



PORSCHE

911 Turbo S: Combined fuel consumption 11.1 l/100 km; Combined CO₂ emissions 254 g/km

911 Turbo S Cabriolet: Combined fuel consumption 11.3 l/100 km; Combined CO₂ emissions 257 g/km

Engine and transmission

New biturbo engine with major leap in performance

The 911 Turbo S brings a significant leap in performance. The most powerful six-cylinder boxer engine now delivers 478 kW (650 PS), 51 kW (70 PS) more than its predecessor. Torque has also increased by 50 Nm to 800 Nm.

The newly developed unit is based on the current 911 Carrera's engine generation. In addition to achieving a significant increase in performance, the primary focus of development was on compliance with the latest emissions standards, with a gasoline particulate filter (GPF). The goals also included improvements to responsiveness, power, torque characteristic, emissions and revving ability. This has been achieved with new, larger VTG turbochargers in a symmetrical layout with electrically controlled wastegate flaps, a newly designed charge air cooling system and the use of piezo injectors.

The new six-cylinder engine features forced induction by a new intake system. For this purpose, the previous routing of process air and charge air cooling was swapped around: part of the process air now flows through the characteristic Turbo air intakes in the rear side sections. In front of the air filters, which are now situated in the rear wings, two other airflows through the rear lid grille have now also been incorporated. This means the new 911 Turbo S has four intakes with a larger overall cross-section and lower wind resistance, improving engine efficiency.

Two symmetrical turbochargers with variable turbine geometry (VTG) and larger dimensions are also new. The compressor and turbine wheels now rotate in opposite directions; the diameter of the turbine wheels has been increased by 5 mm to 55 mm, while the 61 mm compressor wheel is now 3 mm larger. The wastegate flaps are electrically controlled with stepper motors, the advantage being that active and complete opening of the wastegates after a cold start means that the catalytic converters light off earlier. Boost pressure control is also faster and more precise.

Further downstream in the intake system, the compressed air flows through the two repositioned charge air coolers, which are now 14 per cent larger. They are located directly over the engine in a central position under the rear wing. This new position

significantly improves their cooling efficiency and permits improved air inflow and outflow of the cooling air.

New sports exhaust system available as an option

For the first time, Porsche is offering an optional sports exhaust system for the 911 Turbo S. Like the standard system, it features electric, continually adjustable exhaust flaps for the first time, solving the conflict between driving style, interior noise comfort and legal requirements. The specially developed interior flow routing of the sports exhaust system creates a particularly distinctive sound typical of Turbo models. Two oval tailpipes in black (high gloss) or silver are a distinguishing visual feature. The standard exhaust system has two rectangular, black chrome-plated twin tailpipes.

New eight-speed dual-clutch transmission with Turbo specifications

Up to 800 Nm of torque must be converted into drive reliably and with minimum losses. This is achieved with a new eight-speed dual-clutch transmission (PDK) together with a new front-axle transmission. The PDK in the new 911 Turbo S is based on the gearbox from the current 911 Carrera series and has been adapted to the power delivery of the flagship model's engine. The steel plates of the Turbo S dual clutch are corrugated and the number of plates has been increased from six to eight. The gear wheel set has also been reinforced. Compared with the seven-speed transmission in previous models, the new eight-speed PDK offers a host of improvements: the driver can immediately feel the difference in terms of comfort, performance and efficiency. In addition, all gears have new ratios, with first gear now shorter and last gear longer than before. This has made it possible to implement a longer final-drive ratio, thereby further reducing engine speeds in higher gears and improving comfort as well as fuel consumption.

The new lightning-fast gearshifts also offer added driving pleasure. As with the 911 GT sports cars, this means much shorter response times and faster gear changes. Lightning-fast gearshifts are generally used at high engine speeds and loads, both in manual mode and when Sport Plus mode is activated.

Sport Chrono package with the newly integrated Porsche Track Precision app

Driving pleasure is given an additional boost with the standard Sport Chrono package. The various modes are activated on the steering wheel using the new mode switch with Sport Response button, and are displayed in the instrument cluster. The driver can also select the new Wet mode using the mode switch. The package also includes the PSM Sport mode, dynamic engine mounts as well as the stopwatch and the Porsche Track Precision app. The Porsche Stability Mode (PSM) stabilizes the car in extreme dynamic situations, ensuring a high safety level.

Innovative Wet mode provides assistance on wet road surfaces

The Porsche 911 leads the way with an innovative system for detecting wet road surfaces. Wet mode uses acoustic sensors in the front wheel housings to recognise

running water, and in this way can assess wetness on the road. This makes it fundamentally different from windscreen wiper rain sensors, which only react optically to water droplets on the windscreen independently of the road conditions. The response behaviour of the PSM and PTM systems is pre-conditioned if wet road conditions are detected. At the same time, the system informs the driver of the detected wetness and recommends manually switching to Wet mode. This function is integrated in the mode switch. If the driver activates Wet mode, the PSM, PTM, aerodynamics, PTV Plus and drive responsiveness are adapted to the conditions to guarantee the best possible driving stability. This means that the PTM transfers more torque to the front axle to increase traction and improve driving stability; the rear wing moves into the Wet mode position; the front spoiler is retracted; the accelerator pedal characteristic is flatter; and PSM Off or Sport mode are deactivated.

Performance-enhanced all-wheel drive

The improved Porsche Traction Management (PTM) all-wheel-drive system in the new 911 Turbo S offers even more traction, safety and driving pleasure. With its additional water-cooling and reinforced steel plates, the front-axle transmission can transmit significantly more torque, now up to 500 Nm, to the front wheels. A new, lighter and more stable driveshaft with just one universal joint distributes power to the front axle.

New lithium-ion lightweight starter battery

Lighter, more powerful, faster: the 911 Turbo S is equipped as standard with a lithium iron phosphate battery (LiFePO₄). The new battery offers higher voltage stability and lower internal resistance in comparison with a conventional lead battery. For the driver, this translates into shorter response times and an improved auto start/stop function. Even when the battery charge level is low, the higher performance of the new power store also enables much longer operation of energy-intensive and electric on-board vehicle systems, such as the sound system, with the combustion engine switched off. This means fuel-saving stop phases can be activated more frequently. The LiFePO₄ battery has a service life of up to 2.5 times longer than lead-acid batteries and offers up to seven-times higher cycle stability. Thanks to the advanced battery technology and power density, 20 per cent less space is needed and the weight of the on-board battery is reduced by more than half, from 27 kg to 12.75 kg. These features made it possible to reduce the 95 Ah capacity of a conventional lead-acid battery to 60 Ah for the LiFePO₄ battery.