planning to badge-engineer the M-Class SUV. Eventually, in January 1997, this plan fell through, although Porsche did later introduce the Cayenne, a luxury SUV developed jointly with Volkswagen.

### **A final fling**

For 1997, engines were carried over from 1996, and continued through to the end of the 993 run. Of course, Porsche being Porsche, there were a few minor changes, such as a complete new exhaust system, and rear driveshafts

for the Turbo, new Mahle pistons and cylinders, valve guides, catalytic converters, and air sensors for the Carrera, and a fresh air mass sensor for both model lines; new heat exchangers were specified later on. The Carreras also gained revised Tiptronic transmissions (designated A50/06 and A50/07), and new rear driveshafts to suit. However, there was something far more interesting afoot.

Following its 1996 Paris Show debut, the Carrera S was added to the line-up: a Turbo Look version of the strict Carrera coupé. It was not a full Turbo Look model in the original sense of the conversion, though, as only the Turbo body panels were used (minus the rear wing, although the engine cover grille/spoiler was split and colour-keyed, helping to distinguish the model from its lesser brethren and the 4S). The brakes, wheels, and tyres were all different to those of the turbocharged car, and the interior was not as luxurious. As one writer put it at the time: “The Carrera S is all about image; big buck looks at a more attainable price.”

The wheels were interesting, nonetheless, being the regular 17-inch five-spoke C4 rims, shod with the familiar 205/50 and 255/40 rubber. However, to enable the wheels to fill the bulging wheelarches on the S, 31mm (1.22in.) spacers were used at the rear to push them outwards, while the suspension was lowered by 10mm (0.39in.) at the front, and twice that amount at the back; a coloured Porsche crest appeared on the wheel centre.

From a detailing point of view, the 1400kg (3080lb) Carrera S had orange front and rear indicator lenses, and a unique badge under the retractable rear spoiler - the ‘Carrera’ script was in black, with the large ‘S’ in grey. Brake calipers were black, but, like the C4S, it had the Turbo’s roof extension. Inside, the ‘Carrera S’ logo was printed at the bottom of the tachometer, and all instruments acquired aluminium bezels; the handbrake and gearknob were trimmed with aluminium to match.

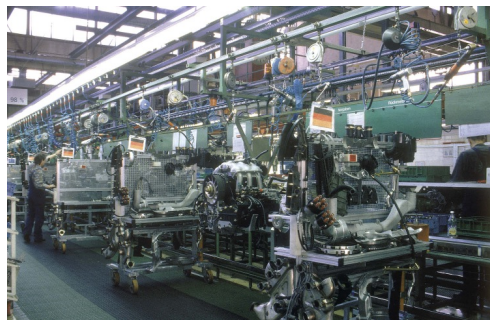
Andrew Frankel of *Autosport* was not overly impressed, however. In the 9 January 1997 issue, he wrote: “In the dry, it is a delight ... In the wet it’s not so good, transpiring to be the least reassuring of all the 911s of this generation I’ve driven, with the notable exception of the terrifying and now defunct 430bhp GT2 [road car]. The problem is that other 911s as stiff as the Carrera S, like the Turbo and 4S, come with four-wheel drive and, to a great extent, cover the disadvantages of such stiffness in damp conditions.

“I am talking, of course, of the last tiny part of the performance envelope that it’s safe to explore in public and, at all other times, it is as secure as you’d wish.

“With the new car due out within the year, it is perhaps as well that the last of the old is not one of the great landmark 911s, like the brilliant 3.8 litre RS which, sadly, has fallen off the bottom of Porsche’s price listings for this year ... The Carrera S is the final incarnation of the legendary 911. Not the outstanding parting shot some may have been hoping for, but worthy of its name.”



*Ralf Kelleners in BPR action at Brands Hatch.*





*The factory, and the 911 build process during the period. Comparison with pictures from earlier volumes will show how production methods changed under Herr Wiedeking.*

***Standard coachwork colours (1997/98)***

*Black, Glacier White, Pastel Yellow, Guards Red, and Blue Turquoise.*

***Special coachwork colours (1997/98)***

*Black Metallic, Arctic Silver Metallic, Pearl White Metallic, Arena Red Metallic, Ocean Blue Metallic, and Zenith Blue Metallic.*

***Cabriolet top colours (1997/98)***

*Black, Classic Grey, Chestnut Brown, or Dark Blue.*

***Trim colours & materials (1997/98)***

*Black, Classic Grey, Chestnut Brown, Cashmere Beige or Midnight Blue vinyl or cloth, with Black, Classic Grey, Chestnut Brown, Cashmere Beige or Midnight Blue leather as an option; special leathers included Rubicon Grey, Boxster Red or Nephrite. Carpets came in Black, Grey, Red, Green, Blue, Brown or Beige.*

Please note that these colour and trim options were carried over for the cars sold in the first part of the 1998, and were shared with the early 996 models.

On the subject of options, it was now possible to specify brake calipers in red, silver, or yellow; the shift pattern insert could be ordered in a contrasting colour, as could the dashboard (as long as it was a dark shade); contrasting stitching was listed for the leather-trimmed dashboard, interior door handle, door storage bin lid, and centre console. The instrument cluster could be trimmed with wood, carbon, or leather, and had matching door trim; interior door handle trim panels could be finished with carbon; an automatic dimming rearview mirror became available, as did an infrared security system, reading lights, and a front rain sensor, and the Carrera S had the option of an additional oil cooler. Finally, there was a new alloy wheel, with ten open spokes, in appearance rather like the BBS rim fitted to the competition GT2. Designated the 'Sport Classic,' it was available in 17- and 18-inch versions.



*The Carrera S pictured at the 1997 Geneva Show. According to Complete Car, because of the different mountings used, the rwd Carrera had a more precise, crisper gearchange than its 4WD counterpart, although both were vastly superior to those of yore. It added: “The classic Carrera with its intimate contact with the road comes closer, especially on winding roads, to being the epitome of a perfect sports car.”*



*Detail shot of the Carrera S logo in that model's tachometer.*



*The majority of the 1997 model year line-up (clockwise from the car on the right, nearest the camera): the water-cooled Boxster; the new Carrera S; Targa; Carrera coupé; Carrera cabriolet, and the mighty Turbo. The Turbo was still Porsche's flagship model, priced at DM 222,500, or DM 235,000 with the 430bhp Werks-Tuning engine.*

The Turbo could be fitted with racing-style seats at no extra charge, and be specified without a rear wiper, too. The Turbo was pitched against the 959 in a number of magazines at this time, as people wanted to know if time had at last caught up with the 1980s supercar, one described by Helmuth Bott as "... the most expensive promotional gift in Porsche's history." (Ferdinand Piech once said that each car cost almost three times its selling price), a decade after it first appeared.

*Complete Car* felt the greatest difference lay in the Turbo's civilized refinement; it was quieter, with lighter pedal action and less kickback through the steering, although ride quality was better in the 959. In conclusion, the monthly preferred the older car: "Bott's dream car still has areas of ability unapproached by its younger sibling. The 911 Turbo is a better turbo and a much more cost-effective supercar. A poor man's 959? On paper maybe. But the 959 still does things no other Porsche can."

*MotorSport* carried out the same test, and added: "There are two distinct levels of performance in the 959: brisk, and scary... The 959's peaky, lag-prone engine needs revving to keep the turbos on song for the next gear. The





*Japanese advertising from spring 1997 promoting Aero Kits and the latest 'Sport Classic' wheels. Tuning and customizing is big business in the Land of the Rising Sun.*



*The Exclusive programme ultimately allowed the customer to have the option of a 993 Speedster, although, as a hand-built conversion, it was not given separate chassis numbers. The works built one in anticipation of Ferry Porsche's forthcoming 90th birthday in 1999, finished in black with a grey hood, and featuring a brown leather interior with wood trim. Sadly, the great man passed away on 27 March 1998.*

Another option was to buy the Turbo S (option M092 on the strict Turbo). As PCGB put it: “Everything Porsche has developed and learned in 35 years of the air-cooled 911 is brought together in the last of its type.”

The 911 Turbo S was a limited edition model from the factory, with the M64/60S engine (basically the GT2 430bhp unit with a new exhaust system), the so-called Aero Kit II with aggressive front and rear spoilers, air intakes in place of the foglights, air scoops in the rear wings (optional in some markets, such as Japan), four tailpipes exiting from the back (two on each side, like the old slant-nose cars), a ‘Turbo S’ logo on the tail and wheel centres, lowered suspension, and custom leather and carbonfibre trim for the interior.

Only 168 Turbo S models were sold in the States (the 424bhp SAE cars were priced at \$150,000, compared to \$105,000 for the regular Turbo), and Britain was allocated only 33 of the 186mph (298kph), £129,950 machines, where they were classed as 1998 vehicles (sales ultimately began in February that year).

*Autocar* compared the Turbo S to the Ferrari F355, and declared: “The Turbo S is formidably quick, but also secure thanks to 4WD; it feels untouchable across country. [However], the super-stiff ride makes it wearing to drive, even on a motorway ... [And] the F355 feels so much lighter on its feet than the 911. In Porsche-Ferrari contests past, the 911 has always been regarded as the everyday car, with the Ferrari favoured for high days and holidays. The F355 has changed all that.”

### **Export market review**

America gained the \$63,750 Carrera S, introduced at the New York Show for the States, and the limited edition Turbo S for 1997. While the turbocharged car was available in small numbers, the Carrera S essentially took the place of the C4 coupé in the line-up; otherwise, everything was much the same as in the 1996 season, including prices.

John Phillips at *Car & Driver* looked at the Carrera S, and declared: “Sitting in the dentist’s chair, I compiled a list of ergonomic antiquities that, 15 years earlier, had sabotaged my own experience of owning a 911. They still annoy. The floor-mounted pedals engage like leg traps. The seat cushion is too low. The graining on the instrument panel resembles the surface of a basketball recently given to me at Pizza Hut. The blower motor roars like an

automatic garage door opener. This list blossomed until I noticed I was alone in Dr Sloane's office. He and his assistants were out in the parking lot, huddled around our silver Carrera S. Critics like me are at risk when they marginalize this car's dazzling ability to entrall."

Csaba Csere added: "Sure, I'm eagerly awaiting the new [1996] model, but if I were sentenced to drive this Carrera S every day for the next five years, I'd still be a happy man."

The *Motor Trend* buyer's guide had different entries for the NA 911s and the Turbo, "... out of a mixture of awe and reverence. Consider the specs: 400 turbocharged horses, all-wheel drive and a six-speed transmission, all packed in a lightweight package that lets you warp the time-space continuum ... Viceless handling and outlandish braking power sweeten the pot. There are other sports cars this good, but none as refined and pleasant in normal driving as the 911 Turbo. For all this, \$105,000 doesn't seem too high a price to pay."

By this time, the cabriolet was a two-seater again in the US, making the Targa a more attractive proposition. US sales were up to 12,976 units for 1997, the Boxster accounting for just over half this figure. 5977 911s were sold in all (5415 NA cars and 562 Turbos).

The C4S first appeared in UK lists in the summer of 1996, with an asking price of £74,795. It continued at the same price for the 1997 season, listed alongside the Carrera coupé (£61,250, or £64,445 with Tiptronic), the Carrera cabriolet (£67,445 in manual guise, or £70,640 for the automatic), the C4 coupé (£64,450), C4 cabriolet (£70,645; about £10,000 cheaper than a Mercedes 500SL, but £15,000 more than a Jaguar XK8 convertible), the Targa (£65,950), and the Turbo (£97,950). The Carrera S was introduced at £65,450.

Spring 1997 saw prices increase by around £150 across the board, but the range then remained the same into 1998. *Performance Car* compared the Carrera S with the Honda NSX, Maserati Ghibli Cup, Lotus Esprit V8, and the TVR Cerbera 4.5. It concluded that in a straight fight for first, it was between the German and Japanese car, but: "The 911 is at its best when pushed to its limits: the way its controls work and the clarity of feedback from its chassis tell you that dedicated engineers have been there before you, refining and polishing. It's immensely satisfying. Yet just taking the 911 to the

corner shop engages your senses and tells you you're driving something special. That's why it sells so well. That's why it wins."

In Australia, the Carrera S was added to the line-up for 1997, with an \$11,000 premium on the strict Carrera; the C4 was only listed in C4S spec for the coupé, priced at \$219,900. Otherwise, things were much the same.

In Japan, there was a Type I and Type II version of each rear-wheel drive Carrera. The Type I had basic equipment, but the Type II had a decent specification; the Type II versions were rather like the UK Lux packages of yore. For 1997, the Carrera coupé Type I cost 9,100,000 yen (the Type II was 10,800,000 yen), the Targa Type I was 10,700,000 yen (against 11,700,000 yen for the II), and the basic cabriolet was 11,150,000 yen, 1,000,000 yen cheaper than the Type II model. The C4S coupé was listed at 11,750,000 yen, with the regular C4 coupé commanding 200,000 yen more. The RS coupé was 12,300,000 yen (the same price as it was at introduction), the 911 Turbo coupé was 16,800,000 yen, and the Turbo S version 18,500,000 yen.

By summer 1997, the Carrera coupé Type I was 350,000 yen more than at the start of the season, but the Type II was 550,000 yen cheaper, with Tiptronic adding 900,000 yen to both. The Carrera S was now 10,750,000 yen, the Targa 11,300,000 yen, and the cabriolet 11,800,000 yen. The C4 and C4S were both listed at 12,400,000 yen, while the C4 cabriolet had a 12,800,000 yen sticker price. The 911 Turbo was put at 17,600,000 yen, 1,700,000 yen cheaper than the Turbo S, while the road version of the GT1 (covered next) cost a whopping 111,000,000 yen. The situation remained unchanged into 1998.

Japan had issued a few 993-based special editions over the years, including a Carrera Aero version (basically a Carrera with front and rear spoilers), the Carrera 4S with a two-tier version of the Turbo's whaletail, the Carrera S with an Aero Kit, Sport Classic and Exclusive versions, and the BBS Aerosports model, with spoilers and BBS alloys.



*Various views of the stunning GT1 road car.*



### **The GT1 road car**

The GT1 road car was basically a pure racer built in limited numbers to satisfy the BPR and FIA regulators. Powered by a 3.2 litre six, developing 544bhp at 7000rpm (and 442lbft of torque at 4250rpm with its road-legal exhaust), and Bosch engine management system (instead of a TAG one), it wasn't so much the brute force of the engine that restricted road use, but its sheer size (4710mm/185.4in. long, 1950mm/76.8in. wide), low ground clearance, and poor visibility, especially rearward. Nonetheless, Porsche fulfilled its promise to build the machine in series, and started producing a planned 30 road cars in the spring of 1997 under the watchful eye of Chief Project Engineer, Gerhard Heid, and Hartmuth Kristen.

Beneath the impressive-looking body (in this case, a steel monocoque strengthened by an integral rollcage, and lightened by carbonfibre doors and lids) was all the hardware found on the competition car, including eight-pot front and four-pot rear brakes, although 380mm (15in.) steel discs were used rather than carbonfibre ones. Massive 18-inch BBS rims played host to 295/35 ZR18 and 335/30 ZR18 rubber, and the suspension was similar, just a touch softer to make it bearable on normal roads. The rear wing was set to give the car a top speed of 194mph (310kph), but adjusting the angle and changing the final-drive ratio would add another 11mph (18kph).

Inside, the dashboard was familiar to any 911 driver (although a water temperature gauge took the radio's usual location), and was completed by a three-spoke Momo steering wheel. Air conditioning was standard, but had to be deleted if a bigger fuel tank was specified (with fixed windows, it was perhaps better to stop for the necessary unleaded petrol more often, even if, at 14mpg, that meant stopping frequently with the regular Carrera tank fitted). The six-speed gearbox had the aluminium gearlever of the GT2, in keeping with the businesslike atmosphere imparted by the change rod running between the racing seats, and the visible parts of the rollcage. Trim could be specified in cloth or leather.

In Germany, the 1150kg (2530lb) GT1 road car was priced at DM 1,550,000, whilst in Britain it commanded £457,075; it was not sold in America. All customer cars would have the 1997 Le Mans body styling, finished in one of nine standard colours. Service intervals were quite remarkable for a vehicle of this type: 6000 miles, or 10,000km.

*Autocar* tested a GT1 in one of its June 1997 issues. In its favour was the GT1's performance (especially over 4000rpm), its brakes, gearchange, and presence. On the down side, it was very noisy, there was a great deal of turbo-lag, it had nervous steering, and the price was out of reach for the vast majority of enthusiasts.



*The GT2 of Bruno Eichmann, Andy Pilgrim, and Andre Ahrle that came tenth overall (second in Class) at Le Mans in 1997.*



*Action from the FIA GT Championship of 1997. A brand new GT1 model, far more curvaceous than the car seen here, was prepared for the 1998 season.*

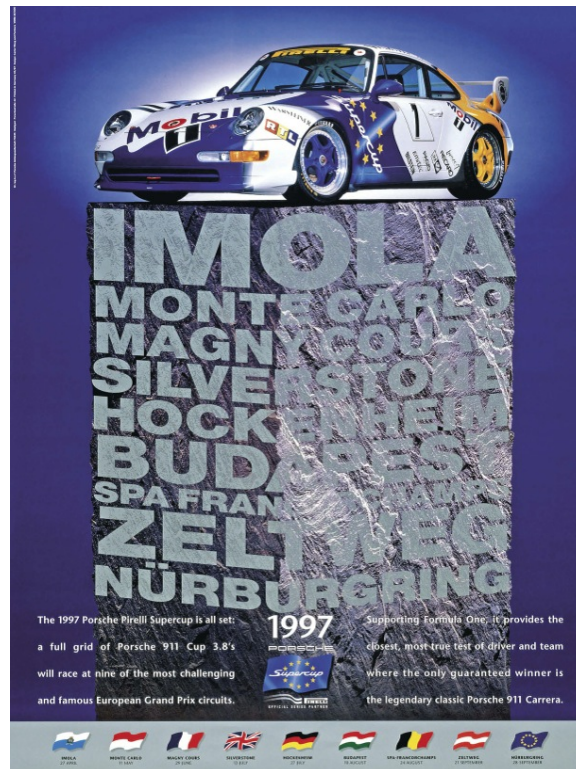
### **1997 competition update**

For 1997, McLaren fought back with a new version of its F1 (the F1 GTR), but GT racing was getting to be an extremely expensive form of competition. The Global Endurance GT Series was now known as the FIA GT Championship, attracting more entrants and bigger budgets. With BMW and Mercedes-Benz throwing big money into the pot, Porsche decided to enter a works team for 1997, but was totally unprepared, using last year's car. The CLK-GTR proved hard to beat, with Bernd Schneider taking the driver's crown, and the F1 GTR was far more competitive. Only after Porsche introduced the GT1 Evolution (with more power and better aerodynamics) at Le Mans did things start to come together for the Stuttgart maker, but it was too late to allow Porsche to finish the season in the top three.



Le Mans remained independent of the FIA series, but the Joest-ran Porsche WSC95 won again at the Sarthe, this time with Tom Kristensen, Michele Alboreto, and Stefan Johansson at the wheel. The two works GT1s retired whilst leading, and the most successful private example could do no better than fifth, 29 laps down on the GT1 Class-winning McLaren. At least GT2 was dominated by 911s, with cars taking the top four slots in that category, the leading one coming ninth overall, 24 laps down on the best 911 GT1.

Incidentally, the victor's spoils went to Patrick Huisman in the 1997 Supercup. Huisman proved it was no fluke by winning the Championship again the following year. Unfortunately, the 911s failed to shine in the JGTC for the first time since its inception.



*Poster advertising the 1997 Supercup.*



*The water-cooled 911 - the 996 series.*

### **A view of the future**

As well as rumours of a V12 supercar, predictions in the early 1990s suggested a V6 or V8 for the new 911 (Type 996). This was probably a fair assumption, as the V8-engined 989 looked like a bigger version of the 996, and to share technology would have been an obvious way to save on production costs. However, with the 989 axed and the 928 discontinued, the new 911 - which once again carried the Carrera name tag - was ultimately powered by a traditional flat-six.

The 996 prototype had longer headlights, running further back towards the screen, and not so wide as those used for production; the rear end was flatter, too. But when the 996 was introduced on stand 56 at the 1997 Frankfurt Show, it became clear that 40 per cent of its parts were shared with the Boxster, the main reason for adopting a new 911 body style so soon after the successful 993 had hit the marketplace: economy of scale.

There was also the embarrassing fact that the Boxster was larger (longer and wider) than the 2+2 993 Carrera! This did not look good in the showroom, so the new Carrera would, in effect, replace the old 911 and the 928. As *MotorSport* observed, the new car was "... more of a world-beating sports GT than a true replacement for the 911."

Anyway, the launch of the 996 brought an end to the air-cooled era. The engine was a water-cooled, 3.4 litre six, based on that of the 2.5 litre Boxster unit. The switch to water-cooling allowed Porsche to easily comply with noise and exhaust regulations, which were becoming increasingly difficult to satisfy with the old air-cooled units, and made it easier to use four-valves-

per-cylinder technology to boost performance and cut emissions and fuel consumption. The 24v engine, with twin-cams on each bank, developed a healthy 296bhp at 6800rpm, and 251lbft of torque at 4600rpm.

Transmission and chassis details were refined, but pretty much carried over in principle, with a six-speed manual or Tiptronic automatic, although the latter was given a fifth gear for the 996. The body was lighter, yet possessed significantly more torsional rigidity, and played host to a fresh interior.

This really was a brand new 911, not simply a facelifted version of the original. There will always be those who will lament the passing of the air-cooled generation, but Porsche had to move with the times. Weideking knew all too well that survival in the highly competitive world that is the motor industry called for drastic measures. Weideking, who had made all the right decisions up to this point in the proceedings, would have to wait and see if this new direction of water-cooled engines and shared platforms was the correct one, but it was certainly a brave move, bringing half a century of history to a sudden end. Saying that, of course, the air-cooled Porsche had been living on borrowed time for years; you've only to read the earlier volumes in this series to appreciate that ...

### **The end of the air-cooled era**

While the 996 Carrera was making its debut in Germany in September, the 993 series soldiered on into the 1998 model year. This was because the 996 was available in rear-wheel drive coupé form only initially (the cabriolet was launched at the 1998 Geneva Show in March), some countries would not receive the new model straight away, and, in any case, it would be some time before the backlog of 993 and 996 orders could be cleared.

In America, Frederick Schwab was still President of PCNA, but the company now worked out of a new address in Atlanta, Georgia. For 1998, the base rear-wheel drive Carrera coupé was dropped, along with the 911 Turbo S. Until stocks ran out, this left the Carrera S at \$63,750, the C4S at \$73,000, the Targa at \$70,750, the cabriolet at \$73,000, and the C4 cabriolet at \$78,350. The Turbo was officially discontinued for 1998, but a few remained in stock at the start of the season, listed at \$105,000. January 1998 saw the introduction of the early 1999 model year 996 coupé, with the cabriolet following in the spring.

In the UK, the line-up remained the same as in 1997 until February 1998, when only the C4 coupé (£64,450), C4S (£76,450), Targa (£65,950), 3.6 litre Turbo (£97,950), and GT1 were listed from the 993 series. The new 911 Carrera was announced at £64,800 (or £68,100 with Tiptronic), almost twice the price of the Boxster, available from £33,950. By the start of March 1998, only the new coupé, Boxster and GT1 were listed by PCGB, with the 996 cabriolet coming on-line a couple of months later.

Japan started the 1998 model year the same way as the 1997 season had finished; selling the 993 cars until stocks ran dry. Meanwhile, Australia was expecting to have the 996 in the showrooms by mid-1998, although it was actually listed from April, alongside the last of the 993s. The 996 Carrera coupé was introduced at \$183,900, while the 993 Carrera S coupé commanded \$192,900, the 993 Targa was \$196,900 (\$11,000 less than the Carrera cabriolet), the 993 C4S was \$219,900, and the 993 Turbo \$299,900. Everything then stayed the same until the end of the 1998 model year in Australia, when the complete range became 996 based.

Once the 996 range was complete, it signalled the end of the air-cooled Porsche once and for all. Following a test comparing the air-cooled 911 Carrera S with the Honda NSX and Lotus Esprit V8 in mid-1997, *Autocar* noted: “Flawed as this particular Carrera S version is, the 911 remains the car to have. The car to want. The car that is hardest to hand back to its maker. I so much hope that next year’s bigger, more refined replacement maintains the immaculate tradition.” Only time would tell ...



*The last air-cooled 911 receiving its final checks. This Carrera 4S, finished in Mexico Blue (a current colour in 1974 and 1975 seasons), was completed on 31 March 1998. Sold to Porsche enthusiast, Jerry Seinfeld, it marked the end of a glorious era.*

# Appendix I: Concise Buyers Guide

This is a brief guide to what to look out for when buying a 964 or 993, the last of the air-cooled models. The reality is, these vehicles are complex machines, and you would be well advised to buy from a reputable dealer, or enlist the help of a specialist (or owner's club official) if contemplating a private purchase.

The following pointers will help the potential owner identify and eliminate a poor car, but are intended as rough guidelines only, nothing more.



*Cutaway drawing of an early C2 coupé with Tiptronic transmission, clearly showing the location of all the major components that make up the 964 series of 911s. The C4 variants were basically similar, apart from the drive to the front wheels and the different rear brakes, although four-pot calipers were eventually adopted on both models.*

## **The 1988-89 Carrera & Turbo**

The 3.2 litre Carreras and contemporary Turbos were covered in detail in the last volume. Therefore, this section will deal with just a few items specific to the last of these models, which are now highly prized by enthusiasts, as they are so practical for everyday use, and offer excellent value for money.

Although the strict Carrera engines and transmissions were carried over from 1987, noisy 1987-88 Carrera gearboxes meant new bearings for the 1989 season. It's therefore advisable to try the car in all gears, including top,

listening even closer than usual for strange noises coming from the transmission.

Bear in mind that the Speedster had a very basic hood that was prone to leak. Check the carpets and floorpan for signs of water getting in, as this, more than any other model, is the one most likely to have a rusty floor, simply because of its configuration: an open car with a flimsy top.

Perhaps establishing vehicle identity should be mentioned at this stage, too. The Club Sport and Speedster had their own batch of chassis numbers, but other desirable models, such as the slant-nose and Turbo Look cars, did not. Look out for aftermarket conversions, which may have been carried out on accident-damaged cars. Try and buy a vehicle with a full service history, if possible, especially if a lot of money is changing hands.

Incidentally, lead-free petrol did, at last, catch up with Britain by the late 1980s. All NA 911 models from 1972 to 1980 are able to run on 95 RON unleaded, as long as every fourth tankful is leaded. The news for pre-1984 models (and Turbos) was not as good, however, particularly as two Star petrol was withdrawn from the pumps. After the 3.2 litre Carreras, however, there was reportedly no problem running a 911 on unleaded. If in doubt, always consult your local dealer.

## **The 964 models**

If the classic look is what you're after, the 964 will be the newest 911 on your shopping list. The suspension modifications and four-wheel drive option might also appeal to those who do not have a specific year or engine type in mind.

The fact that, in general, the 964 is not as desirable as earlier cars, or the 993, for that matter, means that, relatively speaking, there are some real bargains around. Look for the right car with the right mileage and the right history, and don't be tempted to buy the first one you see. No particular year is any better than another.

A friend of the author's has a 964-type Carrera 4, which he uses as everyday transport. He loves the shape, and rates the air-cooled engine far higher than the water-cooled version in the 996s. As one of Japan's top automotive engineers, surrounded on a daily basis by some of the world's best machinery, and a sports car fan of the highest order for more than half a

century (his father had an ex-works MG K3 Magnette before the war), this is the kind of unbiased recommendation that should be taken seriously.

Rust can be a problem on cars that live near the sea, or in countries that salt the roads in winter, but, regardless of where it has been kept, carry out all of the usual checks. However, the main concern is accident damage. If a car has been repaired, make sure the work has been done properly, preferably by an authorized dealer. Check for regular shut lines, overspray on rubbers (inspect their condition at the same time), missing corners, or paint on bolt heads (the cars were sprayed after being built up at the factory), and so on. Also lift the carpets, and be sure to check the floorpan and luggage compartment floor for wrinkles caused by shunts.

The engine is fairly bulletproof, although oil leaks are common. In addition to checking for odd noises and puffs of smoke, warm the engine thoroughly to check for oil leaks; it's probably better to walk away from a car without a history if the inside of the rear valance is covered with a black film. Oil cooler lines and joints should also be inspected for leaks.

Check the fan, alternator, and air conditioning belts (regularly after purchase, too, as they can fray quite quickly in the hostile environment in the back-end of a 911). Later 964s had a hose fitted to the distributor to reduce heat build-up; a good idea, and something that can be retro-fitted. The DME relay in the fuse box can sometimes pack up, leaving the owner stranded, so it's perhaps a good idea to carry a spare.

Regarding transmissions, from reading contemporary reports, there appears to have been a hydraulics problem on very early Carrera 2 clutches, but this was supposed to have been cured before series production started. Basically, expect 60,000 miles (100,000km) without any trouble on manual or Tiptronic gearboxes. The clutch is fairly robust, although the dual-mass flywheel can be damaged by rough driving. Check for smooth and quiet changes, and take a look at the condition of the fluids and CV gaiters.

Springs and dampers last well in normal use, although brake pads don't. According to one specialist, it's advisable to skim the brake discs every second front pad change (the fronts usually last around 6500 miles/10,000km, although the rears will last twice as long). Check for uneven wear on the tyres, and marks on the wheel rims that give a clue to the car having been kerbed at some stage. If you intend to replace the wheels, or they've already been replaced, take note of the offset (marked by the air valve on genuine



Porsche wheels), and ensure there's sufficient clearance around the brakes and suspension. Steering rack gaiters should be in good condition, and, finally, check that the air pump is in the front trunk, otherwise there's little point having a spacesaver spare!

Moving inside, check the general condition of the interior, and ensure electrical accessories are all in working order, including the sunroof and seat adjustment switches (check also the trim on the sunroof, as the headlining is easily damaged by rainwater). Cracks can appear in the dashboard if the car is left in direct sunlight too much, and leather trim naturally suffers. Stitching on the steering wheel can come adrift, and is very expensive to put right. Note that there was a recall on the early 964 fuel gauge sender unit, so if the gauge doesn't work, check whether the sender was replaced.

Air conditioning switches can get shabby with time, but more important is the fact that the hoses running from the engine are quite long, and prone to gas leaks. Recharging the system more often is, perhaps, a short-term alternative, as replacement hoses are very expensive. As for audio equipment, often, only one speaker is working, and a modern aftermarket system may prove a better option if you are not concerned about originality.

If the car has tuning parts, establish whether they are good quality, and have been fitted correctly. Also, ask your insurance company for a quote, giving full details of all the modifications, as these could make a big difference to the premium.

Having found the perfect car, bear in mind that running costs are not cheap. Take one American magazine's experience after running a Carrera 2 for a year: \$3000 in bills, without tax, insurance, and fuel, and that was with a new car more than a decade ago. As these vehicles get older, more things need replacing, especially electrical components, steering and suspension parts, and other parts that wear with extended use, such as the clutch. Servicing should be carried out more often, too.

With the 964, service intervals were stretched yet again, with a tune-up not required until 30,000 miles (50,000km). However, oil and filter changes were recommended every 7500 miles (12,000km), which, ironically, put the car into the dealership more often than its immediate predecessors, if the owner kept to factory schedules.

Remember, Porsche started using synthetic oils in 1993. This ultimately allowed the oil and filter change to be made every 12,000 miles (20,000km),

which brought things back into line with the recommendations originally laid out for the 2.7 litre engine, although the 30,000 mile (50,000km) interval was never an option back in 1974. To keep an older car in tip-top condition, it's advisable to carry out servicing more often, especially if it's not used on a regular basis.

### **The 993 models**

The 993 was certainly more user-friendly than its predecessors, but buying these newer 911s is not a cheap business. The fact that only the Mercedes-Benz SL will retain most of its cost price five years after purchase (the air-cooled Porsche dropping to 75 per cent of cost) speaks volumes for the quality and desirability of the product. However, it also means assigning a hefty budget to buy a 911, and then having a healthy bank balance to run one properly.

There are no major rust concerns on vehicles of this age, although the pointers outlined in the 964 section should be followed. Again, accident damage is more of a worry than corrosion. A contemporary Porsche advert posed the question: "Who causes more damage to your Porsche? The person who runs it? Or the person who repairs it?" Remember this, and the fact that repairs done by other than official Porsche technicians will have an adverse affect on the car's value.

The engine should start straight away, and have a steady idle speed. Check for smoke and any unwelcome noises, and then run the car until it is fully warmed through. Leave it idling for a while to make sure it's not prone to overheating, and then check for oil leaks: oil leaks are quite common, and can be costly to cure properly. With the engine stopped, inspect the belts (the fanbelt in particular should be kept in excellent condition, and anything less may be an indication of poor maintenance). As for the exhaust, there are already many cars with aftermarket replacement systems, as an OE exhaust is very expensive.

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*The older 911s still have a glamorous image - a fact confirmed by the use of a 993 coupé in this Japanese advert dating from 2004. The JAC concern checks the condition of second-hand cars for clients. It is a good idea to get a similar organization to inspect the vehicle you are considering buying, before parting with any cash.*

993 models had a 15,000 mile (24,000km) service interval in America (when the oil and main oil filter, air filter, and air conditioning pollen filters were changed), although European cars, which tend to have a harder life, had a recommended 12,000 mile (20,000km) interval. The secondary oil filter was changed at twice this distance, along with the sparkplugs, and all of the items listed for the first major service. A full service history is an absolute must for peace of mind, and beware of aftermarket parts that have not been fitted professionally.

The transmission is reliable enough, although the clutch can be delicate. It doesn't take kindly to abuse (a clutch can be destroyed very quickly by a poor driver), although an owner with a touch of mechanical sympathy will easily make one last up to 50,000 miles (80,000km). The Tiptronic gearbox presents no real problems - just be sure to use both the fully automatic and 'manual' modes, and look for smooth, quiet changes. Finally, check the condition of the fluids (clutch or ATF).

The Tiptronic gearbox was quite popular, but cars with this transmission tend to be harder on the brakes. Check the condition of the brake fluid, the discs and the pads, bearing in mind that replacement discs are expensive. There are no real problems regarding the suspension, but look for uneven wear on the tyres, and wheels that have been kerbed, and anticipate the usual consumable replacements. OE parts are not cheap, so allow for this if the suspension is tired.

Check the general condition of the interior, and electrical accessories, like power windows, sunroof, audio equipment, etc. Also be sure to check the operation of the power seats, especially on cars that have been parked outside for most of their lives, as damp can sometimes cause the CPU underneath them to malfunction. Try the heater and air conditioning (a smell from the air conditioning can usually be remedied by new filters). Be aware that there was a recall on 1996 models: a new horn was fitted when it was found that there was a risk of the old horn's voltage peak setting off the airbag.

One final piece of advice: unless you are wealthy enough not to have to worry about money, it may pay to ask a local dealer or specialist for servicing and typical repair costs before buying a car, as well as get insurance quotations, of course. The 964 and 993 are not vehicles to try and run on a tight budget, so if the price looks just within reach, save yourself the agony, and get one later when more funds are available. Buying a beautiful car, only to have to sell it five minutes later when the first big bill hits is no laughing matter, and far from the fulfillment of an enthusiast's dream ...

# **Appendix II: Year-by-year range details**

Here are the brief specifications of all 911 Porsches covered in this volume, arranged in chronological/engine size order. Column one shows the model, the second column carries engine details (to be used in conjunction with Appendix III), whilst the third contains any other useful notes. Only production road cars are listed for each model year. Therefore, prototypes and racing variants are not shown:

#### 1988

Carrera coupé	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Club Sport coupé	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Carrera Targa	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Carrera cabriolet	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Turbo coupé	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.
Turbo Targa	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.
Turbo cabriolet	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.

#### 1989

Carrera coupé	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Club Sport coupé	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Carrera Targa	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Carrera cabriolet	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
911 Speedster	930/20 (3.2) 930/25 (3.2)	For USA, Canada, Japan.
Turbo coupé	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.
Turbo Targa	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.
Turbo cabriolet	930/66 (3.3) 930/68 (3.3)	For USA, Canada, Japan.
Carrera 4 coupé	M64/01 (3.6)	

*Note: The so-called Turbo Look body was available on all variants of the 3.2 litre Carrera (coupé, Targa, and cabriolet, and, later on, the Speedster, too) and in all markets for the 1988 and 1989 seasons. The slant-nose Turbo conversion was also available on all body variations during these years.*

#### 1990

Carrera 2 coupé	M64/01 (3.6) M64/02 (3.6)	Tiptronic version (from January 1990).
Carrera 2 Targa	M64/01 (3.6) M64/02 (3.6)	Tiptronic version (from January 1990).
Carrera 2 cabriolet	M64/01 (3.6) M64/02 (3.6)	Tiptronic version (from January 1990).
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	

#### 1991

Carrera 2 coupé	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 2 Targa	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.

Carrera 2 cabriolet	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
Turbo coupé	M30/69 (3.3)	

#### 1992

Carrera 2 coupé	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 2 Targa	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 2 cabriolet	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
Carrera RS	M64/03 (3.6)	
Turbo coupé	M30/69 (3.3)	
Turbo S coupé	M30/69 (3.3)	From March 1992.

#### 1993

Carrera 2 coupé	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 2 Targa	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 2 cabriolet	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
RS America	M64/01 (3.6)	Introduced as an early 1993 model (from January 1992).
Carrera RS	M64/04 (3.8)	

#### 1994

Speedster	M64/01 (3.6)	Introduced as an early 1994 model (from March (1993 to July 1994).
Carrera 2 coupé	M64/01 (3.6)	964 series. To Dec 1993.
	M64/02 (3.6)	Tiptronic version of above.
Carrera 2 cabriolet	M64/01 (3.6)	964 series. To Feb 1994.
	M64/02 (3.6)	Tiptronic version of above.
Carrera 4 coupé	M64/01 (3.6)	964 series. To Feb 1994.
Carrera 4 cabriolet	M64/01 (3.6)	964 series. To Feb 1994.
RS America	M64/01 (3.6)	964 series. To Dec 1993.
Turbo coupé	M64/50 (3.6)	Introduced as an early 1994 model (from January 1993 to July 1994).
Carrera coupé	M64/05 (3.6)	993 series. From January 1994.
	M64/06 (3.6)	Tiptronic version of above.
	M64/07 (3.6)	993 series (USA). From January 1994.
Carrera cabriolet	M64/08 (3.6)	Tiptronic version of above.
	M64/05 (3.6)	993 series. From March 1994.
	M64/06 (3.6)	Tiptronic version of above.
	M64/07 (3.6)	993 series (USA). From April 1994.
	M64/08 (3.6)	Tiptronic version of above.

*Note: The so-called Turbo Look body became available on the 964 C2 cabriolet for 1992 (all markets) and continued until the introduction of the 993 series. For the US, there was a limited edition 'America Roadster' based on this car in 1992, and a Turbo Look C4 coupé during the 1993-1994 season. For 1993, the limited edition 911 'Celebration' model featured a Turbo Look coupé body.*

**1995**

Carrera coupé	M64/05 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/06 (3.6)	
	M64/07 (3.6)	
	M64/08 (3.6)	
Carrera cabriolet	M64/05 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/06 (3.6)	
	M64/07 (3.6)	
	M64/08 (3.6)	
Carrera 4 coupé	M64/05 (3.6)	US market.
	M64/07 (3.6)	
Carrera 4 cabriolet	M64/05 (3.6)	US market.
	M64/07 (3.6)	
Carrera RS	M64/20 (3.8)	
GT2	M64/60R (3.6)	Mainly built for racing.

**1996**

Carrera coupé	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera cabriolet	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera Targa	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
Carrera 4 coupé	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Carrera 4 cabriolet	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Carrera 4S coupé	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Carrera RS	M64/20 (3.8)	
Turbo coupé	M64/60 (3.6)	Introduced as an early 1996 model.
GT2	M64/60R (3.6)	Mainly built for racing.

**1997**

Carrera coupé	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera S coupé	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera cabriolet	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera Targa	M64/21 (3.6)	Tiptronic version. US market. US market. Tiptronic version.
	M64/22 (3.6)	
	M64/23 (3.6)	
	M64/24 (3.6)	
Carrera 4 coupé	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Carrera 4 cabriolet	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Carrera 4S coupé	M64/21 (3.6)	US market.
	M64/23 (3.6)	
Turbo coupé	M64/60 (3.6)	
Turbo S coupé	M64/60S (3.6)	





**1998**

Carrera coupé	M64/21 (3.6) M64/22 (3.6)	Built until December 1997. Tiptronic version. Built until December 1997.
Carrera S coupé	M64/21 (3.6) M64/22 (3.6)  M64/23 (3.6)  M64/24 (3.6)	Built until December 1997. Tiptronic version. Built until December 1997.  US market. Built until December 1997.  US market. Tiptronic version. Built until December 1997.
Carrera cabriolet	M64/21 (3.6) M64/22 (3.6)  M64/23 (3.6)  M64/24 (3.6)	Built until December 1997. Tiptronic version. Built until December 1997.  US market. Built until December 1997.  US market. Tiptronic version. Built until December 1997.
Carrera Targa	M64/21 (3.6) M64/22 (3.6)  M64/23 (3.6)  M64/24 (3.6)	Built until December 1997. Tiptronic version. Built until December 1997.  US market. Built until December 1997.  US market. Tiptronic version. Built until December 1997.
Carrera 4 coupé	M64/21 (3.6)	Built until March 1998.
Carrera 4 cabriolet	M64/21 (3.6) M64/23 (3.6)	Built until March 1998. US market. Built until March 1998.
Carrera 4S coupé	M64/21 (3.6) M64/23 (3.6)	Built until March 1998. US market. Built until March 1998.
Turbo coupé	M64/60 (3.6)	Built until March 1998.
Turbo S coupé	M64/60S (3.6)	Built until February 1998.

Carrera 2 cabriolet	M64/01 (3.6)	
	M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
Turbo coupé	M30/69 (3.3)	

**1992**

Carrera 2 coupé	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 2 Targa	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 2 cabriolet	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
Carrera RS	M64/03 (3.6)	
Turbo coupé	M30/69 (3.3)	
Turbo S coupé	M30/69 (3.3)	From March 1992.

**1992**

1993		
Carrera 2 coupé	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 2 Targa	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 2 cabriolet	M64/01 (3.6) M64/02 (3.6)	Tiptronic version.
Carrera 4 coupé	M64/01 (3.6)	
Carrera 4 Targa	M64/01 (3.6)	
Carrera 4 cabriolet	M64/01 (3.6)	
RS America	M64/01 (3.6)	Introduced as an early 1993 model (from January 1992).
Carrera RS	M64/04 (3.8)	
1994		
Speedster	M64/01 (3.6)	Introduced as an early 1994 model (from March (1993 to July 1994).
Carrera 2 coupé	M64/01 (3.6) M64/02 (3.6)	964 series. To Dec 1993. Tiptronic version of above.
Carrera 2 cabriolet	M64/01 (3.6) M64/02 (3.6)	964 series. To Feb 1994. Tiptronic version of above.
Carrera 4 coupé	M64/01 (3.6)	964 series. To Feb 1994.
Carrera 4 cabriolet	M64/01 (3.6)	964 series. To Feb 1994.
RS America	M64/01 (3.6)	964 series. To Dec 1993.
Turbo coupé	M64/50 (3.6)	Introduced as an early 1994 model (from January 1993 to July 1994).
Carrera coupé	M64/05 (3.6) M64/06 (3.6) M64/07 (3.6)	993 series. From January 1994. Tiptronic version of above. 993 series (USA). From January 1994.
Carrera cabriolet	M64/08 (3.6) M64/05 (3.6) M64/06 (3.6) M64/07 (3.6) M64/08 (3.6)	Tiptronic version of above. 993 series. From March 1994. Tiptronic version of above. 993 series (USA). From April 1994. Tiptronic version of above.

*Note: The so-called Turbo Look body became available on the 964 C2 cabriolet for 1992 (all markets) and continued until the introduction of the 993 series. For the US, there was a limited edition 'America Roadster' based on this car in 1992, and a Turbo Look C4 coupé during the 1993-1994 season. For 1993, the limited edition 911 'Celebration' model featured a Turbo Look coupé body.*

# **Appendix III: Engine specification**

The following is a survey of all the engines employed in the 911 series models featured in this book, complete with the leading specifications (see text for differences brought about by DIN and SAE bhp and torque ratings), and any other notes of interest. Only power units employed in production road cars are covered by this appendix, although the racing engines are looked at briefly within the chapters.

**Type 930/20**

Production (MY) .....	1988-1989
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	95 x 74.4mm
Cubic capacity .....	3164cc
Compression ratio .....	10.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	231bhp DIN @ 5900
Torque @ rpm .....	209lbft @ 4800
Serial numbers .....	63J0001- & 63K0001-

*Notes: carried over from 1987 MY.*

**Type 930/25**

Production (MY) .....	1988-1989
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	95 x 74.4mm
Cubic capacity .....	3164cc
Compression ratio .....	9.5:1
Fuel system .....	Fuel injection
Hp @ rpm .....	217bhp DIN @ 5900
Torque @ rpm .....	195lbft @ 4800
Serial numbers .....	64J0001- & 64K0001-

*Notes: carried over from 1987 MY. For the USA, Canada, and Japan.*

**Type 930/66**

Production (MY) .....	1988-1989
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	97 x 74.4mm
Cubic capacity .....	3299cc
Compression ratio .....	7.0:1
Fuel system .....	Fuel injection
	Single turbocharger
Hp @ rpm .....	300bhp DIN @ 5500
Torque @ rpm .....	317lbft @ 4000
Serial numbers .....	67J0001- & 67K0001-

*Notes: carried over from 1987 MY.*

**Type 930/68**

Production (MY) .....	1988-1989
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	97 x 74.4mm
Cubic capacity .....	3299cc
Compression ratio .....	7.0:1
Fuel system .....	Fuel injection
	Single turbocharger
Hp @ rpm .....	282bhp SAE @ 5500
Torque @ rpm .....	287lbft @ 4000
Serial numbers .....	68J0001- & 68K0001-

*Notes: carried over from 1987 MY. For the US market (all States).*

**Type M30/69**

Production (MY) .....	1991-1992
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	97 x 74.4mm
Cubic capacity .....	3299cc
Compression ratio .....	7.0:1
Fuel system .....	Fuel injection Single turbocharger
Hp @ rpm .....	320bhp DIN @ 5750
Torque @ rpm .....	332lbft @ 4500
Serial numbers .....	61M0001- & 61N0001-

*Notes: replaced by 3.6 litre unit in 1993. Tuned version available (M30/69SL) for Turbo S, rated at 381bhp.*

**Type M64/01**

Production (MY) .....	1989-1994
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	250bhp DIN @ 6100
Torque @ rpm .....	228lbft @ 4800
Serial numbers .....	62K0001-, 62L0001-, 62M0001-, 62N0001-, 62P0001- & 62R0001-

*Notes: engines with Tiptronic gearbox given M64/02 code.*

**Type M64/03**

Production (MY) .....	1992
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	260bhp DIN @ 6100
Torque @ rpm .....	240lbft @ 4800
Serial numbers .....	62N80001-

*Notes: used in the Carrera RS (but not RS America).*

**Type M64/04**

Production (MY) .....	1993
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	102 x 76.4mm
Cubic capacity .....	3746cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	300bhp DIN @ 6500
Torque @ rpm .....	260lbft @ 5250
Serial numbers .....	62P80001-

*Notes: used in the Carrera RS 3.8, and tuned to give 325bhp for use in the RSR.*

**Type M64/05**

Production (MY) .....	1994-1995
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank

Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	272bhp DIN @ 6100
Torque @ rpm .....	244lbft @ 5000
Serial numbers .....	63R0001- & 63S0001-

*Notes: engines with Tiptronic gearbox given M64/06 code.*

#### **Type M64/07**

Production (MY) .....	1994-1995
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	270bhp SAE @ 6100
Torque @ rpm .....	243lbft @ 5000
Serial numbers .....	64R0001- & 64S0001-

*Notes: for the US market (all States). Engines with Tiptronic gearbox given M64/08 code.*

#### **Type M64/20**

Production (MY) .....	1995-1996
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	102 x 76.4mm
Cubic capacity .....	3746cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	300bhp DIN @ 6500
Torque @ rpm .....	262lbft @ 5400
Serial numbers .....	63S85001- & 63T85001-

*Notes: used in the Carrera RS. 285bhp version available for regular 1995 models (known as the M64/05S and M64/06S respectively), and then 300bhp versions available for 1996 (known as the M64/21S and M64/22S respectively).*

#### **Type M64/21**

Production (MY) .....	1996-1998
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	285bhp DIN @ 6100
Torque @ rpm .....	251lbft @ 5250
Serial numbers .....	63T0001-, 63V0001- & 63W0001-

*Notes: engines with Tiptronic gearbox given M64/22 code.*

#### **Type M64/23**

Production (MY) .....	1996-1998
Cylinders .....	Six, air-cooled
Main bearings .....	Seven, plus one outrigger
Valve operation .....	Sohc per bank
Bore & stroke .....	100 x 76.4mm
Cubic capacity .....	3600cc
Compression ratio .....	11.3:1
Fuel system .....	Fuel injection
Hp @ rpm .....	282bhp SAE @ 6100

Torque @ rpm ..... 250lbft @ 5250  
Serial numbers ..... 64T0001-, 64V0001- & 64W0001-  
*Notes: for the US market (all States). Engines with Tiptronic gearbox given M64/24 code.*

**Type M64/50**

Production (MY) ..... 1993-1994  
Cylinders ..... Six, air-cooled  
Main bearings ..... Seven, plus one outrigger  
Valve operation ..... Sohc per bank  
Bore & stroke ..... 100 x 76.4mm  
Cubic capacity ..... 3600cc  
Compression ratio ..... 7.5:1  
Fuel system ..... Fuel injection  
Single turbocharger  
Hp @ rpm ..... 360bhp DIN @ 5500  
Torque @ rpm ..... 383lbft @ 4200  
Serial numbers ..... 61P0001- & 61R0001-  
*Notes: introduced in January 1993.*

**Type M64/60**

Production (MY) ..... 1996-1998  
Cylinders ..... Six, air-cooled  
Main bearings ..... Seven, plus one outrigger  
Valve operation ..... Sohc per bank  
Bore & stroke ..... 100 x 76.4mm  
Cubic capacity ..... 3600cc  
Compression ratio ..... 8.0:1  
Fuel system ..... Fuel injection  
Twin turbochargers  
Hp @ rpm ..... 408bhp DIN @ 5750rpm  
Torque @ rpm ..... 398lbft @ 4500  
Serial numbers ..... 61T0001-, 61V0001- & 61W0001  
*Notes: announced in March 1995, but classed as 1996 engine. Werks-Tuning version available rated at 430bhp – the same as the GT2 road car (code M64/60R). Turbo S used the M64/60S version.*



# **Appendix IV: Chassis numbers & production figures**

### Chassis numbers

Please note that, although the following blocks of sanction numbers tend to reflect build numbers fairly accurately, actual production figures are shown at the end of this appendix. This volume deals only with the air-cooled 911s, so the figures for 1998 do not include the 996 series.

#### J-Serie models

1988 MY	Carrera coupé	WPOZZZ91ZJS 100001-103580
	Carrera Club Sport	WPOZZZ91ZJS 105001-105148
	Carrera coupé (Japan)	WPOZZZ91ZJS 109501-109930
	Carrera coupé (USA)	WPOAB091*JS 120001-122066
	Carrera Club Sport (USA)	WPOAB091*JS 125001-125082
	Carrera Targa	WPOZZZ91ZJS 140001-141281
	Carrera Targa (Japan)	WPOZZZ91ZJS 149501-149586
	Carrera cabriolet	WPOZZZ91ZJS 150001-151501
	Carrera Cabrio. (Japan)	WPOZZZ91ZJS 159501-159581
	Carrera Targa (USA)	WPOEB091*JS 160001-161500
	Carrera cabriolet (USA)	WPOEB091*JS 170001-172116
	Turbo coupé	WPOZZZ93ZJS 000001-000677
	Turbo Targa	WPOZZZ93ZJS 010001-010136
	Turbo cabriolet	WPOZZZ93ZJS 020001-020242
	Turbo coupé (USA)	WPOJB093*JS 050001-050701
	Turbo Targa (USA)	WPOEB093*JS 060001-060141
	Turbo cabriolet (USA)	WPOEB093*JS 070001-070591

#### K-Serie models

1989 MY	Carrera coupé	WPOZZZ91ZKS 100001-103532
	Carrera Club Sport	WPOZZZ91ZKS 105001-105090
	Carrera coupé (USA)	WPOAB091*KS 120001-121156
	Carrera Club Sport (USA)	WPOAB091*KS 125001-125007
	Carrera Targa	WPOZZZ91ZKS 140001-141063
	Carrera cabriolet	WPOZZZ91ZKS 150001-152787
	911 Speedster	WPOZZZ91ZKS 153001-154242
	Carrera Targa (USA)	WPOEB091*KS 160001-160860
	Carrera cabriolet (USA)	WPOEB091*KS 170001-171361
	911 Speedster (USA)	WPOEB091*KS 173001-173823
	Turbo coupé	WPOZZZ93ZKS 000001-000857
	Turbo Targa	WPOZZZ93ZKS 010001-010115
	Turbo cabriolet	WPOZZZ93ZKS 020001-020244
	Turbo coupé (USA)	WPOJB093*KS 050001-050639
	Turbo Targa (USA)	WPOEB093*KS 060001-060109
	Turbo cabriolet (USA)	WPOEB093*KS 070001-070600
	Carrera 4 coupé	WPOZZZ96ZKS 400061-402068
	Carrera 4 coupé (USA)	WPOAB096CKS 450061-451117

Notes: The \* shown in the chassis codes for North America (USA and Canada) could be a number from 0 to 9, or the letter X. Equally, the sixth digit could be a 2, indicating that airbags were fitted.

#### L-Serie models

1990 MY	Carrera 2 & 4 coupé	WPOZZZ96ZLS 400061-408328
	Carrera Cup coupé	WPOZZZ96ZLS 409001-409050
	Carrera 2 & 4 Targa	WPOZZZ96ZLS 410061-411298
	Carrera 2 & 4 cabriolet	WPOZZZ96ZLS 420061-423410
	Carrera 2 & 4 coupé (US)	WPOAB296CLS 450061-452116
	Carrera 2 & 4 coupé (Can)	WPOAB096CLS 459001-459080
	Carrera 2 & 4 Targa (US)	WPOBB296CLS 460061-460727
	Carrera 2 & 4 Targa (Can)	WPOBB096CLS 469001-469061
	Carrera 2 & 4 Cabrio (US)	WPOCB296CLS 470061-472169
	Carrera 2 & 4 Cabrio (Can)	WPOCB096CLS 479001-479061

#### M-Serie models

1991 MY	Carrera 2 & 4 coupé	WPOZZZ96ZMS 400061-407840
	Carrera Cup coupé	WPOZZZ96ZMS 409001-409120
	Carrera 2 & 4 coupé (US)	WPOAB296CMS 410061-411608



Carrera 2 & 4 Targa	WPOZZZ96ZMS 430061-431196
Carrera 2 & 4 Targa (US)	WPOBB296CMS 440061-440746
Carrera 2 & 4 cabriolet	WPOZZZ96ZMS 450061-453886
Carrera 2 & 4 Cabrio (US)	WPOCB296CMS 460061-462207
Turbo coupé	WPOZZZ96ZMS 470061-472288
Turbo coupé (USA)	WPOAA296CMS 480061-480674

**N-Serie models**

1992 MY	Carrera 2 & 4 coupé	WPOZZZ96ZNS 400061-404844
	Carrera RS America (US)	WPOAB296CNS 418001-418298
	Carrera 2 & 4 coupé (US)	WPOAB296CNS 420061-420715
	Carrera 2 & 4 Targa	WPOZZZ96ZNS 430061-430597
	Carrera 2 & 4 Targa (US)	WPOBB296CNS 440061-440211
	Carrera 2 & 4 cabriolet	WPOZZZ96ZNS 450061-452885
	Carrera 2 & 4 Cabrio (US)	WPOCB296CNS 460061-460992
	Turbo coupé	WPOZZZ96ZNS 470061-470836
	Turbo coupé (USA)	WPOAA296CNS 480061-480309
	Carrera RS coupé	WPOZZZ96ZNS 490001-491992
	Carrera RS (competition)	WPOZZZ96ZNS 498001-498287
	Carrera Cup coupé	WPOZZZ96ZNS 499001-499112

**P-Serie models**

1993 MY	Carrera 2 & 4 coupé	WPOZZZ96ZPS 400061-403249
	Carrera RS America (US)	WPOAB296CPS 419001-419450
	Carrera 2 & 4 coupé (US)	WPOAB296CPS 420061-420520
	Carrera 2 & 4 Targa	WPOZZZ96ZPS 430061-430419
	Carrera 2 & 4 Targa (US)	WPOBB296CPS 440061-440137
	Carrera 2 & 4 cabriolet	WPOZZZ96ZPS 450061-451414
	Carrera 2 & 4 Cabrio (US)	WPOCB296CPS 460061-460600
	Turbo coupé	WPOZZZ96ZPS 470061-470650
	Turbo coupé (USA)	WPOAA296CPS 480061-480288
	Carrera RS coupé	WPOZZZ96ZPS 490001-490129

**R-Serie models**

1994 MY	Carrera 2 & 4 coupé	WPOZZZ96ZRS 400061-400505
	Carrera RS America (US)	WPOAB296CRS 419001-419144
	Carrera 2 & 4 coupé (US)	WPOAB296CRS 420061-420456
	Carrera 2 & 4 cabriolet	WPOZZZ96ZRS 450061-450315
	Speedster	WPOZZZ96ZRS 455001-455581
	Carrera 2 & 4 Cabrio (US)	WPOCB296CRS 460061-460283
	Speedster (USA)	WPOCB296CRS 465001-465469
	Turbo coupé	WPOZZZ96ZRS 470061-470471
	Turbo coupé (USA)	WPOAA296CRS 480061-480466
	Carrera coupé	WPOZZZ99ZRS 310061-316412
	Carrera coupé (USA)	WPOAA299CRS 320061-321453
	Carrera cabriolet	WPOZZZ99ZRS 330061-335850
	Carrera cabriolet (USA)	WPOCA299CRS 340061-341224
	Carrera Cup coupé	WPOZZZ99ZRS 398061-398100

**S-Serie models**

1995 MY	Carrera & C4 coupé	WPOZZZ99ZSS 310061-317018
	Carrera & C4 coupé (US)	WPOAA299CSS 320061-324139
	Carrera & C4 cabriolet	WPOZZZ99ZSS 330061-332878
	Carrera & C4 Cabrio (US)	WPOCA299CSS 340061-343718
	Turbo coupé	WPOZZZ99ZSS 370061-370078
	Carrera RS coupé	WPOZZZ99ZSS 390061-390274
	GT2 (competition)	WPOZZZ99ZSS 393061-393109
	Carrera Cup coupé	WPOZZZ99ZSS 398061-398110

**T-Serie models**

1996 MY	Carrera, C4 & C4S coupé	WPOZZZ99ZTS 310061-316762
	Carrera, C4 & C4S (USA)	WPOAA299CTS 320061-323671
	Carrera & C4 cabriolet	WPOZZZ99ZTS 330061-332066
	Carrera & C4 Cabrio (US)	WPOCA299CTS 340061-342152
	Turbo coupé	WPOZZZ99ZTS 370061-372484

Turbo coupé (USA)	WPOAA299CTS 375061-376357
Carrera Targa	WPOZZZ99ZTS 380061-381980
Carrera Targa (USA)	WPOBA299CTS 385061-385462
Carrera RS coupé	WPOZZZ99ZTS 390061-390849
GT2 (road version)	WPOZZZ99ZTS 392061-392202

#### V-Serie models

1997 MY	Carrera, S, C4 & C4S Cpe	WPOZZZ99ZVS 310061-315794
	Carrera, S, & C4S (USA)	WPOAA299CVS 320061-324972
	Carrera S coupé (Brazil)	WPOAA299CVS 329601-329609
	Carrera 4S coupé (Brazil)	WPOAA299CVS 329801-329806
	Carrera & C4 cabriolet	WPOZZZ99ZVS 330061-331679
	Carrera & C4 Cabrio (US)	WPOCA299CVS 340061-342157
	Turbo & Turbo S coupé	WPOZZZ99ZVS 370061-370972
	Turbo & Turbo S (USA)	WPOAA299CVS 375061-376046
	Turbo coupé (Brazil)	WPOAA299CVS 379801-379803
	Carrera Targa	WPOZZZ99ZVS 380061-381276
	Carrera Targa (USA)	WPOBA299CVS 385061-385567
	Carrera Targa (Brazil)	WPOBA299CVS 389801-389803
	GT2 (road version)	WPOZZZ99ZVS 392061-392092
	GT1 (road version)	WPOZZZ99ZVS 396001-396002

#### W-Serie models

1998 MY	Carrera, S, C4 & C4S Cpe	WPOZZZ99ZWS 310061-310841
	Carrera S & C4S (USA)	WPOAA299CWS 320061-321353
	Carrera & C4 cabriolet	WPOZZZ99ZWS 330061-330198
	Carrera & C4 Cabrio (US)	WPOCA299CWS 340061-341263
	Turbo & Turbo S coupé	WPOZZZ99ZWS 370061-370801
	Carrera Targa	WPOZZZ99ZWS 380061-380272
	Carrera Targa (USA)	WPOBA299CWS 385061-385182
	GT2 (road version)	WPOZZZ99ZWS 392061-392081
	GT1 (road version)	WPOZZZ99ZWS 396001-396022
		WPOZZZ99ZXS 100001
	Carrera Cup coupé	WPOZZZ99ZWS 398001-398030

### Production figures

Please note that these annual figures do not include the 959 or pure racing cars, such as the early Carrera Cup models (apart from those built from the RS series), the 993 Carrera Cup racers, and the GT1 and GT2 competition cars. Rebuilt chassis have also been excluded from this survey, unless they have been allocated a new number within an existing batch. The 911 column includes all air-cooled, normally-aspirated 911 variants; air-cooled turbocharged cars are in the second column.

	<b>911</b>	<b>Turbo</b>	<b>Total</b>
1988 MY	12,871	2488	15,359
1989 MY	15,986	2564	18,550
1990 MY	17,890	-	17,890
1991 MY	17,123	2842	19,965
1992 MY	12,174	1025	13,199
1993 MY	6498	818	7316
1994 MY	17,212	817	18,029
1995 MY	17,727	18	17,745
1996 MY	17,522	3863	21,385
1997 MY	16,103	1935	18,038
1998 MY	3749	785	4534

<b>Total six-cylinder cars (to end of 1987 MY)</b>	<b>252,391</b>
<b>Total four-cylinder cars (to end of 1987 MY)</b>	<b>32,399</b>
<b>Grand total (including 13 901 prototypes)</b>	<b>284,803</b>

<b>Total six-cylinder cars (1988 MY to end of 1998 MY)</b>	<b>172,010</b>
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<b>Cumulative total (as of the end of the 1998 MY)</b>	<b>456,813</b>
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(Please note that this figure represents all air-cooled 911 production (excluding pure competition cars); the water-cooled models are covered in the next volume.)