Reduced pitch and roll for better performance

02/12/2024 Reduced pitch and roll for better performance

The new cutting-edge Porsche Active Ride chassis surpasses other suspension concepts in all relevant parameters and offers an unprecedented bandwidth between driving comfort and driving dynamics. The suspension keeps the body of the Taycan level at all times, even during dynamic braking, steering and acceleration manoeuvres. With a smooth ride, the system absorbs bumps almost completely. In dynamic driving situations, the Porsche Active Ride suspension ensures a perfect connection to the road thanks to a balanced distribution of wheel loads.

If the relevant mode is activated, the suspension can compensate for pitching and rolling motions in order to reduce the acceleration forces acting on the occupants. The driver can manually activate and deactivate the following functions in the PCM:

- active cornering dynamics: Normally, a car leans to the outside in corners. If the driver wishes, Porsche Active Ride not only balances out this rolling, but can actually overcompensate for it: like a

motorcycle, the Taycan then leans into the bend.

- Acceleration and braking comfort: when a car accelerates or slows down, it squats or dives forward. Porsche Active Ride can also compensate for this body movement. Much like a helicopter, the Taycan pitches forward when accelerating and backwards when braking.
- Easy entry: when this function is activated, as soon as a door is opened, the body raises automatically by 55 millimetres. This makes it easier to get in and out. When the door closes, the Taycan lowers back down to the previous level.

How the chassis system works in detail

With Porsche Active Ride, all four active dampers are additionally equipped with a motor pump unit. In addition to their damper function, they also perform the function of anti-roll bars. As a result, the there is no need for anti-roll bars, unlike with the standard air suspension. The motor pump unit builds up the active actuating forces on the dampers as needed and at lightning speed. Two electric motors drive two hydraulic pumps. The system obtains the requisite power from the high-voltage battery, directly, without a detour via a voltage converter.

Sensors determine the driving conditions, such as longitudinal and lateral acceleration, effects of road stimuli on the wheels and the body, and the friction and slip of all tyres on the road. Using this data, each motor pump unit generates the exact volume flow required for the desired effect for each wheel. The volumetric flow rate indicates the quantity of fluid travelling through a specific cross-section per period of time. Based on the known properties of the damper oil, engineers can regulate the system pressure, which defines the forces acting in the damper. The damper, controlled in this way, actively suppresses undesired motion of the air suspension. This allows the wheels to be actively pushed into the road (outward deflection) or pulled into the body (inward deflection) at any time.

MEDIA ENQUIRIES

Mayk Wienkötter

Spokesperson Panamera and Taycan
+49 (0) 170 / 911 8684
mayk.wienkoetter@porsche.de

Consumption data

Taycan Turbo S (WLTP)*: Electrical consumption combined: 19.9 – 17.8 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

Taycan (WLTP, preliminary values)*: Electrical consumption combined: 19.4 – 16.4 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

Taycan 4S Sport Turismo (WLTP)*: Electrical consumption combined: 21.1 – 18.5 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

Taycan Turbo S (Predecessor model)

*Further information on the official fuel consumption and the official specific CO_2 emissions of new passenger cars can be found in the "Leitfaden über den Kraftstoffverbrauch, die CO_2-Emissionen und den Stromverbrauch neuer Personenkraftwagen" (Fuel Consumption, CO_2Emissions and Electricity Consumption Guide for New Passenger Cars), which is available free of charge at all sales outlets and from DAT (Deutsche Automobil Treuhand GmbH, Helmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, www.dat.de).

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Dr. Ing. h.c. F. Porsche Aktiengesellschaft
Porscheplatz 1
70435 Stuttgart