

## **Wide balance between performance and comfort**

In keeping with the overall concept of the Panamera, the chassis combines the ride comfort of a luxury saloon with the performance of a true sports car. The basic chassis layout is complemented by a multitude of innovative systems designed for maximum comfort and performance. Virtually all of these assistance and convenience systems are part of the standard specification of the new Panamera Turbo S E-Hybrid – including adaptive air suspension with Porsche Active Suspension Management (PASM), the active chassis control system and anti-roll system Porsche Dynamic Chassis Control Sport (PDCC Sport) with Porsche Torque Vectoring Plus (PTV Plus) and the Porsche Ceramic Composite Brake (PCCB). In the Panamera Turbo S E-Hybrid Executive, which features an extended wheelbase, rear-axle steering is standard. By integrating rear-axle steering, Porsche is bringing the steering precision and handling characteristics of the sports car to the luxury saloon class. In all Panamera models, the integrated Porsche 4D Chassis Control system analyses and synchronises all chassis systems in real time, providing data which is used to optimise handling.

### **Based on a harmonious axle concept**

At the front of the Panamera, Porsche deploys double wishbone suspension with forged aluminium wishbones and hollow-cast lightweight aluminium swivel bearings. A hydraulically damped elastomer bearing on the lower wishbone is designed to boost comfort. The anti-roll bar link on the pivot bearing also enables the use of monotube dampers, which optimise comfort. In combination with electromechanical steering, the rigid aluminium auxiliary frame guarantees a dynamic performance and agile handling. The rear axle uses a lightweight multi-link suspension with forged upper aluminium wishbones and hollow-cast lower aluminium wishbones. Here, too, optimised axle and elastokinematics enhance agility, precision and comfort.

### **Rear-axle steering as standard in the Panamera Turbo S E-Hybrid Executive**

The Panamera Turbo S E-Hybrid Executive is equipped as standard with rear-axle steering, which is available as an option on the short wheelbase version. At low speeds of up to around 50 km/h, the rear wheels steer in the opposite direction to the front wheels – variable across the vehicle speed – up to a maximum steering angle of 2.8 degrees. This approach effectively shortens the wheelbase. The advantages include more dynamic cornering and significantly improved manoeuvring and parking in tight spaces. At speeds above around 50 km/h, the rear wheels turn in the same direction as the front axle depending on the on the speed. Here, rear-axle steering serves to effectively lengthen the wheelbase, which increases stability, for example when changing lanes on the motorway. Rear-axle steering is an active safety system that optimises drive dynamics; it also boosts comfort by reducing the required steering angle at low speeds. The integration of rear-axle steering also results in a more direct steering ratio on the front axle for an exceptionally sporty steering experience.

### **Integrated Porsche 4D Chassis Control**

Porsche 4D Chassis Control is a centrally networked system. It analyses the current

driving situation centrally in all three dimensions (longitudinal, lateral and vertical acceleration), uses these findings to calculate optimum information about the driving status, and makes this information available to all chassis systems uniformly and in real time – creating a fourth dimension in chassis control. As a result, the systems are able to respond to the imminent driving situation in an integrated manner. By way of example: When steering dynamically into a bend, the electronic damper control system PASM, the adaptive air suspension, rear-axle steering, PTV Plus and PDCC Sport systems work together to ensure optimum steering behaviour, exceptional agility and stability. Porsche 4D Chassis Control issues a pulse to the chassis systems as soon as the car starts steering into the corner. This means that the systems are able to respond promptly and ensure maximum performance around bends.

## **Porsche Active Suspension Management (PASM)**

Porsche Active Suspension Management (PASM), which is also part of the standard specification, is an electronic damping control system. The system responds to the road condition and driving style, using the information it gleanes to adjust the suspension on each individual wheel. The dampers in the latest Panamera also boost responsiveness, fine-tuning the balance between comfort and sportiness. Three driving modes are available: “Normal”, “Sport” and “Sport Plus”. The PASM functions as follows: Sensors monitor the body movements such as those that occur during heavy acceleration, braking, fast cornering, or on uneven road surfaces. The PASM then sends the captured data to the Porsche 4D Chassis Control. The control centre determines the current driving conditions and, depending on the active mode, sets the damper hardness for PASM and the damper characteristics and spring rates for the adaptive air suspension system. The 4D Chassis Control also coordinates the control parameters of the other electronic chassis systems. The result: enhanced vehicle stability, performance and comfort.

## **Adaptive air suspension with PASM**

The Panamera Turbo S E-Hybrid is equipped with an adaptive three-chamber air suspension system as standard. In terms of comfort levels in particular, the adaptive air suspension sets new benchmarks. It has been vastly overhauled compared to the air suspension of the first-generation Panamera. The current system has three instead of two switchable air chambers per spring strut and around 60 per cent greater air volume. This enables a considerably larger spread of the spring rates. The chassis can be set to a lower basic spring rate for increased comfort, as the spring rate can be changed electronically in a fraction of a second where necessary – for example, during acceleration and braking or to reduce rolling motion.

The air suspension also offers the familiar advantages of the self-levelling function. In addition to the Normal Level, the system also offers a Lift Level and Low Level. The lift level raises the chassis by 20 millimetres, which can help to prevent damage to the front spoiler, for example, when entering underground car parks. The Low Level lowers the front axle by 28 millimetres and the rear axle by 20 millimetres to perfect the vehicle position on the road at high speeds and improve the aerodynamics.

## **Active anti-roll stabilisation PDCC Sport including PTV Plus**

The Porsche Dynamic Chassis Control Sport (PDCC Sport) system optimises driving dynamics through the integration of electromechanical anti-roll bars. The system reacts significantly quicker than systems with hydraulic actuators and stiffens the anti-roll bars to prevent rolling of the body. In the Panamera, Porsche combines PDCC Sport with Porsche

Torque Vectoring Plus (PTV Plus). The electronically controlled rear differential lock ensures that the drive torque is distributed in varying proportions across the rear wheels, while wheel-selective braking interventions generate additional steering torque on the rear axle – The result of this is even more agile steering behaviour. PTV Plus also delivers a noticeably higher level of traction when accelerating out of bends through targeted use of the differential lock.