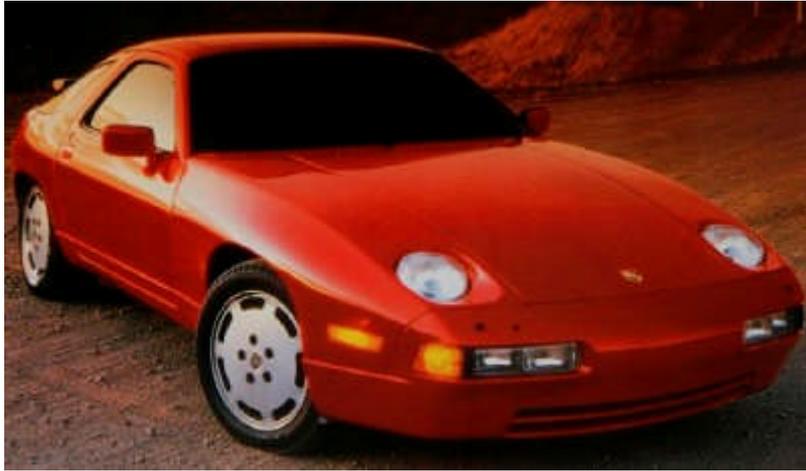


The Porsche 928 history

Text taken from <http://auto.howstuffworks.com/porsche-928-history.htm>



The Porsche 928 bowed for 1978 as the first production Porsche with a V-8 engine.
See more [pictures of Porsche 928](#).

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Introduction

The Porsche 928 was a response to a problem that never developed.

In the early Seventies, Porsche chairman Dr. Ernst Fuhrmann, no small inventor himself, sweated along with his colleagues at Porsche's Zuffenhausen headquarter -- not about what was going wrong (nothing much was in those days) but what *could* go wrong. Mainly they worried that the [Porsche 911](#) just might stop selling (perhaps suddenly) before they could ready a replacement. Their concern was not unjustified. The 911 was then nearing its tenth birthday, no successor was in sight, and Porsche knew better than anyone that no car lasts forever. Even the evergreen 356 had run "only" 15 years.

As we now know, time was not running out on the 911 at all. But Fuhrmann and company couldn't know that back then, and we can be glad. Perspiration and no little inspiration spurred their genius to produce a fabulous new Porsche unlike any that had gone before.

Other concerns prompted thoughts of a 911 successor. Most immediate was the trend to increasingly stringent emission, safety, and noise standards not only in the United States -- then Porsche's most important export market -- but in Europe, as well. This led to the idea that the air-cooled/rear-engine concept might not be able to keep pace -- that it could, in effect, be legislated out of existence.

All this came together in project goals for a new model that, in the beginning at least, was seen as a 911 replacement. As Dean Batchelor recorded, it first had to have "all the quality and performance of previous Porsches" and "be capable of meeting any and all government regulations that might be conceived in the foreseeable future." The latter seemed to imply a water-cooled engine in front, which by then was seen as a given for all future production Porsches.

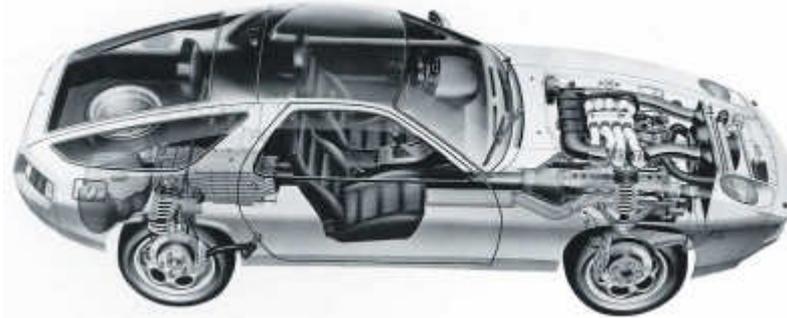
The new car would also have to be more refined, comfortable, and luxurious than any prior Porsche so as to compete with Mercedes and BMW. And it would have to play well in America, where more than half of all Porsches were sold. Of course, a long production run was assumed -- at least 10 years -- which called for styling that wouldn't quickly become dated.

Adding significance to these requirements, this would be Porsche's first "clean-sheet" road car. (The 356 was VW-based, the 911 had evolved from it, and the 924 was taken over from VW after this new project was started.) Considering that, it's amazing that the 928's basic concept was "worked out, deliberated, and decided within a few days," as Fuhrmann later told author Karl Ludvigsen.

By late 1973, Porsche had decided on a relatively large-displacement, water-cooled V-8 up front, plus a rear transaxle, all-independent suspension, and all-disc brakes, the last two long-standing Porsche traditions by this time. Mounting the transmission aft would confer more even front/rear weight balance with the forward engine, plus a high polar moment of inertia to aid handling and high-speed stability.

A 90-degree V-8 might seem rather "American," but Mercedes offered one nonetheless. And it had certain advantages over the 60-degree V-6 that was briefly considered (and may have given rise to rumors of a "new 911" with a front six): superior power potential and running smoothness, greater scope for future displacement increases, and compactness -- important, because Fuhrmann wanted the characteristically low Porsche hoodline. Design chief Tony

Lapine deliberately planned the styling to be futuristic and a little shocking, in line with his notion that if a car looks good right away, it soon starts looking old hat.



The Porsche 928 wasn't small, but was an efficiently packaged grand touring coupe.

Porsche 928 Design

Though Porsche usually premiered new models at the Frankfurt *Automobil Ausstellung*, its traditional "home" show, it chose the Geneva Salon in March 1977 to introduce the 928. The choice was fitting, as the original 356 had been introduced there back in 1950. U.S. deliveries began late in 1977, in time for model-year '78.



The basic Porsche 928 shape unveiled in 1977 stayed with the car through 1995.

What people saw was a sleek if rather heavy-looking 2 + 2 hatchback coupe unlike anything else on the road -- a sort of German Corvette. That may seem an invidious comparison to Porsche-philosophers, but it's logical, and not just because both cars have V-8s. For example, the 928's 98.4-inch wheelbase was just 0.4-inch longer than the contemporary Chevy's. Overall size was broadly similar, too, though the Porsche measured 10 inches shorter (175.7 inches) and offered "+2" seating where the 'Vette did not. Both were obviously high-style, high-performance sports cars, but the 928 was more weight-efficient, tipping the scales at just under 3200 pounds (versus 3500-plus). Undoubtedly, the 928's fixed-roof unit structure was lighter than the 'Vette's steel frame and separate fiberglass T-top body.

There was no doubting the efficiency of the 928 engine. It was not, as some thought, an adaptation of the contemporary 4.5-liter Daimler-Benz V-8. Displacement was close enough - 4,474 cubic centimeters versus 4,520 (273 cubic inches versus 276) -- but the Porsche unit was more oversquare with a bore and stroke of 95 × 78.9 mm.

Pistons were iron-coated aluminum-alloy units running in linerless bores, made possible by casting the block in Reynolds 390 silicon-and-aluminum alloy, like the 911 engine. Again, the bores were electrochemically etched to leave silicon crystals as the wearing surface. The traditional forged-steel crankshaft ran in five main bearings, with forged connecting rods paired on common journals.

Naturally, there were no Detroit-style pushrods and rocker arms but a single overhead camshaft per cylinder bank, driven by a Gilmer-type belt. Though the banks sat at right angles, their cam covers were situated to make the installed V-8 look much like the 911 flat-six, which was possibly deliberate. The cylinder heads were made of alloy, for additional lightness. Compression was initially 8.5:1, and Bosch's reliable K-Jetronic injection fed fuel from a 22.7-gallon plastic tank at the extreme rear.

With all this, rated output was 240 DIN horsepower European at 5,500 rpm and 257 pounds/feet of torque peaking at 3,600 rpm. U.S. models arrived with 219 horsepower (SAE net) at 5,250 rpm and 245 pounds/feet of torque (also at 3600) due to a more restricted exhaust system with catalytic converter for emission control (making this a 50-state car from the first) and minor retiming for operation on lead-free fuel.

A front-engine/rear-transaxle layout made as much sense for the posh and potent 928 as it did for the lighter, less powerful 924. And it worked just as well: Front/rear weight distribution ended up a near-perfect 51/49 percent.

The standard gearbox was a new Porsche-designed five-speed manual mounted ahead of the differential (not behind, as in the 924), and departing from past practice with a direct top-gear ratio (1:1). Alas, it also had a racing-style shift gate like early 911s, with first to the left and down, out of the normal H. Porsche engineers explained that the V-8's ample torque permitted routine starts in second gear, so first wouldn't be needed that much and should thus be "out of the way." Most owners felt differently.

Daimler-Benz did provide one major component: the no-extra-cost three-speed automatic, wearing a housing designed by Porsche. Both transmissions pulled a long-striding 2.75:1 final drive.

Power went through a special Fitchel & Sachs twin-disc clutch of fairly small diameter (200 mm/7inches). This was chosen to match the rotary inertia of a thin, rigid driveshaft carried in a torque tube. A helper-spring release kept clutch effort at a manageable 33 pounds.

Nowhere was that thoroughness more evident than in the suspension. Geometry looked ordinary but wasn't. Up front were unequal-length lateral A-arms, with the lower one mounting a concentric shock absorber and coil spring that passed through the upper arm to an attachment point above. An anti-roll bar was standard.



The 928's water-cooled aluminum twincam V-8 was an engineering tour de force.

Porsche 928 Suspension and Handling

Rear suspension on the Porsche 928 was novel. *Road & Track* described it as “upper transverse links, lower trailing arms, coil springs, tube shocks, anti-roll bar.” Porsche proudly called it the “Weissach (VEE-sock) Axle,” after the site of the company’s new Development Center not far from Stuttgart.



Its novel suspension and mounting structure gave the Porsche 928 great handling.

Britain's *Autocar* noted that each lower arm “takes braking and acceleration torque loads as well as helping the ball-jointed single top link locate the wheel laterally. The bottom [arm] has its inboard pivot axis inclined outwards at the front, like a semi-trailing arm, to provide a measure of anti-squat. And at the front body pivot, it has a sort of double joint [actually an articulated mount]. The give of this in a corner under braking and decelerating forces [that ordinarily result in] an oversteerinducing toe-out [instead] makes the outside rear wheel toe-in slightly [and] thus counters the usual accidental oversteering self-steer in the case where the driver who has entered a corner too fast lifts off, or, worse, brakes.”

Like so many Porsche innovations, the Weissach Axle was an elegant solution to a thorny problem, and it marked a first for toe-compensating rear suspension in a production car. Other manufacturers would devise their own solutions, including full rear-wheel steering, but it would take them at least a decade to follow Porsche's lead.

ZF supplied the 928's rack-and-pinion steering, which, unusually for a Porsche, came standard with power-assist. The assist was also predictive in that it varied with vehicle velocity: minimal at highway speeds for proper effort and optimum control, maximum at low speeds for easy parking. Gearing was reasonably quick at 3.1 turns lock-to-lock. Again for better control (and foreshadowing the later 944), negative steering roll (or “scrub”) radius was designed in to counter sudden changes in steering torque in situations like a front-tire blowout.

The 928 rolled in on low-profile, high-performance 225/50VR16 Pirelli P7s mounted on special “telephone dial” cast-alloy wheels. These state-of-the-art tires worked with the high-tech suspension to give the 928 uncanny cornering stick. “They hang on to absurd limits,” exclaimed *Autocar*, “and combined with the drama-free way the car simply understeers ultimately, it is easy to dismiss the 928 as almost dull in a corner. And then you think about how fast you are going through the corner.”

In fact, the 928 suspension was so remarkably compliant, absorbing most every kind of irregularity, that critics could hardly believe the race-car-like cling in hard driving. “True, those tires are harsh over sharp inputs,” observed *Road & Track*, “and they're also noisy on all but the smoothest asphalt surfaces, but otherwise the ride is wonderfully supple and well controlled. The softness of the suspension on our California freeways had some drivers

expecting a floaty, wallowy ride on fast, twisty undulating roads. Nothing could be further from the truth.”

The big vacuum-assisted all-disc brakes proved equally capable. They could rein in a 928 at up to 1 g deceleration and, in *R&T*'s tests, a mere 139 feet from 60 mph. “One wonders how much the very handsome, wide-eyed wheels help in keeping the fade performance good,” added *Autocar*. “Few cars have such nakedly obvious discs . . . a piece of functional design that makes the car look all the more what it is -- ideally functional.”

Acceleration was nothing less than Porsche-brilliant. Despite its heft, a five-speed 928 would reach 60 mph from rest in 7-8 seconds; the automatic version took perhaps a tick more. The standing quarter-mile flew by in 15-16 seconds with manual, the speedo reading about 90 mph. Top speed was 135-145 mph, more than most owners would typically use.

Not that they didn't have a right to expect super performance, because the 928 was super expensive, arriving in the United States at a heart-stopping \$26,000. “Hardly a bargain,” sniffed *R&T* in 1978, by which time the price had ballooned to \$28,500. “But clever engineering doesn't come cheaply, and few automotive design teams are more clever than the one residing in Zuffenhausen, West Germany.”



The Porsche 928 was composed at speed thanks to its smart suspension design.

Porsche 928 Styling

Porsche was a bit sensitive about the controversy generated by the 928's styling, taking great pains to explain its benefits to customers and dealers alike: “The 928 was designed to have as many Porsche styling points as possible and to be clearly different from other sports cars,” said a 1978 dealer training booklet. “Then there was the safety legislation [to consider]. . . . And, of course, acceptable aerodynamic values had to be reached. . . .”



The Porsche 928's lay-flat/pop-up headlights were a most distinct styling feature.

“The 928 styling with a fastback is an intentional continuation of Porsche tradition in that it is aerodynamically superior, because of the comparative short front end and a gently tapered and rounded tail, guaranteeing low air turbulence. As well as improving directional stability, the large-surface tail end also means a large passenger compartment and an outstanding amount of headroom for rear seat passengers in a sports car. We also believe that rounded forms are more interesting than clean-cut lines, which can be absorbed immediately and do not have anything new to offer the observer. The 928 looks different from each angle and remains interesting.”

Porsche suggested that its sales people offer this retort to prospects dubious about the looks: “Naturally, every observer will need a certain amount of time to get accustomed to the unusual styling of the 928; but a car which is technically different from other cars has the right to look different, don’t you agree?” Styling director Lapine later allowed that even Dr. Fuhrmann didn’t like the 928 when he first saw it, though he did later.

As time passed, the 928 no longer seemed so strange. As Lapine intended, time and tastes caught up with it, “worn-bar-of-soap” shape, curvy flanks, body-color bumpers, flared wheel-arches, and all. Even the side-window shapes would be rendered commonplace by imitators like the mid-Eighties Chrysler Laser/Dodge Daytona.

One element was borrowed: exposed headlamps that “stood up” when switched on and “lay down” (in recesses) when switched off, resting just below hood/fender level. At least Porsche borrowed from one of the best, the magnificent mid-engine Lamborghini Miura of the late Sixties. As Porsche explained, the design had advantages, enhancing aerodynamics while ensuring that the headlights were cleaned each time the car was washed. Also, the design was cheaper to build than the hidden lamps of the 924 and later 944. But most of all, it made for an unforgettable face, which may explain why lay-back lights appeared on the 944’s restyled 1992 successor, the 968. Something else not found on most other cars were separate driving and fog lamps, catering to most every nighttime condition.



A rear wing gave sharp definition to the Porsche 928s collection of round forms.

Porsche 928 Interior



Befitting a grand tourer, the Porsche 928 interior elegant, stylish, and comfortable

The Porsche 928 cockpit was the most sumptuous yet seen from Porsche, with all the usual luxury-car features and a few that weren't. Among the latter were a tilt-adjustable steering wheel that moved the entire instrument cluster with it, thus ensuring good gauge visibility at all times, and air-conditioning that cooled not only the interior but the glove compartment. And as for the back-seat sun visors, well, just put them down to Teutonic thoroughness. At the very least, they were perfect blinders for occupants who got nervous at 125 mph.

Those rear seats were individual buckets and definitely of the "occasional" sort for adults; small children fit much better. As on previous Porsches, the backrests could be flopped down for extra cargo space. Between the rear seats was another glove locker, and each door had map pockets concealed beneath armrests that could be pulled in four inches for closer support in spirited driving (an idea from R&D director Professor Helmuth Bott). Nobody liked the "op-art" checkerboard cloth on seats and door panels, but it wouldn't last, and hide upholstery was available from the start.

Instrumentation was Porsche-complete, with a large, central speedometer and tachometer flanked by oil pressure/voltmeter and fuel/coolant temperature gauges. A vertical extension of the tunnel console swept up gracefully into the main panel, with a small clock at its base, surmounted by radio, climate controls, and, topmost, a large air vent. Additional vents were located in the upper front portions of the armrests, which also flowed into the dash. *R&T* complained about the air vents' meager output but said "the heater, like the 911's, will practically fry eggs and burn toast."

Left of the center vent was a bevy of warning lights for a central monitoring system. This kept track of all the usual items plus fluid levels, exterior bulb failures, and brake-pad wear. A malfunction illuminated the appropriate lamp, which spelled it out in words (like "wash fluid"), plus a large red master light simply labeled "!". One pressed a button to turn off the master, which was reactivated when the driver next switched on the ignition. If a fault was serious, the master light wouldn't extinguish at all until the problem was fixed.

Also on the 928's lavish list of standards were a vacuum-operated central locking system, power windows, headlamp washers (activated with the windshield washer when the lights were up and lit), cruise control, a rear-window wiper and wire-element electric defroster, electric remote-adjustable and heated door mirrors, and a four-speaker stereo radio/cassette. Besides the aforesaid leather trim (which would be progressively expanded over time to include door panels and headliner), buyers could add an extra-cost electric sliding sunroof, limited-slip differential, and factory-fitted burglar alarm.

Porsche initially promoted the 928's structural safety, even claiming that the stout B-pillars functioned in the same manner as the 911 Targa's rollbar. The 928 was indeed robust but, as noted, a little portly despite the use of aluminum for doors, hood, and detachable front fenders. The large, weighty hatch window did nothing to keep weight down.

No matter, for the 928 was built to go the distance. Reflecting Porsche's early-Seventies research into "long life" technology, the steel body/chassis was protected on both sides with the new hot-dip galvanizing process then being applied to 911s. Moreover, brake lines were sheathed in copper-nickel iron alloy, and fuel lines were treated with chrome and then plastic-coated. By 1980, Porsche would offer a six-year warranty against lower-body rust in addition to its normal new-car warranty for all U.S. models, following a program inaugurated in Europe a few years earlier. The only requirement was that the car be inspected once a year at a participating Porsche dealer. Coverage remained in effect even if the car changed hands during the six years -- yet another expression of Zuffenhausen's commitment to top-quality craftsmanship.



Tilting the steering column of the Porsche 928 also moved the instrument pod.

1979 Porsche 928

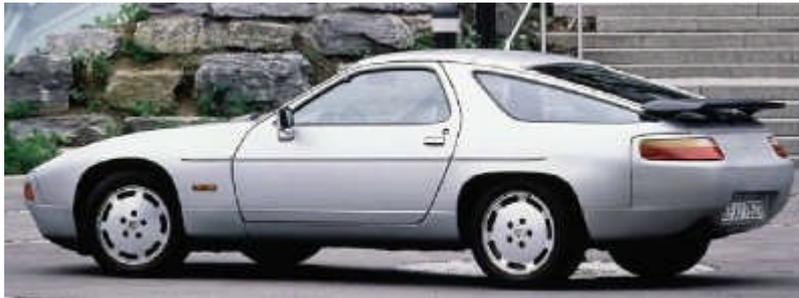
For 1979, the 928 began the inevitable Porsche process of logical, progressive evolution to higher levels of comfort, performance, and refinement.

The monitor warning lights moved to the instrument cluster on all models, but the big news was a more potent new 928S for Europe. A 2-mm bore stretch (to 97 mm) brought the V-8 to 4,664cc (284.6 cid); with dual exhausts and an interim compression boost to 10:1. Horsepower swelled to 300 (DIN) at 5,900 rpm and torque to 283 pound/feet at 4,500 rpm.

Also new were flat-face wheels with circumferential slots for better brake cooling, a front "chin" spoiler beneath the large under-bumper air intake, a small black-rubber spoiler at the base of the rear window, and bodyside rubbing strips.

Autocar had found the original 928 slightly lacking in the "real raw performance which the 911 Series had taught us to expect" but had "no doubts now." The S's 0-60 mph time was just 6.2 seconds, top speed 152 mph, and the standing quarter-mile a 14.3-second 97-mph trip.

Noting that Britons had a choice of 300-horsepower Porsches that year, the magazine advised: "If you want raw excitement...there is still nothing to touch the [911] Turbo -- a truly fantastic car..... If it's refinement that matters, then there is no alternative to the Jaguar XJ-S. If refinement doesn't matter too much, and you can bear the road noise, then the 928S offers a tremendous amount of marvelous motor car which has restored our faith in Porsche's abilities to adapt their formidable skills to the ways of the front-engined Grand Tourer, for that is what the 928S most certainly is."



The Porsche 928 received most of its improvements beneath its sheet metal.

The action shifted to America for 1980. A half-point compression increase, improved emissions control (via an oxygen sensor and a three-way catalyst), revised valve timing, repositioned sparkplugs (moved 4 mm closer to the combustion chamber centers), and adoption of more sophisticated L-Jetronic injection yielded only one extra horsepower but 20 more pound/feet of torque: 265 at 4,000 rpm.

Top speed was harder to measure on the feds' new 85-mph speedometer, but *Road & Track* estimated 140 mph for its automatic-equipped test car. It also reported small gains in economy and off-the-line performance (0.3-second faster to 60, for instance) -- nothing to write home about, but at least they weren't losses. Some 220 pounds *were* lost via a lighter aluminum torque tube and a hollow (instead of solid) transmission mainshaft and front anti-roll bar.

1980, 1981, and 1982 Porsche 928

In addition to the useful extra 20 pound/feet of torque and the strategic shedding of 200 pounds of curb weight through lighter materials, the Porsche 928 made a few other notable advances for the 1980 model year.

Several items were added to the options list in the United States for 1980: radio/cassette, rear wiper, headlight washers, and the big wheels and tires (replaced by five-inch-wide rims with 215/6QVR15 rubber). New extras included a six-way power driver's seat (with a pair of rather hard-to-reach rocker switches on the cushion's outboard side) and automatic temperature control for the climate system.

Base price was close to \$38,000 now, though that included leather seating and a pliable cargo-area cover that rose with the hatch. Late that season, Porsche offered an extra-cost Competition Group that brought over all the goodies from the European S except its engine.

There was also a second U.S. offering for 1980: the Weissach Edition. Sales were deliberately limited to 205 copies, all with Champagne Gold metallic paint, matching alloy wheels, electric sunroof, fore/aft spoilers, and two-tone leather interior, plus a matched three-piece luggage set valued at over \$1,000. An electronic-tune radio/cassette and the auto

climate control were also included, as was a small commemorative plaque ahead of the shift lever. The Weissach would continue through mid-model-year 1982.



Near continuous underskin improvements were the rule for the Porsche 928.

The 928 took a breather for '81, though further emissions fiddling brought another incremental mileage gain on U.S. models. Not that fuel efficiency was a 928 strength -- Porsche never intended that. Still, the addition of an economy gauge for 1982, the year's only significant change, was a telling admission in the wake of "Energy Crisis II" (1979-80). It registered instantaneous mpg in normal driving or fuel use in gallons per hour at idle or very low speeds.

Car and Driver's Pat Bedard termed the magazine's all-black 1981 test 928 "the triple distillation of evil, the baddest machine on any block. . . . But contrary to appearances, the 928, even with the so-called Competition Group, is a mannerly device lacking all the frenzy that characterizes reengined Porsches.... It's also a graceful performer on the track, something I wouldn't say about the 911 or any other road car in its class. In fact, I can't think of another car that offers as happy a combination of road comfort and ultimate handling." In short, the 928 was still everything Dr. Fuhrmann intended -- and more.

During 1982, Porsche discontinued the original 4.5-liter 928 in Europe. This left only the 4.7-liter S, which finally arrived in America for 1983. On higher 9.3:1 compression, horsepower rose to 234 (SAE net) at 5,500 rpm and torque to 263 pound/feet at 4,000 rpm. However, price rose, too -- to 43 big ones to start -- but at least that heady sum included the Competition Group.

To maintain a semblance of fuel economy, Porsche lowered final drive to 2.27:1 with both transmissions. The optional automatic was now a four-speed, again from Daimler-Benz, with a better spread of ratios for overall performance; the five-speed's four lowest cogs were more closely spaced for the same reason. A happy sign of an improving U.S. economy was the return of 160-mph speedometer scales.

Porsche 928S



The Porsche 928S marked the first major revision to the five-year-old 928.

The Porsche 928S came to the U.S. for 1983, improving upon the original 928 with a V-8 bumped from 4.5-liters to 4.7 and a 12-horsepower increase. With manual transmission, the 928S did a claimed 7.0 seconds in the 0-60 dash, and hit 146 mph all out; the automatic's

numbers were 8.5 and 143 mph. As usual, magazine test results tended to bracket these official figures. Here's what *Car and Driver* and *Road & Track* got with their five-speed models:

| Test conducted | <i>Car and Driver</i> | <i>Road & Track</i> |
|---------------------------------------|-----------------------|-------------------------|
| Standing start 0-60 mph (seconds) | 6.2 | 7.0 |
| Standing start 0-100 mph (seconds) | 17.8 | 19.3 |
| Standing start quarter-mile (seconds) | 14.7 | 15.4 |
| Speed at finish of quarter-mile | 94 | 92 |
| Top speed (mph) | 144 | 136 |
| Lateral acceleration (g) | 0.800 | 0.818 |

Discrepancies notwithstanding, this was real Corvette and Ferrari stuff. But *C/D*'s Rich Ceppos rightly observed that mere numbers couldn't capture the Porsche's "double-agent, personality: a killer instinct coupled with luxocar civility and the kind of bulletproof solidity you'd normally associate with a Mercedes.... The feeling around these parts is that the 928S actually gives you your money's worth in today's inflated market."

R&T mostly agreed: "The 928S is simply a marvelously competent car...as close as anything to being the complete automobile as understood in the year 1983.... It's a judgment call to say a car this expensive is worth it, but at least the 928S gives you a good deal of substance to go with its costly image."

And Porsche was about to add new substance. While the U.S. 928 was all but unchanged for 1984, Europe was treated to a Series 2 version fortified in more ways than one. Bosch's advanced new LH-Jetronic injection teamed with electronic ignition and sky-high 10.4:1 compression to lift the 4.7-liter V-8 to 310 horsepower (DIN) and 295 pounds/feet of torque, gains of 10 and 12, respectively. Porsche claimed 10-12 percent better fuel economy, though you couldn't prove it by *Autocar*, whose test S2 proved "patently" thirstier than previous 928s. But who cared? Top speed was now a thrilling 158 mph. "Even with all that luxury, you think the car is still too expensive?" the magazine asked. "Get behind the wheel of the 928S Series 2, drop the clutch, floor the accelerator...and think again."

Even better was the arrival of an anti-lock braking system (ABS) as standard equipment. Subsequently adopted by a number of other manufacturers, ABS does what any good driver would at the first sign of a skid: "pump" the brakes to get a locked wheel rolling again. The difference is that ABS does this more rapidly than any human can -- up to 15 times a second in this case -- and only at the affected wheel (via electromechanical means in response to signals from wheel-mounted sensors).

That sort of braking is beyond human capability; the result is a virtual absence of skidding (except on hard-packed snow or gravel) no matter how hard the driver might push the brake pedal. Steering control is thus maintained. As past 928 brakes had been occasionally criticized for front-and/or rear-lock sensitivity, ABS was a worthwhile addition, mating beautifully with the Weissach Axle to set a new standard of active safety.



Some judged the 1983 Porsche 928S the world's top all-around performance car.

1985 Porsche 928S and 1987 Porsche 928 S4

The Porsche 928S continued its upward bound for 1985. Porsche stretched bore another 3 mm and -- the big attraction -- doubled the V-8's valves and camshafts. The result was superb: 4,957cc (303 cid), plus 10.0:1 compression made possible by the four-valve head with spark plugs centrally located above new pentroof combustion chambers. SAE net horsepower came in at 288. Torque swelled to 302 pounds/feet and peaked at the lowest crank speed yet, 2700 rpm.



The Porsche 928S took a big step for 1985, getting 32-valve heads for its V-8 .

Wonder of wonders, America got the revised 32-valve 928S *before* Europe -- and a lot of new thrills. *Car and Driver* clocked just 5.7 seconds to 60, a mere 13.5 seconds to 100 mph, 14 seconds at 102 mph in the standing-quarter, and 154 mph flat-out. "These are amazing figures for a car with extremely tall economy-oriented gearing," *C/D* observed dryly. ". . . [A] substantial improvement over its predecessor."

Braking was somehow better, too, even though ABS had been left in Germany (it became standard Stateside for '86). *Car and Driver* termed the system "reassuring, thanks to linear performance, well-proportioned front-to-rear balance, and excellent modulation. These characteristics contribute to the 928S's ability to stop from 70 mph in just 175 feet. Perhaps even more impressive is [its] ability to absorb triple-digit speeds without fading or emitting any disconcerting squeals, groans or odors."

There were few other changes for 1985, though Porsche now extended its rust warranty to an impressive 10 years. Inevitably, price was more impressive, too: a cool \$50,000. Still, only a few, much costlier Italian exotics were in the same performance league, and the 928S was far more reliable, comfortable, and practical.

Amazingly, an even better 928 was on the way. It arrived for 1987 in all markets except Australia as the Porsche 928S 4 (denoting a "fourth series"). "Porsche raises the price and rewards of automotive hedonism one more time," said *Car and Driver*.

And how. Emissions-legal horsepower was now 316 at 6,000 rpm, torque 317 pounds/feet at 3,000 rpm. This was accomplished with revised cylinder heads with larger valves, combustion chambers that were shallower by 3 mm, a narrower valve angle (27.4 degrees versus 28), altered valve timing, and a new, more compact two-stage intake manifold. The last comprised twin resonance chambers or tracts -- one long, one short -- feeding air to the intake pipes via a Y-shaped passage from the throttle body. Below 3,500 rpm the engine breathed only through the long tract; above that, depending on throttle position, a butterfly valve in the second tract opened to increase airflow. Porsche claimed this setup ensured at least 300 pounds/feet of torque from 2,700 to 4,750 rpm, a "fat" torque curve, indeed.

Putting the power to the ground was a larger-diameter single-disc clutch instead of the previous dual-disc unit. The ABS brakes also got attention, with a shorter-travel booster and larger pistons for the front calipers.

Further bolstering S4 performance was the 928's first facelift, a minor one that reduced aerodynamic drag. Fog and driving lamps were newly flush-mounted in a smoother nose cap that added 2.3 inches to overall length, and the chin spoiler was now fully integrated with it. A revised cooling system featured thermostatically operated radiator shutters that opened only when needed to minimize drag in high-speed driving. Twin variable-speed electric fans replaced a single engine-driven fan that consumed more power. A "detached" wing-type spoiler flew above a smoother tail (again with flush-mount lamps). Also easing airflow were deeper rocker panels, a new belly pan beneath the engine, a bonded-in windshield, and wipers that parked 20 mm lower than before.

All this added "down" to a drag coefficient of 0.34, versus 0.41 for the original 928 and 0.38 for the previous S. That was commendable considering that, in Porsche tradition, the rear tires had grown wider than the fronts: 245/45VR16s versus 225/50VR16s (on respective rim widths of eight and seven inches).

The S4 cockpit remained familiar 928-style. Body-hugging sports seats were still available, but there were two new options for the standard power seats. One was electric lumbar support adjustable for height as well as firmness. The other was "Positrol," a memory system that stored the positions of seat, lumbar support, and even the door mirrors for recall at the touch of a button. Both were available for either the left or right seat which, as in '86, could be fitted with heating elements as a separate option.

As before, and as with recent 911s, Porsche would decorate a 928 interior to special order in any materials and/or colors a customer wanted. One example was done completely in ostrich leather for Jordan's King Hussein.



The Porsche 928S 4 5.-liter V-8 had a twin-stage manifold and 316 horsepower.

Porsche 928 S4



The Porsche 928S 4 added a fresh nose and new rear wing to the familiar 928S.

In all, the Porsche 928S 4 was the kind of thorough, timely update expected of Porsche. With it, the 928 was even more of what it always had been: a luxurious, supremely comfortable high-speed tourer capable of astounding performance on straights and curves alike. Porsche said the manual 928S 4 would reach 60 mph in 5.7 seconds, but *Road & Track* got 5.5. And though claimed top speed was now no less than 165 mph, Al Holbert, longtime Porsche racer and chief of Porsche Motorsport in the United States, took a virtual stock Porsche 928S 4 to 170 mph his first time out in a series of USAC-certified speed runs at Bonneville in August 1986. He eventually coaxed the car to 171.110 mph in the flying mile and 171.296 mph in the flying kilometer, both new world records for normally aspirated production cars.

With that, the Porsche 928S 4 vied with the vaunted 911 Turbo as the fastest production Porsche -- and not just in acceleration. The 928S 4 achieved truly incredible stopping distances in *R&T's* March 1987 road test: 137 feet from 60 mph, 234 feet from 80. "That's shorter than any production car we've ever tested save the Ferrari 412, which does [80-0 mph] in 230."

The 928 celebrated its tenth birthday with the 1988 model year, yet changes were restricted to standard three-point rear seatbelts and driver's-seat Positrol, plus a newly optional factory cellular-telephone hookup and warmer-looking "Supple Leather" upholstery.

Price, however, was drastically changed, especially in America. After several years of relative

stability, the dollar began another retreat against the German Deutschmark, which forced Porsche to raise sticker prices twice on all its U.S. models during the 1988 season. The increases added up to about 6 percent across the line, which didn't sound too bad except that it meant paying up to \$3,800 more for a 928, which ended the year just \$620 shy of \$70,000 before options. On top of that were the new U.S. gas-guzzler and luxury taxes.

That more than anything explains why Porsche sales began a full-fledged slide in 1988, with the biggest losses coming in the ever-important U.S. market. The 928 was the biggest loser among Porsches, with total production plummeting from just over 8,000 for '89 to barely 4,100 for 1990.

The '89 base price was higher still at \$74,545, but the Porsche 928S 4 itself was a virtual rerun. The only differences involved a new, standard 10-speaker sound system and an automatic transmission with a shorter final drive, revised intermediate gear ratios, and higher full-throttle shift points, all for improved standing-starts.

As explained in earlier articles, a management crisis compounded Porsche's dwindling sales and cash reserves as the 1990s approached. Yet even as the firm struggled to get back on track, the 928 continued to evolve, even if reduced development funds meant that progress was somewhat slower than before.

1990 Porsche 928S and 1991 Porsche 928 S4 and GT

The Porsche 928S name was revived for 1990, taking over from the 928S 4 designation, but there was no backsliding on the sleek coupe's contents or performance.

Among advancements, the 1990 Porsche 928S got standard dual air bags as well as two features pioneered by Porsche's recently deceased 959 supercar. One was a variable-ratio limited-slip differential, comprised of a multidisc hydraulic clutch with electronic controls linked to the ABS wheel-speed sensors. Based on sensor input, the diff could vary its lock-up from 0 to 100 percent to compensate for traction loss as well as variations in cornering and braking loads.



Porsche shortened its flagship coupe's name to 928S, from 928S 4, for 1990.

The other improvement was a tire-pressure monitoring system. This used a separate set of sensors, housed within the wheels, to warn when pressure in any tire fell below a set level, as signaled by a light in the central array.

Yet even with these pluses, the 928S cost not one extra penny in the United States, Porsche holding the price line on all its 1990 models in hopes that the dollar would soon firm up. Unfortunately, the greenback wouldn't strengthen for awhile because America was entering a sharp new recession, making Porsche's decision to forgo another price hike all the more laudable.

Extra power packed into manual-shift 928Ss was achieved in the time-tested Porsche way of revised cam profiles and altered intake system. The result was a boost in horsepower -- to 326 at 6,200 rpm -- and some 200 extra revs to work with. Torque, however, was unchanged and still the same as the automatic version's 317 pounds/feet. With that, Porsche's official performance claims proved optimistic for once. Where the factory said 5.6 seconds 0-60, *Road & Track* replied 6.1 -- a 0.6-second deficit from the magazine's previous S4 result. The self-shift version was claimed to need 6.0 seconds flat, but *R&T* clocked a comparatively disappointing 6.3.

Despite the 928's undeniable abilities, Porsche was worried by a growing perception of the V-8 Porsche as a dinosaur in the automotive world of 1990 -- a too-heavy, too-thirsty, and never-too-practical tourer that had been allowed to live too long with too few meaningful changes.

Perhaps that's why Garrat Lai felt compelled to defend it in *Road & Track's 1990 Sports & GT Cars* issue. "The 928 set the standard for its class," he argued, "embodying the very definition of the luxurious sports car. Moreover, it heralded a number of changes in automobiles. Rounded, aerodynamic shapes are now the norm, and the entire genre of luxury-sport automobiles came into being shortly after the 928. Many cars...now incorporate rear suspension geometry designed to emulate Porsche's Weissach axle. Furthermore, the large engine is making a comeback, borne witness by BMW's V-12 [and] a crop of V-8s from Japan. It's true [the 928] has undergone little more than cosmetic changes over its lifetime. But it may hardly be called a dinosaur. Just think of it as a little ahead of its time."

Car and Driver found the 1991 edition needed no defense, even though nomenclature was about the only thing that had changed. "GT" now denoted the manual model, and a revived "S4" tag identified the automatic version. Granted, editor Art St. Antoine took note of the 928's "reputation as something of a poseur's Porsche -- a car seen less often carving up mountain roads than being proudly handed over to the country-club valet." But he then promptly declared the GT "a deadly serious *driver's* car. In its quest for pure performance, Porsche has chiseled off most of the 928's remaining soft edges." He almost sounded surprised, but then with the 928's slower development pace, *C/D* (and some other "buff books") hadn't visited the car in a while.

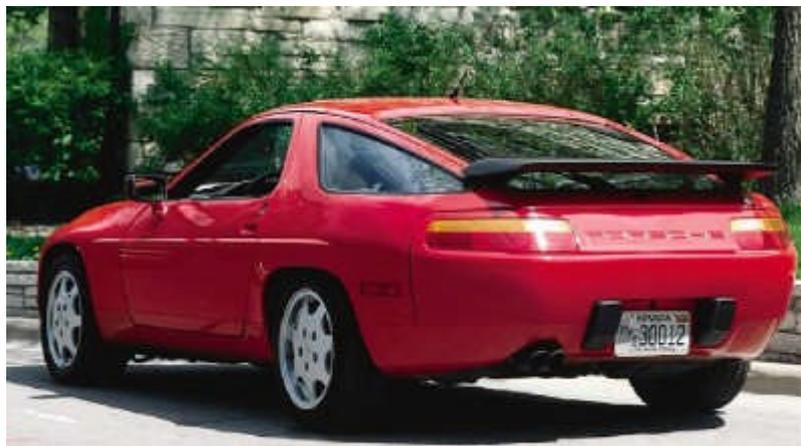
No matter. As usual with Porsches, the numbers spoke volumes. Despite absolutely carryover specifications -- and *R&T's* 1990 numbers -- *C/D's* GT rocketed "from 0 to 60 mph in just 5.2 seconds and through the quarter-mile in 13.7 seconds at 104 mph -- improvements of 0.1 and 0.2 second, respectively, over . . . the five-speed 928S4 we tested in May 1987. (Not a bad showing for a 3,603-pound 'luxury' GT, eh?) Top speed is up a full 10 mph to 169 mph at the engine's 6600-rpm redline."

And road manners were better than ever. The GT "shines when you give it the spurs," St. Antoine reported. "The control efforts are finely honed for speeds above 80 mph; the steering arcs with reassuring heft, the shifter chunks solidly through its racing-pattern H, and the clutch takeup is smooth and positive. Spin the speedo to autobahn speeds and the GT really comes

into its own. Suddenly, the beefy body feels not chubby but secure [and the car] is far more agile in curvy-road dicing and slicing than you'd expect. . . . Porsche has tamed the old 928's tail-happiness; the GT understeers resolutely through hard bends, tucking in neatly even if you suddenly snap off the throttle."

Yet for all that, St. Antoine judged the 928GT too potent and pricey for all but "the serious" and "the solvent." Then again, "Porsche plans to sell only about 100...in the U.S. this year. That should tell you plenty about this car's mass-market appeal."

However limited the supply, the 928's appeal was still on the wane. Porsche Cars North America (PCNA) moved just 620 of the 1990 models and a mere 262 of the '91s (including, one presumes, those 100 GTs). Though total production took an uptick to 5,238 for calendar-year 1991, it dropped back to 3,389 in '92, when U.S. sales were a minuscule 181.



V-8 Porsches had 326 horsepower with manual transmission, 316 with automatic.

Porsche 928GTS

Part of the decline in Porsche 928 production was due to an abbreviated model year in which both the GT and S4 were virtual reruns. But Porsche jumped the '93 season in the spring of '92 by releasing a pair of more potent replacements called the 928 GTS.



The Porsche 928 GTS, new for 1993, was the most-powerful-ever 928 model.

The letter S implied a more-powerful Porsche, and the GTS was. Stretching stroke from 79.9 to 85.9 mm (3.11 to 3.43 inches) upped total capacity to an even 5,400cc (329 cid). Bolstered by even tighter 10.4:1 compression, horsepower swelled to 345 horsepower achieved at a usefully lower 5,700 rpm. Torque rose, too, to 369 pounds/feet, but the peak was now 4,250 rpm for both models -- a lofty 1,250 rpm above the previous year's automatic S4. Less noticed but still appreciated were a stronger clutch, a crankshaft with eight main bearings instead of six, lighter con rods and pistons newly forged instead of cast, and slightly softer shock absorbers for reduced ride harshness.

Appearance was modestly updated for the Porsche 928 GTS. The rear wing was reshaped and newly available in either black or body color, smoother 959-type door mirrors appeared, and the tri-color taillights were linked by a half-height red reflector. More subtle changes included a 2.7-inch wider rear track and a two-inch broadening of the rear flanks to accommodate wider 255/40ZR tires on new five-spoke 17-inch wheels like those of the latest 911 Turbo; front rubber also widened, to 225/45ZR17. (Respective rim widths were 7.5 and 9 inches.) The bigger wheels allowed larger front brakes designed to cope with the extra power; Porsche specified the beefy 12.7-inch rotors of the 911 Turbo. Rear-disc diameter remained 11.77 inches, and hefty four-piston calipers continued at each wheel.

For all that, *Car and Driver's* test of the manual GTS showed little change from previous GT results. The 0-60 dash actually took 0.1-second longer at 5.3 seconds, as did the standing quarter-mile (13.8) -- but then, Porsche only claimed 5.5 for the manual model and 5.6 with automatic.

Zuffenhausen quoted a top speed of 171 mph, versus *C/D's* reported 169 for the previous GT.

But none of this really mattered, for *C/D* seemed about the only U.S. magazine that cared to test a 928GTS on home soil. Perhaps that's because the V-8 Porsche was by now such a negligible part of the American scene. Indeed, calendar '93 sales were just 121 units. The '94 total was even Lower: a paltry 84.

Still, Joe Ruzs needed no persuading to try the GTS for a "First Drive" report in *Road & Track's* July 1992 issue. Though a loyal 911 fan -- and longtime 911 owner -- he remained impressed with the 928 but bemoaned its evident fate. "This may be your last chance to own one of the world's finest *Gran Turismos*," he intoned. "Also, one of the most underrated. And unappreciated. . . . That the 928 hasn't caught the public's fancy may be due to the popularity of the 911 Carrera, which continues to be Zuffenhausen's best-selling road car. Also the oldest. The 928 . . . has been with us for a mere 15 years. Perhaps some designs take a bit longer to catch on."

Ruzs was being kind. The fact was that by the early Nineties, and for all its splendid abilities, the 928 had lost much of its old sales magic -- and, of course, it wasn't a "volume" car to begin with. Higher prices for the GTS iteration only made things worse: nearly \$81,000 on its U.S. debut, rising to \$82,260 by model-year '95.

With all this, no one was greatly surprised when the 928 departed during 1995. Many found it tough to say goodbye, but the posh V-8 coupe had simply outlived its usefulness. So had the front-four 968. After its recent near-death experience, Porsche knew it could no longer afford to build three totally different cars. Near-term survival demanded slimming down and becoming truly cost-efficient -- fast. Dropping the two front-engine models was an expedient start down that road.

New CEO Wendelin Wiedeking had already mapped out the rest of the journey. Step one was to refocus on the breadwinning 911. Step two was a new, lower-priced car, the mid-engine Boxster, that would share many 911 components, thus further trimming Porsche's total manufacturing costs and complexity. It was a good plan, and it worked superbly. By the early 21st century, Porsche was not only enjoying record sales and earnings, it was the most profitable automaker in the world.

Of course, as we know now, much of that success stemmed from the third step on Wiedeking's recovery route, the controversial decision to enter the truck world with the 2002 Cayenne SUV.

Still, it's not unreasonable to suppose that the Cayenne's V-8 powertrains benefitted from lessons learned with the 928. And Porsche was hardly finished with *grand luxe* flyers. In fact, the company recovered so strongly by 2006 that it could venture a "new 928," announced that

year as the 2009 Panamera. Contemporary buyer tastes dictated a four-door design -- Porsche's first "sedan." But in every other way, the Panamera shaped up as a worthy successor to the 928: handsome, V-8 powerful, sports-car agile, luxurious, meticulously engineered, beautifully crafted, packed with purposeful state-of-the-art technology -- in short, a Porsche through and through.

As, indeed, the 928 always was, despite its many breaks with tradition. Its engineering pedigree was certainly never in doubt. But with the passage of time and the perspective it brings, the car itself is being appreciated anew. Collectors have begun snapping them up, an acknowledgement that the 928 was a trailblazer not just for Zuffenhausen but for an entire breed of fast, roadable luxury touring machines. Add in a good long 18-year run, and you have a proud legacy for the ages. It may be gone, but the 928, like all Porsches, will never be forgotten.



The great Porsche 928 GTS was a fitting finale for Porsche's grand-touring coupe.