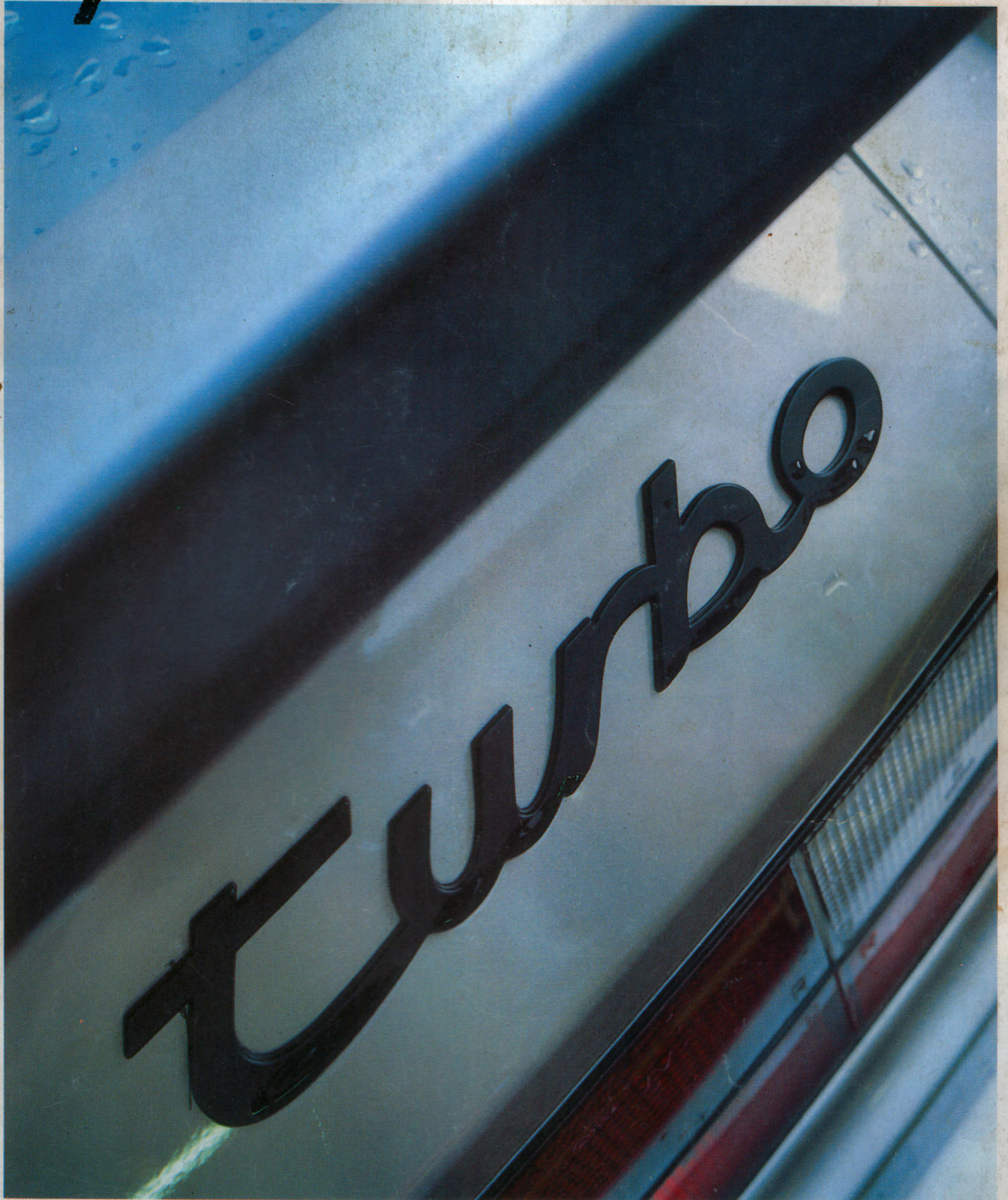


FEBRUARY 1986 £1.15

# Fast Lane



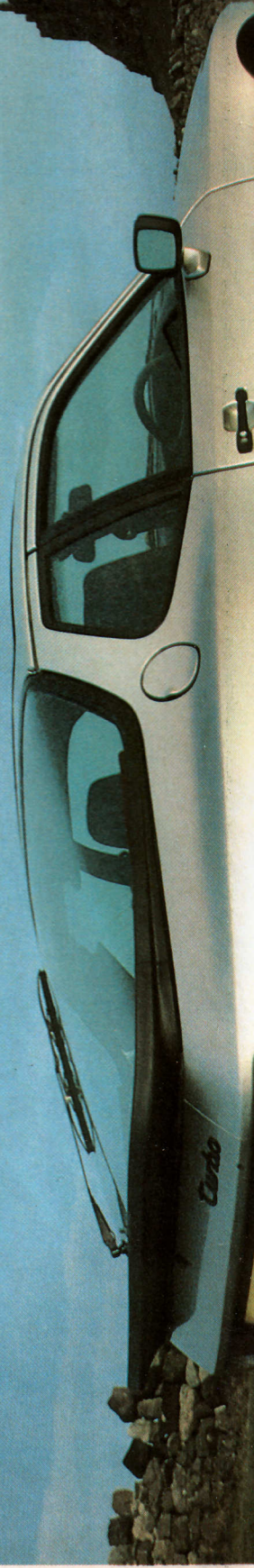
## 944 TURBO

EXCLUSIVE-FIRST UK TEST

AUSTRIA: AS4. DENMARK: DK446.00. GREECE: DR4450.00. HOLLAND: DFL11.50. ITALY: L5400. NEW ZEALAND: NZ\$5.95. SPAIN: Ptas490.00. SINGAPORE: M\$7.20. SWITZERLAND: SF9.00. U.S.A.: \$3.80. GERMANY: DM11.50

# PORSCHE 944 TURBO SUPERTEST

*Of all the 150mph-plus supercars, this is the most refined and the most efficient. In this first UK test of Porsche's latest model to go on sale here, we explain why it's a more logical choice now than the 911 Carrera; the reasons are more significant than a cost saving of £4 . . .*





**R**

ASK THE absurd saloon-bar question: "What is the best car in the world?" and you will get a wide variety of answers, even from those who have driven most or all of the potential candidates. Narrow your parameters and ask: "What is the best high-performance coupé?" And there can be only one answer: the 944 Turbo.

Perhaps it is not as quick as some Ferraris, the Lamborghini Countach and one or two other supercars, but if you can suggest a sports car which combines such excellent handling with a top speed of well over 150mph, 0-60mph acceleration in around six seconds, fuel consumption during hard driving better than 20mpg, with a high level of comfort for two people and their luggage, and reliability and build quality which are justly renowned, then send your answer on a postcard. If your suggestion cannot be dismissed instantly, then we obviously haven't been paying attention and might as well resign.

In recent years, Porsche has virtually cornered the market for high-quality, high-performance coupés. No rival manufacturer gets close to the 40,000-plus cars produced each year by the Stuttgart company,

yet Porsche has held true to its proclaimed target of "always producing one fewer car than demand."

This has been achieved not by standing still and simply churning out 'product', but by continually pushing forward the frontiers of efficiency and excellence.

Some readers will argue that "Porsche 911" is the answer to the question we pose in the first paragraph. The 911 is still in production, of course, and long may it continue. But no one can justify, on any *logical* grounds, buying a 911 instead of a 944 Turbo. You may point out, quite rightly, that logic is not often the prime factor in buying such a car, but that is beside the point.

To argue the case for the 911, you would have to use words like charm, excitement, idiosyncrasy, mind over matter, and so on. You would lose the argument.

Arguments against the 944 Turbo are few and easily demolished. The price (£25,311.59) is too high, do you suggest? Try to get on the waiting list and you will find that there are plenty of people who disagree (if you place your order now, you *might* get your car before 1988 . . .). Perhaps you do not feel that a car with an



engine of only four cylinders should be so highly rated. We certainly agree that having six, eight or 12 cylinders is good for the soul, but that is romance. Look at what this particular four-cylinder engine can do, and you will have to agree, once again, that logic supports its case.

To our eyes, the styling of the 944 is very attractive, and that of the Turbo even more so, with its all-round deformable polyurethane/glass fibre nose section giving it a similar sensuous yet aggressive look to that of the 959. This and other mods are dynamically effective too, not only giving a marginal reduction of Cd, but also reducing front and rear lift (the rear spoiler has been gently altered, there's a rear under-spoiler, which also cools the transmission, exhaust and petrol tank, and vestigial side 'skirts').

The modifications by which the respectable power (163bhp/5,800rpm) and torque (151lb ft/3,000rpm) of the normally aspirated 944 are raised to mini-supercar levels (220bhp/5,800rpm and 243lb ft/3,500rpm) do not simply consist of sticking turbocharger and intercooler on to the harmonically-balanced 2,479cc engine, which is not only among the largest modern four-cylinder units, but also has one of

the highest bore/stroke ratios of any type of production engine.

It has forged pistons instead of the usual cast aluminium type, reinforced valve guides, valve seat rings and inlet valves, stronger valve springs, and Sodium-filled exhaust valves with Nimonic heads. "TOP" (Thermo-dynamically Optimised Porsche), a fancy acronym for combustion chambers designed to cause high turbulence and to lead to excellent thermal efficiency, is retained from the standard engine, which has allowed the compression ratio to be 8.0:1, which Porsche claim to be "relatively high" for a turbocharged engine, but which is in fact about average these days. For comparison, the standard 944's compression ratio is 10.6:1.

A knock sensor is fitted so that the engine will be less prone to damage if low-grade fuel has to be used; this retards ignition in any cylinder by three degrees, and if further knocking is sensed, by up to six degrees; if knocking still persists, the boost pressure can be lowered electronically right down to basic charge pressure.

Bosch's 'black-box' computer operates both the Motronic ignition (with a memory covering 256 fixed points in the engine 'map') and fuel injection,

**B****P****U****S**

of the L-jetronic type.

The turbocharger itself is a KKK unit, with water cooling. It is mounted on the left flank of the engine, opposite the exhaust manifold, which apparently reduces maximum gas entry temperatures by 90deg C. A secondary cooling circuit in the turbo housing switches on automatically to prevent excessive 'heat soak' when the engine is turned off.

Around Millbrook's banked circuit, in poor conditions (with the wind gusting up to 20mph) we recorded a lap at 150.8mph. Although this is a little short of the claimed figure (152.2mph), it is not significantly so, since with tyre scrub and wind effects removed, the true figure of our test car would most likely be well above 155mph. Incidentally, the peak speed shown on the speedometer during our high-speed testing was 170mph,



which is the wildest exaggeration we have ever seen in a Porsche. The odometer was also inaccurate. Almost six per cent.

We got within 0.1sec of the claimed 0-100kph time of 6.3sec, which gave us a 0-60mph time of 6.1sec. The car went on to do 0-100mph in 16.4sec. Although this makes the 944 Turbo slower than the 911 it is not to the extent that the rear-engined car will disappear into the distance.

Turbo effects show up clearly in top gear acceleration, 20-40mph taking a tardy 13.6sec (not surprising when the starting point is well under 800rpm), but 70-90mph occupying only  
**FAST LANE FEBRUARY 1986**

7.5sec. Fourth gear gives a broad band of acceleration, all the 20mph increments between 40-60mph and 80-100mph taking 6.1sec or less.

In more than 1,800 miles of hard driving, we averaged 19.9mpg, a very respectable figure in view of the performance. We would expect most owners to achieve more than 22mpg in their normal driving, and it would only take a small degree of restraint to push the figure beyond 25.

The big fuel tank (with a 17.6-gallon capacity) gives a range during fast motoring of over 330 miles before the necessity to find a petrol station becomes serious, and if you are

'touring' you can squeeze more than 500 miles out of it.

To cope with the increase in power and torque, the clutch has been enlarged in diameter, and the gearbox has been strengthened. However, the quality of the change remains the same, which means that although possibly not as slick as that of some lesser-powered cars, it is the equal at least of any of the 150mph plus cars with the exception of the BMW M635/M5. It may feel a little ponderous at first, but it certainly isn't vague, and it can accept changes just about as quickly as the human hand can move, aided by a lightly-weighted and progressive

clutch. The gearbox, like that of 924/944-derived racers, has an external oil cooler.

The final drive has been raised (numerically lowered) to 3.37:1 and with an identical top gear ratio this gives 25.8mph per 1,000rpm. The other internal ratios have been shifted around (all are effectively slightly higher), and they give maxima (at 6,400rpm, when the rev limiter cuts in) of 39, 66, 97 and 132mph.

With suspension (MacPherson struts and coils at the front; semi-trailing arms and transverse torsion bars at the rear) unchanged from standard, but wider, lower-profile tyres (205/55 VR 16 front, 225/50 VR 16



R rear), it is not surprising that the Turbo gives the same general feel as the standard 944. As might be expected, the roadholding has a more adhesive quality, at least on dry roads.

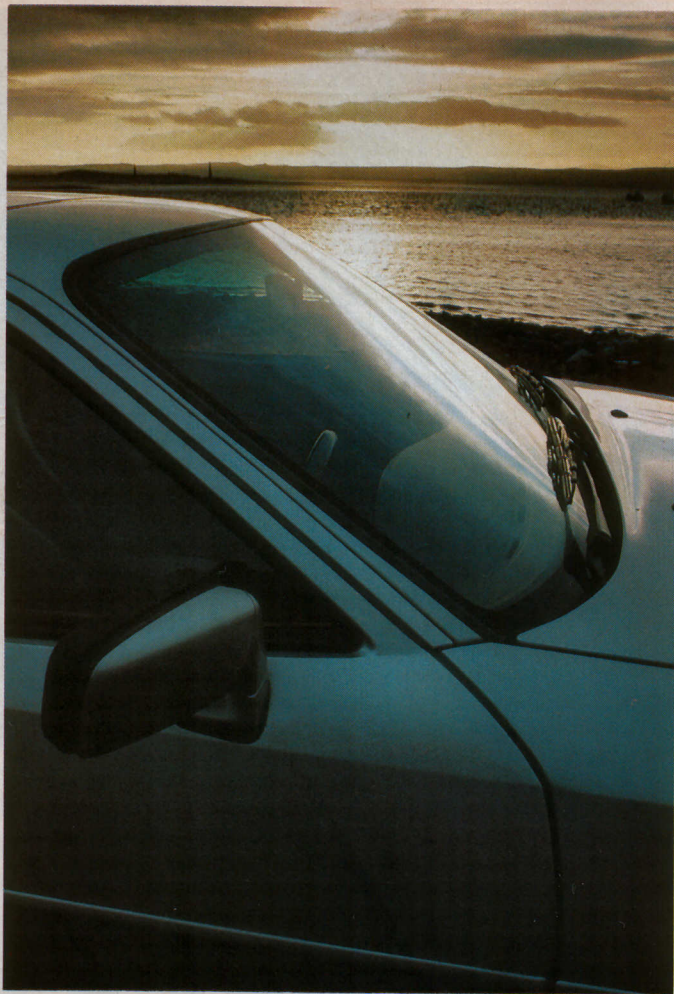
Those who remember the awkward tendencies of the 924 Turbo and Carrera will be pleased to learn that the 944T is a considerably easier car to drive quickly, and it does not present the unwary driver with a sudden and massive increase of power just as the apex of a slippery bend is reached. Though there is still a 'power step', and not much happens below about 2,500rpm, the onset of full boost is not like lighting the afterburner in a jet engine, but simply a steady though substantial increase in the rate of acceleration. In any case it is rare that a competent driver, hustling along even unknown roads, will need to drop below that engine speed.

Initial understeer is slightly stronger than in the latest standard 944, and we wonder if it might be lessened (as in early 944s, which suffered from the same problem on their 185/70 tyres) by adjusting the tyre pressures from the wide-spaced recommendation of 29psi at the front and 36psi at the rear. In any case, once settled into a bend, the 944T is more neutral and unlikely to run wide on the exit. More important than that, it does not swing into vicious oversteer if the throttle is closed suddenly with a significant cornering load building up. Instead it simply resumes the chosen line, and if the tail does slide out, it does so smoothly and progressively. At this point there is the opportunity to hold the car in a satisfying power slide, and it is more easily achieved than in most cars with this level of performance.

Even so, it cannot be 'sent' into bends with quite the controlled aggression that may be used in the normally aspirated model; this is partly a function of the fatter tyres, and partly because of the turbo. The car responds much better to a neat style.

With its bigger tyres, as might be expected, there is rather more road noise, both bump-thump and roar over coarse surfaces, than in the slimmer-tyred standard 944.

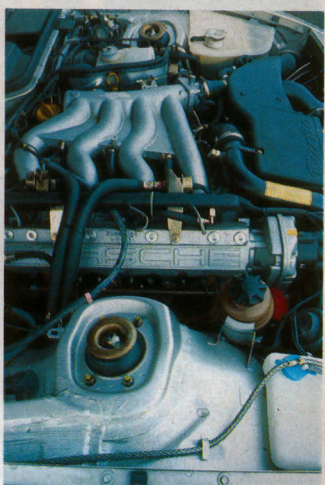
However, this is heard more than felt, and we cannot think of a sports car (even those of significantly lower performance) with a more supple overall ride quality. Damping control at high speed cannot be



faulted, even over some of our most testing B-roads, nor can the compromise by which taut handling is combined with an acceptable level of comfort over our bumpy suburban surfaces.

The only member of the 924/944 range not to have power-assisted steering as standard now is the 924S with manual transmission. In the 944T, this rack-and-pinion system will seem rather light and lacking in feel for the first few miles to a driver accustomed to an unassisted 944. However, you soon get used to it, and we found that after a while we forgot entirely that it was assisted except at the important times that it is needed - during low-speed manoeuvres.

If you wish, you can bump up the price of your 944T by £529.48 and have a limited slip differential. On the basis of our experiences with this test car in a wide range of conditions, we would say that this would be



money unwisely spent, since traction without the LSD is outstandingly good. On the other hand, it *might* be of benefit to an owner who belongs to the 96 Club and wishes to do a lot of circuit driving. The same comment applies equally to the "sports dampers" (£189.37).

One of the reasons why the Turbo is so quick despite its relatively small engine is its aerodynamic efficiency, a claimed Cd factor of 0.33 being combined with a fairly small frontal area. However, a price that is sometimes paid for good air penetration is some loss of stability, and we did find the car to be slightly wayward (though not to an alarming

extent) in crosswinds when moving up into the higher speed ranges, despite the claimed reductions in lift.

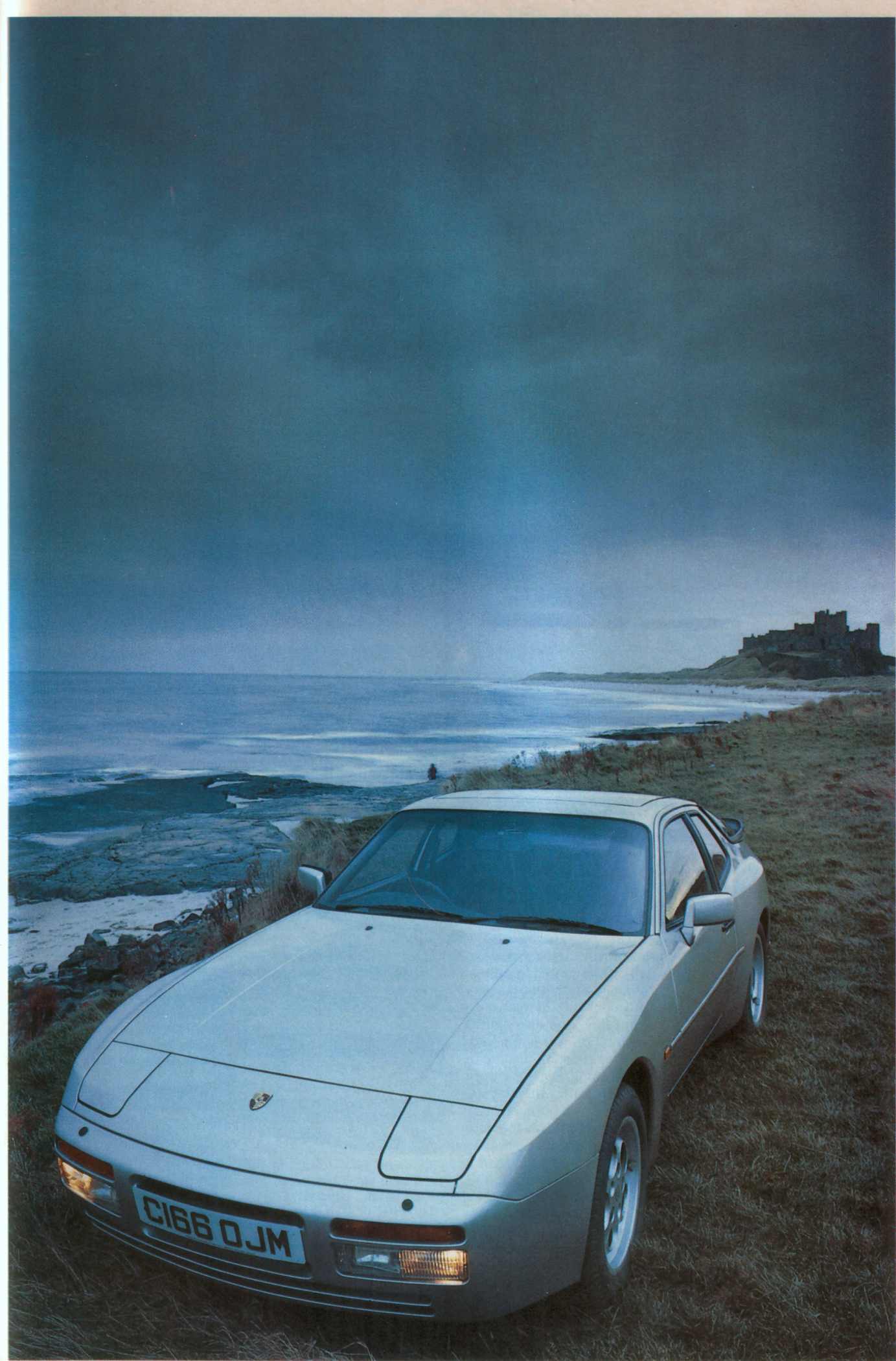
After about three-quarters of an inch of soft free play, the brake pedal has a good, solid feel and the uprated system (with enlarged, internally ventilated front discs with four-piston fixed calipers, and forced air cooling) performs exceptionally well, being both progressive and powerful. We experienced none of the fade which can afflict the less powerful normally-aspirated car, despite trying our level best. However, although the suspension has been modified to accept ABS (anti-lock), the system is not yet available. This is a pity since it's part of the specification of many rivals of similar price and performance.

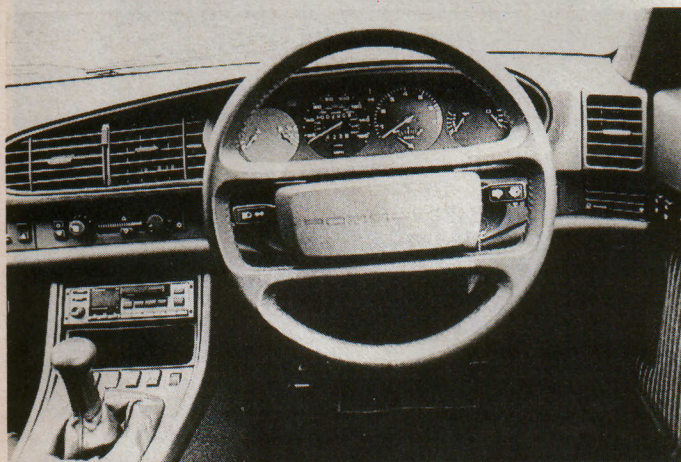
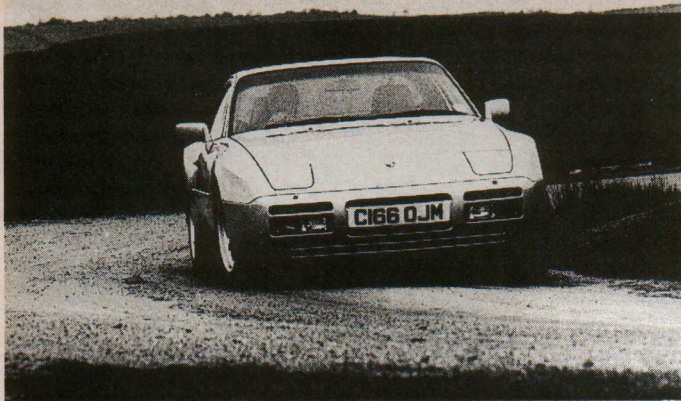
We have described the revised interior of the 944 in detail in Debut (see page 18). The Turbo has an identical overall interior design, with only detail changes, and it does not look out of place in a car of this price. The strengths of the new design are a vastly improved driving position, the relationship of the major controls and the impression of quality. The weakness is the siting (and lack of illumination) of the minor switches.

The only differences inside the Turbo are that it has one unnecessary and virtually meaningless gauge (for turbo boost) instead of another (an 'econometer'), it has "full climate control" (ie air conditioning) as standard instead of as an option and the partial leather front seats (with electric adjustment fore/aft and for backrest angle and tilt) are standard, as is the tiltable/removeable sunroof (also electrically operated). The purchaser can specify either standard seats or Recaro-type "Sports" seats.

The latter were fitted to our test car, and we found them exceptionally comfortable and supportive. The ability to tilt either the front or the rear of the seat independently, together with the other adjustments, means that drivers of almost any shape or size will be able to make themselves comfortable. As in all 944s, the fitting of a clutch-foot rest and the proximity of the throttle pedal to the carpeted panel covering the front wheelarch bulge lessens the strain on the ankles during long journeys.

Immensely powerful on main beam, the headlights seem rather ineffective on dip for a car as fast as this: this seems to be





Top: The Turbo's revised nose treatment gives it a more aggressive look. Handling is superb.  
Above: Revised 944 interior is now in keeping with a £25,000 car.

more a question of adjustment than simple wattage, since the pool of light within a sharply defined area is certainly bright enough.

In all other respects, the all-round visibility is excellent, the three mirrors together giving a comprehensive view of the road behind. The windscreen wipers are much improved not only because of their resiting to give a proper sweep for right-hand drive cars, but also because they now have three speed and an intermittent setting. In operation they are pleasantly quiet too, but it is a pity the same may not be said of the rear-screen wiper, which emits a creaky whining noise reminiscent of cars of 30 years ago. For the price of the car, Porsche could surely have added an intermittent setting and a washer . . .

Air conditioning is standard in the 944T (an extra costing owners of lesser 944s almost £1,200), and it is a simple system to operate, with rotary dials for the four-speed fan (almost silent as it squeezes out a gentle breeze on its lowest setting) and the temperature set-

ting, two volume slides, one for the upper half of the car and the other for the footwells, and two buttons: one operates demist (very efficiently), and the other is for recirculation. The centre vents are individually adjustable for direction in two planes, but cannot individually be closed; the outer ones on the fascia can be. There's also a button which can be pressed to switch off the air conditioning.

Although all this works very well to cool the interior on a very hot day, and also churns out plenty of warm air very soon after starting up on a frosty morning, it cannot cope very well with the typical muggy English winter day when you want warm toes and cool air to the face simultaneously. There is a solution - open the tilting sunroof; this should not be necessary and we hope that this generally effective system may in future be tuned to be closer to perfection.

There are few extras offered, other than those already mentioned, and few are needed, since the specification is very high, including almost everything that might be expected

for the price (air conditioning, electrically operated windows and hatchback release, central locking, electrically operated tilting sunroof, a good-quality Panasonic stereo radio/cassette unit with four speakers and an aerial integral with the windscreen, and so on). You can even have "delete options": removal of the "Turbo" badge and the fitting of non-tinted glass does not add to the price.

This is a stylish and beauti-

fully executed car with only minor flaws which do not, added together, mount up even to an irritant. It's an expensive car to buy, and no doubt will be to run, except that the high demand and relatively small supply ensures that retained values are exceptionally good. It will be interesting to see if the absence of ABS brakes from early cars has any effect on second-hand prices when the ABS-equipped version is available.

## PERFORMANCE

Tests carried out at Millbrook Proving Ground, Bedfordshire.

Maximum speed (lap of banked circuit) 150.8mph  
Fastest quarter-mile 151.9mph

Acceleration through gears:	
0-30mph	2.3sec
0-40	3.4
0-50	4.5
0-60	5.9
0-70	7.8
0-80	9.8
0-90	11.9
0-100	14.9
0-110	18.1
Standing ¼-mile	14.7sec/94mph

Acceleration in single gear:

	5th	4th
20-40	13.6	9.3
30-50	12.1	7.8
40-60	10.7	6.1
50-70	9.2	5.7
60-80	7.9	5.6
70-90	7.5	5.3
80-100	8.5	5.9
90-110	10.8	7.6

## ECONOMY

Overall consumption 19.9 mpg  
Composite\* 30.2 mpg  
Test distance 1,881 miles  
Tank capacity 17.6 gallons  
Range 532 miles

\*Based on government test figures (One half of Urban figure plus one quarter of each of the steady-speed figures, 56/75mph)

## WEIGHT

Unladen 24.8 cwt

## ENGINE

Single overhead camshaft (driven by toothed belt), four-cylinder in line, with twin contra-rotating Lanchester-type harmonic balancer shafts, front mounted, 2,479cc (100/78.9mm). Compression ratio 8.0:1. Aluminium alloy block and head. Two valves per cylinder. KKK turbocharger with intercooler, Bosch L-jetronic fuel injection, Bosch Motronic fully programmed ignition.  
Maximum power 220bhp/5,800rpm. Maximum torque 243lb ft/3,500rpm.

## TRANSMISSION

Rear-wheel drive, five-speed manual gearbox, transaxle, torque tube. Internal ratios and mph/1,000rpm:  
Top 0.829:1/25.8  
4th 1.034:1/20.7  
3rd 1.400:1/15.3  
2nd 2.059:1/10.5  
1st 3.500:1/6.2  
Final drive ratio 3.37:1

## BODY/CHASSIS/ SUSPENSION/ STEERING

Integral steel chassis, fully galvanised, with extra-thick zinc coatings in crucial areas, and PVC coating to the floorpan, wheel arches, front spoiler and undersills, baked-on underbody sealant, wax spray in cavities. Front suspension independent by MacPherson struts, lower wishbones, coil springs, anti-roll bar, gas-filled dampers. Rear suspension independent by semi-trailing arms, transverse torsion bars, anti-roll bar, gas-filled dampers. Power-assisted rack-and-pinion steering.

## TYRES/WHEELS/ BRAKES

Dunlop D4 tyres (on test car; alternative fitting, Pirelli P7), 205/55 VR 16 front, 225/50 VR 16 rear, on 78J x 16 alloy rims. Brakes: servo-assisted discs (ventilated front/plain rear), 11.8in diameter. Dual circuits, split front/rear. Parking brake operates separate rear drums.

## DIMENSIONS

Overall length 166.5in, width 68.3in, height 50.2in, wheelbase 94.5in, front/rear track 58.1/57.1in.

## ELECTRICAL

Alternator 115A; 12V, 50Ah battery. Halogen headlamps, 110/230W total, 24 fuses.

## PORSCHE 944 TURBO

Maker: Dr Ing h c F Porsche AG, 7000 Stuttgart-Zuffenhausen, Porsche-Strasse 42, West Germany. UK importers: Porsche Cars (Great Britain) Ltd, Bath Road, Calcot, Reading, Berks RG3 7SE. Tel: Reading (0734) 303666. Price: £20,317.00 basic plus £1,693.08 Car Tax plus £3,301.51 VAT equals £25,311.59.

FAST LANE FEBRUARY 1986



# Testing times

EVERY SO often, some clever-clogs writes to us to point out that such-and-such magazine achieved a 0-60mph time with a particular model of car which is better than the time we recorded. Are they lying, or are we incompetent? Probably neither, since there is generally more to the interpretation of figures than meets the eye.

Just as often, incidentally, we record quicker times than our rivals. This definitely does not indicate that we tell fibs, and in the case of the more reputable magazines, we would not for a moment suggest that their testers are incompetent.

A case which neatly illustrates the point is the Porsche 944 Turbo, tested for the first time in UK form in this issue. As a 'benchmark' for our figures, we had those recorded by our sister magazine *Motor*, which sent a couple of testers to Germany in the early part of last year to sample a left-hand-drive version.

These comparisons are interesting. For a start, their top speed of 157.9mph, the mean of runs in opposite directions on the autobahn, timed against the kilometer posts, compares with our lap speed of Millbrook of 150.8mph. This discrepancy may be accounted for *partly* by tyre scrub and gusty winds around the banked circuit. It does not seem likely that the *entire* difference in speed would be made up by running our British test car in still air on the straight and level, however.

This suspicion is given added weight by a detailed analysis of the acceleration figures. We actually reached 30 and 40mph from rest in fractionally less time than *Motor's* testers,

though from that point onwards, their figures are better. Their 0-60mph time of 5.9sec compares with ours of 6.1, a difference which is within the limits of testing variation. As the speeds rise, however, the differences are more marked, *Motor's* car reaching 90mph one second earlier than ours, the margin increasing to 1.5sec and 2.6sec in the next two 10mph increments.

Of even greater significance are the figures for acceleration in top gear: although the two cars covered the 20-40mph increment in *exactly* the same time, *Motor's* 944 Turbo was 3.2sec quicker between 90 and 110mph, an advantage of no less than 42 per cent.

Skill, of course, does not come into top-gear acceleration figures; you simply plant your foot firmly on the throttle pedal and keep it there. Therefore, given the fact that *Motor* and *Fast Lane* use identical testing equipment, we must come to the conclusion that the German version of the 944 Turbo was substantially quicker than the British one even though they both allegedly have identical horsepower and torque figures. Could it be that the car sampled by *Motor* was a pre-production 'special'? The figures certainly *suggest* that the boost pressure of the turbocharger was just slightly wound up. . .

Do not infer from this that the car we have tested is slow. It obviously isn't, and in fact the figures we achieved are very close indeed to those claimed by the factory. There is no doubt in our minds, for example, that our test car would better the suggested top speed of 152.2mph on a horizontal

# ON THE BUMP STOPS

PETER DRON

stretch of *autobahn*. It's just that we try our hardest to extract the best figures each test car can achieve, and we are always curious, even suspicious, when obvious anomalies arise.

A wide number of factors can affect the performance of a test car compared with a supposedly identical model, and the same car can get a bit quicker as it 'loosens up'. However, so long as test conditions remain broadly similar, the weather should have no more than a marginal influence over the result. Obviously if you attempt to record acceleration figures on a frozen surface, or attempt to 'max' a car with the wind gusting to 30mph or more, the result will not be representative, but a few mph of wind or a little difference in barometric pressure, or even a trace of dampness should in most cases have negligible effect.

There have been plenty of instances in the past of manufacturers going beyond the parameters of careful inspection and preparation of their press

demonstration vehicles. How many purchasers of the original E-type, for example, had the full 250bhp claimed by the factory, which enabled the early test cars to reach 150mph? Numerous other manufacturers have, in the past, been less than scrupulous in providing vehicles which are typical of the average machine rolling off the end of the production line, some even going so far as "blueprinting", which means selection of a perfectly balanced set of pistons, conrods and so on, and perhaps a touch of buffing to the cylinder head and ports, and other little tricks to make sure that the engine is as close as possible to perfection.

Every manufacturer has tolerances built into every aspect of its production, and the definition of "build quality" is the nearness to the centre of these tolerances a manufacturer can get in every single version of its products.

Aston Martin are unusually open about their tolerances, suggesting that a Vantage engine may have anything between 390 and 420bhp. It sounds like a big difference, but if you take 405bhp as a mean figure, the percentage variation either side is pretty small.

We are not 'getting at' Porsche over this matter, merely illustrating the difficulties involved in assessing a car's performance. Indeed, we have always found Porsche to be scrupulously honest. It isn't simply a question of looking at the figures and reaching for the conclusions. Everything must be placed in context. We are satisfied that the figures we recorded with the 944 Turbo test car in this issue are representative of what purchasers in the UK can expect. We are also convinced that, if this is true, they will not in any way be disappointed.

Some anomalies defy analytical resolution. For example, there was a recent case in which two magazines were given exactly the same car to test. When the second magazine 'maxed' it, it achieved 144mph, whereas the first magazine had recorded 148. Worried that the car had somehow lost a few bhp, the second magazine sent it back; it was put on a rolling road and found to be in perfect working order.

So, please don't shoot the pianist. He's only trying to do his job. . .

