

## PORSCHE AT THE IAA 2013

A meeting of two trend-setters - the world première of the 918 Spyder super sports car in the anniversary year of the Porsche 911

The Porsche 918 Spyder is celebrating its début at this year's International Motor Show (IAA) in Frankfurt. The super sports car with plug-in hybrid drive marks the beginning of a new era. Never before has a super sports car designed for everyday use offered such an impressive dynamic performance combined with the fuel consumption of a compact car.

In setting this technological benchmark, the Porsche 918 Spyder is taking on a pioneering role similar to that of the 911 when it was unveiled at the IAA fifty years ago. To mark the anniversary of the 911, Porsche is presenting a special limited edition '911 50 years' model. The anniversary model is based on the current 911 Carrera S, combining the traditional elements of the 911 with state-of-the-art technology.

Porsche is completing its sports car line-up with the new 'Type 991' 911 Turbo, which is being presented to the public for the first time at the major trade show in Frankfurt. In addition, the new second generation Panamera is demonstrating the breadth of the Porsche range today. As the first plug-in hybrid in the luxury class, the pioneering Panamera S E-Hybrid is proving that Porsche is leading the field with its expertise in the development of fuel-efficient drive concepts for sports cars.

Porsche genetic blueprint for the future: The 918 Spyder with high-performance hybrid

The 918 Spyder is the continuation of the traditional Porsche DNA in a ground-breaking sports car concept. Designed from the start to be a high-performance hybrid, the 918 Spyder boasts an unprecedented combination of performance (offering the 887 hp output of a super sports car) and the virtually silent, emission-free travel of an electric vehicle. The vehicle is able to accelerate from 0 to 62 mph in 2.8 seconds and offers an average standard fuel consumption of between 94 mpg and 85 mpg. The 918 Spyder also allows a combustion engine to be combined with an electric motor-based drive to generate new functions that further optimise the dynamic performance.

A sportscar icon celebrates its anniversary: 50 years of the 911

Since its début at the IAA in September 1963, the 911 has been considered by its many devoted fans around the world as the quintessential sports car, the benchmark for all others. This iconic, rear-engined, flat-six cylinder coupe is celebrating its 50th anniversary in Frankfurt, and Porsche is marking the occasion with a special edition model based on the current 911 Carrera S – only 1,963 are available.

In addition to a comprehensive standard equipment package and various styling cues hinting at the original, this very special 911 model is the only vehicle to also combine the wide body of the all-wheel drive Carrera 4 models with the rear-wheel drive configuration of the original 911; which also featured a charismatic, rear-mounted flat-six engine driving the rear wheels.

Few other cars in the world can look back on such a long and continuing tradition as the Porsche 911. Over the decades, the model line has continued to evolve. The result of this 50 year process is a sports car that can claim to be about as close to perfection as possible without having lost any of its original charm. There have now been seven generations of this iconic sports car, each one writing its own success story. Since 1963, over 820,000 Porsche 911s have been produced at the Stuttgart-Zuffenhausen factory. Few other sports cars in the world have generated such excitement among car enthusiasts, and no other sports car has claimed as many race victories, proving time and again that every Porsche is a race car. Now in its seventh generation, the iconic 911 sports car is continuing its journey into the future.

The new 911 Turbo: Maximum driving dynamics, minimum fuel consumption

The first 911 Turbo prototype was showcased at the IAA in 1973, ten years after the original 911 made its début. For the 40th anniversary of the model, Porsche is presenting the new generation 'Type 991' 911 Turbo and Turbo S, which sit at the pinnacle of technology and dynamic performance in the 911 range. Features like the new all-wheel drive chassis with active rear axle steering, adaptive aerodynamics, full-LED headlights and the 560 hp, flat-six engine with twin turbocharging underscore the role of the new 911 Turbo models as a technological benchmark both for race cars and vehicles intended for everyday use.

The completely re-designed lightweight chassis with 100 mm longer wheelbase and larger 20-inch diameter wheels also have an important part to play. The dynamic performance has also been improved via the active Porsche Dynamic Chassis Control (PDCC) anti-roll system, which is making its first appearance in the 911 Turbo models. This feature is part of the standard equipment for the 911 Turbo S, alongside the Sport Chrono package with dynamic engine mountings and Porsche Ceramic Composite Brakes (PCCB), all of which are also available as options on the 911 Turbo. Combined, these dynamic attributes reduce the lap time of the new 911 Turbo S around the Nürburgring-Nordschleife to 7 min 27 secs. At the same time, both sporting coupes are more efficient with an New European Driving Cycle (NEDC) fuel consumption of 29.1 mpg, which is 15 per cent lower than before.

Porsche 918 Spyder: A unique combination of performance and efficiency

The 918 Spyder embodies the essence of the Porsche idea, combining pedigree motor racing technology with excellent everyday suitability, and maximum performance with minimum consumption. The début of the 918 Spyder at the IAA 2013 marks the start of a new chapter in the future of the hybrid drive. And the technology pioneers are not the only ones who are excited by this flagship project, as the 918 Spyder demonstrates the potential of the hybrid drive to a degree never seen before, achieving a parallel improvement in both fuel efficiency and performance without compromising on either. This is the idea that has made the Porsche 911 the most successful sports car in the world for the past 50 years.

In short, the 918 Spyder contains the genetic blueprint for the Porsche sports car of the future. The 918 Spyder has been greatly influenced by its affiliations with motorsport. A number of the developments on the Porsche LMP1 race car for the 24 Hours of Le Mans 2014 were used in the 918 Spyder – and vice versa. The structural concept, based on a rolling chassis (i.e. a chassis without bodywork), is standard for Porsche race cars. The design of the V8 engine is based on that of the Le Mans Prototype 2 (LMP2) race car, the RS Spyder, and the supporting monocoque structures and unit carriers are made from carbon fibre reinforced plastic (CFRP). More importantly, however, the 918 Spyder is considerably more fuel efficient than any of its competitors. In fact, this plug-in hybrid combines the performance of a race car with an output of over 880 hp with an estimated NEDC fuel consumption of just three litres per 100 km, which is lower than the majority of today's compact cars. Drivers can therefore enjoy maximum driving pleasure and minimum fuel consumption.

Hybrid drive enhances dynamic performance

The core message surrounding the 918 Spyder is that the Porsche hybrid drive offers uncompromising dynamic performance. The unique all-wheel drive arrangement with a combined combustion engine and electric motor drive system on the rear axle, and a second electric motor on the front axle, make this possible. This is based on the Porsche motorsport development work for the successful 911 GT3 R Hybrid race car. The additional, individually controllable front wheel drive enables new driving strategies to be used for extremely high, yet safe, speeds particularly through corners. Furthermore, the advanced 'boost' strategy manages the energy of the electric drive so intelligently that the unrestricted total power of the 918 Spyder can be accessed simply by fully depressing the accelerator pedal for every burst of speed at maximum acceleration. In short, the 918 Spyder allows any driver to experience the potential of its advanced longitudinal and lateral dynamics.

From comfortable to race-ready: Five modes for three motors

The centrepiece of the 918 Spyder is the distribution of propulsive power across three power units, all of which are integrated and controlled via an intelligent management system. To benefit as much as possible from the coverage offered by the different systems, the Porsche engineers at the company's Weissach research and development centre have defined a total of five operating modes, which can be activated via a map switch in the steering wheel,

just like in race cars. Using the pre-selected mode, the 918 Spyder applies the most suitable operating and boost strategy without any further intervention from drivers, thus allowing them to concentrate fully on the road.

#### Quiet and elegant: 'E-Power'

When the vehicle is started up, 'E-Power' mode is selected as the default operating mode, provided that the battery is sufficiently charged. Depending on load, the 918 Spyder can cover between 10 and 20 miles purely on electric power. Even in pure electric mode, the 918 Spyder accelerates from 0 – 62 mph in under seven seconds and can reach speeds of up to 93 mph. In this mode, the combustion engine is used only when needed. If the battery charging condition drops below a set minimum level, the vehicle automatically switches to hybrid mode.

#### Efficient and comfortable: 'Hybrid'

In 'Hybrid' mode, the electric motors and combustion engine work alternately, focusing on achieving maximum efficiency and minimum fuel consumption. The power output of the individual drive components is modified in line with the current driving situation and the required performance level. Hybrid mode is typically used for fuel-efficient driving.

#### Sporty and dynamic: 'Sport Hybrid'

If more dynamic performance is required, the power units in the 918 Spyder switch over to 'Sport Hybrid' mode. The combustion engine now operates continuously, representing the main propulsive force. The electric motors are activated to support acceleration through the electric boost function, or at points when the operating point of the combustion engine can be optimised for greater efficiency. This mode focuses on performance and a sporty driving experience at top speeds.

#### For fast laps: 'Race Hybrid'

'Race Hybrid' is the mode for maximum performance combined with an especially sporting driving experience. The combustion engine is chiefly used under high load, and charges the battery whenever the driver does not require maximum power. In this mode, the electric motors also provide additional support in the form of boosting. The gearshift programme of the Porsche Doppelkupplung (PDK) is also designed for even sportier driving. The electric motors are used up to the maximum power output limit to deliver the best possible performance for the race track. The battery charging condition is not kept constant and instead fluctuates over the entire charge range. In contrast to 'Sport Hybrid' mode, the electric motors run at their maximum power output limit for a short period for enhanced boost performance. This increased output is balanced out by the fact that the combustion engine charges the battery more intensively. The electric power boost is thus always available to the driver even for several very fast laps.

#### For pole position: 'Hot Lap'

The 'Hot Lap' button in the centre of the map switch releases the final reserves of the 918 Spyder and can only be activated in 'Race Hybrid' mode. Similar to a motor sports qualification mode, 'Race Hybrid' pushes the traction battery to its maximum power output limits for a few fast laps. This mode uses all of the available energy in the battery.

#### A world first: A drive that harnesses the power of three separate power units

The main drive source is the 4.6-litre, eight-cylinder engine with an output of up to 608 hp. Based on the power unit of the successful RS Spyder endurance race car, the engine delivers revs of up to 9,150 rpm and a power output per litre of approximately 132 hp/litre – 26 hp/litre more than that of the Carrera GT, making this the highest specific power of any naturally aspirated Porsche engine. And it is not just the performance of the 918 Spyder engine that stirs up an emotive response: The sound of this vehicle is just as impressive, and can primarily be attributed to the 'top pipes' – exhaust tailpipes that terminate directly above the engine in the upper part of the rear engine cover. No

other series production vehicle features this solution.

In parallel in the drivetrain: Hybrid module

The V8 engine is coupled to the hybrid module as the 918 Spyder is designed as a parallel hybrid like Porsche's current hybrid models. The hybrid module essentially comprises a 115 kW electric motor and a de-coupler that serves as the connection with the combustion engine. Because of its parallel hybrid configuration, the 918 Spyder can be powered at the rear axle either individually by the combustion engine or the electric motor, or via both drives together. As is typical for a Porsche super sports car, the power unit assembly in the 918 Spyder has been placed in front of the rear axle, and it does not have a direct mechanical connection to the front axle. A seven-speed Porsche Doppelkupplung (PDK) transmission handles power transmission to the rear axle.

Independent all-wheel drive: Front axle with electric motor

There is another independent electric motor that generates approximately 95 kW of power at the front axle. The front electric drive unit drives the wheels at a fixed gear ratio. A de-coupler removes drive from the electric motor at high speeds to prevent the motor from over-revving.

The drive torque is independently controlled for each axle, creating a very responsive all-wheel drive function with significant potential in terms of traction and dynamic performance.

Lithium-ion battery with plug-in charging system

The electric energy for the electric motors is stored by a liquid-cooled lithium-ion battery comprising 312 individual cells with an energy content of approximately seven kilowatt hours. The battery in the 918 Spyder has a performance-oriented design in terms of both power charging and output, enabling it to meet the performance requirements of the electric motor. The power capacity and operating life of the lithium-ion traction battery depend on several factors, including thermal conditions. This is why the battery of the 918 Spyder is liquid cooled by a dedicated cooling circuit. The global warranty period for the traction battery is seven years.

Porsche has developed a new system with a plug-in charging interface and improved recuperation potential for charging the battery. For example, on the German 230 Volt mains supply, the traction battery can be charged within four hours by connecting the Porsche Universal Charger (AC) provided in the scope of delivery to a ten-ampere fused power socket. The Porsche Speed Charging Station (DC) is also available as an option, and will fully charge the high-voltage battery in just under 25 minutes.

Chassis with race car genes and rear-axle steering

The multi-link suspension of the Porsche 918 Spyder was inspired by motor sport design, and is complemented by additional systems such as the Porsche Active Suspension Management (PASM) adaptive damper system and rear-axle steering, which provides electro-mechanical adjustment of each rear wheel. This adjustment is speed-sensitive, providing steering angles of up to three degrees in each direction. The rear axle can therefore be steered in the same, or opposite, direction to the front wheels. At low speeds, the system steers the rear wheels in the opposite direction to the front wheels, which has the effect of shortening the wheelbase. This makes cornering even more direct, faster and more precise, and reduces the turning circle. At higher speeds, the system steers the rear wheels in the same direction as the front wheels, which has the effect of lengthening the wheelbase. This significantly increases rear end stability when changing lanes quickly, resulting in exceptionally safe and stable handling.

The tyres of the 918: A special challenge

On the one hand, the tyres needed to have optimum grip and razor-sharp handling on all road types. On the other, they needed to be durable on the race track and have as low a rolling resistance as possible. As a result, the developers of the Michelin Pilot Sport Cup 2 tyres for the Porsche 918 Spyder were faced with a seemingly

insurmountable conflict of objectives. However, working closely with Porsche engineers, the tyre experts from Michelin were able to overcome this challenge in impressive fashion, with the result that the 918 Spyder is rolling out exclusively on specially-tuned Michelin Pilot Sport Cup 2 tyres.

A total of 550 prototype tyres were produced and tested over the course of the testing period. Four hundred pre-production prototypes and 200 series test specimens were also produced before Porsche gave the final approval for the Michelin Pilot Sport Cup 2 tyres in size 265/35 ZR 20 for the front axle and 325/30 ZR 21 for the rear axle. The tyres developed specially for the Porsche 918 are also raising the benchmark in the ultra-sports tyre segment when it comes to driving on wet surfaces and in terms of aquaplaning safety.

The 918 sees this exclusive partnership between Michelin and Porsche in the development of special tyres for super sports cars entering its second phase. This partnership started more than ten years ago with the Carrera GT.

The 'Weissach' package for an even better performance

For customers looking for an even better performance from the 918 Spyder, Porsche also offers the 'Weissach' package. Super sports cars modified with this package are also available in special colours and designs inspired by legendary Porsche race cars, making them instantly recognisable. The emphasis on performance is not just visual. Super lightweight magnesium wheels reduce unsprung weight, decreasing the gross weight by around 35 kg. These lightweight features are decisive when it comes to further enhancing the dynamic performance of the vehicle. Other references to motorsport include six-point harness seat belts for the driver and front passenger, an optional film coating instead of a paint finish, plus additional aerodynamic add-on parts in visible carbon fibre.

Porsche Active Aerodynamic (PAA) for different driving modes

Porsche Active Aerodynamic (PAA) is a system of adjustable aerodynamic elements that provides a unique and variable aerodynamic response. The system works in three stages, switching automatically between optimum efficiency and maximum downforce, and working in harmony with the operating modes of the hybrid drive. In 'Race' mode, the retractable rear wing is set to a steep angle to generate high downforce at the rear axle. The spoiler, which is positioned between the two wing supports at the trailing edge of the airflow, also extends. Two adjustable air flaps are opened in the underbody in front of the front axle, directing some of the air into the diffuser channels of the underbody structure to also produce a 'ground effect' at the front axle.

In 'Sport' mode, the aerodynamics control system reduces the approach angle of the rear wing slightly, enabling a higher top speed. The spoiler remains extended but the aerodynamic flaps in the underbody close, which also reduces aerodynamic drag and increases the potential vehicle speed. In 'E'-mode, the system focuses solely on low aerodynamic drag; the rear wing and spoiler are retracted and the underbody flaps are closed. Adjustable air intakes under the main headlights round off the adaptive aerodynamics system. When the vehicle is stationary and in 'Race' or 'Sport' mode, the intakes are opened to enable maximum cooling. In 'E-Power' and 'Hybrid' mode, the air intakes close as soon as the vehicle is driven off in order to keep aerodynamic drag to a minimum. They are not opened again until the vehicle reaches speeds of approximately 80 mph or when cooling requirements are higher.

A pioneering control concept: Clear organisation in the cockpit

The driver is the focus behind all the technology in this Porsche super sports car. With this in mind, the engineers have developed a cockpit that is typical of the brand and pioneering in its clarity. The cockpit concept is divided into two basic sections. The first section comprises the controls that are important for driving; these items are grouped around the multi-function steering wheel and combined with driver information displayed on three large round instruments. The second section comprises the infotainment block housed in the elevated centre console, which was originally introduced in the Carrera GT.

Systems like climate control, wing adjustment, lighting and the Porsche Communication Management (PCM) system along with the Burmester High-End audio sound system can be operated intuitively via the multi-touch control functions on the innovative black panel display.

A unique open-roof driving experience: Removable roof panels

As a super sports car designed for everyday use, the 918 Spyder offers a spectacular top-down driving experience. The two roof panels made from carbon fibre-reinforced plastic (CFRP) are removable, as is the tradition at Porsche, and can be stored securely in the 100-litre capacity luggage compartment located in the nose of the vehicle.

Porsche redefined: A new super sports car for a new decade

The 918 Spyder continues a long tradition of super sports cars at Porsche. Many of these vehicles have set technological benchmarks and have become the ultimate sports cars of their decades: the Carrera GTS, the first Porsche 911 Turbo, the 959, the 911 GT1 and the Carrera GT. More so than any of its predecessors, the 918 Spyder is providing the key momentum for developing technologies for future vehicle concepts. The 918 Spyder features all the components that reflect the Porsche DNA, yet in a format that is more powerful than ever before.

Porsche celebrates 50 years of the 911 with a special edition

Like no other sports car, the Porsche 911 has been able to reconcile apparent contradictions, such as tradition versus innovation, or exclusivity versus a high level of social acceptance.

To mark the 50th anniversary of the 911, Porsche is presenting a very special model at the International Motor Show (IAA) in Frankfurt. Like the original 911, the '911 50 Years' edition is a coupé with a flat-six rear engine and rear wheel drive, but its efficient performance, active sports chassis and exclusive special body are very much state of the art. The 911 anniversary model features the distinctive wide rear end, which is typically reserved for the all-wheel drive Carrera 4 models. The '50 Years 911' edition is limited to 1,963 vehicles – the same number as the year in which the 911 made its début.

The original 911 was first presented to the public at the IAA in Frankfurt in 1963. This iconic sports car has since been revered by automotive fans around the world, and is still frequently considered the benchmark for other sports cars. Following its début, the 911 has continued to evolve, but the iconic sports car has lost none of its original unique character. The result of this 50-year evolution – which has also included countless race victories – is a sports car that truly epitomises the authenticity of the Porsche brand. The 911 has also served as the genetic blueprint for all other Porsche models. After all, every Porsche is designed to assert its claim of being the sportiest vehicle in its segment.

This limited edition 400 hp 911 Carrera S captures the allure of the 911 with a range of features that have contributed to its 50-year success story. For example, the chassis of the limited edition includes the Porsche Active Suspension Management (PASM) system, which has been designed especially to accommodate the increased rear track width and further support the vehicle's exceptional lateral dynamics. The sport exhaust system also delivers a suitably emotive sound. Special 20-inch diameter wheels in a black paint finish with machine-polished centres offer a visual tribute to the legendary "Fuchs" wheels.

The elegant look of the model is emphasized by chrome strips on the front air intake, bespoke slats on the engine compartment grille and along the trim between the tail lights. Another technical highlight of the high-performance equipment package is the Porsche Dynamic Light System (PDLS), featuring Bi-Xenon headlights and dynamic cornering lights.

The anniversary edition model is available in two unique colours: Solid Graphite Grey and Metallic Geyser Grey, as well as Solid Black. The model features a two-tone, 3D-effect '911 50' badge on the rear engine lid and this motif is repeated in embroidery in three colours on the headrests, and in two colours as a logo on the tachometer and on the aluminium-coloured door entry guards. It can also be found on the cup holder trim together with the limited edition number of the individual vehicle. Other exterior characteristics of the special edition model include high-gloss window frames and Sport Design door mirrors.

References to the original 911 can be found in the interior as well. Just like in the vehicle of 50 years ago, the instruments feature green labels with white pointer needles and silver caps on the pivot pins. The centre panels of the leather seats provide a further point of highlight in the form of a fabric reminiscent of the 'Pepita' tartan pattern popular in the 1960s.

The full-leather interior is designed in Agate Grey or Black with decorative stitching, some of which in a contrasting colour. The driver and front passenger seats offer 14-way adjustment, with sport seats plus with 18-way adjustment available as an option. The decorative brushed aluminium panels on the dashboard, doors and centre console match the shift level or gear selector from the Porsche Exclusive range.

The performance of the '50 Years 911' model is virtually the same as that of the 911 Carrera S: The anniversary model accelerates from 0 to 62 mph in 4.5 seconds (4.3 seconds with PDK) and reaches a top speed of 186 mph (185 mph with PDK). The vehicle's total NEDC fuel consumption amounts to 29.7 mpg (32.5 mpg with PDK), which corresponds to 224 g/km CO<sub>2</sub> (205 with PDK).

### 50 years of the Porsche 911: Seven generations – seven legends

For five decades, the 911 has been the centrepiece of the Porsche brand. Few other cars can look back on such a long and continuing tradition. Since its very first appearance as the 'Type 901' at the International Motor Show (IAA) in September 1963, this iconic sports car has been revered by car enthusiasts around the world, and is still frequently considered the benchmark for all other sports cars.

The 911 is also the central point of reference for all other Porsche model lines. From the Cayenne to the Panamera, every Porsche model is designed to assert its claim of being the sportiest vehicle in its market segment, and every one reflects some part of the fundamental idea behind the 911 to enable it to do this.

More than 820,000 Porsche 911s have been built to date, making it one of the most successful sports cars in the world. For each of its seven generations, the Porsche engineers in Zuffenhausen and Weissach have reinvented the 911, demonstrating their innovative approach with every version. Like no other vehicle, the 911 has been able to reconcile apparent contradictions such as sportiness versus everyday suitability, tradition versus innovation, exclusivity versus social acceptance, and design versus functionality. It is no wonder that each generation has written its own personal success story. Ferry Porsche best described the car's unique qualities, when he said: "The 911 is the only car you could drive from an African safari to the Le Mans race track, and then to the theatre and through the streets of New York."

In addition to its classic yet unique design, the Porsche 911 has always been distinguished by its pioneering technology. Many of the ideas and technologies that made their début in the Porsche 911 were conceived on the race track. After all, the 911 has always been designed for a high performance level, and motorsport was its most important testing ground.

From the very beginning, the 911 has been at home on race tracks all over the world, earning a reputation as a versatile and dependable winner. In fact, a good two thirds of Porsche's 30,000 racing victories to date have been notched up by the 911.

Porsche introduces a host of anniversary celebrations for the 911

The 50th anniversary of the 911 has always been the main focus for Porsche in 2013. A wide variety of anniversary events are being held, starting with the Retro Classics motor show in Stuttgart. The anniversary year is also celebrated with a special exhibition at the Porsche Museum in Stuttgart.

The sports car manufacturer is also sending an original, unrestored 911 from model year 1967 on a world tour. Over the course of the year, this vintage 911 will visit five continents where it will be showcased at various locations, including Pebble Beach in California, Shanghai, the Goodwood Festival of Speed, Paris and Melbourne in Australia. As an ambassador for the Porsche brand, the 911 will be in attendance at numerous international events, trade

fairs, historical rallies and motor sport events through the anniversary year. Fans and potential visitors can follow the vehicle's progress at <http://porsche.com/follow-911>.

The Porsche Museum is celebrating 50 years of the Porsche 911 with an extensive special exhibition. From 4 June –29 September, Porsche will be looking back on the history and development of the 911. The Porsche Museum publishing house, Edition Porsche-Museum, is also bringing out a special book to mark the anniversary, entitled '911x911'.

## The 911 generations

### The original 911 (1963) – the birth of a legend

As the successor to the Porsche 356, the 911 won the hearts of sportscar enthusiasts from the outset. The prototype was first unveiled at the Frankfurt International Motor Show (IAA) in 1963 as the type 901, before being renamed as the 911 for its market launch in 1964.

The vehicle's air-cooled flat-six engine delivered an output of 130 hp, giving it an impressive top speed of 210 km/h. For those who wanted to take things a little slower, the four-cylinder Porsche 912 was also available from 1965 onwards. In 1966, Porsche presented the 160 hp 911 S, which was the first model to feature forged alloy wheels from Fuchs. The 911 Targa, with its distinctive stainless steel roll-over bar, made its début in late 1966 as the world's first ever safety cabriolet. The semi-automatic Sportomatic four-speed transmission joined the line-up in 1967. With the 911 T, E and S variants, Porsche became the first German manufacturer to comply with the strict exhaust emission control regulations stipulated by the US Environmental Protection Agency. The Porsche 911 became more and more powerful as displacement increased, initially to 2.2 litres (1969) and later to 2.4 litres (1971). The 911 Carrera RS 2.7 of 1972 with a 210 hp engine and weighing less than 1,000 kg remains the ultimate dream car to this day. Its characteristic ducktail spoiler was the world's first rear spoiler for a series production vehicle.

### 'G-Series' (1973) – the second generation

Ten years after its première, the engineers at Porsche gave the 911 its first thorough makeover. The G-Series model was produced from 1973 to 1989, longer than any other 911 generation. It featured prominent bellows bumpers – an innovation designed to meet the latest crash test standards in the United States. Occupant protection was further improved by the three-point safety belts and integrated head restraints provided as standard. The IAA in Frankfurt was also the backdrop for another important milestone in the history of the 911 - the 1973 launch of the first Porsche 911 Turbo with its 3.0-litre, 260 hp engine and enormous rear spoiler. Thanks to its unique blend of luxury and performance, the Turbo became synonymous with the Porsche brand. The next performance leap came in 1977 in the form of the 911 Turbo 3.3 with a charge-air intercooler. With an output of 300 hp, this vehicle was the best in its class. In 1983, the naturally aspirated 911 Carrera superseded the SC; the 3.2-litre, 231 hp engine made this vehicle a popular collectors' item. Starting in 1982, fresh air enthusiasts could also order the 911 as a cabriolet. The 911 Carrera Speedster, launched in 1989, saw the start of the Porsche legend.

### 'Type 964' (1988) – reinventing a classic

Just when automotive experts were predicting the end of an era, Porsche unveiled the 911 Carrera 4 ('Type 964') in 1988. After fifteen years of production, up to 85% of the 911 platform had been completely revised, allowing Porsche to offer a modern and sustainable vehicle concept. The air-cooled 3.6-litre flat engine now delivered an output of 250 hp.

Externally, the 964 differed from its predecessors predominantly as a result of its aerodynamic polyurethane bumpers and electric extending rear spoiler, but the technology available inside the vehicle was very different. The new model was designed to captivate drivers not only with its sporty performance but also with an enhanced level of comfort. The anti-lock brake system (ABS), Tiptronic gearbox, power steering and airbags were all added for the benefit of drivers.



The 911 also relied on a completely new chassis with alloy wishbones and coil springs instead of the established torsion-bar suspension. The new 911 was more or less revolutionary, as the Carrera 4 model was offered with all-wheel drive right from the start. In addition to the Carrera Coupé, Cabriolet and Targa variants, customers could also order the 964 Turbo from 1990 onwards. Initially powered by the proven 3.3-litre flat engine, in 1992 the Turbo was upgraded to a 360 hp, 3.6-litre power unit. Today, the 911 Carrera RS, 911 Turbo S, and the 911 Carrera 2 Speedster are in particularly high demand by collectors.

'Type 993' (1993) – the last air-cooled model

This 911 model, referred to internally as the 'Type 993', remains the one true love of many Porsche drivers. Its aesthetic design has a lot to do with its popularity. The integrated bumpers emphasise the smooth elegance of its styling. The front section is lower than on the earlier models, made possible by a switch from round to poly-ellipsoidal headlights. The 993 quickly gained a reputation for its exceptional design and reliability. It was also agile as it was the first 911 with the newly designed aluminium chassis. The Turbo version was the first model to feature a bi-turbo engine which, in 1995, made it the lowest-emission series production automotive drive in the world. The hollow-spoke aluminium wheels, never seen before on any other vehicle, were yet another innovation of the all-wheel drive Turbo variant. The Porsche 911 GT2 was aimed at sports car enthusiasts with a need for speed. An electric glass roof that slid under the rear window was one of the innovations of the 911 Targa.

However, the real reason that true Porsche enthusiasts still cherish the 993 is the fact that this model, produced from 1993 to 1998, was the last 911 with an air-cooled flat engine.

'Type 996' (1997) – the water-cooled system

The 'Type 996', which rolled off the assembly line from 1997 to 2005, represented a major turning point in the history of the 911. It retained all the character of its classic heritage, but was an entirely new vehicle. This fully re-designed generation was the first to be powered by a water-cooled flat-six engine. With its four-valve technology, the 996 achieved an output of 300 hp and set new benchmarks for reducing emissions, noise and fuel consumption.

The exterior design reinterpreted the classic silhouette of the 911, but achieved a lower aerodynamic drag factor value of 0.30 Cd. The contours of the 996 were also a result of component sharing with the Porsche Boxster. Its most eye-catching exterior feature was the headlights with integrated direction indicators – these were seen as rather controversial at first, but were soon copied by many other manufacturers.

The interior offered drivers another entirely new cockpit concept, and driving comfort was also beginning to play a greater role alongside the typically sporty characteristics. In connection with the 996, Porsche launched an unprecedented product campaign with a whole series of new variants. The 911 GT3 became one of the highlights of the model range in 1999, keeping the tradition of the Carrera RS alive. The 911 GT2, the first vehicle to be equipped with PCCB ceramic composite brakes as standard, and an extreme sporting derivative arrived in the autumn of 2000.

'Type 997' (2004) – classic and modern combined

Porsche had come a long way by July 2004 when the company unveiled a new 911 generation in the form of the 911 Carrera and 911 Carrera S models, referred to internally as the 'Type 997' line. The clear oval headlights with auxiliary lights in the front end were a closer reflection of the traditional 911 design, but the performance of the 997 impressed as much as its design. The 3.6-litre flat-six engine of the Carrera produced an output of 325 hp, while the new 3.8-litre engine in the Carrera S generated an even more impressive 355 hp. The chassis had also been considerably revised and came with Porsche Active Suspension Management (PASM) as standard in the Carrera S.

In 2006, Porsche introduced a new 911 Turbo, the first series-production vehicle with a petrol engine to feature a

turbocharger with variable turbine geometry. Model improvements in autumn 2008 made the 997 even more efficient thanks to its direct fuel injection concept and double-clutch transmission.

Never before had the 911 series made such extensive allowances to suit drivers' individual preferences – the Carrera, Targa, Cabriolet, rear or all-wheel drive, Turbo, GTS, limited edition models and GT3 and GT3 RS road versions of racing cars amounted to some 24 different model variants.

'Type 991' (2011) – the best 911 of all time

This sports car, known internally as the 'Type 991', represents the greatest technical leap in the evolution of the 911. Already the benchmark in its class for several decades, the new 'Type 911' generation raised the bar once again for performance and efficiency. A completely new chassis with a modified wheelbase, wider track, larger tyres and an ergonomically optimized interior all provide an even sportier yet more comfortable driving experience. Technically, the 911 is the epitome of Porsche Intelligent Performance concept, which combines even lower fuel consumption with an even higher performance level. This is achieved via the smaller 3.4-litre displacement in the Carrera basic model (which still delivers 5 hp more than the 997/II), and also the hybrid steel/aluminium construction, which significantly reduces weight.

Other innovations include Porsche Dynamic Chassis Control (PDCC), and the world's first seven-speed manual transmission. The design of the 991 has likewise received its fair share of praise. With its distinctive, well-proportioned silhouette, athletic contours and precisely designed details, the seventh generation of the Porsche 911 Carrera remains unmistakably a 911 while once again succeeding in redefining the benchmarks of automotive design. And this is just one more reason why this is the best 911 of all time – until the next generation, of course.

The new Porsche 911 Turbo and 911 Turbo S - the benchmark for performance and efficiency

The new generation of the Porsche 911 Turbo and Turbo S models represent the pinnacle of the 911 model line in terms of both technology and dynamic performance, and make their world première at the IAA at Frankfurt. To mark the 40th anniversary of the first Turbo prototype, the Porsche 911 Turbo is once again pushing the boundaries of dynamic performance, efficiency and everyday usability.

The new active systems in the vehicle are playing a key role. Active rear axle steering enhances agility on the road and on the race track, while the Porsche Active Aerodynamics (PAA) system improves performance, efficiency and everyday suitability. A new all-wheel drive system control ensures an even faster, more precise power distribution of the 3.8-litre bi-turbo engines, which boast outputs of up to 520 hp and 560 hp in the respective models. The 30 hp increase in engine performance has been achieved in conjunction with a 15% reduction in fuel consumption in comparison to the previous model. Highly effective efficiency measures mean that combined fuel economy for both versions has increased to 29.1 mpg.

Dynamic performance has also been heightened by the active Porsche Dynamic Chassis Control (PDCC) anti-roll system, Porsche Ceramic Composite Brakes (PCCB), dynamic engine mountings, 20-inch diameter wheels and full-LED headlights, all of which are standard on the Turbo S.

More than ever before, these new top-of-the-range models also make a clear visual statement about their performance. The characteristic, widely flared rear wings of the new 911 Turbo generation are 28 mm wider than those of the 911 Carrera 4 models – a virtually level surface of just over a hand's width extends out from the C-pillar to the outer edge of the vehicle.

More spontaneous, faster and more efficient

The entire drivetrain of the 911 Turbo models is an example of the defining features of the new generation car. The turbocharged 3.8-litre six-cylinder engine with direct fuel injection generates an output of 520 hp in the 911 Turbo and 560 hp in the S model. Compared to previous models, the output of the 911 Turbo has been boosted by 20 hp and its torque increased by ten Newton metres to 660 Nm. In the S model, the power level has been increased by

30 hp, and the torque by ten Newton metres to 710 Nm. Porsche continues to be the only manufacturer to offer twin turbochargers with variable turbine geometry (VTG) in a petrol engine. This arrangement provides a very consistent power output over the entire speed range.

Power is transmitted exclusively via the seven-speed Porsche Doppelkupplung (PDK), which now includes the stop-start function with engine shut-off as soon as the vehicle starts free-wheeling or coasting to a stop. Together with a new thermal management system for the turbo engine, fuel efficiency technologies have reduced the NEDC fuel consumption by as much as 15% to 29.1 mpg for both models.

Overboost: A boost of power at the push of a button

The new sports cars perform even better in a sprint with the Sport Chrono package, which is standard on the 911 Turbo S (optional for the 911 Turbo). One of the features offered by this package is increased torque. The 'overboost' function, which is being introduced for the first time in the 911 Turbo S, increases the maximum boost pressure by around 0.15 bar for up to 20 seconds in the mid-speed range when the 'SPORT' or 'SPORT Plus' button is pressed, increasing the maximum torque to 750 Nm.

Porsche Doppelkupplung (PDK) with virtual intermediate gears

The performance gains and reduced fuel consumption achieved with the new top-of-the range 911 models are due to the enhancement of the Porsche Doppelkupplung (PDK), which features optimised transmission control for a sports driving experience along with some other new functions. For example, Porsche engineers supplemented the seven driving gears by adding 'virtual' intermediate gears to further improve fuel economy and comfort. These gears are used to reduce engine speed when driving at an even, consistent pace when the next gear up would reduce the engine speed to below the specified lower limit. To do this, the transmission control unit engages the adjacent gear levels and controls the two clutches for a defined level of slip when transferring the propulsion force.

New all-wheel drive system with electro-hydraulic control

For even faster and more precise power distribution to the two axles, Porsche has developed a new all-wheel drive system (PTM) with an electro-hydraulic control concept for the multi-plate clutch. This functional principle enables faster and more precise control of the clutch pedal. The result is more dynamic and more precise control of the propulsion force to the front axle combined with improved traction and dynamic performance.

Rear axle steering improves agility and stability simultaneously

The active rear axle steering design consists of two electromechanical actuators, which are used on the left and right of the rear axle instead of the conventional track steering units. Using these actuators, the steering angle of the rear wheels can be varied according to the vehicle speed. This arrangement can be used to achieve one of two different effects, depending on which direction the two axles are turned.

For instance, when the front and rear wheels are steered in opposite directions, the sports car drives like a model with a significantly shorter wheelbase – significantly shorter again than the previous model. The system initiates this function at speeds of below 31 mph. The other effect is achieved when the front and rear wheels are steered in the same direction: The perceived wheelbase of the sports car is lengthened, giving the driver better stability when changing lanes and therefore providing enhanced driving stability overall, especially at high speeds. Both axles are steered in the same direction is when the vehicle reaches a speed of 50 mph.

Adaptive aerodynamics: The precise art of tackling air resistance

The new Porsche 911 Turbo is the first sports car in the world to feature adaptive aero dynamics, allowing it to revolutionise the interaction between everyday usability, efficiency and also performance, and set new benchmarks in each of these three areas. The unique combination of the retractable, multi-stage front spoiler and a slotted wing with height and tilt adjustment means that the aerodynamics of the 911 Turbo can be adapted to the current

situation and the driver's preferences at the touch of a button and as often as required.

The Porsche Active Aerodynamics (PAA) system features three basic modes with which to control the front spoiler and rear wing. Both are fully retracted when the vehicle is started up. When the front spoiler is folded back, it provides a significantly larger approach angle than the previous model. 'Speed' mode is activated at 75 mph. The two outer segments of the three-part front spoiler extend to divert more air around the body and reduce aerodynamic lift at the front axle. At the same time, the rear wing is extended upwards by 25 mm.

'Performance' mode offers an entirely new dimension of aerodynamics for the top 911 model, demonstrated in particular by the aerodynamic forces at work. At 186 mph the sports car generates 132 kg of downforce in Performance mode. This means that the maximum possible lateral acceleration increases by 10% at this speed – just as a result of the downforce. To generate these forces, the middle section of the front spoiler is also extended.

Simultaneously, the rear wing is extended again to a height of 75 mm and is angled forwards by seven degrees.

#### Driving pleasure in exclusive surroundings

The interior of both 911 Turbo models has been completely redesigned and mirrors that of the current Carrera range. The new 911 Turbo models also promise an even richer sound experience. The new Sound Symposer system, which is featured as standard, transmits the actual air induction sounds of the turbo engine to the interior via a diaphragm for an especially emotive driving experience. The purely mechanical system is activated when the 'SPORT' button is pressed.

The driver and front passenger in the 911 Turbo sit on sport seats with fully electric 14-way adjustment, while the S model features the Adaptive Sport Seat Plus with 18-way adjustment as standard. Both versions include the memory package and electrical steering column adjustment. The memory package stores a large number of seat, steering column and vehicle settings. In addition to the extensive package of standard equipment available for the new 911 Turbo, the new 911 Turbo S features a two-tone leather interior in Black and Carrera Red, which is offered as standard exclusively for this model.

#### Instrument cluster with enhanced displays

Both models feature a SportDesign steering wheel with aluminium shift paddles. The instrument cluster located directly in front of the driver differs from that of the 911 Carrera models in that the dials are all black with aluminium-coloured outer rings. The tachometer features a silver-coloured decorative ring and illuminated 'turbo' or 'turbo S' logo. The 4.6-inch, high-resolution colour display offers extensive display options including boost pressure and performance data. The new 'Performance' display shows the engine torque currently available as a moving dot on the screen; this value depends on the engine speed and load. In addition, the main beam assistant for the LED main headlights (standard for the 911 Turbo S, optional for the 911 Turbo) can be activated or deactivated from the vehicle settings submenu.

As in the previous models, the new 911 Turbo models include the Porsche Communication Management (PCM) system with navigation module as part of the standard equipment. This latest PCM generation offers features like a universal audio interface, three-dimensional navigation map including city and terrain models with a satellite map overlay, a map-based speed limit display and controls for the standard Bose® Surround Sound system.

#### Full-LED headlights with continuous levelling adjustment

Porsche offers a number of highly developed systems and features for the new 911 Turbo models, some of which are available as standard in the S model. One of the distinctive features of the Turbo S is its full-LED headlights. These headlights differ significantly from the Bi-Xenon system in the 911 Turbo, for which the LED system is available as an option. The full-LED headlights enable fatigue-free driving with their LED light colour, which is very similar to daylight, and enhanced perception of contrasts. The main headlight housing also includes a new integrated four-point daytime running light, which is a highly attractive feature typical to the brand.

## Camera-based assistance for parking and road sign recognition

For the first time in the new 911 Turbo models, and exclusively for Porsche sports cars, the ParkAssist option with reversing camera will be offered at the end of this year. Combined with ultrasonic sensors in the front and rear apron, this option also comprises a camera above the rear licence plate. The control unit connected to the camera generates an additional vehicle silhouette, which the driver can choose to display on the PCM monitor. The image output from the reversing camera can also be combined with the top view from the ParkAssist system.

Another camera-based option is traffic sign recognition. This information system uses a camera to detect the current speed limit as well as the start and end of no overtaking zones. It also takes temporary traffic signs into consideration. If the camera does not recognise a particular sign, the speed limit stored in the navigation system is displayed automatically.

## Innovative adaptive cruise control system and the Burmester sound system

The adaptive cruise control system with Porsche Active Safe (PAS) also offers some additional new functions. The integration of the Auto Start Stop function is a new feature for this system. In the new 911 Turbo models, the system offers the opportunity to automatically shut off the engine after slowing the vehicle to a stop via the cruise control function.

As in the 911 Carrera models, the Burmester® High-End Surround Sound system is being offered as an option for the new 911 Turbo and 911 Turbo S models. Based on the experience gained with the many award-winning systems already featured in the Panamera and Cayenne models, this premium audio package offers a performance level and sound quality that is unrivalled in the sports car segment.

## Porsche 918 Spyder Specifications\*

Body: Two-seat Spyder; carbon fibre reinforced plastic (CFRP) monocoque interlocked with CFRP unit carrier; two-piece Targa roof; fixed roll-over protection system

Drivetrain: Parallel full hybrid; 4.6-litre V8 mid-engine with dry-sump lubrication; hybrid module with electric motor and decoupler; electric motor with decoupler and transmission on front axle; auto Start Stop function; electrical system recuperation; four cooling circuits for motors, transmission and battery; thermal management

Displacement: 4,593 cm (V8 engine)

Engine power: 608 hp (447 kW) at 8700/min (V8 engine)

286 hp (210 kW) at 6500/min (electric motors)

887 hp (652 kW) at 8500/min (combined)

Max. torque: 917–1,280 Nm (overall, depending on the gear)

Maximum revs: 9,150/min

Power output per litre: 132 hp/litre (V8 engine)

Gearbox: Combustion engine with hybrid module and transmission bolted together to form a single drive unit; seven-speed Porsche Doppelkupplung (PDK); rear-wheel drive; front electric motor with transmission for driving the front wheels (decoupled from 235 km/h); five pre-selectable operating modes for optimum coordination of all drive units

#### Gear ratios PDK:

1st gear 3.91

2nd gear 2.29

3rd gear 1.58

4th gear 1.19

5th gear 0.97

6th gear 0.83

7th gear 0.67

R gear 3.55

Final drive ratio 3.09

Clutch diameter 220 mm/164 mm

Chassis: Double-wishbone front axle; optional electro-pneumatic lift system on front axle; electro-mechanical power steering; multi-link rear axle with adaptive electro-mechanical system for individual rear wheel steering; electronically controlled twin-tube gas-filled shock absorbers at the front and rear with Porsche Active Suspension Management (PASM) system

Brake system: High-performance hybrid brake system with adaptive recuperation; internally ventilated and perforated front ceramic brake discs (PCCB) with a diameter of 410 mm and thickness of 36 mm; rear discs with a diameter of 390 mm and thickness of 32 mm

Wheels and tyres: 918 Spyder wheels

(Weissach package: 918 Spyder forged magnesium wheels)

Front 9.5 J x 20 with 265/35 ZR 20

Rear 12.5 J x 21 with 325/30 ZR 21

Weight: DIN unladen weight 1,634 kg

Dimensions: Length 4,643 mm

Width 1,940 mm

Height 1,167 mm

Wheelbase 2,730 mm

Track width Front 1,664 mm

Rear 1,612 mm

Luggage compartment volume, VDA ~ 110 litres

Fuel tank capacity: 70 litres

Energy supply: Lithium-ion battery with 6.8 kWh capacity (BOL nominal), 220 kW maximum power and mains-compatible plug-in charger

Performance: Top speed 345 km/h

Purely electric 150 km/h

Acceleration: 0–100 km/h 2.8 s (62 mph)

0–200 km/h 7.7 s (124 mph)

0–300 km/h 22.0 s (186 mph)

Consumption (NEDC): Total 3.3–3.0 litres/100 km (85 – 94 mpg)

CO2 emissions: Total 79–70 g/km

Energy consumption: 12.5–13.0 kWh/100 km

Efficiency class: Germany A+

Range Purely electric: 16–31 km

Warranty: Vehicle 4 years

Battery 7 years

\* Specifications may vary according to markets

'50 years 911' Edition Specifications\*

Body: Two-plus-two seat Coupé; lightweight body featuring an intelligent mixed aluminium-steel construction;

wings, doors, luggage compartment lid and bonnet lid made of aluminium; two-stage driver and front passenger airbags; side and head airbags for driver and front passenger

Aerodynamics: Drag coefficient  $c_W$ : 0.30

Frontal area A: 2.04 m<sup>2</sup>

$c_W \times A$ : 0.61

Engine: Water-cooled flat-six engine; aluminium engine block and cylinder heads; four overhead camshafts; four valves per cylinder; variable inlet valve timing and valve-lift adjustment (VarioCam Plus); hydraulic valve clearance compensation; direct fuel injection; one three-way catalytic converter per cylinder bank, each with two oxygen sensors; engine oil capacity of 10.4 litres; electronic ignition with solid-state ignition distribution (six active ignition modules); thermal management system for coolant circulation; auto Start Stop function

Bore: 102.0 mm

Stroke: 77.5 mm

Displacement: 3,800 cm<sup>3</sup>

Compression ratio: 12.5:1

Engine power: 400 hp (294 kW) at 7,400/min

Max. torque: 440 Nm at 5600/min

Power output per litre: 105.3 hp/litre (77.4 kW/litre)

Maximum revs: 7,800/min

Fuel type: Super Plus

Electrical system: 12 volts; three-phase generator, 2100 W; battery, 70 Ah; electrical system recuperation

Gearbox: Engine and transmission bolted to form one drive unit; rear wheel drive; seven-speed manual transmission with mechanically controlled rear-axle differential lock and Porsche Torque Vectoring (PTV); optional seven speed Porsche Doppelkupplung (PDK) with controlled rear-axle differential lock and PTV+.

Gear ratios Manual transmission PDK transmission

1st gear 3.91 3.91

2nd gear 2.29 2.29

3rd gear 1.55 1.65

4th gear 1.30 1.30

5th gear 1.08 1.08

6th gear 0.88 0.88

7th gear 0.71 0.62

R gear 3.55 3.55

Final drive ratio 3.44 3.44

Clutch diameter 240 mm 202 mm/153 mm

Chassis: Front axle: spring strut axle (MacPherson type, Porsche optimised) with wheels independently suspended by wishbones, longitudinal links and spring struts; cylindrical coil springs with internal vibration dampers; electro-mechanical power steering.

Rear axle: multi-link suspension with wheels independently suspended on five links; cylindrical coil springs with coaxial internal vibration dampers. Porsche Active Suspension Management (PASM) system with electronically controlled dampers; two manually selectable maps.

Brakes: Dual-circuit brake system with axle distribution; Porsche Stability Management (PSM) system; vacuum brake booster; brake assistant; electric duo-servo parking brake; auto-hold function.

Front axle: six-piston aluminium monobloc brake callipers, perforated and internally ventilated brake discs with a diameter of 340 mm and thickness of 34 mm.

Rear axle: four-piston aluminium monobloc brake callipers, perforated and internally ventilated brake discs with a

diameter of 330 mm and thickness of 28 mm.

Wheels and tyres: Front 9 J x 20 with 245/35 ZR 20

Rear 11.5 J x 20 with 305/30 ZR 20

Weight: DIN unladen weight 1410 kg

Permissible gross weight: 1830 kg

Dimensions: Length 4,509 mm

Width 1,852 mm

Width with exterior mirrors 1,978 mm

Height 1,295 mm

Wheelbase 2,450 mm

Track width: Front 1,538 mm

Rear 1,560 mm

Luggage compartment volume Front 145 litres; rear 260 litres

Fuel tank capacity: 64 litres

Performance: Top speed 300 (298) km/h 186 mph (185 mph)

Acceleration: 0–100 km/h 4.5 (4.3) s with Sport Plus and PDK\* 4.1 s

0–200 km/h 14.6 (14.1) s with Sport Plus and PDK\* 13.8 s

Fuel consumption: Total 9.5 (8.7) litres/100 km (NEDC) 29.7 mpg (32.5 mpg)

Urban traffic 13.8 (12.2) litres/100 km 20.5 mpg (23.2 mpg)

Extra-urban traffic 7.1 (6.7) litres/100 km 39.8 mpg (42.2 mpg)

CO<sub>2</sub> emissions: 224 (205) g/km

Emissions class: Euro 5

The values in brackets apply to vehicles with the PDK transmission

\* In conjunction with the optional Sport Chrono package

Specifications of the Porsche 911 Turbo Coupé\*

Body: Two-plus-two seat Coupé; lightweight body in intelligent mixed aluminium-steel construction with wings, doors, boot and bonnet lids made of aluminium; two-stage driver and front passenger airbags; side and head airbags for driver and front passenger

Aerodynamics: Drag coefficient cd: 0.31

Frontal area A: 2.07 m<sup>2</sup>

cd x A: 0.64

Engine: Water-cooled flat-six engine; aluminium engine block and cylinder heads; four overhead camshafts; four valves per cylinder; variable inlet valve timing and lift (VarioCam Plus); hydraulic valve lifter; direct petrol injection; one three-way catalytic converter per cylinder bank, each with two oxygen sensors; bi-turbo charging with Variable



Turbine Geometry (VTG); engine oil 10.4 litres; electronic ignition with solid-state ignition distribution (six active ignition modules); thermal management for coolant circulation; auto start/stop function

Bore: 102.0 mm

Stroke: 77.5 mm

Displacement: 3,800 cm<sup>3</sup>

Compression ratio: 9.8:1

Engine power: 520 hp (383 kW) at 6,000 – 6,500 rpm

Max. torque: 660 Nm at 1,950 – 5,000 rpm (710 Nm at 2,100 – 4,250 rpm<sup>\*\*</sup>)

Power output per litre: 136.8 hp/l (100.8 kW/l)

Maximum engine speed: 7,000/min

Fuel type: Super Plus

Electrical system: 12 Volt; alternator 2,100 W; battery 95 Ah; electrical system recuperation.

Gearbox: Engine and transmission bolted to form one drive unit; active all-wheel drive with electronically controlled, map-controlled multi-plate clutch (PTM); seven-speed Doppelkupplung (PDK) with controlled rear locking differential and Porsche Torque Vectoring Plus (PTV+)

#### Gear ratios

1st gear 3.91

2nd gear 2.29

3rd gear 1.58

4th gear 1.18

5th gear 0.94

6th gear 0.79

7th gear 0.62

Reverse 3.55

Final drive ratio, rr. axle 3.44

Final drive ratio, fr. axle 3.33

Clutch diameter 220 mm/163.5 mm

<sup>\*\*</sup> Overboost with Sport Plus (Option Sport Chrono Package)

Chassis: Front axle: strut suspension (MacPherson type, Porsche optimised) with wheels independently suspended by transverse links, longitudinal links and struts; cylindrical coil springs with internal dampers; electro-mechanical power steering

Rear axle: multi-link suspension with wheels independently suspended on five links; cylindrical coil springs with coaxial internal dampers; active rear-wheel steering. Porsche Active Suspension Management (PASM) with electronically controlled dampers; two manually selectable maps

Brakes: Dual-circuit brake system with separate circuits for front and rear axles; Porsche Stability Management (PSM); vacuum brake booster; brake assistant; electric duo-servo parking brake; auto-hold function

Front axle: Six-piston alum. monobloc brake callipers, perforated and internally ventilated brake discs with 380 mm diameter and 34 mm thickness

Rear axle: Four-piston alum. monobloc brake callipers, perforated and internally ventilated brake discs with 380 mm diameter and 30 mm thickness

Wheels and tyres: front 8.5 J x 20 with 245/35 ZR 20

rear 11 J x 20 with 305/30 ZR 20

Weights: Unladen weight DIN 1,595 kg

Permissible gross weight 1,990 kg

Dimensions: Length 4,506 mm

Width 1,880 mm

Width with door mirrors 1,978 mm

Height 1,296 mm

Wheelbase 2,450 mm

Track widths: Front 1,541 mm

Rear 1,590 mm

Luggage compartment volume: front 115 litres, rear 260 litres

Fuel tank capacity: 68 litres

Performance: Top speed 315 km/h 195 mph

Acceleration: 0 – 100 km/h 3.4 s with Sport Plus\* 3.2 s

0 – 200 km/h 11.1 s with Sport Plus\* 10.8 s

Consumption (NEDC): Combined 9.7 l/100 km 29.1 mpg

Urban 13.2 l/100 km 21.4 mpg

Extra-urban 7.7 l/100 km 36.7 mpg

CO2 emissions: 227 g/km

Emissions class: Euro 6

\*In conjunction with the optional Sport Chrono package.

\* Specifications may vary according to markets

#### Specifications of the Porsche 911 Turbo S Coupé\*

Body: Two-plus-two seat Coupé; lightweight body in intelligent mixed aluminium-steel construction with wings, doors, boot and bonnet lids made of aluminium; two-stage driver and front passenger airbags; side and head airbags for driver and front passenger

Aerodynamics: Drag coefficient cd: 0.31

Frontal area A: 2.07 m<sup>2</sup>

cd x A: 0.64

Engine: Water-cooled flat-six engine; aluminium engine block and cylinder heads; four overhead camshafts; four valves per cylinder; variable inlet valve timing and lift (VarioCam Plus); hydraulic valve lifter; direct petrol injection; one three-way catalytic converter per cylinder bank, each with two oxygen sensors; bi-turbo charging with Variable Turbine Geometry (VTG); engine oil 10.4 litres; electronic ignition with solid-state ignition distribution (six active ignition modules); thermal management for coolant circulation; auto start/stop function

Bore: 102.0 mm

Stroke: 77.5 mm

Displacement: 3,800 cm<sup>3</sup>

Compression ratio: 9.8:1

Engine power: 560 hp (412 kW) at 6,500 – 6,750 rpm

Max. torque: 700 Nm at 2,100 – 4,250 rpm (750 Nm at 2,200 – 4,000 rpm\*\*)

Power output per litre: 147.4 hp/l (108.4 kW/l)

Maximum engine speed: 7,200 rpm

Fuel type: Super Plus

Electrical system: 12 Volt; alternator 2,100 W; battery 95 Ah; electrical system recuperation

Gearbox: Engine and transmission bolted to form one drive unit; active all-wheel drive with electronically controlled, map-controlled multi-plate clutch (PTM); seven-speed Doppelkupplung (PDK) with controlled rear locking differential and Porsche Torque Vectoring Plus (PTV+).

#### Gear ratios

1st gear 3.91

2nd gear 2.29

3rd gear 1.58

4th gear 1.18

5th gear 0.94

6th gear 0.79

7th gear 0.62

Reverse 3.55

Final drive ratio, rr. axle 3.44

Final drive ratio, fr. axle 3.33

Clutch diameter 220 mm/163.5 mm

\*\* Overboost with Sport Plus (standard)

Chassis: Front axle: strut suspension (MacPherson type, Porsche optimised) with wheels independently suspended by transverse links, longitudinal links and struts; cylindrical coil springs with internal dampers; electro-mechanical power steering

Rear axle: multi-link suspension with wheels independently suspended o