



PORSCHE

The New Porsche 911

911 Carrera and 911 Carrera S: beginning the transition to the seventh-generation of the iconic Porsche sports car

Since its introduction nearly 50 years ago, the Porsche 911 has provided the ultimate pairing of performance and practicality among the world's sports cars, a vehicle that can be driven daily on the road and enjoyed during weekends at track events. Now, the newest version of the iconic Porsche sports car is introduced in the dynamic form of the new Porsche 911 Carrera and Porsche 911 Carrera S.

In short, the seventh-generation Porsche 911 is longer, lower, has a wider front track and is loaded with new features: a new rear axle design to improve dynamic precision and stability, a new electro-mechanical power steering system, Porsche Torque Vectoring (PTV), enhanced Porsche Active Suspension Management (PASM) and enhanced dynamic engine mount technology created for the last generation 911 GT3. The result raises the bar in driving dynamics with even more sure-footed tracking and roll stability.

Among the new and seventh-generation's innovative features are:

- * A smaller displacement but more powerful 3.4-liter engine (in the 911 Carrera) designed to provide thrilling performance while using significantly less fuel;
- * The world's first seven-speed manual transmission in a passenger car;
- * Auto Start/Stop and "sailing" technology that enhance fuel economy by shutting off the engine at stoplights or allowing it to idle when its power is not needed, for example, when cruising a long downhill stretch of expressway;
- * A redesigned lightweight steel-and-aluminum body that is slightly longer and yet is still the most compact in the premium sports car category;
- * The enhanced high-speed stability provided by a wheelbase nearly four inches longer than the predecessor model;
- * Redesigned suspension, a new rear axle, and new technologies that enhance dynamic precision and stability;

- * Active Porsche Dynamic Chassis Control that expands lateral dynamic capabilities of the car and provides increased agility;
- * Porsche Torque Vectoring for enhanced tracking stability and reduced sensitivity to dynamic load changes;
- * Electro-mechanical power steering that saves fuel by drawing power only when necessary;
- * A new interior design architecture inspired by the Porsche Carrera GT supercar;
- * A new tilt and slide power sunroof concept that provides a larger opening in the roof for open-air driving and enhanced interior headroom.

The new Porsche 911 Carrera and Carrera S exemplify the automaker's commitment to the Porsche Intelligent Performance philosophy – improved performance on less fuel with increased efficiency, reduced emissions and reduced mass. Nearly 90 percent of the seventh-generation 911's components are new or significantly redesigned. The seventh-generation launches in the form of the 991 Carrera and 991 Carrera S, which will begin a new model cycle replacing the previous 997 models throughout the 911 series.

Unmistakably a 911, but longer, lower and lighter

While the new Porsche 911 Carrera and Carrera S ride on a wheelbase nearly four inches (3.9) longer than the previous generation, the car's body is only 2.2 inches longer because the front overhang has been reduced by 1.25 inches and the rear by nearly half an inch. The new car's roofline also is lower, by more than .25 of an inch.

Yet from every angle, the car's redesigned body provides only the latest evolution in a basic shape that has characterized the Porsche 911 from its first unveiling at the Frankfurt show in 1963.

The overall look of the new car is fresh, athletic yet elegant. The profile may appear flatter and stretched, but it also displays exciting contours and precisely designed details – tendons and muscles that exude power.

Viewed from the front, the wide-arched fenders emphasize the widened front track. Headlamps are new. Air intakes are larger. Rearview mirrors are mounted on the upper edge of the door, which not only highlights the new design line while emphasizing the visual impression of width, but create less wind noise as well.

At the rear, a new and wider spoiler and narrowed LED tail lamps highlight the redesign.

Not only is the body new in appearance but in composition, an aluminum-steel composite construction that reduces weight by around 100 pounds compared to the previous-

generation 911. Doors, hood, engine lid and roof are made from aluminum. The philosophy is to use the right material in the right places, thus aluminum can lower weight while ultra high-strength steel provides a body with even greater structural rigidity than before and enhanced occupant protection.

The new body was designed around optimized aerodynamics. Front and rear lift have been reduced to nearly zero while an 0.29 coefficient of drag has been maintained.

Adaptive rear spoiler, new mirrors enhance aerodynamics

Two of the most noticeable details designed around improving aerodynamics are a new adaptive rear spoiler and the new exterior rearview mirrors.

The rear spoiler extends to different heights and at different angles depending upon vehicle speed. It also features a flow element on its leading edge. The element is controlled by a special pivoting kinetic mechanism to assure optimal airflow over the spoiler blade. As a result, downforce approaching 200 pounds can be applied to the rear of the vehicle at maximum speed when equipped with the optional 20 mm lower Sports Suspension.

Moving the exterior mirrors from the so-called mirror triangle to the upper edge of the door optimizes airflow, minimizes vibration and reduces wind noise. The new mirrors also are lighter.

New engine shows less can be more

The lighter, more aerodynamic bodywork joins with new powertrain and other new technologies to boost the performance and the efficiency of the Porsche 911 Carrera and Porsche 911 Carrera S.

Where the sixth-generation Porsche 911 Carrera drew power from a 3.6-liter horizontally opposed “boxer” six-cylinder, the 2012 Porsche 911 Carrera carries a 3.4-liter engine that, while smaller in displacement, provides more power and is more fuel efficient. The smaller engine pumps out 350 horsepower, five more than its larger predecessor. When linked to the Porsche Doppelkupplungsgetriebe (PDK) double-clutch gearbox, the powertrain provides a 16 percent improvement in fuel economy in the New European Driving Cycle (NEDC) (EPA TBD) and, at 194 grams of carbon dioxide emissions per kilometer traveled, is the first Porsche sports car engine to break Europe’s 200 g/km target.

And yet the new 911 Carrera can accelerate to 60 miles per hour in just 4.2 seconds when equipped with the PDK transmission and Sport Chrono Package on its way to a top track speed of 178 miles per hour.

The engine is based on the proven 3.6-liter unit. It achieves its displacement and power via a shorter but faster piston stroke.

But it also has internal enhancements like new thermal management technology that bring the engine and transmission to their optimum operating temperature more quickly and an electrical strategy that employs more aggressive alternator charging when braking and minimized under power – as well as Auto Start/Stop with both the PDK and seven-speed manual transmissions.

Equipped with Porsche's new seven-speed manual transmission, the 911 Carrera reaches 60 mph in 4.6 seconds with a top track speed of 179 mph.

Even the updated 3.8-liter engine in the new Porsche 911 Carrera S provides more power – 400 vs. the previous 385 – while improving fuel economy some 14 percent when linked to the PDK transmission in the NEDC (EPA TBD). This potent combination is capable of acceleration to 60 mph in just 3.9 seconds with the Sport Chrono Package and PDK and a top speed of 187 mph. Acceleration with a manual transmission is two-tenths of a second slower, but top track speed reaches 188 mph.

The 3.4-liter engine in the new Carrera and the 3.8-liter unit in the new Carrera S also feature multi-hole direct injectors which optimize running efficiency and power output.

First passenger car with standard seven-speed manual transmission

The new Porsche 911 Carrera and Carrera S are the world's first passenger cars equipped with a seven-speed manual transmission. The new gearbox is based on the PDK, with close ratios for the first six gears and with seventh providing a tall overdrive for enhanced high-speed fuel economy.

While based on the PDK, the ratios of the third and seventh gears have been adjusted for enhanced manual gear changing.

A sequential shift lock minimizes the possibility of selecting the incorrect gear. A display within the tachometer shows the driver the current gearing and an upshift indicator on the instrument cluster encourages fuel-efficient shift points.

PDK: Racing heritage, cutting-edge electronics

The PDK gearbox also has been enhanced for the seventh-generation 911 to provide even faster acceleration and less fuel consumption.

The PDK transmission is the result of years of Porsche motorsport competition. It originally was developed in the 1980s for the all-conquering Porsche 962 Group C racecar. Its use in the 911 and other Porsche models is the result of the company's hard-earned race track experience and recent advancements in electronic control technology.

The PDK allows the driver to shift up and down using either steering-wheel mounted switches, optional paddles, or the console-mounted gear selector. Or the driver can leave the PDK in automatic mode and allow it to operate totally on its own.

Basically, the PDK is two manual gearboxes combined into one unit. A sophisticated electronically controlled valve body overseeing the operation of two separate multi-plate wet-clutch packs, each with its own gear set. One clutch activates first, third, fifth, seventh and reverse, the other acts on second, fourth and sixth. Only one of the clutch packs is engaged at any given moment, but as one disengages, the other simultaneously engages. Since each gear is pre-selected and already in mesh when its clutch pack engages, the shift is completed instantly and without any loss of power to the driving wheels.

Gear changes occur within milliseconds, faster – and smoother even under full load – than can be made by even the most adept driver. For this reason, top performance is achieved in the 911 Carrera series by models equipped with the PDK transmission, and not the manual gearbox, eschewing conventional wisdom.

In manual mode, under load, the PDK upshifts sequentially, alternating between odd and even numbered gear sets. During downshifts, the PDK can skip gears, even going from seventh to second.

Auto Stop/Start with both PDK and 7-speed manual

The new Porsche 911 Carrera and Carrera S is equipped with Auto Stop/Start technology as standard equipment. This is the first time such technology is available on a Porsche model with a manual transmission.

Auto Stop/Start turns off the combustion engine under defined circumstances while the vehicle is stationary to prevent wasteful use of fuel while idling, for example, at traffic lights. In a car with a manual transmission, Auto Stop/Start shuts down the engine if the gearbox is

shifted into neutral and the clutch is released. The engine restarts as soon as the clutch pedal is depressed and a gear selected.

With PDK, Auto Stop/Start turns off the engine after the car is stopped for approximately one second. A green symbol in the instrument cluster signals the driver. In this case the engine restarts as soon as the brake pedal is released.

Auto Stop/Start becomes available once the powertrain has reached operating temperature. All communication, Heat and Air Conditioning systems stay active while the combustion engine is off. The system can be deactivated via a button in the center console.

Sailing also saves fuel

Another fuel-saving technology on the new Porsche Carrera is “sailing.”

On cars equipped with the PDK, the engine goes to an idle mode in what might be considered coasting situations, for example, while traveling on a slight downhill gradient. Engine-powered systems continue to operate as usual. The engine automatically re-engages if the driver tips into the throttle, manually downshifts the gearbox, or applies significant braking pressure.

New 911 raises the bar on driving dynamics

The seventh-generation Porsche 911 is longer, has a wider front track and is loaded with new features, including a new rear axle designed to improve dynamic precision and stability and features electro-mechanical power steering, Porsche Torque Vectoring, enhanced Porsche Active Suspension Management, an updated braking system, and new wheels and tires. The car also borrows the enhanced dynamic engine mount technology created for the 997 Porsche 911 GT3.

The longer wheelbase provides even more stability at high speeds, but the front track has been widened 1.8 inches on the new Porsche 911 Carrera and a full 2 inches on the Porsche 911 Carrera S, further enhancing stability and agility when cornering.

The result raises the bar in driving dynamics with even more sure-footed tracking and roll stability at high longitudinal and cornering speeds.

Steering technology provides precision and efficiency

The new Porsche 911 Carrera and Carrera S are the first Porsches to be equipped with electro-mechanical power steering. The system is engineered to draw electrical power only when needed by the driver. The system is quick and precise while drawing less power and thus provides additional fuel savings vs. the traditional hydraulic power steering system.

Further, Porsche's electro-mechanical power steering is designed to provide enhanced feedback to the driver through the steering wheel while unnecessary influences are filtered out.

Even at low speeds, active self-alignment of the steering helps ensure that the steering wheel returns to the straight-ahead position and delivers a firm on-center feel. When braking on road surfaces with different levels of grip, the system can automatically deliver steering input in the desired direction, making it easier for the driver to maintain stability and the desired line of travel.

Power Steering Plus, available as an option, provides additional comfort, enabling assisted steering to be customized to the relevant speed and driving situation at speeds of less than 31 miles per hour.

Porsche's electro-mechanical power steering is based on a unique technical control concept to provide the steering sensitivity demanded by Porsche drivers. A vehicle status sensor within the steering system calculates the force currently applied to the rack and pinion and adjusts to the appropriate steering torque. Combined with robust mechanical hardware, this new technology ensures optimal steering feedback in every driving situation and enhanced road surface contact. Useful information about the road surface and driving conditions is transmitted to the driver through the steering wheel while potential interferences are filtered out.

Chassis control with active roll stabilization

For the first time in the 911 series, Porsche Dynamic Chassis Control (PDCC) has been applied to the seventh-generation car and sets new standards in lateral acceleration and overall handling. The system senses when the car is about to lean when cornering and activates hydraulic actuators to keep the car flat and thus allows the tires to maintain optimal grip and an ability to transmit even higher lateral forces. The system also affords more direct steering feedback and precision.

PDCC's control of anti-roll stabilizers also enhances ride comfort in straight-line driving, such as freeway cruising.

Porsche Stability Management (PSM) and Porsche Torque Vectoring (PTV)

Porsche Stability Management (PSM) is a computerized system that helps the driver maintain the car's intended path. By comparing movement of the individual wheels, vehicle speed and engine rpm, PSM can determine if a tire is losing traction or if the car is beginning to slip sideways. To help the driver keep the car under control, PSM can apply brake force to a slipping wheel, or even engage the engine control module to briefly reduce power. PSM also recognizes when the driver lifts abruptly off the gas pedal and instantly pre-fills the brakes (pumping brake fluid to the calipers and moving the pads into position) should the driver need to stop immediately. Further, when the driver applies full force for braking, PSM provides an assist to help shorten stopping distance.

As with other Porsche performance-enhancing technologies, PSM is non-intrusive, never abruptly wresting control of the car from the driver, nor does it interfere with a skilled enthusiast's pleasure. If the driver doesn't increase his pressure on the brake pedal past a certain point, the additional pressure built up by the system is reduced. Critically, the pressure booster does not always cut in. And true to Porsche's philosophy that the driver should always be in command of the vehicle, PSM can be switched off by the driver. When deactivated, PSM remains off until the driver firmly hits the brake pedal, reaching the ABS threshold on at least one front wheel. This allows the skilled enthusiast driver more dynamic freedom.

With the launch of the new Porsche 911 Carrera and Carrera S, Porsche introduces another technology as an ideal complement to PSM – Porsche Torque Vectoring (PTV) for cars with manual transmissions and Porsche Torque Vectoring Plus (PTV Plus) for cars with PDK gearboxes, previously only available on the 911 Turbo models.

PTV is a mechanical differential lock while PTV Plus is an electronically controlled, fully variable differential lock.

PTV Plus improves steering behavior and precision by modulating braking interventions to the rear wheels when a 911 is being driven in a highly dynamic way. When entering a corner, braking force is applied to the inside rear wheel as the steering maneuver begins. This imparts greater drive torque to the outside rear wheel and improves the car's agility.

Active suspension enhances dynamic capabilities

Porsche Active Suspension Management (PASM) has been revamped and upgraded for the seventh-generation Porsche 911. An additional height sensor has been added to the car at each wheel and improves dexterity and comfort.

The PASM system lowers the vehicle by eight-tenths of an inch and allows the driver to choose between Normal or Sport modes. Additionally, cars with PASM get an aerodynamically optimized front lip spoiler and a rear spoiler that extends higher to improve performance at higher speeds.

PASM is an electronically controlled suspension with continuously adjustable dampers, front and rear accelerometer and a dedicated electronic control unit that considers steering angle, vehicle speed, brake pressure, and engine torque, then alters oil flow within the dampers to provide optimum firmness, such as reducing dive under hard braking or squat under full acceleration.

If left in the Normal mode, PASM will gradually increase the suspension's firmness if the car is driven in such a way that generates higher dynamic forces.

Dynamic engine mounts with Sport Chrono Package

The Sport Chrono Package sets up a Porsche 911 for track day performance, though it also can be used to enhance dynamic capabilities in daily driving situations. For example, activating Sport Plus mode on a car with the PDK and optional Sport Chrono Package enhances gear-shift parameters and throttle response and includes Launch Control for faster off-the-line acceleration.

With the launch of the seventh-generation Porsche 911 Carrera and Carrera S, dynamic engine mounts are included with the new Sport Chrono Package. Based on the dynamic engine mounts formerly available in 911 GT3 and 911 Turbo models, they make a decisive contribution to dynamic performance by controlling centrifugal forces.

The electronically controlled system minimizes the oscillations and vibrations of the entire drivetrain, especially the engine. The engine is bolted to the body by two mounts and like any mass, it obeys the law of inertia. This means that it will continue moving in a uniformly straight line until a different force causes it to change direction. Dynamic engine mounts minimize the centrifugal effect. Steering angle and both longitudinal and lateral acceleration are constantly recorded by sensors. The stiffness and damping performance of the engine mounts adapt to changes in driving style and road surface conditions.

This results in greater traction and stable handling under load change conditions and in fast corners.

SPORT button

A Sport Mode is now standard on the new 911. The Sport button adjusts the engine's response to suit one's preferred driving style. Pressing the Sport button changes the electronic engine mapping so it engages a sharper throttle response.

In vehicles with PDK, upshifts take place at higher engine speeds and downshifts happen sooner. In addition, coasting mode and the auto start/stop function are automatically deactivated. If fitted, the optional sport exhaust system is also activated automatically.

Sport Chrono Package

The Sport Chrono Package is optional in the new 911 models. With the touch of the Sport Plus button, this integrated system adjusts the engine and transmission for high-performance driving. In addition, it includes a performance display with both digital and analog stopwatches. A display in the steering wheel and instrument cluster indicates whether the Sport button and Launch Control have been activated.

On activation of Sport Plus mode, Porsche Active Suspension Management (PASM) and, in the S model, optional Porsche Dynamic Chassis Control (PDCC) switch to a firmer damping setting for more direct steering and better roadholding.

In Sport Plus mode, the trigger threshold for PSM is raised. Agility is perceptibly enhanced when braking for corners with PSM, allowing for sportier braking and exit acceleration. For maximum dexterity, PSM can be set to standby while the car is still in Sport Plus mode. For safety, it is set to intervene automatically only when ABS assistance is required on both front wheels.

In cars equipped with PDK, the selection of Sport Plus adds two additional high-performance functions. The first is Launch Control, which can be used to achieve the fastest possible standing start. The second is a motorsport-derived gearshift strategy.

The Sport Chrono Package includes a stopwatch mounted on the dashboard. The driver can store and evaluate lap times via the Porsche Communication Management (PCM) system. The display shows lap distance, lap number, individual lap times, and total driving time.

Strong brakes, but no hand brake

The seventh-generation Porsche 911 Carrera and Carrera S are equipped with brakes designed to fit the cars' performance potential. They also are equipped with a brake booster that is more than 1.7 pounds lighter than that used on the sixth-generation 911. Also changed is the elimination of a hand (parking) brake operated by a lever. The new 911

Carrera and Carrera S have an electronically activated parking brake operated by a button near the ignition switch.

The 911 Carrera comes with 13-inch diameter perforated and vented discs at each corner. The discs are 1.1 inches thick with six-piston aluminum monobloc fixed calipers in front and four-piston in the rear.

The 911 Carrera S has 13.4 X 1.3 perforated and vented discs in front and 13 X 1.7 at the rear, again with six-piston front and four-piston rear calipers.

A Racing-bred Porsche Carbon Composite Brake (PCCB) system is also available on either Carrera or Carrera S models.

Larger but lighter wheels

To reduce unsprung weight, improve ride comfort and save fuel, the seventh-generation Porsche 911 Carrera and Carrera S ride on wheels that are lighter thanks to a weight-saving flow-forming process.

The 911 Carrera is equipped with 19-inch Carrera wheels with a five double-spoke design and high-gloss silver finish. The 911 Carrera S has 20-inch Carrera S wheels with a new premium high-gloss silver finish. For both cars, front wheels are 8.5 inches wide and rears are 11 inches wide. Also available is a new 20-inch Carrera Classic wheel with a bi-color design, a 20-inch Carrera SportDesign wheel with a multi-spoke racing design and the 20-inch SportTechno wheel, with distinctive design featuring an 11.5-inch rear wheel and a wider tire.

Tires for the seventh-generation Porsche 911 Carrera and Carrera S were engineered to reduce rolling resistance by 7 percent, thus contributing to the cars' improved fuel efficiency.

The 911 Carrera rides on 235/40 ZR front tires with 285/35s at the rear. The 911 Carrera S has 245/35s in front and 295/30s at the rear, except when equipped with the 20-inch SportTechno wheel, which includes a 305/30 rear tire.

Larger sunroof provides more headroom

The new optional electric sunroof on the Porsche 911 Carrera and Carrera S opens 30 percent more of the roof area for improved open-air driving. The new unit also enhances occupant headroom because instead of sliding back between the head liner and roof, the new unit tilts and slides over the outer sheetmetal.

The sunroof incorporates a new mesh wind deflector to reduce acoustic discomfort and wind buffeting.

Interior architecture emulates Carrera GT supercar

The seventh-generation Porsche 911 Carrera and 911 Carrera S welcome driver and passenger to a completely new ambiance, and yet every 911 enthusiast will feel in familiar surroundings. Occupants are ensconced in new sport seats with four-way electric adjustment on either side of a new center console that draws its cues from the Carrera GT Porsche supercar. The console rises up to the high-mounted gearshift lever to present an ergonomically comfortable environment with more of a cockpit design.

The center console plays an essential role in the more advanced ergonomics because the various controls are clustered in logical function groups so the driver can operate them easily, quickly and intuitively, without any need for a long or complex search through submenus of an on-board computer menu.

There is, however, an enlarged, seven-inch touch screen in the center of the redesigned dashboard that is used to control an array of vehicle and informational functions like navigation, audio and telephone communications.

While redesigned, the dashboard retains its classic clarity with the 911's familiar five round instrument gauges providing feedback on the vehicle's operating state. As always, the tachometer – the most important gauge for the driver – is in the center and displays not only rpm, but vehicle speed, gear selection and various indicator lights.

Just to the right of the tach is a new 4.8-inch, high-resolution TFT screen with a configurable display that can show navigation directions, audio status, mobile telephone information, or vehicle information such as the tire pressure monitor. Cars with the optional Sport Chrono Package also can display G-Force figures showing the vehicle's longitudinal and lateral acceleration.

New interior amenities

In addition to new four-way power adjustable front seats (manual for and aft), the rear seats in the seventh-generation Porsche 911 Carrera and Carrera S have been redesigned with separately foldable rear seat backs to provide more space for luggage or packages, up to a generous 7.2 cubic feet.

Optional front seats also are available with 14- or 18-way adjustment, with memory package.

Seat heating is available as an option for the front seats. Seats are heated in the bottom cushion, backrest, and the side bolsters. In conjunction with seat heating, seat ventilation is also available. A slipstream, wicking effect is produced by drawing moisture away from the body through the perforated seat center and backrest and by passive aeration at the side bolsters, improving comfort in hot weather.

Two-zone automatic climate control has been redesigned and is more efficient and quieter in operation, with three airflow preference settings incorporated into the air conditioning system.

The audio system in the seventh-generation Porsche 911 includes nine speakers and 235 watts of power with a CD/DVD drive and MP3 connection.

Highly sophisticated audio systems available

Burmester®:

Porsche has teamed with Burmester® to develop a special top-of-the-range sound system for the new 911 Carrera and Carrera S. As in the Porsche Panamera and Cayenne, the Burmester® High-End Sound System option provides unprecedented sound quality in a sports car and the Burmester components are also the lightest available in any Porsche model, to save even more weight.

The system includes 12 individually controllable speakers, a 300-watt subwoofer built into the body shell, and 16 amplifier channels with a total output of more than 800 watts.

Bose®:

A Bose® Surround Sound System also is offered as an option. It features 12 speakers, a 100-watt active subwoofer built into the body shell, and eight amplifier channels with 445 watts.

A highlight of both of these optional audio systems is a patented body shell subwoofer solution. Instead of a separate subwoofer box, the structure of the body-in-white cowl frame houses the subwoofer. This saves some 10 pounds of weight, reduces power consumption, and improves sound quality, especially in the bass ranges.

ParkAssist, Dynamic lights on the options list

Optional equipment for the seventh-generation Porsche 911 Carrera and Carrera S includes a Light Design Package for the passenger compartment; Porsche Dynamic Lighting System (PDLS) with dynamic cornering lights and speed-dependent driving light controls; front and rear proximity warning ParkAssist; and Porsche Entry & Drive, which does not require insertion of the key into the ignition switch.

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