



PORSCHE



Panamera Technology Workshop

Press Information

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Fuel consumption/emissions (Range of figures according to the tyre set used)

Panamera 4S: Fuel consumption (in l/100 km) Urban 10.2 – 10.1 Extra-urban 6.8 – 6.7 Combined 8.2 – 8.1; CO₂ emissions combined 186 – 184 g/km

Panamera 4S Diesel: Fuel consumption (in l/100 km) Urban 7.9 Extra-urban 5.9 – 5.8 Combined 6.8 – 6.7; CO₂ emissions combined 178 – 176 g/km

Panamera Turbo: Fuel consumption (in l/100 km) Urban 12.9 – 12.8 Extra-urban 7.3 – 7.2 Combined 9.4 – 9.3; CO₂ emissions combined 214 – 212 g/km

The new Porsche Panamera

The Panamera – reworked from the ground up – meets high standards as both a sports car and a comfortable cruising car. Its engines and transmission were re-engineered, the chassis perfected, the display and operating concept interpreted for the future and the design transferred to a new evolutionary stage. At its launch, the second generation of the Porsche Gran Turismo will be available in the three all-wheel drive versions Panamera 4S, Panamera Turbo and Panamera 4S Diesel.

Concept Four-door sports car. The concept of the four-seat Gran Turismo combines the performance of a high-performance sports car with the comfort of a luxury saloon. The tailgate, folding rear seat backrests and up to 1,304 litres of luggage volume make the Panamera the most versatile model in its class.

Design New evolutionary stage of the Panamera concept. Expressively designed – with extended, dynamic proportions, flared shoulders, athletic flanks and an extremely fast roof line. This “flyline” that is typical of Porsche cars forges a stylistic link to the 911 design icon.

Drive Three new twin-turbo engines:
Panamera 4S: 2.9-litre V6 petrol engine with 324 kW (440 hp).
Panamera Turbo: 4.0-litre V8 petrol engine with 404 kW (550 hp).
Panamera 4S Diesel: 4.0-litre V8 diesel engine with 310 kW (422 hp).
New Porsche dual-clutch transmission (PDK) with eight speeds and all-wheel drive for all models.

Chassis Broad spread between performance and comfort characteristics sets standards in the luxury segment. New features include rear axle steering, three-chamber air suspension, the electromechanical roll stabilisation system Porsche Dynamic Chassis Control Sport (PDCC Sport) with Porsche Torque Vectoring Plus (PTV Plus) as well as networking of all chassis systems via 4D Chassis Control.

Body Lightweight body in intelligent aluminium/steel hybrid construction. Increased use of aluminium: Parts made of aluminium – besides the outer door panels, the bonnet, tailgate and front wings – now include large body-in-white parts and the entire side panels and roof.

**Electrics/
electronics** New Porsche Advanced Cockpit and state-of-the-art connectivity. Black panel surfaces and interactive displays combine the visuality and intuitive operation of smartphones with the practical aspects of controlling an automobile. New LED Matrix headlights and new assistance systems such as Porsche InnoDrive that anticipates conditions over the three kilometres ahead and the night vision assistant.

The sports car among luxury saloons

Porsche stands for building unique cars – and the Panamera is one such car. Developed for sports car drivers who appreciate four doors and four seats. And for saloon drivers who swear by sports cars. Opposites which the Panamera reconciles in superior style. A sports car and a luxury saloon in one. It is a Gran Turismo that has been rethought and realigned. The second generation of the Panamera is advancing to become a performance icon of the luxury class. In this transformation, Porsche has systematically improved the Panamera concept – with a four-door car that has been redesigned and restyled down to the last detail. Its engines and transmissions have been redesigned, its chassis perfected, and its display and control concept reinterpreted for the future with multi-touch gesture control. The new Panamera once again extends the borders between an ambitious sports car and a comfortable cruising car with technical highlights such as rear axle steering, electromechanical roll compensation and a three-chamber air suspension.

911 design language with a much more dynamic flyline

Visually, the unique concept of this large Porsche is reflected in a new expressive design: unmistakably a Panamera, unmistakably a sports car – with long, dynamic proportions, pronounced shoulders, athletic flanks and an extremely fast roof line that is 20 mm lower at the rear. This typical Porsche flyline creates a stylistic link to the 911 design icon.

New V6 and V8 twin-turbo engines with ample power and full-bodied sound

A Porsche has always impressed with more than just power; its efficiency is equally important. To make the new Panamera even more efficient than the previous model, all of the second generation engines have been redesigned. They have been made more powerful, while significantly improving fuel economy and reducing emissions. Three new twin-turbo direct injection engines are being introduced at the market launch: in the Panamera Turbo, the Panamera 4S and the Panamera 4S Diesel. All models – and for the first time including the diesel – are equipped with a permanent, fully variable all-wheel drive system and a new eight-speed Porsche dual-clutch transmission (PDK). A four-litre V8 petrol engine that delivers 404 kW (550 hp) powers the Panamera Turbo and a V6 petrol engine with a displacement of 2.9 litres and output of 324 kW (440 hp) drives the Panamera 4S. In the Panamera 4S Diesel, a four-litre V8 with 310 kW (422 hp) and a maximum torque of 850 Nm generates powerful thrust.

On the race circuit in a made-to-measure suit

In keeping with the overall concept of the new Panamera, the chassis also unites the cruising comfort of a luxury saloon with the performance of a true sports car. This is achieved by supplementing the perfectly coordinated suspension concept as a basis for innovative mechatronics systems such as an adaptive air suspension with new three-chamber technology, including electronic damper control (Porsche Active Suspension Management PASM), the enhanced Porsche Dynamic Chassis Control Sport (PDCC Sport) system including Porsche Torque Vectoring Plus (PTV Plus) and a new electromechanical steering system. The integrated 4D Chassis Control system analyses the current driving condition in real time and enables optimised and coordinated use of all systems for even better handling of the new Panamera. Porsche is also taking the steering precision and handling of sports cars into the class of Gran Turismo cars with the new rear axle steering – inspired by the 918 Spyder and 911 Turbo. Furthermore, the brakes are now even more powerful to bring the braking power into line with the increased performance.

Plenty of functionality and easy interaction in the Porsche Advanced Cockpit

The typical Porsche interior has been reinterpreted for the future in the new Panamera. Black panel surfaces and interactive displays combine a visually clear and intuitive user interface like that of smartphones and tablets with the practical requirements for controlling the car. Classic hard keys and conventional instruments have been reduced significantly. Instead touch-sensitive panels and individually configurable displays take centre stage in the new Porsche Advanced Cockpit – with great benefits for the driver as well as the front and rear passengers. Despite a significantly extended range of communication, convenience and assistance systems, the different functions can now be used and operated more clearly and intuitively. The Porsche Advanced Cockpit transforms the analogue world into the digital present of mobility.

Next generation assistance systems

The Panamera is equipped with many standard and optional assistance systems, which make life while driving more convenient and safer. The most important new systems include a night vision assistant, which uses a thermal imaging camera to detect people and large animals and displays a colour highlighted warning indicator in the cockpit. If the optional new LED matrix headlights with 84 image points are selected, people beyond the visual range of the dipped

beam headlight are also illuminated briefly if they are in the computed driving corridor, allowing the driver to react even faster. Looking especially far ahead along the road is the new Porsche InnoDrive, which includes adaptive cruise control. Based on three-dimensional, high-resolution navigation data, it computes and activates the optimal acceleration and deceleration rates as well as gear selections and coasting phases, for the next three kilometres. In doing so, this electronic co-pilot automatically takes bends, inclines and speed limits into account. Other vehicles and current speed limits are detected by the radar and video sensors and incorporated into the control system

The design of the new Panamera forges a link to the Porsche 911

The exterior character of the Panamera has also been sharpened with the dawn of the second generation. It is based on very dynamic proportions. The new Panamera is 5,049 millimetres long (gain of 34 mm), 1,937 millimetres wide (6 mm wider) and 1,423 millimetres high (5 mm taller). These dimensions house a superior package. There is ample space for four people to travel extremely comfortably; the rear also offers plenty of space for use as a chauffeured saloon. In addition, the Porsche Panamera offers the best layout variability of any model in the luxury class, making it the most practical for everyday use with a 40:20:40 split of the folding rear bench backrests and 495 to 1,304 litres of luggage capacity.

Despite the slight increase in height and the exceptionally spacious interior, the four-door car looks considerably lower and longer. This is primarily due to the reduced height above the rear of the passenger compartment – reduced by 20 mm – while maintaining consistently good headroom. This changes the car's overall image completely. The wheelbase has been increased by 30 mm to 2,950 mm; this too lengthens the car's proportions. The front wheels were shifted further forward, reducing the front overhang and making the prestige dimension – the distance between the A-pillar and the front axle – even larger. The rear overhang is longer, giving the car a more powerful appearance.

The Panamera has only grown six millimetres in width, but it feels like several centimetres. This effect is created by such features as the A-shaped air intake, which extends out to the sides and creates a completely new front-end design. At the same time, a precisely designed cross-bar in the radiator grille emphasises the car's width. The arrow-shaped bonnet over the engine accelerates this visual effect further forward and lower than before – due to the prominently contoured powerdome, whose lines now reach into the bumper. The lower front end was enabled by the compact construction of the new engines in the vehicle concept. To the left and right of the powerdome, the bonnet blends precisely into the stronger flares of the front wings – a typical Porsche design trait. Also exuding confidence is the look of the LED headlights with their four-point LED daytime running lights, of which three versions are available.

The new side section reflects the silhouette of a sports car more than ever thanks to its dynamic roof line. At the rear, this roof line becomes the charismatic Porsche flyline – the distinctive lines that adorn all of the brand’s coupés. Two precisely executed edges on the lateral roof line visually lower the silhouette’s centre of gravity. The look of the side windows has also been redesigned: their visually continuous surface, together with their lines on the rear body, create a stylistic affinity to the Porsche 911. Three-dimensionality characterises the doors and wings, where incident light shining on their convex and concave surfaces generates muscular tension. Integral design components there are the air exhaust ports behind the front wheels. The flared wheelhouse lips also have a powerful look: the large arches provide space for the different alloy wheels available – from 19-inch wheels for the Panamera 4S and 4S Diesel, to 20-inch wheels for the Panamera Turbo and the optional 21-inch wheels.

The fact that the Panamera is a four-door coupé and not a conventional saloon is clearer from the rear than from any other perspective. The ‘greenhouse’ – made up of the roof, roof pillars and window surfaces – is supported by a powerful and broad shoulder section. Clearly a Panamera, definitely a sports car. In addition to the three-dimensional PORSCHE lettering, the most prominent components identifying the rear body are, without a doubt, the three-dimensional LED rear lights with integrated four-point brake lights. The rear lights are interconnected by a narrow LED strip. All of these elements together create an unmistakable night design. Integrated seamlessly and elegantly into the tailgate, which features electric opening and closing as standard, is the extendible rear spoiler that is now finished in body colour. On the Panamera Turbo, the wing also splits as it extends, thereby gaining additional surface area. Terminating the lower rear body is a diffuser into which the dual stainless steel tailpipes of the exhaust system are integrated on the left and right. The Panamera 4S and 4S Diesel can be recognised by their round tailpipes, while the Panamera Turbo has trapezoidal tailpipe trims.

V6 and V8 twin-turbo direct injection engines with ample power and full-bodied sound

For the market launch the new Gran Turismo from Porsche is debuting in the versions Panamera Turbo, Panamera 4S and Panamera 4S Diesel. All models have new engines, permanent all-wheel drive and a new eight-speed Porsche dual-clutch transmission (PDK) on board. A four-litre V8 petrol engine that delivers 404 kW (550 hp) powers the Panamera Turbo and a 2.9 litre V6 petrol engine with 324 kW (440 hp) drives the Panamera 4S. In the Panamera 4S Diesel, a four-litre V8 with 310 kW (422 hp) generates powerful thrust.

New twin-turbo eight-cylinder engines offer pure dynamics and maximum efficiency

An innovative engine family has been created by the new eight-cylinder engines for the Porsche Panamera. Key development goals were maximum efficiency and extraordinary performance. A further objective of the new engine line-up was a flexible structure with modular components, so that other variants such as hybrid versions can be implemented rapidly. To meet these specifications, Porsche engineers developed a modular high-tech generation of V8 engines whose technical architecture brings parameters such as low fuel consumption and low emission figures into harmony with high power and torque figures – normally contrasting parameters.

The Panamera Turbo initially has the most powerful V8 petrol engine of the new engine generation. Between 5,750 and 6,000 rpm its four-litre engine develops maximum power output of 404 kW (550 hp). At just above 3,000 rpm the engine already breaks through the 250 kW (340 hp) threshold. The maximum torque of 770 Nm is available between 1,960 and 4,500 rpm. The eight-cylinder engine propels the Panamera Turbo from 0 to 100 km/h in 3.8 seconds. With the Sport Chrono Package, its sprint time is 3.6 seconds. After a short 13.0 seconds, the Gran Turismo is already moving at 200 km/h, and with the Sport Chrono Package this figure is reduced to 12.7 seconds. The Porsche has a top speed of 306 km/h. These are impressive figures which underscore how easily the engine is able to power the Panamera with its power-to-weight ratio of just 3.6 kg/hp. The extraordinary performance figures stand in contrast to an improvement of up to 1.1 litres per 100 km in its combined fuel consumption of 9.4 – 9.3 l/100 km (New European Driving Cycle); this equates to CO₂ emissions of 214 – 212 g/km.

The new eight-cylinder engine is a longitudinally-mounted V-engine with a cylinder bank angle of 90 degrees. The four intake and exhaust camshafts can each be adjusted by 50 degrees and are chain driven. The displacement of the four valve per cylinder engine that can rev up to 6,800 rpm is 3,996 cc. The dominant technical characteristics of the V8 twin-turbo direct injection petrol engine are the new central turbo layout with turbochargers located within the inner V, injectors located centrally in the combustion chamber, circuit racetrack compatible oil circulation, nearly wear-free coating of the cylinder linings and cylinder deactivation.

Innovative cylinder deactivation –four pistons take frequent breaks

The Panamera Turbo has the first Porsche engine to be equipped with a new adaptive cylinder control system. In part-load operation, the system temporarily and imperceptibly turns the eight-cylinder into a four-cylinder engine. The result: fuel economy is improved by up to 30 per cent in the four-cylinder phases, depending on power demand. The deactivation and reactivation of the cylinders are controlled by VarioCam Plus with a two-stage sliding cam system. In the case of the new V8 the valve gear of cylinders two, three, five and eight is deactivated or reactivated as required. The intake and exhaust valves of these cylinders are completely shut down in four-cylinder operation. Cylinder deactivation is operational over an engine speed range from 950 to 3,500 rpm and up to a torque limit of 250 Nm.

Weight reduction of up to 9.5 kilograms and compact package

The new eight-cylinder engines have a more compact design and are up to 9.5 kilograms lighter than their predecessors. Porsche has achieved the weight reduction with various engineering measures. For example, the aluminium crankcase weighs just 39.1 kilograms – this corresponds to 6.7 kilograms less weight than the comparable 4.8-litre engine of the previous model. Every component has been analysed and made lighter if possible. For example, the crankshaft drive: Porsche has reduced its weight by 1.4 kilograms. The special design of the crankcase drive with its crankshaft supported by five bearings is another element of compact engine design: the crankshaft drive is characterised by the use of an intermediate shaft that is used to drive the water pump and the timing drive; thanks to the toothed gear drive of the water pump inside the engine, Porsche was able to compress the engine package. Also having a positive influence on mounting space and weight are the central turbo layout and a 0.8-litre

reduction in engine displacement. The progress that has been made is all the more noteworthy, because the maximum specific power of the new four-litre V8 is much higher than that of the 4.8-litre engine. The new engine of the Panamera Turbo, for instance, has a specific power of 137.5 hp/l; this figure was 108.3 hp/l in the previous model.

Central turbo layout – a design trait of all Panamera engines

The V8 petrol engines of the Panamera exhibit exceptional agility right up into high rev and power regions. At the same time, the eight-cylinder engines already produce their maximum torque at very low revs. This is an engine characteristic that also applies to the new V6 petrol engines and V8 diesels. This type of sports car dynamic is largely attributable to the central turbo layout that is a feature of twin-turbo charging realised in all models. Take the Panamera Turbo, for example.

Sophisticated twin-scroll turbochargers supply compressed air to the V8's combustion chambers. The two counter-rotating turbines produce maximum torque figures at very low engine speeds. The maximum charge pressure of the turbochargers is 0.3 bar. A compressor driven by the exhaust gas stream compresses the intake air in each turbocharger. The flow of this process air is configured as a dual-branch system for optimal engine response. It flows from the outside, and – after passing through the intercoolers on the left and right sides upstream of the V8 – the process air passes through one throttle valve on each side and into the left and right cylinder banks. The intercoolers ensure that the temperature of the process air, which has been heated by the compression process, is further reduced significantly. This boosts the density of the air, the extent to which the cylinders are filled with oxygen and ultimately the efficiency.

Injectors positioned centrally – perfect for V6 and V8, petrol and diesel

Another unifying property of all of the Panamera engines is that the injectors – with their high-pressure injection valves – are positioned centrally in the combustion chamber. Once again the example of the Panamera Turbo: here valves with seven nozzle holes are used; their jets are individually aligned to achieve perfect homogeneity of the mixture and optimal combustion – in every operating phase. Porsche utilises injectors to implement injection strategies that are specific to engine start, heating of the catalytic converters, the engine warm-up phase and the hot operating engine. One high-pressure pump is used per cylinder bank; the maximum injection pressure is 250 bar (previous engine: 140 bar).

Emissions control with catalytic converter located in the inner V

The V8 engines have a dual-branch exhaust system with upstream catalytic converters and main catalytic converters as well as upstream and downstream silencers. Like the central turbo layout, another engineered feature of the eight-cylinder engine is the close proximity of the catalytic converter to the engine within the inner V. This configuration allows the emissions control system to reach to its optimal operating temperature particularly quickly. In addition, catalytic converter heating is accelerated in the engine start phase by opening the turbocharger's wastegate valve.

Iron alloy of the cylinder linings reduces wear and oil consumption

A highlight of the V8 engines is iron coating of the cylinder linings in the cast aluminium block. It significantly reduces internal friction, wear (even with poor fuel quality) and oil consumption. In the manufacturing process, an atmospheric plasma spray method is used to apply an extremely tough and low-friction iron coating to the cylinder surface. The layer is only 150 microns thick. Compared to previous concepts implemented in V8 engines, lining wear is reduced by one-tenth at the motion reversal point of the piston rings and is thereby virtually eliminated. The design of the lightweight cast pistons has been adapted to the new alloy. The piston rings have a chrome nitrite coating, which harmonises perfectly with the iron coating. In the interplay of all these measures, oil consumption has also been reduced by up to 50 per cent compared to the previous engine.

Reliable oil circulation on the circuit racetrack as well

Every Porsche must operate reliably under racetrack driving conditions, too. The new Porsche Panamera meets this challenge impressively – for example, with an innovative oil circulation system; the layout even compensates for extreme lateral and longitudinal accelerations. A special feature is that the oil passages are partitioned into oil supply for the engine and oil supply for the cylinder head. The supply openings in the oil passages are tailored to the needs of the specific components in the oil circulation system. This has a positive effect on the time required to build up oil pressure at engine start. The fast pressure build-up is also assisted by a check valve in the oil pump – it ensures that the large volume of oil in the inner V does not flow back into the oil pan, causing the engine to run empty. The oil pressure itself is built up via a fully

variable vane oil pump, and a valve is used to control it to map-specific figures. Integrated into this control valve is oil pressure limiting, which automatically activates for an engine start and at low outdoor temperatures. An electronic switching valve located centrally in the inner V also controls the piston spray nozzles according to piston cooling needs and map parameters. This type of control reduces churning losses, and the oil circulation volume can also be controlled. The Porsche Panamera Turbo can even be driven on the Nürburgring-Nordschleife at high speeds.

Sport Chrono Package and Sport Response button

The optional Sport Chrono Package with launch control and mode switch – including Sport Response button in the multifunction steering wheel – has been perfectly configured for race circuit use. The mode switch introduced for the first time in the Porsche 918 Spyder gives direct access to the four driving modes (Normal, Sport, Sport Plus and Individual) with an ergonomically positioned rotary switch on the steering wheel. Sport Plus mode is ideal for the race circuit. Here, the drivetrain is pre-conditioned for optimal response and maximum acceleration. In addition, active suspension components – such as the three-chamber air suspension, Porsche Active Suspension Management (PASM), PDCC Sport, Porsche Torque Vectoring Plus and rear-axle steering – switch to a sportier mode for maximum performance.

The Sport Response Button is located in the centre of the mode switch. It calls up the maximum power potential of the Panamera for 20 seconds at the press of a button in a highly agile manner. In this case the engine response is more direct and spontaneous; furthermore, the PDK switches to an even more dynamic shifting map than in Sport Plus mode and immediately shifts down to a speed range of 3,000 to 6,000 rpm (except if the button is pressed under full load). Gears are changed extremely late.

Panamera 4S with a new 2.9-litre engine

The six-cylinder petrol engine in the Panamera 4S is also a completely new development. It is a V-engine with a 90 degree cylinder angle and displacement of 2,894 cc. As is usual with every model change, Porsche was able to increase the power of the new six-cylinder engine while reducing its fuel consumption and emissions. For example, the Panamera 4S produces

20 hp more than its predecessor yet consumes eleven percent less fuel. The figures: the V6 twin-turbo engine in the Panamera 4S delivers maximum output of 324 kW (440 hp) at 5,650 rpm. This corresponds to specific output of 152 hp/l (predecessor: 140 hp/l). The six-cylinder engine produces a constant powerful 550 Nm of torque (gain of 30 Nm) over a wide speed range from 1,750 to 5,500 rpm. The classic torque curve is therefore a torque plateau rather than a torque curve. The Panamera 4S can reach 100 km/h in just 4.4 seconds (4.2 seconds with the Sport Chrono Package). The Porsche reaches the 200 km/h mark after 16.2 seconds (Sport Chrono Package: 15.9 seconds). With a top speed of 289 km/h, this Panamera also approaches the 300 km/h mark. The NEDC combined fuel consumption is 8.2 – 8.1 l/100 km (186 – 184 g/km CO₂). Compared to the first generation Panamera 4S, this represents a fuel saving of up to 1.0 l/100 km.

Like the eight-cylinder engine, a main feature of the new six-cylinder engine is the central turbo layout. The two turbochargers of the new V6 engine are also integrated centrally between the cylinder banks. Here, too, the air drawn in is routed through a dual-branch conduit to each turbocharger and to the combustion chambers to improve the engine's responsiveness.

In addition, the arrangement of the oil cooler and the oil filters in the inner V and the centrally located injectors forge a link to the V8 engine. However, unlike the eight-cylinder engine, with the V6 engine the exhaust manifold is also positioned in the inner V to save weight. Overall, the new six-cylinder engine has a very high rate of integrated functional parts: in addition to the exhaust manifold these include the partly cast-on intake manifold and the oil cooler. The crankcase of the V6 turbo engine is made of a lightweight aluminium alloy. The crankcase is sand-casted. This enables a high level of functional integration to reduce the weight. The engine of the Panamera 4S therefore weighs 14 kilograms less than the V6 turbo of the previous model.

V6 engine with variable timing of the intake valves

The central positioning of the injectors in the combustion chambers for the direct petrol injection is a common feature of the six- and eight-cylinder engines. Like the V8 engine, the centrally positioned high-pressure injection valves also lead to significantly improved combustion here and therefore to greater efficiency and agile response. However, there are also differences between the V6 and V8 engines. For example, the intake valves of the six-cylinder engine have variable timing for optimal efficiency and dynamics in both part-load operation and under a high load.

In part-load operation, the combustion process of the V6 engines is characterised by a shorter compression phase with a higher compression ratio. In combination with the expansion phase, which has a normal configuration but is longer than the compression, this results in clear efficiency and fuel consumption advantages. The following applies: the shorter the intake opening time, the higher the compression ratio and the efficiency gain. However, the shorter opening time reduces the fill of the combustion chamber. This is why the valve timing and therefore the compression have a variable design: the intake valve control switches to longer intake times as soon as the driver requests more power. This ensures that the engine delivers the maximum power with optimal efficiency in the full load range as well.

Like the first generation Panamera, the new V6 engines also feature VarioCam Plus. The system enables the intake and exhaust camshafts to be adjusted (each by up to 50 degrees) and the switching of the valve stroke of the intake camshafts. VarioCam Plus distinguishes between phases with normal power demand – for example, cruising – and very dynamic phases – for example, overtaking. Depending on the position of the accelerator pedal, the stroke of the intake valve can therefore be switched between six and ten millimetres. The variable valve stroke and the variable opening times of the intake valves result in very low fuel consumption coupled with high agility, especially in the partial load range.

Panamera 4S Diesel is the world's fastest diesel saloon

The second generation of the Porsche Panamera will be fitted with a newly developed eight-cylinder diesel engine for the market launch. The previous diesel model was only available with a six-cylinder engine. Furthermore, the Panamera Diesel will be offered with all-wheel drive for the first time. The most powerful diesel engine to be fitted by Porsche in a production model to date produces a power output of 310 kW (422 hp) between 3,500 and 5,000 rpm and an enormous torque of 850 Nm in the Panamera 4S Diesel – constantly from 1,000 to 3,250 rpm. The V8 engine generates the high power and the exceptionally powerful torque from a displacement of 3,956 cc. The high-pressure direct injection takes place via a common rail system with maximum pressure of 2,500 bar.

The comfort and dynamics of the eight-cylinder diesel engine are comparable with the world of petrol engines. With a top speed of 285 km/h, the Porsche Panamera 4S Diesel is currently the world's fastest production vehicle with a diesel engine. The Gran Turismo reaches the 100 km/h speed mark from stationary in 4.5 seconds (4.3 seconds with the Sport Chrono Package). It sprints to 200 km/h in 17.1 seconds and 16.8 seconds respectively with the Sport Chrono Package. The performance at sports car level is contrasted with the combined fuel consumption of a compact car: 6.8 – 6.7 l/100 km (178 – 176 g/km CO₂). With a tank capacity of 75 litres this results in a range of more than 1,200 kilometres; with the optional 90-litre tank this figure increases to up to 1,475 kilometres.

Central turbo layout in combination with sequential turbocharging

The Porsche Panamera 4S Diesel also has twin-turbo charging with a central turbo layout. The turbocharger, exhaust gas recirculation and exhaust manifold form a compact unit that is entirely housed in the inner V (90 degrees). Unlike the petrol engine, the common-rail engine features sequential turbocharging. This allows the eight-cylinder engine to operate as a twin-turbo or monoturbo, depending on the operating state. At low to moderate engine speeds, the entire stream of exhaust gas is directed solely through one of the two turbochargers, which improves throttle response. The V8 diesel engine reaches its full torque at engine speeds as low as 1,000 rpm with this one turbocharger alone. The second turbocharger is only activated at higher speeds to call up the maximum power potential. Both chargers have variable turbine geometry (VTG).

In the sequential turbocharging, the exhaust gas is routed from the two exhaust valves of each cylinder to the two turbines in two separate flows. Over the speed range up to 2,200 rpm, the exhaust valves of the second exhaust flow are closed; the second turbocharger therefore does not contribute to building up charge pressure in this operating phase. The switch to twin-turbo mode starts at around 2,700 rpm with the opening of the exhaust valves of the second exhaust flow.

Variable valve timing enables sequential turbocharging

The sequential turbocharging of the two turbochargers is made possible by variable valve timing of the intake and exhaust valves. The axially sliding cam pieces on the camshaft are used to change the switching positions. Electromagnetic actuators slide the cam pieces. On the intake

side the event duration is varied with two different cam contours to achieve optimal start-up performance on the one hand and also to call up the full power output over a long valve opening duration. There are also two switching positions on the exhaust valve side. The first is relevant for the monoturbo mode; it switches to a cam without valve stroke, which means that one exhaust valve per cylinder stays closed. In the second switching position a cam contour with valve stroke ensures that the previously closed exhaust valve is additionally opened to activate the second turbocharger.

World premiere of the first Porsche eight-speed PDK in the Panamera

The second generation Panamera is the first model from Porsche to feature a dual-clutch transmission with eight instead of seven speeds. The new eight-speed PDK can be used in conjunction with rear-wheel or all-wheel drive and in future it can also be used in combination with a high-performance hybrid module. The eight-speed transmission generally enables an even better gear ratio spread and – with top comfort and agility – a further reduction in fuel consumption as the seventh and eighth gears are designed as engine speed-reducing overdrive gears. All Panamera reach their top speed in sixth gear.

Like all dual-clutch transmissions, the Panamera's new eight-speed PDK shifts without any interruption in tractive power as the next gear ratio is essentially waiting to be activated „in stand-by“ in the fraction of a second. The sporty and yet extremely comfortable shift characteristic of the PDK is therefore perfect for a dynamic Gran Turismo like the Porsche Panamera. The eight-speed PDK is designed for torques of up to 1,000 Nm.

Large spread between performance and comfort

In keeping with the overall concept of the new Panamera, the new chassis also combines the cruising comfort of a luxury saloon with the performance of a true sports car. This is achieved by supplementing the impressive basic layout with a whole armada of innovative systems: in its new rear-axle steering, Porsche brings the steering precision and handling of sports cars to the Gran Turismo class for the first time. The wider fleet of chassis and suspension systems includes an adaptive air suspension with new three-chamber technology, including PASM (Porsche Active Suspension Management) electronic damper control, the enhanced Porsche Dynamic Chassis Control Sport (PDCC Sport) system including Porsche Torque Vectoring Plus (PTV Plus) and the new electromechanical steering. In addition, the integrated Porsche 4D Chassis Control system analyses and synchronises all chassis systems in real time and optimises the handling performance of the new Panamera. The performance of the brake system has also been improved.

Perfectly coordinated suspension concept as a basis

Porsche has fitted an enhanced aluminium double-wishbone suspension with forged aluminium transverse links and hollow aluminium lightweight swivelling bearings at the front of the Panamera. The optimised axle and elasto-kinematics provide for maximum precision and agility coupled with further improved ride comfort. To further increase the comfort there is a large hydraulically dampened elastomeric mount on the lower wishbone. Furthermore, the stabiliser connection on the pivot bearing allows comfort-optimised single-tube shock absorbers to be used. A rigid bolted aluminium subframe in combination with the new electromechanical steering ensures excellent driving dynamics and agile handling; among other things steering precision and directional stability have been further improved. A more advanced lightweight multilink suspension is also fitted on the rear axle with forged top aluminium wishbones and hollow lower aluminium wishbones. Here, too, the optimised suspension and elasto-kinematics ensure maximum agility and precision coupled with greatly enhanced ride comfort. Furthermore, the modified kinematics enable the integration of the new rear-axle steering, the new electromechanical PDCC Sport and the new adaptive air suspension.

Rear-axle steering now also in the Panamera

In the new Panamera, a newly developed rear-axle steering system is now available as an option for the first time. At low speeds of up to around 50 km/h, the rear wheels steer – variably with the driving speed – in the opposite direction to the front wheels up to a maximum steering angle of 2.8 degrees. This is called a virtual wheelbase shortening. The advantages: more dynamic turn-in characteristics in bends and much easier manoeuvring and parking in tight spaces. At speeds above around 50 km/h, the rear wheels steer in the same direction as the front axle depending on the speed. The result: a virtual wheelbase extension and further enhanced driving stability, for example when changing lane on the motorway. The Panamera's new rear-axle steering therefore optimises overall active safety and driving dynamics and the reduced steering angle needed at low speeds also enhances comfort. And that's not all: the use of the rear-axle steering allows a much more direct steering ratio on the front axle with a steering feel that is unique in the competitive field.

Integrated Porsche 4D-Chassis Control

Porsche has developed a centrally networked control system for the chassis of the new Panamera – 4D-Chassis Control. To date the chassis systems have worked largely independently of one another, used their own sensors and reacted to the other systems. Porsche 4D-Chassis Control analyses the current driving situation centrally in all three dimensions (longitudinal, transverse and vertical acceleration), uses this to calculate optimal information on the driving condition and makes it consistently available in real time to all chassis systems – a fourth dimension of chassis control. This enables the systems to act together for the driving situation ahead. One example: during dynamic cornering the standard PASM electronic damper control and the optional systems – the adaptive air suspension (standard on the Panamera Turbo), rear-axle steering, PTV Plus and PDCC Sport – work together for optimal turn-in properties, maximum agility and stability. The Porsche 4D-Chassis Control gives input to the chassis systems when the vehicle starts to turn in. This means that the systems act at an early juncture for maximum cornering performance.

Porsche Active Suspension Management (PASM)

Porsche Active Suspension Management (PASM), a standard feature, is an electronic damper control system. It reacts to the road condition and the driving style and depending on this it continuously regulates the damping for each wheel individually. The PASM fitted in the current Panamera features a new, lighter damper and improves the responsiveness and the spread between comfort and sport. In addition, three driving modes are available: "Normal", "Sport" and "Sport Plus".

This is how PASM works: sensors register body movements that occur during fast acceleration, braking, fast cornering or on uneven roads. PASM sends the acquired data to Porsche 4D-Chassis Control. The new control centre calculates the current driving condition and regulates the damper stiffness of the PASM according to the preset mode. Thanks to 4D-Chassis Control, the control parameters of the other electronic chassis systems are also coordinated with this mode. The perceptible result: enhanced driving stability, performance and comfort.

PASM holds even greater potential in conjunction with the adaptive air suspension: as both the damper characteristics and the spring rates can be varied and combined in this case, the result is an even greater spread between sportiness and comfort.

Adaptive air suspension including PASM

Even the first Panamera generation was offered with selectable air suspension as an option. For the second generation Gran Turismo Porsche has now developed a new three-chamber air suspension. The adaptive air suspension with this new technology sets standards – especially in terms of the comfort level realised. The system has three instead of two air chambers per strut and around 60 percent higher air volume. This enables a much greater spread of spring rates. The suspension can therefore be set to a more comfortable low basic spring rate as the spring rate is electronically adjusted in the fraction of a second as soon as this becomes necessary – for example, when accelerating and braking or to reduce rolling motion.

In addition, the air suspension offers the familiar advantages of levelling control. Alongside the normal level, a lift and a low level are available. The lift level raises the chassis by 20 millimetres, for example in order to prevent the front from touching the ground on steep garage exits. When the low level is activated the front axle is lowered by 28 millimetres and the rear axle by 20 millimetres to perfect the car's attitude to the road at high speeds and improve aerodynamics.

Active roll compensation PDCC Sport including PTV Plus

The new Porsche Dynamic Chassis Control Sport (PDCC Sport) optimises the driving dynamics in the Panamera through the integration of electromechanical stabilisers. The system regulates much faster than systems with hydraulic actuators and stiffens the stabilisers to prevent body rolling motion. In the Panamera this active roll compensation forges links to 911 calibre sports cars.

Porsche combines PDCC Sport in the Panamera with Porsche Torque Vectoring Plus (PTV Plus). The electronically controlled rear-axle differential lock provides for variable drive-torque distribution between the rear wheels while braking interventions at individual wheels generate additional steering torque at the rear axle. This results in even more agile turn-in characteristics. On the other hand, PTV Plus provides for noticeable additional traction when accelerating out of bends by specifically locking the differential. The combination of both technologies – PDCC Sport and PTV Plus – elevates the Panamera as a large saloon to a class of its own in terms of driving dynamics.

High-strength lightweight aluminium/steel hybrid construction

The new Panamera has a redesigned high-tech lightweight body. Porsche uses even more aluminium than before here. On the predecessor the outer door panels, bonnet, tailgate and the front wings were already made of aluminium. With the new Panamera Porsche is now going much further and also producing large body parts such as the whole side section and the roof in aluminium.

The Panamera body is based on the Modular Standard Drive Train Platform (MSB), which Porsche is responsible for developing in the Volkswagen Group. One of the many advantages of the MSB is its great versatility. For example, Porsche is able to produce the new Panamera at its Leipzig plant with two different wheelbases and all conceivable drive types for this segment. Further body derivatives are also relatively easy to realise.

The platform consists of the three modules front body, middle floor section and rear body. In the case of the Porsche Panamera these modules are produced in „lightweight multi-material“. This is an innovative cocktail of different kinds of materials – various steel alloys, aluminium and plastic. The front end of the Panamera is made of aluminium. Furthermore, a new manufacturing process is used to produce the firewall cross member, which is very important for crash properties. On the new Panamera this ultra-high-strength tube is made of boron-alloyed steel. Although high-strength boron steel tubes of this type exist – never before have they been realised in the automotive industry in the complexity of the Panamera’s firewall cross member. Furthermore, the whole firewall and the passenger cell offer optimal protection thanks to the use of high-strength, hot-formed steels.

This type of material distribution – lightweight aluminium surfaces combined with high-strength steel structures – is a recurrent theme in the Panamera. As outlined, the side parts of the new model are also made of aluminium and the same applies to the floor and the roof. Special processes are needed to join aluminium and steel so that these two very different materials do not react with one another. For example, the side wall: to join – as the product experts would say – i.e. to connect the lightweight aluminium sidewall with the high-strength steel side wall structure Porsche combines roller hemming (a form-locking method of joining components without welding spots) with a bonding process.

New levels of comfort, connectivity and safety

Digitalisation of the automobile is currently changing mobility more intensively and faster than ever. Completely new display and control concepts, more intelligent and more networked assistance systems and continually faster and more powerful on-board electronics are leading to new levels of comfort, connectivity with the outside world and safety. The new Panamera is a reflection of this trend; it is the most digitalised and networked model that Porsche has launched on the market yet. But the Panamera is not a car that filters away the driving experience with electronics. Rather, Porsche has taken advantage of today's digitalisation capabilities to build a Panamera that combines maximum comfort and maximum dynamics and is intuitive to operate.

Porsche Advanced Cockpit – digitalised for the future

The new Panamera exhibits a completely new display and control concept. In many areas, touch-sensitive surfaces replace classic hard keys, and high-resolution displays merge into the interior. The digitalisation of the Porsche interior, which began with the 918 Spyder, is now in its next development stage and has reached the luxury saloon segment aboard the Panamera in the form of the new Porsche Advanced Cockpit. From the low seat position typical of sports cars, drivers not only see the fascinating front-end landscape of the car's wings and power-dome, but also two 7-inch displays that are placed along the driver's line of sight for ideal ergonomics and each feature two round instruments. Located in the middle, between these two displays, is the tachometer, which is still an analogue instrument.

To the immediate left of the tachometer is the virtual speedometer, which is displayed at the centre. Shown at the centre here is clearly organised information about the assistance systems – the instrument is therefore known as “Speed & Assist”. As is usual at Porsche, the speed being driven is shown digitally within the analogue tachometer. To the right of the tachometer is the “Car & Info” display. Vehicle settings can be made or retrieved, and information from the trip computer can be accessed here. The driver can freely configure the two smaller round instruments next to the Speed & Assist and Car & Info instruments in a defined frame. All of this is intuitively controlled via buttons on the multifunction steering wheel.

Meanwhile, the gear shift console between the driver and the front passenger is dominated by the 12.3-inch touch display of the next generation Porsche Communication Management (PCM) system. A sub-area of the start screen can be customised by tile-shaped windows. User operation also incorporates the new multitouch gesture control. Just like with a smartphone or tablet, it is possible to use two fingers to rotate navigation maps in any desired direction. Moreover, the display recognises handwriting – this makes it easy to write navigation destinations on the screen.

These standard features are integrated as part of the PCM system: Connect Plus with features such as an online navigation module including real-time traffic information plus Google Earth and Google Street View, smartphone integration via Apple CarPlay, LTE phone module with SIM card reader, wireless Internet access and a smartphone tray in the centre console with an interface to the car's exterior antenna. Connect Plus also integrates apps into the PCM such as Parking places (parking place search and availability), Fuel prices (fuel station search including display of fuel prices), Dictate messages (SMS via voice control), Twitter (tweets are read aloud, information is shown on the display), Train arrival, Flight information, Weather (current location or destination), Event Info and News.

Also on-board: the online functions of Porsche Car Connect with Remote Vehicle Status (e.g. central locking status), Remote Services (remote control of functions) and Porsche Vehicle Tracking System (PVTs, vehicle localisation in case of car theft). Porsche Car Connect is an app and is operated via smartphone or Apple Watch. Navigation destinations can even be selected from a device at home for later transfer to the PCM.

The menus are clearly and intuitively structured. When the user's hand approaches the PCM, proximity sensors detect this and open a menu bar on the left side of the 12.3-inch display that offers additional context-related functions. If a menu level has multiple pages, the user can scroll through the menu by a swiping motion from side to side – just like on a smartphone. On the right side of the display, tiles – which are known as widgets here – can be shown and personalised in a user-defined layout. Depending on the user's taste or the situation, the user can have navigation info, the current playlist or climate control shown in the widgets i.e. the widgets extend the main PCM menu by adding individually configurable screens.

Direct touch control reorganises centre console functions

The PCM area – with its high-end, high-resolution display – transitions harmoniously into the black panel concept of the centre console with a shift-by-wire gear selector for the PDK. A new control panel on the centre console with touch-sensitive switches enables intuitive control of various vehicle and climate control functions. Even the louvres of the central air vent are electrically adjusted by touch-sensitive sliders. Rear passengers can control air conditioning and infotainment functions from a seven-inch black panel in conjunction with an optional four-zone automatic climate control system.

Networked electronics revolutionise safety and comfort

The Panamera is equipped with many standard and optional light and assistance systems, which make life more convenient and safer while driving. The most important technologies include the new night vision assistant, Porsche InnoDrive including adaptive cruise control which is also new, the newly developed LED Matrix headlights, the advanced lane-change assistant and a lane departure warning system including road sign recognition that is available for the first time in the Panamera.

LED Matrix headlights

All new Panamera cars are equipped with LED headlights including four-point daytime running lights in LED technology as standard. The night can also be illuminated by optional LED headlights including the Porsche Dynamic Light System (PDLS) (standard in the Panamera Turbo). In the third expansion stage, the newly developed LED Matrix headlights with PDLS Plus can be ordered as special equipment. This is a system with which Porsche transfers the maximum potential of today's lighting technology into the Panamera. The LED Matrix headlights contain a total of 109 LEDs for all lighting functions. The LED Matrix module alone comprises 84 individually adjustable LEDs (pixels), which can implement the ranges of both the dipped beam and the adaptive main beam lights via lenses and reflectors. The light is networked to a camera that is mounted in the windscreen. It detects vehicles ahead and oncoming vehicles, and it controls the main beam light distribution intelligently so that it does not cause glare to any other participants in traffic. At the same time, the LEDs are controlled so that the driver can always obtain maximum illumination of the road by the main beam without causing glare to others in traffic.

The complex headlight module is not only networked to the camera, but can also integrate navigation data and vehicle states into control of the 84 LEDs in a highly variable way and independently of one another. This intelligent control of light distribution can be used to integrate other convenience and safety functions. For instance, the system recognises reflective road signs that could cause glare to others in traffic; such zones in the headlight pattern are dimmed so that they do not dazzle the driver and impair driving. There is another new LED Matrix headlight function that stands ready for oncoming traffic: the headlights not only dim the lighting pattern in segments; they also intensify illumination of the car's own lane with a boosting function. This redirects the driver's gaze – to the benefit of both comfort and safety. The dynamic cornering lights are implemented electronically and not mechanically.

Night vision assistant

The new night vision assistant is one of the assistance systems that help to avoid critical situations before they occur. It utilises a thermal imaging camera to detect people and large animals and displays a colour highlighted warning indicator in the cockpit. The system is able to classify the heat source and thereby make distinctions, such as distinguishing between a person and a parked motorcycle with a warm engine. Persons or larger animals are first displayed in yellow in the instrument cluster in front of the driver. If the system recognises a hazard based on the movement and location of a person or animal, the highlighting changes from yellow to red and an audible warning is given. If the optional new LED matrix headlights with their 84 image points are ordered, any persons located beyond the visual range of the dipped beam headlight are also illuminated briefly three times if they are in the computed driving corridor, allowing the driver to react even sooner. Within built-up areas, the night vision assistant is deactivated to avoid false alarms – such as triggering by a dog that is being walked on a leash on the pavement.

InnoDrive including adaptive cruise control

Looking especially far ahead along the road is the new Porsche InnoDrive, which includes adaptive cruise control. Based on the navigation data, the system calculates the optimal acceleration and braking figures for the next three kilometres and these figures are implemented via the engine, eight-speed PDK and brake system. In doing so, this electronic co-pilot automatically takes bends, inclines and speed limits into account. The momentary traffic situation is captured by radar and video sensors, and the control is adapted accordingly. The system, which Porsche

developed entirely on its own in-house, significantly improves the Panamera's efficiency. It achieves better fuel efficiency than ever in its control of vehicle functions such as coasting, overrun cut-off and brake interventions based on predictive navigation data. Currently, there is no comparable technology worldwide.

In addition, Porsche InnoDrive offers definite convenience and dynamic benefits when driving with automatic adaptive cruise control. The system even recognises roundabouts and independently adapts its speed to conditions ahead. When the Sport mode is activated, the InnoDrive also switches to a dynamic characteristic map. As in classic adaptive cruise control, the radar and video sensors naturally also continually monitor the distance to vehicles ahead and adjust this gap continually. Porsche InnoDrive is expected to become available starting in January 2017 in Germany, the Netherlands, Belgium, Luxembourg, Switzerland, Austria, Spain, Portugal, France, Italy, England and Ireland. The USA, Canada and many other countries will follow shortly thereafter.

Adaptive cruise control

The functional range and properties of the classic forms of adaptive cruise control have been significantly improved. Crucial here are two important innovations that were used to modify the system of the first generation Panamera: instead of one radar sensor (usually integrated in the middle of the front end), two are used in the new Panamera. They are integrated in the bumper on the left and right sides. In addition, the cruise control system now also incorporates camera sensors into its control. This system extension makes monitoring of the distance to vehicles ahead more reliable. In addition, vehicles merging into the car's own lane from adjacent lanes are detected much sooner. If necessary, the system can brake the car to a standstill. Thanks to a stop-and-go function, the Panamera can also resume driving autonomously. If the standstill lasts longer than three seconds, all the driver needs to do to drive off again is to briefly tap the accelerator pedal or resume the function from the steering wheel stalk. Automatic adaptive cruise control is active over a driving speed range from 30 to 210 km/h. If at all possible, the system also utilises the coasting function (engine idling, clutches disengaged) to further reduce fuel consumption.

Lane-change assistant

The lane-change assistant uses two radar sensors in the rear bumper to detect the distance to vehicles approaching on an adjacent lane from the rear and their driving speeds. If these two factors are judged to be critical, a visual warning indicator is shown in the wing mirror on the relevant side of the car. This considerably reduces the risk of overlooking another car in what is known as the blind spot. The lane-change assistant, which is already familiar from the first Panamera and other Porsche cars, has been further perfected. The new system detects vehicles at distances of up to 70 metres, and it can now be activated over a driving speed range from 15 to 250 km/h. Since the driving speed at which the system is activated has been lowered, the lane-change assistant can now be used for turning manoeuvres in the city as well.

Lane departure warning assistant including road sign recognition

The lane departure warning system being offered for the first time in the Panamera reduces the risk of unintentionally leaving one's own driving lane – one of the most frequent causes of accidents on country roads. The system now being implemented in the Panamera is one of the most advanced of its kind. It detects lane markings via a camera in the windscreen and operates over a driving speed range from 65 to 250 km/h. As soon as the driver leaves the lane without setting the indicator, the car automatically countersteers via the new electromechanical steering system. If desired, the driver can also configure the PCM to output an audible warning and a visual warning in the instrument cluster. One component of the system is road sign recognition. It utilises the same camera as the lane departure warning assistant.

	Panamera 4S	Panamera Turbo
Engine		
Type	V6 twin turbo	V8 twin turbo
No. of cylinders	6	8
Valves/cylinder	4	4
Displacement	2,894 cm ³	3,996 cm ³
Bore	84.5 mm	86.0 mm
Stroke	86.0 mm	86.0 mm
Max. power output	324 kW (440 hp)	404 kW (550 hp)
at engine speed	5,650 – 6,600 rpm	5,750 – 6,000 rpm
Max. torque	550 Nm	770 Nm
at engine speed	1,750 – 5,500 rpm	1,960 – 4,500 rpm
Max. output per litre	111.7 kW/l (151.7 hp/l)	101.0 kW/l (137.5 hp/l)
Compression ratio	10.5:1	10.1:1
Maximum engine speed	6,800 rpm	6,800 rpm
Cooling system	Water cooling, thermal management with control thermostat and potted water pump	
Valve control	VarioCam Plus: adjustment of intake and exhaust camshafts, valve stroke switching on intake camshaft	VarioCam Plus with adaptive cylinder control: adjustment of intake and exhaust camshafts, cylinder deactivation via two-stage sliding cams on intake and exhaust camshafts

Specifications may vary in individual markets

Panamera 4S

Panamera Turbo

Power transmission

Drive system	Porsche Traction Management (PTM): active all-wheel drive with electronically- and map-controlled multiplate clutch, variable torque distribution between front and rear axles	
Transmission	8-speed Porsche Doppelkupplung (PDK)	
Gear ratios		
1st gear	5.97	5.97
2nd gear	3.24	3.24
3rd gear	2.08	2.08
4th gear	1.42	1.42
5th gear	1.05	1.05
6th gear	0.84	0.84
7th gear	0.68	0.68
8th gear	0.53	0.53
Reverse gear	5.22	5.22
Rear axle	3.36	3.15

Chassis

Springing and damping	Steel springs with Porsche Active Suspension Management (PASM)	Adaptive air suspension with three-chamber air springs and Porsche Active Suspension Management (PASM)
Front axle	Aluminium double wishbone suspension, independent wheel suspensions	
Rear axle	Aluminium multi-link suspension with subframe, independent wheel suspensions	
Steering	Electromechanical servo steering; optional rear axle steering (HAL)	
Steering ratio	15.5:1 (centre position) up to 9.3:1; with rear axle steering (HAL) 14.2:1 (centre position) up to 9.3:1	
Steering wheel diameter	375 mm	
Turning circle diameter	11.9 m; with rear axle steering (HAL) 11.4 m	
Driving stability system	Porsche Stability Management (PSM) incl. ABS with extended brake functions	

Panamera 4S

Panamera Turbo

Brakes

Brake system	Six-piston aluminium monoblock fixed calliper brakes, front; four-piston aluminium monoblock fixed calliper brakes, rear	
Brake discs, front axle	Grey cast iron, internally vented	
Diameter	360 mm	410 mm
Thickness	36 mm	38 mm
Brake discs, rear axle	Grey cast iron, internally vented	
Diameter	330 mm	380 mm
Thickness	28 mm	30 mm

Wheels and tyres

Wheels with tyres, front	9 J x 19 ET 64 with 265/45 ZR 19 tyres	9.5 J x 20 ET 71 with 275/40 ZR 20 tyres
Wheels with tyres, rear	10.5 J x 19 ET 62 with 295/40 ZR 19 tyres	11.5 J x 20 ET 68 with 315/35 ZR 20 tyres

Dimensions

Length	5.049 mm	
Width (with door mirrors)	1.937 mm (2.165 mm)	
Height	1.423 mm	1.427 mm
Wheelbase	2.950 mm	
Track width, front (wheel size)	1.671 mm (19")	1.657 mm (20")
Track width, rear (wheel size)	1.651 mm (19")	1.639 mm (20")

Luggage volumes and weights

Luggage volumes	495 – 1,304 l	
Unladen weight (DIN)	1,870 kg	1,995 kg
Allowable gross weight	2,495 kg	2,585 kg
Weight-to-power ratio	4.3 kg/hp	3.6 kg/hp

Panamera 4S

Panamera Turbo

Driving performance

Top speed	289 km/h	306 km/h
Acceleration		
0-60 mph	4.2 s	3.6 s
0-60 mph with Sport Plus	4.0 s	3.4 s
0-100 km/h	4.4 s	3.8 s
0-100 km/h with Sport Plus	4.2 s	3.6 s
0-160 km/h	10.3 s	8.4 s
0-160 km/h with Sport Plus	10.0 s	8.1 s
0-200 km/h	16.2 s	13.0 s
0-200 km/h with Sport Plus	15.9 s	12.7 s

Fuel and emissions

Emissions standard	Euro 6	
Fuel type	Super Plus (98 RON)	
Fuel consumption Urban	10.2 – 10.1 l/100 km	12.9 – 12.8 l/100 km
Extra-urban	6.8 – 6.7 l/100 km	7.3 – 7.2 l/100 km
Combined	8.2 – 8.1 l/100 km	9.4 – 9.3 l/100 km
CO₂ emissions Combined	186 – 184 g/km	214 – 212 g/km
Efficiency class in Germany	C	D
Fuel tank capacity (optional)	75 l (90 l)	90 l

Aerodynamics

Air drag coefficient, c_d	0.29	0.3
Frontal area A	2.37 m ²	2.38 m ²
c_d x A:	0.687	0.714

Panamera 4S Diesel

Engine

Type	V8 twin-turbo diesel
No. of cylinders	8
Valves/cylinder	4
Displacement	3,956 cm ³
Bore	83.0 mm
Stroke	91.4 mm
Max. power output	310 kW (422 hp)
at engine speed	3,500 – 5,000 rpm
Max. torque	850 Nm
at engine speed	1,000 – 3,250 rpm
Max. output per litre	77.5 kW/l (105.3 hp/l)
Compression ratio	16.0:1
Maximum engine speed	5,300 rpm
Cooling system	Water cooling, thermal management with control thermostat and switchable water pump

Specifications may vary in individual markets

Panamera 4S Diesel

Power transmission

Drive system	Porsche Traction Management (PTM): Active all-wheel drive with electronic map-controlled multiplate clutch, variable torque distribution between front and rear axles
Transmission	8-speed Porsche Doppelkupplung (PDK)
Gear ratios	
1st gear	5.97
2nd gear	3.24
3rd gear	2.08
4th gear	1.42
5th gear	1.05
6th gear	0.84
7th gear	0.68
8th gear	0.53
Reverse gear	5.22
Rear axle	3.15

Chassis

Springing and damping	Steel springs with Porsche Active Suspension Management (PASM)
Front axle	Aluminium double wishbone suspension, individual wheel suspensions
Rear axle	Aluminium multi-link suspension with subframe, individual wheel suspensions
Steering	Electromechanical servo steering; optional rear axle steering (HAL)
Steering ratio	15.5:1 (centre position) up to 9.3:1; with HAL 14.2:1 (centre position) up to 9.3:1
Steering wheel diameter	375 mm
Turning circle diameter	11.9 m; with HAL 11.4 m
Driving stability system	Porsche Stability Management (PSM) incl. ABS with extended brake functions

Panamera 4S Diesel

Brakes

Brake system	Six-piston aluminium monoblock fixed calliper brakes, front; four-piston aluminium monoblock fixed calliper brakes, rear
Brake discs, front axle	Grey cast iron; internally vented
Diameter	360 mm
Thickness	36 mm
Brake discs, rear axle	Grey cast iron; internally vented
Diameter	330 mm
Thickness	28 mm

Wheels and tyres

Wheels with tyres, front	9 J x 19 ET 64 with 265/45 ZR 19 tyres
Wheels with tyres, rear	10.5 J x 19 ET 62 with 295/40 ZR 19 tyres

Dimensions

Length	5,049 mm
Width (with door mirrors)	1,937 mm (2,165 mm)
Height	1,423 mm
Wheelbase	2,950 mm
Track width, front (wheel size)	1,671 mm (19")
Track width, rear (wheel size)	1,651 mm (19")

Luggage volumes and weights

Luggage volumes	495 – 1,304 l
Unladen weight (DIN)	2,050 kg
Allowable gross weight	2,635 kg
Weight-to-power ratio	4.9 kg/hp

Panamera 4S Diesel

Driving performance

Top speed	285 km/h
Acceleration	
0-60 mph	4.3 s
0-60 mph with Sport Plus	4.1 s
0-100 km/h	4.5 s
0-100 km/h with Sport Plus	4.3 s
0-160 km/h	10.7 s
0-160 km/h with Sport Plus	10.4 s
0-200 km/h	17.1 s
0-200 km/h with Sport Plus	16.8 s

Fuel and emissions

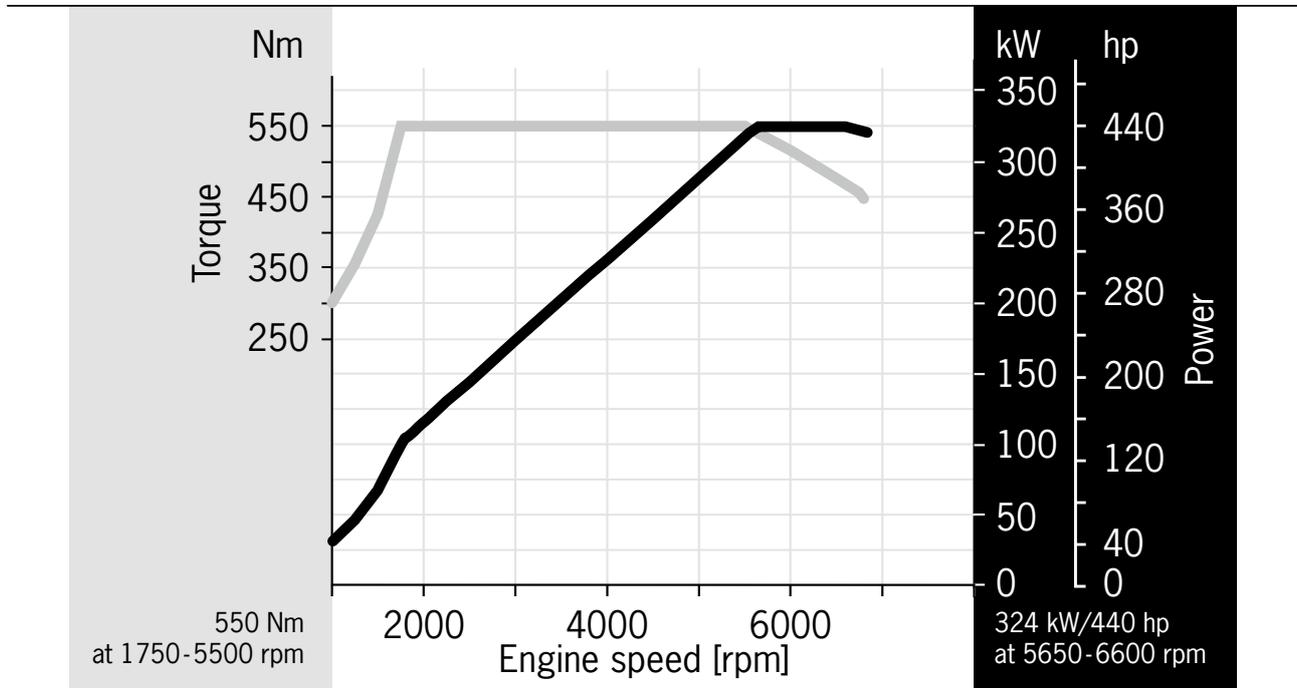
Emissions standard	Euro 6
Fuel type	Diesel
Fuel consumption Urban	7.9 l/100 km
Extra-urban	5.9 – 5.8 l/100 km
Combined	6.8 / 6.7 l/100 km
CO₂ emissions Combined	178 – 176 g/km
Efficiency class in Germany	B
Fuel tank capacity (optional)	75 l (90 l)

Aerodynamics

Air drag coefficient c_d	0.29
Frontal area A	2.37 m ²
$c_d \times A$:	0.687

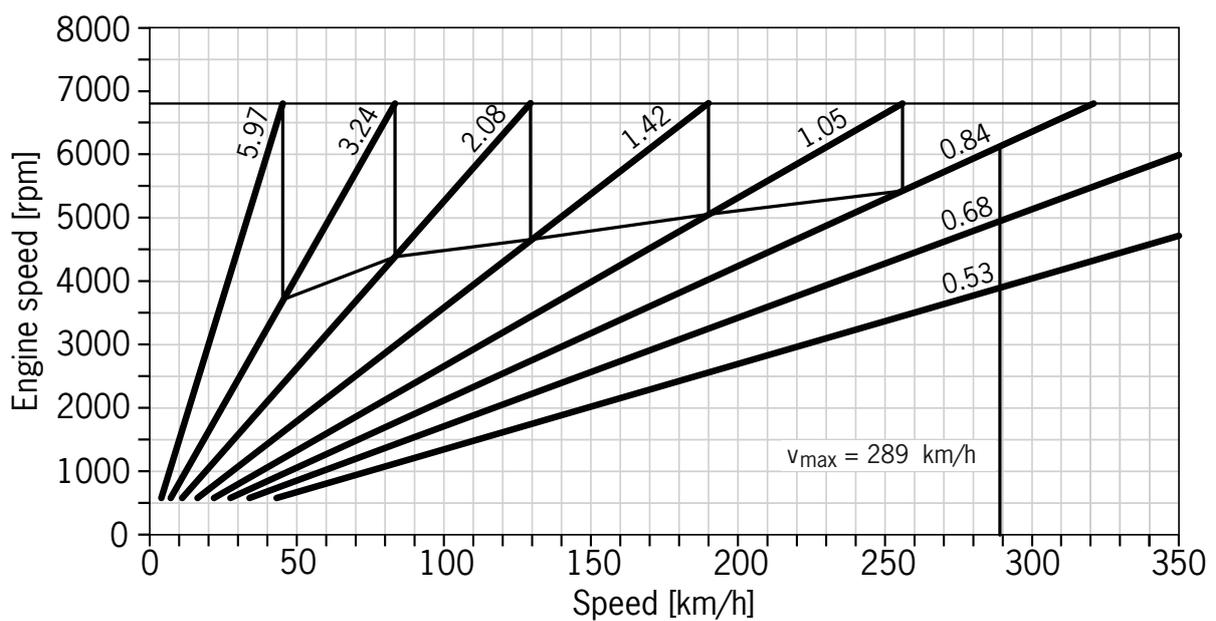
Porsche Panamera 4S

Power and torque



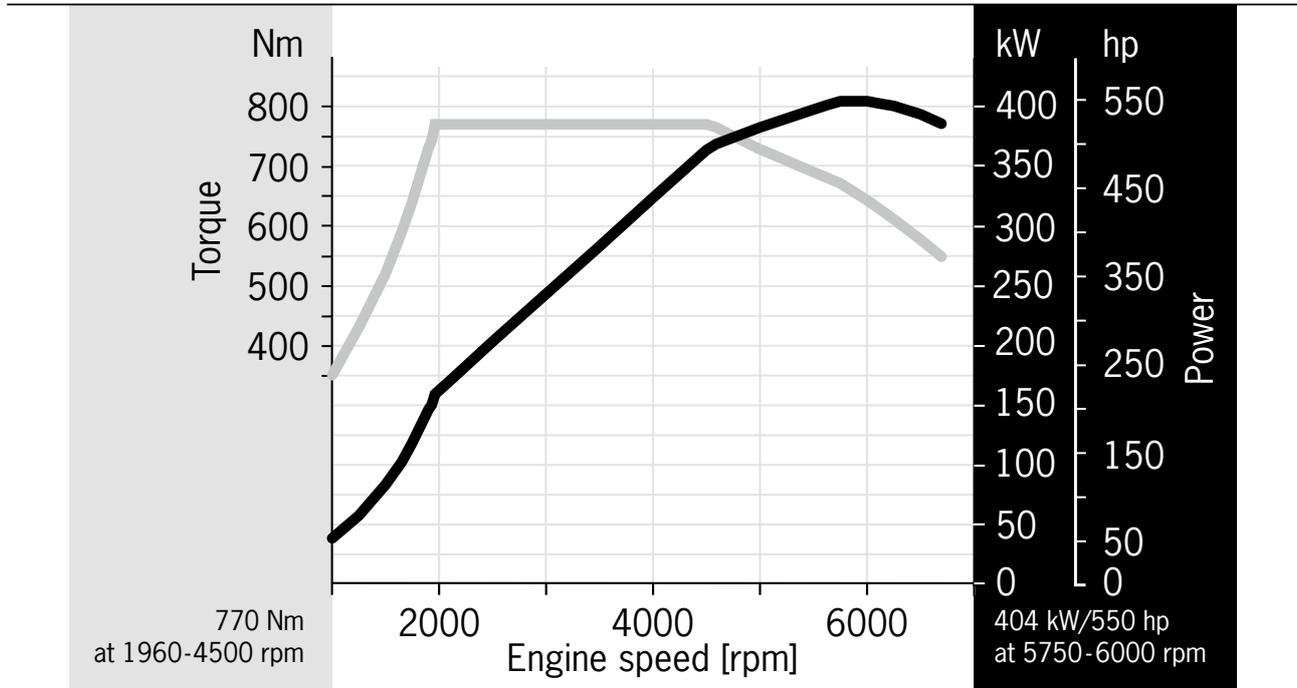
Porsche Panamera 4S

8-speed Porsche Doppelkupplung (PDK)



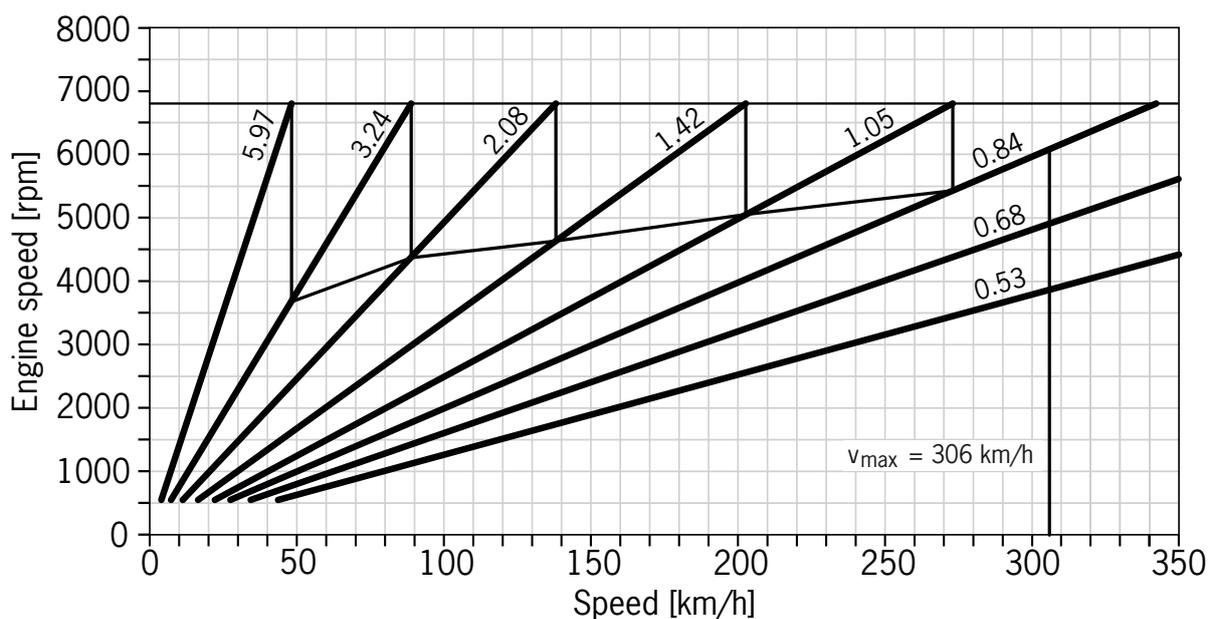
Porsche Panamera Turbo

Power and torque



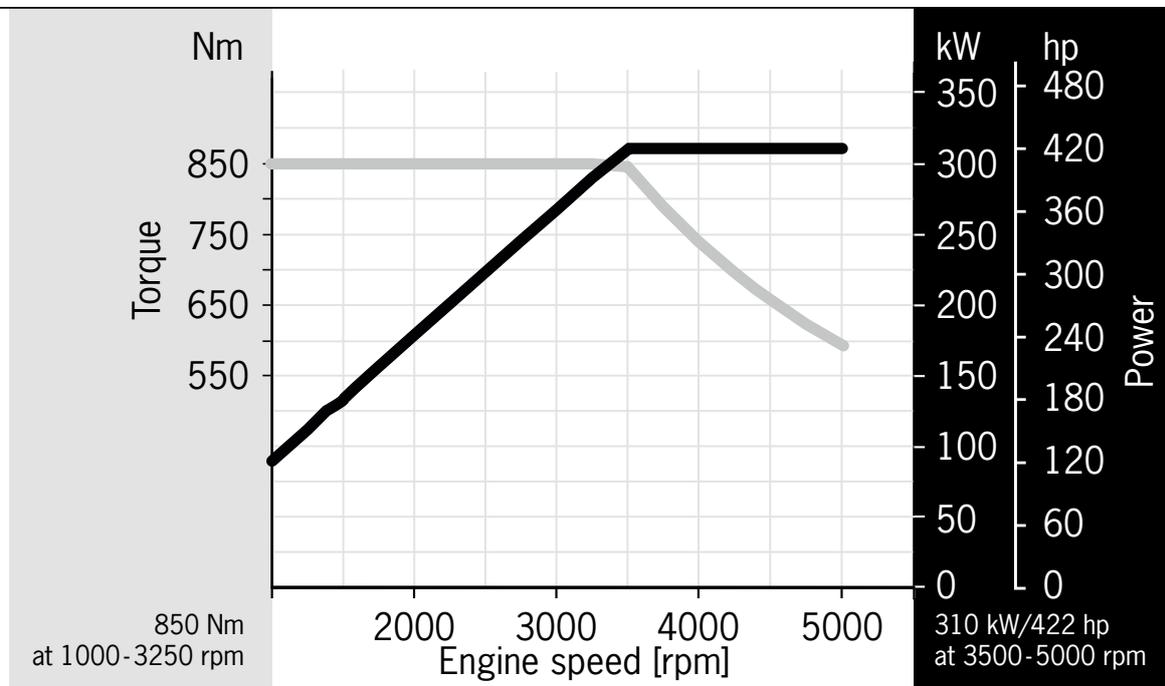
Porsche Panamera Turbo

8-speed Porsche Doppelkupplung (PDK)



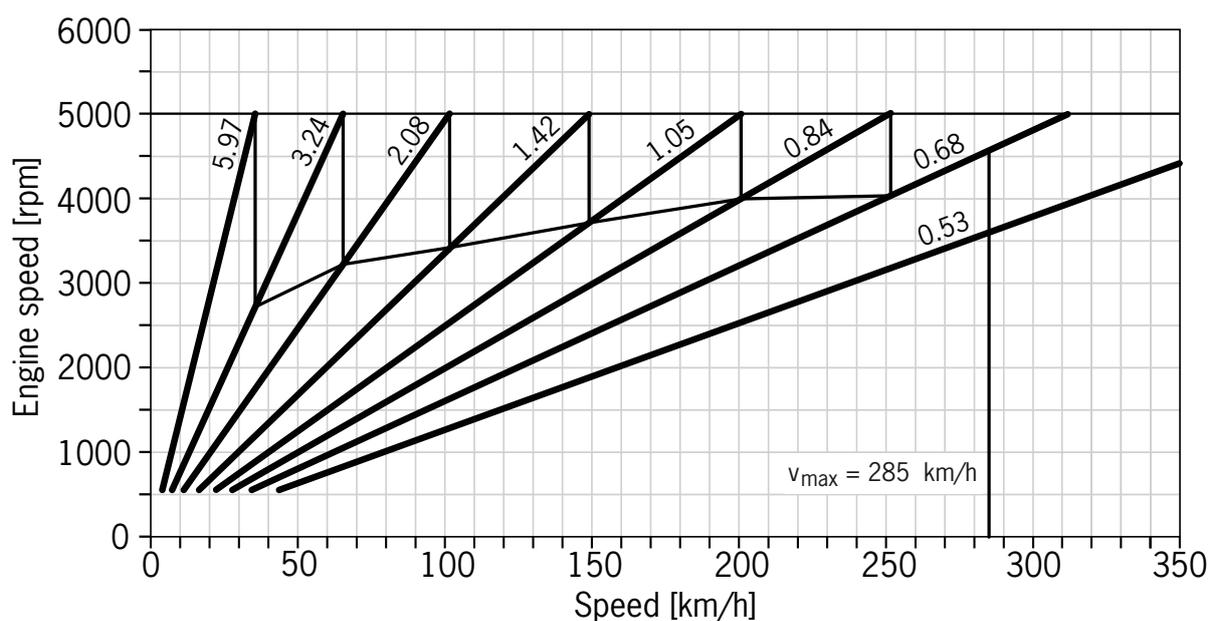
Porsche Panamera 4S Diesel

Power and torque

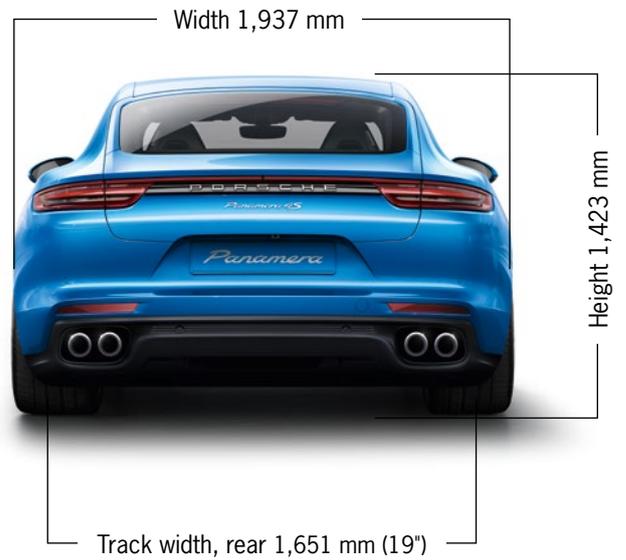
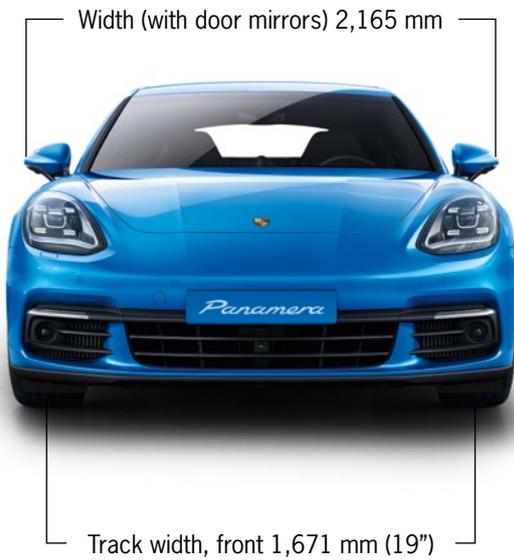


Porsche Panamera 4S Diesel

8-speed Porsche Doppelkupplung (PDK)



Panamera 4S and Panamera 4S Diesel



Porsche Panamera Turbo

