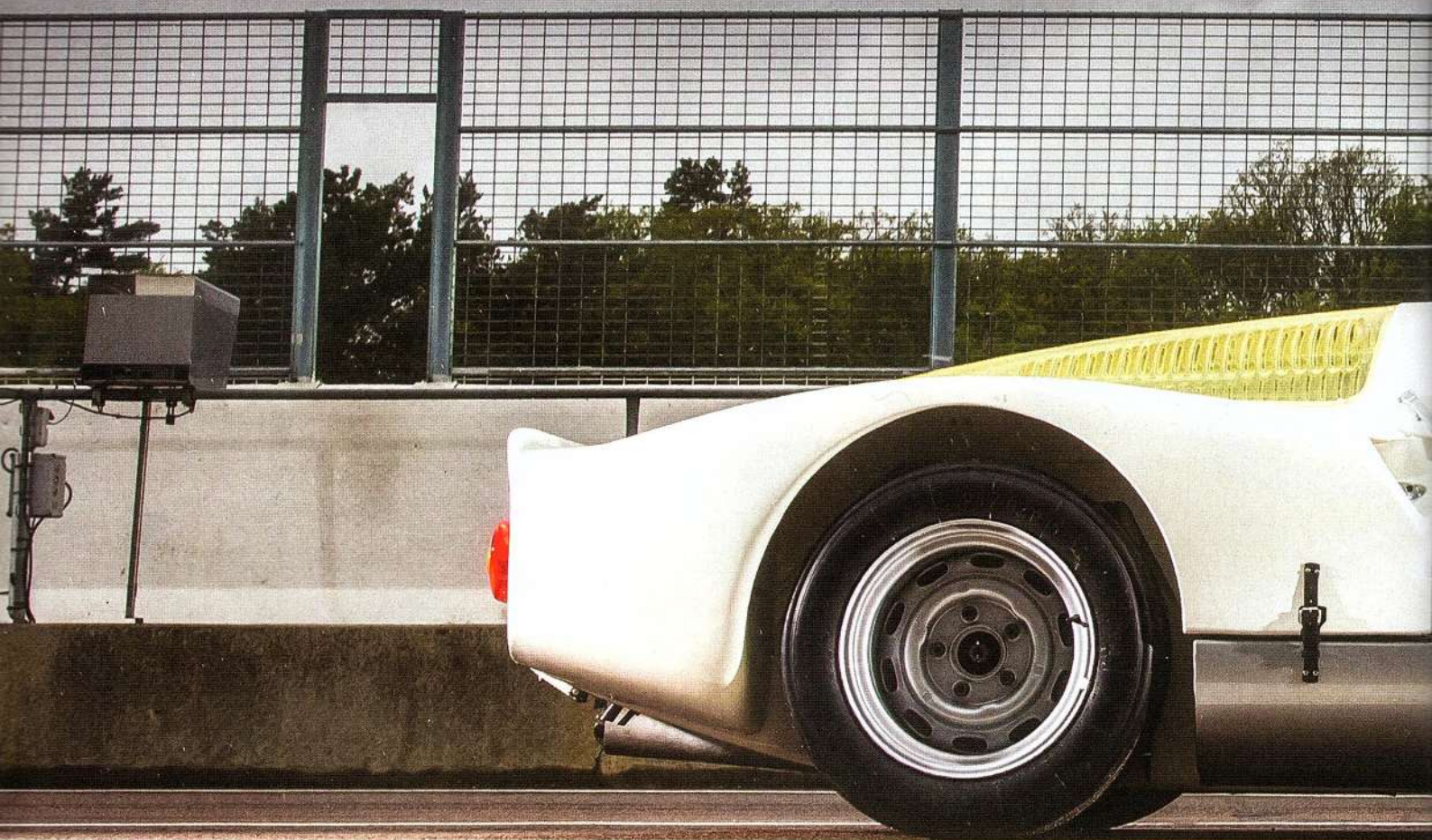


906

APPEAL

Porsche's Carrera 6 – otherwise known as the 906 – was born out of Porsche's determination to beat Ferrari in the mid-1960s. Stunningly beautiful, it owes its origins to the 904 GTS and the cars built by Porsche to tackle the European Hillclimb Championship

Words: Keith Seume
Photos: Etienne Crebessegues



The side-on view shows how low and lean the Carrera 6 was. It was largely the brainchild of Ferdinand Piëch who would later be the driving force behind the mighty Porsche 917. Has there ever been a prettier profile than this?

Porsche had shone in motorsport throughout the 1950s, especially in areas which tended to favour smaller, lightweight machines where a good power to weight ratio was more beneficial than outright horsepower – hillclimbing, for example. In fact, Porsche had tended to dominate this area of sport until 1965 when Ferrari's Dino 206 burst onto the scene and sent Porsche packing, its tail between its legs.

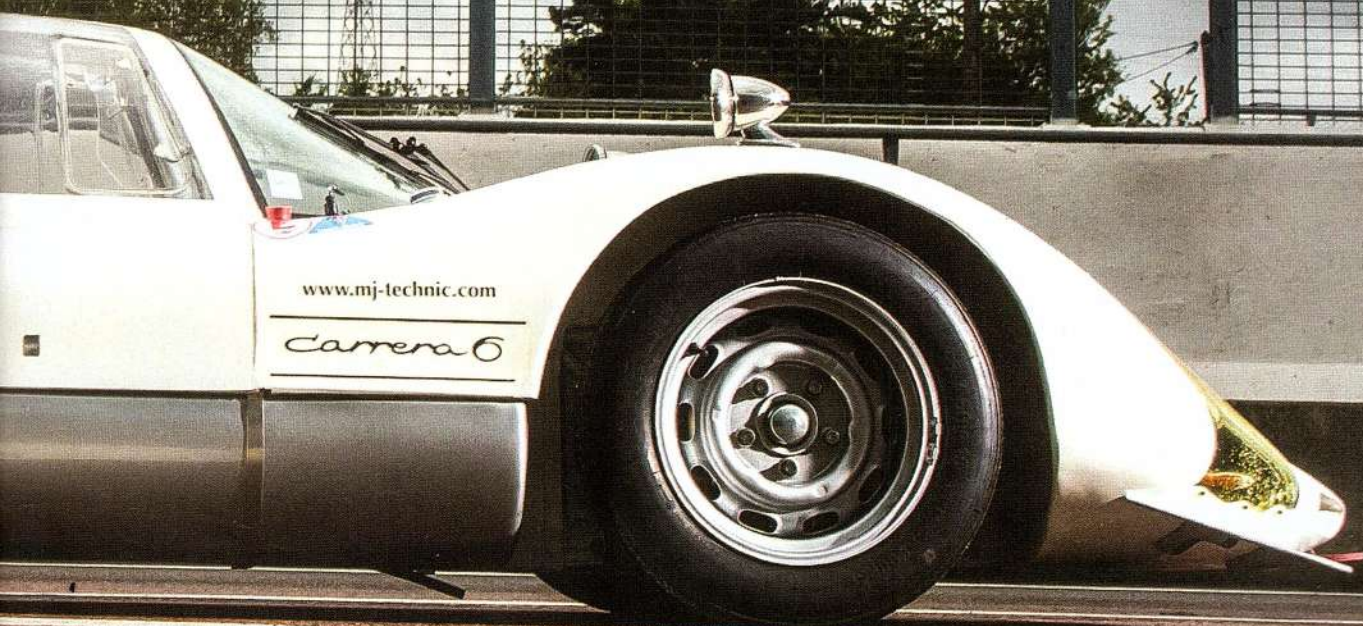
You can read the full story of this period in Porsche history in Delwyn Mallet's feature in issue #16 of *Classic Porsche*. It's a fascinating tale of how the factory responded to this invasion of its 'territory' by creating the infamous 'Kangaroo' – a flat-eight-powered ultra-lightweight machine built from a 904 with the sole intention of reclaiming the European Hillclimb Championship. It handled badly but was quick. Hot on its

heels was the 'Ollon-Villars' hillclimb car – a radical departure with a full tube chassis, and suspension and wheels from a Lotus.

Hillclimb competition had further demonstrated that the production 904, with its pressed-steel chassis, was too heavy as an all-out race car. It had been conceived as a dual-purpose machine, for use on road and track, and as such had been something of a compromise. Although the 904 was extremely successful in its role, and an essential stepping stone in the development of the successful hillclimb cars, it did not represent the future as far as Porsche racing was concerned. The Kangaroo had only served to prove the point... But these purposes built specials were ultimately responsible for spawning an entirely new model: the Carrera 6, or 906.

To accomplish what the race department – or more

“It was clear that designing a new car around a purpose-built chassis was the only way to go...”



specifically Ferdinand Piëch – wanted to achieve, it was clear that designing a new car around a purpose-built tubular chassis was the only way to go. This decision has been regarded as indicative of the ‘new wave’ flooding through Porsche at the time, headed by Piëch. For the new young designers and engineers, the past was just that: the past. Or so they thought.

In truth, the whole concept of using a fully-spaceframed chassis was anything but new. After all, as you can read elsewhere in this very issue, the Porsche Spyders, starting with the 550 back in 1956, relied on a tubular frame. It was only the 904 (and production-based race cars, such as the Carrera-Abarth) that deviated from this path. Another advantage in using a tubular frame was that it was deemed easier and quicker to build – or modify – than the pressed-steel frame of the 904.



Gullwing doors were necessitated by the shape of the roof – it would have been impossible to use conventional doors with such a curved roof and wide sills. The Cd figure was 0.35 – slightly higher than the outgoing 904...

But even before the ultra-light Ollon-Villars Spyder had hit the track, work had begun on the Carrera 6, which was seen as the direct replacement for the 904. The latter had been built around the venerable Fuhrmann four-cylinder four-cam engine, and then been the subject of a transplant when the new 901 six-cylinder engine was squeezed in to create the 904/6. There had even been a 904/8 Spyder. But a change in rules for the 1966 FIA World Sports Car Championship, requiring a minimum series of 50 examples to be built, gave Porsche reason to reconsider developing the 904 still further.

The Carrera 6 may look radically different to the 904 – more aerodynamic and more, well, modern – and featured an all-new chassis, but it borrowed heavily from its predecessor's parts bin. The engine and transmission were carried over almost directly from the 904/6, as were the brake and suspension components.

However, the 904's principle weakness when it came to handling – rubber-bushed suspension – was addressed on the 906, when more rigid spherical bearings, similar to those used on the 904/8 Spyder, were installed.

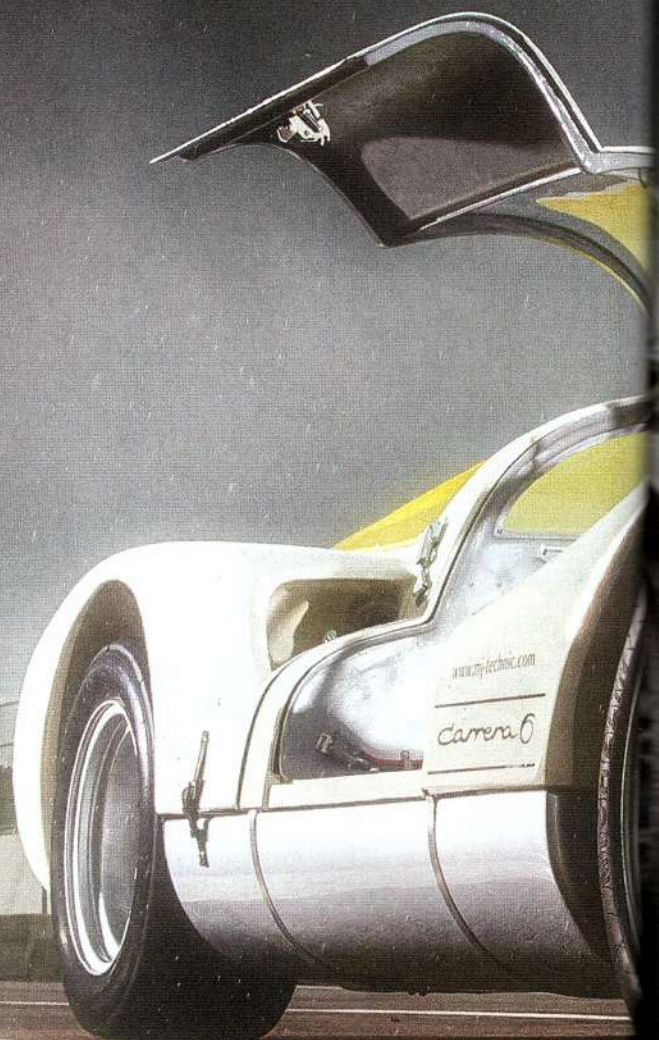
As far as the braking system was concerned, the 906 used the same 911-derived ATE discs and calipers as the 904 (actually using what were referred to as the 904's 'Le Mans' calipers), but with dual master-cylinders operating the front and rear brake circuits independently.

There was a sound financial reason for using the same brakes and major suspension components as the 904: Porsche had plenty of such parts already on the shelf, following the decision not to build a second series of the 904 GTS. Rather than develop new parts from scratch, why not simply use these tried and tested parts which were going spare?

The brakes were tucked away behind composite aluminium-rimmed/steel-centred wheels, similar to those of the 904 with the exception of the width: the 906 was equipped with 7J x 15 rims at the front and 9J x 15s at the rear, while the 904 used rims varying in width between 5J and 7J according to tyre choice.

The wheelbase of the two cars remained the same at 2300mm, but the front and rear track of the new cars were both wider, by around 25mm at the front and 60mm at the rear.

The engine of the Carrera 6 was referred to by the internal type number 910/20. Although outwardly similar to the production flat-six used in the new 911, it differed in several ways. The aim of the development team, headed by Hans Mezger, was to elevate the power output from the 130bhp of the 911 to 210+bhp while, at the same time, saving weight. The crankcase, for example, was cast from magnesium, whereas the regular 911 unit featured a cast aluminium case at this point in its development.



Plexiglas rear window gives the rear a distinctive look. Accommodation is best described as 'cosy'! Small winglets (right) were added to works cars to reduce front-end lift. Front-mounted oil cooler (middle right) is fed oil channelled through the chassis. Wheels (far right and above) feature aluminium rims on steel centres

“The aim of the development team was to elevate the power output from the 130bhp of the 911 to 210+bhp...”



While cylinder heads and cam carriers resembled the aluminium castings of the 911, internally there were several changes made to shave a few more grammes: the shaft drive sprockets were made from aluminium instead of steel, as were the cylinders themselves, which were then hard-chromed. Forged slipper-skirt pistons, made by Mahle, replaced the regular cast items, but the best weight savings came from using titanium con-rods, each weighing 150g less than the standard forged-al parts. That's a saving of almost a kilo right there... Few camshafts, with longer duration but roughly the same lift to the stock 911 profile, proved to be hard on the valvetrain. The standard rocker arms in particular came under scrutiny and these were modified and strengthened by hard-chroming the pads, and doing away with the tappet adjusting screws altogether. To set the correct clearances, it was now necessary to use lash-caps of varying thicknesses which were placed over the tips of the valve stems.

Attention was taken care of by a pair of triple-choke A3C Weber carburettors with 42mm venturis, while four jet headers feeding individual megaphones looked after the waste gases.

The end result of all this was a 1991cc engine (the same size as the production 911 unit) which produced a net 210bhp at some 8000rpm, although official figures say that in reality power output was closer to 225bhp, with peak torque of 145lb ft at 6000rpm. The transmission also came under scrutiny. Although similar to that of the 911 (but reversed to take into account the engine's location ahead of the rear axle), the unit featured magnesium casings, again in an effort to save weight. A wide variety of ratios were on offer to customers – some 33 different gear sets were available to allow the Carrera 6 to be used in various theatres of motorsport, from hillclimbing to endurance racing.

The design and construction of the Carrera 6's frame posed a few problems. In essence, it was carried over from the Ollon-Villars Spyder, the design of which allowed the installation of dual 100-litre fuel tanks, one on each of the door sills. The complex tubular frame was designed to be considerably lighter than the pressed-steel chassis of the 904 but was also its match in terms of structural strength.

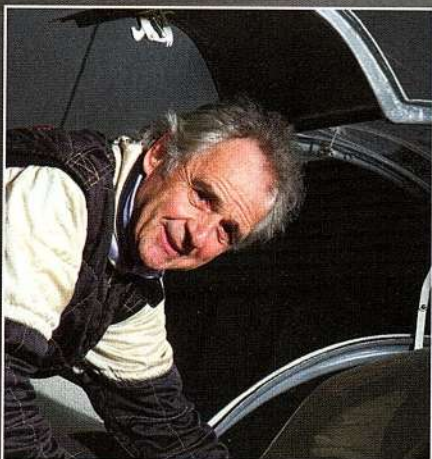
In theory, building a tubular chassis would be relatively straightforward for a company like Porsche, but it was a consuming process and, if the requirement to build examples was to be met, it was deemed necessary to hire an outside contractor. Karosseriewerk Weinsberg was given the contract.

In the ever-continuing search into ways of saving weight, it had been decided that two of the main tubes would carry oil to and from the front-mounted oil cooler. Porsche soon discovered that internal leaks at some of the welded joints meant that oil could begin to fill adjacent areas without being visible on the outside. Faulty chassis were repaired but Porsche felt it necessary to warn customers that it could not guarantee the oil tightness of anything other than a new chassis – basically, race it at your own risk...

There is also another interesting twist to the tale. The Carrera 6 may look substantially more dynamic than the 904, wind-tunnel testing proved otherwise. The 904, which had been designed largely by Ferry Butzi Porsche, had a coefficient of drag of around 0.35, while the 906, which was expected to be superior in this regard, proved to have a Cd of 0.35! This was largely due to the slightly increased frontal area (wider tyres for help) and those large ducts in the leading edge of the rear wings.

“The complex tubular frame proved to be considerably lighter than the pressed-steel chassis of the 904...”

Sylvain Regnier (bottom left) is the new owner/driver of the Carrera 6, seen here testing at Dijon. Michel Paulin (bottom right) is co-owner of MJ Technic, who rebuilt the car to race-ready condition



906 CARRERA 6

3.0 RS came equipped with 8J and 9J rims, while the RSR was equipped with 9J and 14J rims, front and rear respectively. Road cars wore Pirelli CN36 rubber



The 1991cc engine produces around 220bhp and features a host of weight-saving features, such as a magnesium crankcase and titanium con-rods. Maximum power is produced at 8000rpm

The Carrera 6 was first raced at Daytona in 1966, driven by Herrmann/Linge, where it acquitted itself magnificently, finishing first in the 2.0-litre Prototype class and sixth overall. At Sebring just seven weeks later, a Carrera 6 finished first in class again, and fourth overall, pushing the arch-rival Ferrari Dino 206 back into fifth. The svelte 906 had made its mark and Ferrari was forced to rethink its strategy in the 2.0-litre classes.

The car shown here is the 23rd Carrera 6 to be built. It was the subject of an extensive restoration over a two-year period by French-based MJ Technic, which is run by Michel and Marc Paulin. They were determined to make this a 100 per cent accurate restoration and went out of their way to track down as many correct parts as possible.

The concern for authenticity was a real challenge, as Michel Paulin explains: 'Nothing has been changed. This means that if in 1966 there was a defect in the body, it

can be found here on this car. Mechanically, it is the same as it would have been back in 1966. I guess you could say it is a 1966 Carrera 6 reborn in 2013...

'The engine required almost 200 hours to rebuild. Between research and construction of missing parts, that's what gave us the most trouble. But this is the price you pay when you search for authenticity...'

The photos were taken at the car's shakedown session at Dijon with its new owner, Sylvain Regnier. Rain may have limited the amount of running time, but his smile says it all. Well, wouldn't you smile, too? **CP**

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