



CAR AND DRIVER ROAD TEST

PORSCHE 911 S

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Oversteer is back—and Porsche's got it! Early Porsches had it too, and now it has come full circle. Barely three years ago, Porsche employed a device called a "camber compensator" to curb the oversteering tendencies of the 356 series. Then the completely redesigned suspension of the 911 and 912 models made Porsches behave like normal, front-engined cars, and the purists started to carp. Porsche had even hidden an iron weight behind the 912's front bumper to keep the back end from coming around. Sure, understeer is safe—great for the masses—but oversteer makes driv-

ing fun . . . if you're expert enough to handle it. Fanciers of the marque yearned for the good old days when they used to *wischen* their Speedsters through turns, tails all hung out, arms sawing away like mad on the steering wheel.

Porsche is making a car for these drivers again, offering a sportier version of the 6-cylinder 911 dubbed the 911S. S for Super. Super because horsepower is up 20%, from 148 to 180. Super because the brake discs are vented. And Super because the suspension has been modified with strengthened struts, Koni adjustable shocks, a stiffer front anti-sway bar,

and an anti-sway bar added at the rear.

The rear anti-sway bar, in addition to reducing body lean, has an effect diametrically opposed to that of the old "camber compensator." *Gott im Himmel! Übersteuer!* We'll hang out our tails on the Siegfried Line. "This is no car for a novice," warns a Porsche brochure.

The 911S's introduction has occasioned a shuffle in Porsche's marketing structure so that it now approximates the former ascending scale of Normal, Super and Carrera engines in the same body. The prices have been rearranged too. On the bottom

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rung is the 102-hp, 4-cylinder 912, with a base price of \$4790, up \$100 from last year, but two instrument panel gauges have been added. The 148-hp, 6-cylinder 911 is now \$5990, down \$500 from last year. However, many items that were standard on the 911 in '66 are optional in '67. In effect, it becomes simply a higher-powered version of the 912. The flagship of the fleet, the \$6990, 180-hp, 6-cylinder 911S, is loaded with performance, luxury, and distinctive features like racy-looking forged magnesium-alloy wheels, a leather-covered steering wheel rim, extra instrumentation, an auxiliary gasoline heater, fog lights, pile carpets, and waffled padding on the dash. Most of these unique options are available—for a price—on the 911 and 912 (the mag wheels for \$175), along with the old standbys like chromed steel road wheels.

In our zeal to obtain a 911S for a road test, we had to settle for one right off the boat. The car hadn't been dealer-prepared, much less fine-tuned, and it wasn't exactly in full song. Acceleration times were little better than those of a Weber-carbureted 911 5-speed we drove recently, which clocked 0-60 mph in 6.9 seconds and the standing quarter-mile in 15.6 seconds at 90 mph. Actually, our times were nearly identical to those claimed for the 911S by Porsche. The German government requires car manufacturers to certify performance which can be duplicated by any production model straight off the showroom floor. The factory figures are therefore ultra-conservative and represent the slowest car within assembly-line tolerances. Careful tuning of a 911S with some mileage on it should hack close to a second off our 0-60 mph

time of 6.5 seconds. Still, neither that, nor a quarter-mile in 15.2 seconds at 92 mph (with three gears yet to go) is bad for *any* high-performance car. For a little 2-liter sports car, it ranks with Robert Moses building a replica of the Great Pyramid of Cheops overnight.

The brakes on our test car left something to be desired, although—again—were enormously above average. The 911 and 912 have Ate-Dunlop solid discs on all four wheels; the 911S's discs have internal radial venting. Vented discs are new to Porsche; so new, in fact, that Porsche has mistakenly laid claim to building the first sports car thus equipped. The Corvette Sting Ray has had vented discs since 1965, at which time Chevrolet claimed to be first with drums inside the rear discs for the parking/emergency brake. Porsche had had *that* feature since



PHOTOGRAPHER: AL FISHER

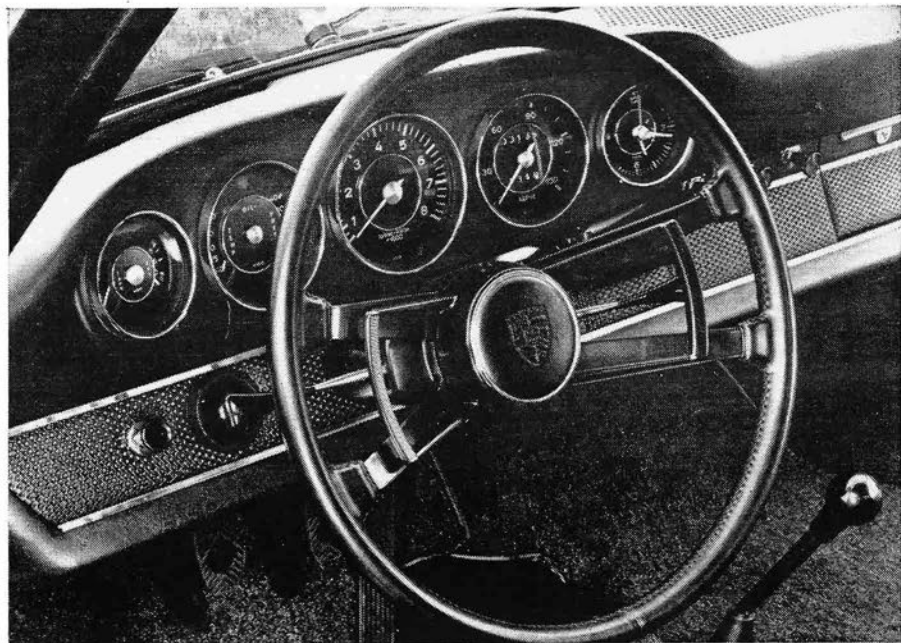
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1964, so perhaps the current German boast is just Porsche's way of getting back at Chevy.

At any rate, the bugs aren't yet out of Porsche's vented discs. True, they run cooler, making them less prone to fade, and lengthening pad life, but they are more difficult to modulate. If Ford's experience with vented discs on their Le Mans-winning Mk. II is any indication, the problem may be that the discs aren't dimensionally and/or geometrically stable. In our 80-0 mph braking test, the left rear wheel would invariably lock up, and the shortest stopping distance we could record was 271 ft. (.71G). Not half bad, but we knew the car could do better. Later, we sampled another 911S, and, after heating up the rather hard pads, it stopped from 80 mph in 242 ft. (.88G), but we have stopped a solid-disc 911 in 218 ft. (.98G), which is more like what the true potential is.

Normally, we measure a car's cornering power by clocking lap times on a skid pad of a known radius. We don't use an accelerometer, or Tapley meter, because it adds the vehicle's roll angle to the absolute lateral acceleration, and there is no accurate way to distinguish between the two. (Similarly, on braking and acceleration, the vehicle's pitch angle is automatically included in the reading.) However, during one phase of this test, we had the opportunity to ride shotgun with expert Porsche pilot Lake Underwood as he booted the 911S around a road circuit. Out of curiosity, we installed a lateral accelerometer to measure the 911S's cornering power. On level, unbanked turns, the instrument showed a maximum reading of .93G on right-hand corners, and .89G on left-hand bends. Subtracting a generous 9° (.10G) for roll angle, the 911S's limit of controllability is well over .81G.

The 911S's oversteer characteristic appears early in the car's cornering range. At low lateral accelerations, it understeers mildly. From .40G on up, less and less steering lock is
(Text continued on Page 91;
Specifications overleaf)



PORSCHE 911S

Importer: Porsche of America Corp.
107 Tryon Ave. West
Teaneck, N.J.

Number of dealers in U.S.: 244

Vehicle type: Rear-engine, rear-wheel-drive,
2+2-passenger GT car

Price as tested: \$7,255 (Manufacturer's suggested retail price, plus Federal excise tax, dealer preparation and delivery charges; does not include state and local taxes, license or freight charges)

Options on test car: AM-FM radio (\$180.00)

ENGINE

Type: Air-cooled flat six, aluminum block, 12-port aluminum heads, 8 main bearings
Bore x stroke.....3.15 x 2.60 in, 80 x 66 mm
Displacement.....121.5 cu in, 1991 cc
Compression ratio.....9.8 to one
Carburetion.....2 x 3-bbl Weber 46 IDA 3Cs
Valve gear.....Single overhead camshafts on each bank, chain-driven, rocker arms
Power (SAE).....180 bhp @ 6600 rpm
Torque (SAE).....144 lbs/ft @ 5200 rpm
Specific power output.....1.48 bhp/cu in, 90.5 bhp/liter
Max. recommended engine speed...7200 rpm

DRIVE TRAIN

Transmission: 5-speed manual, all-synchro
Clutch diameter.....8.46 in
Final drive ratio.....4.43 to one
Gear Ratio Mph/1000 rpm Max. test speed
I 3.09 5.3 38 mph (7200 rpm)
II 1.89 8.8 63 mph (7200 rpm)
III 1.32 12.5 89 mph (7200 rpm)
IV 1.04 15.9 114 mph (7200 rpm)
V 0.79 20.9 140 mph (6700 rpm)

DIMENSIONS AND CAPACITIES

Wheelbase.....87.1 in
Track.....F:53.4 in, R:52.2 in
Length.....163.9 in
Width.....63.4 in
Height.....52.0 in
Ground clearance.....5.9 in
Curb weight.....2279 lbs
Test weight.....2535 lbs
Weight distribution, F/R.....41/59%
Lbs/bhp (test weight).....14.0
Battery capacity.....12 volts, 45 amp/hr
Alternator capacity.....420 watts
Fuel capacity.....16.4 gal
Oil capacity.....9.5 qts

SUSPENSION

F: Ind., MacPherson strut with lower wishbone, longitudinal torsion bars, anti-sway bar, Koni adjustable shock absorbers
R: Ind., semi-trailing links, transverse torsion bars, anti-sway bar, Koni adjustable shock absorbers

STEERING

Type.....Rack and pinion
Turns lock-to-lock.....2.75
Turning circle.....34 ft

BRAKES

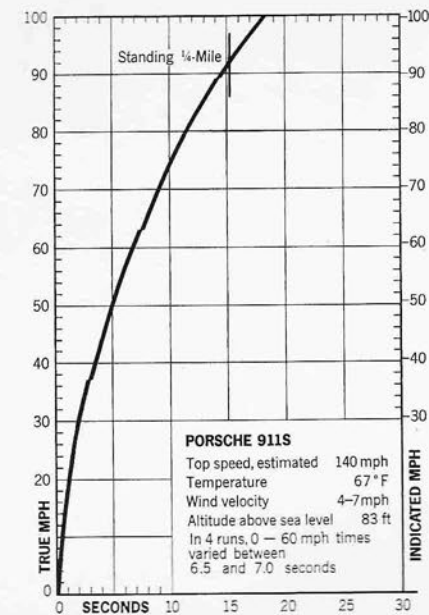
F: Ate-Dunlop 11.1-in. vented discs
R: Ate-Dunlop 11.25-in. vented discs with integral 7.09-in. drums for handbrake
Swept area.....371.0 sq in

WHEELS AND TIRES

Wheel size and type.....4.5J x 15-in, aluminum alloy, 5-bolt
Tire make, size and type.....Dunlop HR 165-15 SP radial-ply, tube-type
Test inflation pressures.....F: 32 psi, R: 35 psi
Tire load rating:.....810 lbs per tire @ 24 psi

PERFORMANCE

Zero to	Seconds
30 mph	2.2
40 mph	3.4
50 mph	4.8
60 mph	6.5
70 mph	9.0
80 mph	11.4
90 mph	14.6
100 mph	18.2
Standing 1/4-mile	15.2 sec @ 92 mph
80-0 mph	271 ft (.71 G)
Fuel mileage	14-18 mpg on premium fuel
Cruising range	230-296 m



CHECK LIST

ENGINE

Starting.....Fair
Response.....Excellent
Vibration.....Excellent
Noise.....Fair

DRIVE TRAIN

Shift linkage.....Very Good
Synchro action.....Excellent
Clutch smoothness.....Excellent
Transmission noise.....Excellent

STEERING

Effort.....Very Good
Response.....Excellent
Road feel.....Excellent
Kickback.....Very Good

SUSPENSION

Ride comfort.....Good
Roll resistance.....Very Good
Pitch control.....Very Good
Harshness control.....Good

HANDLING

Directional control.....Very Good
Predictability.....Very Good
Evasive maneuverability.....Excellent
Resistance to sidewinds.....Fair

BRAKES

Pedal pressure.....Very Good
Response.....Excellent
Fade resistance.....Excellent
Directional control.....Excellent

CONTROLS

Wheel position.....Excellent
Pedal position.....Very Good
Gearshift position.....Good
Relationship.....Excellent
Small controls.....Good

INTERIOR

Ease of entry/exit.....Good
Noise level (cruising).....Good
Front seating comfort.....Excellent
Front leg room.....Excellent
Front head room.....Very Good
Front hip/shoulder room.....Good
Rear seating comfort.....Poor
Rear leg room.....Poor
Rear head room.....Poor
Rear hip/shoulder room.....Poor
Instrument comprehensiveness.....Excellent
Instrument legibility.....Excellent

VISION

Forward.....Excellent
Front quarter.....Very Good
Side.....Excellent
Rear quarter.....Fair
Rear.....Fair

WEATHER PROTECTION

Heater/defroster.....Excellent
Ventilation.....Fair
Weather sealing.....Very Good

CONSTRUCTION QUALITY

Sheet metal.....Excellent
Paint.....Excellent
Chrome.....Very Good
Upholstery.....Excellent
Padding.....Very Good
Hardware.....Very Good

GENERAL

Headlight illumination.....Good
Parking and signal lights.....Excellent
Wiper effectiveness.....Very Good
Service accessibility.....Fair
Trunk space.....Fair
Interior storage space.....Good
Bumper protection.....Fair



(continued from page 39)

needed to keep this car on a given course. By .70G, it's in a full-blooded four-wheel drift, and the steering behavior is back-tracking toward neutral-steer. Beyond the limit of the tires' rolling adhesion, the 911S reacts like any car with a rearward weight bias, and spins, or, if you're quick enough to catch it, power-slides like an old dirt-track roadster. All told, Porsche's admonition, "not for the novice" is a bit gratuitous. Within normal driving limits and with reasonable caution, the 911S handles predictably, controllably, and head and shoulders above practically anything else on the road.

There's always room for improvement, however, and the present limitations on the 911S's absolute cornering power are imposed by its wheels and tires. We were stunned to learn that the rim width of those flashy new wheels is still only 4½ inches, a mere half-inch wider than a Volkswagen's, and unchanged since Porsche went from 16-in. to 15-in. wheels in the dim dawn of time. Four-and-a-half inches was unfashionably skinny even then, and is almost inconceivable today. Porsche ballyhoos the notion that their racing program improves the breed of their production cars, but the competition-bred lesson of the benefits of wide-rim wheels has apparently gone unheeded. One-inch wider rims alone would have wrought as much improvement in the car's handling ability as all their tricks with rear anti-sway bars, stiffer shocks and spring rates, and radial-ply tires. Wide-rim racing wheels are available from Porsche for competition drivers, and American Racing Equipment in San Francisco is doing a land-office business in 5- and 6-in. mag wheels for disc-braked Porsches. The introduction of Porsche's own mag wheel would have been an ideal opportunity to cash in on the trend, but Stuttgart fumbled the ball. We can only surmise that steps will soon be taken to correct this state of affairs. In the meantime, it is of some consolation that the new wheels aid brake heat dissipation and reduce unsprung weight.

The 911S's radial-ply tires, German Dunlop SPs, are the other limiting factor. Radial-ply tires are generally advantageous, developing a higher cornering force at a lower slip angle than conventional tires. They do this by keeping more rubber on the road through a softer lateral compliance—the tread stays flat

on the ground while the sidewall rolls. This gives radials an odd feel; they mush sideways until the slack is taken up, then they grip. The SPs, in particular, have an odd tread pattern, like a knobby snow tire, with S-shaped cleats and a deep (¼-inch) tread depth. The cleats are so tall that they bend like willows under side loads. Coupled with the normal mushiness of radials, the SPs give a sensation somewhat akin to riding on bristles. It would be interesting to try a 911S with a shallow-tread radial-ply tire, like the Michelin X, or an American high-performance tire, like the Firestone Wide Oval.

The only real handling fault of the 911S is a corkscrewing motion of the front end when cornering on an undulating surface. This appears to be a by-product of the Porsche's unconventional MacPherson strut front suspension. There is no loss of adhesion or directional stability, but with a lack of other vices it stood out disconcertingly.

If we've dwelled on the 911S's handling traits, it's because they are the most obvious departure from the standard 911, impressing us far more than the 32 extra horsepower. The 180-hp engine is notable mainly for its lack of temperament. Its idle is slightly more uneven, it accelerates with a more vigorous growl, prefers super-premium fuel, and consumes it a shade more prodigally than the 911. The power and torque curves aren't "peaky," and, except for an ill-advised change in gearing, it pulls as well from low revs. Revving it beyond its 7200 rpm redline would be all too easy were it not for a centrifugal ignition governor concealed in the distributor arm.

With racing versions of Porsche's flat-six pulling close to 235 horsepower, raising the output of the street engine to 180 horsepower was easy—a matter of subtle changes in the cam timing and carburetor jetting (Webers are used on all 6-cylinder Porsches now), plus an increase in compression ratio from 9.0- to 9.8-to-one. Initial reports indicate that there is less carbon build-up with the higher compression ratio. Oil control appears to be difficult even on the 148-hp engine, however, with most owners reporting 400-500 miles per quart. The dry sump holds nearly two gallons, so topping up could be a matter of every other gas stop.

The original 911 had a long, 2.83 first gear, which made the car hard to start from rest. To ease the load on the clutch, first gear on all

Porsches has been shortened to 3.09, with the other gears closed up in suit. The 911 and 912 have .86 high gears while the 911S has a .79 high gear, enabling its engine to wind the car out to its full top-speed potential of 140 mph. Unfortunately, this has resulted in a wider gap between fourth and fifth gears, and a 20% loss of pulling power in high. A gearchange is necessary for surprisingly mild hills. Since nobody in his right mind should think the unthinkable—140 mph on our public highways—a shorter fifth gear would mean less rowing back-and-forth on the gearshift lever. We really didn't mind more frequent use of the transmission, though; slicing through the Porsche's gears remains one of the great delights of the Western Hemisphere.

Little else is changed from the 911 of our April, 1965 Road Research Report. The styling still looks good to us, and, like any Porsche, it has personality in its design, workmanship, and its seat-of-the-pants telegraphy about what it's doing. The firmer ride heightens this sensation, although thankfully, the increase in stiffness has not been accompanied by a similar increase in harshness. Sidewind sensitivity, already a tender subject with 911 owners, is, if anything, slightly worse in the 911S, although hardly noticeable below a thoroughly illegal 120 mph.

Maybe it's just us, but, in retrospect, the steering wheel seems oversized, giving more leverage than needed on one of the easiest-steering cars built today. Also, we note that an optional spacer can bring the wheel 1½-inches closer to the driver, which we think we'd prefer. Otherwise, the interior is a model for the way all cars should be built—sports cars or utility sedans, front-engined or rear, Detroit or Kharkov. The seats, upholstered in a new air-flow weaving, stay cooler, and, as always, are almost infinitely adjustable to a variety of comfortable positions. There's plenty of room (except, perhaps, elbow room), and all the controls are located where you can get at them easily and operate them efficiently.

Just cruising around town or belting along back roads like a would-be racer, the 911S is a great way for getting from Point A to Point B, even when Point B represented only an excuse to drive somewhere.

Each successive Porsche has been the ultimate Porsche, which is akin to its being the ultimate luxury GT car. The 911S surely must be the all-time high. Where can Porsche go from here? Build a car with disappearing headlights? c/d