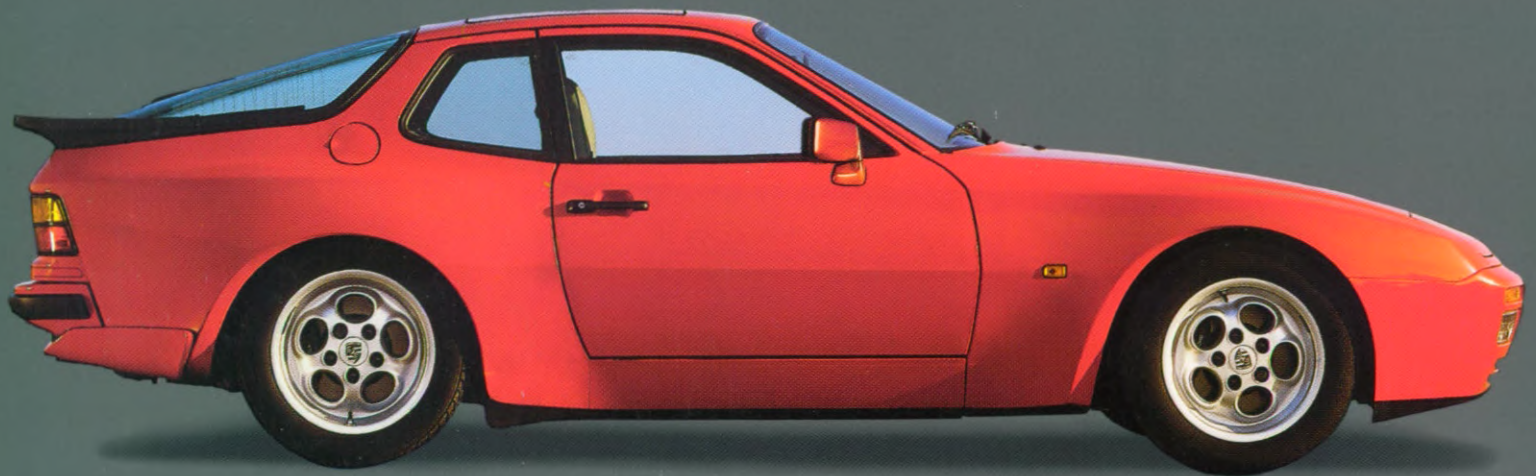




PORSCHE 944 *Turbo*







### **A NEW DEFINITION OF SPORTING MOTORING COMFORT.**

"Driving in its purest form" has always been the phrase previously used to describe the Porsche motoring experience. From now on, new standards will apply to this definition of sporting motoring.

In only three years, 60,000 cars have been constructed in the 944 Series. Basing their work on this most thoroughbred of cars, the technicians at the Porsche Development Centre in Weissach have created one of the most modern, safest and pollution-free cars ever – the Porsche 944 Turbo.

It has always been a tradition at Porsche to crown an existing and successful model range with a Turbo charged version and in this form, the new 944 Turbo has all the merits of economy and quality motoring of the present 944 and carries even higher performance potential and driving comfort.

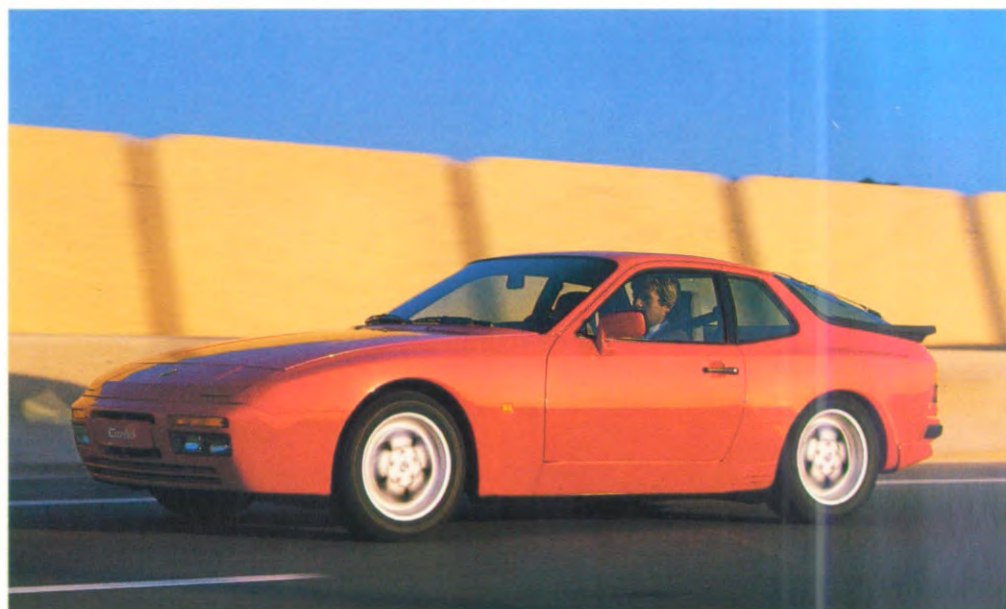
The decision to build this top model in the 944 Series also came about because we wanted to close the gap in our transaxle range between the present 944 and the 928 Series.

Although we were able to take recourse to the basic concept of the 944's naturally aspirated engine, during the development and design of the turbo engine, we have incorporated a considerable amount of new technology to fulfill the highly sophisticated demands we ourselves have placed on this new model.

The compelling demand for pollution-free engine concepts has been met by offering the 944 Turbo both with and without a catalytic converter. What's more, we have effectively and expeditiously modified the bodywork

and design regarding visual and aerodynamic aspects and the chassis to do justice to this high performance turbo charged engine.

It will not surprise us if we have not once again, set new standards for automotive technology with the 944 Turbo, which will give new dimensions to the joy of driving.







# Safety and comfort

## THE GUIDING PRINCIPLE: ERGONOMICS.

Making use of high performance technology depends first and foremost on its being completely fault-free and effortlessly controllable. On the basis of ongoing ergonomic research and appropriate experience in motor sport, Porsche has developed a systematic interior layout for the 944 series which combines ease of use with personal comfort in a practical way.

The design concept of the cockpit makes allowances for both the individual motoring practices and physical proportions of the driver.



The logical design and layout of the instruments, switches and controls enable him to devote his undivided attention to traffic conditions. Every item is within comfortable reach. The steeply pitched, 38 cm diameter steering wheel (a leather-clad 36 cm diameter, 4-spoke sports steering wheel is available as an optional extra) and the stubby gear lever for the 5-speed gear box were

designed on the basis of ergonomic studies and are ideally located. The handbrake is handily placed on the left of the driver's seat. The pedal layout and the general seating arrangement optimize the application of driver effort and the pedal pressures required for the clutch, accelerator and brakes. Minimal physical demands on feet and hands make for sensitive control of the processes which are so crucial to vehicle safety.

In addition, seating, visibility and information systems, together with features to improve comfort, help to conserve the driver's energies, thereby rendering

motoring in the Porsche 944 Turbo safer and more enjoyable still. The maximum has been done to increase safety by reducing stress (a contribution towards active safety!).

## MADE TO MEASURE SEATING.

The cushioned front seats, made to the highest standard

throughout, fulfil in every detail the demand for the most beneficial ergonomic seating position. The seat suspension, vehicle suspension and anti-roll and shock-absorbing measures combine to form a carefully co-ordinated functional entity. The anatomically correct contours of the seats and upholstery ensure a relaxed attitude in long-distance motoring and appropriate lateral support under high speed cornering conditions. The shape and upholstery of the squab also prevent slumping and the consequent undesirable tendency of the lap-strap element to ride up. Head restraints, secured rigidly to the seat backs, exclude any possibility of incorrect height adjustment. Electric motors essentially relieve the driver of the burdensome task of adjusting his seat. The seat height, infinitely variable, can be adapted at the front and back to the driver's individual body size and driving position quite simply at the push of a button. The two occasional rear seats, provided with lap belts for additional safety, can accommodate two adults on short journeys. The backrest of the occasional seats can be folded down to turn the 944 Turbo into a two-seater with a large luggage compartment. The variability of this special feature ensures the 944 Turbo's transporting versatility.

## AMBIENCE.

The special ambience in the Porsche 944 Turbo owes much to the exceptional quality of the materials used and the meticulous craftsmanship that goes into every detail. The front seats are partially upholstered in leather. The seat inserts and integral headrests are trimmed in de luxe fabrics. The inner sides of the

seats are leather and the outer sides consist of leatherette. Both the front and back seats are optionally available as all-leather seats. The carpeting, which covers not only the floor but also the centre console and door pockets, can be harmoniously matched to the interior colour scheme.

## INFORMATION SYSTEM.

Electronics are used in the Porsche 944 Turbo to control and monitor a host of functions. The key function indicators are located on the instrument panel, i.e. in the driver's direct field of vision. In common with the normally aspirated 944 model, the 944 Turbo is fitted with a speedometer, tachometer, coolant temperature gauge, voltmeter and oil and fuel gauges, it is also provided with a display of the pressure of the exhaust turbo charger. This is integrated in the lower part of the tachometer.

The layout is completed by warning lights indicating brake pad wear, brake fluid level, engaged parking brake, safety belt reminder and quartz clock.

## SOPHISTICATED STANDARD DETAILS.

In addition to the features already provided in the 944, the standard ones offered in the 944 Turbo include the following comfort details – four-loudspeaker system with electronically boosted windscreen antenna, electrically operated door windows for the driver and passenger, automatic heating and headlamp wipe and wash system. In addition, power steering is, of course, a standard feature of the Porsche 944 Turbo.

In addition to the speedometer, tachometer, coolant temperature, fuel and oil gauges and a voltmeter, the 944 Turbo also features an indicator for the pressure of the exhaust turbochargers.



# Active safety

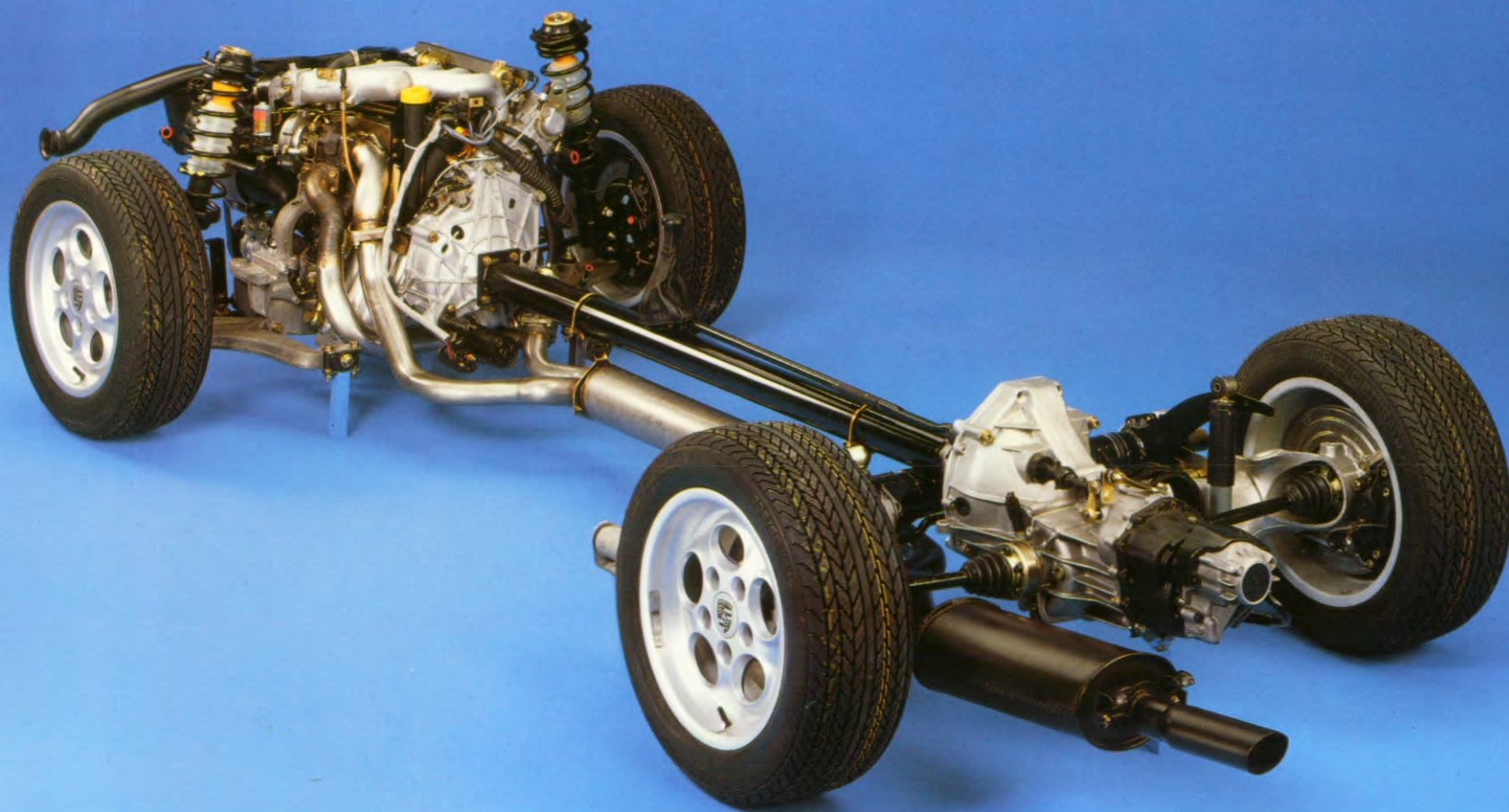
## **THE TRANSAXLE PRINCIPLE.**

The chassis of the 944 Turbo is based on the time-proven front engine transaxle concept, providing a well balanced fore and aft weight distribution. The weight of the engine resting on the front axle, whereas that of the gearbox, differential, fuel tank and spare wheel is located on the rear driving wheels.

However, due to the Turbo's higher performance potential and its increased weight, it has been necessary to reinforce and adapt some essential design details of the suspension springs, shock absorbers and stabilizer bars. Previously, the front and rear suspension control shaft was constructed of welded sheet steel. This has been replaced by lighter, high strength metal cast compo-

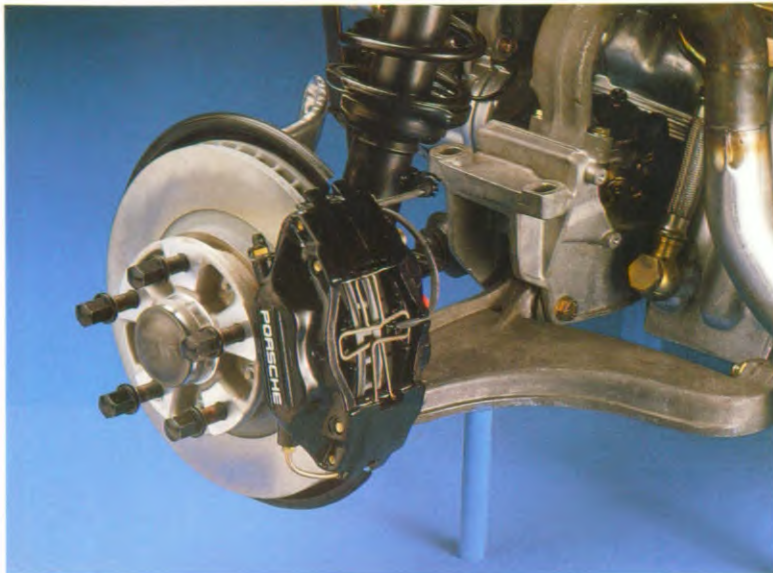
nents. It has also been necessary to adapt the control shaft bearing rubbers to meet the increased demands and to incorporate the possibility of fine adjustment of the wheel's kinematic system. The powerful stabilizer bars (24 mm  $\varnothing$  front and 18 mm  $\varnothing$  rear) and ideal shock absorber matching are indicative of the overall sporting character of the 944 Turbo's chassis.

The standard ultra low cross section tyres, 205/55 VR 16 at the front and 225/50 VR 16 at the rear, are fitted onto light cast alloy wheels, 7 J x 16 at the front and 8 J x 16 at the rear.





# Aerodynamics save energy



## BRAKES.

To match its turbo performance, the front and rear axles of the 944 Turbo are equipped with high-grade 4-piston fixed caliper brakes. This newly developed brake system exhibits a favourably low brake fluid temperature, under even the highest of loads. This was a precondition for the use of brake pads containing no asbestos but nevertheless affording maximum resistance to wear and a good response even in unfavourable driving conditions.

The front brakes are additionally ventilated by air ducts which, similar to the 928 S, guide cooling air to the internally ventilated discs from the front section to the wheel housings.

The servo-assisted braking in conjunction with the rear brake force regulator provide for the sensitive braking of the Porsche 944 Turbo with little pressure, even at high speeds.

## THE BODYWORK.

The bodywork design includes sophisticated details. However, such sophistication must be aimed not only at embellishment, but should, above all, fulfill a function. The changes we have made to the exterior of the 944 were primarily limited to meeting the specific demands placed by the turbo engine and the improvements in aerodynamics. The nose section of the 944 Turbo was technically and visually redesigned to provide the best ram-air system for engine water cooling, engine oil cooling and accumulated air cooling of the front wheel brakes.

Additional long range driving and fog lamps and the side parking lamps are installed in the shock-absorbing plastic nose section. All design measures fulfilling aerodynamic functions are the

result of complex wind tunnel studies. New panels have been added in the engine and the floor areas. At the sides, panels secured below the door sills contribute to road holding stability, especially at high speeds. A novel wing apron attached below the rear bumper especially serves to improve the air passage underneath the car, to ameliorate its side wind response and to more effectively ventilate the fuel tank, gearbox and exhaust silencer at the rear. The Porsche 944 Turbo has a drag coefficient of  $C_W = 0.33$  (at half permitted maximum payload).



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# Engine

## THE PORSCHE 944 TURBO'S PERFORMANCE.

With a capacity of 2.5 litres and a compression ratio of 8.0:1, the water cooled engine with exhaust turbo charger produces 162 kW-EC (220 bhp-EC) at a speed of 5,800 rpm. The Turbo's maximum torque of 330 Nm occurs at 3,500 rpm. These performance values refer both to the

catalytic converter version and the engine without the catalytic converter. Maximum engine speed is 6,500 rpm.

The Porsche 944 Turbo accelerates from 0 to 100 km/h in 6.3 secs (measured at DIN kerb weight plus half permitted payload). It reaches a maximum speed of 245 km/h.

## TECHNOLOGY.

Porsche engineers were able to take recourse to the basic principle of the normal 944 four-cylinder engine for the development of the new turbo engine. The reason for this is that the necessary demands applicable to turbo charged engines were already taken into account in the development of the normally aspirated engine, one which stands up well in comparison with a 6-cylinder engine as regards smoothness and ease of operation. However, a considerable amount of technology was needed to achieve the same reliability and long life for the higher loaded turbo charged engine as in the case of the time-proven normally aspirated engine.

The cast aluminium pistons of the normally aspirated engine were replaced by forged ones, to achieve higher strength, to do justice to the engine and to the higher performance. The inlet and outlet valves were matched to the higher temperature load. Porsche engineers insisted on a 20% higher closing force for the valve springs to guarantee reliable closure and sealing of the valves.

The turbo charger is positioned on the engine's cooler side, i. e. opposite the exhaust pipes. The outlet ducts of the catalyst engine are ceramic coated for better heat insulation.

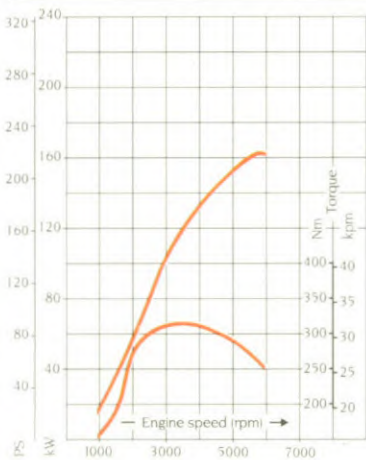
without a catalytic converter. Consequently, an essential design aim when developing the 944 Turbo engine was to achieve identical performance values both with and without catalytic converter.

In either form the Porsche 944 Turbo combines very high performance with remarkable flexibility – especially at low revs. Turbo-lag, the bane of other turbo charged engines has been virtually eliminated.

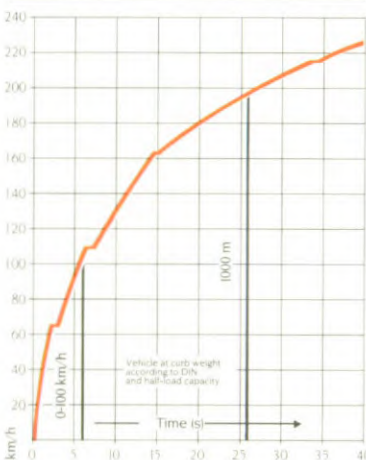
To prevent possible damage through a sudden increase in pressure from the turbo charger as engine speed rises, a knock sensor, especially matched to the 944, electronically regulates the ignition timing when the knocking threshold is reached. Therefore, the engine operates continually in the most efficient temperature range. This is a fact which particularly affects the car's performance, consumption and composition of the exhaust gases. And, if necessary, permits fuel grades down to 91 ROZ. However, a slight drop in performance can then be expected.

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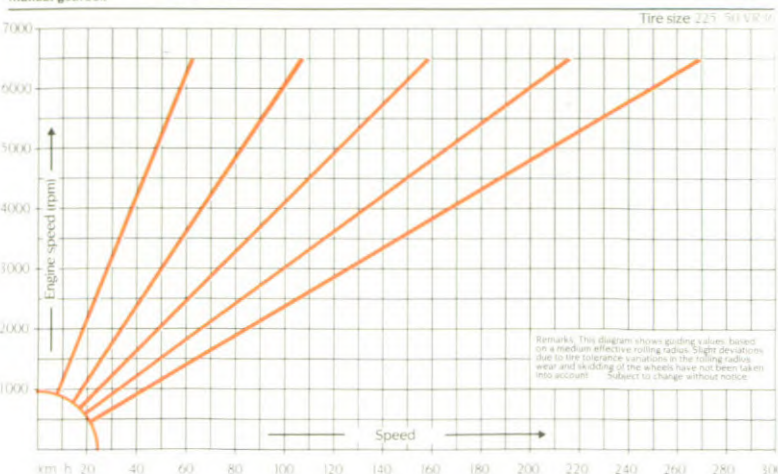
Full-power Curve  Turbo



Acceleration Curve  Turbo

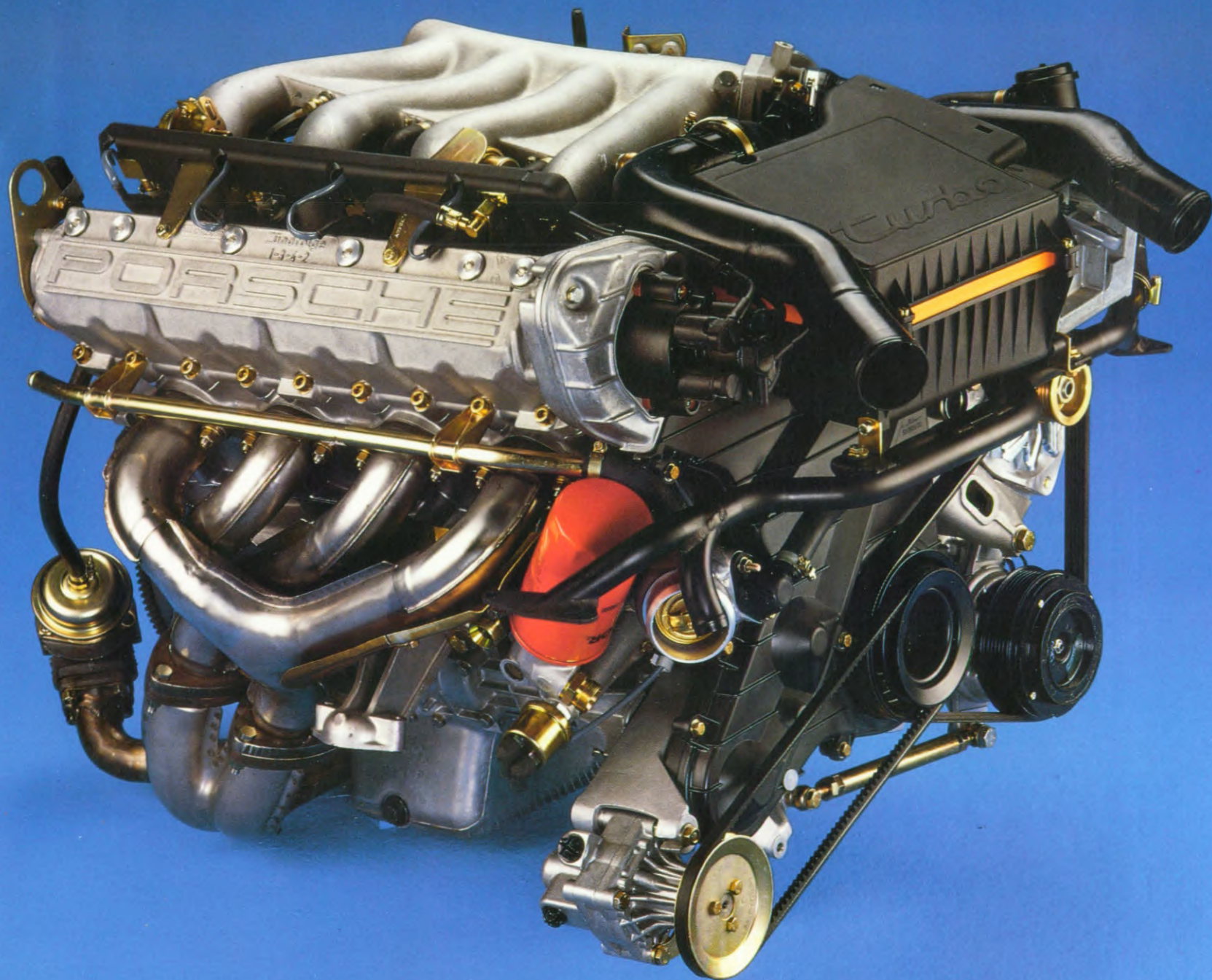


Transmission Diagram  Turbo



## THE SPECIAL CHARACTERISTIC OF THE 944 TURBO.

Porsche has already proved in the normal 944 that pollution-free engine technology can also be found in a high-performance sports car. With respect to exhaust emission, the 944 ranks as one of the best vehicles



### THE COMBINED ELECTRONIC IGNITION AND INJECTION SYSTEM.

For more than ten years now, Porsche has been using fuel injection engines only for all models. As in the case of their normally aspirated 944 engine, the 944 Turbo power plant employs a Bosch electronic fuel injection system in direct conjunction with the electronic ignition system. This computer controlled digital motor-electronics system (DME) fully meets all the demands for high responsiveness, trouble-free cold and hot starts, high engine efficiency and lower exhaust emission.

### COOLING SYSTEM.

Temperature management of a turbo charged engine is a prerequisite for vigorous and fast response. Full use of Porsche's expertise in this field has been incorporated into the design of the 944 Turbo. Hot, compressed intake air is cooled on its way from the compressor to the throttle flap to a more favourable temperature by an inter-cooler. It obtains the fresh air it needs from a small, but very efficient air duct located in the central part of the vehicle nose. The 944 Turbo engine is equipped with an external engine oil cooling system

coupled with thermostatic regulation to keep the engine at the right operating temperature even in extreme temperature conditions. The system is cooled by another separate air inlet in the nose section. The 944 Turbo also incorporates an external gearbox oil cooling system.

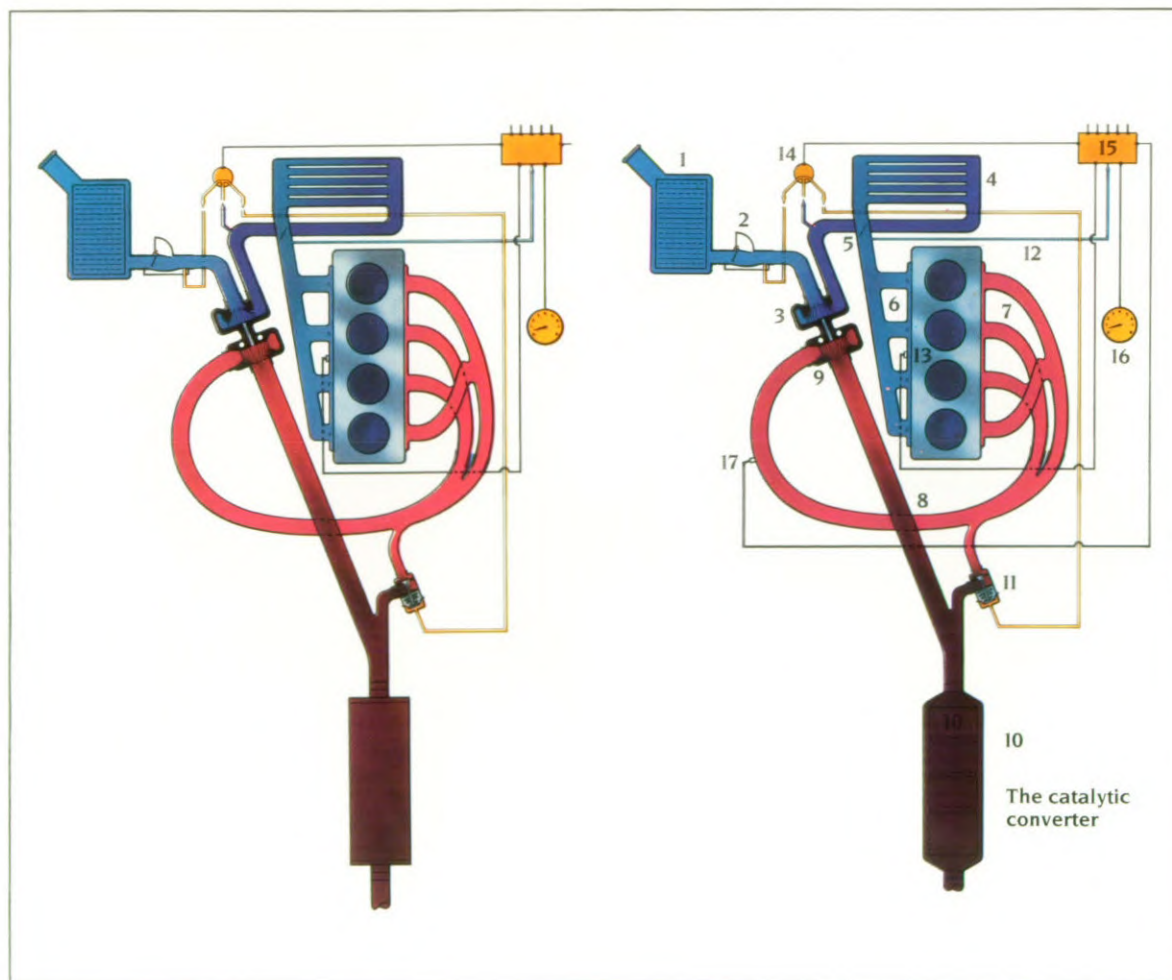
### THE CATALYTIC CONVERTER.

The Porsche 944 Turbo is offered with or without a catalytic converter. The design of the 3-way catalytic converter to Lambda regulations affords the same performance value as the version without a catalytic converter.

Various design measures have already been incorporated to permit later conversion to a catalytic converter at the factory.

The engine without a catalytic converter can also be safely operated with lead-free fuel.

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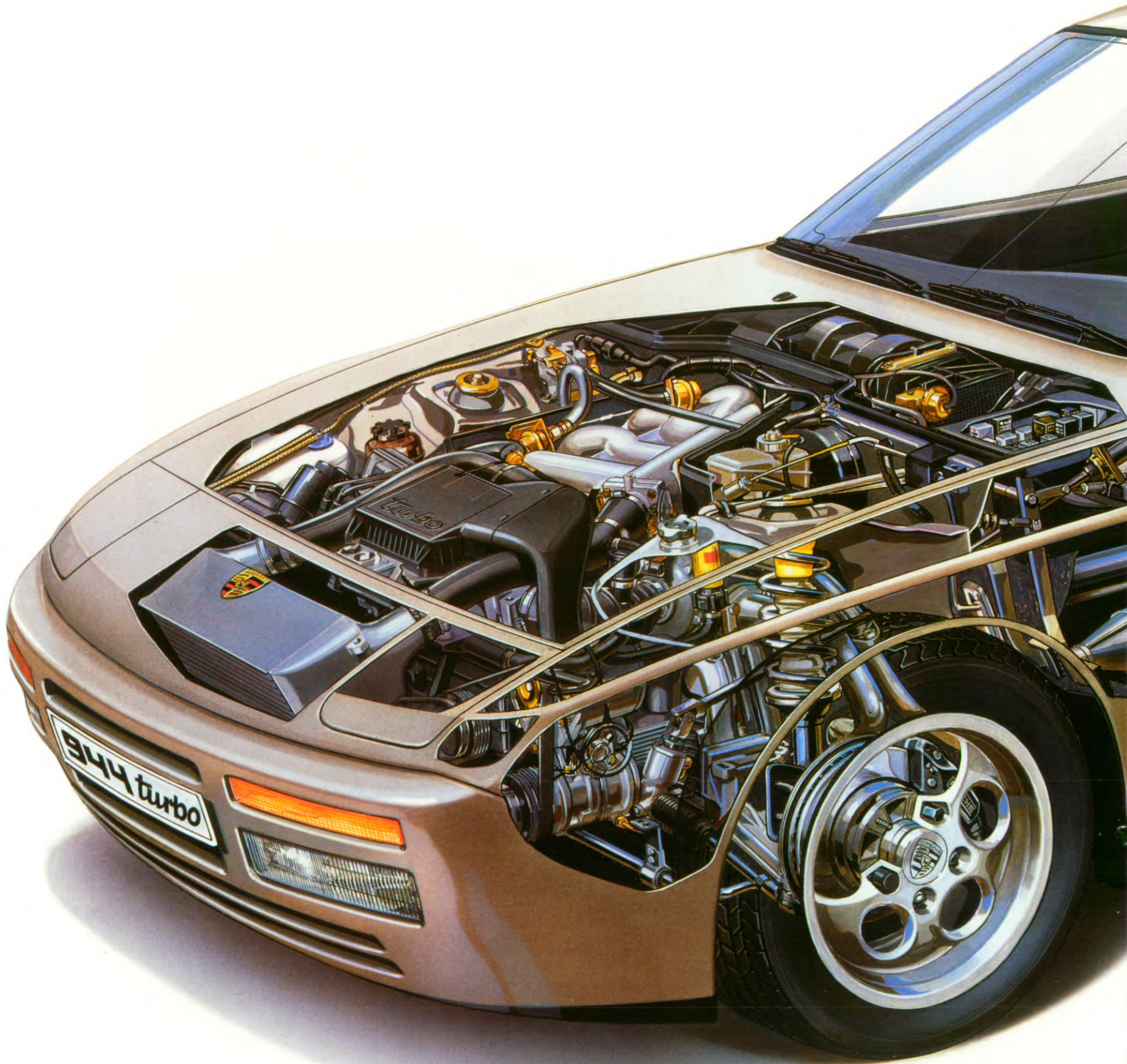
Porsche 944 Turbo

- 1 Air filter
- 2 Air flow sensor
- 3 Turbocharger (compressor)
- 4 Charging air cooler
- 5 Throttle valve
- 6 Intake manifold
- 7 Exhaust manifold pipes
- 8 Exhaust transverse pipe
- 9 Turbocharger (turbine)
- 10 Catalytic converter/muffler
- 11 Turbo boost control valve
- 12 Pressure line
- 13 Knock sensor
- 14 Frequency valve
- 15 Control unit
- 16 Rev. counter
- 17 Oxygensensor

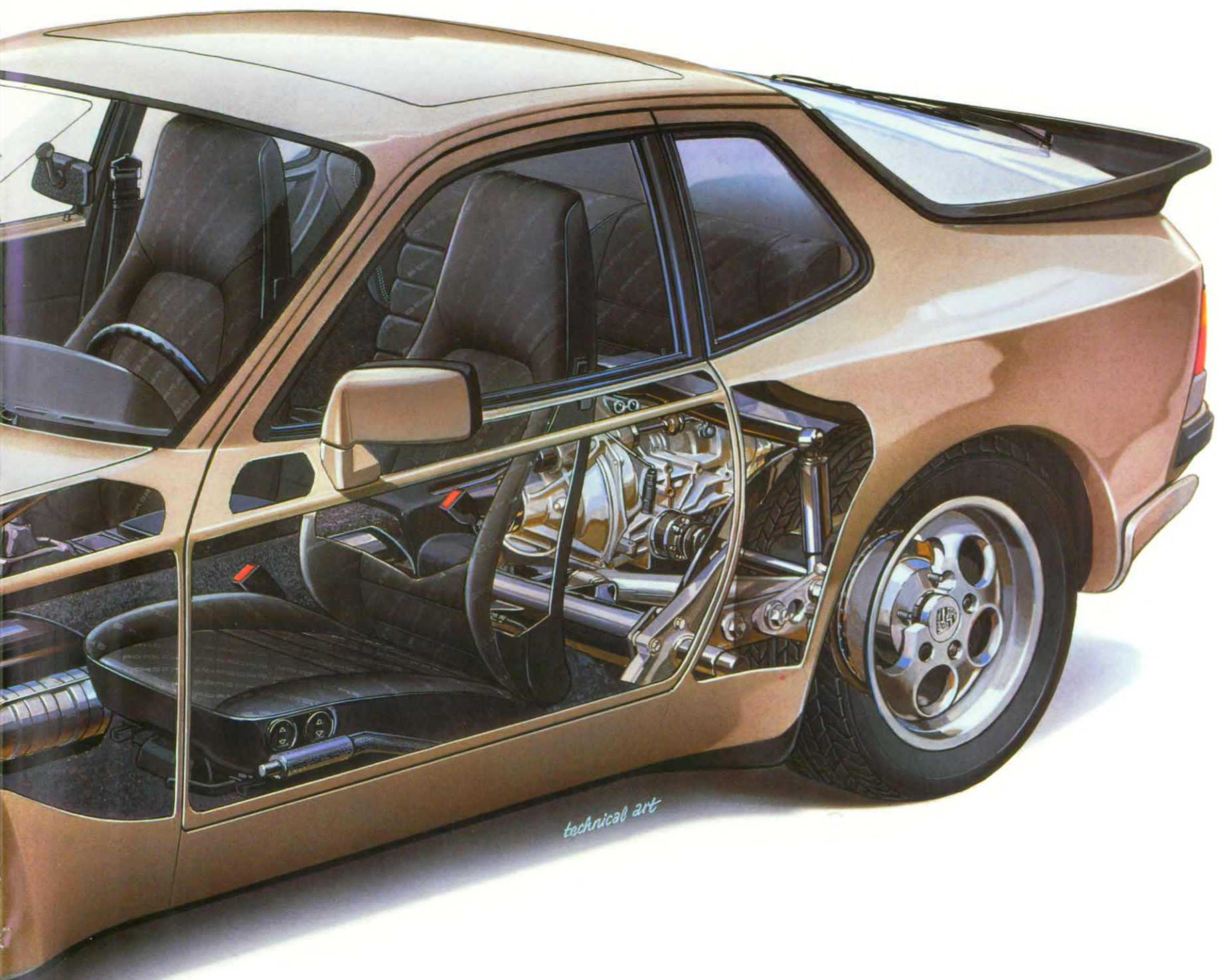












*technical art*

# Technical Data

## ENGINE

Number of cylinders .....	4
Bore mm (in.) .....	100 (3,94)
Stroke mm (in.) .....	78,9 (3,11)
Capacity cm <sup>3</sup> (cu. in.) .....	2.479 (151,26)
Compression ratio .....	8,0:1
Maximum power kW (hp EEC), at rpm .....	162 (220)/5.800
Maximum torque Nm (EEC mkp) at rpm .....	330 (33,6)/3.500
Petrol octane rating (RON) .....	96

## ENGINE DESIGN

Type layout .....	Water-cooled, in line, 4-cylinder, four-stroke engine, overhead camshaft and 2 balance shafts; turbo-charged, front mounted 2 valves of each cylinder
Fuel injection .....	Bosch L-Jetronic with digital electronic unit (DME), coasting cutoff, idling speed control

## ELECTRICAL SYSTEM

Battery (V/Ah) .....	12/50
Generator .....	Alternator 1610 W
Ignition .....	Transistorized, contactless, with digital control-DME

## TRANSMISSION

Clutch .....	Single dry plate, engine mounted, hydraulically operated
Gearbox .....	Full synchromesh, rear mounted
Number of gears .....	5 forward, 1 reverse

## CHASSIS & SUSPENSION

Front suspension and springs .....	Independent, McPherson struts with coil spring coaxial wishbone and anti-roll bars (24 mm $\phi$ )
Rear suspension and springs .....	Independent, semi-trailing arms transverse round torsion and anti-roll bars (18 mm $\phi$ )

Shock absorbers .....	double-acting, gas-filled shock absorbers
Braking system .....	Dual circuit hydraulic system (front/rear division), 4 intervalled discs with 4-piston fixed caliper brakes, parking brake by mechanical drum brake action on both rear wheels
Wheels .....	light alloy, pressure cast 7 J x 16 front, 8 J x 16 rear
Tyres .....	205/55 VR 16 front, 225/50 VR 16 rear
Steering .....	Rack and pinion safety steering, power assisted, steering wheel dia. 380 mm (14,9 in.)

## CAPACITIES (APPROXIMATE ONLY)

Engine oil (incl. oil filter) .....	6,5 litres (11,5 pints) approved multigrade oil, API specification SE or SF
Fuel tank .....	80 litres (17,6 gallons) of which approx. 8 litres (1,76 gallons) are reserve

## DIMENSIONS

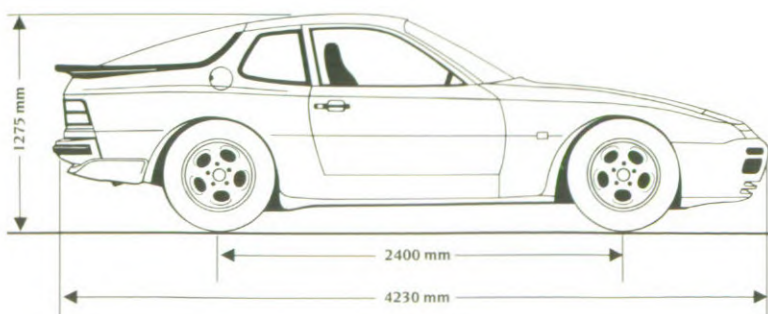
Track, front .....	1477 mm (58,2 in.)
Track, rear .....	1451 mm (57,1 in.)
Turning circle .....	10,3 m (33,8 ft.)

## WEIGHTS

Unladen weight (DIN standard) ....	1280 kg (2821 lbs.)
Useful load .....	320 kg (705 lbs.)

## PERFORMANCE (APPROXIMATE)

Top speed .....	245 km/h (151 mph) Five-speed
Acceleration	
0-100 km/h (0-62 mph) .....	6,3 sec.
Fuel consumption (approximate)	
Constant speed	
90 km/h (56 mph) .....	6,8 l/100 km (41,6 mpg)
Constant speed	
120 km/h (75 mph) .....	8,5 l/100 km (33,3 mpg)
Urban cycle .....	12,3 l/100 km (23,0 mpg)



Some of the vehicles illustrated in this brochure are fitted with special equipment available at extra cost. We reserve the right to modify or alter specification of our models in respect of design shape, delivery and colour without prior notification.

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