PORSCHE

911 Carrera / 911 Turbo

At the end of the 1940's, many people thought that we were unwise to start building performance cars. At that time, the indications were far from favourable that our ambitious undertaking would succeed. As soon as we had created those first few handmade cars however, it quickly became apparent that there were sports-minded drivers who shared our dream. These were discerning individuals who desired above all a car with superior handling that was swift, safe and intensely satisfying to drive.

Thanks to those early success, we were able to continue building performance cars the way we wanted them. To this day, we have continued to develop distinctive vehicles of unique sporting character.

Just as our ideals have remained constant over the years, so have those of our customers. Indeed, it is this common belief in ideals and individual ambitions that unites all Porsche drivers within a single 'Porsche family'. This 'family' has grown much larger than we ever imagined in our wildest dreams. It now covers all parts of the world and includes all those who share our 'sporting philosophy'.

Although that in itself is a substantial achievement, it does not allow us the right to rest on our laurels. Our success has always been built on staying one step ahead of our competitors.

Consequently, we invest significantly every year in the most effective research and development, ensuring the latest technologies are applied to our competition and road-going performance cars. The results of our endeavours can be seen in the highly individual Porsche 911 Series, which I take great pleasure in presenting in the following pages.

As you will discover, we continue to fulfil our customers' requirements and build performance cars that provide the most memorable driving pleasure.

Yours sincerely,

Ferry Porsche.


Carrera

DRIVING IN ITS PUREST FORM

There is probably no other performance car in the world with as rich a heritage in motorsport and sports car motoring as today's Porsche 911 Series. The Porsche 911, with its distinctive shape and totally individual character has appealed to true driving enthusiasts for over two decades. Throughout an era when mass-production has increasingly dictated conformist car design, the 911 has continued to be hand-built on a very different principle: that the demands of the sporting driver come first. As a result, the 911 Series offers unprecedented rewards to those who attain this classic Porsche. A timeless body design; a supremely powerful engine; exceptional levels of roadholding; everyday practicality, reliability and economy – these are the hallmarks of the Porsche 911 Series.

THE CLASSIC DRIVING EXPERIENCE

Individual 911 Carrera and 911 Turbo models provide, as experts recently attested, "one of the world's most exhilarating driving experiences". Such acclaim has evolved as a consequence of 25 years constant development of the Porsche 911 for road-going and world beating competition. Enhancement of the engine, transmission and suspension systems, as well as development of the interior and exterior design, has enabled the Porsche 911 Series to remain at the forefront of automotive development, yet lose none of its classic features.

The distinctive style of each Porsche 911 model is inherited from a timeless body shape of sleek and smooth contours, allied to an unconventional yet universally acclaimed engine concept. The rear-mounted, air-cooled, horizontally opposed six cylinder "boxer" engine has always defied the rules of convention. Today, it still remains one of the most respected of engine concepts in terms of power output, economy, durability, reliability and environmental acceptability.

This unique combination of a seemingly timeless body shape with a most sophisticated and thoroughly developed engine underlies the worldwide appeal of the traditional Porsche – the 911 Series. The Porsche 911 Carrera Coupé exemplifies this classic 911 tradition, epitomising all that is most desired of the exclusive Porsche marque – distinctive style and scintillating performance combined with practicality, reliability, safety and economy.

A special feature of the Porsche 911 Series is the variations of Coupé, Targa and Cabriolet body options, each of which equally retain all the traditional characteristics that have made the Porsche 911 a classic and world famous automobile concept. This flexibility of the body design as well as Sport Equipment options, enables performance-minded drivers to tailor the Porsche 911 to their precise needs.

Picture: The classic Porsche 911 Carrera Coupé

HIGH PERFORMANCE PLEASURE WITH EVERYDAY PRACTICALITY

All Porsche 911 models fulfil their "Carrera" designation, which at Porsche is synonymous with the very highest performance. The power potential of the 911's rear-mounted engine is enormous. With 3,164 cc, this six cylinder air-cooled "boxer" engine develops a potent 231 bhp (DIN); its turbocharged derivative a staggering 300 bhp (DIN).

This world famous engine has defied the rules of convention, yet today still powers some of the most technically advanced and acclaimed performance coupés ever to bear the Porsche badge: acceleration from 0-62.5 mph is achieved in 6.1 seconds and a maximum speed in excess of 150 mph is attainable by all Carrera models.

Constant development of this proven engine concept has enabled the production of a power unit that is reliable, durable and environmentally acceptable, yet delivers its latent power with unrivalled smoothness and flexibility. Largely unmodified 6-cylinder Porsche engines today power light aircraft – indicative of the engine's dependability and durability.

The massive performance potential of the Porsche 911 Series does not however, make it any less suitable for everyday driving. It

was Ferry Porsche himself who said that this 2 + 2 coupé should be practical enough "to carry a customer's golf bags in comfort". This 'design philosophy' provides the sports-minded driver with everyday practicality, as well as the best possible performance.

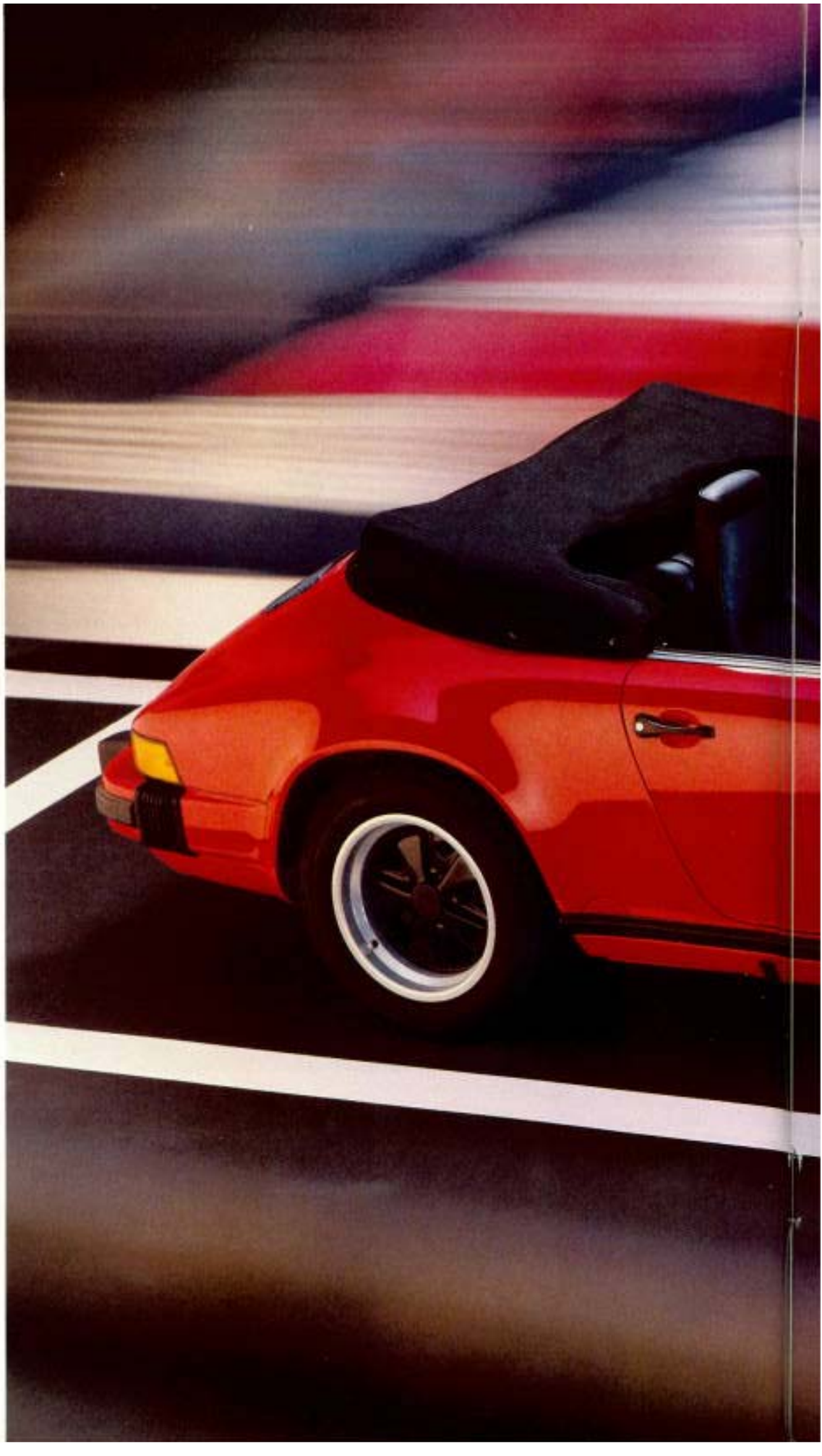
Whilst retaining the Coupé style, the Porsche 911 Carrera Targa above, enables an appreciation of another driving sensation – open-air motoring. The integral "roll-over" bar and the streamlined rear window ensure that the performance of this model can be safely used with or without the roof panel. In conjunction with the development of the 911-derived competition vehicles, Porsche completed wind tunnel studies with the design objective of improving aerodynamic performance. The contoured 911 body style is however, not merely for appearance but influences fuel consumption and road handling as significantly as the thoroughbred engine, transmission and suspension. Consequently, the 911 Series has impeccable straight-line stability at speed and secure road holding when braking and cornering.

Picture: The practical Porsche 911 Carrera Targa

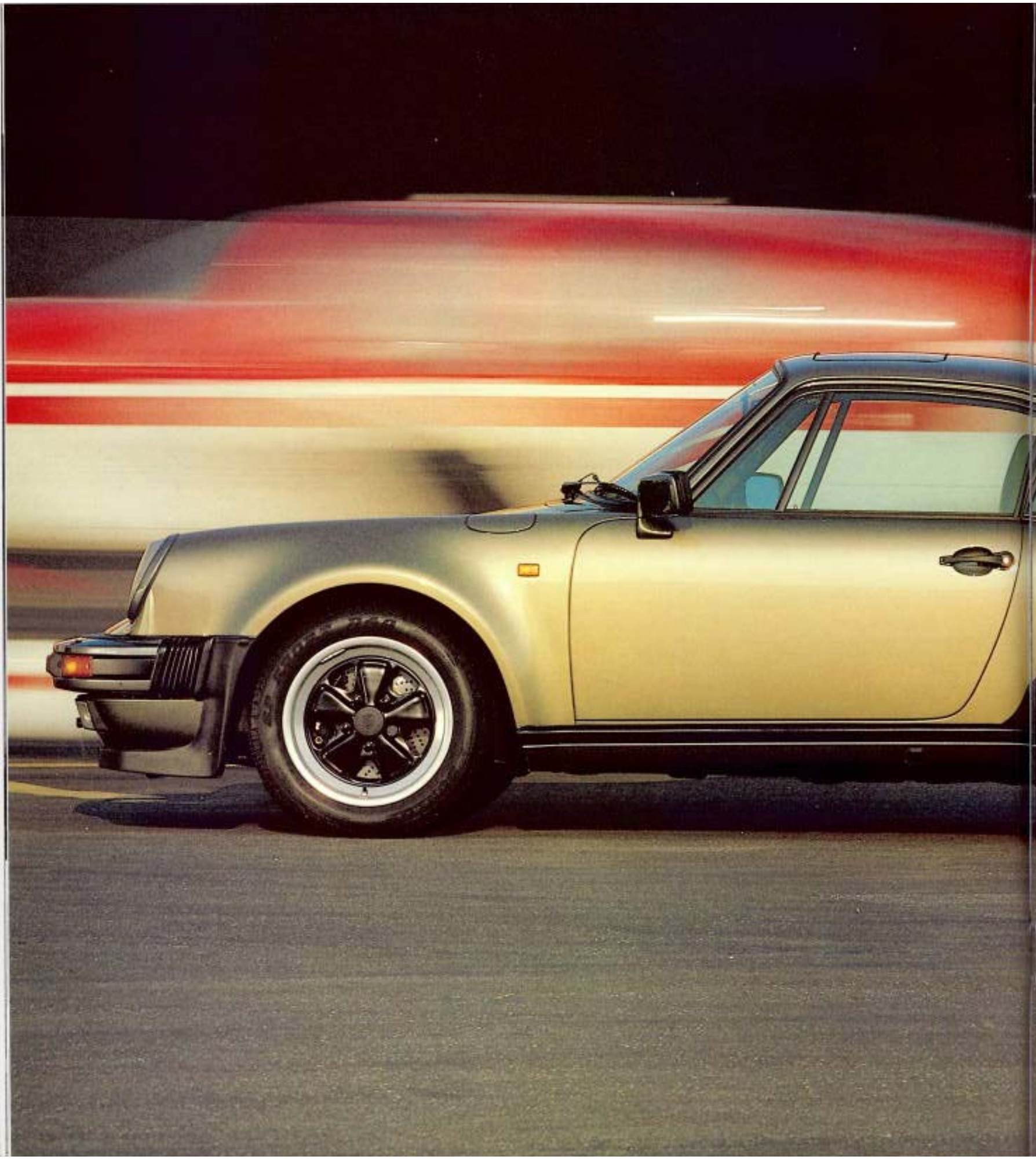
All 911 Carrera models have a subtle front spoiler to reduce underbody air turbulence and maintain directional stability. Air-lift forces may be further minimised with the optional fitment of a rear spoiler. Equally, engine air-cooling and passenger compartment ventilation inlet positioning have been optimised in a wind tunnel for throughput, as have the rubber door and window seals, mirrors and windscreen wipers for noise reduction.

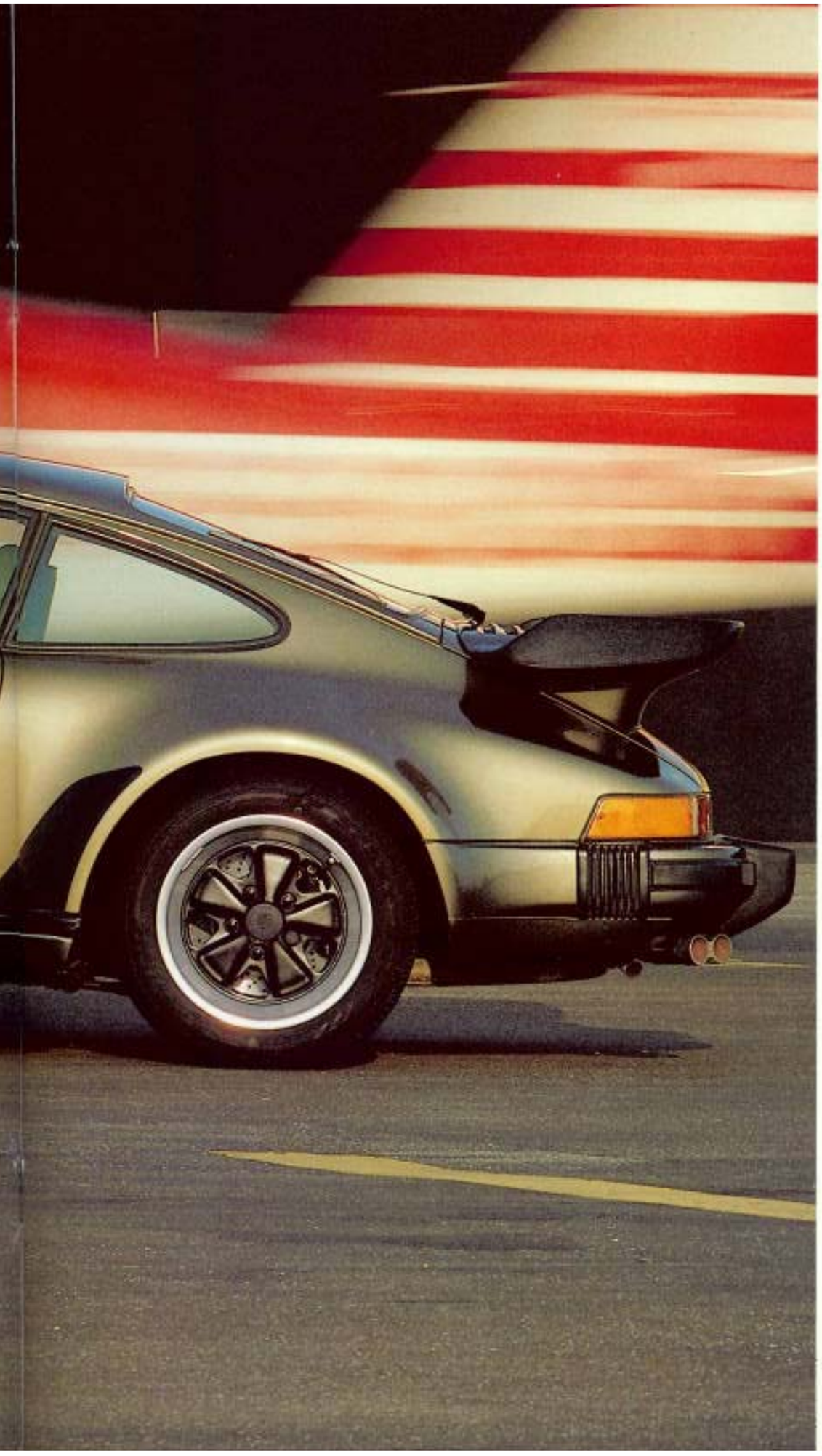
The traditional hand-built quality which Porsche applies to the 911 Series has enabled all models to be covered by the unique, routine maintenance-free Porsche Longlife 10-year anti-corrosion body warranty and 3-year paintwork warranty. Still largely hand-assembled, the thoroughbred engine complements the Porsche 911 bodywork in terms of quality and exclusivity, enabling Porsche to provide a 2-year mechanical warranty and 12,000 mile service interval requirement for all 911 models. Combined with the comprehensive body warranty, such confidence by Porsche in the classic 911 Series ensures the timeless appeal, desirability and practicality of 911 ownership.

True open-top motoring at its most refined is experienced with the Porsche 911 Carrera Cabriolet shown here. This acclaimed model has an electrically retractable hood as standard. When closed, the hood enables the performance of the 911 Carrera to be fully appreciated, whilst the strengthened windscreen pillars enhance safety when performance motoring "al-fresco".



Picture: The acclaimed 911 Carrera Cabriolet





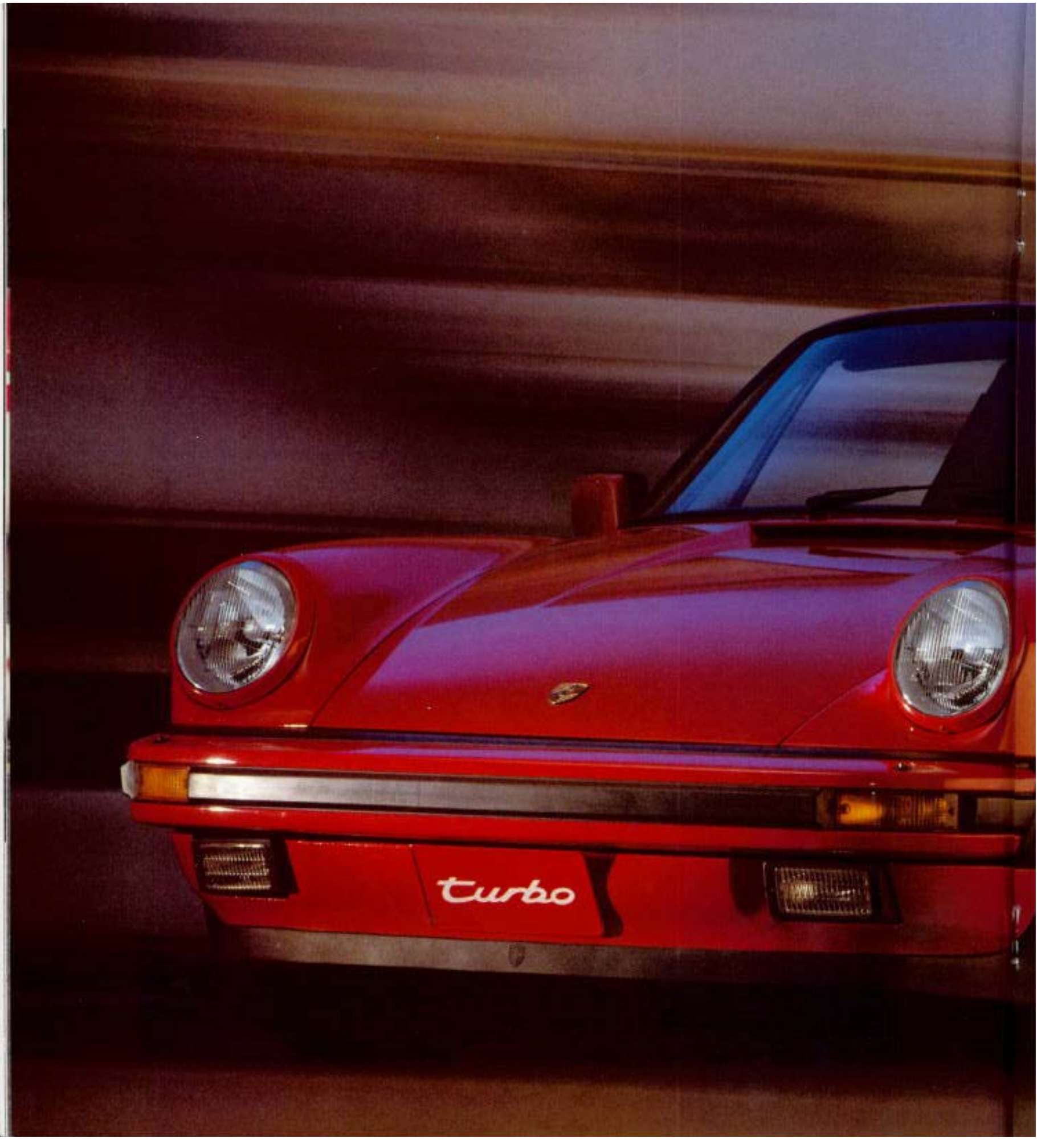
THE "TURBO"

Ultimate performance within this acclaimed Porsche 911 Series is the prerogative of the unrivalled Porsche 911 Turbo models. The first high performance car ever to be turbocharged, the "Turbo" maintains its position as the world's most covetted supercar. Huge reserves of power complemented by remarkable limits of roadholding, make it a machine of unparalleled performance. Yet its practicality is vouched for by exceptional reliability, exemplary fuel efficiency and and ease of driving.

Fitted with a derivative of the flat six cylinder 911 Carrera engine, this larger 3,299cc turbocharged power unit develops a staggering 300 bhp (DIN) at 5,500 rpm, producing "sling shot" acceleration and a maximum speed comfortably in excess of 160 mph.

In June 1984, a standard production Porsche 911 Turbo won the title: "The Fastest Accelerating Production Car in the World"; the first official event of its kind organised by the RAC Motor Sports Association. The final winning time, from a standing start to the one kilometre mark, was 23.985 seconds with a final speed of 135 mph. To date, this achievement has not been bettered.

As the ultimate in the 911 Series, the Porsche 911 Turbo models have distinctive spoilers to enhance the aerodynamic styling exemplified by the individual 911 Carrera models. The deeper front, rubber-edged spoiler on the 911 Turbo minimises underbody air turbulence, while the advanced rear spoiler ensures maximum air cooling to the all-powerful turbo engine, optimises rear stability and increases tyre adhesion to accommodate the greater performance.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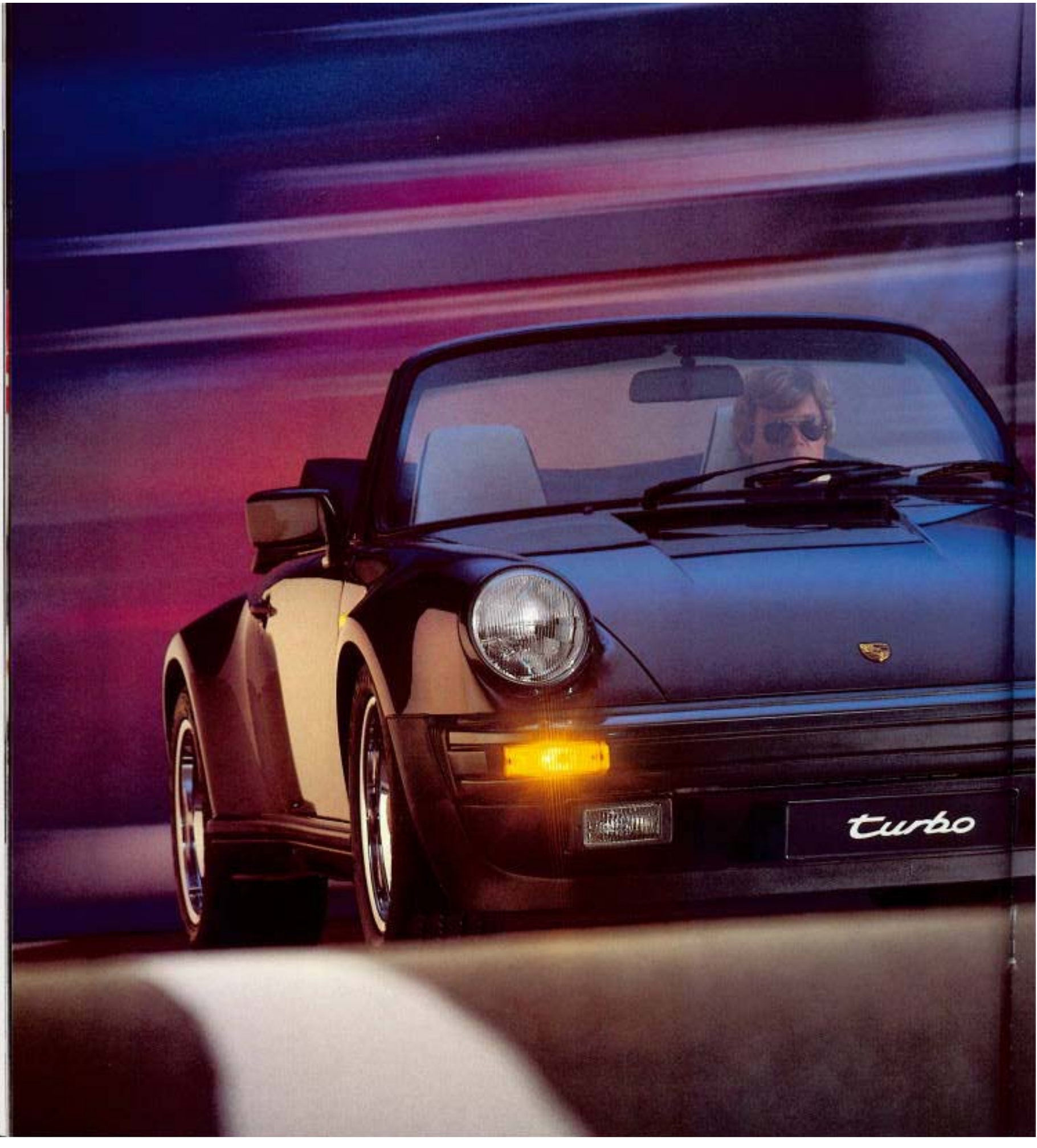

turbo

THE 911 TURBO TARGA AND CABRIOLET

Porsche have combined the classic performance of the 911 Turbo with the charisma of the Targa and Cabriolet body styles. The integral strength of these 911 body variants means that they can be made available with the more powerful engine, running gear and braking system of the 911 Turbo.

This potent combination creates two of the most desirable cars in the world. For the first time, the unique sensation of open-air motoring and the legendary performance of the Porsche 911 Turbo can be experienced together. For the sporting driver, or the true individualist, the Porsche 911 Turbo Targa and 911 Turbo Cabriolet offer the ultimate "al-fresco" options.

INTERIOR SAFETY AND COMFORT

CLEAR INFORMATION AT ALL TIMES

Ergonomics – "the relationship between the driver, passengers and the car". The enhancement of this scientific relationship has been a concerted design philosophy applied by Porsche to the interior of the 911 Series.

Operational ease of driving and a comfortable yet supportive seating design are essential for sustained fatigue-free control of such technically advanced and high performance cars. Pedals, steering wheel and gear lever are positioned for natural leg and arm movements, minimising physical effort required and maximising driver sensitivity to the car's road behaviour. The result is that Porsche motoring is not only exhilarating and satisfying, but has been made as safe as possible.

The "cockpit concept" underlying the 911 Series dashboard design ensures that all instruments, switches, controls and ventilation outlets are positioned for ease of operation, optimising driver concentration and physical comfort.

The comprehensive, clearly calibrated primary instruments remain largely within the driver's field of view, irrespective of the seating position. A sophisticated electronic system monitors the car's main functions, accurately informing the driver of engine and vehicle speeds, engine and oil temperature, fuel level, oil pressure and level, voltage charge and brake pad wear. In addition, the Porsche 911 Turbo has a turbo-boost gauge incorporated into the centrally positioned rev counter.

The Porsche 911 Series is ideally suited for high quality audio equipment and is fitted with a stereo radio and cassette system as standard. (Please refer to the Model Range Price List or consult your Official Porsche Centre for details.)

Insert picture: The dashboard 911 Turbo

"MADE-TO-MEASURE" SEATING COMFORT

The 911 Series interior is the result of a philosophy of design which prescribed operational safety with physical comfort above all. A comfortable seat is as crucial to a comfortable ride, as is the design of a car's suspension or the correct choice of wheels and tyres.

The anatomically correct seats are designed with that belief firmly in mind. They are required to transmit information regarding the car's behaviour, as well as to provide comfortable, supportive physical positioning for driver and passengers. As is to be expected from Porsche, the design of the seats and their spring rate has been carefully co-ordinated with the car's suspension and "anti-roll" settings.

The contours and upholstery of the front seats with integral head supports, avoid the quicker onset of fatigue by ensuring a relaxed posture on long journeys. Yet they also provide firm lateral support under high speed cornering. Re-positioning of the front seats is electrically operated with side-mounted rocker switches to independently adjust front and rear squab angle and thereby seat height, as well as backrest angle. Legroom adjustment is electric.

Seat heating (standard on 911 Turbo models) and a fully adjustable orthopaedic lumbar support are also available as options for the standard 911 Carrera seats. Ambitious drivers with greater sporting aspirations may select optional, specially contoured Sport seats.

A GENUINE 2 + 2 COUPÉ

As a rear-engined high performance coupé, the 911 Series does not offer the full rear seating capacity of a large saloon. The two occasional rear seats of the Porsche 911 will however, be comfortable for short journeys. The rear backrests can be folded down to increase load space to complement the front luggage area. Door pockets and a lockable illuminated glovebox add further to interior convenience and practicality.

THE SPECIAL AMBIENCE OF THE 911 SERIES

The special interior atmosphere of the 911 Series results from Porsche's use of select materials and meticulous attention to detail. Standard and optional seats are trimmed in high grade textile materials designed to match the interior colour and co-ordinated carpeting. The 911 Turbo models have the added luxury of a leather interior.

Bespoke trim combinations to suit individual requirements may be prepared for all 911 Series models. (Please refer to the separate Colour Chart or consult your Official Porsche Centre for details and specialist advice.)

INTERIOR HEATING AND VENTILATION

The Porsche 911 models are equipped with a sophisticated thermostatic heating control system. The ventilation system ensures optimum levels of airflow. The outlets and louvres can be volume regulated and automatically controlled with a variable fan boost intensifying interior temperature and windscreen demisting.

The highly effective, fully automatic air conditioning system in the Porsche 911 Turbo models may be specified as an option for the 911 Carrera models. This is a combined heating, ventilation and cooling unit, constantly maintaining the pre-selected temperature and circulating re-conditioned cooled air to enhance driving comfort.

Ventilation is also assisted by the standard electrically operated front windows on all 911 models. The Coupé models have an electric sunroof with an automatically raised wind deflector. The fitment of heat filtering, tinted thermal safety glass to the 911 Series helps protect the car's interior from overheating in direct sunlight, while large sunvisors further reduce glare that would distract both driver and passenger.

SOUND INSULATION

Driver and passenger comfort is completed by comprehensive sound insulation that absorbs high frequency engine noise, prevents heat transfer from the rear engine compartment, dampens out sheet metal vibrations and screens the interior from traffic noise. The engine has been carefully dampened against vibration, as have the suspension and steering systems. In addition, aerodynamic features excel in minimising wind noise, creating a quieter, stress-free driving environment.

INTEGRAL ALARM SYSTEM

A door key operated alarm system is now fitted as standard. This is activated if either of the doors, the engine compartment or bonnet are opened. In addition, the vehicle is electronically immobilised. The full feature Porsche Cars Remote Control Alarm System-1 is available as an option for enhanced security and convenience.

Picture: The interior of a 911 Carrera in Mahogany leather upholstery

911 Turbo

All-galvanised steel construction. Aerodynamic body shape results in a low drag co-efficient of Cd = 0.40 and a frontal area of 1.77m^2. Maximum speed: 152 mph. Acceleration from 0-62.5 mph in 6.1 seconds.

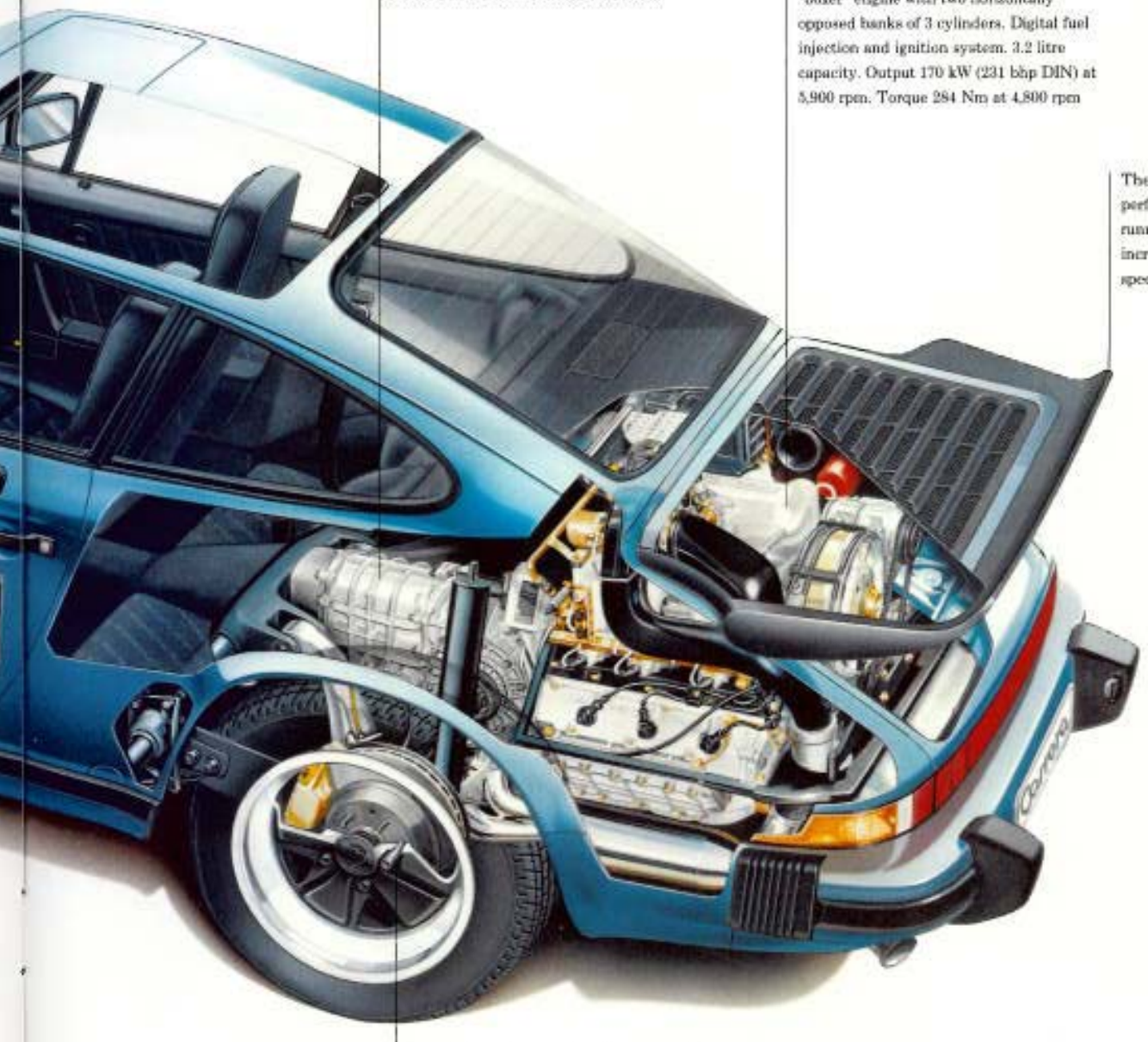
Independent suspension with wishbones, MacPherson struts and torsion bars. 22mm anti-roll bar. Hydraulic, dual-circuit braking system with internally ventilated disc brakes all round. Light alloy forged 6J x 16 road wheels with 205/55 ZR 16 tyres.

2 + 2 seating accommodation with individually folding rear backrests to increase luggage capacity. Ergonomically optimised seating available in fabric, leather or leatherette combinations. Driver's and passenger's seat electrically adjustable.

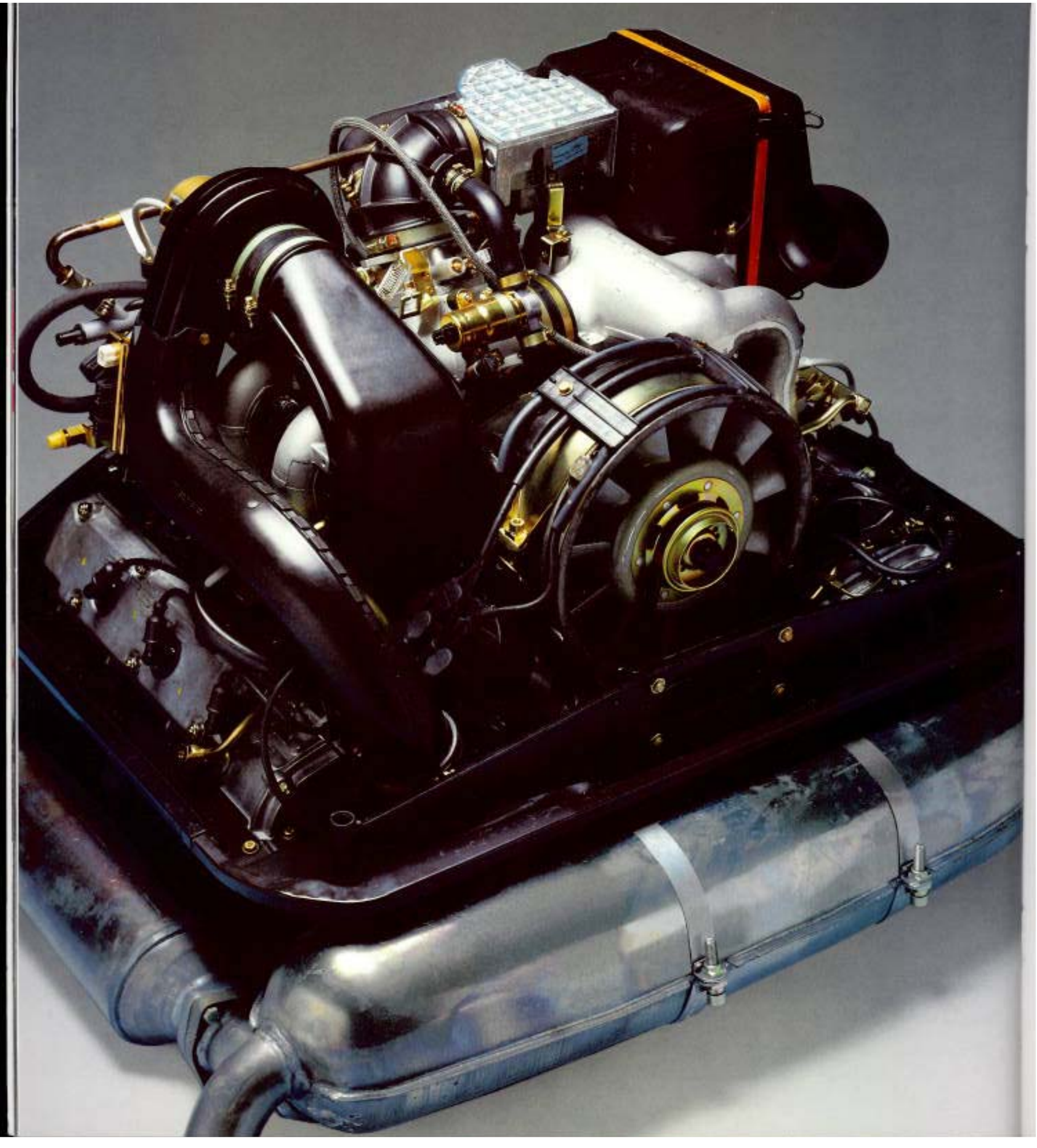
Advanced transmission synchronisation system and hydraulic clutch actuation.

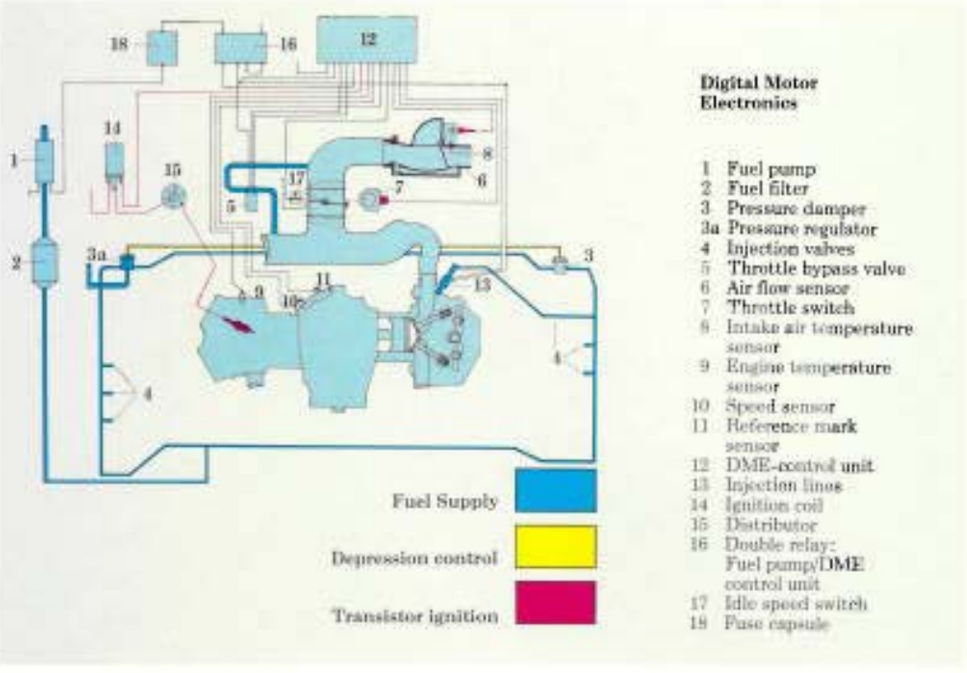
Air-cooled light alloy 6-cylinder four stroke "boxer" engine with two horizontally opposed banks of 3 cylinders. Digital fuel injection and ignition system. 3.2 litre capacity. Output 170 kW (231 bhp DIN) at 5,900 rpm. Torque 284 Nm at 4,800 rpm

The optional large rear spoiler enhances performance by improving straight-line running and reducing wind resistance, increasing stability and reducing lift at high speed.



Rear, independent semi-trailing arms with transverse torsion bars per wheel. 21 mm anti-roll bar. Light alloy forged 8J x 16 road wheels with 225/50 ZR 16 tyres.





THE POWERFUL HEART OF THE PORSCHE 911 SERIES

The famous 6-cylinder Porsche "boxer" engine is one of the most thoroughly race-proven engines in existence. Competition experience has been fully applied in the continuous development of this classic 911 power unit. Such an allegiance between road and race track engines continues to be a unique Porsche feature, with today's largely unmodified Porsche 6-cylinder engines still powering many of the world's most successful competition cars to victory. The air-cooled engine of the Porsche 911 Series has thereby been developed into one of the most efficient, economical and environmentally acceptable performance engines.

Picture: Engine of the Porsche 911 Carrera

SIX CYLINDER SMOOTHNESS AND FLEXIBILITY

All the 911 models are highly responsive even in the lowest rev bands, with enormous reserves of power ensuring sufficient torque to produce exhilarating yet economical performance. Such performance is delivered with a characteristic smoothness unique to this unconventional engine design. Its unrivalled flexibility enables the swiftest acceleration whilst the exhilerating engine note distinguishes the Porsche 6-cylinder from any other performance power unit; an audible reminder of its outstanding power and smoothness that delights connoisseurs of performance engines.

SIX CYLINDER ENGINE TECHNOLOGY

Such exceptional performance has been achieved with one of the most respected, yet unconventional engine designs. The rear-mounted Porsche 6-cylinder power unit is compact, horizontally opposed and air-cooled with three cylinders on either side of the crankcase. Its compactness is complemented by its relatively low weight, the result of a lightweight silicon aluminium alloy engine block, the light alloy cylinders and cylinder heads.

The inverted 'V'-positioned intake and exhaust valves within the cylinder head guarantee the most efficient flow of inlet and exhaust gases, ensuring maximum engine performance. Both camshafts, oil scavenger and pressure pumps are driven by an intermediate shaft, with force-fed lubrication and self-bleeding, maintenance-free chain tensioners.

The extremely accurate balance of the connecting rods and the forged steel crankshaft (achieved in the latter by 12 counter weights), together with 8 main bearings, results in remarkably quiet and smooth operation for an engine of this class.

THE 911 CARRERA ENGINE PERFORMANCE

The advanced specification has resulted in the 3.2 litre engine of the 911 Carrera models developing 231 bhp (DIN) at 5,900 rpm with a 10.3:1 compression ratio. The 3,164 cc engine's maximum torque of 284 Nm at 4,800 rpm indicates its excellent flexibility, enabling 0-62.5 mph acceleration in 6.1 seconds and a maximum speed of over 152 mph, regardless of body style.

PERFORMANCE IGNITION AND FUEL INJECTION SYSTEMS

A highly effective ignition system is an essential pre-requisite for smooth performance, optimum fuel efficiency and minimum exhaust emissions. To ensure maximum engine performance, all 911 Carrera engines have full electronic ignition control.

On the 911 Carrera engine, the fuel injection and ignition timing are electronically optimised by using the latest Bosch Motronic (DME) system (schematic diagram previous page). This solid state system precisely monitors and instantaneously adjusts the fuel/air mixture and ignition timing to any of over 4,000 possible combinations, thereby minimising fuel consumption and maximising engine efficiency. The Motronic system controls the engine rev-limiter and fuel cut-off, set at 6,520 rpm, to ensure engine durability and reliability without any loss of performance.

On the 911 Turbo engine, accurate ignition timing is provided by a contactless, inductive capacitor discharge system to ensure optimised ignition for this turbocharged, more powerful engine. Engine speed is controlled by an electronic rev-limiter, set at 7,000 rpm, to ensure both engine and turbocharger durability without restricting performance. This solid state system operates with faultless precision.

Both the 911 Carrera and 911 Turbo engines are fuel injected to optimise power output and efficiency. All 911 Carrera models have the latest Bosch L-Jetronic injection system for maximum reliability. Double electric pumps in the 911 Turbo combined with the Bosch K-Jetronic injection system ensures a consistent and reliable fuel supply to this ultra-high performance engine.

PORSCHE SPECIALITIES: AIR COOLING AND LUBRICATION

The Porsche 911 engine is unique in terms of its cooling features and its design is today still unrivalled by other high performance engines. The engine is cooled by the distinctive central direct-drive axial flow fan. A constant output of 1,500 litres of air per second (at 6,000 rpm) over the whole engine surface is more than sufficient to effectively cool even the highest heat outputs of the Porsche 911 engines.

This cooling system is complemented by an effective dry sump lubrication system with a separate oil reservoir, ensuring a continuous oil supply, even under high speed cornering. Such a system is normally only found in racing car engines. In addition to the oil cooler on the engine, a finned oil cooler raises cooling capacity and efficiency.

THE 911 TURBO ENGINE PERFORMANCE

As a derivative of the all-powerful 911 Carrera engine, the turbocharged power unit develops even greater engine output. An increased capacity of 3,299 cc and a 7.0:1 compression ratio, combined with advanced turbocharging, enables the Porsche 911 Turbo engine to produce 300 bhp (DIN) at 5,500 rpm, with a torque of 430 Nm at 4,000 rpm. Performance is consequently unsurpassed; 0-62.5 mph acceleration in 5.2 seconds and maximum speed in excess of 160 mph.

ADVANCED TURBO TECHNOLOGY

As a direct result of extensive motorsport experience, Porsche developed the world's finest turbocharging system for the 911. The principle of the Porsche turbocharger underlies its effectiveness. A turbine, driven at speeds of up to 90,000 rpm by the force of hot exhaust gases, is co-axially mounted with a compressor. This compressor boosts the fuel/air mixture pressure prior to injection into the engine, via a throttle butterfly valve. The resulting gain in the Turbo's performance is achieved by the higher cylinder "charge", without increasing revs – a method that in no way detracts from the engine's everyday practicality at minimum engine speeds or its peak power output at 5,500 rpm.

Porsche engineers devoted particular attention to eliminating "turbo-lag". With this in mind, a distinctively compact turbocharging unit was designed. Since the rotating mass is so small, the charging unit attains high revs swiftly, progressively "coming-in" with exceptional smoothness. In addition, the hot boosted air is cooled on its way from the charger to the throttle butterfly valve by an intercooler. This ensures that maximum air pressure and "fueling" of the cylinders is maintained under all circumstances to produce the highest power when required.

The advanced technology of the 911 engine, fuel injection and ignition systems is not only responsible for fuel economy and low exhaust emissions; it also contributes significantly to the reliability, durability and practicality of the ultra-high performance Porsche 911 Turbo.

Picture: Engine of the Porsche 911 Turbo

THE FUNDAMENTALS OF DRIVING SAFETY

POWER RESERVES

Each model in the Porsche 911 Series not only offers the most exhilarating performance possible, but also boasts design features that are fundamental to driving safety.

Safety features are designed into the suspension and steering systems to give the Porsche 911 Series renowned cornering ability and control. Porsche "built-in" safety in the 911 Series is exemplified by smooth, deformable body contours and special interior protection features.

One of the fundamental factors in the 911's driving safety lies in the performance reserves of the powerful engines. These ensure effortless sporting performance. All models accelerate with controlled vigour and smoothness, having the ability to overtake in the shortest times and therefore making such manoeuvres safer.

Should the Porsche 911 be in town traffic, overtaking on larger roads or motorway cruising, the 60% loading on the rear driving wheels (a result of the rear mounted engine layout) and efficient gear ratios, ensure that the 6-cylinder engine's power is transferred to the road without any appreciable loss. This applies particularly to road surfaces when above average traction is required, ensuring safer application of the power reserves.

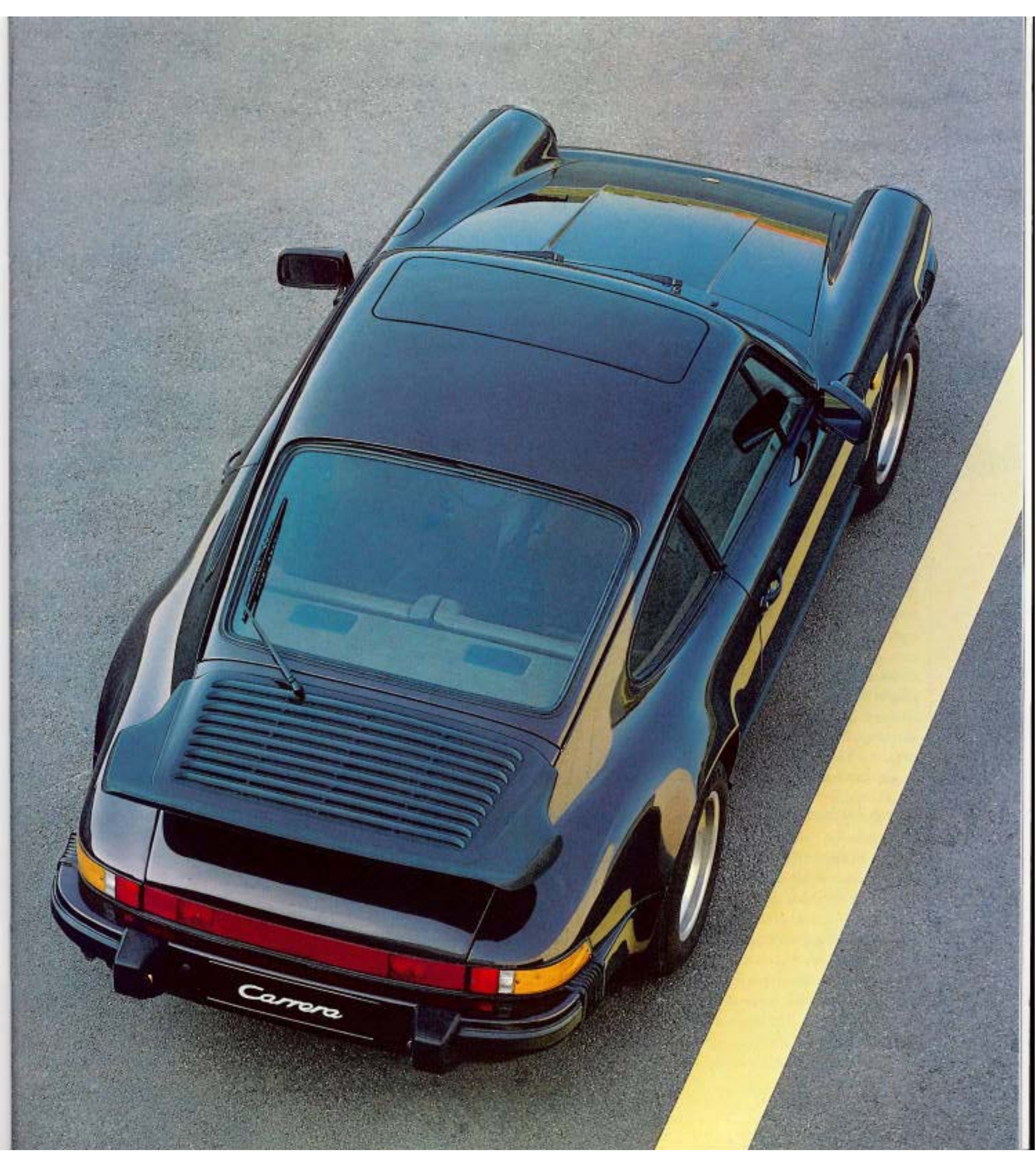
CORNERING SAFETY

The large difference between speeds habitually used by a driver and the potential top speed of a vehicle with genuine sporting ability undoubtedly provides an important safety margin. The average driver will rarely wish to avail himself of the 911 Carrera and 911 Turbo's exceptional maximum speed. For example, most drivers will probably content themselves with 40% – 50% of these cars' cornering abilities. Experienced Porsche drivers will probably reach a higher figure. Yet the Porsche 911 Carrera can corner safely at about 85% of gravitational acceleration and a 911 Turbo at almost 90%. This means that on a 190 metre radius track, the Carreras' lateral acceleration limit lies at 0.85g, with the Turbos' at 0.90g (g=gravitational acceleration), compared with the average limit of about 0.76g for competitive marques. This means that the Porsche 911 will reach its cornering limit far later and in the hands of experienced drivers will perform that much more safely.

Such extraordinary safety in cornering has not been achieved by any single component of the car. Many features have contributed: the carefully calculated suspension spring and damper settings of the running gear; tyre specification; the steering and braking systems. All have played their part in ensuring that the Porsche 911 is a supremely safe and enjoyable high performance car, if treated of course, with the respect it deserves.

BALANCED HANDLING AND CONTROL

The 911's perfect blend of roadholding, comfort and safety is admirably achieved by the precise steering system, correct choice of road wheels and tyres, sophisticated transmission and suspension technology and a highly effective braking system.


Carrera

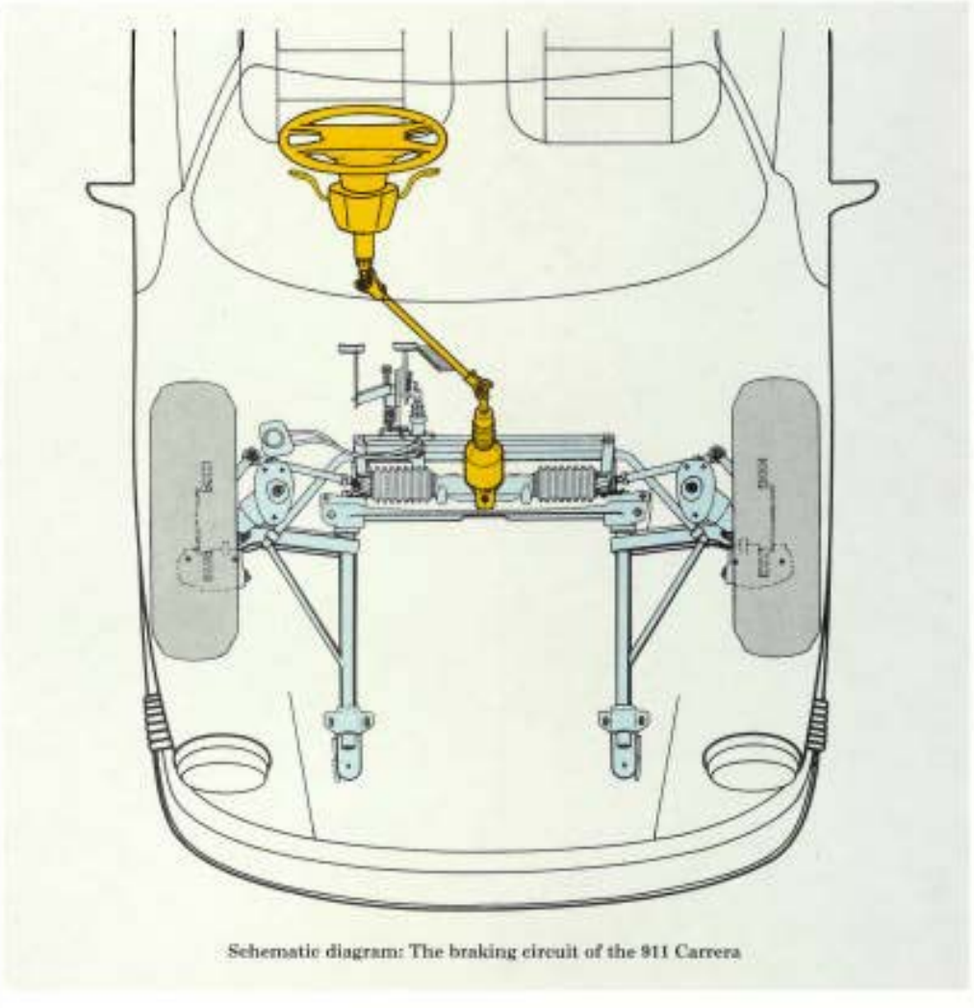
PERFORMANCE SUSPENSION TECHNOLOGY

The safe handling and control of the Porsche 911 Series is ensured by applying race track experience to road-going vehicles. The independent front suspension of the Porsche 911 models uses MacPherson struts, while the rear suspension has light alloy semi-trailing arms.

The front suspension cross member is of light alloy while both wheels have fore and aft torsion bars. The semi-trailing arms of the rear driving wheels' suspension are mounted on a transverse torsion bar carrier tube. Anti-roll bars on all 911 models ensure that even during hard cornering and swift changes of direction, "body roll" is kept to a minimum and tyre adhesion is maximised.

The 911 Turbo models now have an uprated high performance suspension system. A larger rear torsion bar, modified anti-roll bar and firmer settings for the gas-filled shock absorbers result in enhanced handling refinement. When braking or accelerating there is less pitching movement and cornering becomes even more neutral.

All the performance of the Turbo can be enjoyed without any harshness of ride.



Schematic diagram: The braking circuit of the 911 Carrera

PRECISION STEERING SYSTEM

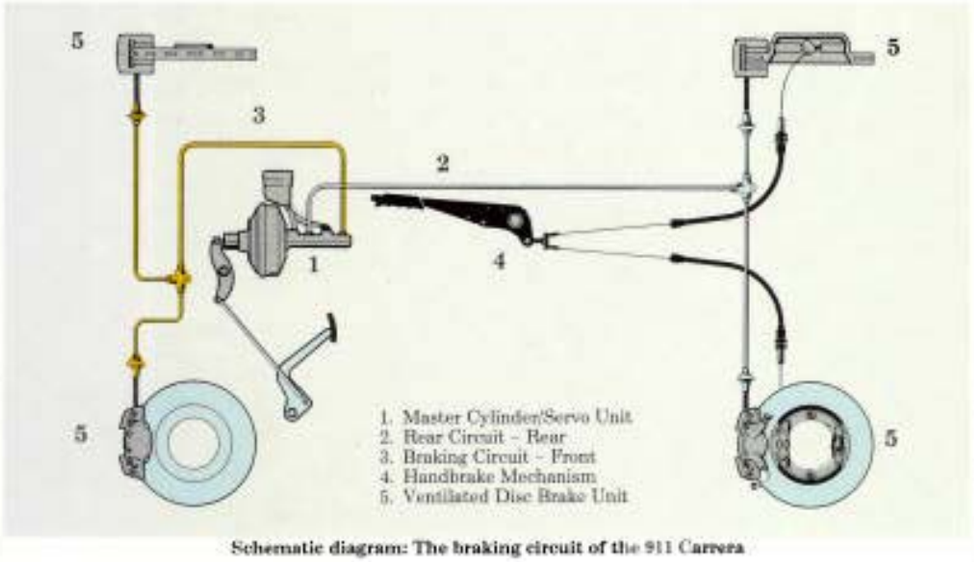
The precise and responsive steering of the Porsche 911 is based on the proven rack and pinion principle. The steering rack forms part of the track rod and is self-correcting, with no play whatsoever from lock to lock. The steering system provides the driver with genuine "feel" as to the car's road behaviour, particularly when the vehicle is being driven near the limit or when tyre adhesion is reduced. The double-jointed telescopic safety steering column is designed to yield in a collision, helping to prevent intrusion into the passenger "safety cell".

PERFORMANCE TRANSMISSION TECHNOLOGY

The classic high performance engine of the Porsche 911 Carrera models is complemented by a transmission system of equal repute. The positioning of the compact power unit above the rear driving wheels, ensures balanced handling and vehicle control together with optimum application of engine performance.

The gearbox is directly mounted on to the engine, with power take-up provided by a single dry plate, lightweight clutch and power transmission to the rear wheels via articulated half-shafts. The hydraulically operated clutch mechanism enables smooth, positive gear changes. The gearbox of the 911 Carrera is a sport-type five speed synchromesh unit, ensuring optimum acceleration with enhanced ease of operation. Its steady fifth gear cruising capability at reduced engine speed maximises fuel economy and engine durability.

The 911 Turbo is now equipped with a 5-speed manual gearbox. This gives the 911 Turbo five performance peaks and consequently an even more responsive and sportier 'feel'. With new hydraulic clutch



Schematic diagram: The braking circuit of the 911 Carrera

911 Carrera front disc brake unit

911 Carrera rear disc brake unit

911 Turbo front disc brake unit

911 Turbo rear disc brake unit

operation and shorter gear shifts, gear changes are smoother and slicker. The ratios of this new 5-speed transmission improve the acceleration performance (0-62.5 mph 5.2 secs) and also maximise economy when cruising at high speed.

PERFORMANCE BRAKING SYSTEM

As performance improves, so do the exacting demands for efficient and reliable braking. Therefore, the 911 Carrera models are equipped with a race-proven hydraulic dual circuit braking system with ventilated disc brakes all-round.

The floating calipers, with high performance brake pads, are located to maximise cooling. The 911 Series braking system is servo-assisted requiring only minimum pressure for highly effective, yet sensitive braking. The handbrake acts on seperate rear drums, with a dashboard indicator to warn of brake pad wear.

The 911 Turbo models, as would be expected, are fitted with an ultra-high performance braking system. This consists of deeply finned light alloy calipers with four pistons, as well as cross-drilled, internally ventilated discs to optimise cooling. The braking system is dual circuit, servo-assisted and developed from the 935 race car.

ALL-ROUND ACTIVE SAFETY

With a highly advanced braking system, high performance running gear and huge power reserves, few cars are better equipped to perform safely under all driving conditions. The 911 models are high performance cars designed for the ultimate in responsive driving. Each model has been race-proven over 25 years and today's 911 Series represents the highest levels in both performance and safety.

BUILT-IN SAFETY FEATURES

The ergonomic interior of the 911 Series is padded with energy absorbing material at all critical points. All instrument panel switches, handles and even the glove compartment lock are either made of deformable material or are recessed.

The rear view mirror is attached to the windscreen by a deformable stalk and the retracting mechanism of the inertia reel seat belts has been concealed behind the interior panelling for greater protection. All materials used in the interior are flame retardant.

Unobstructed all-round visibility is also important to motoring safety. The large laminated windscreen has slim, internally reinforced support pillars, effective wash/wipe and demisting functions. The electrical windscreen washers have heated nozzles to prevent freeze-up and the tinted, electrically adjustable mirrors are heated when the rear screen demister is in operation.

The intense halogen headlamps have a powerful washer system to ensure maximum effectiveness. Driving lamps broaden illumination and are recessed in the front spoiler. The indicators are integrated within the front bumper. Large, integrated lamp clusters including high intensity fog lamps tail, brake, indicator and reversing lamps give excellent rear lighting for the appropriate conditions and are designed to remain as dirt-free as possible in inclement weather.

EXTERIOR SAFETY FRONT AND REAR

Outside, the 911's styling is marked by a genuine concern for the safety of fellow road users. This means meticulous attention to detail so that the danger of injuries is minimised.

These measures include the gently rising, extended bonnet and exterior mirrors which swivel on impact, as well as flexible edging to the front spoiler and an upturned, deformable edge to the rear spoiler, reducing the risk of physical injury or damage to the bodywork.

Distinguishing safety features of the Porsche 911 bodyshell include the large deformation zones and deformable structures. The arc-shaped bumpers, made of 5-6mm gauge aluminium, are incorporated into the body lines by means of bellow-type trims and mounted on hydraulic shock absorbers. These bumpers considerably reduce the damage to the bodywork in the case of light impact.

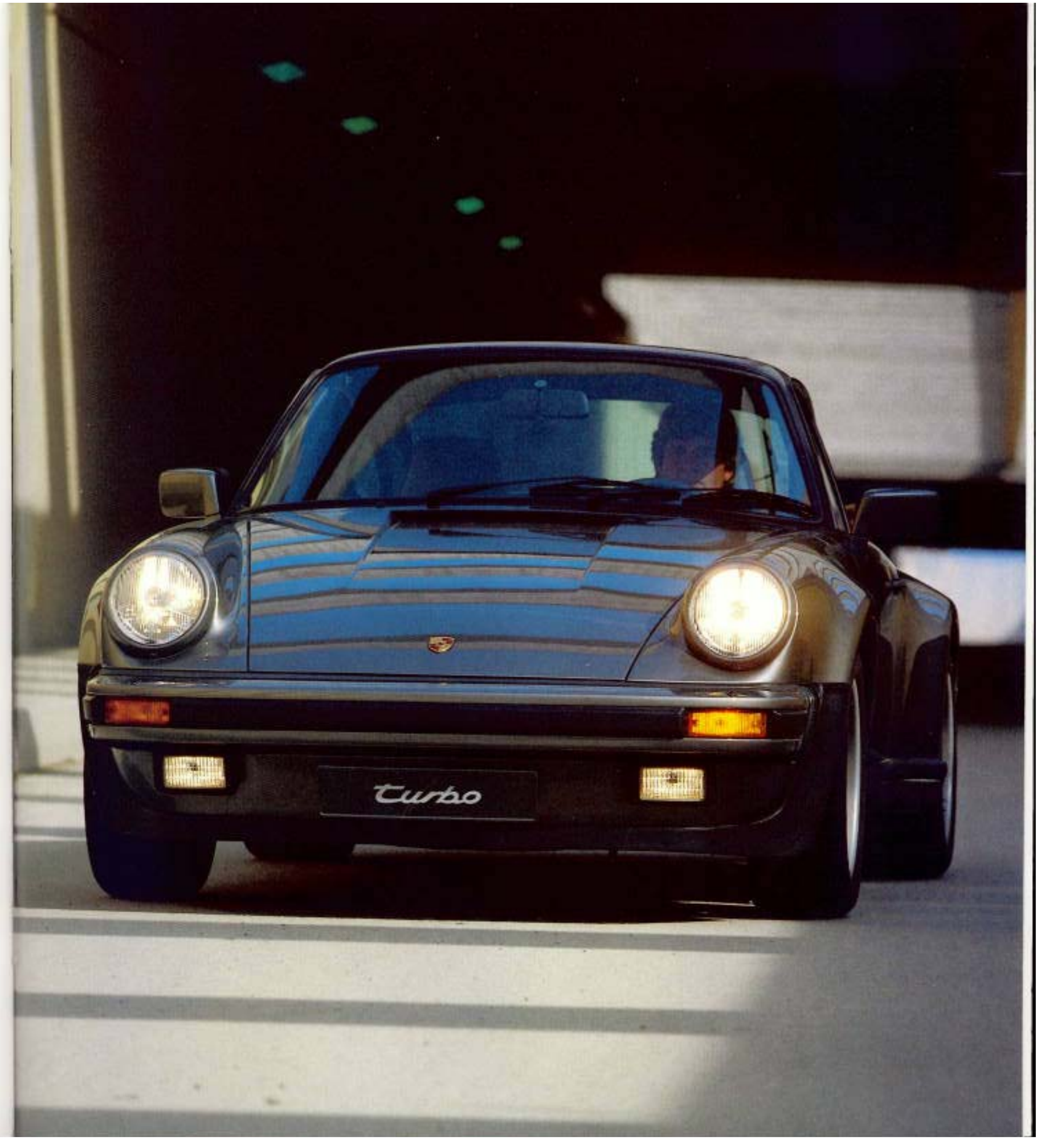
The effectiveness of these bumpers in more serious impact has been stringently tested. The results indicated that at minimum speeds, no damage is caused to the bodywork at all and at higher speeds, the damage suffered is greatly reduced. Such results are indicative of the exemplary way in which safety, careful detailing and exclusive styling have been synthesised, to help ensure optimum interior and exterior safety in most foreseeable conditions.

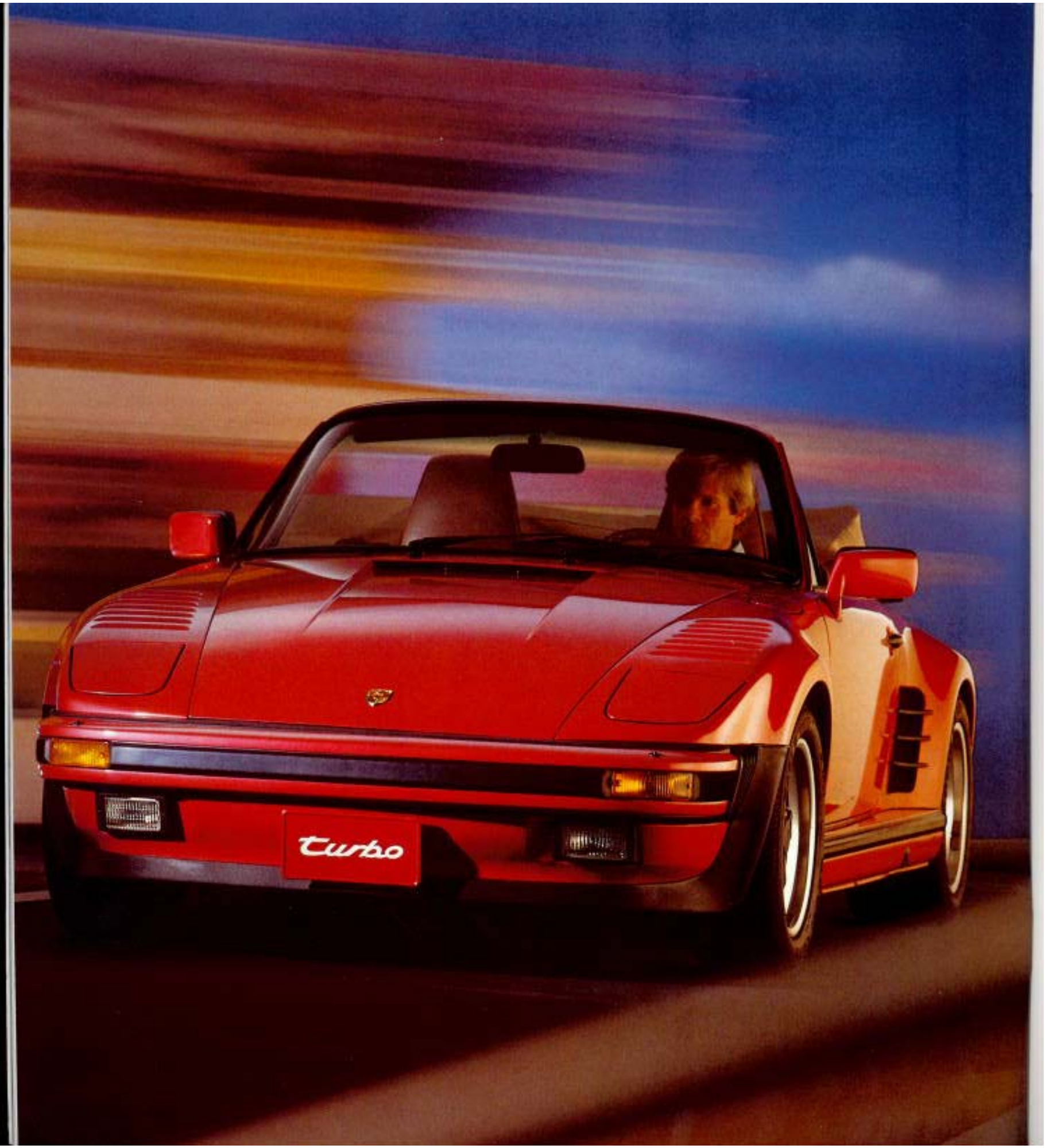
BODY DESIGN AND SAFETY

The Porsche 911's front deformation zone absorbs so much energy when, for example, crashed into a fixed barrier at about 30 mph, the bonnet buckles in a predetermined way and its firm hinge mountings help prevent intrusion into the passenger compartment. The layout of the front radius arms constitutes a dependable safety zone for the front mounted fuel tank. The windscreen is made of composite safety glass. Safety locks are designed to keep the doors closed, even in side-on collisions, yet the "safety cell" construction of the Coupé and Targa bodyshells help ensure that they can still be opened from inside or out.

The design of the roof, together with the strengthened front pillars, form an exceptionally rigid, load bearing structure which acts as a tough "roll-over cage". Its strength has been further confirmed by extensive testing in which the car is repeatedly rolled over on its sides, simulating what to car and passengers must be one of the most critical situations. Both doors remained firmly shut but afterwards opened freely. The Targa body version passed all static and dynamic roof tests just as well as the Coupé. Its rigid "roll-over" bar fully meets all the requirements of a reliable "shield".

Finally, a leakage resistant fuel tank, closed evaporation system and protected pipes help prevent fuel escaping in "roll-overs" and most collision possibilities. All in all, Porsche 911 Carrera and 911 Turbo models are quite exceptional performance cars from a safety viewpoint.


Turbo


Turbo

OPTIONAL EQUIPMENT

Many optional features available on the 911 Series have already been mentioned in this brochure. However, certain options in addition to those detailed below, are available to enhance the individual models of the Porsche 911 Carrera and Porsche 911 Turbo. Full details of the standard specifications and Optional Equipment are available in the Model Range Price List. In addition, further information and specialist advice are available from your Official Porsche Centre.

911 CARRERA WITH SPORT EQUIPMENT

The performance and distinctive appearance of the Porsche 911 Carrera models may be further enhanced with the fitment of Sport Equipment. This comprises front and rear aerodynamic spoilers, sport shock absorbers and wider road wheels with low profile tyres. This specification enables the sports-minded driver to further utilise and enjoy the performance capabilities of each 911 Carrera.

911 CARRERA WITH SUPER SPORT EQUIPMENT

For drivers with more sporting aspirations, there is the option of Super Sport Equipment. This includes extended rear arches, an ultra-high performance braking system, uprated suspension and shock absorbers, wider wheels with ultra-low profile tyres and front and rear spoilers as fitted to the Porsche 911 Turbo. This represents a comprehensive package for the connoisseur of high performance.

Picture: The startling Porsche 911 Turbo Cabriolet with Sport Equipment

911 TURBO WITH SPORT EQUIPMENT

For drivers with even greater sporting intentions, there is the exclusive Sport Equipment specification for the 911 Turbo models. The bodywork enhancements include retractable headlamps, door sill panels, front wing air vents and rear wing air ducts. This special version distinguishes itself dramatically with impeccable style. Furthermore, performance has been uprated – a full power unit conversion raises the engine output to a sensational 330 bhp. A limited slip differential makes for superlative road-holding and enables such unrivalled performance to be enjoyed to the full. This option creates the "ultimate supercars" in the current Porsche 911 Series.

THE LIMITED SLIP DIFFERENTIAL

A limited slip differential, gives the experienced Porsche driver extra reserves of traction when cornering on the limit, or whenever widely differing friction co-efficients are encountered by the driving wheels. When such poor adhesion occurs between the tyres and the road surface, the limited slip differential, using two friction plates, significantly reduces wheel spin, transferring otherwise wasted engine torque to the rear wheel with the maximum traction.

HARD TOP FOR 911 CARRERA CABRIOLET

A Hard Top is available for the Cabriolet-bodied 911 models, enabling still greater practicality and enjoyment from this body variant. Made of galvanised steel, the Hard Top is easily fitted to the Cabriolet body using the same mounting points as the cabrio hood.

PORSCHE "EXCLUSIVE" PROGRAMME AND ACCESSORIES

A programme of "Exclusive" products is available to complement the Porsche 911 Carrera or 911 Turbo models. These "Exclusive" products include interior and exterior enhancements, as well as equipment to upgrade the suspension and drivetrain for the more sporting driver.
Specially developed exterior sill and spoiler mouldings, luxurious leather interior fittings and sport suspension tuning components are available, expertly fitted by Porsche, to make these Porsche 911 models exclusive to your personal requirements. Details of "Exclusive" products are available from your Official Porsche Centre together with expert advice.
A range of accessory items has been developed to enhance the practicality of your Porsche. This range includes for example, roof transport systems, protective Carpet Sets, Car Care products, car security and cellular telephone equipment. Full details of the Accessories range are available from your Official Porsche Centre.

PORSCHE "POSSESSIONS"

A range of "Possessions" to complement your ownership of a Porsche has been carefully selected to reflect the Porsche reputation for style and quality. This range includes for example, made-to-measure leather jackets to match Porsche's standard leather interior colours, clothing items including sports and leisure wear, Porsche Design watches and sunglasses.
A brochure is available from your Official Porsche Centre, where a wide selection of these prestigeous items is on display.

YOUR NEXT STEP TO THE WORLD OF PORSCHE

From a perusal of this brochure, you will appreciate that the Porsche 911 is unquestionably a classic Porsche product. The 911 Series reveals all the hallmarks of Porsche: superior and timeless styling; advanced engine and chassis engineering; the highest design and manufacturing quality; everyday reliability and economy; motoring safety; comfort and ease of servicing.
Such a perfect combination of apparently contradictory features has been derived from extensive research and development in virtually all aspects of automotive engineering, allied to whole-hearted participation in motorsport.

Brochures containing full details of the technology, safety features and specification for all the other individual Porsche models – the uprated Porsche 944, the 3.0 litre 944S2, the more potent 944 Turbo and the all powerful 928S series 4 – are also available from your Official Porsche Centre, together with interior and exterior Colour Charts and experienced, specialist advice.
Your Official Porsche Centre can also offer you an incomparable experience which can properly convey the fascination of Porsche motoring and one you should certainly not miss – a test drive in a Porsche.
We look forward to meeting and welcoming you to the 'Porsche family'.

Service Intervals: All new vehicles have 12,000 mile service intervals (911 Turbo oil change recommended at 6,000 miles).

Warranty: All new vehicles supplied by Official Porsche Centres are covered by a 2-year unlimited mileage mechanical warranty, a 3-year paintwork warranty and a Porsche Longlife 10-year routine maintenance-free anti-corrosion body warranty.

Some of the vehicles illustrated in this brochure are fitted with Optional Equipment available at extra cost. Standard specification and Optional Equipment may vary according to market.

We reserve the right to modify or alter the specification of our models in respect of design, shape, delivery and colour without prior notification. Technical data and specification correct at time of printing.

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TECHNICAL DATA '89

911 Carrera
911 Turbo

TECHNICAL DATA

	911 Carrera	911 Turbo
ENGINE		
Number of cylinders	6	6
Bore mm (in.)	95 (3.74)	97 (3.82)
Stroke mm (in.)	74.4 (2.93)	74.4 (2.93)
Capacity cm^3 (cu. in.) effective	3164 (193.1)	3299 (201.3)
Compression ratio	10.3 : 1	7.0 : 1
Maximum power kW (bhp DIN)/at rpm	170 (231)/5900	221 (300)/5500
Maximum torque Nm (EEC kpm)/at rpm	284 (29.0)/4800	430 (43.8)/4000
Output per litre kW (bhp DIN)	53.7 (73.0)	67 (90.9)
Petrol octane rating (RON)	98 leaded	98 leaded
ENGINE DESIGN		
Type and layout	Air-cooled, 6-cylinder, four stroke, horizontally opposed; rear mounted	Air-cooled, 6-cylinder, four stroke, turbo-charged, horizontally opposed; rear mounted
Crankcase	Light alloy	Light alloy
Cylinders (individual)	Light alloy	Light alloy
Valve arrangement per cylinder	1 inlet, 1 exhaust; inverted V-pattern	1 inlet, 1 exhaust; inverted V-pattern
Valve operation	Single overhead camshaft for each cylinder bank	Single overhead camshaft for each cylinder bank
Camshaft drive	Chain	Chain
Crankshaft	Forged steel, 8 main bearings	Forged steel, 8 main bearings
Lubrication	Dry sump lubrication system, full flow oil filter, thermostatically controlled oil cooling with supplementary finned oil cooler mounted in right front wheel arch	Dry sump lubrication system, full flow oil filter, thermostatically controlled oil cooling with supplementary finned oil cooler mounted in right front wheel arch
Fuel supply	Electric pump	2 electric pumps
Fuel injection	Bosch L-Jetronic with Digital Motor Electronics (DME), deceleration fuel cut-off	Continuous injection system, turbocharged with induction air-cooler, Bosch K-Jetronic
TRANSMISSION		
Clutch	Single dry plate, hydraulic	Single dry plate, hydraulic
Manual gearbox	Porsche "Borg Warner" Synchromesh	Porsche "Borg Warner" Synchromesh
Number of gears	5 forward, 1 reverse	5 forward, 1 reverse
Final drive	Spiral bevel, differential	Spiral bevel, differential
Final drive ratio	3.444 : 1	3.444 : 1
BODY		
Type	2-door, 2+2 Coupé, Targa, Cabriolet bodyshells of hot-dip galvanised sheet steel	2-door, 2+2 Coupé, Targa, Cabriolet bodyshells of hot-dip galvanised sheet steel
CHASSIS AND SUSPENSION		
Front suspension	Independent, with wishbones and MacPherson struts, 18.8 mm dia. torsion bars, anti-roll bar	Independent, with wishbones and MacPherson struts, 18.8 mm dia. torsion bars, anti-roll bar
Rear suspension	Independent, semi-trailing arms, 26 mm dia. torsion bars, anti-roll bar	Independent, semi-trailing arms, 27 mm dia. torsion bars, anti-roll bar
Shock absorbers	Front and rear hydraulic double-acting gas pressure dampers	Front and rear hydraulic double-acting gas pressure dampers
Anti-roll bars	Front 22 mm dia., rear 21 mm dia.	Front 22 mm dia., rear 18 mm dia.
Braking system	Hydraulic dual circuit with internally ventilated discs on all 4 wheels, servo assisted	Hydraulic dual circuit with internally ventilated and cross-drilled discs on all 4 wheels, servo assisted, 4-piston calipers
Wheels	Light alloy, forged, 6 J x 16 front, 8 J x 16 rear	Light alloy, forged, 7 J x 16 front, 9 J x 16 rear
Tyres	205/55 ZR 16 front, 225/50 ZR 16 rear	205/55 ZR 16 front, 245/45 ZR 16 rear
Steering	Rack and pinion	Rack and pinion

TECHNICAL DATA	911 Carrera	911 Turbo
ELECTICAL SYSTEM		
Battery voltage	12 V	12 V
Battery capacity	66 Amp/hr	66 Amp/hr
Generator	14 V, 90 A/1260 W	14 V, 90 A/1260 W
Ignition	Intergrated in Digital Motor Electronics (DME)	Capacitor discharge system, contactless
Spark plugs	Bosch WR 4 CC	Bosch W 3 DPO
CAPACITIES		
Engine oil	Approx. 13.0 litres approved multigrade oil in compliance with manufacturer's specification	Approx. 13.0 litres approved multigrade oil in compliance with manufacturer's specification
Gearbox oil	Approx. 3.4 litres	Approx. 3.7 litres
Fuel tank	85.0 litres (of which approx. 8.0 litres is reserve)	85.0 litres (of which approx. 8.0 litres is reserve)
Screenwasher	Approx. 8.0 litres	Approx. 8.0 litres
Intensive windshield wash system	Approx. 0.6 litres	Approx. 0.6 litres
DIMENSIONS		
Wheel base	2272 mm	2272 mm
Track, front	1372 mm	1432 mm
Track, rear	1405 mm	1492 mm
Overall length	4291 mm	4291 mm
Overall width	1652 mm	1775 mm
Height (unladen)	1320 mm	1310 mm
Ground clearance (laden)	130 mm	120 mm
Turning circle	10.95 m	10.95 m
WEIGHTS		
Unladen weight (DIN standard)	1210 kg	1335 kg
Maximum permitted weight	1530 kg	1680 kg
Trailer load (unbraked)	480 kg	
Trailer load (braked)	800 kg	
Total permissible pulling weight	2330 kg	
PERFORMANCE		
Maximum speed mph (km/h)	152 (245)	162 (260)
Acceleration 0–62.5 mph (0–100 km/h) (DIN kerb weight plus half permitted payload)	6.1 secs	5.2 secs
FUEL CONSUMPTION (Energy Act 1976 and Passenger Car Fuel Consumption (Amendment) Order 1987)		
	5-speed manual transmission	5-speed manual transmission
Constant speed 56 mph (90 km/h)	41.5 mpg (6.8 l/100 km)	26.4 mpg (10.7 l/100 km)
Constant speed 75 mph (120 km/h)	31.4 mpg (9.0 l/100 km)	21.7 mpg (13.0 l/100 km)
Urban cycle	20.8 mpg (13.6 l/100 km)	19.8 mpg (14.3 l/100 km)
	Sport Equipment, 5-speed manual transmission	Sport Equipment, 5-speed manual transmission
Constant speed 56 mph (90 km/h)	40.4 mpg (7.0 l/100 km)	25.9 mpg (10.9 l/100 km)
Constant speed 75 mph (120 km/h)	31.4 mpg (9.0 l/100 km)	20.6 mpg (13.7 l/100 km)
Urban cycle	20.8 mpg (13.6 l/100 km)	19.0 mpg (14.9 l/100 km)
	Super Sport Equipment, 5-speed manual transmission	
Constant speed 56 mph (90 km/h)	36.2 mpg (7.8 l/100 km)	
Constant speed 75 mph (120 km/h)	28.0 mpg (10.1 l/100 km)	
Urban cycle	20.8 mpg (13.6 l/100 km)	

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