



**PORSCHE**

Contact:

Chris Wall  
Manager, Automotive Media and Product Relations  
(770) 290-3834

Tony Fouladpour  
Manager, Corporate Communications  
(770) 290-3667

## **2008 Porsche 911 Turbo Coupe**

Porsche rocked the sports car world last year with the introduction of its sixth-generation 911 Turbo Coupe. This latest version, designated internally as 997, is the sports-car manufacturer's most powerful, nimble and environmentally friendly four-place Turbo Coupe to date. For 2008, the Turbo Coupe is joined by a similarly potent Turbo Cabriolet.

### **Highlights**

#### **What's new for 2008**

Other than the addition of a Turbo Cabriolet sibling, the recently introduced Porsche Turbo Coupe goes into 2008 with only minor revisions.

#### **Optional leather sports bucket seats**

Essentially a race seat with a folding backrest, the new sports bucket seat boasts carbon fiber-reinforced construction for a weight savings of 15 to 20 pounds (7 to 9 kg) over standard seats, depending on model. Like all Porsche driver and front-passenger seats, the sports bucket seats have integrated thorax airbags and are compliant with all U.S. safety standards.

#### **Aerokit Turbo option**

This functional appearance package features a new front spoiler lip, new rear lid and rear spoiler with a fixed wing profile.

#### **New colors**

As popular tastes continue to change, Porsche designers continue to refine the palette of available colors. For '08, the new exterior color, Macadamia Metallic is available. Other '08 exterior color changes have Atlas Grey Metallic replacing Lapis Blue Metallic as a special color, Malachite Green Metallic replaces Lagoon Green Metallic, and Carmona Red Metallic is replaced by Ruby Red Metallic.

Inside the cockpit, Palm Green is gone from the list of available colors and Carrera Red as a new natural leather option.

#### **Service intervals**

For 2008 models, the recommended oil change interval is now 12,000 miles (20,000 km), or one year.

The spark plugs should be replaced every 24,000 miles (40,000 km) or four years.

### **Explosive all-weather acceleration**

The 911 Turbo Coupe is defined by its astounding powerplant. The 3.6-liter horizontally opposed six-cylinder engine features twin turbochargers and readily delivers an awesome 480 horsepower and a locomotive-like 460 lb.-ft. of torque. When equipped with the optional Sports Chrono Turbo feature with Overboost, the driver actually has bursts of 505 lb.-ft. of torque available.

The engine's stunning potential is channeled to all four wheels via Porsche Traction Management (PTM) all-wheel drive. This electronically controlled system can vary the torque split infinitely and absolutely between front and rear wheels as needed for optimum traction. Wheel slip is further reined in by Porsche Stability Management (PSM) which is standard on all Turbos.

Driving through either a standard-equipment six-speed manual or optional five-speed Tiptronic S transmission, the Turbo Coupe drives from zero to 60 mph in a 3.7 second blur. When equipped with the Tiptronic S, the Turbo Coupe gets to 60 mph in 3.4 seconds. That's 0.3 second faster than the experienced Porsche test drivers could make the run with the manual gearbox. This superior acceleration of the automatic transmission is another example of Porsche's engineers bringing higher levels of performance to a broad range of skilled drivers.

### **Socially responsible performance**

As astounding as is the Turbo Coupe's brutal acceleration is its miserly fuel consumption. The EPA rates the Turbo Coupe at 23 mpg on the highway. The manual gearbox delivers 16 mpg in the city test, and the Tiptronic S version 15 mpg. Despite its segment leading performance potential, the Turbo Coupe does not carry a gas guzzler penalty.

The Turbo Coupe is also certified as a Low Emissions Vehicle, category two (LEV-II) thanks to its engine's efficiency. Besides the twin turbochargers, the 3.6-liter boasts Porsche VarioCam Plus variable intake timing and lift system under the purview of its Motronic® engine controls.

### **Active suspension is standard**

As the flagship 911, the Turbo Coupe bristles with performance and safety enhancing technologies. Besides the PSM stability system, the Turbo Coupe comes standard with Porsche Active Suspension Management (PASM), which allows the driver to choose the firmness of the suspension. By selecting the Normal mode, the Turbo Coupe driver enjoys a sporting but comfortable ride. Choosing the Sport mode brings a firmer ride for improved performance dynamics.

### **Muscularly aerodynamic**

Clearly a member of the Porsche 911 family, the Turbo Coupe is instantly identifiable as the top of that range. From its iconic front air intakes, oval Bi-Xenon® headlights, LED directional indicators mounted in the front side cooling-air openings to horizontally split air intakes for the turbocharger intercoolers mounted aft of the doors, the Turbo Coupe's sheetmetal is unique.

More than head-turning, the Turbo Coupe's body shape is purposeful. Like its new Turbo Cabriolet sibling, the Turbo Coupe has a sleek coefficient of drag of only 0.31. Equally impressive is the car's high-speed stability thanks to the automatically extending rear wing which maximizes high-speed downforce on the rear axle for increased driver confidence.

### **Occupant protection**

Knowing full well even the most skilled driver in the most capable car may still be involved in an accident, Porsche engineers equipped the Turbo Coupe with a strong body shell and an interior with six airbags: dual frontal airbags as well as two front seat-mounted thorax airbags and door-sill mounted head airbags.

But Porsche firmly believes that accident avoidance is the ultimate safety feature. The 911 Turbo Coupe boasts awesome stopping power, thanks to 13.78-inch (350-mm) diameter rotor disc brakes at all four wheels. The front rotors are internally vented and are clamped by six-piston, fixed calipers. The rear rotors stopped by four-piston fixed calipers. For those drivers wanting additional braking performance, it's available with optional Porsche Ceramic Composite Brakes (PCCB).

### **Details**

#### **Looks that matter**

As the flagships of Porsche's 911 model range, the Turbo Coupe and Cabriolet are wrapped in sheetmetal that exudes and enhances their stupendous performance potential.

The front fascia of the Turbo Coupe leads with its sharply defined intake air scoops housing LED directional signals. The integral foglamps are positioned close to the nose's outer edges which helps accentuate the car's brawny stance.

The rear of the car purposely boasts about the power between the rear wheels. The fenders' wheel arches have been widened by 0.87 inch (22 mm) over the predecessor 996 model Turbo Coupe. The exhaust pipe outlets are integrated in the rear fascia.

Between front and rear, the turbo intercooler air intake openings on the flanks have been revised from the previous model for improved airflow and to add to the car's overall more aggressive look.

#### **Keeping the weight down**

When equipped with the manual gearbox, the Turbo Coupe has curb weight of only 3494 pounds (1585 kg). The Tiptronic S model weighs but 78 pounds (35 kg) more, 3572 pounds (1620 kg).

The Turbo Coupe's monocoque structure carries a mostly hot-galvanized steel body with a light-alloy front decklid and aluminum doors. These doors weigh only 24 pounds (11 kg) each, a reduction of 31 pounds (14 kg) over the standard steel doors. The doors rest on a light-alloy pressure-cast frame, which is visible at certain points without any surface cover, a feature unique to the Turbo. This frame also eases manufacturing complexity by reducing the number of individual door components to just five.

## **Superb airflow**

Despite its increased width, the Turbo Coupe has an efficient and stable Cd of just 0.31. Porsche aerodynamicists achieved both a sleek shape and high-speed stability. Lift at the front axle has been reduced as compared with the previous model and downforce at the rear axle has been increased. The driver appreciates these forces as superb higher speed stability and predictable handling.

## **The split rear wing**

The Turbo Coupe benefits from a rear spoiler that increases downforce without adding drag. The rear wing is more efficient than on earlier models. When fully extended, the spoiler is 1.37 inches (35 mm) lower than before, which enhances the car's aerodynamic balance. The result is increased stability for more driver confidence during high-speed maneuvering, such as changing lanes.

The revised rear spoiler maintains the car's excellent drag coefficient even though the new design increases downforce at the rear of the car by 60 pounds (27 kg).

The innovative split wing is approximately 1.18-inch (30-mm) wider on each side than the rear wing on the previous model, and is contoured to match the body at either end. The rear spoiler automatically extends when the car reaches approximately 75 mph (120 kph) and retracts smoothly when the car slows to approximately 37 mph (60 kph).

## **Optional fixed spoiler**

Drivers who want even further high-speed stability can opt for the newly available Aerokit Turbo. This features a different, deeper front spoiler lip and a revised rear decklid with a fixed rear double-winged rear spoiler.

## **What's underneath counts**

Since airflow beneath the car affects fuel economy, handling and stability as much as air moving over the car, Porsche aerodynamicists paid careful attention to the underbody design. As on the other models in the 911 model range, the underfloor of the Turbo Coupe is almost completely enclosed for optimum airflow beneath the car. This reduces turbulence and keeps air swirl to a minimum.

On cars equipped with the manual gearbox model, the underfloor cover is six polypropylene panels over an area almost double the covered area of the previous model.

## **Enhanced engine cooling**

To ensure that the tremendous heat generated by the turbocharged engine is dissipated, the Turbo Coupe has three radiators. There is one radiator mounted ahead of each front wheel as well as one mounted centrally in the front air dam. This radiator array is fed by approximately 4000 liters (140 cu.-ft.) of air per second at 186 mph (300 kmph).

To minimize resistance, Porsche aerodynamicists developed a deflector blade to direct the air after it passes out of the center radiator. This guides the air down under the floor without creating any lift forces in the process. In addition the side radiator diverter blades are larger than before for improved airflow and to minimize lift forces on the front wheels. Finally, the front differential is vented by four front underbody channels. A rear opening vents the gearbox.

### **New colors for 2008**

As with other Porsche models, the available palette of exterior colors has been revised. Macadamia Metallic is now available as new finish. In addition, Atlas Grey Metallic replaces Lapis Blue Metallic as a special color, Malachite Green Metallic replaces Lagoon Green Metallic, and Ruby Red Metallic is gone, replaced by Carmona Red Metallic.

### **Refined personalized interior**

As the exterior of the 997 Turbo Coupe is larger than the predecessor 996, so the interior is more spacious as well. The revised passenger compartment boasts leather-upholstered seats that are lower than before, helping lower the car's center of gravity for improved stability and agility.

The pedals have been moved forward, meaning more legroom for taller drivers and the adjustable steering wheel has a range of height adjustment of 1.6 inches (40 mm).

The instrument panel features the Porsche hallmark round gauges with aluminum-colored faces. The word "Turbo" is emblazoned in script on the large tachometer. White, light-emitting diodes ensure easy night readability of all the gauges and the turbocharger boost gauge is also shown as a bar graph.

### **Optional new sports seats**

Also new for this year are lightweight optional sports bucket seats. These front seats are essentially race seats appropriate for the street as well. They feature folding backrests and do not impede access to the Coupe's rear seats. Like all Porsche front seats, these sports bucket seats have side-impact thorax airbags mounted in the outer edges of the seatbacks.

In addition, the new sports bucket seats boast carbon fiber-reinforced construction for a weight savings of 15 to 20 pounds (7 to 9 kg) over standard seats, depending on model.

### **Expanded navigation capabilities**

As befits an exclusive car, the Turbo Coupe comes standard with such convenience features as a navigation system and sophisticated audio system.

The Turbo boasts Porsche Communication Management (PCM) which includes an enhanced DVD-based navigation system. PCM has a large 5.8-inch display screen and 23 stages of map definition, to a very fine resolution of only 165 feet (50 m).

The DVD-drive for the navigation is housed in the luggage compartment. A benefit of having the unit DVD based is its blazingly fast response for instant route calculations as well as expanded database capacity.

The standard audio system in the Turbo is a 13-speaker Bose® Surround Sound System with a seven-channel digital amplifier.

### **Safe as well as comfortable**

The occupants of the Turbo Coupe are well protected in the case of an accident by the car's supremely strong structure. In addition, the passenger cabin boasts three-point, inertial-reel safety belts on all seats, with belt-latch tensioners and belt-force limiters in front.

The belts are supplemented by six airbags. There are two full-size, two stage front-impact airbags, thorax-protecting side-impact airbags in the front seats and head-protecting side-impact airbags mounted in the doors, as part of the Porsche Side Impact Protection (POSIP) system.

In a collision from the side, the POSIP's head airbag inflates upward from its location at door window sill forming a flat cushion with a total capacity of nearly 500 cubic inches (8 liters), helping prevent the occupant's head from impacting the side window.

The passenger-side front airbag relies on a sensor in the front passenger seat that defeats that airbag if the sensor detects a child or very small adult is sitting there.

The aluminum doors of the Turbo offer all the occupant protection as the steel ones on other 911 models. In the event of a front impact, extrusion-pressed profiles beneath the doorsill transfer the crash forces to the rear, around the passenger cell.

### **Maximum safety through accident avoidance**

The Porsche philosophy is firm in the belief that avoiding an accident is always preferable to trying to survive one. All Porsche vehicles benefit from uncanny agility and predictable, instant response to driver commands.

To ensure that the Turbo Coupe's chassis is more than equal to the task of letting the driver confidently and fully enjoy the awesome drivetrain, Porsche engineers insisted on a fully capable suspension. The design is based on the existing Carrera 4S suspension, but the Turbo has reconfigured and upgraded springs and shocks, with Porsche Active Suspension Management (PASM) as standard.

In addition, Porsche engineers gave the Turbo Coupe a wider track than the previous model, which translates to improved handling, particularly at higher speeds. The front track is 0.71-inches (18-mm) wider, while the rear track has been increased by 0.79 inches (20 mm).

Mechanically, the front suspension consists of Porsche configured McPherson struts—with gas pressurized, electronically controlled twin-sleeve shocks—longitudinal and lateral arms and antiroll bar. At the rear, each wheel is located by a multilink setup with five control arms, coil springs mounted over electronically controlled, single sleeve gas pressurized shocks, with an antiroll bar.

The complete chassis and suspension of the Turbo Coupe is significantly lighter than that of its predecessor. The four lightweight spring struts alone reduce the overall weight of the suspension by 5.3 pounds (2.4 kg).

### **Right for the ride**

The shocks are all under the purview of PASM. Reacting to road and driving conditions, PASM adjusts the shocks individually, altering their firmness within fractions of a second. The driver selects one of two settings, Normal or Sport. The Normal mode provides a softer ride, with the system automatically switching over to a more sporting program as the driver becomes more aggressive. In Normal mode, PASM delivers a more comfortable ride over various road surfaces than a system with conventional shocks. The Sport mode activates a harder shock control map, comparable to the typical features of a sports suspension, and acts to minimize body roll during hard cornering.

For the Turbo Coupe, Porsche engineers have enhanced the system to work in conjunction with PTM all-wheel drive and Porsche Stability Management (PSM). Constantly adjusting to the driver's style as well as conditions, these systems help the driver maintain control without intruding or coarsely wresting control from the driver. The result is an extraordinarily high-level of driver confidence while enjoying the car's impressive traction and high-speed stability capabilities.

The Turbo Coupe has power-assisted, variable-ratio rack-and-pinion steering as standard. The steering wheel is adjustable for both height and reach.

### **Deceleration to match acceleration**

As befits any Porsche Turbo, the 997 Turbo Coupe boasts extremely effective brakes. The all-disc, antilock brake system uses large, 13.78-inch (350-mm) diameter, cross-drilled, internally vented rotors and fixed calipers at all four wheels. The front brakes have the same six-piston calipers as the Carrera GT, while the rears utilize four pistons. The caliper pistons have ceramic inserts which insulate them and help keep heat from transferring to the brake fluid during long periods of hard braking.

The brakes themselves are cooled by carefully directed airflow. In front, air moves through two openings in the front spoiler to a wide duct in one of the front underbody panels and on to the front axle.

For even greater stopping power, the Turbo Coupe is available with Porsche Ceramic Composite Brakes (PCCB) as an option. Besides replacing the metal rotors with ceramic composite, PCCB brings rotors that are almost eight percent larger than standard: 14.96 inches (380 mm). Among the benefits of PCCB are a 50-percent weight reduction compared to metal brakes, quicker response, and superb resistance to fade and zero corrosion.

### **Four rubber patches**

To manage the drivetrain's power and ensure traction, the Turbo Coupe rides on massive 19-inch wheels and tires. The high-speed rated tires are 235/35ZR19 in front, and the rear ones 305/30ZR19.

The tires are mounted on forged wheels, developed exclusively for the Turbo. They feature two-tone, tri-spoke design. Apart from lower weight, forging technology helps reduce the cross-section of the spokes to a minimum, providing a clear, unobstructed view of the brake calipers.

Since tire inflation pressure is critical for safe handling and optimum fuel economy, the Turbo comes standard with the Porsche Tire Pressure Monitoring System (TPMS). Sensors at each wheel constantly monitor pressure of each tire.

Should inflation pressure drop by more than 2.9 psi but not as much as 5.8 psi from specifications, the driver sees a text message in the instrument cluster. This warning appears for ten seconds when the car is started.

If pressure drops by more than 5.8 psi or if the pressure drops at a rate of 2.9 psi per minute or faster, the warning becomes more serious. The text message is red and comes on as soon as the thresholds are exceeded, whether the vehicle is moving or not.

To help keep unnecessary vehicle weight to a minimum, the Turbo Coupe has no spare tire, jack or tire-changing tools, saving approximately 22 pounds (10 kg). Instead, the car is equipped with a small electric air compressor and emergency tire sealant to allow the driver to get to a service station to have the damaged tire properly repaired or replaced.

## **Powertrain Details**

### **Astounding output per liter**

As with every Porsche Turbo sports car before it, the heart of the new 911 Turbo Coupe lies behind the passenger compartment: The unique Porsche turbocharged six-cylinder engine.

The 3.6-liter flat six develops 480 bhp (353 kW) at 6000 rpm, or an awesomely efficient 133 bhp (98.1 kW) per liter. Given the Coupe's low 3494-pound mass (for the manual gear box model), the 911 Turbo Coupe has an outstanding power-to-weight ratio of only 7.28 pounds/hp.

But knowing full well that torque is what moves the automotive world, Porsche engine designers developed a twin turbocharged engine that offers a peak torque of 460 lb.-ft. (624 Nm) available over an extremely broad range, from 1950 rpm to 5000 rpm. The optionally available Overboost feature briefly ups the torque peak to 505 lb.-ft. (685 Nm) from 2100 rpm to 4000 rpm.

### **Power on tap, instantly**

Key to the turbocharged engine's potent efficiency is the use of variable turbine geometry (VTG). Essentially, VTG uses constantly adjustable turbine blades to vary the turbine's cross-section precisely to the exhaust flow regardless of engine load and/or speed.

At low rpm, the blades close to form small air gaps. This causes the exhaust gases flowing through the small cross-section to accelerate, spinning the turbine quickly—as though it were a small, low rotating mass turbocharger. At higher rpm, with its inherently greater exhaust-gas flow, the turbine blades open, increasing their cross-sections and simultaneously lowering turbine speed, maintaining a constant intake charge pressure.



The full range of movement of the turbine blades takes merely 100 milliseconds and is controlled by the engine's Motronic® electronic control module (ECM). Action of the variable turbo vanes is so precise that there's no need for a turbocharger bypass valve to limit maximum boost. To reduce excess boost pressure on the throttle butterfly when the driver quickly lifts off the throttle or in overrun, the Turbo features an automatic bypass valve which saves space via a new placement on the compressor housing.

The intake charge from each of the engine's two turbochargers is cooled by a dedicated intercooler, each located ahead of a rear wheel, as has been a Porsche Turbo hallmark.

The result of this sophisticated engineering and complex manufacturing is a turbocharged engine that responds to the driver's demand for more power immediately. There is no time lag between stepping on the throttle and the expected rush forward of boost. In fact, the VTG delivers its rewarding surge of power as quickly as an engine with a mechanically driven supercharger, but without the penalty of the supercharger's parasitic power drain on the engine.

### **More for those who want it**

To ensure the expected high level of engine response and long life, maximum intake pressure is set to approximately 14.5 psi, or 1 bar. The optional Overboost feature briefly allows approximately ten-second bursts of 17.4 psi or 1.2 bar, at the touch of a console-mounted button. On-the-road tests show that with Overboost, 50 to 75 mph (80 to 120 kmph) passing time—without downshifting from second highest gear—is just 3.6 seconds, vs. 3.9 seconds without the use of Overboost.

Porsche engineers measure boost levels at sea level, under full load and at an ambient temperature of 68°F (20°C).

### **Keeping it cool**

Though the VTG concept has been applied to Diesel engines for some time, it has not been commonly used with gasoline engines due to the higher heat of gasoline exhaust. Diesel exhaust temperatures are much cooler than gasoline engine exhaust, which places far less thermal stress on the turbocharger's components. Diesel exhausts are approximately 1250°F (700°C), compared with gasoline engine exhaust temperature of about 1850°F (1000°C). In order to allow the turbine blades to adjust, rather than be fixed,

Porsche's engineers had to tame the demon heat by rethinking turbocharger design and materials. To ensure both high performance and a long, trouble-free service life, the turbo designers created turbochargers with adjustable turbine vanes and double redundancy cooling. In addition to the existing oil cooling for the turbo bearings, the turbos also have a water cooling system *and* a follow-up pump to keep the bearings temperatures under control.

Regardless of turbo design, all turbocharged engines are subject to more stress than their naturally aspirated equivalents.

Consequently, the Turbo Coupe's powerplant is a liquid-cooled, flat, or horizontally opposed, six-cylinder with dual overhead camshafts, four valves per cylinder, variable valve lift and timing, distributorless solid-state ignition, sequential electronic fuel injection and twin turbochargers.

### **Proven dry-sump lubrication**

The engine consists of a split, pressure-cast, light-alloy crankcase. The block is made in usual Porsche fashion with camshaft housing, cylinder head and cylinder housings bolted to the crankcase. Based on decades of Porsche racing success, the engine's lubrication system is a dry sump design, with the oil carried in a remote reservoir. This configuration permits a more compact engine, critical for superb road holding.

To ensure more than adequate engine lubrication, the Turbo Coupe has nine separate oil pumps. There are two oil extraction pumps for the turbochargers, two oil extraction pumps on each cylinder head, and two oil extractions and one pressure pump in the crankcase. The extraction pumps ensure proper lubrication during long periods of hard braking.

There are two oil coolers which transfer the heat from the engine oil to the engine coolant. The engine coolant itself releases its heat at three separate heat exchangers mounted in the front of the car. Radiators are mounted ahead of both front wheels in addition to one mounted in the car's nose.

The crankshaft spins in eight main bearings. The six forged light-alloy pistons pump in Nikasil®-coated cylinder liners. The 3600 cc displacement engine is a highly responsive short-stroke design, with a cylinder bore of 100 mm (3.94 inches) and piston stroke of 76.4 mm (3.01 inches). There are four valves (two intake, two exhaust) per cylinder operated by dual overhead camshafts. Fuel injection is electronic and under the purview of the engine control module, as is the distributorless solid-state ignition system, which boasts individual coils for each cylinder.

### **Two different camshaft profiles**

The engine control module also controls valve action via Porsche VarioCam Plus. This valve management system adjusts intake valve lift and timing based on engine speed and load. Though the VarioCam Plus operates far too quickly for the driver to be aware of it, the results are obvious. The effect is that of an engine with two different intake camshaft profiles, one set up for smooth and efficient around-town driving, the other a high-performance camshaft designed for higher speed. These two designs usually each preclude the other and most cars have a compromise of the two. Porsche VarioCam Plus removes the compromise and the driver benefits from the best of both driving worlds.

Valve timing is controlled via a vane cell adjuster which continuously varies the two intake camshaft positions relative to crankshaft. The adjustment range covers a 40-degree range of crankshaft angle. Valve lift is varied by a system utilizing two cup tappets, one resting in the other. These tappets are actuated by separate cam lobes of differing size. The engine control module directs oil pressure to the appropriate tappet based on engine speed and load parameters. When non-pressurized, the tappet moves under the camshaft lobe, but exerts no pressure on the valve, in effect free wheeling.

### **Smooth, light intake**

To be sure that the Turbo Coupe's engine gets a constant and adequate supply of intake charge air, Porsche engineers optimized intake flow. The intake manifold halves are formed of a single piece of synthetic material. This manifold is about 4.4 pounds (2 kg) lighter than the one in the previous model while offering improved airflow. The air filter housing was also redesigned and the filter element now has a recommended service life of 40,000 miles.

### **Sodium-filled exhaust valves with modified springs**

A variable-turbine geometry turbocharger means increased exhaust gas backpressure. To take this into account, the Turbo Coupe's exhaust valve springs are of a modified construction. Their design ensures the valves continue to close properly and securely. With the valves closed, the springs create a higher closing force without changing the force exerted by the springs under maximum valve lift. This helps prevent increases in friction losses.

As on the previous Turbo, the exhaust valves have sodium-filled stems. The sodium liquefies at combustion temperatures, and draws heat from the valve face, helping keep the valves cool even during periods of hard use.

### **Transmitting the torque to the tires**

The 911 Turbo Coupe is available with a choice of transmissions: six-speed manual gearbox is standard equipment. A five-speed driver-shiftable Tiptronic S is optional. Both boast closely spaced gear ratios for rewarding performance as well as overdrive top gears for relaxed and economical cruising.

### **Revised six-speed manual**

In consideration of the engine's bodacious output, the entire gearbox has been reinforced and its cooling system improved. Reinforcements have been made around the drive head (crown and plate wheel) and on the individual gear sets. Modification of the fins on the gear casing and an additional vent opening in the underfloor cover improve the gearbox's cooling. Structural reinforcements on the housing reduce the transmission of airborne sound waves.

Gearshift travel is about 15 percent shorter due to a change in the location of the pivot point. First and second gear boast triple carbon mechanisms. Third through sixth have dual carbon synchromesh mechanisms. The use of carbon coatings enables the gears to handle higher loads, and improves gearshift feel while maintaining the same service life.

Clutch actuation is hydraulic. Gear changes are crisp and direct thanks to the compact design of the powertrain unit and the solid linkage.

### **Enhanced Tiptronic S**

The planetary gearsets in the Turbo Coupe's Tiptronic S have been strengthened, commensurate with the engine's stupendous torque. In addition, the shifting and reaction times of the unit are quicker than before.

By reducing torque converter slip, and adjusting to engine speed more quickly, the Turbo Coupe's Tiptronic S reacts more quickly to the accelerator pedal for improved responsiveness, and a more connected feeling via the throttle. The optional five-speed Tiptronic S allows the driver to permit the transmission to shift gears automatically or shift for himself via steering-wheel mounted paddles or by tipping the console-mounted gear lever.

The Tiptronic S features a Fast-Off function which prevents the transmission from upshifting when the driver lifts off the gas pedal abruptly. This allows the driver to downshift more quickly when applying the brakes while driving enthusiastically.

In addition, the Fast-Back function operates whenever the driver changes over from the accelerator to the brake pedal within 1.5 seconds, Tiptronic S immediately downshifts a gear, even if the driver only touches the brake pedal hard enough to activate the brake lights. This shortens the reaction time of the first downshift while braking by approximately 30 percent. When downshifting while braking with normal force, the system changes gears only as a function of the car's actual deceleration, maintaining a certain time-lag between activation of the brake pedal before Tiptronic S actually downshifts.

The Fast-Back function operates on top of this brake downshift function and, for example when braking into a bend, automatically selects the optimum gear for subsequent acceleration out of the corner.

When the Tiptronic S is coupled with the optional Sports Chrono Package Turbo, the engine management system receives a signal for brief interim throttle, resulting in even quicker gearshifts.

The proof of the changes is in the driving: track testing with factory drivers, the Turbo Coupe with Tiptronic S accelerated to 60 mph (100 kph) 0.3 seconds faster than the Turbo with six-speed manual gearbox. The difference between the two gearboxes in the run to 99 mph (160 kph), is even greater, 7.8 seconds for the Tiptronic S and 8.4 seconds for the manual.

And unlike other makers' automatic transmissions, the Turbo Coupe's Tiptronic S starts from a stop in First, not Second, gear for a quick launch.

### **The comforting stability of all-wheel drive**

To ensure that the engine's output is put safely and competently to the road, the Turbo Coupe comes only with Porsche's all-wheel drive system, Porsche Traction Management (PTM).

PTM distributes engine power between the front and rear axle based on available traction and road conditions. Though the system can vary the torque split infinitely from zero to 100 percent at either axle as needs be, the normal bias is with about two-thirds of the torque to the rear wheels. As most Porsche purists prefer, and has been since the company's inception, the Turbo Coupe behaves most normally as a rear-wheel drive sports car.

When the system determines it's needed, PTM diverts engine power and torque to the front axle in millisecond cycles. Particularly at speed, the driver feels the significant stability.

PTM instantly detects dynamic changes in driving conditions, avoiding wheelspin. The system determines how fast the driver is accelerating and how much throttle is being applied before the engine is even able to react. PTM closes the multiple-plate clutch to prevent wheelspin. This translates to quick, smooth and lightning fast launches with equal traction at all four wheels.

In the wet, the Turbo reaches its rear-axle traction limit quickly, thanks to the car's huge amounts of torque. When accelerating on a wet surface, PTM intervenes more aggressively, feeding more torque more quickly to the front wheels.

Similarly, since PTM reads steering-angle information as well as wheelslip, the system recognizes oversteer and understeer and compensates by diverting more stabilizing power to the front wheels or rear wheels as needed. Given that PTM reacts in milliseconds, as the skilled driver corrects the steering, the PTM recognizes that, too, and readjusts power distribution before the driver is aware it is happening.

### **Multiple-plate clutch with magnetic control**

Unlike other makers' all-wheel drive systems with viscous couplings, PTM relies on the instant response of an electronically controlled, electro-magnetic multiplate clutch pack to distribute engine torque to the front and rear wheels as conditions demand.

Magnets operate a master clutch with three discs. The discs are connected to one another by a mechanical reinforcement element, which actuates the main clutch. The main clutch is comprised of eight sets of friction discs. Given that the Turbo Coupe's front tires lose traction on a dry road at about 221 lb.-ft. (300 Nm) of torque, the clutch's capacity of 295 lb.-ft. (400 Nm) is more than sufficient.

The multiple-plate clutch runs in an oil bath integrated in the housing of the front-axle differential, and features its own oil circuit, complete with a separate circulation pump. The special automatic transmission fluid used has a recommended service interval of 56,000 miles (90,000 km).

### **Optimized braking and stability**

The dedicated computer which controls PTM is apprised of wheel speed, lateral and straight-ahead acceleration and steering angle via a CAN-bus network with other systems. Among those systems is Porsche Stability Management (PSM), which is standard on the Turbo Coupe.

Besides helping ensure stability, PSM boasts new functions. Critical among them is pre-loading the brakes to help shorten stopping distances in an emergency. Whenever the driver lifts off the gas pedal abruptly the system instantly pumps brake fluid from the hydraulic PSM control unit to the brake calipers. This has the pads already touching the rotors by the time the driver's foot hits the brake pedal. The result is less reaction time for quicker stops.

The refined PSM also helps drivers apply full braking force when needed. If the driver hits the brake pedal hard, but not with full force, PSM instructs the hydraulic pump to apply the rest, right up to the ABS threshold.

Like all Porsche dynamic safety-enhancement systems, the enhanced PSM does not 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 since Porsche engineers firmly believe that the driver is always in command of the car's dynamics, the additional functions are deactivated if the driver presses the Sports button or switches the PSM off.

Even more traction is available for the Turbo Coupe compliments of an optional mechanical differential lock with asymmetric distribution. The differential lock is available only with the manual gearbox and provides 22 percent locking under power, 27 percent otherwise. This differential complements PTM's qualities by allowing higher traction on the inner wheel when tackling a fast corner.

### **Always under the driver's command**

Given the demands and expectations of the typical Porsche driver, PSM has been designed to act seamlessly and all but invisibly. Porsche engineers programmed the system to allow the driver to fully enjoy the Turbo Coupe's agility and speed without coarse interference and abrupt actions. But the highly skilled, enthusiast driver who may wish to fully experience the Turbo's balance and ultimate handling limits can temporarily switch off PSM. The system automatically re-engages when one of the front brakes exceeds the ABS control threshold.

### **Sports Chrono Package Turbo option**

The available Sports Chrono Package Turbo provides the choice of an even more sporting set-up of various vehicle functions, including engine and Tiptronic S management, and profiles of the Porsche Stability Management (PSM), Porsche Active Suspension Management (PASM) and Porsche Traction Management (PTM). The option also brings overboost.

By hitting the Sport button on the center console, the driver engages overboost. This briefly increases turbocharger pressure when accelerating under full throttle. An arrow in the turbocharger boost display informs the driver that the car is in overboost. This additional boost of turbocharger pressure is achieved by adjusting the turbocharger blades to increase maximum turbocharger pressure by approximately 2.9 psi (0.2 bar), in the engine speed range of 2100 to 4000 rpm. The extra high level of turbo boost lasts for about ten seconds allowing the driver to confidently execute a fast maneuver.

### **Standard and optional**

Besides the Sports Chrono Package Turbo, there are several other optional features available for the Turbo Coupe.

The Turbo Coupe can also be equipped with Porsche Park Assistant. This uses ultrasound to measure the distance between the car's bumpers and obstacles in its vicinity.

The PCM can be upgraded with a telephone module that incorporates an electronic logbook for easy record keeping.

HomeLink is a programmable, fully integrated garage/gate opener able to replace up to three transmitters. HomeLink® can also operate home lighting and alarm systems.

###