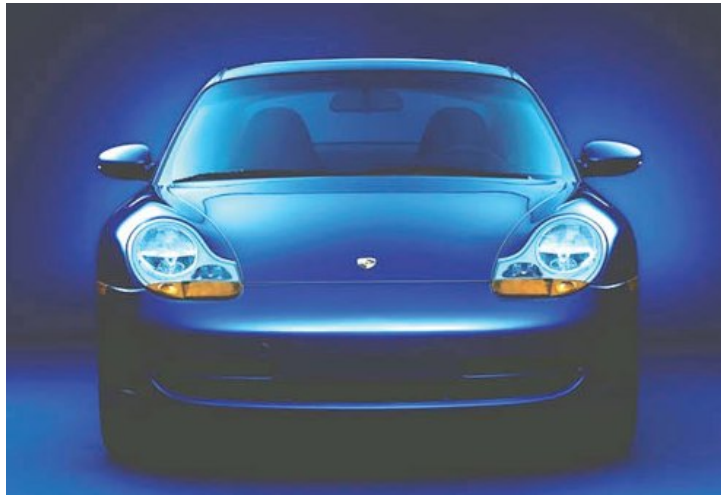


History and Variants of the 996 Carrera

MY1998



The 996 was introduced to the world at the Frankfurt Motor show in September 1997. It was a radical redesign of the 911 concept with a completely new body shell, and for the first time the engine was water cooled. Designers Pinky Lai and Harm Lagaay produced a svelte new form which was 30mm wider and 173mm longer than its predecessor, the 993. Structural stiffness of the new bodyshell was up by 45% in torsion, and 50% in flexure. Drag coefficient was down to 0.3 from 0.33, and the extra internal dimensions gave the car a roomier and luxurious feel. But it remained instantly recognisable as a 911. The 996 shared many components of the 986 Boxster, and the cars were visually virtually identical from the nose to the 'A' pillar. The car was much cheaper to produce than the 993, as a result of bringing in Japanese consultants to assist with production techniques.

The engine was also the same basic design as the Boxster, albeit enlarged to 3.4 litres. Emission and noise regulations determined the unavoidable necessity for the new engine to be water cooled. The engine used four-valve technology with a new variocam system for adjusting the camshaft timing to produce an increase in torque and reduction of hydrocarbon emissions. The engine also featured what can only be described as a 'semi-wet' sump, as the oil reservoir was incorporated within the crankcase. Transmission was provided by either a manual 6-speed transmission manufactured by Getrag, or a 5-speed tiptronic automatic gearbox supplied by ZF.

The chassis and suspension was the work of Carrera Project Manager Bernd Kahnau, with a McPherson strut design at the front and a cast aluminium multi-link design at the rear corners. The longer wheelbase and more rigid structure proved to be an excellent platform for the new suspension arrangement.

On the inside the transformation was also extensive. Gone was the seemingly haphazard arrangement of switchgear and instruments which had been carried over from previous models to the 993. A much more practical and ergonomic layout took its place, yet retained some of the trademark Porsche features, such as the large central revcounter. The driving position improved with wider spaced pedals which were more centrally mounted in the footwell. Water cooling also had a big advantage in providing a far superior heating system, and a true climate control system was introduced using a control system from Audi. The cabin was a much more refined place to be than ever before.

MY1999



The cabriolet and four-wheel-drive Carrera 4 versions of the 996 were unveiled at the Paris Motor Show in October 1998 for the 1999 model year. The Porsche Side Impact Protection System (POSIP) was introduced, as were clear indicator lenses front and rear to distinguish the car from the Boxster, and to counter criticism of the 'fried egg' look of the front lights. The cabriolet mechanism was fast, and could lower or raise in just 20 seconds. Cabriolets came with a removable hardtop, colour-coded to the bodywork. The cabriolet was around £6000 more to purchase than the Coupe equivalent.

The 4 wheel drive system was available for both Coupe and Cabriolet, and was nearly £4000 more than the 2 wheel drive model. Various modifications to the front end were required to make room for the front axle final drive, which resulted in a smaller front luggage compartment, and the use of a deflated space-saver wheel under the floor of the compartment. The C4 was also available in tiptronic transmission for the first time. Engine management was by Bosch Motronic 7.2, which introduced drive-by-wire throttle control, often referred to as eGas.

The four wheel drive system added 55kg to the overall weight, but performance figures were quoted identical to the C2 equivalent due to improved traction. The extra weight at the front end gave a weight balance of 40-60, compared with 38-62 for the C2. The 4-piston calipers manufactured for Porsche by Brembo were painted in a 'titanium' (silver) colour for the C4, as opposed to black for the C2. Perhaps the most significant introduction on the C4 was Porsche Stability Management (PSM). To quote the Porsche Service Information Document of the time: "PSM is an active control system for stabilising a vehicle at the limit of its driving dynamics capability. PSM includes functions such as ABS, ABD, ASR (traction-slip control), EBV (Electronic Brake-force Distribution), as well as a longitudinal dynamics control system MSR (engine drag torque control). In addition to this, the vehicle is stabilised at the limit of its driving dynamics capability within the transverse dynamics control system by FDR (driving dynamics control system)."

From the outside there is virtually no difference in appearance, other than the Carrera 4 engine compartment badge, silver calipers, and a new design of 17" alloy wheels.

MY2000 & 2001

Changes for Model Year 2000 Porsche included the adoption of Motronic 7.2 (eGas) to all Carrera models, and the option of PSM on C2 models, which had previously been offered with a basic traction control system based on ABS 5.3. In 2001 the luggage and engine compartment lids became electrically operated.

MY2002



The Frankfurt Motor Show in September 2001 brought the most significant changes to the 996. In addition to a more powerful 3.6 litre engine and styling changes to the existing model range, there were two new models – the C4S and Targa.

Visually, the main change to the Carrera 2 & 4 was to the front wings and lights, incorporating those from the Turbo model which was introduced in 2001. This gave it a noticeably different front-end look to the Boxster, as it was a common comment that they looked too similar. The front and rear bumpers were modified to give a 'skirt' effect around the bottom edges, giving them a slightly more aggressive appearance.

Engine capacity was enlarged from 3387cc to 3596cc and there was a resulting power increase from 300bhp to 320bhp at 6800rpm. Maximum torque was up from 258ft/lb at 4600 to 273 ft/lb at 4250 rpm. The increase in displacement was achieved by increasing the stroke from 78mm to 82.8mm, while retaining the bore size of 96.0mm. Engine management was changed to the Bosch Motronic 7.8 system. The Variocam Plus system first used on the Turbo was also introduced, along with larger valves. The package resulted in improved fuel economy too. The new exhaust system was optimised for sound, within permissible noise limit values. The extra 20bhp of the facelift 996 improved the 0-62mph time of the Carrera from 5.2 to 5.0 seconds, while the maximum speed increased from 174 to 178mph.

Both manual and tiptronic transmissions were strengthened accordingly. The 6-speed gearbox had an extra bearing on the input shaft, and the tiptronic was completely revised, based on the Turbo unit. Inside the passenger compartment there were several subtle changes. Convenience features like a glovebox and integrated cupholders were introduced. A revised instrument cluster had a far more comprehensive on-board computer system (OBC). Control buttons were given a matt (as opposed to gloss) finish to give a perceived improvement of quality and a three-spoke steering wheel became standard. Other minor improvements included seat belt tensioners with belt force limiters, a larger centre air conditioning vent, memory seats option now included memory via the key fob, and CAN wiring of the instrument cluster, DME, Tiptronic, PSM, and air conditioning was introduced.

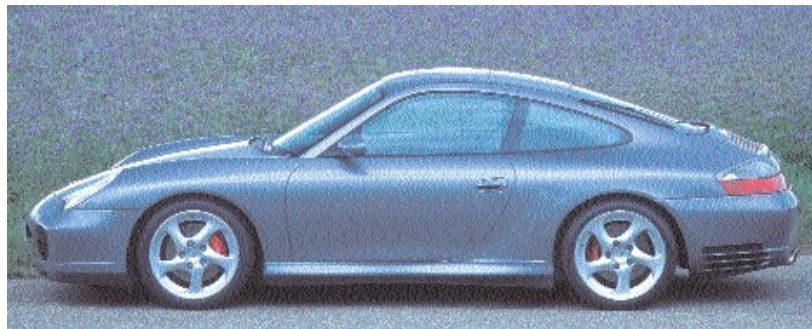
There were some improvements to the 996's running gear. The front track was widened by 10mm to 1465mm, while the wheel offset was 5mm less. Standard 17" wheels remained at 7"(F) and 9"(R) wide, but the optional 18" became 8" and 10" wide, instead of 7.5" and 10". Extensive reinforcement of the roof frame, sills, and seat pan area increased stiffness of the coupe by 25% and by 10% for the cabriolet.

A most welcome and significant improvement for the 2002 cabriolet was the introduction of a heated glass rear window. In addition, the rear window was made as part of a detachable panel, so that if either the fabric of the hood, or the glass window were to be damaged, they could be changed independently.



The new Targa followed the concept introduced on the 993. A large, electrically controlled, glass roof panel slid back under the rear window to give open top motoring. When closed it gave the security and closed-cockpit sensation of a coupe. When the roof was closed the rear window could be opened like a hatchback to allow luggage to be loaded into the rear of the car. An electrically operated blind covered the underside of the glass roof to give protection from the sun with the roof closed, if required. The glass roof gave a wonderful light and airy feel to the interior.

The Targa was only available in rear wheel drive, and weighed a full 80kg more than the coupe. Accordingly, Porsche quoted 0-62mph times comparable to those of the cabriolet. The car was also fitted with stiffer anti-roll bars, as the centre of gravity was higher. The modified roofline gave the Targa slightly more headroom than the coupe, and a little more luggage space than the coupe behind the rear seats.



The Carrera 4S utilised the wide body of the Turbo (60mm wider than the Carrera at the rear) but without the turbo's rear spoiler or air inlet scoops in the rear wings. It also featured a rear reflector strip between the lights, reminiscent of earlier 911's. Running gear from the Carrera 4 was used, and the 10mm lower and uprated suspension was based on the turbo's, utilising Turbo Look II 18 inch alloys. The C4S also shared the turbo's 'Big-red' 4-piston brake callipers. The front spoiler lip was slightly different to the turbo's to maintain the aerodynamic balance, in combination with the standard retractable spoiler.

The C4S offered no performance increase over the C4, as it was some 65kg heavier (the 0-62 time was 0.1 seconds slower than the C4) and less aerodynamically efficient (top speed 3mph lower than the C4). However, many regard it as the best looking 996 derivative and it is probably the most sought after 996 model on the used car market.

MY2003

In the summer of 2003 the C4S cabriolet was introduced. On all 2003 cabriolets, the roof could now be raised and lowered at speeds of up to 50km/h (31mph). The structure of the C4S cabriolet was slightly stiffer than the standard cabriolet, with an increased torsional stiffness of 4.5%, and flexural stiffness by 3%. The Carrera C4S was built well into 2005, prior to the release of the 997 version. Porsche Communications Management PCM 2.0 was also introduced in 2003

MY2004



In September 2003 the Carrera Anniversary was introduced to celebrate 40 years of the 911. Finished in special 'GT silver' metallic paint it featured turbo front grilles, chrome 18 inch wheels and chrome tailpipes. The engine produced 345bhp (25bhp more than standard) while the suspension was the M030 Sports type - stiffened and lowered by 10mm. The cabin featured dark grey leather and various items of body coloured trim. Only 1963 examples were produced and each is uniquely badged with the '911' script on the engine compartment lid.

Note: Performance figures quoted are for manual transmission cars.

Sources and further reading:

Porsche Service Information Technical Introduction Booklets (1999-2004), some of which are available at: <https://techinfo.porsche.com/techinfo/index.jsp>

Wikipedia: http://en.wikipedia.org/wiki/Pinky_Lai, http://en.wikipedia.org/wiki/Harm_Lagaay, and http://en.wikipedia.org/wiki/Porsche_996

Photos courtesy of Porsche AG