Carrera GT

Highlights

Through its design language alone, the Carrera GT expresses its truly outstanding performance as an uncompromising, no-nonsense supersports. But contrary to prototypes conceived only for racing, the design of the Carrera GT, despite the re-interpretation of existing features and the use of design elements never seen before, shows a convincing resemblance in design to Porsche's production cars, even providing a certain reminiscence of Porsche's legendary racing cars. The typical Porsche face with the front lid swept back like an arrow and the elevated wheel arches, for example, take up the design of Porsche's legendary sports cars.
The mid-engine concept, finally, is clearly accentuated by the forward-moving cockpit and the long gap between the door and the rear axle.

Lightweight Technology Throughout

Porsche's philosophy to concentrate on the essential comes out particularly in the Carrera GT through the use of consistent lightweight technology in every respect. Measuring 4.61 metres or 181.5" in length, 1.92 metres or 75.6" in width, 1.16 metres or 45.7" in height, and with wheelbase of 2.73 metres or 107.5", the Carrera GT weighs in at an ideal unladen weight of 1380 kilos or 3043 lb.

Magnificent Power and Muscle

The ten-cylinder power unit behind the cockpit of the Carrera GT is based on a 5.5-litre normal aspiration engine which, as a thoroughbred racing machine, might also have been raced in the 24 Hours of Le Mans. Increasing engine capacity for the Carrera GT to 5.7 litres, Porsche's engineers have now achieved maximum output of 450 kW (612 bhp) at 8000 rpm and maximum torque of 590 Newton metres (435 lb-ft) at 5750 rpm. Top speed is 330 km/h or 205 mph. And despite its racing character, this ten-cylinder is fully suited for everyday motoring also at low engine speeds.

The Ceramic Clutch – Another World-First Achievement

Apart from Porsche Ceramic Composite Brakes (PCCB) already well known and widely lauded for their efficiency, Porsche is now using extra-light and extremely resistant ceramics for the transmission of power in this top-flight athlete: The Carrera GT is the first car in the world equipped with a ceramic clutch, the Porsche Ceramic Composite Clutch (PCCC), to use its precise name.
Through its compact dimensions, this two-plate dry clutch meets all the requirements of motorsport: Clutch plate diameter is only 169 millimetres or

6.65", serving to give the engine and transmission a very low centre of gravity. A further feature of the new ceramic discs is their much longer service life compared with alternative materials.

Chassis and Module Frame Forming a Closely-Knit Team

The Carrera GT is the first production car in the world with a monocoque chassis and module frame made of carbon-fibre reinforced plastic (CFP), a principle Porsche has registered for a patent in the meantime. Carbon, a material carried over from the most sophisticated aerospace applications, is elaborately processed and finished on the car in providing the foundation for supreme performance and driving dynamics combined with minimum weight and maximum strength.
So here again, Porsche's engineers have transferred the great demands made on the race track to a road-going sports car for regular use, giving the Carrera GT not only outstanding performance, but also supreme safety all in one.

Same Underfloor as a Racing Car

With a top speed of 330 km/h or 205 mph, aerodynamics are obviously a crucial factor. So to maximise the downforces acting on the Carrera GT, the car features underfloor geometry of the same kind otherwise to be found only on racing cars: Interacting with the rear diffuser and airflow channels, the fully covered carbon underfloor generates a suction effect quite unusual on a road-going vehicle of any kind.

Sensitive Suspension Set-Up

Advancing into an ultra-high speed range, the Carrera GT obviously requires a spectacular spring and damper set-up to maintain the stability of the car – also at the rear – at all speeds. And again, the solution applied for this purpose comes straight from motorsport, spring/damper elements operated by stainless-steel pushrods and pivot levers being fitted inside the chassis structure. This firm connection to the chassis promotes exact response of the springs and dampers, ensuring safe and secure driving behaviour in the process.

Seats only Half Their Usual Weight

Within the sophisticated interior of the Carrera GT combining smooth and subtle leather, magnesium and carbon-fibre structures, the all-new seats catch your eye immediately, also through their elegant, sporting design. These are the first production seats ever made of composite carbon and aramide fibres, aramide being better known, of course, as kevlar. The result is a

substantial decrease in weight, the bucket seats in the Carrera GT, at 10.3 kg or 22.7 lb, weighing only about half as much as conventional seats.

Carrera GT

Supersports for the Road

The Carrera GT is the open two-seater in the classic open supersports segment. But that does not mean that bad weather will keep the Carrera GT in the garage, since the car comes with a specially developed, easy-to-use roof system made of two individual lightweight carbon shells each weighing 2.4 kilos or 5.3 lb and removable by means of rapid-action catches for subsequent storage in the front luggage compartment.
The design of the car is determined throughout by aerodynamic requirements. The main criterion in designing the body of the car was the consideration of genuine racing conditions on the track requiring high downforces. At its top speed of 330 km/h or 205 mph, the Carrera GT develops a downforce of approximately 4000 Newton, equal to a load pressing on the rear axle of 400 kilos.
Elaborate geometry on the underfloor also serves to maximise downforces, without at the same time exerting a negative influence on the car's drag coefficient. With its rear diffuser and airflow channels, the fully covered underfloor made of composite carbon-fibre generates a suction effect quite unusual on a road car.

Thoroughbred Ten-Cylinder Racing Engine

The ten-cylinder power unit with dry sump lubrication behind the cockpit of the Carrera GT is based on a 5.5-litre V10 normal-aspiration engine which might well have been raced in the 24 Hours of Le Mans, given its qualities as a genuine racing machine. Engine capacity has been increased to 5.7 litres for the production car, enabling the power unit of the Carrera GT, with its tremendous performance, to meet all requirements for circuit racing and at the same time providing all the qualities required in everyday motoring.
Indeed, the Carrera GT clearly proves its status as a supersports for the road through its performance data alone: Maximum output is 450 kW (612) at 8000 rpm, maximum torque 590 Newton-metres (435 lb-ft) at 5750 rpm. Top speed, in turn, is 330 km/h or 205 mph, the Carrera GT entering new dimensions through its acceleration from 0 – 100 km/h in just 3.9 seconds, and 0 – 200 km/h in a staggering 9.9 seconds.

Innovative Six-Speed Manual Gearbox

A six-speed manual gearbox developed especially for the Carrera GT and fitted transversely at the rear of the car conveys the enormous power of the

engine smoothly and consistently to the road. Compact in design and with the lowest possible centre of gravity, the gearbox contributes to the car's optimum weight distribution.
Due to the need to use a clutch as compact as possible for racing requirements, the Carrera GT does not come with a two-mass flywheel – but the function of such a flywheel is provided nevertheless by the special design of the input shafts: The first main shaft is hollow, with a long and thin full shaft running inside as a spring rod. Together with the mass weight of the angle drive the two shafts acting as a torsion spring serve to absorb possible jolts coming from the engine, reducing transmission noise in the process.

Another World-First Achievement: the Ceramic Clutch

The Carrera GT is the first car in the world to feature a ceramic clutch, to be precise the Porsche Ceramic Composite Clutch (PCCC). A particular feature of this worldwide innovation is the small clutch plate measuring just 169 millimetres or 6.56" in diameter and giving the entire drive unit a very low centre of gravity. Another decisive advantage is the low mass weight of the clutch with its positive effect on the engine's dynamic qualities.
Previously only a carbon-fibre clutch was able to offer these qualities required in motorsport. But having a much shorter service life, such a clutch would not have met the demands made of the Carrera GT in terms of everyday driving dependability. The Porsche Ceramic Composite Clutch (PCCC) exceeding even the service life of conventional clutch plates is an all-new construction in every respect.
Developing this new technology, Porsche's engineers have benefited from their excellent experience with Porsche Ceramic Composite Brakes (PCCB), at the same time continuing the development of this material, making it suitable for a two-plate dry clutch with a long running life.

The Suspension – Dynamic and Comfortable All in One

The chassis and suspension of the Carrera GT has already proven its qualities under the toughest conditions, being carried over from the Porsche 911 GT1, the winner of the 1998 24 Hours of Le Mans. Experience gained in this and other races regarding the particular requirements made of a composite carbon-fibre chassis has gone into the Carrera GT in all details and with all its features.
The fine response and optimum transmission of forces to the chassis of the Carrera GT are ensured by the double-wishbone pushrod axles front and rear. Contrary to the McPherson spring struts commonly used on other Porsche sports cars, pushrods have separate guide sleeves and springs, pursuing a design principle providing sensitive response and perfect spring balance at

both low and high speeds. The high standard of driving dynamics, finally, is also supported by the agile power steering.

Ceramic Brakes for Supreme Stopping Power

The Carrera GT comes with ceramic brake discs introduced in production cars by Porsche as the first manufacturer in 2001, when this world-first achievement made its appearance in the 911 GT2. Now Porsche Ceramic Composite Brakes (PCCB) have been further optimised and enlarged for the Carrera GT, diameter of the cross-drilled composite ceramic brake discs with their efficient involute cooling ducts measuring 380 millimetres or 14.96" front and rear.
Measuring 34 millimetres or 1.34" in thickness, the ceramic discs featured in the PCCB brake system are about 50 per cent lighter than grey-cast-iron discs of the same type and size. In conjunction with the brake lining also developed as a all-new technology, PCCB brakes immediately build up a very high and, in particular, consistent frictional coefficient.

Electronic Assistance When Driving to the Limit

When running on different road surfaces and under adverse weather conditions, ABS and the traction control system allow a dynamic style of driving even when the driver goes to the very limit. This system enhances driving stability when braking and accelerating and gives the driver of the Carrera GT an appropriate feeling of safety in line with the car's outstanding performance.
The four-channel anti-lock brake system allows individual control of the wheels on the front and rear axles, with the entire set-up of ABS being adapted to the ceramic brakes for very short stopping distances keeping the driver under control with full response of the steering. Integrated four-channel anti-spin control (ASC) is activated whenever required throughout the car's entire acceleration process, preventing excessive wheel spin on the drive wheels and keeping the rear end of the car smooth and stable on the road. Yet another feature serving to slow down the drive wheels of the car when spinning is the automatic brake differential (ABD). Whenever he wishes, however, the driver can do without this electronic support by switching off the entire traction control function by a button in the cockpit.

Trendsetting Body Concept in Monocoque Design

The Carrera GT is the first car in the world, whether on the road or in racing, to apply a brand-new design and construction concept, both the monocoque and the entire frame carrying all the car's modules and components being made of carbon-fibre-reinforced plastic (CFP).

Contrary to a conventional body structure with a large number of individual components, this monocoque is made of just a few shell elements connected to one another in a high-pressure furnace (a principle, incidentally, registered by Porsche for a patent).
The central unit comprises all structural functions, such as the transmission of reaction forces from the suspension and drivetrain normally handled by the bodyshell of the car. The drive unit, in turn, is bolted on to the chassis by means of the engine support fitted firmly in position, these two principal structural components acting together to provide one complete unit with a very high standard of torsional and flexural stiffness one might call the backbone of the Carrera GT. These modules serve to support the front and rear suspension and at the same time absorb any forces fed in by the crash structures, holding the body panels and the interior in position.

Carbon Structure Enhancing the Car's Safety

Apart from its outstanding driving characteristics, the Carrera GT is also a very safe car: This ultra-high-performance sports car offers all of Porsche's well-known active safety features even at the highest speeds, complying with all crash regulations applied worldwide.
In its torsional stiffness, the Carrera GT sets a new record for open cars, the passive safety offered being based on the monocoque passenger cell made of composite carbon fibre and supplemented by integral rollbars on the A- and B-pillars. For even greater strength and safety, the A-pillars are further reinforced by high-strength steel tubes.
Four airbags make yet another contribution to the car's high standard of passive safety, with a full-size frontal airbag and a side airbag for both the driver and passenger. The side impact system, in turn, is made up in each case of a side airbag and a door panel including reinforcements made of high-strength steel tubes serving to take up impact energy.

Functional Elegance on all Equipment Features

The cockpit of the Carrera GT offers all the functional ambience of a genuine racing car, low weight being the name of the game also in this area – a target achieved in full through the exclusive use of high-tech materials throughout the interior. All the composite fibre components in the car's chassis reflect the exclusive nature and quality of carbon as a very special material.
The centre console sweeping upwards is also made of carbon firmly connected to the chassis of the car in the interest of extra safety. On top of the centre console is an extra-light, galvanised magnesium element housing all buttons and switches. The gearshift lever with its ball-shaped knob made of laminated birchwood, in turn, bears testimony to the culture of motor racing in the old days.

Positioned far up on the centre console, the shift lever is close to the steering wheel in the interest of superior sporting ergonomics. The Carrera GT is the first production car in the world with seat buckets made of composite carbon-fibre combined with non-splintering aramide fibre well-known in everyday language as kevlar. Complete with their supple leather upholstery, the seat buckets weigh a mere 10.3 kilos or 22.7 lb each, approximately half the weight of a “normal" Porsche production seat.