

PORSCHE

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Porsche 1990 model year range includes
new 250 bhp, 3.6-litre, two-wheel drive 911
Carrera 2 with 5-speed manual or optional
revolutionary new Porsche Tiptronic dual-function
gearbox; Coupé, Targa and Cabriolet versions for
911 Carreras 2 and 4; new electronically-
controlled, transverse rear differential lock-up
on 928 Series plus new standards in environment
and safety.

The new 250 bhp, 3.6-litre, two-wheel drive 911 Carrera 2 with five-speed manual or optional, revolutionary new Porsche Tiptronic dual-function gearbox; a choice of either Coupé, Targa or Cabriolet versions of the new 911 Carrera 2 or Carrera 4; a new electronically-controlled, transverse rear differential lock-up for a revised 928 Series line-up; a new rear spoiler for the 944 Turbo, together with various other product enhancements are the major changes for the Porsche 1990 model year which starts on 1st September, 1989, in the UK. In addition, all new Porsche models sold in the UK will be offered with controlled 3-way exhaust-gas catalytic converters and ABS braking systems as standard

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When the 161 mph 911 Carrera 4 Coupé made its debut in the Autumn of 1988, it not only set new standards in automotive design with its dynamic, electronically-controlled all-wheel drive system, new chassis and aerodynamic bodywork with near zero lift and retractable rear spoiler but evoked considerable acclaim from the international motoring media. As a result, before rhd deliveries to the UK commenced at the end of June, 1989, the 911 Carrera 4 was already sold out until the 1991 model year and the announcement that it will now be available in Targa and Cabriolet versions will also undoubtedly increase the forward order bank.

in competition, the power shift system combined with the new 5-speed manual gearbox. Now for the start of the 1990 model year, the Porsche is offering the new 250 bhp, 3.6-litre two-wheel drive 911 Carrera 2 which matches the 911 Carrera 4 in all visual and technical respects apart from the latter's all-wheel drive technology. Available in Coupé, Targa or Cabriolet versions, the new 161 mph 911 Carrera 2 heralds in a new era in the 26-year-old history of the 911 as it succeeds the 152 mph 3.2-litre model which has borne the Carrera name since 1983.

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The optional, revolutionary new Porsche Tiptronic dual-function gearbox, available in the UK from January, 1990, combines the best features of both manual and automatic transmissions. Direct gear changes are possible any time without power loss, whilst in fully automatic operation, undesirable upward gear changes before or in a corner are avoided. Since the driver can alternate between either the manual or automatic parallel transmission programmes at any time, he or she is presented with a much wider choice of gear change options, e.g. sporting manual gear changes in the country and more relaxing automatic gear changes in city traffic. Proven in competition, the power shift system combined with the Intelligent-Shift Programme (ISP) of the automatic programme pioneers a new era in automotive transmission technology.

Completing the news on the 911 Series line-up, it is confirmed that whilst production of the 911 Turbo ceased at the end of the 1989 model year, work is already proceeding on a successor.

The flagship 32-valve, 5-litre, V8 928 Series range has also been revised with the 928 GT introduced in the Spring of 1989, taking over as the sole manual representative. Both the 320 bhp, 165 mph 928S series 4 and the 330 bhp, 170

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mph 928 GT are offered with the new Porsche-developed, electronically-controlled, transverse rear differential lock-up (PSD). Based on the multi-disc lock-up introduced on the Porsche 959, it offers a lock-up range varying between 0-100% for improved traction and reduced oversteer effect during load transfer in a corner. This new technological innovation which offers decisive advantages over conventional limited-slip differentials from an active safety viewpoint follows on from the two technological world "firsts" introduced in the last model year, namely a tyre pressure monitoring system and a self-sufficient electronic information and diagnostic system.

With production of the 944 having now ceased in readiness for the previously announced move of all 4-cylinder production to Zuffenhausen and the increased capacity requirement for the 944S2 Cabriolet, the Porsche 944 Series now comprises the 211 bhp, 3-litre, 16-valve 944S2, the 944S2 Cabriolet and the 250 bhp, 2.5-litre 944 Turbo.

As with the 911 Carrera 4, the 149 mph 944S2 and 944S2 Cabriolet have drawn very positive media and customer reaction. Both models are powered by one of the most powerful normally-aspirated 4-cylinder engines in the world whose

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major characteristics are both its smoothness, high torque and ease of maintenance.

Flagship of the 944 Series, the competition-proven 161 mph 944 Turbo features a new 959 style rear spoiler which provides greater aerodynamic stability at high speeds and a new look.

New Porsche environmental and safety standards

Dr. Ing. h.c.F. Porsche AG was the first automobile manufacturer in the world to offer all of its models with controlled 3-way exhaust gas catalytic converters. Now that unleaded fuel is available at over 50% of petrol filling stations in the UK, Porsche Cars Great Britain Limited will be selling all new Porsche models with controlled 3-way exhaust gas catalytic converters as standard equipment.

Whilst in an in-depth research survey conducted by TÜV Bayern on car exhaust gas pollution sponsored by the German magazine *Auto Motor und Sport*, the 944S2 fitted with an exhaust gas catalytic converter was revealed as being one of Europe's cleanest cars with the lowest carbon monoxide emission, Porsche AG has developed a second-generation 3-way metal converter. This new converter is more robust and reacts more

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quickly during warm-up than ceramic coated controlled 3-way converters. It is fitted to both the new 911 Carrera 2 and 911 Carrera 4 models.

The second-generation metal converters were, in keeping with Porsche philosophy, first proven under the rigorous stress of motor sport competition. Every car used in the 944 Turbo Cup races from 1988 served as a mobile test bed and the new design passed with flying colours.

Since February, 1985, with the introduction of the 944 Turbo, Porsche AG has maintained an engineering philosophy of only designing new engines for its model range which could provide equal power and performance, whether or not they were equipped with 3-way exhaust gas catalytic converters. The belief that the latter so far provides the best current solution to reducing harmful vehicle exhaust emissions is reflected in the fact that over 90% of new Porsches sold in West Germany are fitted with converters.

Further attention to the environment was made in 1985 by introducing active-charcoal filters in tank venting systems to provide an effective check on escaping fuel vapour and from 1988, all

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Porsche models were fitted exclusively with asbestos-free brake pads, engine and gearbox gaskets plus clutch linings. sold in the UK will continue to be equipped, as standard, with an alarm. With the advent of the new 911 Carrera 2, Porsche AG is also the first automobile manufacturer in the world to fit ABS to all its models as standard.

Colours

The latest passive and active safety features include: metallic colours are offered for the 944 Series and one new one for the 911 and 928

- * ABS standard equipment on all models.
- * heated and electrically adjustable door mirrors standard equipment on all models.
- * anti-intrusion bars for side-impact protection on all models.
- * inertia reel 3-point rear safety belts on all models except Cabriolet versions.
- * tyre pressure monitoring system on 928 Series models.
- * electronically-controlled, transverse rear differential lock-up on 928 Series models.
- * all models now have energy absorbing PU front body sections.

Longlife anti-corrosion body warranty.
Continued/

- Ends -

Vehicle Security

All 1990 model year Porsches sold in the UK will continue to be equipped, as standard, with an alarm system which is automatically armed when the central locking is activated. All models will also be fitted with locking wheel nuts.

Colours

Four new metallic colours are offered for the 944 Series and one new one for the 911 and 928 Series.

Pricing

No 1990 model year new car prices will be published until 1st September, 1989.

Warranties

All new cars sold through the 37 Official Porsche Centres in the UK continue to be covered by a two-year unlimited mileage warranty, a three-year paintwork defect warranty and a ten-year Porsche Longlife anti-corrosion body warranty.

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26th June, 1989

08/944S2/89
23.6.89

944S2 - One of Europe's cleanest cars

According to an in-depth research survey conducted by TÜV Bayern on car exhaust gas pollution, sponsored by the German magazine, *Auto Motor und Sport*, the 944S2 fitted with an exhaust gas catalytic converter was found to be one of Europe's cleanest cars with the lowest carbon monoxide emission. As it enters the 1990 model year, the 944S2, along with all other Porsche models sold in the UK, is fitted with a controlled 3-way catalytic converter as standard equipment. In keeping with Porsche's declared engineering philosophy since the introduction of the 944 Turbo in February, 1985, the fitment of the catalytic converter affects neither performance or power output.

At the heart of the 944S2 is the highly acclaimed 3-litre, 16-valve, water-cooled, in-line 4-cylinder engine. Power output is 211 bhp at 5800 rpm, whilst engine torque is 280 Nm at 4100 rpm. Acceleration from 0-62.5 mph (0-100 km/h) is achieved in 7.1 seconds, whilst the top speed of the 944S2 is 149 mph.

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PORSCHE 911 TURBO

Two-door, 2+2 coupé body, rear window hatch	Bodywork
Four-cylinder, four-stroke, in-line engine, overhead camshaft driven by cooled belt, two control-valve balance shafts, exhaust turbocharging, water-cooled, intercooler, controlled 3-way exhaust gas catalytic converter	Engine
100 mm/3.94 in	Bore
78.9 mm/3.11 in	Stroke
2479 cc/151 in ³	Capacity
8.0 : 1	Compression
184 kW at 5800 rpm (250 hp DIN)	Engine Output
350 Nm at 4000 rpm (25.8 mkg, 258.5 lb-ft)	Maximum Torque
Transaxle layout with front-mounted engine and rear gearbox, bolted into a rigid drive unit by a connecting tube	Power Transmission
ABS dual-circuit hydraulic brake system, ventilated disc brakes front and rear, brake servo	Brakes
1100 kg/2425 lb	Weight
1710 kg/3770 lb	Weight
Acceleration from 0-100 km/h (0-62.1 mph) in 5.9 seconds	Performance
Top speed 280 km/h or 174 mph	Performance
15.2 l/100 km	Consumption
12.9 l/100 km	Consumption
10.4 l/100 km	Consumption

* It should be noted that figures under normal motoring conditions may vary from those achieved in official tests.

Vehicle fitted with controlled 3-way catalytic converter

26th June, 1989

10/911C2/89
23.6.89

New 911 Carrera 2

250 bhp, 3.6-litre two-wheel drive Carrera with optional revolutionary Porsche Tiptronic dual-function gearbox

The introduction of the new 911 Carrera 2 in Coupé, Targa and Cabriolet versions powered by a 3.6-litre, 250 bhp flat-six cylinder, air-cooled, normally-aspirated engine heralds in a new era in the 26-year-old history of the 911 as it succeeds the 3.2-litre model which has borne the Carrera name since 1983.

The new 911 Carrera 2 matches both visually and technically, with the exception of all-wheel drive, the 911 Carrera 4 which went into production in the Spring of 1989 after universal press acclaim.

The standard equipment includes a second-generation controlled 3-way metal exhaust gas catalytic converter, ABS braking system, power assisted steering, a new heating and ventilation system, a Blaupunkt Toronto stereo radio/cassette

Continued/

player with 10-speaker hi-fi pack, plus an ultrasonic alarm system which is automatically armed when the central locking is activated. In addition, the 911 Carrera 2 Cabriolet has an electrically operated hood.

Offered with the 911 Carrera 2, as optional equipment from January, 1990, is a revolutionary concept in gear change technology. The new Porsche Tiptronic dual-function gearbox, draws on the experience gained racing the dual-clutch PDK system in the Porsche 962C sports cars. Its introduction marks the first time that Porsche has offered an alternative transmission system in the 911 Series since production of the Sportomatic gearbox came to an end in 1979.

- Ends -

Viewed from inside the cockpit, the Porsche Tiptronic gearbox offers the driver the choice of two gear lever plans to select. The left-hand gear lever plan incorporates the familiar automatic as no hand throttle is required. The right-hand gear lever plan allows the lever, when pressed, to tip forward for upshifts and to tip back for downshifts. Selection of either

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26th June, 1989

11/911C2/89
23.6.89

The revolutionary Porsche Tiptronic dual-
function gearbox manual or automatic gear change
without power loss

Porsche's revolutionary new Tiptronic dual-function gearbox combines the best features of both manual and automatic transmissions. Porsche Tiptronic allows the driver to make direct gear changes at any time without power loss resulting from the necessary clutch disengagement in a conventional manual transmission. Furthermore, during optional, fully-automatic operation, undesirable upshifts before or in a corner which can occur with a conventional automatic transmission are avoided.

Viewed from inside the cockpit, the Porsche Tiptronic gearbox offers the driver the choice of two gear lever planes to select. The left-hand gear lever plane incorporates the familiar selector positions found on an automatic transmission, whilst the right-hand gear lever plane allows the lever, when pressed, to tip forward for upward gear changes and to tip back for downward gear changes. Selection of either

Continued/

transmission mode is via a gate level with the 'Drive' (D) position of the automatic transmission. Gear and transmission selection are indicated to the driver on the dashboard.

Since it is possible for a driver to alternate between both types of transmission or remain in one, he or she is presented with a much wider choice of gear change options, e.g. sporting manual gear changes in the country and more relaxing automatic gear changes in city traffic. Starts are possible in either transmission mode and can be made progressively from idle or using harsh acceleration.

The automatic left-hand programme does not differ from any conventional automatic transmission layout and offers the normal P, R, N, D, 3 and 2 selection positions. However, the "Intelligent Shift Programme" (ISP) avoids the disadvantages normally associated with a conventional automatic system by preventing any undesirable upshifts before or in a corner. An electronic control unit reads a given driving situation from the throttle position and degree of lateral acceleration in a corner. Higher and lower gear change points are thus raised to avoid any unwanted gear changes which might then affect the balance of the car and driving safety. This

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variable adjustment of the gear change points replaces the normal economy and performance gear change programmes found on some conventional automatic transmission systems.

A further benefit of the automatic programme is that noise, power loss and fuel consumption are reduced compared to a conventional system via a converter lock-up.

The manual gear change system was first perfected in the 962C racing sports car where Porsche used a dual-clutch gearbox (PDK) to great effect to win the SuperCup series in 1987. Higher gear changes are made by pushing the lever forwards and lower ones by pulling it back. The gear changes take place immediately without any interruption of power delivery. Whilst drive remains constant when changing up, immediate engine braking is provided when changing down. A safety switch prevents over-revving of the engine if the latter change is too early and the gear selection memorised so that, when engine revs allow, the change is executed safely and automatically. The same safety switch prevents over-revving of the engine whilst accelerating in a low gear by automatically changing up.

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The new Porsche Tiptronic dual-function gearbox, which combines an automatic, converter type power shift transmission with a new combination of manual and automatic gear selection, was developed by Porsche in cooperation with Bosch and ZF. Porsche engineers are convinced that manual power shift transmission systems will have widespread appeal in the future. Meanwhile, the Porsche Tiptronic gearbox maintains Porsche at the leading edge of automotive technology.

- Ends -

Bodywork	Body
Engine	Horizontally opposed boxer engine, dry sump, catalytic converter
Capacity	100 km/h 3.7 s, 0-100 km/h 7.7 s
Compression	10.5:1
Engine Output	150 kW (204 hp) at 5500 rpm (250 hp (184 kW) at 5500 rpm)
Maximum Torque	310 Nm at 4250 rpm (228 lb-ft at 4250 rpm)
Power Transmission	Engine in vehicle in 4th gear at 100 km/h
Brakes	ABS dual-circuit hydraulic system with four vented disc brakes and servo
Weight	DIN empty weight 1350 kg/2977 lb, total weight 1690 kg/3726 lb
Performance	Acceleration from 0-100 km/h 7.7 s (0-62.5 mph) in 5.7 s, 0-160 km/h 16.1 s or 0-100 mph 16.1 s
Fuel Consumption	Simulated urban driving 15.5 mpg, constant driving 10.5 mpg, 90 km/h/55 mph 8.2 mpg
Tests*	Constant driving 10.5 mpg, 90 km/h/55 mph 8.2 mpg, 120 km/h/75 mph 12.1 mpg
1978	

* It should be noted that figures for 1978 are based on test results for the 1978 model year.

* Vehicle equipped with catalytic converter

TECHNICAL DATA

PORSCHE 911 CARRERA 2

Bodywork	-	Two-door, 2+2 coupé, targa or cabriolet body.
Engine	-	Air-cooled, six-cylinder, four-stroke horizontally opposed boxer engine, dry sump lubrication, controlled 3-way exhaust gas catalytic converter.
Bore	-	100 mm/3.74 in
Stroke	-	76.4 mm/2.93 in
Capacity	-	3600 cc/193 in ³
Compression	-	11.3 : 1
Engine Output	-	184 kW at 6100 rpm (250 hp DIN)
Maximum Torque	-	310 Nm at 4800 rpm (31.6 mkg, 210 lb-ft)
Power Transmission	-	Engine and gearbox in single drive unit at the rear.
Brakes	-	ABS dual-circuit hydraulic brake system with four ventilated disc brakes and servo.
Weights	-	DIN empty weight : 1350 kg/2977 lb Permitted total weight : 1690 kg/3726 lb
Performance	-	Acceleration from 0-100 km/h (0-62.5 mph) in 5.7 seconds Top speed 260 km/h or 161 mph
Fuel Consumption Tests*+ (Passenger Car Fuel Consumption Amendment Order 1978)	-	Simulated urban driving: 16.5 mpg Constant speed driving at 90 km/h/56 mph: 36.2 mpg Constant speed driving at 120 km/h/75 mph: 29.1 mpg

* It should be noted that figures under normal motoring conditions may vary from those achieved in official tests.

+ Vehicle fitted with controlled 3-way catalytic converter

Continued/

PORSCHE 911 CARRERA 4

Bodywork	Two-door, 2+2 coupé, large or cabriolet body
Engine	Air-cooled, six-cylinder, four-stroke horizontally opposed boxer engine, dry sump lubrication, controlled 3-way exhaust gas catalytic converter
Bore	100 mm/3.94 in
Stroke	76.4 mm/3.01 in
Capacity	3600 cc/199 in ³
Compression	11.3 : 1
Engine Output	184 kW at 6100 rpm (250 hp DIN)
Maximum Torque	310 Nm at 4800 rpm (228 lb-ft)
Power Transmission	Engine and gearbox in single drive unit at the rear
Brakes	ABS dual-circuit hydraulic brake system with four ventilated disc brakes and servo
Weights	DIN empty weight: 1550 kg/3427 lb Permitted total weight: 1850 kg/4079 lb
Performance	Acceleration from 0-100 km/h (0-62.5 mph) in 5.7 seconds Top speed 260 km/h or 161 mph
Fuel Consumption	Simulated urban driving: 16.3 mpg Constant speed driving at 90 km/h/56 mph: 26.2 mpg Constant speed driving at 120 km/h/75 mph: 29.1 mpg

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- Vehicle fitted with controlled 3-way catalytic converter

the 959 and the new 911 Carrera 4

electronically-optimised all-wheel drive system
26th June, 1989 12/911C4/89
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in the Paris-Dakar Raid. Also in 1986, a 911

race version of the 959, finished 7th at Le Mans

The 911 Carrera 4
The advantages of rear-engined/all-wheel drive

Advantages of Porsche's dynamic all-wheel drive control

The 250 bhp 3.6-litre 911 Carrera 4 with all-wheel drive is the most powerful, normally-aspirated production 911 ever. It accelerates from 0-62.5 mph (0-100 km/h) in 5.7 seconds and has a top speed of 161 mph.

improved traction, and the spread between front

which successfully avoid the risk of rear axle

The all-wheel drive technology of the 911 Carrera 4 is the culmination of eight years of technical development and experience gained on the road and in motor sport.

These advantages apply to varying degrees

over two-wheel drive. The latter's advantages

In 1981, the 911 Cabriolet "Studie" with

all-wheel drive was unveiled at the IAA Frankfurt

motor show. Three years later, an all-wheel

drive 911 Carrera driven by René Metge became the

first sports car to win the gruelling Paris-Dakar

Raid, heading a three-car Porsche finish for the

Team prize. On 23rd March, 1984, Board approval

was given to the 911 Carrera 4 project. In 1985,

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the 959 won the Pharaohs Rally using an electronically-optimised all-wheel drive system and a year later 959s finished 1st, 2nd and 6th in the Paris-Dakar Raid. Also in 1986, a 961, race version of the 959, finished 7th at Le Mans and won the IMSA-GTX class on its debut outing. A year later 959 production began.

Advantages of Porsche dynamic all-wheel drive control

The principle advantages of all-wheel drive over conventional two-wheel drive are full use of vehicle weight to transmit drive torque, i.e. improved traction, and the spread between front and rear axles of the drive influences which affect vehicle dynamics, i.e. improved driving stability.

These advantages apply to varying degrees over two-wheel drive. The latter's advantages are lower weight and simpler technology. The disadvantages of two-wheel drive in terms of traction and driving stability depend on whether the vehicle is front or rear-wheel driven.

Compared to other two-wheel drive systems, a rear-engined, rear-wheel drive car offers the

Continued/

greatest advantages of traction. Under hard acceleration, a higher proportion of the vehicle's unladen weight is over the driven wheels. This is why the 911 can apply its power so easily.

Thus, in its earlier 911 Cabriolet "Studie", Porsche combined in a high performance road car all-wheel drive with the familiar rear-engined layout of the 911. An additional drive shaft led from the gearbox located at the rear, in front of the engine, to the front axle. This driveshaft was located in a tube as found in the 4 and 8-cylinder Transaxle ranges. The layout was subsequently retained for every all-wheel drive car based on the 911.

- Ende - Experience in the Paris-Dakar Raids

underlined the clear tractional advantages, even for rear-engined, rear-wheel drive cars, of additional drive to the front wheels. Naturally, similar traction improvements are evident when starting or accelerating on any surface with a low coefficient of friction, i.e. on wet or icy roads or on snow.

The second principle advantage of all-wheel drive of increased driving stability shows itself

Continued/

both in a straight line and under cornering. With properly controlled all-wheel drive, directional instability on the straight caused by a spinning wheel is prevented. Also with a dynamic all-wheel drive control system, understeer, oversteer and dynamic axle load transfers are influenced for increased driving safety.

Taken a stage further, the facility for driver input is desirable as exemplified by the electronically-optimised variable all-wheel drive system of the 959. It is from this ultimate system that the Porsche dynamic all-wheel drive control system found on the 911 Carrera 4 is descended.

- Ends -

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The maximum torque of the engine is 310 Nm at 4800 rpm. With 250 bhp developed at 6100 rpm, the 3.6-litre engine powers the 4 from a standing start to 62.5 mph (0-100 km/h) in 5.7 seconds. The 911 Carrera 4 is capable of 151 mph.

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The 911 Carrera 4

The most powerful normally-aspirated 911 to date

The power output of 250 bhp is developed even though a controlled 3-way exhaust gas catalytic

At the heart of the 911 Carrera 4 is the most powerful normally-aspirated flat six-cylinder air-cooled production engine in 911 history - a twin-ignition 3.6-litre unit producing 250 bhp.

Besides the twin-ignition developed from Porsche PFM 3200 aero technology, the 3.6-litre engine differs from its predecessors in featuring a revised air intake manifold with resonance flaps, a re-designed exhaust system, new heat exchangers which supply warmth to the new heating system shortly after cold start and a new Motronic engine management system with knock control. The latter in combination with the twin ignition system provides for the most efficient combustion of the fuel/air mixture and reduces the sensitivity of the engine to poor grades of fuel.

Underneath, the smooth underbody of the car not only improves the aerodynamics of the 911

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The maximum torque of the engine is 310 Nm at 4800 rpm. With 250 bhp being developed at 6100 rpm, the 3.6-litre engine powers the 911 Carrera 4 from a standing start to 62.5 mph (0-100 km/h) in 5.7 seconds and on to a top speed of 161 mph.

The power output of 250 bhp is developed even though a controlled 3-way exhaust gas catalytic converter is fitted as standard equipment. This second generation metal catalytic converter has been thoroughly tested in 944 Turbo Cup racing from 1988 and offers various advantages over ceramic coated converters. It is more robust and reacts more quickly during warm-up.

The 3.6-litre engine also proves more environmentally-favourable than its predecessors in terms of noise. Whilst the unmistakable sound of the classic air-cooled flat six-cylinder engine can still be recognised, the noise of the engine has been more effectively dampened by the unit being partially encapsulated. A two-mass flywheel has also been introduced to reduce interior noise levels by isolating the engine from the gearbox.

Underneath, the smooth underbody of the car not only improves the aerodynamics of the 911

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The maximum torque of the engine is 370 Nm at 4800 rpm. With 250 bhp being developed at 6100 rpm, the 3.6-litre engine powers the 911 Carrera 4 from a standing start to 62.5 mph (10-100 km/h) in 5.7 seconds and on to a top speed of 161 mph.

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Carrera 4 but also ensures the engine is kept clean even in the worst road conditions. Indeed, the factory claim the engine is one of the best dirt-protected engines ever built.

- Ends -

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23.6.89

The front windscreen is bonded into position whilst the smooth hood flows along the

The 911 Carrera 4
Aerodynamic body in Coupé, Targa and Cabriolet
versions with retractable rear spoiler for zero lift

As a result of the bodywork changes, the drag coefficient has been reduced from 0.395 to 0.32.

The body of the 911 Carrera 4 in Coupé, Targa and Cabriolet versions, which is produced in the modern body plant at Zuffenhausen, differs from the previous 911 Carrera in the structure of its underbody. This is due to the space required for all-wheel drive which necessitates a larger central tunnel and different space proportions in the nose section. The high aerodynamic qualities of the 911 Carrera 4.

On the outside, these fundamental changes are translated in a body shape which closely with resembles the traditional 911 silhouette. Integral front and rear body sections harmonise the contour of the car without altering its character. Experience here has been gained originally with the 928 with good use made of concealed bumpers protected by deformable polyurethane panels. The familiar headlamps 911 mounted in the raised front wings remain the

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unaltered but both the front and rear high intensity lamps, together with the rear lamp clusters have all been blended into the bodywork. The front windscreen is bonded into position whilst the smooth rain channels extend along the A pillars.

As a result of the bodywork changes, the drag coefficient has been reduced from 0.395 to 0.32. However, low lift is a more important consideration for high performance handling than low drag. Whilst the Cd value could have been reduced still further, the front and rear spoilers together with the flat undertray have contributed to a lift coefficient approaching zero. The combination of low drag and near zero lift underlines the high aerodynamic qualities of the 911 Carrera 4.

Originally, Porsche pioneered the way with front and rear aerodynamic spoilers on production cars. The retractable rear spoiler on the 911 Carrera 4 takes this lift-reducing aerodynamic aid a step further by underlining its functional rather than cosmetic value.

Whereas the rear spoiler on the previous 911 Carrera changed the silhouette of the 911, the

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use of the retractable rear spoiler allows the classic lines of the 911 to be retained when stationary, whilst ensuring optimum air flow conditions and the intake of additional clean air into the engine when on the move. An electric motor operates the rear spoiler which is part of the engine cover section. At 50 mph, the rear spoiler is automatically extended and retracted at around 6 mph. This solution ensures that the spoiler is always deployed at high speeds for optimum handling whilst avoiding unnecessary opening and closing at low and medium speeds which could affect balance. When open, the air intake area is doubled.

The final styling changes relate to the special disc-style cast alloy 6J x 16 front and 8J x 16 rear road wheels fitted with respectively 205/55 ZR 16 and 225/50 ZR 16 ultra-low profile tyres. These wheels have enlarged openings for additional brake cooling and are specifically designed for the ABS and all-wheel drive systems.

Whilst the interior layout remains unchanged, 959 influences are evident and the 911 Carrera 4's dashboard treatment incorporates a new heating system. Heating and ventilation is now

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operated by similar controls to that found on the 944 Series. The output and temperature consistency set new standards for an air-cooled engine, by hot and cold air being blended in the mixing chamber prior to delivery, and can be supplemented with air conditioning available as optional equipment.

The round instrument dials are back-lit with symbols and text only becoming visible when necessary for driver information. The headlamp switch now rotates in keeping with all other Porsche models and the gear lever, centre console and glovebox have all been re-designed.

Under the front bonnet, the fuel tank capacity has been reduced from 18.5 gallons (84 litres) to 16.7 gallons (76 litres) in order to accommodate the all-wheel drive. However the touring range is hardly affected due to the improved fuel consumption.

- Ends -

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26th June, 1989

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23.6.89

The 911 Carrera 4

All-wheel drive and chassis details

The 911 Carrera 4 is the first Porsche model to embody 959-derived technology and thus, for the first time, a wider circle of Porsche enthusiasts can benefit from electronically-controlled all-wheel drive.

Based on the experience gained with the 959, the Porsche dynamic all-wheel drive control system represents the very latest development standard in all-wheel drive technology.

A planetary gear train, combined with a 5-speed gearbox, normally distributes 31% of the drive torque to the front axle and 69% to the rear axle. This ratio split was selected in order to preserve the 911's classic driving characteristics whilst enhancing the car's considerable performance potential.

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Whilst distribution of drive torque to the front or rear axles is predetermined by the central differential on a 31% : 69% split, this can be varied through the effect of locking devices when slip occurs - more power being transmitted to the axle capable of taking it. Thus, the system is automatically adjusted to driving conditions.

Traction and driving stability in a straight line, when cornering or under dynamic axle load transfers are therefore constantly optimised.

As a rule the larger share of drive torque remains with the more highly loaded rear axle so that, as mentioned, the basic sporting characteristics of the 911 are maintained. The advantage in driving dynamics on a dry road with a good coefficient of friction is particularly evident.

Individual wheel slip is registered by electronic sensors and prevented by hydraulically-controlled locks. The system has a reaction speed comparable to that of an ABS system and does in fact include elements of the latter. The wheel revolutions for example are monitored by the ABS sensors and constantly

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compared in the computer. Lock-up can be initiated with slip differentials as low as 0.8 km/h and within 2.5/1000th second.

Threshold values which lead to lock-up are however variable. At higher speeds, the system permits larger differences than at lower ones.

Furthermore, different tyre diameters or variations in air pressure can lead to variations in wheel revolutions without slip actually being present. For this reason, electronic modules are programmed to recognise such conditions and take them into account.

Since it was always intended that the 911 Carrera 4 should have an ABS braking system compatible with an all-wheel drive system, the chassis of the car had to be designed to accommodate both.

The 911 Carrera 4 therefore features negative scrub radius front suspension geometry for the Porsche-designed ABS system so each wheel is independently controlled by a lower wishbone and inclined MacPherson strut arrangement.

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At the rear, inner semi-trailing arms with coil-sprung shock absorbers are used. The former are designed in such a way that they perform a positive track-correcting function when lateral forces appear, thus increasing driving stability during dynamic axle load changes in a corner.

As a high proportion of the extra weight of the all-wheel drive system is borne by the front wheels, speed regulated variable power assisted steering is used. It is similar to that found on the 4 and 8-cylinder models and provides the driver with considerable feel.

Finally, the Porsche-designed ABS maximises its effect until milliseconds before a complete stop is reached, a feature which provides optimum ABS braking when combined with an all-wheel drive system.

- Ends -

TECHNICAL DATA

PORSCHE 911 CARRERA 4

Bodywork	-	Two-door, 2+2 coupé, targa or cabriolet body with retractable spoiler.
Engine	-	Air-cooled, six-cylinder, four-stroke horizontally opposed engine, dry sump lubrication, controlled 3-way exhaust gas catalytic converter.
Bore	-	100 mm/3.74 in
Stroke	-	76.4 mm/2.93 in
Capacity	-	3600 cc/193 in ³
Compression	-	11.3 : 1
Engine Output	-	184 kW at 6100 rpm (250 hp DIN)
Maximum Torque	-	310 Nm at 4800 rpm (31.6 mkgp, 210 lb-ft)
Power Transmission	-	All-wheel drive system. Normal split 31% front : 69% rear.
Brakes	-	ABS dual-circuit hydraulic brake system with four ventilated disc brakes and servo
Weights	-	DIN empty weight : 1450 kg/3197 lb Permitted total weight : 1790 kg/3947 lb
Performance	-	Acceleration from 0-100 km/h (0-62.5 mph) in 5.7 seconds Top speed 260 km/h or 161 mph
Fuel Consumption Tests** (Passenger Car Amendment Order 1978)	-	Simulated urban driving: 15.8 mpg Constant speed driving at 90 km/h/56 mph: 35.3 mpg Constant speed driving at 120 km/h/75 mph: 29.7 mpg

* It should be noted that figures under normal motoring conditions may vary from those achieved in official tests.

+ Vehicle fitted with controlled 3-way catalytic converter