NEW

PORSCHE 911 BUYER'S GUIDE

Your ultimate guide to the greatest Porsche 911s of all time

Pre-impact bumper • Air-cooled • Water-cooled • RS & Turbo

Welcome to…

PORSCHE 911 BUYER'S GUIDE

Never before has the iconic Porsche 911 been so revered, so admired and so desired by enthusiasts and collectors alike. With over 52 years of heritage attached to its name, the Porsche 911 conjures up vivid memories of sporting success like no other, married to a thrilling drive on the road that only true motoring aficionados will appreciate.

There are very nearly one million Porsche 911s in existence today, from early T, E and S air-cooled models right up to today's water-cooled Carreras, Turbos and Rennsports. However, with such variety to choose from, which would make for the perfect first foray into 911 ownership? And which appreciating classics should be added to the collection?

This buyer's guide bookazine, from the makers of Total 911 magazine, offers prized information and stats on the key Porsche models spanning the 911's entire history. With expert guidance and informed comment, this is the only resource you need to get your seat in the right Porsche 911 for you. Your journey starts here!

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IMAGINE PUBLISHING

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WATER-COOLED

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CAR CARE

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BRIDGESTONE
HEXAGON

911 2.0-Litre

Get it for
£100,000-£150,000
$150,000-$225,000

Performance
★★☆☆☆

Maintenance costs
★★★☆☆

Rarity
★★★☆☆

Value
★★★★☆

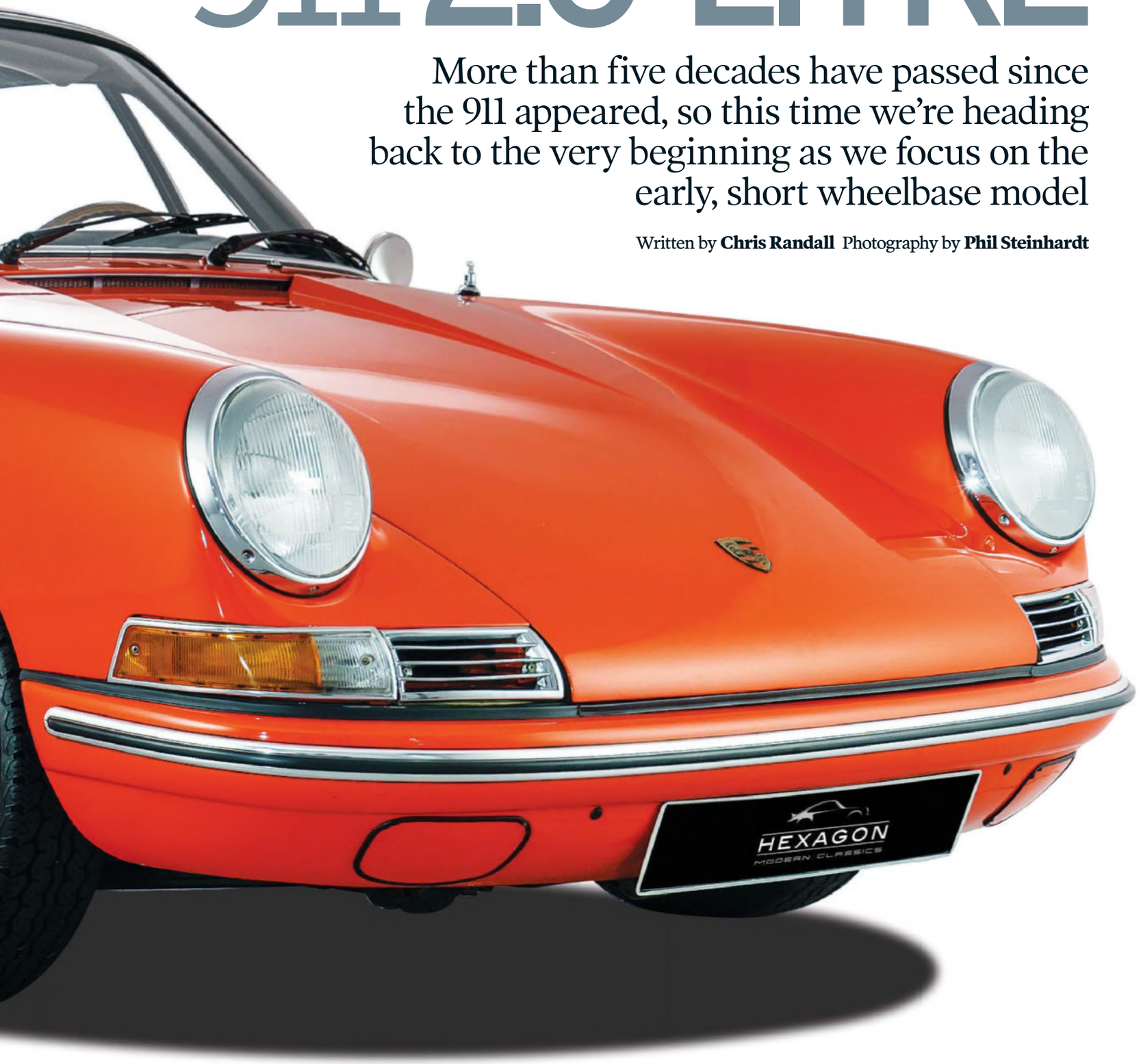
THE 911L

With US sales booming, the fact the more powerful 'S' couldn't meet new, stricter emissions legislation was becoming a problem. In fact, it forced Porsche to introduce the 911 in 'Luxury' specification, a model that would only be on sale from 1967 to 1968. Still, with 130bhp and Weber carburettors, it was also fitted with a rudimentary system of air pumps to clean up the exhaust gases, and came with the dual-circuit braking system demanded by the US market. Brakes were the ventilated 'S' items and it also retained all of the kit fitted as standard to that model. The 'L' also benefitted from some exterior tweaks including polished aluminium window frames and push-button door handles, while inside the wood fascia trim had gone, and there were now black bezels around the instrument gauges on the dashboard.

911 2.0-LITRE

More than five decades have passed since the 911 appeared, so this time we're heading back to the very beginning as we focus on the early, short wheelbase model

Written by **Chris Randall** Photography by **Phil Steinhardt**



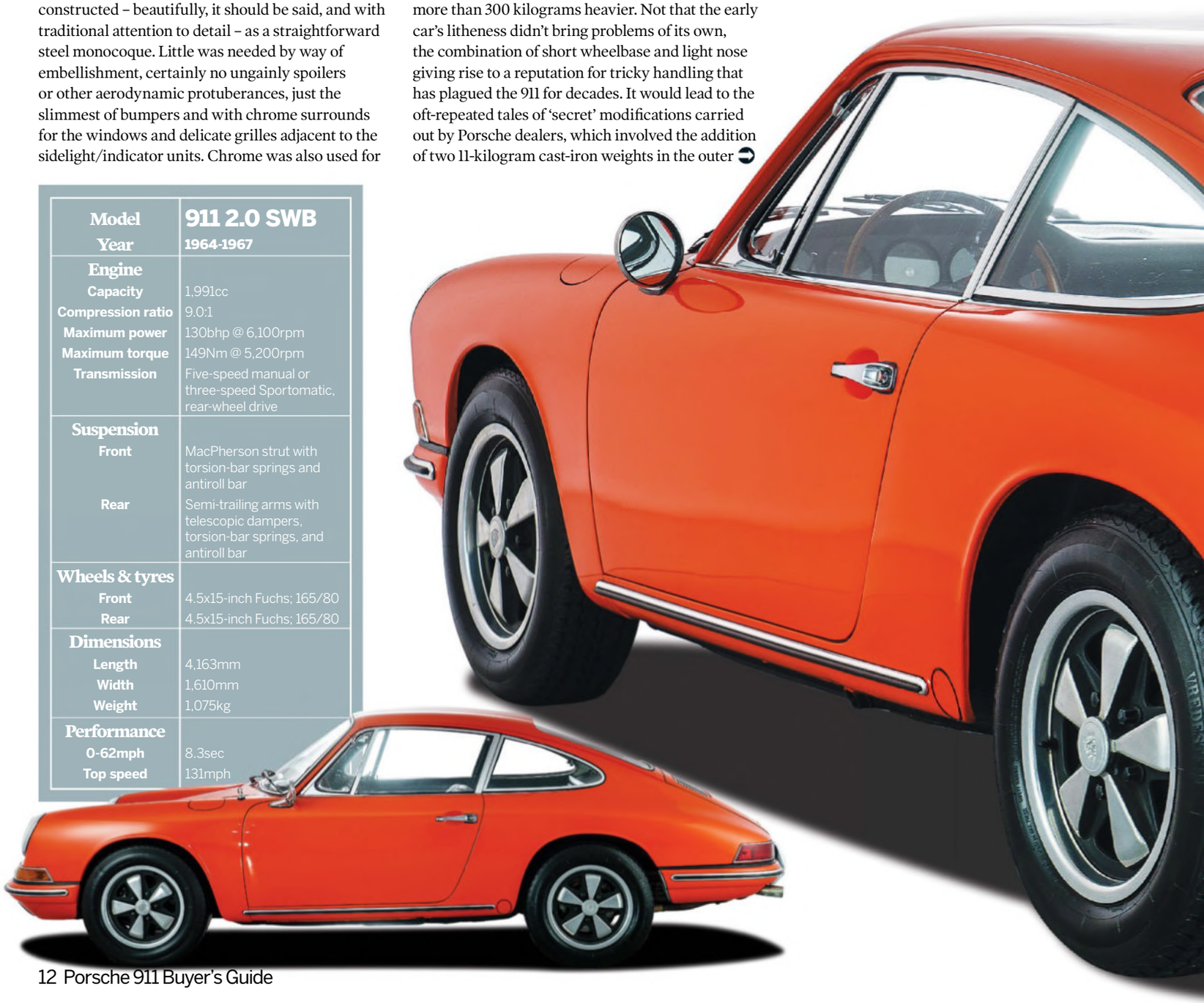
As the 911 gets bigger, faster and ever-more luxurious, it's easy to forget that there was once a much simpler way. Nothing epitomises that more than the car featured here, a 911 shorn of the electronic driver aids and the clever aerodynamic enhancements we've become used to seeing with every new generation. Scrolling back half a century brings us to this, the short wheelbase (SWB) 911.

Back in 1964, when the 911 was finally launched to an expectant public, this was a sports car that looked impossibly pretty. Delicate and with a purity of line that, some argue, has been lost in the race for ballistic performance and the ability to brag about lap times, the simplicity of Porsche's approach was more than a little breathtaking. And that simplicity extended to a two-door coupe body shell that was constructed – beautifully, it should be said, and with traditional attention to detail – as a straightforward steel monocoque. Little was needed by way of embellishment, certainly no ungainly spoilers or other aerodynamic protuberances, just the slimmest of bumpers and with chrome surrounds for the windows and delicate grilles adjacent to the sidelight/indicator units. Chrome was also used for the small door mirror and handles, and the whole effect was one of neatness and understatement.

This was truly a case of function over form, and the earliest 911 was all the better for it. A Targa model would appear in 1967 with its now-iconic steel roll hoop and a zip-out plastic rear window, although this latter feature proved fiddly and 1968 saw a fixed-glass item offered as an option. But whatever the body style, the dimensions too were somewhat less than we're used to today, a SWB car measuring around 30 centimetres shorter overall and 20 centimetres narrower than a current 991 Carrera. The older car is also a substantial 241 millimetres shorter in the wheelbase – it would grow by 57 millimetres for the 1968 model – than the 991, which goes to show how much extra cabin space today's occupants enjoy. And if any further comparison were needed, a 991 Carrera is also more than 300 kilograms heavier. Not that the early car's litheness didn't bring problems of its own, the combination of short wheelbase and light nose giving rise to a reputation for tricky handling that has plagued the 911 for decades. It would lead to the oft-repeated tales of 'secret' modifications carried out by Porsche dealers, which involved the addition of two 11-kilogram cast-iron weights in the outer

> **THE 'S' SHAVED 0.3 SECONDS FROM THE 0-62MPH SPRINT TIME AND ADDED 6MPH TO THE TOP SPEED, BUT THE REAL BENEFITS WERE IN IMPROVED DRIVEABILITY**

Model	911 2.0 SWB
Year	1964-1967
Engine	
Capacity	1,991cc
Compression ratio	9.0:1
Maximum power	130bhp @ 6,100rpm
Maximum torque	149Nm @ 5,200rpm
Transmission	Five-speed manual or three-speed Sportomatic, rear-wheel drive
Suspension	
Front	MacPherson strut with torsion-bar springs and antiroll bar
Rear	Semi-trailing arms with telescopic dampers, torsion-bar springs, and antiroll bar
Wheels & tyres	
Front	4.5x15-inch Fuchs; 165/80
Rear	4.5x15-inch Fuchs; 165/80
Dimensions	
Length	4,163mm
Width	1,610mm
Weight	1,075kg
Performance	
0-62mph	8.3sec
Top speed	131mph



Early, pre-impact bumper 911s all came with the same shell width, measuring 1,610mm. US cars such as this had red rear clusters while Europe had orange indicators

911: FIRST 10 YEARS

1964
The 911 goes into production with a 2.0-litre flat-six producing just 130bhp. It is the start of the making of a legend.

1967
The first 'Super' model arrives. Detailed engine changes generate 160bhp and it also receives upgraded brakes and suspension.

1969
All 911s now get an enlarged 2.2-litre motor, with power ranging from 125-180bhp. It's a substantially revised unit that brings a healthy 7.0-second 0-62mph sprint time.

1972
With the launch of the latest 911E there's a longer-stroke engine for 2.4 litres and it's the first time we see the 915 transmission.

1973
Hugely valuable now, the 2.7 RS is launched with lightened bodywork, 210bhp, and that iconic duck-tail spoiler.

1974
The G-series 911 gains a 2.7-litre engine and impact bumpers to comply with US road safety regulations. Top of the range is the Carrera.

Although the interior is basic by today's standards, a buyer in the 60s could choose different trim options including a wood steering wheel or basket weave seat inserts. A four-speed Sportomatic was also available on certain models, which still utilised a conventional shifter

corners of the front bumper. And staying up front, all models got a 62-litre fuel tank in the trimmed front luggage compartment.

Things would be kept simple beneath the unadorned engine cover too, the beautifully engineered flat-six boasting the sort of accessible installation a 991 owner can only dream about. It was a 1,991cc unit with an 80-millimetre bore and 66-millimetre stroke, a single overhead camshaft per bank, sodium-filled exhaust valves and a 9.0:1 compression ratio. At its core was an aluminium alloy crankcase, cast-alloy pistons running in 'Biral' cast-iron barrels with aluminium cooling fins, and an eight-bearing crankshaft. Lubrication was via a dry sump arrangement and it was fuelled by Solex carburettors that would be replaced with the ubiquitous Weber items in March 1966. The upshot was an output of 130 brake horsepower at 6,100rpm that was enough to get the lightweight coupe to 62 miles per hour in 8.3 seconds and on to 131 miles per hour. What hadn't changed, though, was Porsche's eagerness to give buyers something more. That would arrive in 1967 in the shape of the 911S – or Super – that brought substantial changes to the 2.0-litre powerplant. There were now forged-alloy pistons allied to stronger, forged-steel connecting rods and larger intake and exhaust valves that had grown from 39 and 35 millimetres to 42 and 38 millimetres respectively. With Bosch ignition, a compression ratio upped to 9.8:1 and the addition of two Weber 40IDS carburettors, power had risen to 160 brake horsepower while torque had increased to 179Nm at a higher 5,200rpm. It was enough to shave 0.3 seconds from the 0-62 miles-per-hour sprint time and add six miles per hour to the top speed, but the real benefits were felt in improved driveability; an early sign that continuous development was very much on the Zuffenhausen agenda.

But whichever model you chose, power was delivered to the rear wheels via the five-speed manual gearbox (designated 901) and there was the option of a ZF limited-slip differential. Also available for those who wanted a more relaxed, two-pedal approach to 911 motoring was the Sportomatic '905' transmission that arrived in late-1967. Developed by Fichtel and Sachs and offering four-speeds – L, D, D3, and D4 – this was a torque convertor 'box that also included an automatic clutch operated by a micro-switch in the gear-lever knob. However, this gearbox didn't draw universal praise from owners or journalists of the day, although it somehow survived in Porsche's options catalogue all the way to 1979. Thankfully, the rest of the running gear was a little less quirky. The unassisted rack-and-pinion steering was courtesy of ZF and stopping duties were taken care of by a single-circuit braking system with 11.1-inch diameter ATE discs at the front and 11.2-inch items at the rear, ventilated on the 'S'. The suspension was independent at all four corners

WHEN YOU CLICKED OPEN THE LIGHTWEIGHT DOOR OF AN EARLY 911, THE CABIN APPEARS AS A MODEL OF SPORTING RESTRAINT

BUYING TIPS

A 911 of this age is always going to present a risk unless it's already been subject to a top-quality restoration. A car in need of major work is going to require substantial financial investment, so getting it checked by an OPC or specialist is always going to make sense.

- **Originality and rarity:** A car that's correct in every detail will always be valued. Rarity of parts is an issue, though, exacerbated by the various changes over the years, so be prepared to settle for second-hand items or a lengthy search for the right bits.
- **Corrosion:** The only option is to examine every panel with forensic levels of care as eradicating all traces of rot will be pricey. Check for accident damage and previous bodges, and don't assume US cars are rot-free. Panel prices can exceed £1,000 so be warned.
- **Engines:** The aluminium crankcase unit is considered pretty bulletproof, although parts are costly. Engine swaps aren't uncommon, especially with imported vehicles, so make sure you know what you're buying.
- **Low mileage:** Collector cars may need substantial recommissioning so budget accordingly. It's not necessarily difficult, but the costs can add up so you might be better off with one that's been used regularly.
- **Interiors:** Wear and damage should be obvious. It can obviously be re-trimmed – at a price – but it's worth checking that trim and materials are original, as well as looking for signs of water leaks.

and used a combination of MacPherson struts and longitudinally mounted torsion-bar springs up front and trailing arms allied to telescopic dampers and transverse torsion bars at the rear. A 13-millimetre anti-roll bar was optional, although the 'S' would receive an upgrade in the form of stiffer Koni dampers and anti-roll bars front and rear as standard in 15 and 16-millimetre diameters respectively. It was a set-up that would serve the 911 well for many years, but there's one last detail that amply demonstrates the gulf that separates these early cars from the current generation, and that's in the choice of wheels and rubber. The earliest SWB models employed plain-Jane 4.5x15-inch steel wheels – albeit with lovely chrome hubcaps – fitted with 165/80 tyres, and it wasn't until the 'S' arrived that you got a marginally wider wheel fashioned from a more exotic alloy. In fact, this was the first 911 to get the iconic wheels from Otto Fuchs that were a useful 2.3 kilograms lighter than steels. It's something of a revelation compared to the steam-roller sized boots that fill the arches of a modern 911, even if it does go a long way to explaining the agility and delicacy of response that so enchanted the buyers of Porsche's finest back in the day, and indeed continues to do so even now.

The simplicity employed elsewhere would also be found when you clicked open the lightweight door, the cabin appearing as a model of sporting restraint. There was no bulky and intrusive dashboard here, with passengers separated by a leather-clad and button-festooned centre console. Instead what you'd find was a slim, wood-trimmed fascia with the classic five-dial instrument pack facing the driver, chrome instrument bezels, and a modest – if a little random – scattering of knobs and switches. And if the seats looked a little minimalist, they would actually prove very supportive, and just like today Porsche understood the importance of ergonomics, so the driving position itself was spot on. Those perches were trimmed in vinyl as standard, but leather was optional and you could also choose to have the centre panels covered in basket-weave leatherette or cloth. Buyers could choose to team the subtle interior with typical colourful 1960s exterior hues such as canary yellow or tangerine, although there were more subdued tones available as well as various special-order colours for those who appreciated a more low-key approach for their Porsche.

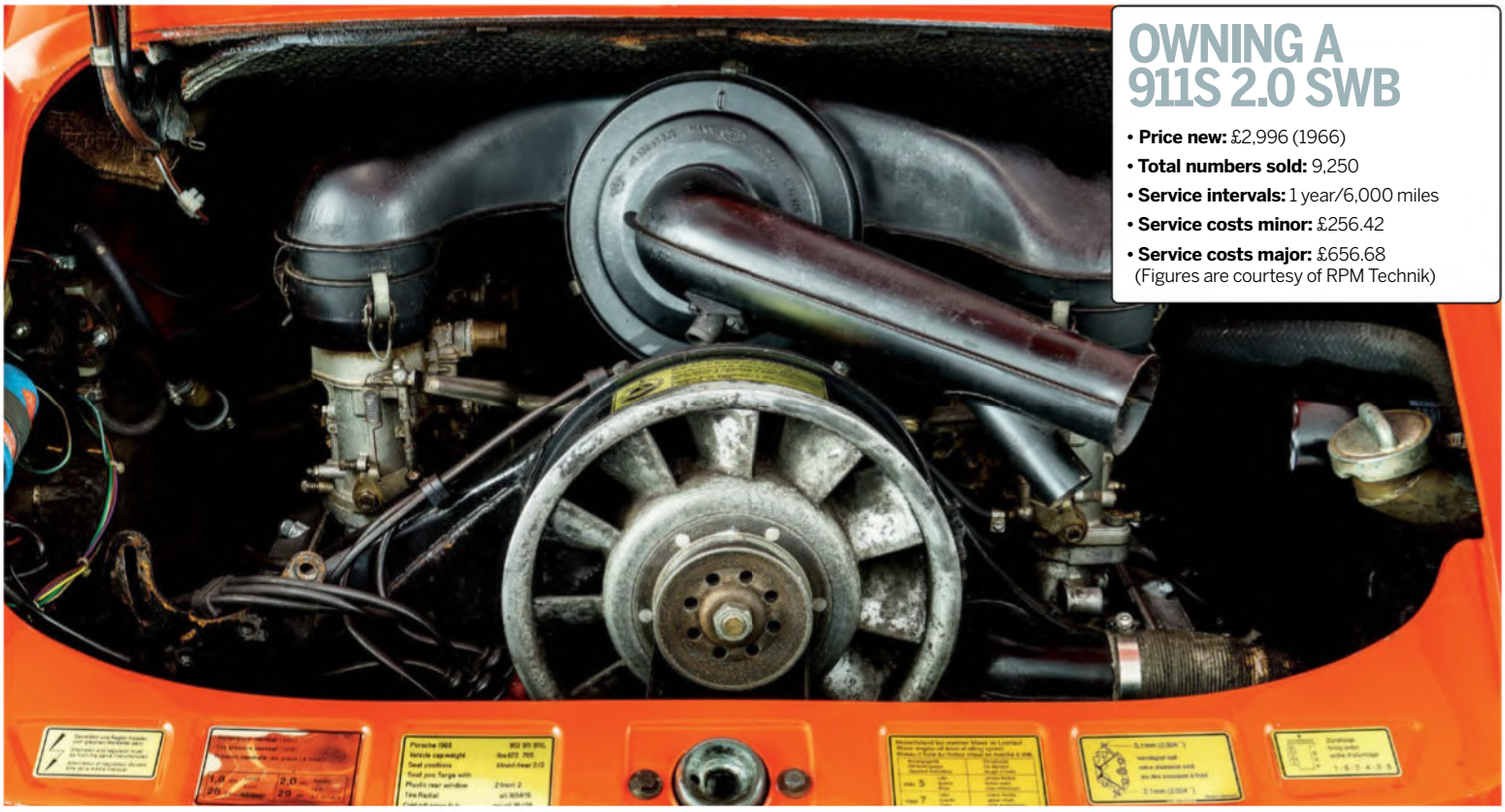
Going back to basics reveals a charmingly simple 911, one that was just the first taste of the top-notch engineering Porsche would employ for many decades to come, and that is something all fans of this evergreen sports car can appreciate. Here's to the next half century of evolution, too. 911

> "A SWB 911 MEASURES 30 CENTIMETRES SHORTER OVERALL AND 20 CENTIMETRES NARROWER THAN A CURRENT 991"

SPECIALIST VIEW

"There's no doubt that when you're talking about a 911 produced in such small numbers, prices are going to be kept very buoyant in the future. Values of SWB models clearly have some way to go yet, I think, but interest in these earliest cars is growing strongly as more and more people come to appreciate the purity they offer, and that almost certainly means there is going to be strong investment potential. Having said that, I do think they offer excellent value at the moment, especially when compared to other sports cars of the period, so it's going to be really interesting to see how the market reacts over the next few years."

Jonathan Franklin, Hexagon



OWNING A 911S 2.0 SWB

- **Price new:** £2,996 (1966)
- **Total numbers sold:** 9,250
- **Service intervals:** 1 year/6,000 miles
- **Service costs minor:** £256.42
- **Service costs major:** £656.68

(Figures are courtesy of RPM Technik)

"I'VE GOT ONE"

"The short wheelbase 911 represents the Porsche 911 in its original and purest form. Without any of the later bulges and wings to disrupt the smooth flow and svelte lines one can appreciate the artistry and beauty of the original design.
There are very few cars that can connect you so closely to the road through the steering and suspension like an original 911, making every journey a visceral experience."

Marcus Carlton

911 2.2S

Get it for
£80,000-130,000
$120,000-$195,000

Performance
★★★☆☆

Maintenance costs
★★★☆☆

Rarity
★★★☆☆

Value
★★★☆☆

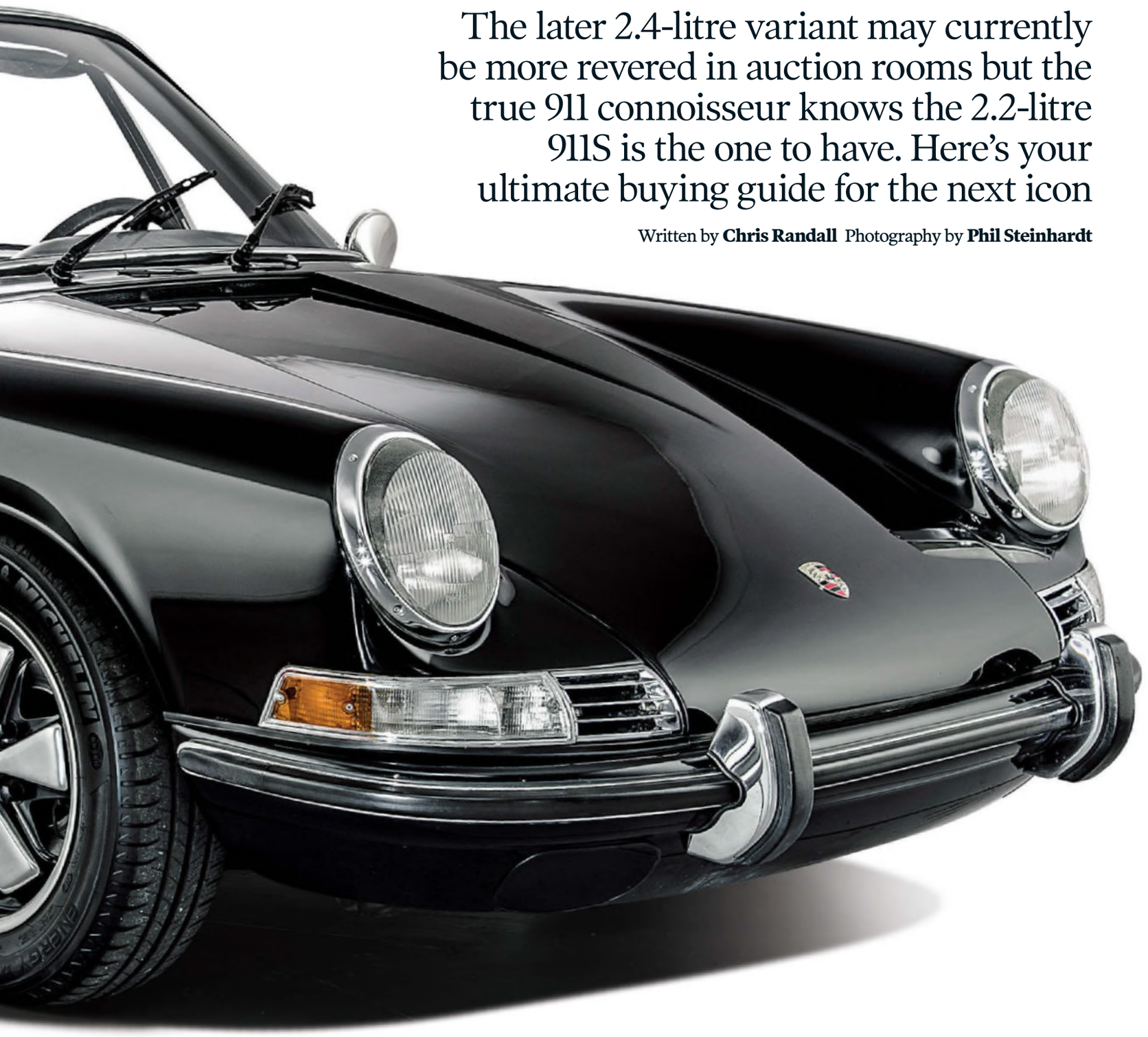
STORY OF THE 911 S/T

With motorsport always high on Porsche's agenda, it's perhaps no surprise that a suitable 911 of the period would arrive – that car being the S/T. As always in competition, lightness was key, so all extraneous weight was removed – the bodyshell shorn of its protective under-seal and soundproofing for starters. Contributing to the diet was the use of thinner steel in key areas including the floorpan and roof, while plastic replaced metal in other areas and the paint was thinner than usual. A two-inch wider track also featured. The S/T recorded a number of victories in top-line rallying and with just 33 produced, it's one of the rarer 911s around.

911 2.2S

The later 2.4-litre variant may currently be more revered in auction rooms but the true 911 connoisseur knows the 2.2-litre 911S is the one to have. Here's your ultimate buying guide for the next icon

Written by **Chris Randall** Photography by **Phil Steinhardt**



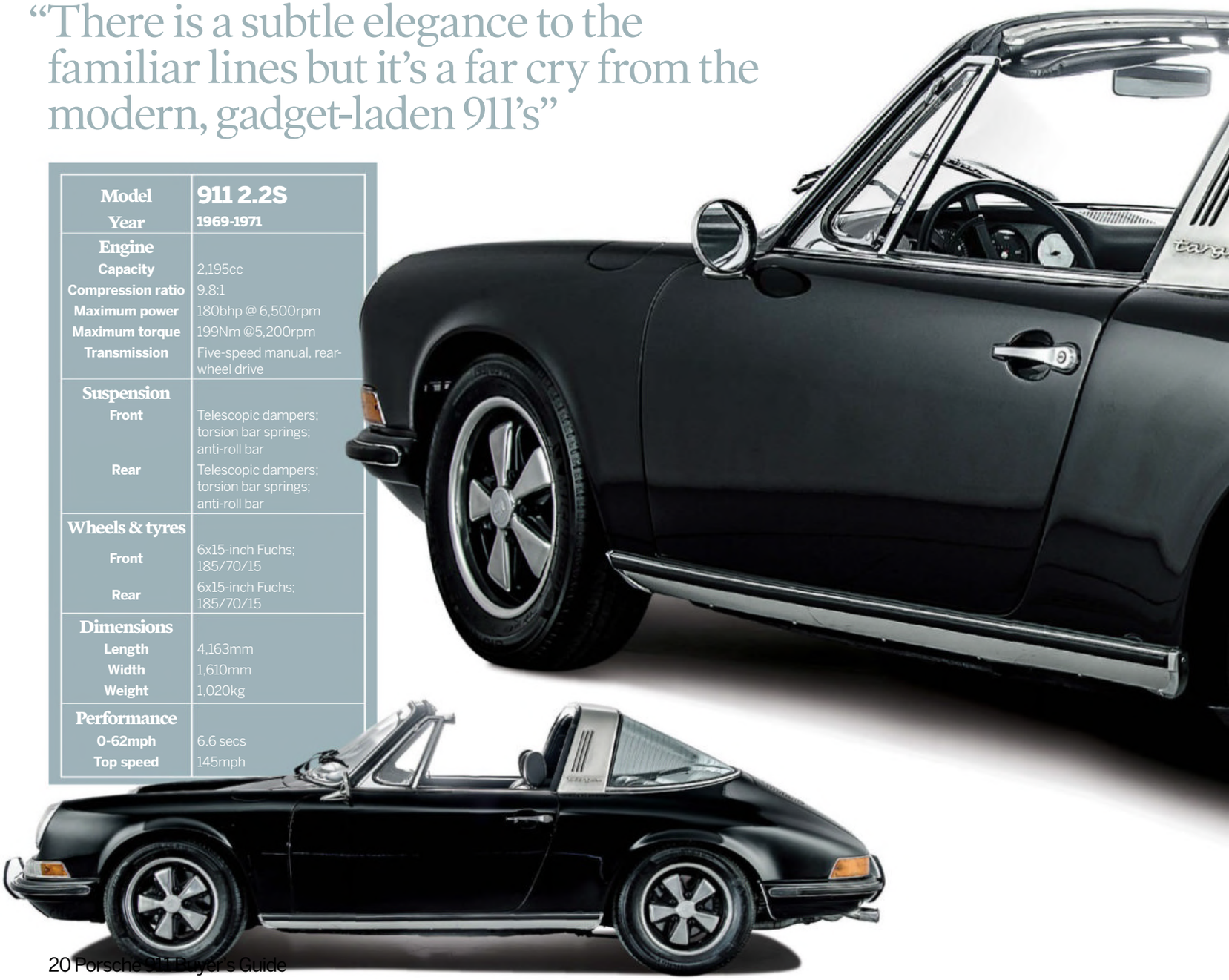
Think back to 2013 and all the talk amongst 911 enthusiasts was of the fiftieth anniversary celebrations, which let's face it, is a pretty amazing milestone for a sports car, never mind one as unique in its approach as this one. However, for our Ultimate Guide this month we're spooling back 44 of those years to 1969, when buyers after a sporting German coupe were offered this, the 2.2S. Today it's the 2.4-litre 911S that has stolen the limelight in auction rooms and in the wider media, but let's not forget it's the earlier car with the truly celebrity connection – need we remind you of the model's appearance in the racing film Le Mans, when it was leant upon by a moody Steve McQueen?

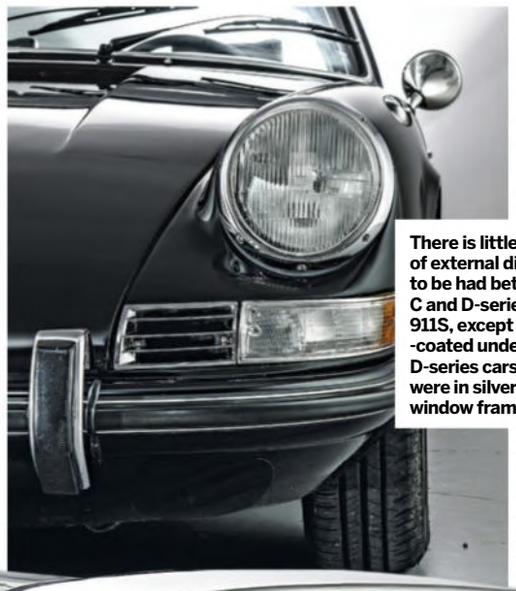
But with that inevitable mention out of the way it's time to focus on the business at hand, and the first thing you notice is the pure simplicity of the design. There is a subtle elegance to the familiar lines and it's a far cry from the modern, gadget-laden 911s that usually appear in these very pages. There are no clever aerodynamic tweaks or prominent spoilers, the bodyshell comprising a conventional steel monocoque that in a nod to longevity, received a healthy layer of PVC underseal and a partial zinc coating. Both coupe and Targa body styles were available – the latter featuring the iconic steel roll hoop and a glass rear window, adding around 50kilograms to the overall weight – but the 2.2S had also grown over previous incarnations, an extra 2.2-inches of wheelbase sharpening the proportions and improving cabin space. It's still a petite 911 compared to today's model though, being 328 millmetres shorter, 198 millmetres narrower and 360 kilos lighter.

The use of aluminium for the engine cover and the centre section of the bumpers helped keep weight in check, while Porsche had also paid attention to weight distribution, mounting the twin batteries in the front compartment to help offset that pendulous flat-six. There was a 62-litre fuel tank squeezed in there with buyers getting the option of a 110-litre tank to assist with long-distance jaunts to La Sarthe and there was even a reasonable amount of luggage space, 7.0 cubic feet available in the nose and a further 8.8 cubic feet if you dropped the rear seats. Oh, and there were some impressively period colours to choose from including Signal orange and tangerine, both proving quite popular in the UK by all accounts. This then was a practical sports car, very much as it remains today. What it wouldn't have been was quite as safe

"There is a subtle elegance to the familiar lines but it's a far cry from the modern, gadget-laden 911's"

Model	911 2.2S
Year	1969-1971
Engine	
Capacity	2,195cc
Compression ratio	9.8:1
Maximum power	180bhp @ 6,500rpm
Maximum torque	199Nm @5,200rpm
Transmission	Five-speed manual, rear-wheel drive
Suspension	
Front	Telescopic dampers; torsion bar springs; anti-roll bar
Rear	Telescopic dampers; torsion bar springs; anti-roll bar
Wheels & tyres	
Front	6x15-inch Fuchs; 185/70/15
Rear	6x15-inch Fuchs; 185/70/15
Dimensions	
Length	4,163mm
Width	1,610mm
Weight	1,020kg
Performance	
0-62mph	6.6 secs
Top speed	145mph





There is little in the way of external differences to be had between the C and D-series 2.2-litre 911S, except for the zinc-coated underbody on D-series cars. Horn grills were in silver, as were the window frames

EARLY 911S TIMELINE

1967
The first of the 'Super' models arrives with a 2.0-litre engine pushing out 160bhp, 30bhp more than the regular 911. Weighing little more than a ton, it can crack 60mph in 8.0 seconds.

1968
B-Series cars are still 2.0-litre but fuel injection replaces the twin Weber carburettors, upping the power to 170bhp.

1969
It's the turn of the C/D-Series cars and with a new 2.2-litre engine power is up to a punchy 180bhp. There are brake and suspension upgrades as well.

1973
Just over 5,000 F-Series models are produced. Power is up another 10bhp thanks to the bigger 2.4-litre engine, while various styling tweaks keep the 911 looking fresh.

1974
More major changes occur and the 911S is relegated to the mid-range option, with impact bumpers and a bigger 2.7-litre powerplant. Just 173bhp means it's slower than its top-spec predecessor too.

“As always though, it was the engine that was the star here”

as today’s air-bag-filled models, although Porsche literature of the day did boast of a padded fascia and a collapsible, three section steering column with two universal joints – which provided some protection should you find yourself on the wrong side of a hedge. At least the standard quartz-iodine headlamps made night time excursions a much more pleasurable experience.

As always though, it was the engine that was the star here and it was an increase in bore from 80millmetres to 84millmetres that increased capacity to 2.2-litres. Courtesy of Bosch mechanical fuel injection and a 9.8:1 compression ratio, power was up to 180bhp at 6,500rpm with a useful 199Nm of torque, both handy increases over the previous 2.0S and enough for an impressive 166bhp per tonne. After the monster power outputs of recent 911s, discussing a power figure that starts with a one seems faintly absurd, but a kerb weight of just 1,020kilograms ensured ample punch. Official figures quoted a top speed of 145mph and a 0-62mph sprint in 6.6 seconds, all achieved with the free-revving feel and pin-sharp responses of an engine unencumbered by digital interference. Lubrication was by a dry sump arrangement, while the two-valves per cylinder were operated by a single chain-driven overhead camshaft per bank. Stronger connecting rods and a magnesium crankcase also featured and while all 2.2-litre models had a common cylinder head design, the ‘S’ received tweaks to the camshaft profiles and valves, as well as improved porting. Dig deep enough and you’d also find a head gasket redesigned for better sealing, re-shaped cylinder barrels with more cooling fins, and a high-capacity discharge ignition system with an in-built ignition cut-out. It’s also worth noting that the 2.2S saw the ‘901’ engine numbering come to an end, the new power plant issued with the 911/02 designation.

While we’re in the engine bay it’s worth mentioning the delightful period details that adorn an older 911, in this case the stickers that sit on the lock panel. Four in total, they detail tyre pressures, oil capacity, valve clearances and firing order – the figures for the latter pair 0.1millmetres and 1-6-2-4-3-5 respectively, which could come in handy for a spot of DIY maintenance. Bolted to the flywheel was a larger clutch – now 225millmetres in diameter rather than 215millimetres – that was lighter in operation and that transferred drive

Front seats in the 2.2-litre 911S were much improved from earlier variants, now offering more lateral support. A Sportomatic option was dropped for the model in 1970, meaning the only gearbox on offer was manual

to a 5-speed manual gearbox with revised ratios and a first gear out on a dog-leg. There was no Sportomatic option for the 'S' but buyers seeking ultimate traction could specify a ZF limited slip differential if they wanted.

Attention had been paid to the rest of the running gear too. Suspension was still managed by telescopic shock absorbers and torsion bar springs with anti-roll bars at both ends, but changes to the geometry had improved wheel location and included moving the front strut mounts 14mm forward. This improved the castor angle and ensured that the ZF rack and pinion steering was both lighter and much more accurate. The extra performance meant that some improvements were needed in the braking department as well and the 'S' had alloy calipers that gripped ventilated discs measuring just a smidgeon over 11-inches in diameter and backed by vacuum assistance. The stoppers were hidden behind classic 15-inch

BUYING TIPS

Plenty of would-be 911 owners are attracted to the idea of buying an early model, but like any classic car, it pays to tread carefully. Numerous (expensive) pitfalls await those that buy in haste, so get specialist advice before taking the plunge.

- **Originality and provenance:** An important factor in buying an early 911, condition really is everything with these cars. Look for evidence of previous re-builds and be alert for any signs of bodged restorations such as the 'sinking' of paint around filler holes. The Porsche club can help with history and build data too.
- **Corrosion:** They rust just like any classic of the period and you'll need to examine every inch of the bodywork. Eradicating all traces of corrosion will be ferociously expensive, so you have been warned.
- **Engine and transmission:** There is a good chance that both will have been re-built by now, but any neglect will be very costly. Watch for any signs of oil smoke, low oil pressure and crunching synchromesh.
- **Suspension/brakes:** Age-related wear and tear is the main concern and a complete refurbishment is a costly job. Cars that have been sitting around for a long time are likely to have seized lines.
- **Interior:** It might be simple but don't underestimate the cost of bringing a tatty cabin up to scratch. It shouldn't be a deal-breaker if the car is otherwise sound but bear it in mind all the same.

Fuchs alloy rims, half an inch wider than those that were fitted to the entry level 911T at six-inches and carrying 185/70 rubber.

Click open the door handle – operated by a trigger behind rather than the previous push-button – and you were faced with yet another dose of elegant simplicity. Indeed, there's a delicacy to the design and feel of the cabin that feels far removed from the imposing chunkiness that characterises sports cars today, 911 included. But while cabin quality is solid enough – and notably superior to other mainstream cars of the period – it still retains an austere feel that would be unrecognisable now.

The 2.2S doesn't have the acres of soft-touch materials and damped switchgear we're cossetted by today, nor the button-fest that has crept into the 991 interior. Nope, this is a far simpler approach to cabin architecture and one that has plenty of admirers. The good news was that the five-dial instrument pack was present and correct, the faces now surrounded by black rubber rather than chrome rings, while a gauge showing oil level and pressure was standard. At the same time Porsche revised the column stalks, the left-hand one now controlling indicators and lights, the right looking after wipers and washers. Also standard was a leather covering for the slim-rimmed four-spoke steering wheel, a steering lock and a heated rear window, but if that sounds measly you could seek the solace of the options list and add tinted glass, electric windows and a sunroof. There were other changes to the dashboard including the relocation of the ashtray, but the 'S' did benefit from improvements to that bug-bear of early 911s, the ventilation system. There were opening front quarter-light windows and the Targa received ventilation grills let into the vertical section of the roll hoop that assisted with air circulation, but in all models a trio of sliders controlled things with Porsche proudly trumpeting the addition of a three-speed blower fan. This top-spec 911 did get velour carpeting though, and the leatherette seats with their woven finish for the centre panels could be specified in real hide at extra cost.

Porsche literature described those front seats as offering 'ample' lateral support in hard cornering and while the bolstering seems lacking compared to the modern cars, they were at least comfortable. The interior revamp had a new set of door cards that featured rigid and useful storage pockets.

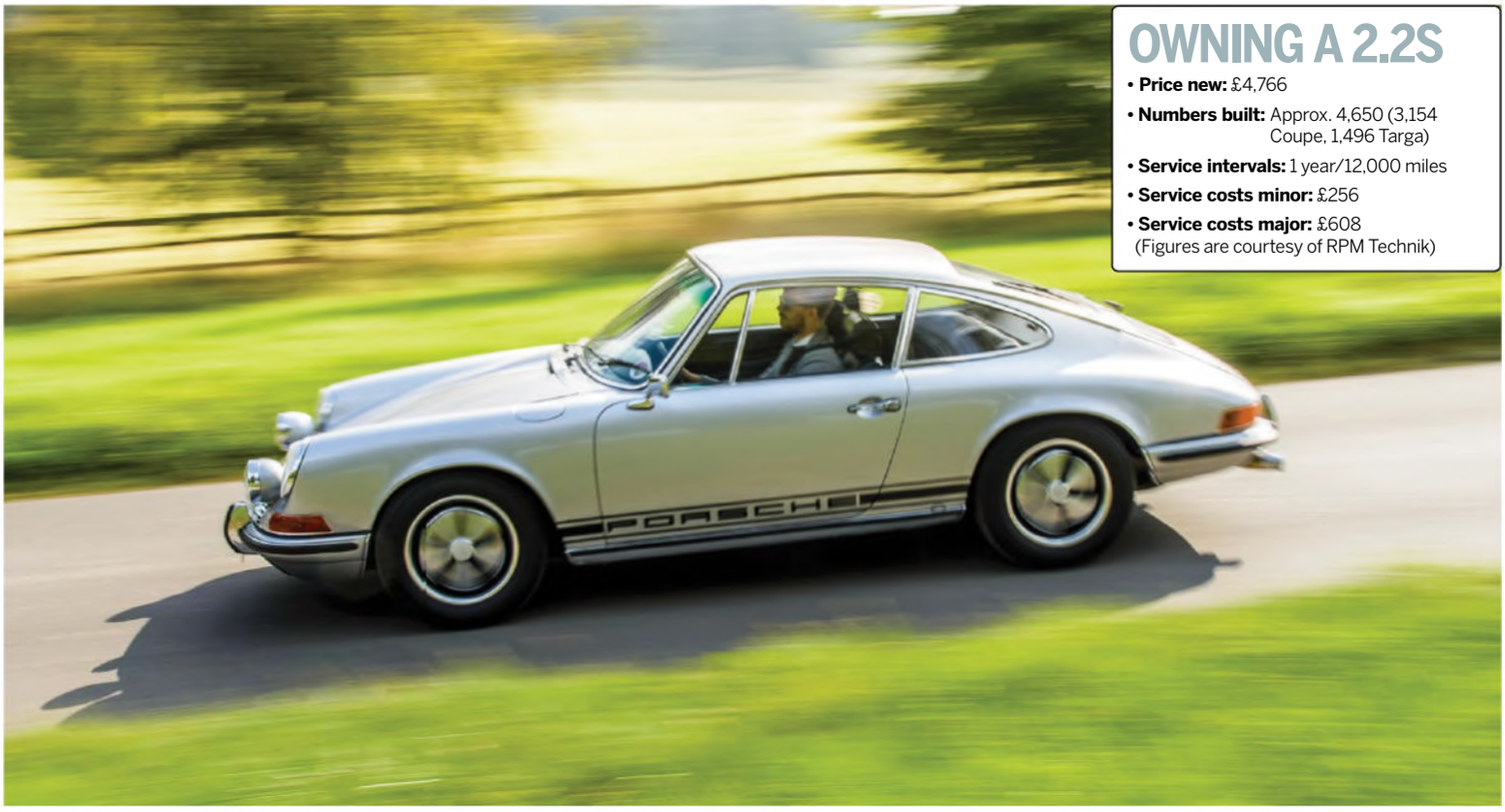
That's the 2.2S. It was a 911 that showed Porsche's commitment to develop their unique sports car, bringing with it the subtle but well-engineered improvements that have remained a hallmark today. Internal wobbles over replacing the 'S' would come, but in 1969 things looked rosy. 911

"This is a far simpler approach to cabin architecture and one that has plenty of admirers"

SPECIALIST VIEW

"Nearly any early 911 is sought-after at the moment and the enthusiasm around cars like the 2.2S is a perfect example of that. The 'E' and 'T' variants seem to be proving popular too, no doubt helped by the fact that values of the 'S' are continuing to rise. That's having a positive effect on the models below and we've seen the values for all 2.2s strengthen over the last year. In fact, the rising interest means that project cars are harder to find – they are being snapped up quickly when they come onto the market, restored and then stored away. Values will keep rising so if you want a 2.2S, now is a good time."

Jonathan Franklin, Hexagon Modern Classics



OWNING A 2.2S

- **Price new:** £4,766
- **Numbers built:** Approx. 4,650 (3,154 Coupe, 1,496 Targa)
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £256
- **Service costs major:** £608

(Figures are courtesy of RPM Technik)

"I'VE GOT ONE"

"The 2.2-litre 911S is a real racer. From the engine there's plenty of power and the body is as light as possible, keeping the unsprung weight to a minimum, so you can max out the brakes and suspension. Even by modern standards it is quick but thrilling, responsive and direct in a way no modern car can be."

Brandon Davies

2.7 RS

Get it for
£300,000+
$450,000+

Performance
★★★★☆

Maintenance costs
★★★★☆

Rarity
★★★★☆

Value
★★★★☆

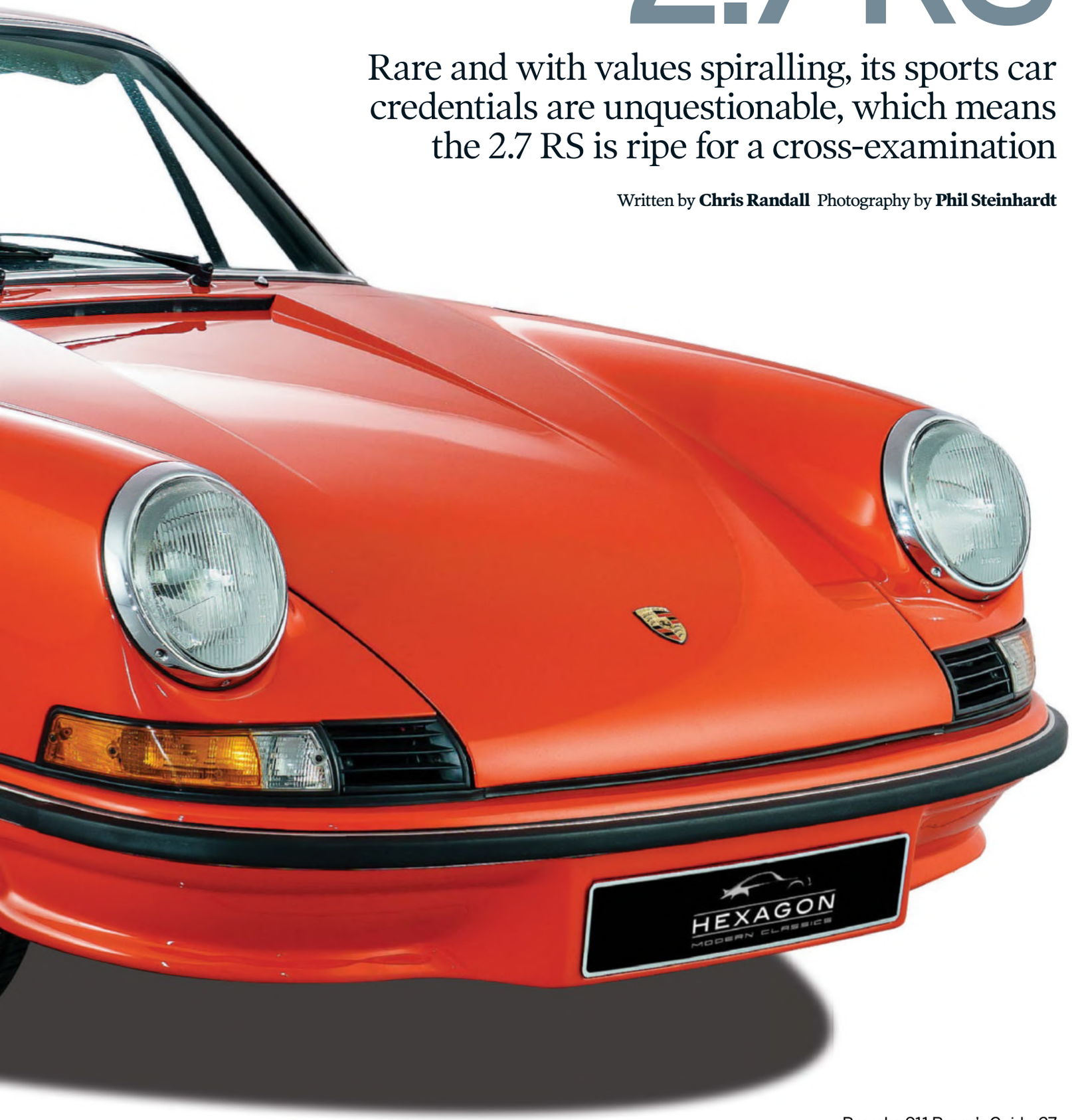
CARRERA RS 3.0

1974 would see a further development of the RS genre when Porsche introduced an even rarer model, so rare in fact that the right-hand-drive cars are identified by their colour alone. Just 109 3.0-litre RSs were made in total, and only six of those came with the steering wheel on the right – five came to the UK and one went to Australia. Externally, they were identified by their flared wheelarches, gaping air intake in the front air dam (with room for an oil cooler) and a Turbo-style rear spoiler. Lightweight construction featured once again, with thinner steel panels and a luggage cover, engine cover, and bumpers fashioned from fibreglass, the end result a 911 that weighed just 900kg. A bore increase to 95mm resulted in a 2,994cc motor boasting 230bhp and 275Nm of torque and that now featured an aluminium crankcase, while the transmission had its own oil cooler. The brakes were now 917-derived items with 300mm cross-drilled and ventilated discs, while the suspension featured revised mountings and geometry.

2.7 RS

Rare and with values spiralling, its sports car credentials are unquestionable, which means the 2.7 RS is ripe for a cross-examination

Written by **Chris Randall** Photography by **Phil Steinhardt**



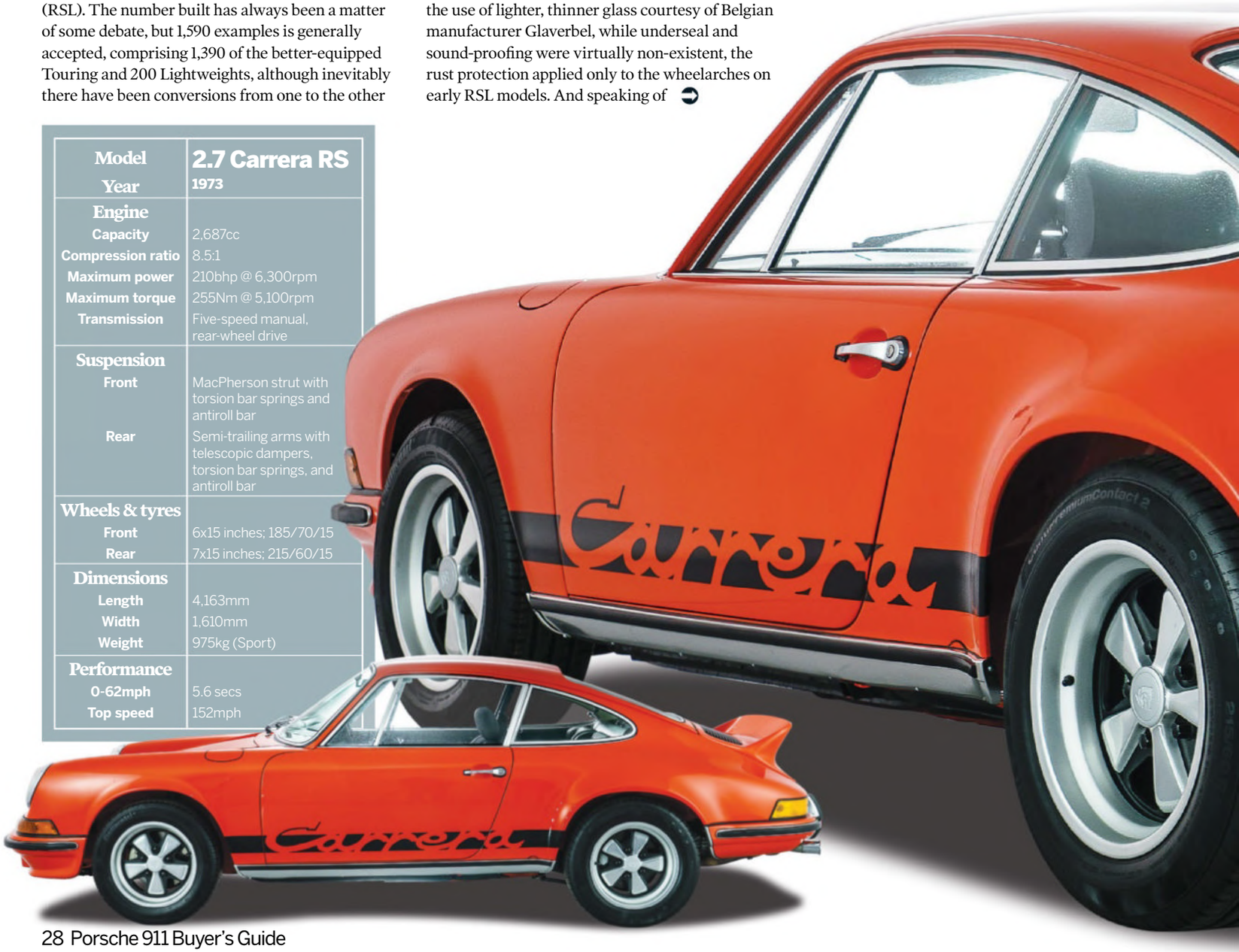
Take a look back through automotive history and there are only a handful of cars that have achieved truly legendary status. The 911 you see here – the 2.7 RS – is one of them. With 1,590 models produced and prices hitting the £500,000 mark, its position as an iconic 911 has been well and truly cemented in the minds of every enthusiast. So where to start? Well, its difficult gestation has been documented many times – the doubts of Porsche's marketing department, the determination of then CEO Ernst Fuhrmann to drive the project through, the immediate sales success – so we won't dwell on that any further here. Suffice to say, its reception at the 1972 Paris Salon and the subsequent clamour to snap up the first 500 cars fully vindicated Fuhrmann's belief.

It was based on the 2.4S, and came in two distinct forms: the Sport, and the Touring (RST), designated M471 and M472 respectively. The former quickly became known as the 'Lightweight' (RSL). The number built has always been a matter of some debate, but 1,590 examples is generally accepted, comprising 1,390 of the better-equipped Touring and 200 Lightweights, although inevitably there have been conversions from one to the other over the years. But let's not get bogged down with such arguments, because what really fascinates admirers of this special 911 are the changes that Porsche made, and they begin with one of the strictest diets yet seen in motordom.

Firstly, the non-load bearing panels such as the roof, front and rear wings, and the front luggage compartment lid were formed from metal just 0.7mm thick when 1.0 to 1.25mm was the norm. And these were joined on Lightweight cars by bumpers formed from fibreglass, pleasingly unadorned items that lacked the gaping scoops and diffusers of today's cars, with just a black trim strip and a recess for the number plate up front and delicate quarter sections at the rear. The RST got a steel rear bumper instead, although the engine cover and iconic 'ducktail' spoiler on all variants were also fashioned from fibreglass. That spoiler was claimed to reduce aerodynamic lift at the rear by 75 per cent, so it was certainly effective, although it wasn't fitted to all RSs. The weight saving continued with the use of lighter, thinner glass courtesy of Belgian manufacturer Glaverbel, while underseal and sound-proofing were virtually non-existent, the rust protection applied only to the wheelarches on early RSL models. And speaking of ➲

> **THE NUMBER BUILT HAS ALWAYS BEEN A MATER OF SOME DEBATE, BUT WHAT REALLY FASCINATES ADMIRERS OF THIS SPECIAL 911 ARE THE CHANGES THAT PORSCHE MADE, AND THEY BEGIN WITH ONE OF THE STRICTEST DIETS YET SEEN IN MOTORDOM**

Model	2.7 Carrera RS
Year	1973
Engine	
Capacity	2,687cc
Compression ratio	8.5:1
Maximum power	210bhp @ 6,300rpm
Maximum torque	255Nm @ 5,100rpm
Transmission	Five-speed manual, rear-wheel drive
Suspension	
Front	MacPherson strut with torsion bar springs and antiroll bar
Rear	Semi-trailing arms with telescopic dampers, torsion bar springs, and antiroll bar
Wheels & tyres	
Front	6x15 inches; 185/70/15
Rear	7x15 inches; 215/60/15
Dimensions	
Length	4,163mm
Width	1,610mm
Weight	975kg (Sport)
Performance	
0-62mph	5.6 secs
Top speed	152mph



From top right: ducktail spoiler is now a worldwide motoring icon; front vents were matte black with a matching decklid in line with 1973 MY; the RS got Fuchs that were one-inch wider at the rear than the 2.4S

THE RENNSPORT TIMELINE

1972
The legendary 2.7 RS launches the breed, and is worth a fortune today. 210bhp doesn't sound much, but the reduced weight ensured stunning performance.

1984
The SC RS was built to homologate the factory Rothmans team's rally effort. Had a Turbo body with fibreglass bumpers and aluminium doors.

1991
Launched at the Geneva Show, the 964 revives the RS moniker with both 3.6 and rare 3.8-litre variants. Power is up by 10bhp in 3.6-litre form and weight is down.

1995
Porsche reprise the RS theme with the 993, the 3.8-litre engine revised for a 300bhp output. It was rear-wheel drive only, and notable for its aggressive looks.

2004
It was the 996's turn for the lightweight treatment, the GT3 making 381bhp and 280bhp per ton. Top speed is an epic 190mph.

2006
The 997 RS was available in GT3, GT2, and rare GT3 4.0 forms. Power ranged from 415bhp to a slightly bonkers 620bhp in the GT2, the latter hitting 62mph in just 3.5 seconds.

Extra equipment in the Touring included a radio (blanked here), full carpet, and rear seats. The Lightweight was typically sparse, with even the glovebox lid and passenger sun visor removed. Door cards in the Lightweight had manual winders and a door strap rather than the handle and electric window mechanism found here in the Touring

wheelarches, the rears were flared by 50mm, the increase necessary to cover wider Fuchs rims.

There were plenty more weight-saving measures applied to the cabin and running gear, but the overall result was a car that in RSL form tipped the scales at little over 975 kilograms, with the Touring's extra equipment adding around 100 kilograms. To put that in perspective, an entry-level Lotus Elise – hardly the last word in sybaritic sporting comfort – weighs 876 kilograms and needs a high-tech bonded aluminium chassis to achieve that. Reputedly, the later cars made do with steel panels and standard glass, as Porsche had used up all the lovely lightweight bits – and there was the occasional oddity, with some Lightweights getting opening rear quarterlight windows from the Touring and others not – but whatever the truth, the RS was a seriously lithe car. It certainly explains why it made such good use of the singing flat six that Porsche had tucked beneath that pert spoiler.

The engine – codenamed 911/83 – was also 2.4 S-based, but it too had substantial changes, not least a 6mm growth in bore from 84 to 90mm for a capacity of 2,687cc and running an 8.5:1 compression ratio. Rather than risk any durability issues, Porsche employed Nikasil-coated cylinder liners rather than the usual 'Biral' construction of cast iron cylinders surrounded by aluminium cooling fins, although the valves, connecting rods, forged crankshaft and magnesium alloy crankcase were all carried over from the 'S' unchanged.

Fitted with Bosch mechanical fuel injection, the result was 210bhp and a healthy 255Nm of torque. The power was sent to the rear wheels via the '915' five-speed manual transmission, although the ratios for fourth and fifth were longer compared to the 2.4 S. Also, and unlike the muscle-bursting items in other sports cars, the clutch was a standard item that needed a stronger spring to cope with the higher output.

Of course, that low weight paid dividends elsewhere, not least in the braking department, where only modestly sized ventilated discs were required. Measuring 282mm and 290mm front and rear respectively, they seem small by today's dinner-plate standards, but they were more than up to the job of slowing this featherweight Coupe. The suspension didn't depart too far from standard either, comprising the same setup as regular 911s with struts at the front, albeit with lighter alloy components and semi-trailing arms at the rear allied to torsion bar springs all round.

Along with firmer bushes, the antiroll bars received attention, growing in diameter to 18mm and 19mm at the front and rear respectively, while Bilstein dampers replaced the usual Koni items, saving a further 7.7 pounds in the process. The deliciously light and accurate rack and pinion steering remained, while the wheels were the familiar Fuchs design that for the first time

> THERE WERE PLENTY MORE WEIGHT-SAVING MEASURES APPLIED TO THE CABIN AND RUNNING GEAR, BUT THE OVERALL RESULT WAS A CAR THAT IN RSL FORM TIPPED THE SCALES AT LITTLE OVER 975 KILOGRAMS

BUYING TIPS

The 2.7 Carrera RS is right up there at very top end of Porsche acquisitions at present. As such, we're heading into price tags with many zeros here, so the normal rules don't really apply. If you have the sort of bank balance that supports the idea of buying an RS, then it goes without saying that you'll be buying it from an expert source. Anything else would be madness. However, there are some obvious points still to be considered here:

- **Prices:** The biggest limiting factor when it comes to buying. They're increasing on a weekly basis, and you wouldn't bet against the £1 million 2.7 RS by the turn of next year.
- **Provenance and Originality:** Few things are more vital with an RS so expert advice is an absolute necessity. Be fastidious when checking its history, and remember that many will have been raced. Any repair work should be to a world-class standard.
- **Restoration:** It just has to be done right, but original parts are either impossible to find or incredibly expensive. With prices as they are, a detailed restoration will certainly make sense if you can afford it.
- **Replicas:** There are plenty around, some of them very good, so perhaps this is the way to go if you want to experience a more affordable taste of the RS legend. Regardless, ensure the base car is structurally sound or you'll still face a hefty bill.

on a 911 were wider at the rear at seven inches. The fronts were six-inch items, and the RS came with 185/70 front and 215/60 rear Pirelli CN36 rubber, although later cars would switch to Dunlops.

Porsche hadn't finished with the weight saving though, and once ensconced in the snug cabin of a Lightweight, you'd become aware of how spartan things had become. The seats were cloth-covered Recaro items that could be fitted with optional headrests, while underfoot you'd find thin felt instead of carpets, covered with plain rubber mats. The rear seats were noticeable only by their absence, and it wouldn't take long before you noticed that a few other pieces had also gone missing. You'd search in vain for any sign of a passenger sun visor, glovebox lid or clock, while the door trims were vinyl panels that had straps rather than proper handles and manual window winders. Even the coat hooks had disappeared.

Also gone were the counterbalance springs for the luggage compartment lid, beneath which you'd find a toolkit and a compressor. The single 12-volt battery was also located up front, although things differed here too, as the Touring was fitted with two six-volt items either side of the spare wheel. The more comfortable variant also got back all of the kit so carefully pruned from the Lightweight, including full carpeting, rear seats, a radio and electric windows, but Porsche would happily add whatever options a buyer chose, even if such luxuries weren't exactly in the spirit of the original Rennsport brief.

You'd pay another £1,000 for the extra comfort and luxuries, although at least you ended up paying less money for less equipment rather than the opposite. There were also choices to make when it came to colours, with the option to pick from a standard palette that included period hues such as Tangerine and Emerald green or to go for the Grand Prix white that has become so synonymous with the model. And with that decision made, it was just a matter of choosing the colour of the 'Carrera' side decals that were available in red, black, blue or green, along with colour-coded wheel centres. Or, if you preferred to draw slightly less attention to your choice of 911, you could forego the script altogether. In fact, it was something of a rare feature on the darker painted cars.

But whichever specification you chose, the fact remains that you were buying into a very special 911, one that might not have arrived at all were it not for the unshakeable belief and hard-headed approach of the talented Dr Fuhrmann. Indeed, it's easy to argue that the RS underpins the very legend of the 911, and the only shame is that with prices continuing to head for the stratosphere, only a select few will ever get to experience it. 911

> **IF YOU PREFERRED TO DRAW SLIGHTLY LESS ATTENTION TO YOUR CHOICE OF 911, YOU COULD FOREGO THE SCRIPT ALTOGETHER**

SPECIALIST VIEW

"In some ways it's hard to summarise the 2.7 RS, as the normal 911 rules aren't relevant. The one thing that is clear, though, is these cars are selling for astonishing sums of money compared to a couple of years ago, and that includes our Touring model. With a global market for cars like these, as long as the details and history are spot-on then people are willing to pay a premium, and I really can't see that ending any time soon."

Jonathan Franklin, Hexagon

OWNING A 2.7 CARRERA RS

- **Price new:** £6,112 (Sport)
- **Total numbers sold:** 1,590
- **Service intervals:** 1 years/12,000 miles
- **Service costs minor:** £256.08
- **Service costs major:** £609.72

(Figures are courtesy of RPM Technik)

"I'VE GOT ONE"

"I've had my 2.7 RS for approximately two years, having bought it from a specialist dealer after an extensive search - and lots of patience.

It has been everything I wished for. In my opinion, it is the best car I've ever driven for sheer driving thrills and experience. So many things in life are a disappointment after a long wait, but this definitely isn't. My personal collection also includes a Ferrari 246 Dino, and the RS is definitely the sharper tool of the iconic pairing. To drive, it's a car you need to work with to get the most from, but when you master it, it is so rewarding to drive. Precise, exciting - it is the perfect car."

Jonathan Aucott

911 SC

Get it for
£25,000-£50,000
$37,500-$75,000

Performance
★★★☆☆

Maintenance costs
★★☆☆☆

Rarity
★☆☆☆☆

Value
★★★★☆

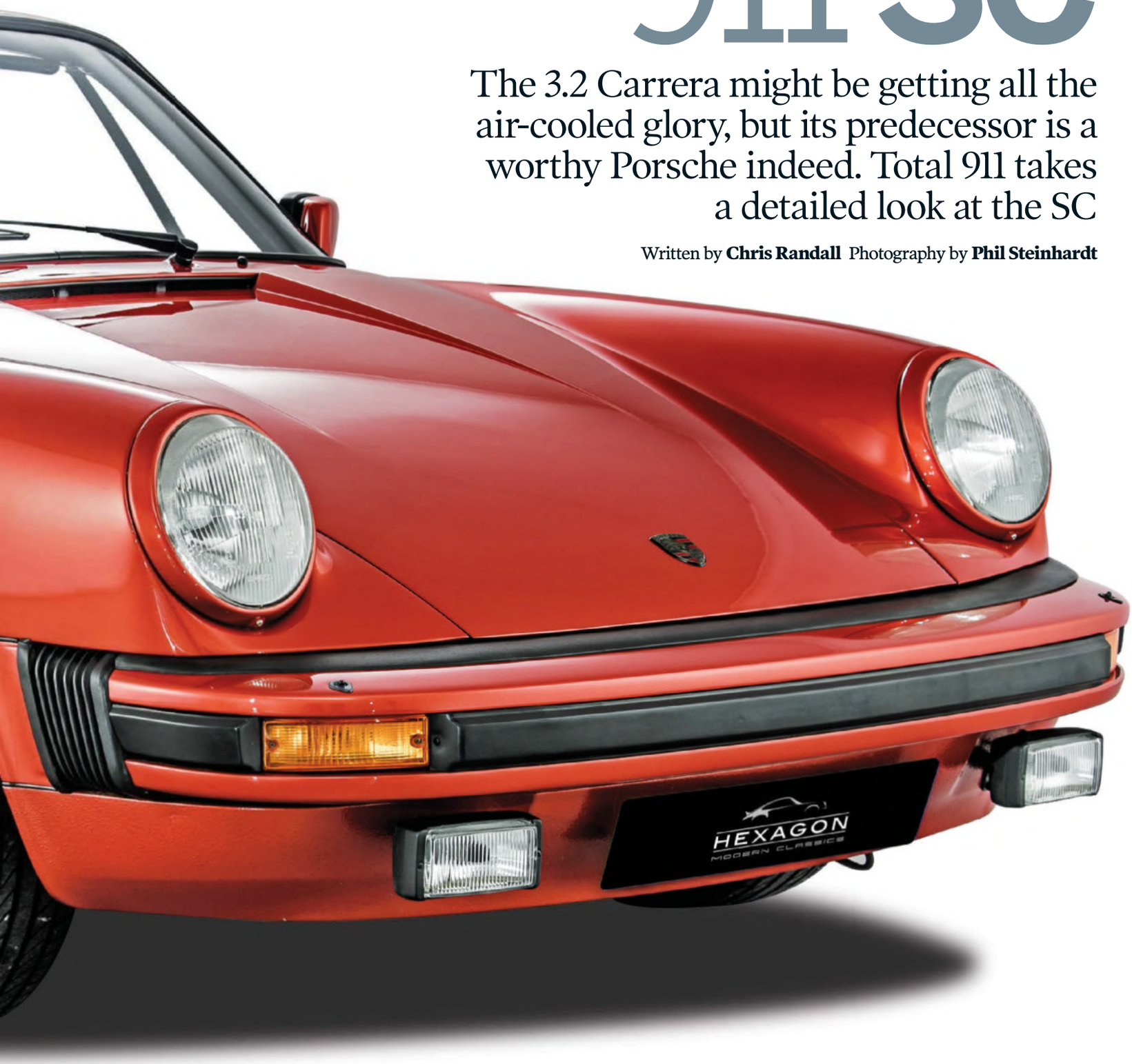
THE SC LINE-UP

Back when the SC was new, the 911 range was nowhere near as expansive as it is today, but there were some interesting variants available all the same. For example, UK buyers could choose the Sport package, which was fitted with a front chin spoiler and whaletail as standard. The interior got sports seats and the running gear was upgraded with Bilstein gas dampers and 16-inch wheels wearing the latest Pirelli P7 tyres. More exciting though was the SC RS (right), a road-going Touring version of the car developed for Group B rallying. Just 20 were made with the road car gaining a 250-horsepower version of the 3.0-litre unit, courtesy of forged pistons, a 10.3:1 compression ratio and mechanical fuel injection. But if you wanted luxury, the SC Ferry Porsche edition would have fit the bill. Celebrating the company's 50th anniversary, the 200 examples featured Meteor grey metallic paintwork and a burgundy leather interior. Fuchs wheels were standard and as well as extra equipment, each car had Ferry's signature displayed on the headrests.

911 SC

The 3.2 Carrera might be getting all the air-cooled glory, but its predecessor is a worthy Porsche indeed. Total 911 takes a detailed look at the SC

Written by **Chris Randall** Photography by **Phil Steinhardt**

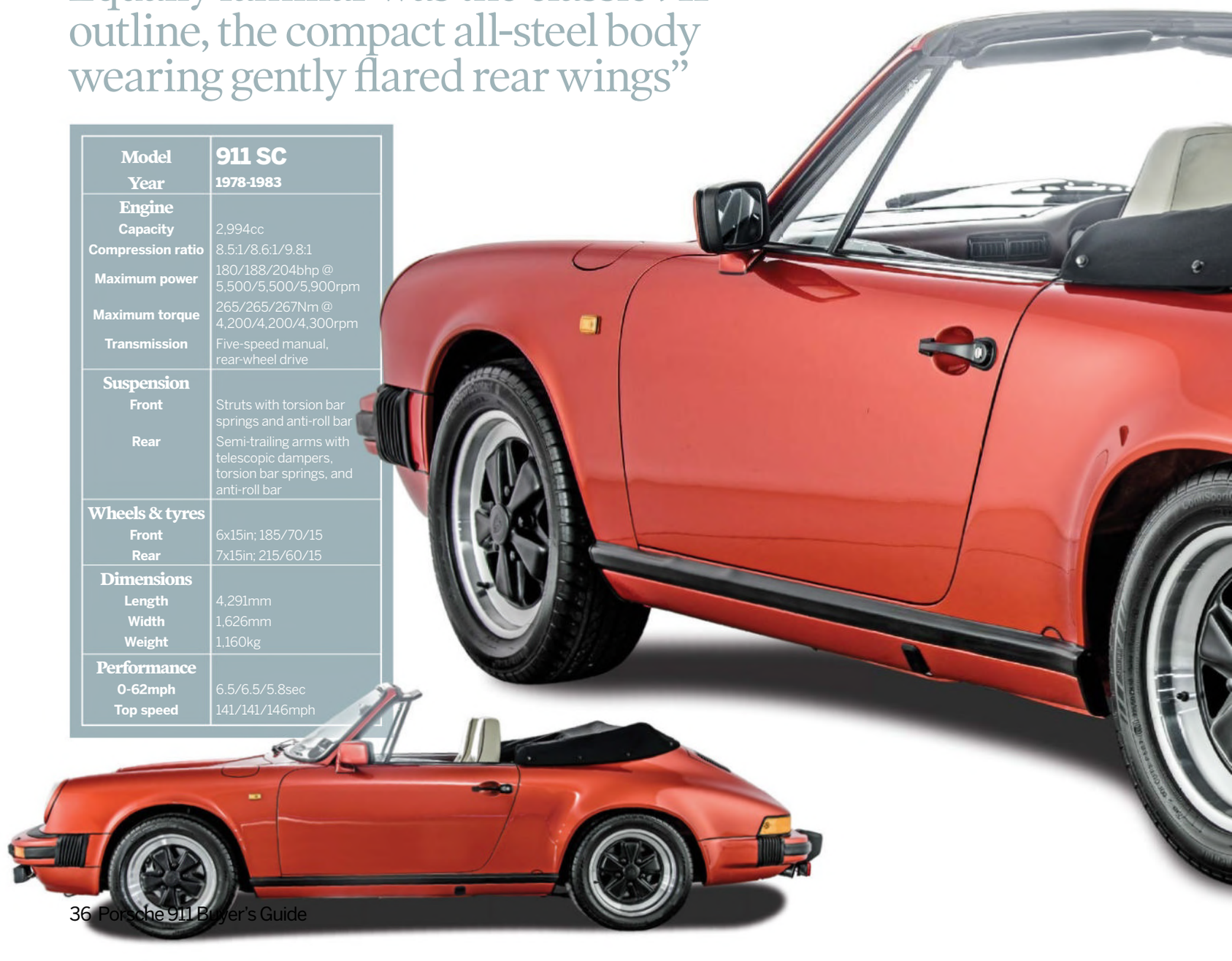


You don't need to spend long browsing the internet or flicking through the classic car publications to find commentators extolling the virtues of air-cooled 911s, and more specifically the early cars and the iconic 3.2 Carrera. They're not wrong, of course – both are sought after today – but there's one model that tends to get forgotten, and that's the car you see here. Between 1978 and 1983 the SC was the only normally aspirated 911 you could buy, its only company in the range being the legendary 3.3 Turbo. Therefore, if you wanted something less ballistic and less hardcore than the Turbo for use on a daily basis then it had to be the SC – and that's not a bad thing at all.

Not everyone was thrilled with the new arrival, though, and the main bone of contention was the power output. The outgoing 3.0-litre model had managed a useful 200 horsepower or so, while the SC arrived on the market with a 180-horsepower version of the flat six, and frankly that wasn't the sort of progress most 911 buyers were looking for. However, it would benefit from power boosts in the following years, so for now let's concentrate on that original powerplant. The 930/03 unit that could trace its lineage back to the awesome 930 Turbo was constructed around a light alloy crankcase and Nikasil bored cylinders that were fashioned from aluminium rather than magnesium, and was fitted with a forged-steel crankshaft with eight main bearings. The 2,994cc capacity came courtesy of a 95-millimetre bore and 70.4-millimetre stroke and there was a single overhead camshaft per bank that operated two valves per cylinder. Also new for the SC was a duplex chain for the camshaft drive with spring-loaded tensioners, although in an effort to improve reliability Porsche introduced a revised tensioner idler arm for 1980 – the hydraulic system adopted for the 3.2 Carrera would finally banish the problems for good. A dry sump system took care of lubrication and there was a tubular oil cooler while the company also took the opportunity to upgrade the ignition with a capacitive discharge system that did away with the contact breaker points. Fuelling was taken care of by Bosch K-Jetronic injection that Porsche commonly referred to as CIS, or Continuous Injection System. But while revised valve timing had released a little extra torque from the 3.0-litre unit – up by 10Nm to 265Nm for the new model – the company was coming under increasing pressure to improve the power output to more acceptable levels, and the first increase arrived for 1980. Minor tweaks, including

"Equally familiar was the classic 911 outline, the compact all-steel body wearing gently flared rear wings"

Model	911 SC
Year	1978-1983
Engine	
Capacity	2,994cc
Compression ratio	8.5:1/8.6:1/9.8:1
Maximum power	180/188/204bhp @ 5,500/5,500/5,900rpm
Maximum torque	265/265/267Nm @ 4,200/4,200/4,300rpm
Transmission	Five-speed manual, rear-wheel drive
Suspension	
Front	Struts with torsion bar springs and anti-roll bar
Rear	Semi-trailing arms with telescopic dampers, torsion bar springs, and anti-roll bar
Wheels & tyres	
Front	6x15in; 185/70/15
Rear	7x15in; 215/60/15
Dimensions	
Length	4,291mm
Width	1,626mm
Weight	1,160kg
Performance	
0-62mph	6.5/6.5/5.8sec
Top speed	141/141/146mph



Much of the SC's body was standard fare from the Carrera 3.0 it replaced, with 'flat backs' coming as standard. Late SCs were also available as the first ever 911 Cabriolet, as shown here

IMPACT BUMPER TIMELINE

1974
3.0 RS aside, the 2.7 is the first 911 to be fitted with the controversial impact bumpers, adopted to meet strict US safety regulations.

1976
With the Carrera name to denote the range-topping model, the 3.0-litre gets an engine derived from the mighty 930 Turbo.

1978
The only option if you want a normally aspirated model, the SC doesn't stray far from the standard recipe, although it does introduce the convertible to the 911 range.

1984
The 3.2 Carrera had numerous small revisions in its five-year life, including trim options, bigger Fuchs wheels and even a new gearbox.

1989
Something of a game-changer, the 964 ushers the 911 into a new era. Construction is all-new, with buyers offered power steering, ABS brakes and four-wheel drive for the first time.

"Not everyone was thrilled with the new arrival, though, and the main bone of contention was the power output"

a compression ratio raised from 8.5:1 to 8.6:1 and revisions to the ignition timing, liberated an extra eight horsepower. A year later and Porsche was at it again: with the compression ratio now upped to a significantly higher 9.8:1 and with revised valve timing, the SC produced a much healthier 204 horsepower. At the same time the Bosch injection was revised so that the cold start injector that now sprayed directly into the air intake rather than into the airbox, solving the problem of damaging backfires. In this more powerful incarnation, performance had improved markedly with a top speed of 146 miles per hour and a 0-60-miles-per-hour sprint time slashed from 6.5 seconds to a far brisker 5.8.

Whichever power output you ended up with, though, the SC sent drive to the rear wheels via the 915 five-speed manual transmission, which now benefited from a lighter and stronger aluminium casing and a longer fifth-gear ratio for more relaxed cruising. The stronger differential was donated by the Turbo and there was the option of a limited-slip unit with a 40 per cent locking ratio, while Porsche also took the opportunity to revise the clutch mechanism by fitting a clutch disc with a rubber damper at its centre. Intended to reduce vibration and chatter from the transmission, it wasn't entirely successful, as it had a tendency to disintegrate with expensive consequences, so it was replaced with a traditional steel-sprung item later on. And while we're on the subject of transmissions, buyers could still tick option M09 for the Sportomatic gearbox, although this increasingly unloved unit was dropped in 1979.

The rest of the running gear was pretty familiar 911 fare for the most part. Suspension was by telescopic dampers and torsion bar springs at all four corners, with semi-trailing arms at the rear and light alloy employed for various components, along with anti-roll bars front and rear in 20 and 18-millimetre diameters respectively. The rack-and-pinion steering was operated by a chunky three-spoke steering wheel of 380-millimetre diameter that was new for the SC, while the dual-circuit brakes featured ventilated discs at each corner that now benefited from the addition of a vacuum servo

Air vents were a notable addition to the SC's dashboard, while the trusted 915 gearbox remained between the front two seats. A greater variety of trim options were also available, though the Sport seats offered the most firm hold

for reduced pedal weight. Like the 3.0 Carrera that preceded it, the SC also used 15-inch alloy rims, pressure-cast items were wider at the front than at the rear with ATS cookie-cutter wheels a common fitment, although the classic 16-inch Fuchs would also prove incredibly popular.

Equally familiar was the classic 911 outline, the compact all-steel body wearing gently flared rear wings to accommodate the wider wheels and adopting the same impact bumpers as before, which were made from lightweight aluminium and incorporated shock absorbers that were designed to protect the bodywork in impacts of up to five miles per hour. The shell also benefited from a hot-dip galvanising process to arrest corrosion, along with a layer of Polymer underseal. Further reflecting the general conservatism of the period, other changes for the new model were of the detail variety rather than anything radical. Quartz halogen headlamps were standard with

BUYING TIPS

A relatively affordable air-cooled 911 it may be, but like any older model the condition is crucial if you're to avoid eye-watering restoration bills. With the youngest car over three decades old, it pays to be very careful before you commit – and a thorough check will be needed to ensure the car isn't rusting away well below the surface.

- **History:** An unloved example will be a money pit, so investigate its service history thoroughly. Poorly restored cars will be more trouble than they're worth.
- **Bodywork:** Despite the galvanised shell, there are plenty of places where corrosion can strike. Key areas include the front wings, the sills and kidney bowls, the 'B' pillars, and beneath screen rubbers. Don't take for granted that a car from a 'dry state' won't rust, either!
- **Engine:** Anything without a service history should be viewed with suspicion. Broken head studs can be an issue, and ask whether the timing tensioners have been changed or upgraded.
- **Running gear:** Suspension and brakes are straightforward and just need checking for condition. A complete overhaul will be pricey though, and make sure you're happy with any upgrades.
- **Interior:** Its simplicity makes checking the condition easy, but make sure any options such as air-conditioning and electric windows and sun roof are still working. Old wiring can cause problems too.

the option of washers, while the chrome exterior trim could be swapped for black instead, a subtler look that may have sat better with the typically '70s colour palette Porsche offered at the time. Choices including Continental orange, Apple green and Bitter chocolate. There were minor alterations in 1980 when the prominent headlamp washers were swapped for flush fitting items and the body gained a seven-year anti-corrosion warranty, while 1981 would see side repeaters added to the front wings – a good way of spotting a 204-horsepower model – and the option of the whaletail rear wing. Of the 60,000 or so SCs built, the Coupe would prove by far the most popular, especially in later 204-horsepower form with Porsche shifting over 16,000 examples – but buyers could also choose the popular Targa body style. With a matte black roll hoop and tinted rear glass it would account for just over 21,000 sales and proved that wind-in-the-hair motoring was as popular as ever with 911 devotees. It also made the introduction of the Cabriolet variant all the more significant. Announced at the 1982 Geneva Motor Show, it would be the first drop-top Porsche to be launched for the best part of 30 years – the 356 being the first – and prove an instant hit and an option that continues to this day. Based on the Targa body shell and fitted with the 204-horsepower engine, it featured a light alloy frame covered by a three-layer hood and a detachable plastic rear screen. Manually operated at first, the roof gained electric assistance later on. Just over 4,000 examples would be sold in total.

Things were just as familiar on the inside, with the evocative five-dial instrument pack, a slightly illogical scattering of switches, and the addition of a simple centre console that housed controls for the heater blower and temperature setting. The rear seating was trimmed in vinyl at first with cloth used later on, while most buyers would find themselves sitting on seats covered in typically period tartan cloth. The choice of the somewhat psychedelic Pascha trim would come later, as would a rather smart Berber tweed. There was a lengthy options list, and many cars would leave the production line equipped with niceties such as electric windows and sun roof, air-conditioning, cruise control, the aural wonders of a digital radio/cassette player, and front fog lights, which unfortunately appeared something of an afterthought.

There was the potential to make your 911 very much a luxury sports car, but we shouldn't lose sight of the fact that the SC was still a driver's car at heart. It retained all the traditional appeal of early models, and the air-cooled engine was an absolute gem. With 3.2 Carrera prices heading skyward, that makes one of these very desirable indeed. 911

"The choice of the psychedelic Pascha trim would come later, as would a smart Berber tweed"

SPECIALIST VIEW

"The SC – if you can find a good one – is a real gem of a classic 911. It's still considered a very underrated car and therefore has superb investment potential. The SC also welcomed an important addition to the 911 line-up by offering a Cabriolet model, which was the first convertible Porsche sportscar since the 356. Cabriolets like our example here were launched very late in the SC's life in 1982/83. It was very successful, selling over four thousand cars in the first year."

Jonathan Franklin, Hexagon

OWNING A 911 SC

- **Price new:** £12,600 (Coupe, 1978)
- **Numbers built:** Circa 60,000
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £178.96
- **Service costs major:** £716.48

(Figures are courtesy of RPM Technik)

"I'VE GOT ONE"

"How would I describe my Porsche 911 SC? Light, agile and fizzy. Fast, as well. I love my SC; it's a simple, hidden gem of a 911. I love that it punches above its weight, I love that it's still (just) under the experts' radar, and I love its 915 gearbox.

The revvy motor harks back to pre-impact bumper cars, yet the SC is tough enough for everyday use and enjoyment. It's the perfect classic 911."

Gina Purcell

3.2 Speedster

Get it for
£120,000-£150,000
$120,000-$195,000

Performance
★★☆☆☆

Maintenance costs
★★☆☆☆

Rarity
★★★★☆

Value
★★★☆☆

[illegible] (overprinted heading: 964 SPEEDSTER / THE SC …)

[illegible] here near as [illegible] interesting variants [illegible] could choose [illegible] spoiler [illegible] seats and [illegible] gas dampers and [illegible] More exciting [illegible] version of [illegible] were made with [illegible] the 3.0-litre [illegible] ratio and [illegible] the SC Ferry [illegible] the company's [illegible] grey [illegible] Fuchs wheels [illegible] car had [illegible] displayed on the headrests.

3.2 CARRERA SPEEDSTER

It's almost thirty years since Porsche first announced it was bringing back the Speedster name, this time to the fabled 911 range in 3.2 Carrera form, as we investigate

Written by **Chris Randall**
Photography by
Phil Steinhardt

There have always been ways for fresh air lovers to enjoy the delights of the 3.2 Carrera, the model available in Cabriolet and Targa forms right from the start of production. But in 1989 Porsche were to go a step further and revive the Speedster name for the 911.

It was earlier in the Eighties when then-CEO Peter Schutz quite fancied doing something a little different with the 911, one of the ideas being a sleeker kind of drop-top, but it took the skills of Technical Director Helmuth Bott to bring it to reality. The Speedster concept was displayed at the 1987 Frankfurt Motor Show, grabbing the attention of show-goers as soon as the covers were removed. Not all of the responses were positive but the impact was clear, and it went on sale in January 1989. It's worth noting that the original plan was to base the new model on the forthcoming 964, but production delays meant the Speedster acted as a useful shot in the arm for 3.2 Carrera sales. Production numbers vary depending on who you ask, but what is known is that a little over 2,000 examples rolled out of Zuffenhausen before production ceased in July of the same year, the vast majority featuring the Turbo-look bodywork that was standard for Germany and the US (just 171 cars were narrow bodied). 823 headed Stateside with 139 earmarked for the UK, and there was also the option to add the 'slant nose' front end although very few did. As for cost, the Speedster was listed at a substantial £11,000 more than a Carrera Cabriolet.

From the door mirrors downwards it was essentially standard 3.2 Carrera, but how it looked above that point that made the Speedster – option M503 in Porsche speak – stand out. The galvanised

"As for cost, the Speedster was listed at a substantial £11,000 more than a 3.2 Carrera Cabriolet"

Model	3.2 Carrera Speedster
Year	1989
Engine	
Capacity	3,164cc
Compression ratio	10.3:1
Maximum power	231bhp @ 5,900rpm
Maximum torque	284Nm @ 4,800rpm
Transmission	Five-speed manual, rear-wheel drive
Suspension	
Front	MacPherson strut with torsion bar springs and anti-roll bar
Rear	Semi-trailing arms with telescopic dampers, torsion bar springs, and anti-roll bar
Wheels & tyres	
Front	6x16-inch; 205/45/VR16
Rear	8x16-inch; 245/60/VR16
Dimensions	
Length	4,291mm
Width	1,775mm
Weight	1,220kg
Performance	
0-62mph	6.0 secs
Top speed	148mph

all-steel monocoque was from a Cabriolet body with no extra strengthening metalwork required, and the differences started with a shorter and more steeply raked windscreen, swept back by an extra five degrees and featuring a slim aluminium frame.

Theoretically it was removable too, although there was minimal chance of seeing one driven in such a fashion, the effect of wind in the face unlikely to be the look that most style-conscious owners were looking for. The quarter light windows had also disappeared, replaced with glass that disappeared into the doors courtesy of old-fashioned manual winders, and the shallowest of sun visors were fitted.

Above occupants' heads was a smaller, lighter fabric hood that was single-lined and intended very much for occasional use only and in fact would prove somewhat less effective than the usual luxurious soft-top when it came to water resistance, automated car washes being strictly out of bounds. Owners were said to have been asked to sign a disclaimer by Porsche agreeing to the new hood arrangement's limited ability to repel wind and moisture. Given that stowing and erecting the hood could be a slightly fiddly affair – especially in a downpour – it's easy to see why most didn't bother.

It's better instead to leave it stowed under the hinged glass-fibre cover that sat atop the rear deck, which, with its gentle twin humps, contributed greatly to the car's stand-out looks. That cover was secured with a typically neat solution though, requiring owners to apply a quarter turn to what appeared to be a window winder handle located at the base of the rear inner trim panel on the left-hand side. This released the main locking bar, and then it was just a matter of pulling a toggle (identical in appearance and located close to the one for releasing the engine cover) to release the single safety catch before pulling the cover back and upwards. The unique stowage arrangement also meant that the rear seats disappeared, replaced with a carpeted area that could contain a useful lockable storage box if buyers ticked the M419 option. Combined with the usual 130-litre luggage capacity in the nose, the Speedster retained more than a modicum of practicality. The driver and passenger sat on slightly altered pews too that were lowered by a few millimetres to release crucial extra headroom and used a standard, manually-adjustable base coupled to bolstered backrests.

As for the rest of the interior, it was thoroughly familiar to owners of the regular 3.2 Carrera with the Speedster benefitting from revisions that had sought to improve the standard model as the end of production loomed. The seats were trimmed in top quality hide, there was a leather-bound four-spoke steering wheel plus better audio systems. There was plenty of opportunity to ransack the options list, even if it did somewhat negate the claimed 70kg weight saving over the Coupe. Still, this was the '80s and there was no shortage of buyers.

Mechanically it was very much business as usual too. Beneath the spoiler-less engine lid was the 3,164cc unit that combined the 95mm cylinder barrels from the earlier 3.0-litre to the crankshaft from the 930 Turbo for a stroke of 74.4mm and, using forged pistons, the compression ratio was now a higher 10.3:1. The induction and exhaust systems had also come in for attention and with two-valves per cylinder and a single overhead camshaft per bank the result was a power output of 231bhp backed by a useful 284Nm of torque. Boasting 73bhp per litre, the result was a genuine 150mph machine. More significant for the 3.2 engine was the use of the latest Bosch LE-Jetronic injection system that was controlled – as was the ignition – by a Bosch Motronic 2 engine management system (termed Digital Motor Electronics). It was the first time that an ECU had been used in a production 911 and there were myriad benefits, chief among them being improvements to driveability and instant starting in any weather. Fuel consumption was improved compared to the SC as well. The bigger unit was also responsible for ridding the 911 of a well-known weak-point as the troublesome mechanical cam chain tensioners were swapped for a new system of hydraulic items fed by the engine's main oil system. Power was deployed via the much sweeter shifting Getrag G50 gearbox that had been introduced to the range in 1987 along with hydraulic operation for the clutch. All of this resulted in performance that was to all intents and purposes identical to other models in the range, although it's doubtful whether owners ever made full use of the 3.2's verve. This particular 911 was all about style after all and there were few finer - or indeed rarer - ways to soak up the sun.

And it was that temptation of fine weather cruising that likely meant drivers would never get to experience the much-improved handling offered by the Carrera. Certainly not in the wet anyway, although in all probability it was the thought of fiddling with that roof rather than on-limit oversteer that curtailed any temptation to exercise the Speedster in inclement conditions. Like the other models in the range it was underpinned by running gear that was essentially unchanged from that found beneath the SC, with suspension by MacPherson struts at the front and semi-trailing arms at the rear with torsion bar springs and anti-roll bars at both ends and unassisted rack and pinion steering that provided oodles of feedback at anything above walking pace. Stopping duties fell to servo assisted ventilated discs measuring 282mm and 290mm front and rear respectively, which proved ample given a modest kerb weight that hovered around 1,200kg. And like all later 3.2 Carereras, the Speedster rode on those iconic 16-inch Fuchs wheels.

The oily bits weren't going to spring any surprises then, but the looks? Well that was a different matter entirely. They certainly didn't appeal to everyone, and even the briefest survey of 911 enthusiasts would have found plenty of people quick to denounce the Speedster aesthetically, and indeed question its whole existence. But viewed through the prism of Porsche's current, muscular styling the Speedster manages to appear both delicate and purposeful in equal measure. Love it or hate it though it brought back an illustrious name and looks as striking today as it did almost three decades ago, and for many 911 enthusiasts that's something to be celebrated. 911

SPEEDSTER TIMELINE

1954
Porsche launch the first Speedster, based on the 356. Light and simple in design, it became an instant classic.

1987
The world gets its first look at the 3.2 Carrera Speedster, which was the first 911 version. It raised a few eyebrows at the Frankfurt Show, splitting opinions in the meantime.

1989
The 3.2 Speedster enters production in January. The wide body model proves the more popular, with just 171 'narrow' cars made.

1993
It's the turn of the 964 to get the Speedster treatment. Based on the Carrera 2, sales were lower than expected and less than 1,000 were made by Porsche.

2011
After skipping a couple of generations, the name and unique styling reappears on the 997. It was costly though with a price tag of £144,000.

964 C4

Teardrop mirrors were a more modern touch and contributed to the impressive aerodynamics

964 C4

Get it for
£25,000-£50,000
$37,500-£75,000

Performance
★★★☆☆

Maintenance costs
★★★☆☆

Rarity
★★☆☆☆

Value
★★★☆☆

> THE 964 CARRERA 4 WOULD MARK A NUMBER OF FIRSTS FOR THE ICONIC SPORTS CAR

The 964 was arguably the model that kick-started a significant modernisation process at Porsche, with a new body style and, for the first time, power to all four wheels...

Written by **Chris Randall** Photography by **Phil Steinhardt**

Specification

964 Carrera 4
(1989)

Engine
Capacity: 3,600cc air-cooled flat six
Compression ratio: 10.3:1
Maximum power: 250bhp @ 6,100rpm
Maximum torque: 310Nm @ 4,800rpm
Transmission: Five-speed manual, four-wheel drive

Suspension
Front: MacPherson strut with coil springs and antiroll bar
Rear: Semi-trailing arms with telescopic dampers; coil springs; antiroll bar

Wheels & tyres
Front: 6x16-inch Cup alloys, 205/55/16 tyres
Rear: 8x16-inch Cup alloys, 225/50/16 tyres

Dimensions
Length: 4,250mm
Width: 1,650mm
Weight: 1,450kg

Performance
0-60mph: 5.7 secs
Top speed: 162mph

Porsche didn't stray too far from familiar lines, but the smoothly profiled bumpers were one of the most notable changes for the 964 generation

In the last ultimate guide we turned the spotlight on the Carrera 3.2, but we also mentioned that a new generation of 911 was waiting in the wings. And here it is, the 964 in Carrera 4 form. Launched in late 1988 for the 1989 model year (and overlapping the end of 3.2 production), the Carrera 4 was still recognisably a 911 in outline, but it was also a model that was to mark a number of firsts for the iconic sports car.

We'll get to those later, but first that shape, which was all a bit, well, smoother. Topped and tailed by re-profiled polyurethane bumpers and with the addition of underbody trays, it was vastly more aerodynamic than previous iterations, the drag coefficient now standing at a creditable 0.32. You may have noticed another major change, as the dramatic whaletail spoiler had disappeared, to be replaced by a smaller and more discreet item that remained hidden in the engine cover until you hit 50mph. At that point it rose electrically to provide a modicum of downforce and feed more air to the engine's oil cooler. Considered by many observers to be more about the latter than the former, it dropped out of sight below 6mph, although it could be raised by pressing a button in the cabin to improve cooling in heavy traffic.

There were more significant sheet metal changes though, the 964 sitting on a new and much stiffer floorpan, the extra rigidity a by-product of the need to accommodate the 959-derived four-wheel drive system. Porsche opted for a torque tube arrangement, the beefy central tunnel it required improving crashworthiness, although a bonus was more efficient ducting for the ventilation system. Of perhaps less interest is the fact that it was also the first 911 to be fitted with plastic wheel arch liners.

But it was that four-wheel drive layout that caught the eye of Porsche enthusiasts and press alike, and for many it seemed like the answer to the 911's perceived handling shortcomings. Not everyone agreed, of course – too much of a safe setup for average drivers and prone to understeer were the main complaints from purists and motoring journalists – but it was certainly effective. Incorporating the snappily titled 'Porsche Dynamische Allrad Steuerung' (Porsche Dynamic All Wheel Control, or PDAS for short), the torque split was a nominal 31/69 per cent front-to-rear, although the electronically controlled multi-plate clutch could apportion drive to whichever axle had the most grip depending on the information it received from a variety of sensors. And if conditions were particularly slippery, a knob on the centre console could be used to lock the centre and rear differentials for maximum grip, with the system defaulting to automatic operation above 25mph.

The gearbox, although designated 'G64', was essentially a development of the previous 'G50' unit, with revised ratios and a centre differential incorporated at the front of the housing to send drive to the front axle. A redesigned luggage compartment made room for the front differential, the new layout also providing the driver with a shorter and more sporting gearlever.

Powering the 964 was effectively a brand new engine, the dry-sump 'M64/01' unit using a 100mm

CARRERA 4 TIMELINE

1989
The 964 generation goes on sale, initially available only in Coupe-bodied Carrera 4 form.

1990
The range is expanded with Targa and Cabriolet variants; a two-wheel-drive model also goes on sale.

1993
Production of the 964 ends, with almost 20,000 Carrera 4 models having been made.

1998
Porsche call time on air-cooling, launching the 996 in C2 and C4 forms. A wide-bodied C4S would arrive later.

2005
With Carrera 4 models firmly established in the 911 range, the 997 C4S gets a 3.8-litre engine with 355bhp.

2011
Porsche unveil the latest 991 generation. The Carrera 4 is available with a seven-speed manual or PDK automatic gearbox, and will hit 60mph in under five seconds.

SPECIALIST VIEW

"For many years the 964 was the unwanted 911 that sat between the last 'pure' and air-cooled 911s. Times have changed, and the 964 has finally received the credit it was due. Prices have increased dramatically over the last two years, with Carrera 2 Coupes leading the charge. The 964 and in particular the Carrera 4 is in many people's minds the first of the daily driveable 911s with a sensible heating system, power steering, ABS brakes and a competent chassis. I would certainly consider a C4 over a C2 if I wanted a car to run all year. Coupes are the most valued, the Cabriolet has a good following and even the Targa, the least popular variant, is finding a market. Values start at £15,000, but good 964s can hit high £20s or low £30s."

Darren Anderson, RPM Technik

bore and 76.4mm stroke for a capacity of 3.6 litres and a 250bhp power output. Still air-cooled, the block casting was all-new, as were the crankshaft and connecting rods, while revised cylinder heads (with ceramic-lined exhaust ports, but not the sodium-filled exhaust valves of previous generations) and dished pistons allowed for a 10.3:1 compression ratio.

Coping with the greater power was an improved cooling system that had separate belts for the alternator and fan (allowing the latter to turn faster) and a nose-mounted oil cooler with pipes through the right-hand sill. There was a new design of induction system with Bosch DME engine management, while efficiency was improved by an ignition system that used two spark plugs per cylinder and dual distributors, a primary one driven by the crankshaft that powered the second via a toothed rubber belt. It was an effective setup, albeit one that proved slightly troublesome in earlier incarnations, as a build-up of ozone within the distributors ate away at the rubber belt,

The trademark fixed rear spoiler disappeared on the 964, replaced by this pop-up item that helped with engine cooling

Still recognisably a 911 from this angle, many thought it harked back to the purer lines of the earliest models

causing failure, plus engine damage if you were unlucky. A plastic vent pipe was added in 1993 to fix the problem, and is often retro-fitted to older cars. Unfortunately, the new engine also gained a reputation for leaking oil, although a redesign for 1991 addressed the issue when sealing rings were added, along with steel cylinder head studs.

Embracing the spirit of modernisation, Porsche also took the opportunity to equip the 964 with another innovation that would go on to prove a headache for some owners in the form of a dual-mass flywheel (DMF). The very earliest models made do with a conventional solid flywheel, but from late 1989 a DMF made by Freudenburg was fitted, which had an unfortunate habit of disintegrating. 1993 models got a more reliable LUK unit, and it's a popular modification on early cars. So there was a new engine and driveline, but previous 911 owners expecting more of the same were in for a shock. This was a 911 for a new generation of buyers, which meant sweeping changes for just about every aspect of a car that had endured pretty much unchanged in philosophy for a quarter of a century.

First to go was the old suspension layout with its compact torsion bars, replaced with a setup using MacPherson struts and coil springs. The front wishbones and rear semi-trailing arms were now made of light alloy, and the geometry at both ends was altered, new rubber bushes at the rear enabling a degree of passive rear-wheel steering. Only a front ride height deemed high gave cause for complaint.

Also new was hydraulic assistance for the rack and pinion steering, while the brakes were to come in for attention. The ventilated discs were gripped by four-piston aluminium calipers assisted on the Carrera 4 by a high-pressure hydraulic booster system that operated at around 2,600psi, but the biggest addition was anti-lock brakes. The three-channel Bosch system banished the threat of front-wheel lock-up, while the ABS sensors were used to feed information on wheel slippage to the four-wheel-drive electronics. The Carrera 4 rode on 16-inch 'Design 90' alloy wheels as standard, with the 17-inch 'Cup 1' design added in 1992.

If these new developments were too much to take in, 911 devotees could seek solace in a familiar cabin. Here, Porsche didn't stray far from

There was nothing to overtly shock the 911 faithful inside the 964 Carrera 4, though there were plenty of new warning lights. A redesigned centre console housed controls for the ventilation and differential locks

30TH ANNIVERSARY CARRERA

With few notable additions to the Carrera 4 range during production, one that is worthy of mention is the model built to celebrate the 30th anniversary of the 911. Just 911 examples were planned with the Coupe body, wider Turbo rear wings and standard retractable spoiler. Colours were limited to viola and the lavish specification included full leather trim, airbags and air conditioning as standard. An interior plaque, underlined '911' script on the engine cover and logo embossed in the carpet of the rear seats completed the look.

High-quality piped leather adorned many a 964. Those chunky seat bolsters came in handy, as the C4 generated plenty of grip in dry conditions

BUYING TIPS

Once underrated, the 964 now has a loyal following, but like any older 911 it is one to buy with a degree of caution. Righting a bad one can be a wallet-stripping experience, so it definitely pays to obtain the best example you can from the outset.

- **History:** Plenty of scruffy examples with patchy service histories exist, which should be avoided at all costs. Get any potential purchase inspected.
- **Corrosion:** They do rust, but it's not a massive issue. A badly fitted or sealed windscreen can cause rot around the scuttle, and check the front wings above the bumper.
- **Engines:** A major rebuild won't be cheap, so ask about any work that's been done. Oil leaks from corroded tanks and lines, as well as DMF issues, need watching for.
- **Electrics:** Check it all works, especially the heater. No ABS warning light can mean a failed pump, while damaged rear light units are almost £800 a pair.
- **Suspension:** Perished bushes will affect the handling, so budget for an overhaul if there's no evidence of recent work. Porsche items are unavailable (and new suspension arms are costly), so go aftermarket.

the established recipe, and drivers still had the classic five-dial instrument pack, although the oil temperature/pressure dial now incorporated an impressive display of warning lights. All of the usual labour-saving gadgets were standard, while most of the interior surfaces were swathed in high-quality leather. Porsche's options programme also provided owners with plenty of opportunity to experiment with different trim, although not all colour combinations could be considered tasteful, and it's debatable whether wood would ever suit the 911's dashboard. What did appeal to many buyers, though, was the adoption of a new electronically controlled heating and ventilation system with controls that could be fathomed without recourse to the manual and actually worked. In another first, front airbags would become standard on UK cars from 1993, the one for the driver encased in a somewhat bulky and unattractive steering wheel.

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So there was a new engine and driveline, but previous 911 owners expecting more of the same were in for a shock. This was a 911 for a new generation of buyers, which meant sweeping changes for just about every aspect of a car that had endured pretty much unchanged in philosophy for a quarter of a century. First to go was the old suspension layout with its compact torsion bars, replaced with a setup using MacPherson struts and coil springs. The front wishbones and rear semi-trailing arms were now made of light alloy, and the geometry at both ends was altered, new rubber bushes at the rear enabling a degree of passive rear-wheel steering. Only a front ride height deemed oddly high provided cause for complaint.

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If these new developments were too much to take in, 911 devotees could seek solace in a familiar cabin. Here, Porsche didn't stray far from the established recipe, and drivers still had the classic five-dial instrument pack, although the oil temperature/pressure dial now incorporated an impressive display of warning lights. All of the usual labour-saving gadgets were standard, while most of the interior surfaces were swathed in high-quality leather. Porsche's options programme also provided owners with plenty of opportunity to experiment with different trim, although not all colour combinations could be considered tasteful, and it's debatable whether wood would ever suit the 911's dashboard. What did appeal to many buyers, though, was the adoption of a new electronically controlled heating and ventilation system with controls that could be fathomed without recourse to the manual and actually worked.

In another first, front airbags would become standard on UK cars from 1993, the one for the driver encased in a somewhat bulky and unattractive steering wheel. It's no surprise that

OWNING A 964 CARRERA 4

- **Price:** £47,699 (1989 Coupe)
- **Total numbers sold:** 19,484 (all body styles)
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £420
- **Service costs major:** £510, including fuel filter and brake fluid change

(Figures courtesy of Northway Porsche, Reading)

Coupe models made up the bulk of the sales, but Targa and Cabriolet derivatives arrived in 1990, the latter fitted as standard with an electrically operated cloth hood, and a number of examples also sported the wider rear bodywork of the later Turbo. The body styles may have been familiar then, but make no mistake: the 964 was a significant car for Porsche, forming a stepping stone between the traditional approach of the Carrera 3.2 and the brave new world that would culminate in the techno-fest of the 991 generation. It may have seemed like all-change, but there were even more exciting times ahead. 911

"I'VE GOT ONE"

"Bought during the 964's unpopular period, nobody wanted an 'oil-leaking, understeering ugly duckling', but I always saw its potential. For me, the C4 was the perfect choice, as it's the only original shape, all-weather 911. It was easily transformed into an inspiring driving machine, and with the engine rebuilt and body restored, I have many years of driving pleasure ahead."

Gina Purcell

993 CARRERA

The 993 utilised the 'teardrop' wing mirrors, left over from late 964 models

993 Carrera

Get it for
£35,00-£50,000
$52,500-$75,000

Performance
★★★☆☆

Maintenance costs
★★★☆☆

Rarity
★★☆☆☆

Value
★★★☆☆

> THE 993 UTILISED THE 3.6-LITRE FLAT-SIX M64 ENGINE, ALTHOUGH IT HAD WIDE-RANGING CHANGES

For many, the final air-cooled generation represents key mechanical and aesthetical advancements while providing the last form of a pure 911 driving experience

Written by **Chris Randall** Photography by **Phil Steinhardt**

Model Year	993 Carrera (1996 – VarioRam)
Engine	
Capacity	3,600cc air-cooled flat six
Compression ratio	11.3:1
Maximum power	285bhp @ 6,100rpm
Maximum torque	340Nm @ 5,250rpm
Transmission	Six-speed manual or four-speed Tiptronic; rear-wheel drive
Suspension	
Front	MacPherson strut; coil springs and antiroll bar
Rear	Multi-link with telescopic dampers; coil springs and antiroll bar
Wheels & tyres	
Front	7x17-inch alloys; 205/50/17 tyres
Rear	9x17-inch alloys; 255/40/17 tyres
Dimensions	
Length	4,245mm
Width	1,735mm
Weight	1,370kg
Performance	
0-62mph	5.3 secs
Top speed	168 mph

Headlights were the main change over the 964's design, which were raked back considerably on the 993

As production of the 964 generation drew to a close, it appeared that sales were beginning to falter, and Porsche knew that major improvements were going to be needed if the 911 was to keep its place at the top table of fine sports cars.

Step forward the 993, styled by British designer Tony Hatter, which appeared in 1993. The outline was reckoned to be more reminiscent of earlier 911s, with a simpler shape and fared-in headlights that were more effective than those found on the 964 (they were also the first to use the handy system of release levers in the luggage compartment for easy bulb changes), along with wider rear wings that covered the broader track required by the new suspension design. According to Porsche, the new body shell was some 80 per cent new compared to the outgoing 964 and 20 per cent stiffer in Coupe form, and with smoother bumpers, underbody cladding and other clever air-management tweaks. The aerodynamics were improved, too. The retractable rear spoiler was retained, popping up at 50mph and disappearing into the engine cover at 35mph. Only the roof and bonnet had been carried over from its predecessor, while the galvanised shell benefitted from a ten-year anti-corrosion warranty, and there were water-based paints to boost its environmental credentials.

The 993 utilised the 3.6-litre flat-six M64 engine, though once again it had received wide-ranging changes over the unit found beneath the 964's engine lid. A stronger, stiffer crankshaft (which negated the need for a separate crankshaft damper) was joined to the thinner and lighter pistons by lightened connecting rods, and revised chain-driven camshafts operated the two valves per cylinder via hydraulic adjusters. The oil flow within the engine was improved for better lubrication, and there was also a redesigned exhaust system that liberated a few more units of horsepower over the 964, while the Bosch Motronic 2.1 system took care of engine management duties. Putting out a healthy 272bhp (22bhp more than the M64 used in the 964) in standard form, power was boosted further to 285bhp for the 1996 model year Carrera thanks to the introduction of VarioRam, which was first used on the 300bhp 993 RS in the preceding year.

This induction system used variable-length intakes to boost power and mid-range torque thanks to larger intake and exhaust valves, and worked by effectively altering the length of the inlet pipes depending on the engine speed. Below 5,000rpm, the intakes were around twice the length of non-VarioRam engines, but as the engine speed rose, vacuum-operated sleeves shortened the pipes for better high-speed breathing. This also ensured a small increase in overall torque developed 250rpm higher up the rev range. VarioRam was an effective system that provided a notable step-up in performance, and can be distinguished by the aluminium inlet pipework on top of the

993 TIMELINE

1993
The 993 is launched in two-wheel drive Coupe form, boasting 272bhp from its 3.6-litre engine and an impressive new rear suspension layout.

1994
The range expands to encompass four-wheel drive (C4) and Cabriolet variants, the latter with a fabric roof and plastic rear window.

1995
A busy year for the 993 saw the introduction of the lightened 300bhp RS, the awesome Turbo and GT2 with 408 and 450bhp respectively, as well as the Targa and 4S.

1996
'96 saw the popular VarioRam engines being introduced, which boosted mid-range torque. A telltale sign was an alloy manifold instead of plastic.

1997
Porsche announced the end of 993 Carrera production due to emissions. The Turbo and 4S models ended in 1998.

SPECIALIST VIEW

"The 993 has always been popular with the market, as it is such a pretty 911. We find that the typical customer for a 993 wants an example with superb history and must be in top order to really accentuate the looks. The new 991 Targa is in the news currently, but for the 993 the Targa model is not seen as the entry point in the model range, unlike other 911 variants, but more in line with Coupes and Cabriolets. They provide a driving experience which gives Coupe levels of comfort, but with a cabin that has that airy feel both with the Targa roof open and closed. The main problems we see with them are creaks and condensation due to the nature of how the Targa was designed. Porsche only made around 4,500 worldwide, so while not being super rare, the Targa is exclusive enough to see prices holding firm and even rising in coming years."

Greig Daly, RPM Technik

The retractable rear wing rose at speeds of over 50mph

> NOT ONLY WAS THE NEW VERSION OF THE M64 ENGINE MORE EFFICIENT AND FREE-REVVING, IT ALSO MADE GREATER USE OF LIGHTWEIGHT MATERIALS IN ITS CONSTRUCTION

engine, the lower-powered unit making do with a smaller set of black pipes.

Not only was the new version of the M64 engine more efficient and freer-revving, it also made greater use of lightweight materials in its construction. Magnesium alloy was employed for components like the cooling fan and timing chain housings, with plastic used for the inlet manifold and various bits of ducting. Power was channelled via a six-speed manual gearbox – lighter than the five-speeder in the 964 and with reduced shift effort thanks to double-cone synchromesh, and using an updated version of the dual-mass flywheel – or a four-speed Tiptronic automatic that featured revised control software for smoother gearshifts. Available on two-wheel drive models only, it still wasn't perfect, but did at least answer some of the criticisms levelled at the previous unit, and now featured the option of shifting via the gearlever or steering wheel-mounted buttons.

Fans of the previous C4 model had to wait until August 1994, when a thoroughly revised four-wheel-drive system was added to the 993, Porsche boasting of a setup that weighed little more than half that of the 964's arrangement. The centre differential was replaced by a viscous coupling to apportion torque between front and rear axles and the C4 featured Porsche's 'Automatic Brake Differential' (ABD). Using signals from the anti-lock brake sensors, ABD was able to detect a loss of traction and apply the brakes to a spinning wheel, diverting torque to the wheel with the most grip. It was mightily effective, and did much to reinforce the 993's credentials as a true all-weather sports car.

Inside, the 993 felt very similar to the 964, with a driver position sitting almost on top of a steeply raked windscreen. Manual transmission came with six forward gears, while four-speed Tiptronic examples, as seen here, had a manual override function via the gear stick or steering wheel

993 TARGA

The Targa isn't a model that everyone is attracted to, but it is an interesting variant nonetheless and deserves consideration if a modicum of fresh-air motoring is required. As long as the seals are in good condition and the roof closes properly, there shouldn't be too many problems with the rattles or water leaks that are believed to afflict the model. Keeping the seals clean and using a silicone lubricant will go a long way to ensuring it works reliably, though as a used buy it is worth checking that everything works smoothly. Wear in the motors or stretched cables can lead to slipping or jamming, and there are also micro-switches that can give up the ghost. It's also worth ensuring that the sunblind isn't torn.

The 993 was the first Targa to utilise a sliding glass roof design, though it meant a weight increase of 30kg over the Coupe

A disc holder sat between the two front seats, themselves electrically adjustable and trimmed in an abundance of luxury leather as perhaps the last example of classic German over-engineering on the 911. Larger sports seats were available as an option

However, one thing that really set the 993 apart from earlier offerings was the new rear suspension design that did away with the semi-trailing arms that had served the 911 for so long. In their place was a multi-link arrangement that Porsche dubbed 'LSA' (lightweight-stable-agile) and resembled a double wishbone layout. Influenced by the 'Weissach' axle utilised so successfully by the 928, it was mounted on a cast alloy subframe that was attached to the body by rubber mounts. The new setup lessened squat and dive under acceleration and braking, reduced camber changes for greater stability and provided a degree of toe-in that all but eliminated the lift-off oversteer that lurked at the edges of the 964's handling envelope.

Besides subtle revisions to the geometry things were also lightened at the front, which retained the familiar MacPherson struts, and there were antiroll bars and gas dampers at both ends. Buyers who ticked the 'M033' option box got firmer springs and dampers and suspension lowered by 10mm at the front and 20mm at the rear, a setup that was standard on the C4S that arrived in 1995 sporting Turbo-style bodywork draped over standard Carrera engines.

Hydraulically assisted steering remained, and braking was taken care of by larger ventilated discs backed by Bosch ABS, although C4S models got the larger cross-drilled discs from the Turbo, along with red-painted four-piston calipers. Launch Carreras rode on 16-inch alloy wheels as standard – five-spoke Design 93 items – although plenty of owners chose to upgrade to the 17-inch and 18-inch items on offer.

Another area where 993 owners benefitted was the cabin. Even by Porsche standards the build quality was excellent – something that was widely remarked on by owners and motoring journalists alike – and there was a richness to the materials that fully justified the lofty price tag. Leather upholstery was standard, and the seats came with electric adjustment, while many owners added the optional seat heaters. They would also have been impressed by the revised electronic heating and ventilation system that boasted a better level of control – a real plus for those used to struggling with the recalcitrant system fitted to older 911s – and a pollen filter as standard. And if the standard Blaupunkt hi-fi was found lacking, the acoustic enjoyment could be boosted by the addition of an optional CD changer that slotted into the luggage compartment or a powerful ten-speaker setup. Buyers needn't have stopped there either, as there was always the temptation of Porsche's 'Exclusive' catalogue waiting to empty the bank account, although the result could well be divisive

BUYING TIPS

993 build quality was very good at the time, but any 911 that is heading for its 20th birthday is going to need careful checking. Don't underestimate the cost of sorting seemingly minor issues.

- **Bodywork:** Stone-chipping around the nose can be an issue, along with rotten bumper mountings and problems with the door check straps. Major refurbishment will be costly.
- **Windscreen:** Although bonded in place on the 993, these have been known to creak or vibrate if the silicon is corroded, particularly if the windscreen has already been replaced. Glasstec have a faultless reputation for 993 windscreen replacement.
- **Engines:** An unimpeachable service record will put your mind at rest. Neglected cars aren't worth the risk – find another one if the history is patchy.
- **Suspension:** Setting the geometry requires specialist tools, so check for uneven tyre wear. A complete refurb can be well into four figures, so get an inspection if you're not sure.
- **Brakes:** Sticking brake pads can be caused by a corroded steel section within the alloy Brembo calipers, and it's worth checking the discs for scoring.

> **ANOTHER AREA WHERE 993 OWNERS BENEFITTED WAS THE CABIN. EVEN BY PORSCHE STANDARDS THE BUILD QUALITY WAS EXCELLENT**

OWNING A 993

- **Price:** £64,350 (when new)
- **Total numbers sold:** 75,839
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £390
- **Service costs major:** £720

(Figures here are courtesy of Porsche Centre Reading)

colour and trim combinations (which could have a negative effect on used values).

The majority of the 993 range bowed out towards the end of 1997, with EU noise and emissions regulations being to blame, although a few models, including the Turbo, continued into the following year. The 993 was to be the last air-cooled model before the advent of the 996, as Porsche knew that water-cooling was going to be needed if the 911 was to survive the more stringent emissions legislation looming on the horizon. It was the end of an era, and one that continues to divide Porsche enthusiasts to this day. *911*

"I'VE HAD ONE"

"My 993 was gorgeous: so moulded and sleek, and that rear end was a masterpiece to look at. The interior was something that really did it for me – with all the mod cons and good heaters, it was a godsend compared to the heating units in my older 911 SC.

The drive was very smooth, and a vast improvement over old. The power delivery was lovely and smooth, too – it was progressive, though still a fast car.

My 993 was a Tiptronic, a somewhat dirty word when first introduced to the 911, but it allowed me to sit back and enjoy the ride. Pulling away in second was an issue, but the rest of the car was great."

Vinny Canakiah

WATER-COOLED


GT3
GT 2
ET03 OPF

996 Carrera

Get it for
£8,000-£17,000
$12,000-$25,500

Performance
★★★☆☆

Maintenance costs
★★★☆☆

Rarity
★★☆☆☆

Value
★★★★★

THE GEN2 996

With some of the brouhaha surrounding the water-cooled 996 having died down, it was time for a round of updates. The Gen2 model arrived in 2001, with the biggest difference being the adoption of a 3.6-litre motor boasting more power and torque, as well as Variocam Plus that operated on both inlet and exhaust camshafts. Considered less prone to failure than the earlier 3.4, it provided a useful step up in response and performance despite an overall weight gain of around 25kg. The looks came in for some subtle tweaks too, with re-profiled bumpers and the use of Turbo-style headlamps with clear rather than orange indicators. The covers for the front and rear compartments got electric releases rather than cables, while the Cabriolet would see the plastic rear window replaced with heated glass. 2002 model year cars also benefitted from cabin improvements in the form of an opening glovebox lid and cupholders, while the ventilation system and cabin plastics were improved. New engine aside, the changes were modest but effective, and kept the car fresh until the arrival of the 997 in 2005.

996 CARRERA

Representing a seismic shift in the 911's evolution upon release, the Gen1 996 Carrera is now a vastly accessible Porsche purchase – but there's much to look out for when searching for the perfect example, as **Total 911** investigates...

Written by **Chris Randall** Photography by **Phil Steinhardt**

After its launch at the 1997 Frankfurt Show, the new 996 left sections of the 911 faithful underwhelmed with the new direction Porsche had decided to take with the car. The design was the work of Pinky Lai and Harm Lagaay, and was in itself a marked change of direction for the evergreen sports car, following on as it did from the more classic proportions of the 993.

Firstly, it had grown in size over the outgoing model, carrying an additional 185mm in length and 30mm in width, although it was 50 kilograms lighter than the 993, weighing in at 1,320 kilograms in Carrera 2 form. It was also 45 per cent stiffer and more aerodynamic, boasting a drag coefficient of just 0.30. In fact, it was a good deal smoother than its predecessor, with a windscreen now raked at 55 degrees rather than 60, and a sleeker nose cone incorporating what would become known colloquially as 'runny egg' headlamps.

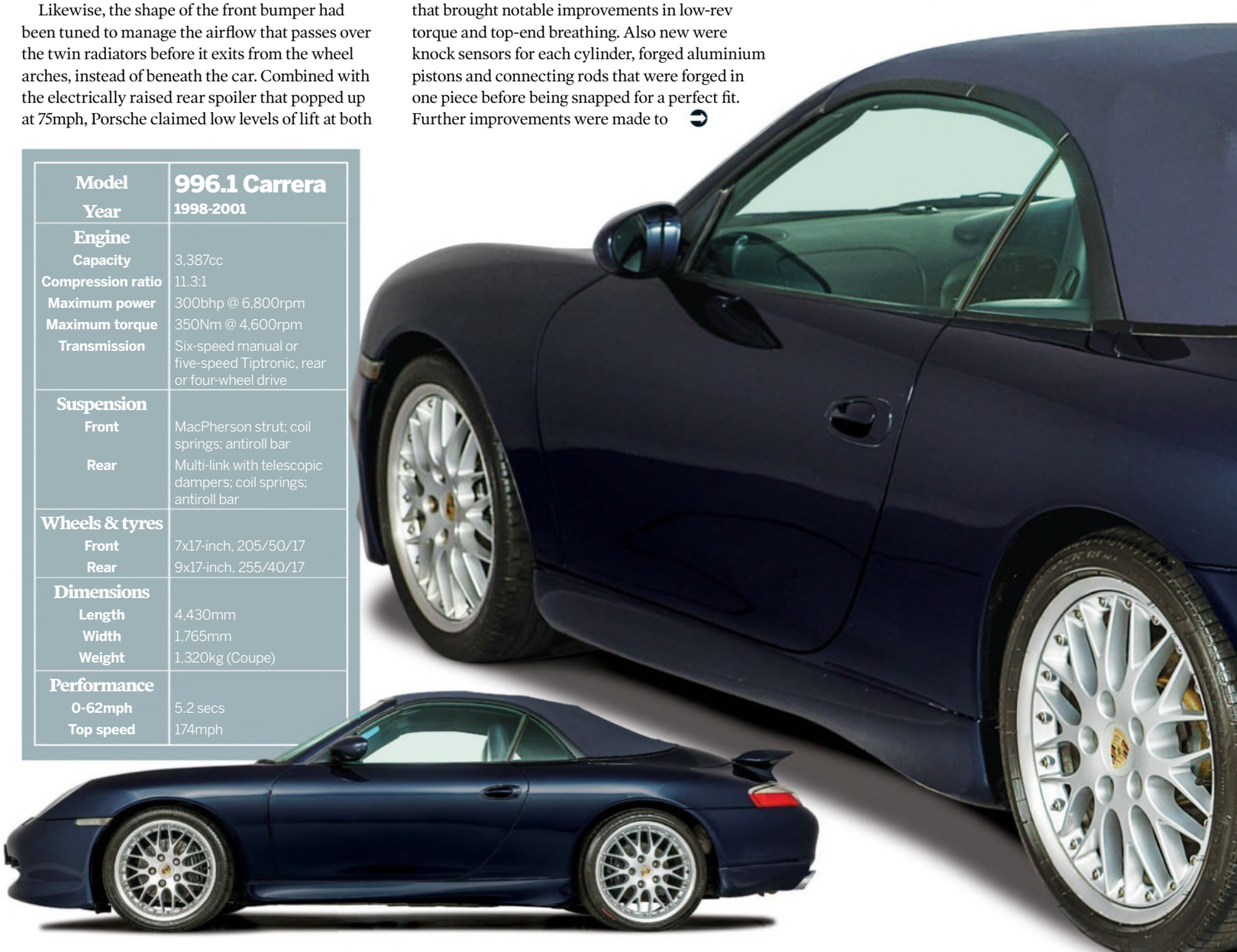
Likewise, the shape of the front bumper had been tuned to manage the airflow that passes over the twin radiators before it exits from the wheel arches, instead of beneath the car. Combined with the electrically raised rear spoiler that popped up at 75mph, Porsche claimed low levels of lift at both axles. However, with an increase in size and an ever-luxurious interior, some were worried that their favourite sports car was morphing into more of a long-distance GT, but it was the new engine that was to cause the most angst.

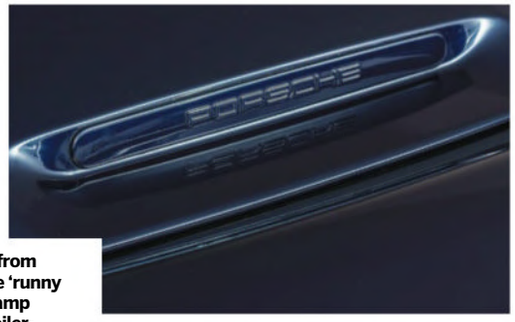
In a move considered sacrilege by many, the M96 3.4-litre flat six was now cooled by water rather than air, a development necessitated by the need to meet ever more stringent emissions and drive-by noise regulations. Porsche had no choice if the 911 was to continue to flourish, and they took the opportunity to update the powerplant, which in Gen1 form managed a useful 300bhp.

The four valves per cylinder used hydraulic lifters and were operated by chain-driven camshafts. There was VarioCam variable valve timing for the inlet camshafts, and a two-stage resonant inlet manifold was employed. The latter was fitted with a butterfly valve controlled by the Motronic engine management – an arrangement that brought notable improvements in low-rev torque and top-end breathing. Also new were knock sensors for each cylinder, forged aluminium pistons and connecting rods that were forged in one piece before being snapped for a perfect fit. Further improvements were made to

> **IN A MOVE CONSIDERED SACRILEGE BY MANY, THE M96 3.4-LITRE FLAT SIX WAS NOW COOLED BY WATER RATHER THAN AIR, A DEVELOPMENT NECESSITATED BY THE NEED TO MEET EVER MORE STRINGENT EMISSIONS AND DRIVE-BY NOISE REGULATIONS**

Model Year	996.1 Carrera 1998-2001
Engine	
Capacity	3,387cc
Compression ratio	11.3:1
Maximum power	300bhp @ 6,800rpm
Maximum torque	350Nm @ 4,600rpm
Transmission	Six-speed manual or five-speed Tiptronic, rear or four-wheel drive
Suspension	
Front	MacPherson strut; coil springs; antiroll bar
Rear	Multi-link with telescopic dampers; coil springs; antiroll bar
Wheels & tyres	
Front	7x17-inch, 205/50/17
Rear	9x17-inch, 255/40/17
Dimensions	
Length	4,430mm
Width	1,765mm
Weight	1,320kg (Coupe)
Performance	
0-62mph	5.2 secs
Top speed	174mph





Clockwise from top left: the 'runny egg' headlamp design; spoiler-mounted brake lights; fixed aerokit spoiler option; the famous rear badge

CARRERA TIMELINE

1973
The Carrera badge appears for the first time on the 911, at the time denoting the top-of-the-range Rennsport model.

1984
The SC, which replaced the Carrera 2.7 and 3.0, makes way for the 3.2 Carrera, its electronically managed flat six pushing out a healthy 231bhp.

1989
The arrival of the 964 heralds a major overhaul for the 911, and the Carrera is the first model to benefit from four-wheel drive.

1993
As the last of the air-cooled cars, the 993 Carrera is guaranteed a place in Porsche history. It's also the first model to carry Carrera S badging.

1998
Water-cooling arrives courtesy of the 996. Not everyone is convinced and engine problems are a concern, but it's a great entry-level 911 now.

2005
Many consider the 997 Carrera to be a return to form. Styling is less slippery than on the 996, although the M97 engine is similar to the M96.

2012
The 991-model Carrera and Carrera S arrive, the 3.8-litre DFI engine showing how far things have come for the model.

A big change for the 996 was the redesigned interior. Climate controls were sited in the centre console, while many owners took advantage of the lengthy options list; Tiptronic automatic was a popular choice, Porsche claiming manual shifts in 0.2 seconds. The 996 boasted plenty of safety kit, including a full suite of airbags

the lubrication system, an integrated dry-sump arrangement that saw oil lines cast directly into the block and heads that avoided the likelihood of leaky external pipework. Porsche also fitted twin catalytic convertors that used metal rather than ceramic internals, which they deemed more efficient.

Much has already been written about this engine's apparent propensity to explosively self-destruct, but there was no doubting the technical advances that were made. Once again, a dual-mass flywheel was bolted to the crankshaft and helped feed drive to a choice of transmissions. The manual was a six-speed unit that had been beefed up with double-cone synchromesh and a cable-operated shift, while those after a more relaxing experience could opt for the five-speed 'Tiptronic' automatic. Left in 'Drive', it was capable of smooth and responsive gear changes, but for more control it needed the lever nudging left into manual mode, where you could use the wheel-mounted buttons.

Porsche claimed that shifts were achieved in just 0.2 seconds – rapid at the time, but a world away from the millisecond response of today's PDK units. The Carrera 4 that arrived in 1999 used a viscous coupled four-wheel-drive setup that incorporated Porsche's 'Automatic Brake Differential' system as well as 'Porsche Stability Management' (PSM, which became an option for the C2 at the same time). Just five per cent of drive was sent to the front wheels in normal running, although up to 40 per cent of power could be shuffled forwards if slip was detected. Choosing the C4 brought few penalties; overall weight rose by 55 kilograms, weight distribution was now 40/60 compared to 38/62 for the C2, and the front luggage compartment shrank slightly, requiring the fitment of a deflated spare.

Just as much attention had been paid to the rest of the running gear, the 996 being fitted with an aluminium-rich MacPherson strut front suspension and a multi-link arrangement mounted on a separate alloy subframe. The latter was dubbed the 'Lightweight-Stable-Agile' system, but whatever the acronym it certainly contributed to the confidence-inspiring handling. The 996 stopped well too, courtesy of larger cross-drilled and ventilated discs squeezed by four-piston Monobloc calipers (black on C2s, silver on C4s), backed by the Bosch 5.3 ABS. The hydraulic power steering required just 2.98 turns between locks, while the cast-alloy wheels were 17 inches as standard, although many buyers were enticed by the optional 18s.

Extensive changes were also wrought on the inside, where the previously haphazard control layout was replaced with something more befitting the 911's position among the sports car elite. The distinctive five-dial instrument pack was still present and correct, the tachometer still dead ahead and now incorporating a digital speed readout, but controls for the hi-fi and climate control were now logically grouped in a new centre console.

> MUCH HAS BEEN WRITTEN ABOUT THIS ENGINE'S APPARENT PROPENSITY TO EXPLOSIVELY SELF-DESTRUCT, BUT THERE WAS NO DOUBTING THE TECHNICAL ADVANCES THAT WERE MADE

BUYING TIPS

A 911 of this type needs to be in nothing short of perfect condition, and signs that it might not have received anything approaching fastidious care should have you running a mile. The cost of sorting a bad one is likely to prove stratospheric, so you have been warned.

- **Bodywork:** Rust shouldn't be an issue, and is likely to result from poorly repaired accident damage. Stone-chipping is common though, and watch for damage to bumpers and condensation inside light units.
- **Engine:** The 3.4-litre engine is much maligned, but serious issues will likely have occurred by now. It's worth checking the history for evidence of major work, but a specialist inspection is best to search for symptoms of scored bores or RMS leaks.
- **Transmission:** Hard-worked manuals can suffer from weak synchromesh and pop-out of gear. The notorious IMF bearing will show few symptoms before failing, though check for oil leaks between the engine and transmission.
- **Suspension/Brakes:** Wear and tear is likely to be the main concern, and complete refurbishment is a costly job. Budget accordingly if it has been neglected.
- **Cooling system:** The front-mounted radiators and air-conditioning condenser are prone to rot thanks to a build-up of detritus. Check they are clear and that there are no signs of leaks.

The heating and ventilation system itself was much improved, and buyers could choose from a wide range of entertainment options featuring additional speakers and amplifiers and a six-disc CD changer mounted in the front compartment. And while not everyone was sold on the build quality (although it has actually proved quite robust), there was no doubt that the 996's cabin was a refined and luxurious place to be.

Plenty of leather was applied to the seats and surfaces, and a raft of modern conveniences on the options list, which many buyers found hard to resist – hence the number of examples littering classifieds today – and there was always the lure of the Porsche Exclusive programme. In one final split from the past, the pedals were no longer floor hinged, this last remaining 911 idiosyncrasy confined to the history books, although the new car did benefit from a roomier footwell.

Of course, Porsche weren't about to forget those that liked blending rear engine thrills with wind in the hair, and the Cabriolet duly arrived for the 1999 model year. The multi-layer cloth hood could be raised or lowered in 20 seconds, all at the push of a button located adjacent to the ventilation controls. In a bid to ensure perfect sealing at speed, opening the doors would see the window glass drop a millimetre or two before lifting snugly against the roof seal when the door was closed. The system worked too, with impressive refinement on offer at motorway pace with the roof raised.

If there was a penalty to be paid for al-fresco enjoyment, it was the 75 kilograms or so added by the folding roof mechanism, although in reality there was a negligible effect on performance. Those wanting greater security and weather resistance also benefitted from a standard aluminium hardtop weighing just 33 kilograms, although fitting it was a job for at least two people. As you might expect, Porsche continued to make improvements to the Gen1 car. Safety credentials were boosted by the Porsche Side Impact Protection system (POSIP), while in 2000 all models got the improved Bosch Motronic 7.2 engine management system with a drive-by-wire throttle. Known as 'E-gas', the system had been fitted to Carrera 4 models from the start.

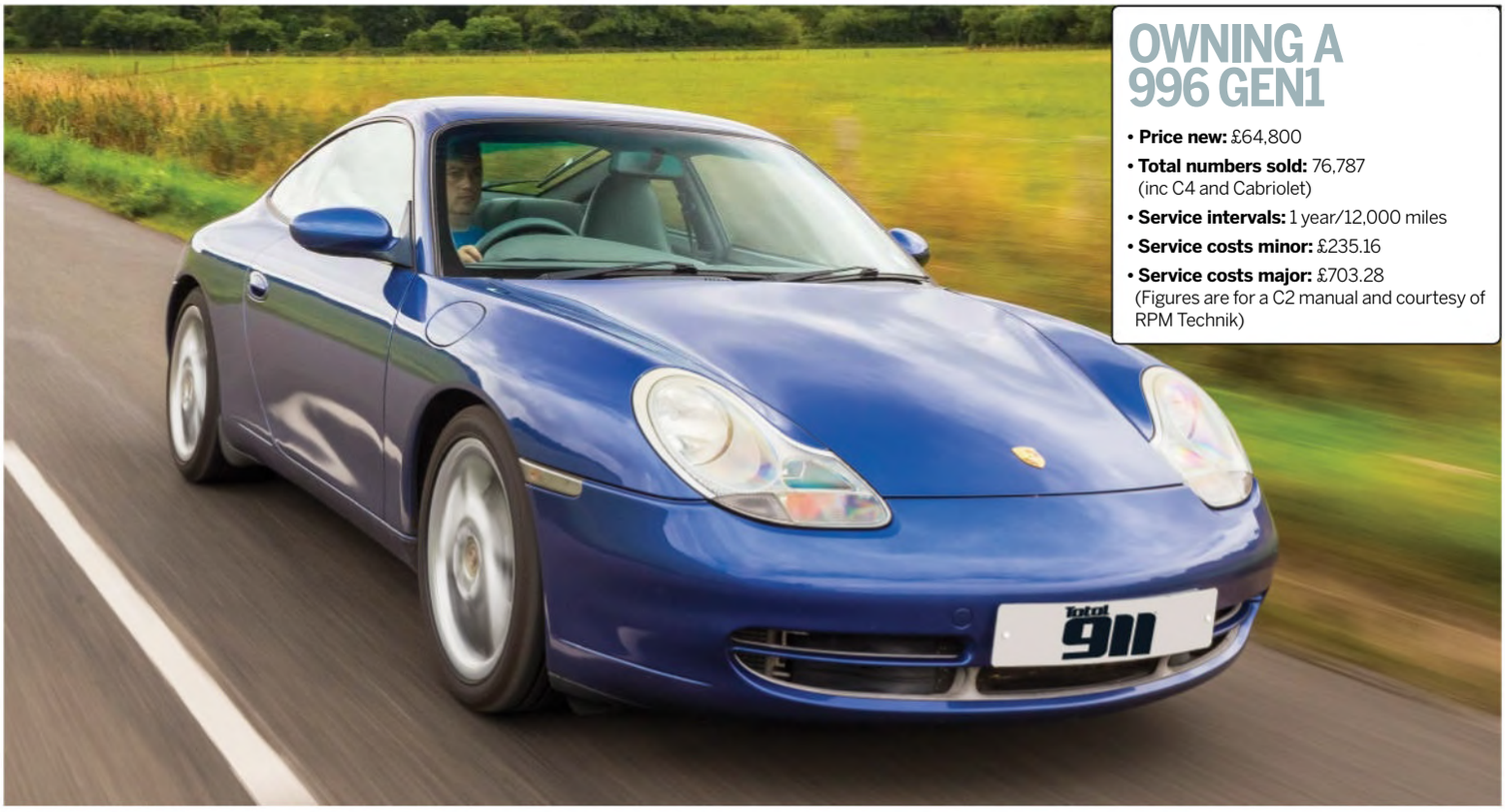
So where does all that leave us? Well, first off with a 911 that continues to divide opinion, even although it's fast heading for two decades since launch. Secondly, with one that – for the time being – still offers a cost-effective way into 911 ownership. The 996 wasn't perfect, and a combination of water cooling and a reputation for expensive engine problems soured the experience for many would-be buyers, but changes were needed, and as always Porsche ultimately delivered. 911

> **THOSE WANTING GREATER SECURITY AND WEATHER RESISTANCE BENEFITTED FROM AN ALUMINIUM HARDTOP WEIGHING JUST 33 KILOGRAMS**

SPECIALIST VIEW

"The 996 hasn't always been the most desirable model, but it does offer tremendous value for those looking to enter 911 ownership. They need maintaining properly though, so you need to be sure you can afford to keep it in top condition. Of course, you must be aware of the potential for engine problems, although not all cars are affected. There are also quite a few on the market, so it's hard to predict how Carrera model prices will develop short term, but the model to keep an eye on is the Turbo. It's a lot of car for the money, and that would certainly be my choice."

Jonathan Franklin, Hexagon



OWNING A 996 GEN1

- **Price new:** £64,800
- **Total numbers sold:** 76,787 (inc C4 and Cabriolet)
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £235.16
- **Service costs major:** £703.28

(Figures are for a C2 manual and courtesy of RPM Technik)

"I'VE GOT ONE"

"To me, the word 'Carrera' conjures up the Eighties icon. Fast-forward, and I now own one from a newer generation. This is by far the best car I have owned. For what is a supercar of its day, it is comfortable, spacious, performs well and can take daily use like a modern hot hatch. For my particular car, the body colour and Turbo wheel combination looks fantastic, and the four-wheel-drive system gives it that added level of on-road stability. It inspires confidence in its ability to cover ground at speed, and mine, coupled with the Tiptronic gearbox, makes this an effortless GT."

Rob Clarke

996 GT2

The rear bumper was lifted from the Turbo, but the dual rear spoiler was unique, with the top section being adjustable through five degrees

996 GT2

Get it for
£120,000-£150,000
$180,000-$225,000

Performance
★★★★★

Maintenance costs
★★★★★

Rarity
★★★★★

Value
★★★★★

> SOME COMMENTATORS RECKONED IT WAS ONE OF PORSCHE'S FINEST DRIVER'S CARS

Ferocious turbocharged power fed exclusively to the rear wheels makes for an explosive 911 experience, epitomised in the modern day by Porsche's peerless GT2

Written by **Chris Randall** Photography by **Phil Steinhardt**

Specification

996 GT2
(2003)

Engine
Capacity: 3,600cc air-cooled flat six
Compression ratio: 9.4:1
Maximum power: 462bhp @ 5,700rpm
Maximum torque: 620Nm @ 3,500-4,500rpm
Transmission: Six-speed manual, rear-wheel drive

Suspension
Front: MacPherson strut; coil springs; adjustable antiroll bar
Rear: Multi-link with telescopic dampers; coil springs; adjustable antiroll bar

Wheels & tyres
Front: 8.5x18-inch alloys; 235/40/ZR18 tyres
Rear: 12x18-inch alloys; 315/30/ZR18 tyres

Dimensions
Length: 4,435mm
Width: 1,830mm
Weight: 1,440kg

Performance
0-60mph: 4.1 secs
Top speed: 195mph

The term 'Widowmaker' is not the most auspicious of monikers – or one that conjures up especially pleasant images – when it's applied to a range-topper that cost north of £110,000 on its launch in 2001. A number of factors contributed to the reputation of the GT2, not least of which was a mighty power output, lack of electronic driver aids and a peaky power delivery. It divided opinion too, some commentators reckoning it was one of Porsche's finest driver's cars, while others felt it was a model that should have remained on the drawing board, but we're not here to judge. Instead, let's look at the facts behind the myth, and that starts with the twin-turbocharged flat-six engine.

The 3.6-litre motor was lifted from the 996 Turbo – itself no slouch – but with some key changes, chief among them larger turbochargers, with the KKK17 items swapped for bigger KKK24 blowers and boost pressure increased to 13.5psi. On a 9.4:1 compression, that meant a power output of 462bhp and a top speed close to 200mph. Fuelling and ignition was controlled by a Bosch Motronic 7.8 system incorporating cylinder knock control, and there were twin catalytic converters. The engine itself came in for some fettling, and along with a light alloy crankcase and pistons there were forged connecting rods, Nikasil-lined bores and dual valve springs with hydraulic tappets. Porsche's VarioRam variable valve timing system was carried over from the regular 996, while the bottom end of the engine utilised the same dry-sump arrangement as the GT3 – itself derived from that found on the GT1 race car – but used a dual pick-up to ward off oil starvation. 2004 saw a round of revisions that included tweaks to the turbos and Motronic mapping among other changes, boosting power to a heady 483bhp and the price to a wallet-wilting £126,000.

All that power was channelled to the rear wheels – no molly-coddling four-wheel drive here – via a six-speed manual gearbox. Although similar to the 993 GT2's unit, there were a number of changes for the new application, including a 20 per cent shorter shift action that was operated by cables rather than rods for smoothness, brass instead of steel synchromesh rings for increased strength and an internal oil pump to keep everything lubricated. A heat exchanger for the gearbox oil was another racing-derived addition, while the gears from third to sixth could even be swapped for competition-orientated ratios if circuit use was your thing. A dual-mass flywheel and standard limited-slip differential completed the transmission package, while any form of electronic stability control was notable only by its absence.

The rest of the running gear was a mouth-watering confection, starting with the brakes. The very earliest cars were fitted with conventional steel discs, but most GT2s were equipped with the PCCB carbon-ceramic setup. The cross-drilled and ventilated rotors were expensive to replace, and there were wear issues in the early days, with some being replaced under warranty, but with six-piston calipers up front and four-piston units at the rear, there was no doubting their stopping ability. The GT2 was the first production Porsche

GT2 TIMELINE

1995
Porsche introduces the first GT2 with the 993. 430bhp and beefy aerodynamic addenda distinguish it from lesser 911s.

2001
The 996 GT2, with rear-wheel drive and no traction control, attracts the 'widowmaker' tag.

2004
A revised model goes on sale, boasting 483bhp via tweaks to ECU and turbos. Carbon ceramic brakes are standard.

2007
The 997 GT2 arrives with 530bhp and 680Nm of torque. It is essentially a Turbo with rear-wheel drive.

2010
Porsche go back to basics, losing weight from the bodywork and interior and adding more power to create the 997 GT2 RS.

2013
Spy pictures emerge of the 991 GT2 testing at the Nürburgring. Insiders reckon it could be PDK-only, as per the Turbo and GT3.

SPECIALIST VIEW

"Low-production volume Porsches have always been great long-term investments, and I think we are on the cusp of seeing the 996 GT2 have its day. Many have been driven very hard and have non-Porsche specialist service histories. These cars with patchy histories and that have been poorly maintained can be expensive to prepare. However, a well-setup GT2 with full Porsche specialist service history and lots of big service bills is something to cherish. Personally, I think it's arguably the best-looking 996 generation 911, and they are always on my radar. With only 129 UK cars ever delivered, it's hard to find good ones, so I expect to see values continue to climb. I just hope they don't all go into collections. A twin-turbo, non-traction-controlled 911 with masses of torque and manual transmission is unlikely to be produced again."

Greig Daly, RPM Technik

Exhaust exits were fairly subtle considering the potential of the engine that fed them. Fixed rear wing clearly marks the model out form a Turbo variant

> A WEIGHT SAVING OF AROUND 50 PER CENT WAS CLAIMED OVER THE EQUIVALENT STEEL BRAKES FOR THE GT2, AND THEY WERE BACKED UP BY FOUR-CHANNEL ABS

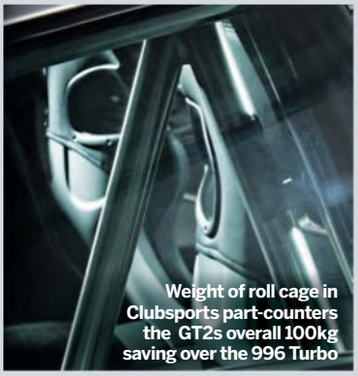
to use PCCB brakes as standard, and they were marked out by distinctive yellow calipers. A weight saving of around 50 per cent was claimed over the equivalent steel items, and they were backed up by four-channel ABS. Although essentially the same MacPherson strut front/multi-link rear arrangement as standard 996s, the suspension also received substantial changes. Compared to the Turbo it was stiffer as well as 20mm lower, the front struts had different mounting points, and there were rose joints in place of some of the standard bushes. There was also a wide range of adjustability, with camber, track and ride height all changeable to suit a specific preference or circuit, and you could adjust the antiroll bars through five stages at the front and four stages at the rear. Hydraulically assisted steering was carried over from other models, and wheels were 18 inches in diameter, shod at the rear with impressively broad 315/30 rubber. Gen2 cars came fitted with lighter ten-spoke alloys (also fitted to later versions of the GT3) in place of the previous five-spoke Turbo items.

The GT2 was no less special on the outside. Based on the wider shell of the Turbo and sharing that model's air intakes ahead of the rear wheels and its rear bumper, a unique aerodynamic package marked out the newcomer. Up front, a small grille was located between the lower edge of the bonnet and the bumper, the latter gaining special ducting to direct air to the brakes and a flexible front splitter fashioned from composite. At the rear was a two-part spoiler, the lower section fixed to the engine cover with a large upper element that could be adjusted through a range of five degrees for ➲

As a derivative of the Turbo models, the 996 GT2 was ergonomically sound, though a plethora of logos reminded the driver that they were in something special. There were plenty of options available, too, if the stripped-bare racer look wasn't for you

WEIGHT SAVING IN THE GT2

Where Porsche did focus plenty of attention with the GT2 was on saving weight. With a well-equipped Turbo model tipping the scales at a slightly portly 1,540kg or so, the company managed to lop around 100kg from that with the GT2. Ditching the four-wheel drive system was one of the main benefits, along with the adoption of carbon-ceramic brakes, but reducing sound insulation and undersealing also played a part. Approximately 20 per cent of the GT2 was formed from lightweight aluminium and magnesium, which helped too, but despite the lack of luxury kit the Clubsport was reckoned to weigh slightly more than the Comfort model once all the safety features had been added.



Weight of roll cage in Clubsports part-counters the GT2s overall 100kg saving over the 996 Turbo

Hip-hugging Recaro seats were standard, covered in flame-retardant cloth or leather depending on your preference. Electric items from the Turbo were optional. Carpet adorned the vacant rear bench in place of the rear seats from Turbo and Carrera models

maximum downforce. Located at the base of the spoiler supports were air ducts to feed air into the engine bay, which was an effective setup, with Porsche claiming an impressive reduction in lift and a Cd of 0.34. Interestingly, the company also boasted that the bodywork of the GT2 was more than 80 per cent recyclable, which might be useful if you'd just stuffed yours into the Armco at the Nordschleife. And despite its reputation, the GT2 was packed with the latest safety technology just in case the worst happened, with careful design at the front ensuring maximum energy absorption in an impact, Boron steel reinforcing bars in the doors and the 'Porsche Side Impact Protection' system consisting of side airbags and energy-absorbing door panels. Front airbags for the driver and passenger were standard, while the seat belts came with the now common pre-tensioning feature.

Owners could also choose to have their GT2 in one of two distinct flavours: Comfort or Clubsport. The latter was the one to have if you had any pretentions to track action, coming as it did with a tasty spec that included figure-hugging Recaro buckets covered in a flame-retardant material, a bolted-in rear roll cage (the front half was available separately), fire extinguisher and battery cut-off switch. You could also ditch the standard seat belts and replace them with a six-point harness. Those after something a bit less track-focused – though this is relative when you're talking about the GT2 – are likely to have found the Comfort option more to their liking. You could have the same Recaro seats trimmed in leather instead, while the electrically adjustable items from the Turbo model were no-cost options. Items such as electric windows and central locking were standard, although a CD player and air-conditioning remained on the options list.

Missing from both variants were rear seats and a spare wheel, the latter replaced by a foam/compressor repair kit. But while the GT2 was aimed at the racing driver in us, Porsche wasn't going to miss the opportunity to offer a vast range of personalisation options. The PCM system offered satellite navigation and better audio, there were various levels of phone preparation on offer, and you could choose from a wide variety of interior trims. If you wanted to cover the cabin of your car with leather, aluminium or carbon, or decorate it with GT2 logos then Porsche could oblige. Even the seat belts could be coloured to suit your tastes, with Guards red, Speed yellow and Maritime blue offered as no-cost options. Thankfully perhaps, exterior choices were limited to a range of tasteful colours and the option to clad the mirrors, rear spoiler and air ducts in carbon.

All this talk of equipment lists and optional extras is diverting us away from the fundamental

BUYING TIPS

The 996 GT2 was a specialised model, and a rare one in the UK, so finding one that has been cared for is crucial if big bills and a painful ownership experience are to be avoided.

- **Ownership:** Hard-driven cars or those that have seen action on a circuit should have an impeccable service history for peace of mind. Avoid any that haven't.
- **Bodywork:** Corrosion should not be an issue unless there has been some damage somewhere down the line. The unique parts are costly, so check the condition carefully.
- **Engines:** Engines are considered bomb-proof, but only if looked after properly. Any signs of wear should be treated with extreme caution.
- **Suspension:** A complete overhaul is pricey, and it's possible that inexperienced owners may have fiddled around with the various settings. A specialist check is advisable to ensure everything is straight.
- **Brakes:** The huge cost of replacing the PCCB discs – nigh-on £4,000 per corner – means some owners have reverted to steel items. Either way, you need to be absolutely certain of its condition before taking the plunge.

> "THE PURPOSE WAS TO OFFER BUYERS A CAR THAT SAT AT THE TOP OF THE 911 TREE WHEN IT CAME TO PERFORMANCE, DYNAMICS AND DRAMA"

OWNING A 996 GT2

- **Price:** £116,000 in 2001
- **Total numbers sold:** 129
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £375
- **Service costs major:** £750

(Figures here are courtesy of Porsche Centre Reading)

purpose of the GT2, though; namely to offer buyers the most powerful 911 yet at the time, a car that sat at the very top of the 911 tree when it came to performance, dynamics and, dare we say it, drama. They most definitely succeeded. Porsche might not like the reputation the car developed – and they certainly wouldn't thank you for mentioning that 'widowmaker' word – but they delivered a car that will live long in the minds and imagination of the 911 enthusiast. Those once-impressive power outputs and performance figures may have been eclipsed by subsequent generations, but the GT2 was special. Very special. 911

"I'VE GOT ONE"

"I've known this car for a while now, having sold it on two previous occasions over the last eight years. The 911 GT2 is a rewarding car, though not for the faint-hearted, and the 996 model makes for a track weapon with a difference, retailing at around £45,000. With 997 GT2 prices still sky high, the 996 GT2 may make for a true performance bargain and an exhilarating experience, providing, of course, the right application is executed behind the wheel. It's easy to get caught out in one of these, such is its zest for sheer rocketship performance, but right now the GT2s startling performance is happily matched by startling value."

Anthony Pozner, Hendon Way Motors

997 GT3

The rear bi-plane wing with 'Gurney flap' was mildly adjustable, despite appearing to be fixed in position

997 GT3

Get it for
£80,000-£140,000
$120,000-$210,000

Performance
★★★★★

Maintenance costs
★★★★★

Rarity
★★★★☆

Value
★★★★★

> IF TURBOCHARGED PERFORMANCE DIDN'T APPEAL, PORSCHE HAD AN ANSWER IN THE FORM OF THE GT3

The 996 generation introduced buyers to the GT3 tag, but how did its successor stack up? Total 911 turns the spotlight on the first 997 version introduced in 2006

Written by **Chris Randall** Photography by **Phil Steinhardt**

Model Year	997.1 GT3 (2006)
Engine	
Capacity	3,600cc air-cooled flat six
Compression ratio	12.0:1
Maximum power	415bhp@7,600rpm
Maximum torque	405Nm@5,500rpm
Maximum torque	Six-speed manual; rear wheel drive
Suspension	
Front	MacPherson strut; coil springs; antiroll bar
Rear	Multi-link; telescopic dampers; coil springs; antiroll bar
Wheels & tyres	
Front	8.5x19-inch alloys; 235/35/ZR19 tyres
Rear	12x19-inch alloys; 305/30/ZR19 tyres
Dimensions	
Length	4,445mm
Width	1,808mm
Weight	1,395kg
Performance	
0-62mph	4.3 secs
Top speed	192mph

First 997 GT3 had bigger air intakes while new front spoiler was deeper than ever before

A new vent ahead of the luggage compartment fed air to the radiator and dispelled air over the top of the car, aiding downforce

There's no doubt that buyers after the cream of 911s were spoilt for choice when it came to the 997 generation, a range that encompassed the mighty Turbo and the seriously focused GT2 that somehow managed to push more than 500bhp through its overworked back wheels. But if turbocharging didn't appeal when it came to performance then Porsche had an answer in the form of the GT3. The name tag was first seen back in 1999 when it adorned the rump of the 996, a car that would qualify – appropriately enough – for the GT3 endurance racing category. So successful was the formula that the 2006 Geneva Show saw the launch of the latest 997 variant that arrived in the UK in August that year.

Wedged beneath the new bi-plane rear wing was a 3.6-litre motor that had been carried over relatively unchanged from its 996 installation, although power had increased from 381bhp to 415bhp at a howling 7,600rpm, with torque up by 20Nm to a peak of 405Nm. Output was slightly over 115bhp per litre, and the rev limit was also raised, action not being curtailed, until 8,400rpm was showing on the tachometer. Essentially, the engine was the water-cooled bottom end from the 996, but topped with the latest cylinder head design, featuring four valves per cylinder and 'Variocam' variable valve timing on both inlet camshafts.

Using rotary-type adjusters to tweak the timing according to load and engine speed and controlled by the Bosch Motronic ME7.8 management system, it improved driveability as well as contributing to those hugely impressive headline figures. The engine featured lightweight pistons with titanium con-rods along with specially lightened tappets and hydraulic adjusters, and there were revisions to the lubrication system. The latter was a dry sump arrangement that featured two pumps in the cylinder head, driven from the exhaust camshafts, and two pumps in the crankcase, while an oil/water heat exchanger helped keep temperatures under control. Rounding off the revisions were resonance valves in the inlet plenums (dual units linked by three separate pipes), larger exhaust tracts for better gas flow, and a lightweight sports exhaust system with two catalytic convertors that now exited via centrally mounted pipes.

Driving through a dual-mass flywheel, power was fed to the rear wheels and a limited-slip differential via a six-speed manual gearbox that featured a cable-operated change and a shorter throw to the gearshift. First gear apart, all the other ratios had been shortened for greater straight-line punch, and things were beefed up with steel baulk rings for third to fifth gear and a heat exchanger for the transmission fluid. What this all amounted to were some very impressive performance figures, the GT3 claiming to stop the clock at 4.3 seconds for the 0-62mph sprint and passing 100mph in 8.7 seconds on the way to a 193mph maximum speed. Porsche also added a traction control system for the first time, albeit one that could be switched off by those who had taken their bravery pill.

GT3 TIMELINE

1999
Porsche introduce the first GT3 with the 996 generation. Substantially lighter than the Carrera, 1,890 'Gen1' cars are built.

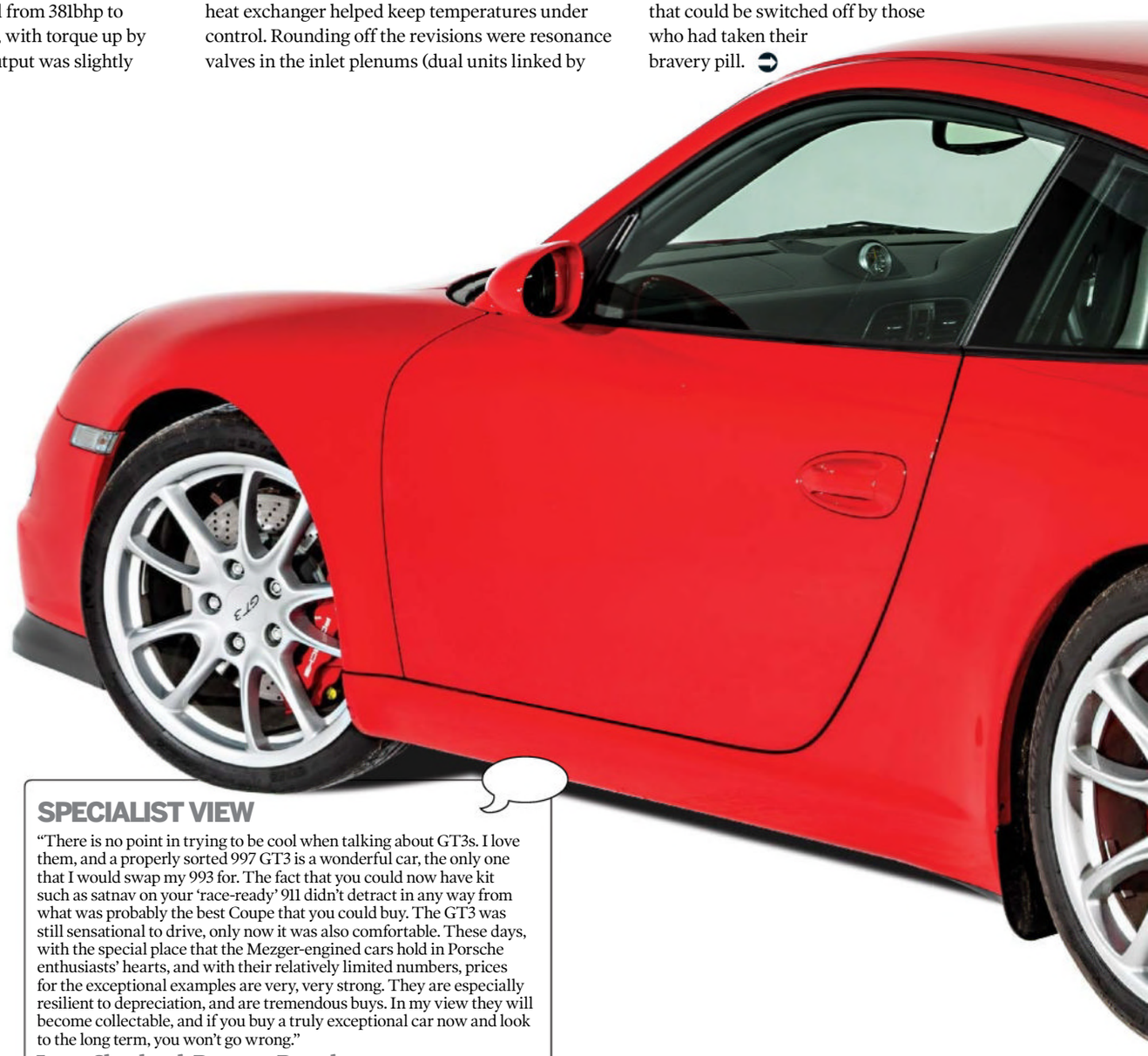
2003
The Gen2 996 facelift version arrives, boasting a revised rear spoiler, 381bhp and optional ceramic brakes.

2006
Once again it's a Geneva Show launch for the 997 GT3. Power is raised to 415bhp helped by the addition of VarioCam.

2009
In Gen2 form, a power hike produces 435bhp, with revised spoilers and better brakes. The lighter RS variant saves 25kg.

2010
Porsche introduces a 997 GT3 RS with nigh-on 500bhp from a 4.0-litre engine and a 0-60 time below four seconds.

2013
The latest 991 gets the GT3 treatment, with power upped to 475bhp from the 3.8-litre DFI engine with PDK.



SPECIALIST VIEW

"There is no point in trying to be cool when talking about GT3s. I love them, and a properly sorted 997 GT3 is a wonderful car, the only one that I would swap my 993 for. The fact that you could now have kit such as satnav on your 'race-ready' 911 didn't detract in any way from what was probably the best Coupe that you could buy. The GT3 was still sensational to drive, only now it was also comfortable. These days, with the special place that the Mezger-engined cars hold in Porsche enthusiasts' hearts, and with their relatively limited numbers, prices for the exceptional examples are very, very strong. They are especially resilient to depreciation, and are tremendous buys. In my view they will become collectable, and if you buy a truly exceptional car now and look to the long term, you won't go wrong."

Jason Shepherd, Paragon Porsche

A variety of gills in the rear of the GT3 helped dissipate heat from the high-revving, dry-sump Mezger engine

> THE CABIN OF A 997 WAS ALREADY A FINE PLACE TO BE, WITH EXCELLENT BUILD AND MATERIAL QUALITY, SO PORSCHE SAW LITTLE REASON TO MESS WITH THE RECIPE WHEN IT CAME TO THE GT3

As you might expect, Porsche altered the exterior, starting at the front, where you'd find a redesigned bumper with bigger intakes and a deeper front spoiler. Feeding air to an additional central radiator was a new vent just ahead of the luggage compartment lid that then expelled the air over the car to provide added downforce.

Balancing the aero package was the previously mentioned bi-plane rear wing that featured a rubber 'Gurney flap' on the lower section, along with a degree of adjustability despite appearing fixed, while vents in the engine lid helped remove hot air from the engine bay via the rear apron. The bodyshell itself featured improvements to the crash structure compared to the 996, and there was greater use of super high-strength steels and tailored blanks and a larger proportion of lightweight alloy, with the doors and front bonnet in aluminium. With a claimed curb weight of 1,395 kilograms, it amounted to a power/weight ratio of 297bhp per ton. No wonder it was quick.

The cabin of a 997 was already a fine place to be, with excellent build and material quality, so Porsche saw little reason to mess with the recipe when it came to the GT3. Climate control and a decent stereo were standard along with lightweight, race-derived seats, and most interiors were smothered in Alcantara and leather. Safety was top notch too, with a full complement of airbags, while the dials featured GT3 logos, yellow needles and a change-up light. Where things departed from standard was the chance to equip the car with all the accoutrements needed for an assault on the Nordschleife, the no-cost 'Clubsport' package including a rear roll

The addition of PASM to the factory spec list wasn't the interior's only impressive new feature. PCM with satnav was ideal for finding your way home, the Sport Chrono package great for lap timing, and a blend of leather and Alcantara in Comfort guise ensured the GT3 retained as much class as it did purpose. Note that manual gear shifter, too: with PDK-only on 991 GT3 variants, the transmission alone has assured the 997 GT3 of its long-term desirability

GT3 RS

Porsche wasn't going to pass up the opportunity to add the latest GT3 to the rich heritage of RS models. Introduced in autumn 2006, it was now based on the wider C4 bodyshell, adding 44mm across the hips, but it had also lost 20kg in the process thanks to the use of carbon fibre for the seats and rear wing, and a plastic rear window. Power remained the same, the engine now sporting a single-mass flywheel, and there was a scant 0.1 sec reduction in the 0-62mph time. Porsche claimed the same top speed, although in reality the wider bodywork and more aggressive rear wing would have reduced it a little. It didn't matter though, as the roll cage and six-point harnesses were standard for the full race effect. And the price? A mildly eye-watering £94,000.

GT3s with the Comfort pack had the rear seats deleted, as shown here, while the Clubsport pack went a step further, with a full rear roll cage fitted in place. Sports seats were optional for Comfort GT3s, but a required option for Clubsport variants

cage, six-point safety harness, fire extinguisher and wiring for a battery master switch. The CS option was only available in conjunction with the lightweight carbon bucket seats based on those fitted to the Carrera GT, weighing ten kilograms each and covered in flame-retardant fabric.

There was no need to be too minimalist when equipping a GT3, with plenty of opportunity to offset the weight savings by raiding the options list. Niceties like bi-xenon lights, electric seats, carbon interior garnishes, an upgraded sound system and tyre pressure monitoring were just a tick of a pen away, as were some particularly lurid exterior hues. Another popular choice was the Porsche Communications Management system, which provided satellite navigation, a high-resolution colour screen and phone prep – necessary if you wanted Sport Chrono Plus, which gave added lap-timing and data storage capability (basic Sport Chrono was effectively little more than a dash-mounted stopwatch).

The fettling didn't stop there, and there were major changes to the suspension compared to 'regular' 997s. Approximately 30mm lower all-round than a Carrera, up front was still the familiar MacPherson strut arrangement, but with rose joints and a range of adjustability that included the ability to tweak camber, ride height and toe angle. If you were after the perfect setup, the GT3 could certainly oblige. Propping up the rear was the subframe-mounted multi-link arrangement that Porsche named 'Lightweight-Stable-Agile' (LSA), first seen on the 993 and still pinning down the rear end. Steel bearings on the front strut mounts and an absence of rubber in the rear subframe mountings helped eliminate movement between suspension and the body for better wheel control.

More interesting still was the use of 'Porsche Active Suspension Management' as standard, in essence a system of continually adjustable dampers. A button on the centre console allowed the driver the pick of 'Normal' or 'Sport' modes depending on preference or road surface, although the harder setting was reckoned to be a bit extreme for anything other than a smooth circuit, while a variety of sensors monitored body movement during cornering, acceleration and braking.

The ECU then adjusted the valving of individual dampers to keep things even. The merits of such a system are still debated, but there is no doubting the effectiveness of the system in reducing body deflection. The stoppers received attention too, the GT3 getting 350mm vented and cross-drilled steel discs as standard squeezed by six-piston Monoblock alloy calipers at the front and four-piston items at the rear, backed by ABS. But for maximum stopping power it was the optional Porsche Ceramic Composite Brake (PCCB) setup

BUYING TIPS

Offering epic performance and real track ability, a 997 GT3 is a special machine, but it needs to be treated like one.

- **History:** Buying from a recognised specialist or Porsche-approved seller is advisable for peace of mind. At the very least, get it inspected if you decide to buy privately.
- **Bodywork:** Accept nothing less than perfect when it comes to the body and paintwork. It's worth making sure it hasn't visited a gravel trap or two.
- **Engines:** Essentially bulletproof as long as the maintenance record is unimpeachable. Anything neglected should be avoided at all costs.
- **Gearbox:** Any issues caused by track abuse will be costly, so make sure there are no nasty noises. Clutch replacement is labour intensive too, so watch for signs of slippage.
- **Suspension:** Not known to be problematic, but hard use will take its toll on bushes and joints. It's also worth checking to see if the various settings have been needlessly fiddled with.

> **THERE WAS NO NEED TO BE TOO MINIMALIST WHEN EQUIPPING A GT3, AND THERE WERE PLENTY OF OPTIONS TO OFFSET THE WEIGHT SAVINGS**

OWNING A 997 GT3

- **Price new:** £79,540
- **Total numbers sold:** 3,329
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £358
- **Service costs major:** £714 (including spark plug change)

Figures courtesy of Paragon Porsche

that many buyers coveted, with larger 380mm front discs, yellow calipers instead of red and a claimed 50 per cent weight reduction over the steel items. Like other 997s, the GT3 was fitted with variable-ratio steering with hydraulic assistance, and there were new one-piece, 19-inch wheels wrapped with tyres of a special tread design and compound.

It's a tasty spec, but what's important here is the true purpose of the 997 GT3. It substituted the sledgehammer performance of the Turbo and GT2 for an altogether more subtle blend of road and track ability, and rightly has a reputation for being one of the most thrilling 911s. 911

"I'VE GOT ONE"

"I've owned my 997.1 GT3 since February 2011. I was immediately excited when I first set my eyes on the 'for sale' advertisement, which revealed a generous spec: finished in rare Cobalt Blue with PCCB, carbon Cup seats, and an RS-spec rear roll cage.

The first test drive was a little intimidating, but in the end the full Porsche history pushed me into the seat and I bought it.

It's a great car for track use and driving all day. After a stint on track I just put my racing helmet in the boot and drive home with the air conditiong on, so it really is the perfect package. Every time I climb into the GT3, I get excited: you know the drive ahead is going to be fun."

Chris Stewart, Southampton

991 CARRERA

991 Carrera S

Get it for
£55,000-£110,000
$82,500-$165,000

Performance
★★★★☆

Maintenance costs
★★★★★

Rarity
★★★☆☆

Value
★★★☆☆

> THE CARRERA NAME HAS FOLLOWED THE MARQUE THROUGH SEVERAL MODELS

Porsche's original rear-wheel-drive layout lives on in the 991 Carrera, and its S variant adds a little extra spice into the mix

Written by **Andrew Krok** Photography by **Phil Steinhardt**

The updated looks and larger wheelbase of the Type 991 make even Gen2 997s look dated

Specification

991 Carrera S
(2012)

Engine
Capacity: 3,800cc, naturally aspirated water-cooled flat six
Compression ratio: 12.5:1
Maximum power: 400hp @ 7,400rpm
Maximum torque: 325lb ft @ 5,600rpm
Transmission: Seven-speed manual or PDK dual-clutch

Suspension
Front: MacPherson strut suspension with antiroll bar
Rear: LSA multi-link suspension with antiroll bar

Wheels & tyres
Front: 8.5x20-inch Carrera S alloys, 245/35/20 tyres
Rear: 11x20-inch Carrera S alloys, 295/30/20 tyres

Dimensions
Length: 4,491mm
Width: 1,808mm
Weight: 1,395kg (7MT), 1,420kg (PDK)

Performance
0-60mph: 4.3 secs (7MT), 4.1 secs (PDK), 3.9 secs (Sport Plus)
Top speed: 188mph (7MT), 187mph (PDK)

Porsche's 911 started out as a rear-engine, rear-wheel-drive vehicle and, for the most part, that formula has worked over its entire run of 50 years and counting. Yes, there have been variations on the theme, but the formula at its most basic has continued despite the ever-present push to innovate. Even now, with all the technological advances beneath the Type 991's exterior, the song remains the same. On this model, however, it has been boosted by way of the 'S' badge.

The Carrera name, plucked from the Carrera Panamerica race, has followed the marque through several models, including the 356 and 904. From there, it landed on the rear decklid of the 911, and has stayed put ever since, providing a cornerstone of 911 branding as it has become synonymous with the marque at large.

The 'Carrera S' designation didn't show up until 1997 with the release of the 993, the last of the water-cooled 911s. Its four-wheeled variant arrived a year prior, and both models shared their body with the 993 Turbo. However, unlike the C4S, which utilised the Turbo's brakes, the rear-drive S only borrowed its body. The wheels actually required spacers to fit between the rim and the hub, filling up the 31mm gap that was a result of mixing wide fenders and standard wheels. The only other difference was a slightly lowered suspension; in actual fact, its width created more aerodynamic drag on the chassis, lowering the Carrera S's top speed to 168mph.

The second water-cooled 911, the 997, brought back the Carrera S model designation after it disappeared during the days of the 996 (which only enjoyed the C4S model, as seen in **Total 911** Issue 101). Porsche actually went above and beyond with this generation, introducing a new 3.8-litre flat six that was unique to the Carrera S; the non-S models received (more or less) the same 3.6-litre motor that came with the outgoing 996. The Gen2 997 Carrera S and its 355bhp power plant achieved 60mph in less than five seconds.

The second generation of the 997 was the final precursor to the 991, but the Carrera wasn't about to rest on its laurels and wait for the new model. Instead, Porsche packed the 997.2 with updates. Most importantly, it introduced the new 3.8-litre direct-injection 9A1 motor, which would continue to power the 911. In the 997.2 C2S, this put out 380bhp, reaching 60mph in four and a half seconds. The exterior styling also received a refresh, and the oft-maligned Tiptronic automatic transmission was replaced with a Porsche Doppelkupplung (PDK) dual-clutch transmission.

The latest incarnation of 911 Carrera S arrived in 2011, where there were yet more changes. One thing, however, remained the same: the 9A1 came over from the Gen2 997 Carrera, although the output figures were bumped slightly. Power increased to 400bhp at 7,400rpm for the S, and torque increased to a meaty 440Nm at 5,600rpm. Coupled with PDK, these new numbers helped the rear-drive Carrera S achieve 60mph in 4.3 seconds.

The 991 Carrera S also grew in size over its older counterpart – the wheelbase increased by 100mm and the length by 70mm. Furthermore, ➲

CARRERA TIMELINE

1963
Porsche introduces the 911 in its original – and arguably 'purest' – form: rear-engine, rear-wheel-drive.

1973
After being used on just about every other Porsche in the factory, the Carrera badge finally lands on the 911.

1997
The first Porsche Carrera S goes on sale. It shares the Turbo's body, the width of which required wheel spacers on the rear.

1998
Porsche failed to make a rear-wheel-drive Carrera S model, which didn't return until the 997 began production in 2004.

2009
A direct-injection Carrera S joins the 21st Century as the new 9A1 motor becomes standard on the Gen2 997.

2012
The Carrera S arrives in the Type 991 model designation of 911, once again treated to a 3.8-litre direct injection engine.

SPECIALIST VIEW

"It's fair to say used examples of the 991 Carrera S are still finding their place in the current market. Do date, initial depreciation has been hard on what is an exceptionally good Porsche. As an independent specialist, RPM Technik would be wary of buying one in to retail at present as depreciation can be severe almost on a monthly basis. Make no mistake however, once the prices of the Type 991 911s have settled down and buyers have confidence in their more settled values, it will be a great buy."

Darren Anderson, RPM Technik

The rear spoiler on the 991 Carrera S is not directly over the engine bay like in previous generations

> **TO KEEP FUEL ECONOMISTS HAPPY, PORSCHE ALSO INCLUDED THEIR NEW AUTO START/STOP FEATURE, WHICH KILLS THE MOTOR WHEN THE CAR IS IDLE**

a new transaxle moved the rear wheels back by approximately 76mm for the purposes of increased handling and weight distribution. Even though the size increased, the weight did not; the utilisation of high-strength steels, composites and aluminium dropped the manual S to a svelte 1,395 kg. The PDK-equipped S wasn't a hog either, adding only 25kg.

There are other benefits, as aluminium and magnesium were utilised in the roof, underbody, front, doors and rear wings. As well as the weight savings, this helped increase dynamic torsional stiffness by nearly 25 per cent, further grooming the 911's track pedigree. This, in conjunction with the new motor, helped reduce fuel consumption by almost 15 per cent compared to the Gen2 997.

The list of features doesn't stop there. Thanks to direct injection, knock control became cylinder-specific, as individual injectors could have their ignition points altered. Porsche also included their new Auto Start/Stop feature, which kills the motor when the car is at idle, only to bring it back with near imperceptibility just before the gas pedal is tapped. This can be turned off manually, but it also shuts off when the SPORT button is pressed.

To further aid fuel economy, the PDK-equipped models have a 'coasting' feature that decouples the engine from the transmission. This brings us to another great feature of the 991 Carrera S – seven-speed manual transmission. Just like PDK, the first six gears are all about performance, with the extra-tall seventh gear providing low-rev driving at highway speeds to conserve petrol on longer drives.

Another innovation in the 991 C2S is the vehicle's new method of electrical system recuperation. The

The 991 features a Panamera-esque centre console, equipped with selectable options such as Sport, Sport Plus and Performance Exhaust, as shown here. Sunroof-equipped 911s will also have three additional buttons installed in the middle. PCM in the 991 is the greatest evolution yet over previous models, with a multi-function touch screen allowing you to take advantage of media on the go while navigating your route. The digital navigation display on the fourth pod ensures the driver's eyes face forward instead of looking into the centre console for navigation, but the display can also be changed to measuring G forces, for example

ELECTRIC REPLACES HYDRAULIC

You might recall the anguish of a self-proclaimed Porsche purist when Stuttgart announced the latest generation of Porsche would utilise electromechanical power steering. Ignoring the fact that a proper purist would denounce any power steering, the new system does have benefits. First, it only uses energy when the wheel is moved from dead centre. This does a great deal to mitigate parasitic power loss due to accessory use. Second, it features a variable steering ratio, with plenty of response making its way to the driver. It's not a bad system, and we didn't mind it (see Issue 90). We suggest you try it before judging.

Purists may disagree, but electric steering does offer feel and response

Sport seats are extremely comfortable even over long distances, with additional options available including heated centres and Porsche logos on the headrests

alternator will charge the battery predominantly under braking situations, preferring to limit the alternator draw during acceleration in favour of reduced parasitic power loss.

The 9A1 received a few other changes as well. Porsche's new intake system is able to increase intake volume via a two-stage system that produces a flatter torque curve with an emphasis on increased torque at lower speeds. In addition to the intake, the camshafts received a bit of extra technology. Porsche's VarioCam Plus system continually monitors a number of driver inputs, and when the time is right it adjusts the intake valves' lift timing for maximum performance.

Two features that are options on the 3.4-litre Carrera models come standard on the Carrera S. The first is PTV (Porsche Torque Vectoring), a differential lock (mechanical on the manual, electronic on PDK) that can brake specific wheels to keep the car from losing composure. PTV is a function based on multiple sensor inputs, including steering angle, steering speed, gas pedal position, vehicle speed and yaw.

The other is PASM, Porsche's Active Suspension Management system. This monitors the dampers as they operate, and changes damping forces to adapt to driving style and road conditions. It has both Normal and Sport modes, and lowers the car by an extra 20mm.

One of the options available with the Carrera S is Porsche Dynamic Chassis Control (PDCC). It's an active antiroll system that counteracts lateral body roll by using hydraulic actuators to optimise camber and the connection between tyre and road.

Of course, standard items also receive upgrades, as the new generation of Porsche brought with it a new generation of brakes. The Carrera S has six-piston monobloc aluminium calipers up front, with four-piston monoblocs out back. The brake discs are large, measuring 340mm up front and 330mm in the rear. Modified air spoilers help deliver a better cooling effect on the S models, too. The calipers are painted in a bright shade of red; you can get them in yellow, but you will need to upgrade to Porsche's PCCB ceramic brake setup.

If comfort and aesthetics interest you more, the 991 Carrera S doesn't disappoint, as the exterior offers 14 choices of metallic and non-metallic paint. Alternatively, you can opt for the Paint-to-Sample option and get something entirely unique. The C2S has four potential OEM wheel options as well, with five different ways to paint them. Other exterior options include a bevy of aerodynamic additions, as well as typical add-ons like a sunroof, rear windscreen wiper and badge delete.

BUYING TIPS

The 991 is still a relatively new car, and as a result the standard luxury-car depreciation has yet to go into full effect. That said, they're still new enough for factory warranties to still be in effect, which can help offset the cost of ownership as the next couple of years tick by. Otherwise, the car is too new for long-running problems to start cropping up,

- **Try it out:** Test-drive it and get a feel for the electromechanical steering. It may not suit your tastes.
- **Warranty:** Check to see if the factory warranty still applies and what it covers. It's always good to have some extra protection.
- **Lights:** Check every single LED on the third brake light before you purchase a 911 Carrera. Some go quickly.
- **Make haste:** If you see one you like, you may have to act fast. The pre-owned 991 market is known for moving well-specced cars incredibly quickly.
- **Leakage:** It's a Porsche, so it's a good idea to check for any errant leaks. A pre-purchase inspection (PPI) is highly recommended, even if it looks new.

> "THE STANDARD CARRERA S ALSO HAD UPGRADES, AS THE NEW GENERATION OF PORSCHE BROUGHT WITH IT A NEW GENERATION OF BRAKES"

Unlike previous generations of 911, there's virtually nothing of the engine to see under the rear decklid of the Type 991

OWNING A 991 CARRERA

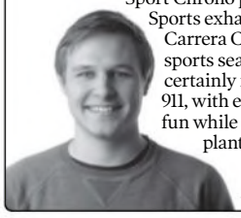
- **UK price:** From £83,000.
- **Service intervals:** Porsche recommend a service every two years/20,000 miles, but do push for an annual checkover too.
- **Service costs minor:** From £480.
- **Service costs major:** From £680, plus brake fluid change.

* Covered under Porsche warranty if bought in the last three years.

Inside, the options continue. The Carrera S is lined with leather and Alcantara, although buyers can choose from three packages with different materials (brushed aluminium, mahogany or carbon fibre). There are four different kinds of seating options, multiple steering wheels and two audio upgrades. If you want the London Symphony Orchestra inside your Carrera, we suggest opting for the Burmester system, complete with 12 loudspeakers and an output of 821 watts.

The Carrera badge continues to mark decades of technological as well as mechanical supremacy of the 911 at large. There may be more glamorous impending additions to range, but the 991 Carrera S is a fast and comfortable daily sports car. 911

"I'D HAVE ONE"



This 991 Carrera S comes straight from the factory and is decorated with a wealth of great options including Sport Chrono package Plus, PDK, PASM, Sports exhaust, impressive 20-inch Carrera Classic alloy wheels and sports seats. The extra 50bhp is certainly noticeable over the 3.4-litre 911, with enough grunt to let you have fun while maintaining an incredibly planted feel to the road.

Lee Sibley

TURBO


Turbo
HVX 845T

930

The 930's 'tea tray' rear wing adorned many a bedroom wall in the Eighties

The Turbo's widened rear arches provided an outlandish but purposeful stance on the road, later copied on many replica wannabes

930 3.3

Get it for
£75,000-£110,000
$112,000-$165,000

Performance
★★★★☆

Maintenance costs
★★★★☆

Rarity
★★★☆☆

Value
★★★★☆

> THE CAPACITY INCREASED FROM 3.0 TO 3.3 LITRES AND POWER AND TORQUE TO 300BHP AND 412NM

The launch of the 3.0-litre 930 was just the beginning of Porsche's enduring Turbo passion. Total 911 takes up the story with its more powerful successor

Written by **Chris Randall** Photography by **Phil Steinhardt**

Specification

930 3.3
(1978)

Engine
Capacity: 3,299cc turbocharged and air-cooled flat six
Compression ratio: 7.0:1
Maximum power: 300bhp @ 5,500rpm
Maximum torque: 412Nm @ 4,000rpm
Transmission: Four/five-speed manual, rear-wheel drive

Suspension
Front: MacPherson strut with torsion bars
Rear: Trailing wishbones with telescopic dampers and torsion bars

Wheels & tyres
Front: 7x15-inch Fuchs alloys 185/70/15 tyres
Rear: 815-inch Fuchs alloys 215/60/15 tyres

Dimensions
Length: 4,491mm
Width: 1,775mm
Weight: 1,300 kg

Performance
0-60mph: 5.3 secs
Top speed: 160mph

The 930 is peppered with period manufacturing hallmarks such as the rubber fixings between most panels

Blink and you'll miss it: the Porsche crest is neatly printed in the centre of the 930's front splitter

Almost 40 years ago, Porsche set out to challenge the established supercar elite. Entering a market dominated by Italian carmakers, a turbocharged version of the 911 was launched with 260bhp at its disposal courtesy of a Kühnle Kopp & Kausch blower, and a legend was born. Performance was exceptional at the time, the iconic Coupe being capable of achieving 150mph and completing the 0-60mph dash in a mere six seconds. It was far from perfect, though, as marginal brakes, tricky handling and a hefty price tag conspired to make the original Turbo something of a specialist proposition, albeit a thrilling one. The lag-prone power delivery didn't go unnoticed either, but it mattered little – Porsche had proved their point, and three years later they decided to raise the bar yet again with the 3.3-litre 930.

The headline numbers were a capacity increase from 3.0 to 3.3 litres and a boost in power and torque to 300bhp and 412Nm respectively. There was a lot more to the changes than those figures alone, of course – both bore and stroke were increased over the 3.0-litre unit to 97mm and 74.4mm respectively, and there was a higher compression ratio: 7.0:1. To cope with the extra power and deliver the reliability demanded by Porsche, the engine internals came in for attention too, including larger main and big-end bearings. Bosch K-Jetronic injection and the KKK turbo remained, but one of the biggest changes was the addition of an air-to-air intercooler mounted in the engine compartment. Capable of lowering the intake air temperature by around 60 degrees, the intercooler was one of the more obvious changes to the new engine, now codenamed M930/60. On the road those changes translated to a top speed of nigh-on 160mph and a sprint to 60mph that was dispatched in less than 5.5 seconds, not to mention 0-100mph in 12.3 seconds – a production car record back then and equally impressive today.

A further change was a new clutch design that not only required a bigger bellhousing, but also shifted the engine 30mm rearwards. This added around 30kg to an already substantial rearward weight bias, requiring tweaks to the suspension and higher rear tyre pressures – neither of which helped an already firm ride, although they did go some way to taming the handling. What hadn't changed over the 3.0 litre model was the four-speed '915' gearbox, never considered the sweetest of transmissions, but reputedly the only one capable of handling the higher outputs.

As for the rest of the running gear, it was still the familiar combination of unassisted rack and pinion steering and independent torsion bar suspension that had always underpinned the 911. Brakes were another matter though, and thankfully they were to receive the highest level of attention. Those fitted to the 3.0 litre were deemed woefully inadequate for the performance on offer, their limitations often becoming clear to the driver in heart-stoppingly late fashion. Aware of criticism from owners and the motoring press, Porsche went all-out on the new model by fitting brakes derived from the 917 racer. In came cross-drilled discs that were not only much larger in diameter – those at the front measured

TURBO TIMELINE

1974
The 3.0-litre 911 Turbo with 260bhp is revealed at the London Motor Show to huge acclaim.

1977
Porsche announce the revised version with power hiked to 300bhp courtesy of a bigger 3.3-litre engine and an intercooler.

1990
The 964 Turbo is launched, the Gen1 cars appearing with a modified version of the 3.3-litre engine and 320bhp.

1995
The 993 Turbo arrives with more power and now fitted with twin-turbochargers.

2001
Power rises to 420bhp with the arrival of the 996, the first of the water-cooled turbo engines.

2006
997 Turbo introduced with 480bhp. It would later spawn an 'S' variant with more power and a PDK gearbox.

SPECIALIST VIEW

"I have a great personal interest in the 930, as I previously owned one myself for three or four years. The beauty of these cars is that they boast high quality, reliability and longevity – they really are built to last, as shown by our 1978 model here. There are faster cars with better road holding and aesthetic appeal, but no car that I know of combines all features to such a high degree, and that's why hand-built 911s are such icons for the Porsche fraternity."

Anthony Pozner, Hendon Way Motors

The side-exit exhaust is a textbook 930 feature

Porsche's Turbo passion has lasted for 38 years and counting

> THERE WAS ONE KEY CHANGE: THE 3.3 ADOPTED A NEW DESIGN OF REAR SPOILER THAT WAS TO ENDURE RIGHT THROUGH TO 1989

304mm, the rear 309mm – but were substantially thicker too, and now gripped by four-piston aluminium calipers fitted with larger pads. A bigger servo topped off the changes, and to the relief of many the Turbo now stopped as well as it went.

Externally, it was pretty much business as usual, which meant sensuously flared rear wings and the now iconic Fuchs forged-alloy wheels wrapped in Pirelli P7 tyres, but there was one key change: the adoption of a new design of rear spoiler that was to endure right through to 1989. The now familiar whaletail design was dropped, and in its place was a type that became known as the 'tea tray'. It was still fitted with the flexible rubber lip that had marked out the previous design, but it now featured a single large grille on top and box-section beneath that left room in the engine bay for the intercooler.

The cabin would have been familiar to owners of the earlier model too. There was still something of a scattergun approach to the positioning of the minor controls, the three-spoke steering wheel and spindly gear lever were both present, and the five-dial instrument pack was unchanged, save for a boost gauge on the rev counter. With air conditioning, electric windows, tinted glass and leather trim all standard, owners didn't want for kit, though few could resist raiding the options list for niceties like a sunroof and limited-slip differential. Over time, Porsche would add central locking, headlamp washers and electric seats to the kit-count.

But as impressive as the standard car was, a steady program of improvements focused on tweaks to the mechanicals that aimed to improve reliability and efficiency. In fact, the latter proved ➲

The four-speed gearbox is a remarkably simple yet effective piece of engineering by today's standards, giving the driver a delightfully long throw between gears and feeling incredibly solid. The cassette player is dated now, as is the never-ending aerial that arises from the nearside front wing when turning the casette player on. The tape deck in the centre console is a charming feature in our opinion, however

SLANTNOSE: UNDER THE HOOD

The Slantnose model is worth a closer look, not least because of the eye-watering price. Joining the UK range in 1986, designated as the Turbo SE, it cost barely £74,000 – almost twice as much as a standard model. Apart from the restyled bodywork and a raft of extra interior kit, the power output was now a healthy 330bhp. Elevating the top speed to 170mph, this came courtesy of mechanical changes that included a larger intercooler, increased boost, greater valve lift and a freer-flowing exhaust. For those who could afford it, this was the pinnacle of the 930 Turbo.

The Slantnose 930 immediately stands out thanks to its restyled front end and skirts

The 930's seats suitably bolstered the driver's seating position at the time. Other interior luxuries included electric sunroof and windows, plus air conditioning

to be something of a bugbear for owners, as they discovered economy that struggled to rise above the mid-teens, and ever-more stringent emissions legislation led to the withdrawal of the 3.3 Turbo from the US and Japanese markets in 1979 (the addition of LE-Jetronic injection and a catalytic converter saw it return to the US in 1985). Minor changes included the fitment of dual tailpipes for the exhaust and a more effective tubular brass oil cooler, followed later by changes to the exhaust and fuel injection system that improved economy further still and boosted torque to a substantial 432Nm. But by far the biggest development – and one welcomed by potential Turbo owners – was the adoption in 1988 of the 'G50' five-speed gearbox. Already available in 3.2 Carrera models since the previous year, the new transmission and accompanying hydraulic clutch transformed the driveability of the Turbo. Gone was the irritatingly vague gear change of the four-speeder, the revised ratios not only allowing drivers to make the most of the performance on offer, but also doing much to reduce the turbo lag that blighted the model. At the same time, the Turbo benefitted from upgrades to the suspension that included firmer dampers and fatter antiroll bars bringing a marked reduction in body roll and less pitch and dive under acceleration and braking.

By the mid Eighties, buoyed by the success of the Coupe, Porsche were keen to expand the range of Turbo models, the first of which was the Slantnose. Covered in more detail in the separate section, its design was inspired by the successful 935 race cars and consisted of a new front end featuring flattened wings and a set of 944-style pop-up headlamps. The new nose was accompanied by sill extensions, even more heavily flared rear wings covering wider wheels and substantial air intakes in the rear wheel arches. Interestingly, the slantnose shape was first seen in 1981 when it was made available by special order, although it was 1986 before it joined the range full time. Not everyone was a fan, but it made a statement, not least of which being that the buyer had deep pockets!

There was time for one last hurrah for the Turbo, Porsche providing buyers with a taste for fresh air motoring with an opportunity to sample that turbocharged shove in both Targa and Cabriolet flavours. The Targa roof wasn't new of course, the arrangement having been available on 911s since 1967, and the Turbo utilised the same lift-out roof panel as its naturally

BUYING TIPS

Despite a reputation for superb build quality and engineering, buying an older 911 always needs a degree of care, and the 3.3 Turbo is no different. Originality and an unimpeachable maintenance record is the holy grail with these cars, and with the newest example being almost 25 years old it pays to be cautious.

- **Corrosion:** Rot can affect a number of areas, including the wings and the boot floor. Inspecting the car on a ramp is recommended.
- **Engines:** The flat six can suffer from broken cylinder head studs and oil leaks, both of which can be costly to fix.
- **Heating:** Corroded heat exchangers are a common issue, and renewing a complete system including exhaust will leave little change from £2,000.
- **Low mileage:** Lack of use can cause various issues, including binding brake calipers. A specialist overhaul will be needed, so budget accordingly.
- **Interiors:** Condition is everything, and buyers value originality. Watch out for non-functioning electrics and broken air conditioning, which are costly to put right.

> "A STEADY PROGRAM OF IMPROVEMENTS FOCUSED ON TWEAKS TO THE MECHANICALS THAT AIMED TO IMPROVE RELIABILITY AND EFFICIENCY"

Power in the 3.3-litre motor was upped to 300bhp, considered astronomical in the late Seventies and still quick today

OWNING A 3.3 TURBO

- **Current price:** £26,249 (1979)
- **Total numbers sold:** 1,034
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £359 minor
- **Service costs major:** £1,035 major

(Figures courtesy of Porsche Guildford)

aspirated brethren. The Cabriolet wasn't exactly unexpected either, having been introduced to the 911 range for 1983, but the combination of an electrically operated cloth hood and turbo power was appealing, and it remained a popular addition to the range right through to the end of production. And that end wasn't far away, the launch of the '964' model in August 1989 being a sign that Porsche was ready to take the 911 in a new direction. A month later the 3.3 Turbo bowed out, and after more than a decade that saw almost 17,000 cars leave the production line, it was time for the company to focus on the next generation. 911

"I'VE GOT ONE"

"The 930 has always been a dream car for me, and I bought mine in May last year. Living in Rio de Janeiro, I had to import the car to Brazil. The motor was completely rebuilt, and I got new tyres, new headliner and new AC. It finally arrived in Rio in December, due to the local bureaucracy... I drive the car at the weekend, and it gives me the ultimate pleasure. I suggest everybody who wants to buy a 930 to do the PPI. The motor is the most important part in the car, but the only bad point in my opinion is the AC. In 1979 it wasn't as efficient as the new ones, so I decided to change the old AC for a new one."

Richard Klevenhausen

964 Turbo 3.6

Get it for
£120,000-£130,000
$180,000-$195,000

Performance
★★★★☆

Maintenance costs
★★★★☆

Rarity
★★★★☆

Value
★★★★☆

TURBO 3.6 S

Having launched a Turbo S version of the 3.3-litre car at the 1992 Geneva Motor Show, it's perhaps no surprise that Porsche would look to repeat the trick with the outgoing 3.6-litre model. Built by Porsche Exclusive, there's the usual debate over the actual numbers produced, but the most accurate story seems to be 93 examples with 76 of those in flat-nose 'Flachbau' form and 17 with the standard front. The majority utilised the same headlamps as the 968 coupe, but interestingly the cars for the Japanese market received a front end more reminiscent of the 930 SE. The engine – now known as the M64/50S unit – benefitted from the X88 upgrade which resulted in 385bhp and would receive a raft of changes that included a re-designed sports exhaust system, a larger KKK K27 blower, a larger intercooler and alterations to the cylinder heads, valves and valve timing. A different clutch and flywheel also featured. Costing around £130,000, the 'S' also received a different design of front and rear spoiler along with air intakes in the rear wings.

964 TURBO

Turbocharging has been part of the Porsche legend for decades and with so few built, the later 3.6-litre 964 model is particularly sought after. Total 911 takes a closer look

Written by **Chris Randall** Photography by **Phil Steinhardt**

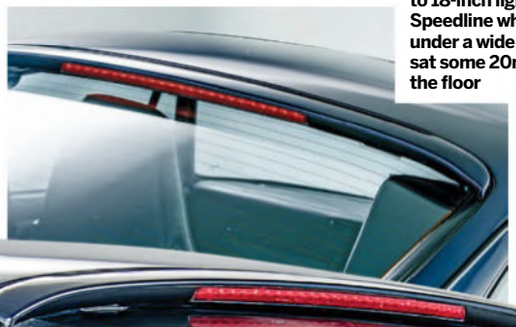
Regular readers of this magazine will need little reminding of just what a step change the 964 generation represented when it came to the evolution of our favourite sports car. It was a model that ushered in a whole new era, one that was smoother and more aerodynamic – the drag coefficient of standard models was a creditable 0.32 – not to mention a great deal more rigid than the 3.2 Carrera it succeeded. There was an electrically-operated rear spoiler for the first time, and even greater changes beneath the skin with 911 buyers getting their first taste of power-assisted steering, anti-lock brakes and a more modern suspension arrangement to replace the torsion bar springs of old.

However, despite the introduction of a new 3.6-litre, 'M64' engine, what the range lacked was a turbocharged variant. In fact, it would be around a year before one arrived and when it did, it was equipped with an updated version of the 3.3-litre motor from the 930, albeit one that promised greater performance according to Porsche. Neither the media nor the Porsche faithful were entirely convinced, and it took until the Paris Motor Show in the autumn of 1992 before a blown variant of the larger engine was unveiled. With the 993 waiting in the wings, the 3.6 Turbo was on sale for barely a year with Porsche building just 1,437 examples (the number of right-hand drive variants is hard to pin down, estimates ranging from around 50 to 150 examples depending on who you ask).

Valuable and sought after today, just what made it so special? Well, the first thing was the engine – dubbed M64/50, it was a unit that had come in for some major modification compared to that found beneath the engine lid of standard 964s. With a 100 millimetres stroke and 76.4 millimetres bore (an extra three millimetres and two millimetres respectively), the headline numbers for the Bosch K-Jetronic injected and catalyst-cleansed 3.6 were an impressive 360bhp at 5,500rpm and 520Nm of torque at 4,200rpm, increases of 40bhp and 70Nm over the earlier 3.3. The compression ratio was raised slightly to 7.5:1 and while still utilising the single KKK turbocharger and intercooler from the smaller engine, it was deep inside the flat-six where the real changes had been made. The M64 crankcase effectively remained the same, but the pistons, connecting rods and crankshaft were all upgraded to cope with the extra power, the latter also receiving a vibration damper for smoother running. The cylinder bores were Nikasil ➲

"With the 993 waiting in the wings, the 3.6 Turbo was on sale for barely a year with Porsche building just 1,437"

Model	**964 Turbo 3.6**
Year	**1993-1994**
Engine	
Capacity	3,600cc
Compression ratio	7.5:1
Maximum power	360bhp @ 5,500rpm
Maximum torque	520Nm @ 4,200rpm
Transmission	Five-speed manual, rear-wheel drive
Suspension	
Front	MacPherson struts with coil springs; anti-roll bar
Rear	Semi-trailing arms with telescopic dampers; coil springs; anti-roll bar
Wheels & tyres	
Front	8x18-inch; 225/40/18
Rear	10x18-inch; 265/35/18
Dimensions	
Length	4,250mm
Width	1,775mm
Weight	1,470 kg
Performance	
0-62mph	4.8 secs
Top speed	174mph



Though the teatray wing from the earlier 3.3-litre 964 Turbo remained, the 3.6 was treated to 18-inch lightweight Speedline wheels sitting under a wide body that sat some 20mm lower to the floor

THE AIR-COOLED TURBO TIMELINE

1974
The 3.0-litre 911 Turbo with 260bhp is revealed at the London Motor Show in October, receiving huge acclaim

1977
Porsche announce the revised version with power hiked to 300bhp courtesy of a bigger 3.3-litre engine and an intercooler

1990
964 Turbo is launched, first generation cars appearing with a modified version of the 3.3-litre engine and 320bhp

1993
A blown 3.6-litre unit is fitted. Based on the standard M64 engine, power is up to 360bhp joined by lower suspension and 18-inch wheels

1995
993 Turbo arrives with more power and fitted with twin-turbochargers. Four-wheel drive and 'Big Red' brakes help keep things under control

1998
With air-cooling about to disappear, the 993 Turbo S is a fitting finale. Manual only, 450bhp is enough for a 186mph top speed and 0-60mph in a whisker over 4.0 seconds

"The upshot of all this work was a 964 Turbo that now boasted some mighty impressive performance figures"

coated and stainless steel rings had been added to improve the sealing of the cylinders, effectively curing the engine's propensity to leak oil.

The rocker arms and shafts were carried over from the 3.3, but new camshafts were fitted to operate the two valves per cylinder, a more aggressive profile increasing the valve lift on both intake and exhaust sides, and the cam timing had also been altered. The intake valves themselves were as found on the 3.3 but the exhaust valves that were increased in size to 42.5 millimetres were now made from 'P25' steel and no longer sodium filled. While we are on the subject of the cylinder heads, they now boasted just one spark plug per cylinder, the twin distributors and dual plugs of the standard engine ditched for the new application. The plugs themselves were long-life items and the distributor drive was modified too. The heads also allowed for the addition of secondary air injection as part of the emissions system, with an air pump driven by a belt from the camshaft.

The lubrication system was essentially the same dry sump arrangement found on the standard M64 engine, although it received minor modification in order to provide an additional oil feed to the turbocharger. Alterations to the throttle body and a re-mapped ignition ECU completed the mechanical changes, while the engine and gearbox themselves now sat on revised hydraulic engine mounts. The upshot of all this work was a 964 Turbo that now boasted some mighty impressive performance figures, with a top speed raised to 174 miles per hour and the 0-62 miles per hour sprint despatched in an internal organ-rearranging 4.8 seconds. Not only that, but Porsche also claimed that the plumper torque curve noticeably reduced turbo lag, while economy was improved by somewhere in the region of five per cent. It's probably fair to say that the former would be more important to owners than the latter.

To cope with the added power now heading for the rear wheels, the clutch came in for some beefing up, as did the driveshafts, and the 3.6 was fitted with the five-speed manual G50/52

The opulent 964 Turbo 3.6's cabin is well appointed, with electrically adjustable front seats covered in an abundance of supple leather. A five-speed manual transmission was of course compulsory

transmission and a dual-mass flywheel. Also standard for the new model was a limited-slip differential that featured carbon plates for greater durability, with a locking ratio of 20 per cent under power and 100 per cent on the over-run. Needless to say, Porsche ensured that the new car would stop as well as it went and that meant the fitment of 322 millimetres discs at the front and 299 millimetres items at the rear, both ventilated and cross-drilled and clamped by aluminium alloy four-piston 'Big Red' callipers with larger brake pads. Bosch ABS was standard. Suspension-wise, the 3.6 Turbo still featured the basic 964 arrangement of struts up front and semi-trailing arms at the rear, and incorporated anti-roll bars at both ends and twin-tube gas dampers. However, with the M030 suspension package as standard, the new car sat 20 millimetres lower than the 3.3 and the spring rates had been stiffened by some 12 per cent.

BUYING TIPS

Relative rarity in 911 terms should mean that cars have been pampered, but there's no guarantee. Given their value, a forensic examination before purchase is a must.

- **Bodywork:** Expect it to be immaculate – be wary of any thing that isn't. Look closely for signs of mismatched paintwork signifying previous repairs, and make sure you know what was done.
- **Engine & Transmission:** Strong if looked after, though broken cylinder head studs are worth checking for. Specialists recommend having a cylinder leak-down test to ensure the head and cylinders are healthy. Be wary of any modifications, unless you're sure of their provenance. The gearbox is considered bomb-proof in normal use and the LSD shouldn't give trouble.
- **Running gear:** A steel plate within the alloy brake calliper can lift due to corrosion, so get them checked. At the time of writing, rear axle strut bushes (at the camber and toe adjustment point) were unavailable. They were £650 new. Watch for perished front wishbone bushes too – you'll need two of them at £500 each including VAT.
- **Wheels:** Those Speedline rims are lovely, but they can suffer from corrosion and may have been refurbished. They aren't cheap to replace – around £1,500 each.
- **Interior:** Aside from signs of wear and tear, there's little to worry about. Check everything works, especially the heating and ventilation system as it's known to play up.

Standard wheels fitted to the 3.3 were replaced by rather more dramatic looking 18-inch Speedline rims of a three-piece design. An inch wider at both the front and rear – measuring eight and ten inches respectively – they wore 225/40 rubber at the front and 265/30 at the rear.

It's perhaps no surprise that the exterior of the new car would receive attention too, buyers keen to ensure that onlookers were aware of the fact that they'd parted with almost £73,000 to get behind the wheel of this final 964 iteration. The first thing to give the game away would have been the more flared wheel arches, the result of a 25 millimetres increase in width to cope with the wider track and fatter wheels, and the particularly keen-eyed might also have spotted the more aerodynamic 'Cup' door mirrors and the rear bumper that featured the same centre section as the 964 RS. Less obvious would have been the re-profiled undertray beneath, and the fact that the drag coefficient had increased from 0.32 to 0.35. Still, with those split-rim wheels, fixed rear spoiler and lowered stance, little more adornment was needed to denote this particular 964 as something very special. Mind you, if a nosey passer-by had peaked through the windows, they would have certainly noticed the opulent interior that Porsche had endowed upon this new Turbo variant. The basic cabin architecture might have been familiar from the rest of the 964 range – think classic five-dial instrument pack, centre console and electronically controlled heating and ventilation that actually worked – but it was smothered in soft leather. The sports seats were electrically adjustable and were matched by a lavish standard specification that included electric windows and central locking, an alarm and immobiliser, air-conditioning, a top-notch hi-fi and a trip computer. As with all 964s, driver and passenger air bags were standard as well – the former still fronted by a slightly ugly steering wheel – but there was still some scope for buyers to add to the kit count, an electric steel sunroof and upgraded sound system being amongst the most popular choices.

Today, this coveted iteration of the Turbo breed commands very high prices, and it takes only the briefest skim of the facts and figures to realise why. Not only is it relatively rare – a fact guaranteed to get 911 enthusiasts like us drooling – but, more importantly, it's immensely capable. That engine packed a sledgehammer punch, but still managed to be civilised and controllable when you weren't in the mood, while the chassis modifications provided the 3.6 with supreme ability at maximum attack. Together with those looks, it's a very potent recipe indeed. 911

"Today, this coveted iteration of the Turbo breed commands very high prices"

SPECIALIST VIEW

"Any Turbo is of course a special 911 but the 964 in later 3.6-litre specification is even more so. With only a very short production life, numbers of these are low, particularly for a right-hand-drive car as we have here. We've also been lucky enough to sell one or two examples with the ultra-desirable X88 Powerkit option.

Boasting great power that's usable on our roads, the 964 Turbo 3.6 holds provenance as it's the last 911 Turbo to utilise that single turbocharger, just like the original 930."

Jonathan Franklin, Hexagon Modern Classics

OWNING A 964 TURBO 3.6

- **Price new:** £72,294
- **Numbers built:** 1,437
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £358
- **Service costs major:** £528 (£900 with spark plug change)

(Figures are courtesy of Paragon Porsche)

"I'VE GOT ONE"

"I recently purchased a 964 Turbo 3.6 from New Zealand after falling in love with a photograph of what I believe to be the most beautiful 911 that Porsche made.

The engine has been rebuilt and I have taken the liberty of lowering it ever so slightly as I feel that 964s sit a tad high.

My journey is almost complete and I can't wait to enjoy my 'factory fresh' 964 Turbo, getting to experience that unbelievable rush of torque whilst sitting in a well-built engineering masterpiece, soaking up that proper 'old school' 911 leather smell. As you can imagine, excited doesn't quite cut it!"

Richard P

996 TURBO

The rear spoiler was unique to the Turbo and was raised hydraulically at 75mph, helpfully flagging your speed to law enforcement!

996 Turbo

Get it for
£30,000-£45,000
45,000-$67,500

Performance
★★★★☆

Maintenance costs
★★★★☆

Rarity
★★☆☆☆

Value
★★★★☆

> THERE WERE CHANGES THAT INSTANTLY SET THE TURBO APART FROM ITS NORMALLY ASPIRATED BRETHREN

The 996 had already caused waves in the 911 world thanks to its water-cooled engine, but was the Turbo the car to mollify the detractors?

Written by **Chris Randall** Photography by **Phil Steinhardt**

Model Year	996 Turbo (2002)
Engine	
Capacity	3,600cc air-cooled flat six
Compression ratio	9.4:1
Maximum power	420bhp @ 6,000rpm
Maximum torque	560Nm @ 2,700-600rpm
Maximum torque	Six-speed manual or five-speed Tiptronic automatic, four-wheel drive
Suspension	
Front	MacPherson strut with coil springs; antiroll bar
Rear	Multi-link with telescopic dampers, coil springs; antiroll bar
Wheels & tyres	
Front	8x18 inches, 225/40/ZR18
Rear	11x18 inches, 295/30/ZR18
Dimensions	
Length	4,435mm
Width	1,830mm
Weight	1,540kg
Performance	
0-62mph	4.2 secs
Top speed	189mph

Not everyone was a fan of the 'runny-egg' headlamps, although the Turbo was the first 996 to sport the improved 'facelift' lights

The 996 was something of a revelation at launch, not least because it introduced 911 buyers to the world of water cooling. Needless to say, this development wasn't met with universal approval, despite being caused by legislative changes that Porsche had no control over. We've previously looked at the 996 as a buying proposition, but one model that did hit the mark was the Turbo that arrived in 2002.

In terms of style, the 996 embraced the familiar 911 DNA – even if Pinky Lai's design was somewhat smoother and less aggressive than previous iterations. But there were changes that instantly set the Turbo apart from its normally-aspirated brethren, most noticeably at the front and rear. The front bumper was now deeper and contained a trio of large air intakes that fed much-needed air to the three engine-cooling radiators and the air-conditioning condenser. Incidentally, Porsche claimed that those radiators offered a 50 per cent larger cooling area and ten per cent improvement in overall cooling capacity compared to the outgoing and air-cooled 993 Turbo.

Cast your eyes towards the muscular rear wings – 66mm wider than a standard Carrera – and you'd come across intakes ahead of each rear wheel arch that force-fed air to the twin intercoolers, before arriving at a bumper unique to the Turbo with vents that helped draw air through those side intakes. Also new was the rear spoiler, the upper portion of which was lifted 2.4 inches by hydraulic rams when the speedometer hit 75mph. Overall, the 996's body was claimed to be 45 per cent stiffer than its predecessor – and lighter too – thanks to the greater use of Boron steel, high-strength steels and tailored blanks in key areas. It was also more aerodynamic than the 993, boasting a drag coefficient of 0.31 thanks to the smoother bodywork and extensive use of underbody panelling.

But the star of this particular show was to be found at the rear, hidden beneath various covers and bits of plastic trunking. So while the 3.6-litre unit didn't look that dramatic when you peered in the engine bay, there was no doubting the depth and effectiveness of the engineering. Rather than the occasionally troublesome M96 motor found in other 996s, the engine was based on that found in the 993 Turbo, and it was one that benefitted from Porsche's obsessive attention to detail.

At its core was a light-alloy crankcase, Nikasil-coated cylinders, lightweight aluminium pistons and forged connecting rods, with chain-driven camshafts incorporating VarioCam Plus variable valve timing. A dry sump system took care of lubrication, while the boost was provided by a pair of KKK turbos sucking air through twin intercoolers. With a 9.4:1 compression ratio and Bosch's 7.8 Motronic management system keeping a tight rein on proceedings, the result was a storming 420bhp at 6,000rpm, 560Nm of torque and

TURBO TIMELINE

1974
The first 911 Turbo arrives with a 3.0-litre engine and single turbocharger, delivering 260bhp

1977
The revised version is announced, with 300bhp of power thanks to a 3.3-litre engine and intercooler

1989
Production of the 930 generation of Turbo models ends with over 21,000 examples sold

1990
964 Turbo appears with a version of the 930 3.3-litre engine and 320bhp, later a 3.6-litre engine is produced

1995
993 Turbo arrives with more power and fitted with twin turbochargers, plus four-wheel drive

2000
Power rose to 420bhp with the arrival of the 996, the first of the water-cooled Turbo engines

2006
The Gen1 997 Turbo is introduced with even more power, now 480bhp, and Variable Turbine Geometry

2009
Porsche release Gen2 997 Turbo with 500bhp plus a Turbo S with 530, before the arrival of the 991 Turbo

SPECIALIST VIEW

"The 996 Turbo has been an interesting car to track. We noted that values hit an all-time low around the £20,000 mark. Unfortunately, this meant some cars slipped into the hands of buyers that perhaps couldn't maintain what was once a £100,000 supercar, and as such these cars can be financially ruinous. The Turbos to get involved with are cars with excellent histories. Really, £26-27,000 is now the entry point. Manual Coupes are the car of choice, with X50-optioned cars commanding a premium and Turbo S variants leading the way on values. As the resurgence in 996 values has just begun, the 996 Turbo is becoming a modern classic, but one that can hold its own against more modern machinery. If current classic 911 prices are anything to go by, I would buy one now."

Greig Daly, RPM Technik

Purposeful dual exhaust tips were further unique additions, mounted in a redesigned apron that drew air through the wing-mounted intakes

The active rear wing on the 996 was a Turbo first, and is a trait embodied on the 911 with forced induction today

> JUST FIVE PER CENT OF THE POWER WAS SENT TO THE FRONT AXLE IN NORMAL RUNNING, ALTHOUGH THE ELECTRONICS COULD INCREASE THAT TO UP TO 40 PER CENT AT MAXIMUM ATTACK

a power to weight ratio of 272bhp per ton. It was capable of firing the car to 60mph in 4.2 seconds and onto a shade under 190mph. Even those purists that bemoaned the lack of air cooling couldn't fail to be impressed by numbers like these, which are still more than respectable for a supercar today.

Responsibility for getting power to the road – and keeping your precious 996 separated from hedges and other road-side furniture – fell to a viscous-coupled four-wheel-drive system. Just five per cent of the power was sent to the front axle in normal running, although the electronics could increase that to up to 40 per cent at maximum attack, and it was backed by the full gamut of microprocessor-controlled safety systems, including Automatic Brake Differential, which braked a spinning wheel to restore grip, and Porsche Stability Management.

Buyers opting for six-speed manual transmission got a cable-operated shift that Porsche claimed reduced weight and vibration, while the gearbox featured redesigned internals for a quicker shift and greater longevity. A dual-mass flywheel was standard, as was a servo-assisted clutch mechanism similar to that seen on the 993 Turbo.

But if you wanted access to the performance to be a little easier to come by, you could now specify your Turbo with a five-speed Tiptronic automatic gearbox. Many owners did, and while outright performance suffered slightly – a 0.6-second drop in 0-60mph time and 4mph slower overall – the ability to perform easily repeatable full-bore starts without fluffing your lines was seen as ample compensation by many. Manual shifts were managed by switches on the steering wheel, and while they were less

Porsche didn't skimp on luxury kit for the Turbo, and most owners duly obliged by raiding the options list. Popular additions were an upgraded Bose hi-fi and the PCM system with satellite navigation and telephone, although the handset looks dated here in a world of smartphones and Bluetooth

X50 POWER

As always, Porsche was on hand to offer the discerning 996 Turbo buyer something extra – just as long as they were prepared to pay around £6,000 for the privilege. The X50 Power Kit offered from 2002 boosted power and torque to 450bhp and 620Nm respectively courtesy of tweaks to the turbochargers, intercooler and ECU. Some balked at the extra cost, but it was effective, the 0-60mph time being shaved by a couple of tenths, with the 100mph barrier broken in around nine seconds. In 2005 the Turbo S was to prove a fitting end to 996 production, even if the £99,300 price tag was a touch eye-watering (the Turbo S Cabriolet weighed in at an even loftier £105,000). However, you did get the X50 modifications as standard along with the PCCB carbon-ceramic brakes, PCM with satellite navigation, the top-notch Bose hi-fi with CD changer and numerous other luxury accoutrements.

Although these weren't the most comfy seats to come out of Zuffenhausen, the leather trim was standard, and there was electric operation for them, too

BUYING TIPS

It will come as no surprise that a 911 with this magnitude of performance and ability needs proper looking after. An unimpeachable service record is also a must, as a neglected car could easily become a money pit.

- **Bodywork:** A history check will reveal any previous accidents, but keep an eye out for damage underneath caused by circuit 'offs'.
- **Engines:** Few inherent problems, but it's worth ensuring that the unit is leak-free and doesn't exhibit any electrical issues. They will take tuning, but ensure you're happy with what's been done before committing.
- **Cooling system:** The cooling radiators and air-con condenser can become clogged with debris, leading to corrosion. Check them thoroughly, as replacing the whole setup won't be cheap.
- **Transmission:** Expect some noise from the four-wheel drive system, but it shouldn't be excessive. Tiptronic automatic was popular and should be smooth, but check that the steering wheel switches work.
- **Suspension/Brakes:** A complete overhaul will be pricey, so don't skimp on the checks here. Given the eye-watering replacement costs, it's worth considering whether you really need the PCCB items.

> **AS YOU'D EXPECT, THE TURBO BENEFITTED FROM THE UPDATES THAT WERE APPLIED TO THE REST OF THE RANGE OVER THE ENSUING YEARS**

handy than the now ubiquitous paddles, they worked well enough on the whole.

Porsche paid plenty of attention to the rest of the mechanicals too. 10mm lower and with extensive use of lightweight alloys, the front suspension was still a MacPherson strut arrangement, but new bearings for the control arms improved wheel location, while the shape of the steering knuckles was tweaked for optimum brake cooling.

At the rear was the same multi-link setup found on standard 996s that was mounted on a separate subframe, although the wider track demanded some changes, like the use of longer control arms. The deliciously accurate rack and pinion steering featured speed-sensitive hydraulic assistance.

Make full use of the turbocharged shove, and you could reel in the horizon at a ferocious rate, so the attention Porsche had lavished on the brakes was more than welcome. The standard arrangement comprised 330mm steel discs that were cross-drilled and ventilated, and gripped by 'Big Red' four-piston calipers, backed by Bosch 5.7 ABS.

For those with track action in mind, you could specify your Turbo with PCCB carbon-ceramic stoppers. Claimed to offer a 50 per cent weight reduction over steel items, disc diameter grew to 350mm and the yellow calipers now contained six pistons. Fronting the anchors were 18-inch hollow-spoke 'Turbo II' alloy rims wrapped at launch with Pirelli P-Zero rubber. Not only did the new design contribute to a reduction in aerodynamic lift; they also helped draw hot air from the brakes and saved ten kilograms overall compared to the solid-spoke items. Those prone to such detail could tell them apart by checking the rear of each spoke – rounded when hollow rather than ribbed.

Head inside, and buyers enjoyed the extra room and strong build quality of all 996s, and there was plenty of standard kit too. Leather upholstery adorned the electrically adjustable seats, while climate control and an electric sunroof were included. You also got 'Litronic' bi-xenon headlamps and a top-quality hi-fi system, although it was easy to see the price approach six figures if you got carried away with the options. Most opted for the PCM communications system with satnav, while upgraded Bose sound and different interior finishes were temptations. There was also an extensive range of exterior colours, although most opted for the resale safety of darker hues, leaving Speed yellow for the more flamboyant buyer.

As you'd expect, the Turbo benefitted from the updates that were applied to the rest of the 911 range over the ensuing years. 2001 saw a series of minor tweaks, including electric releases for the front and rear lids, replacing the cables and aluminium levers fitted at launch, while a software update in that year improved the throttle response. Cabin upgrades for the 2002 MY were more extensive, including an opening glovebox lid, cup holders, improved ventilation and some softer-touch

OWNING A 996 TURBO

- **Price new:** £86,000
- **Total numbers sold:** Approx 22,000 (all variants)
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £301.40
- **Service costs major:** £970.60 (manual gearbox)

(Figures courtesy of RPM Technik)

plastics. Rain-sensing wipers and an auto-dimming interior mirror were added, while the Bose stereo was standard. Crash safety and body stiffness also increased, and the arrival of the Convertible variant in 2003 meant you could enjoy some rapid hair ruffling if al fresco motoring was your bag.

The 996 wasn't always welcomed with open arms, but it proved that Porsche's turbocharging mojo was as strong as ever. Air cooling might have gone, but this iconic sports car remained in the rudest of health, and the 996 Turbo is now considered one of the best-value supercars on the used car market today. **911**

"I'VE GOT ONE"

"I remember the 996 Turbo's release fondly, a month or two before my 18th birthday. I saw it on *Top Gear*, and thought 'One day, one day.' Well, that day was yesterday! The surroundings are familiar next to the C4, but behind the wheel it feels totally different. The steering is a lot heavier, the chassis feels more planted, and there's less body roll. Power delivery is incredible, the torque is just stupendous, and it's very fast, even when you're just pootling through the gear. Its limits, at least at this point, seem to be moons ahead of mine, and I do find the car somewhat intimidating – which is the point, right?"

Joel Newman

997 TURBO S

The wider Turbo body caters for vents in the rear arches that feed air to the intercoolers

Big yellow brake calipers are another sure sign of a Turbo S, while ceramic discs eliminate brake dust

997 Turbo S

Get it for
£70,000-£100,000
$105,000-$150,000

Performance
★★★★★

Maintenance costs
★★★★★

Rarity
★★★★☆

Value
★★★★☆

> THE TURBO HAS ALWAYS BEEN THE PINNACLE OF THE 911 RANGE

The 996 Turbo S left motoring scribes gasping, while the 997 made the previous model seem dated. Total 911 looks at the background to the most blistering Turbo model yet

Written by **Kieron Fennelly** photographed by **Jonny Gawler**

The front spoiler aids aerodynamics and feeds air to the brakes

Specification

997 Turbo S

(2010)

Engine

Capacity: 3,821cc twin turbocharged and water-cooled flat six

Compression ratio: 9.8:1

Maximum power: 530bhp@ 6,750rpm

Maximum torque: 700Nm between 1,900 & 5,000rpm

Transmission: Seven-speed Porsche double clutch, all wheel drive

Suspension

Front: MacPherson strut

Rear: Multi link with coil springs

Wheels & tyres

Front: 8.5x19-inch; 235/35/19

Rear: 11x19-inch; 305/3019

Dimensions

Length: 4,435mm

Width: 1,808mm

Weight: 1,585 kg

Performance

0-60mph: 3.3 seconds

Top speed: 195mph

From its introduction in 1975, the Turbo has always been the pinnacle of the 911 range, but in more recent times Porsche's astute marketing machine realised that if an 'S' niche worked for the Carrera and other Porsche models, then logically a similarly higher powered Turbo 'S' version should top the Turbo range. "Given a choice, customers will always take the faster car," says August Achleitner, who led the engineering team behind the 997 Turbo. He bases this assertion on experience with the 997, which shows that the 3.8 Carrera S outsold the plain 3.4 Carrera by a ratio of three to one. As is well known in the motor industry, the better specified a production model, the more profit the manufacturer makes from it.

Just as the 996 brought the 911 bang up to date, the Turbo, launched in 2001, did the same for the blown model, and the 996T soon gained the enviable reputation of being the most accessible and usable super car on the market. From the very beginning, Porsche has always made its Turbo stand out from lesser 911s with wider haunches and aerodynamic appendages. The 996 Turbo was the first, however, to be accused of looking slightly bland. With its side skirts, turbo hips and lower front and rear valances, it certainly stood apart from its normally aspirated sister, but for some it did not appear special enough for a model retailing in Britain for upwards of £90,000. Arriving in 2004, the 996S did gain white, turbo-inscribed instruments and turbo flashes on its sills, but at this stage Porsche was preparing to introduce the 997 so the changes were limited.

Though the 997 was basically a reskin of the 996, Porsche evidently took criticism of the styling of its first water-cooled 911 to heart, for the new model had more of the much-admired 993, especially its front. So when the Turbo arrived shortly afterwards it was, as anticipated, a distinctly more interesting design, with a number of changes to make it appear more aggressive. The rear wings were 22mm wider and the valances were revised, the rear incorporating new exhaust outlets and a horizontal bar at the front containing the now obligatory LEDs, as well as reducing lift by redirecting airflow. Less successful in some people's opinion were the ostentatiously chromed five-spoke wheels, which **Total 911**'s then editor thought would be more appropriate on a gangster rapper's motor.

The interior of the 997 was of far higher quality than the 996, and this was better expressed nowhere than in the cabin of the Turbo S, which had its own distinctly luxurious two-tone leather adaptive sports seats together with 'Turbo' reminders in the instruments and on the door sills. The S also saw the introduction for the first time of an S Cabriolet, priced a cool £7,000 over the Coupe.

TURBO TIMELINE

1974
The first 911 Turbo model is revealed to the public, featuring a 3.0-litre 260bhp engine and now trademark rear spoiler.

1977
The first performance jump came in 1977 with the intercooler-equipped 300bhp 911 Turbo 3.3.

1990
Customers could now order the new 964 Turbo, featuring a further-tuned 3.3-litre engine found in the 930.

1992
The 964 Turbo was upgraded to a more powerful 3.6-litre engine.

1995
993 Turbo was the first to have a bi-Turbo engine, reducing lag.

2001
The first water-cooled Turbo engine arrived with the 996.

2006
997 Turbo introduced with 500bhp engine. Later given facelift and mechanical update.

2009
526bhp Turbo S arrives in bodyshell of facelifted 997.

SPECIALIST VIEW

"997 Turbo S models were built in small numbers and left the factory with a great spec. Big power combined with PDK gearboxes make them ideal daily drivers or special cars for the weekend. As with all of the lower production number factory specials, buyers suspect residuals will firm at a higher price when they eventually settle. Look out for cars that have been on track or have damaged ceramic brakes, as they cost a fortune to replace."

Darren Anderson, RPM Technik

The bi-plane rear spoiler rises at speeds above 75mph, retracting again at 37mph

> THE HIGHEST LEVEL OF DRIVETRAIN TECHNOLOGY THAT PORSCHE HAS TO OFFER COMBINES PERFORMANCE WITH AMAZING REFINEMENT

Interestingly, there was no 'S' version with the original launch of the 997 Turbo; Porsche waited until the arrival of the Gen2 engine before presenting the S variant of the turbocharged unit. The new engine represented perhaps the biggest milestone in the history of the Turbo, as the famous Mezger engine, versions of which had powered the Turbo for 34 years, was replaced by Porsche's completely new direct injection unit. This was a major development; direct injection, originally used on diesels, squirts fuel directly into the cylinders at very high pressure, eliminating loss and increasing efficiency while allowing better control of the mixture, which in turn enhances power and economy. It's a significant advance on traditional injection, which mixes the fuel and air in the manifold before it is sucked into the combustion chambers. After launching the Gen2 997 Turbo in September 2009, Porsche would finally unveil the 997 Turbo S at the 2010 Geneva Show. As with the 993 and 996 Turbo S models, it offered more power and torque than the 'base' Turbo, with 526 instead of 500bhp and 700Nm rather than 650Nm. Porsche claimed a 0.4 seconds faster 0-62mph time, too.

Known for its abrupt mid-corner turbo boost and equally sudden loss of adhesion, the early single Turbo 911s had something of a reputation as experts' cars – a state of affairs which perhaps suited Porsche at the time. But times and tastes change, and by the late Nineties twin turbo chargers were used for more modulated boost and four-wheel drive had completely changed the nature of the beast. The new century saw the introduction of electronic safeguards, notably traction control

An extra 26bhp was eeked from the revised 3.6-litre engine for the Turbo S

The Sport Chrono Package Turbo is standard on all Turbo S models, with visual features including a digital and analogue stopwatch in the centre of the dashboard, a performance display plus 'Sport' and 'Sport Plus' buttons, which illuminate on the steering wheel to notify the driver of the driving mode selected

AN AUTOMATIC CHOICE

One of the refinements of the 996 Turbo was a Tiptronic version – an important option on such a sophisticated GT and the absence of which on earlier Turbos no doubt cost sales. However, by 2000 Porsche was rightly confident that the Tiptronic would cope with the Turbo's torque, and the two turned out to be a particularly successful pairing. Technology moves on, though, and the automatic 997 Turbo had the PDK gearbox, which offers the same levels of refinement as the Tiptronic and quicker step off than the six-speed manual. The 997 Turbo S is the first 911 to be offered without a manual option. Porsche has said that the majority of sales will be of the PDK variant, so it was not worth upgrading the six speed manual gearbox to handle the 700Nm torque of the latest S variant.

PDK is fitted as standard on the 997 Turbo S

Occupant space is generous in the Turbo S, which features contrasting seams on the seats, door panels and dashboard

and Porsche Stability Management, which made exploiting the Turbo's immense performance more secure. The advent of the 997 Turbo saw this advance further, and the 2010 Turbo S sports the full panoply of electronic watchdogs. In addition to PSM and PASM (Porsche Active Suspension Management, which lowers the suspension by 20mm and firms up the damping), the Turbo S has Porsche Torque Vectoring, as well as the popular Sport Chrono. Of all the options, the Sport Chrono is one of the most useful: the accompanying Sport button remaps the engine to give a more aggressive response. In the case of the PDK-equipped Turbo S, Sport Chrono holds the lower ratios longer and controls the turbo's overboost facility. It also controls the adjustable engine mounts: in a new development, Porsche's Dynamic Engine Mounts are fluid-filled rather than the regular solid bushes. As such, they remain pliable when refinement is required, but they harden when commanded by the Sport Chrono to enhance stability during cornering.

PTV works by applying braking to the inside rear wheel (an intervention mandated by the PSM), and the effect of torque vectoring is to rotate the car into corners, which is particularly reassuring on wet surfaces and, in the words of Porsche development engineers, makes the 911 "handle more like a mid-engined design." With the Sport Chrono button on and backed up by the standard mechanical LSD, which allows earlier application of throttle, the Turbo S can be made to corner at speeds once thought to be physically impossible.

The larger diameter 19-inch wheels may reduce ride quality in full Sport mode, but this is a small price to pay. Indeed, the Turbo S's agility has been described as almost GT3-like – albeit without any of the road-going cup car's intensity or demanding nature.

With its redesigned Gen2 engine, the 997 Turbo S upholds the 911 Turbo performance tradition. It doesn't quite reach 200mph, and if its lighter and altogether more austere cousin, the 997 GT2, could pip it by 6-7mph, step-off in the Turbo S will always be faster to 100mph because, as Porsche's figures show, the PDK transmission can swap cogs faster than any driver with a manual clutch.

Total 911 has already commented on how the Tiptronic transmission suited the 996 Turbo, and though the 997 Turbo is held to offer a sharper drive, it does seem that intelligent automation is inevitable with this kind of performance, especially given the way the transmission works in conjunction with the car's dynamic control systems. Certainly, the coupling of the double clutch with the Turbo S's 526hp and 700Nm deploys this resource with aplomb. The 'highest level of drivetrain technology that Porsche has to offer' combines performance with amazing refinement. Adhesion on dry surfaces is phenomenal, and the S

BUYING TIPS

The Gen2 engine, introduced in 2008 and turbocharged a year later, has got off to a better start than Porsche's first water-cooled engine. The Gen2 unit is lighter and stiffer and has 40 per cent fewer parts: in four years it has gained a reputation as a well-engineered design. Given that the Turbo S model is less than three years old, used examples are likely to be in the hands of the OPCs, though RPM Technik in Hertfordshire currently have one for sale and ready to view in their showroom. However, despite the thoroughness of Porsche's used car inspection, there are a few points to bear in mind.

• **Warranty:** Most used Turbo S models will still have some of the standard two-year warranty period left. Consider extending this by a third year. Given the sheer power attributed to the Turbo S, check for crash damage.

• **Alignment:** Make a geometry check part of the deal. UK roads are increasingly pockmarked with holes and sunken drains, and many authorities will not repair them until they are over 40mm deep.

• **Coils:** A (rare) weakness is the ignition coils. See whether the OPC will consider replacing them as part of the sale, as the warranty does not cover consumables.

• **Price:** The Turbo S is firm at the moment, but value falls by ten per cent when a new model is launched. Is it worth delaying purchase until the 991 Turbo arrives?

• **Porsche Experience:** Do you really need a Turbo S? Go to Porsche Silverstone and try the plain Turbo or the new 991 Carrera S. You might surprise yourself!

Variable Turbine Geometry utilises vanes within the turbo that direct exhaust flow onto the blades, giving greater boost across a wider rev range

OWNING A 997 TURBO S

- **UK price:** (January 2013) £125,925 Coupe £133,663 Cabriolet
- **Numbers sold in UK (2011-13):** 350 (Coupe & Cabriolet)
- **Service intervals:** Two years / 30,000 km
- **Service costs minor:** £550
- **Service costs major:** £1,25v0 (includes spark plugs). Figures courtesy of Porsche Swindon

accelerates with the control and direction of a proverbial space rocket. Porsche's standard-fit ceramic PCCB brakes and six-piston aluminium calipers at the front and four behind are more than a match for the Turbo S's performance. They offer a durability which should extend through several service intervals, and will overcome complaints from owners of 997s with conventional brake linings that PTV increases rear brake wear. 911

"I'VE GOT ONE"

"I purchased my Turbo S with just 800 miles on the clock, and so far it has proved to be near faultless. Two things dominate the experience: the way it goes and the way it stops – it is an imperious ground-covering machine. The instantaneous PDK gear changes give monumental uninterrupted acceleration just when you need it, and the ceramics offer phenomenal, confidence-inspiring braking power. In the real world, few things stand a chance of keeping up.

The Turbo S is an entirely different animal to the fidgety 996 GT3 I had previously. Comfortable and composed when you want it to be (tyre noise and poor acoustics spoil total refinement), but a snarling beast when the mood takes you. The only thing I haven't sussed yet is whether you can completely lock out the kick-down in full manual mode.

Damian Butt

RENNSPORT


1/min x1000
VDO


PARAGON

964 RS

Get it for
£150,000-£230,000
$225,000-$345,000

Performance
★★★★☆

Maintenance costs
★★★☆☆

Rarity
★★★☆☆

Value
★★☆☆☆

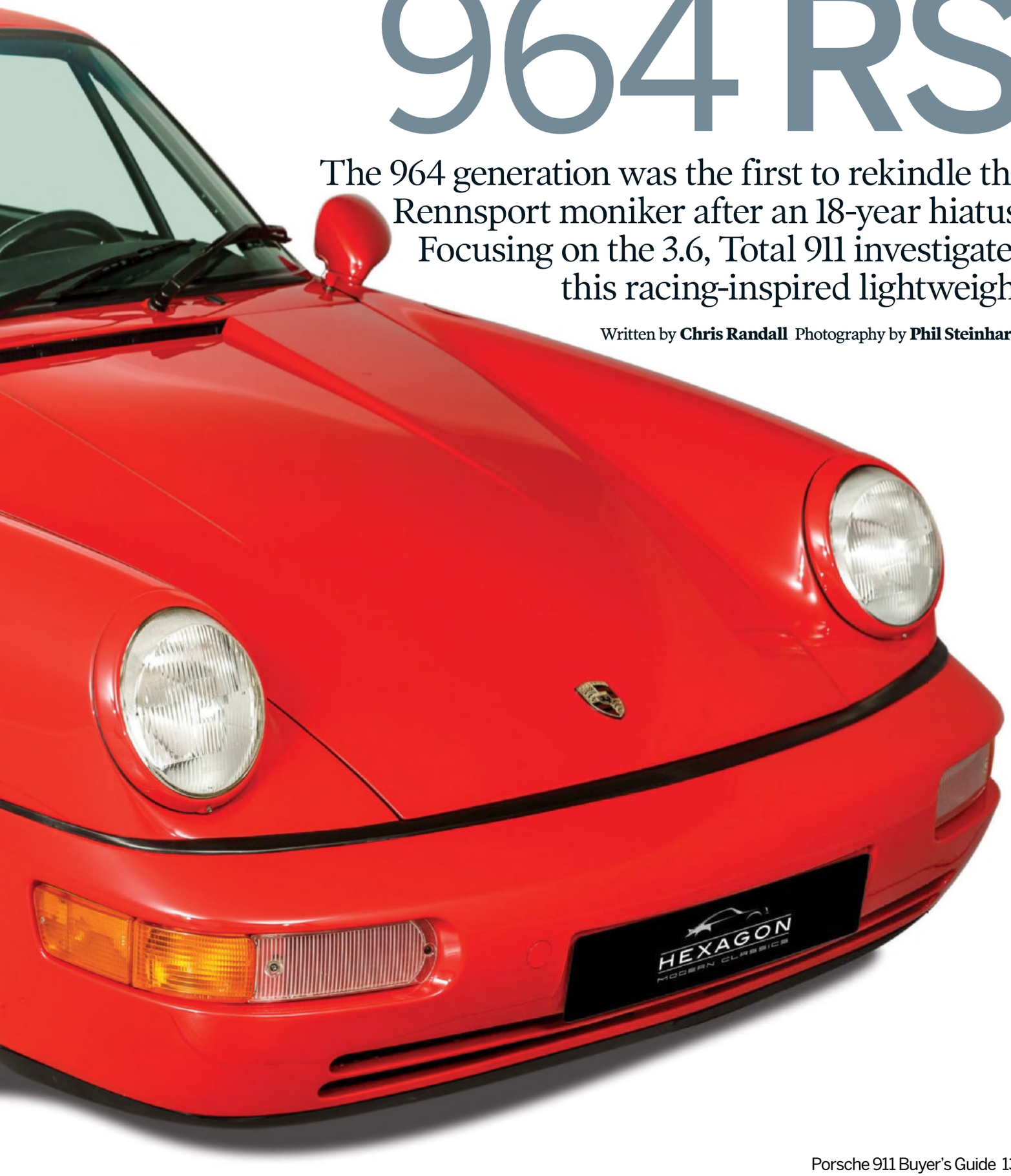
3.8-LITRE: THE WIDEBODY 964 RS

Porsche has always been adept at going that one step further. Just when you thought a model had reached its zenith, the company would launch something that little bit more special, and that's the case with the 3.8-litre RS version of the 964. Around 100 examples were built for 1993 so Porsche could mix it with larger-capacity GT racers, and that meant fitting a 3,746cc flat six, dubbed M64/04. The increase was courtesy of a 2mm-wider bore, and it was accompanied by a variety of engine modifications that included lighter pistons and an exhaust with less back pressure. The result was a storming 300bhp and 360Nm of torque, enough to punch the RS to 62mph in 4.9 seconds and on to 170mph. Those figures might have been higher still if it wasn't for the wide body that blunted the aerodynamics, although there is no doubting the effectiveness of the adjustable bi-plane rear wing. Completing the transformation were a set of impressively large Speedline alloys, a split-rim design that measured 9x18 inches at the front and 11x18 inches at the rear. The 3.8 also marked the first appearance of 'Speed yellow' paint, although more subtle colours were available for those wishing to make less of a statement.

964 RS

The 964 generation was the first to rekindle the Rennsport moniker after an 18-year hiatus. Focusing on the 3.6, Total 911 investigates this racing-inspired lightweight

Written by **Chris Randall** Photography by **Phil Steinhardt**



The last 964 to be subjected to the Ultimate Guide treatment was the Carrera 4, but this time we're focusing on a very special incarnation of the penultimate air-cooled 911.

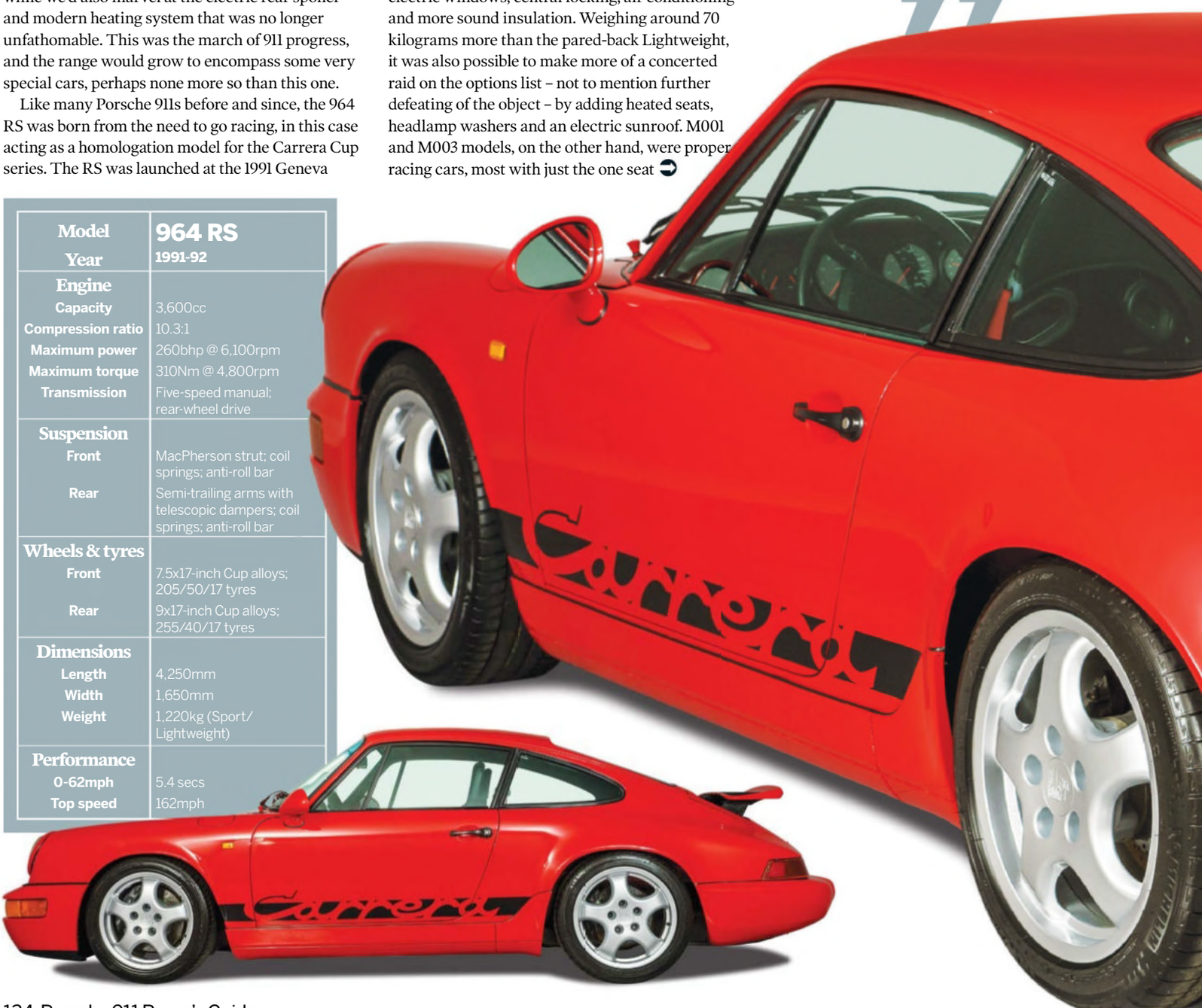
Before we get to the meat of what the RS is all about, however, it's worth taking a moment for a broader reminder of the 964's pivotal role in the model's evolution. Essentially, it stood as a bridge between the old guard that was the 3.2 Carrera and the 911s we admire today, introducing modernities such as power steering, anti-lock brakes and coil-sprung rather than torsion-bar suspension. Four-wheel drive and Tiptronic gearboxes also made their first appearance, and the 964 was both stiffer and more aerodynamic than its predecessor, while we'd also marvel at the electric rear spoiler and modern heating system that was no longer unfathomable. This was the march of 911 progress, and the range would grow to encompass some very special cars, perhaps none more so than this one.

Like many Porsche 911s before and since, the 964 RS was born from the need to go racing, in this case acting as a homologation model for the Carrera Cup series. The RS was launched at the 1991 Geneva Motor Show, and went on sale later that year as a 1992 model, with total sales reckoned to be in the region of 2,400. Production would be split between four key variants – the majority of which (just under 2,000) would be in 'Sport' or 'Touring' specification, with the remainder in 'M001' and 'M003' form – and it's worth exploring those in more detail before going any further. The Sport model was marketed as 'Lightweight' in the UK, and was designed both as a road car and club racer, making it uncompromising as a choice for the daily commute. Closer to the race cars in reality, there were no luxuries inside, although you did at least get a smattering of carpet – albeit a very thin one.

As the name suggests, Touring models were a little more comfortable, gaining leather-clad seats from the Carrera 2 and niceties such as a stereo, electric windows, central locking, air conditioning and more sound insulation. Weighing around 70 kilograms more than the pared-back Lightweight, it was also possible to make more of a concerted raid on the options list – not to mention further defeating of the object – by adding heated seats, headlamp washers and an electric sunroof. M001 and M003 models, on the other hand, were proper racing cars, most with just the one seat

"AS THE NAME SUGGESTS, TOURING MODELS WERE A LITTLE MORE COMFORTABLE, GAINING LEATHER-CLAD SEATS FROM THE CARRERA 2 AND NICETIES SUCH AS A STEREO, ELECTRIC WINDOWS, CENTRAL LOCKING, AIR CONDITIONING AND MORE SOUND INSULATION"

Model	964 RS
Year	1991-92
Engine	
Capacity	3,600cc
Compression ratio	10.3:1
Maximum power	260bhp @ 6,100rpm
Maximum torque	310Nm @ 4,800rpm
Transmission	Five-speed manual; rear-wheel drive
Suspension	
Front	MacPherson strut; coil springs; anti-roll bar
Rear	Semi-trailing arms with telescopic dampers; coil springs; anti-roll bar
Wheels & tyres	
Front	7.5x17-inch Cup alloys; 205/50/17 tyres
Rear	9x17-inch Cup alloys; 255/40/17 tyres
Dimensions	
Length	4,250mm
Width	1,650mm
Weight	1,220kg (Sport/ Lightweight)
Performance	
0-62mph	5.4 secs
Top speed	162mph



In true racing style, the 964 RS had internal and external engine cut-off switches, with a brace linking the front suspension struts, aiding rigidity

RS TIMELINE

1972
The legendary 2.7 RS launches the breed, and is worth a fortune today. 210bhp doesn't sound like much, but the reduced weight ensured a stunning level of performance.

1991
Launched at the Geneva Show, the 964 revives the RS moniker with both 3.6 and rare 3.8-litre variants. Power is up by 10bhp in 3.6-litre form, and weight is down compared to a Carrera.

1995
Porsche reprise the RS theme with the 993, the 3.8-litre engine revised for a 300bhp output. It was rear-wheel drive only, and notable for its aggressive looks.

2005
It was the 996's turn for the lightweight treatment, the GT3 making 381bhp. Top speed is an epic 190mph, but thankfully PCCB brakes are standard.

2006
The 997 RS was available in GT3, GT2 and rare GT3 4.0 forms. Power ranged from 415bhp to a slightly bonkers 620bhp in the GT2, the latter, of course, being turbocharged.

2015
The latest 991 is likely to arrive in GT3 RS form in 2015. Expect an output of around 500bhp and PDK gearbox as standard.

The interior of the 964 RS followed the Rennsport tradition of paring back on niceties to save weight. Notice the blanking plate in place of the radio/casette player, plus the minimalist door cards with grab handles

and strictly for track sorties. The M003 – built for the European GT championship and known as the 'N-GT' – was re-named 'Clubsport' for the UK, and boasted a Recaro seat that was shelled in kevlar and covered in fire-retardant cloth, as well as a four-point Schroth harness and Matter roll cage. This was very much the business end of the 964 RS.

Less complicated than the model range was the bodywork, the outline of which deviated little from the standard 964 – save for a handful of RS-specific tweaks. All versions featured a stronger seam-welded shell to withstand the battering from circuit curbs, and although it was zinc-coated as standard, the Lightweight models lacked the layer of underseal. These cars therefore got a three-year anti-corrosion warranty rather than the usual ten years. The Turbo-style teardrop mirrors were lighter and more aerodynamic, and there was a new rear bumper identified by numberplate lights positioned at the side rather than above.

Further weight-saving measures included a luggage compartment lid that was fashioned from aluminium, side and rear glass that was now just 3mm thick instead of 4.7mm, and a larger 92-litre plastic fuel tank in the nose in place of the standard car's 75-litre steel item. Porsche had done just what you might have expected with this special model, and approached the whole business with their usual laser-sharp focus and obsessive attention to detail. There were no half measures here, and the 964 RS was all the better for it.

However, in a far cry from the stratospheric power outputs we are used to today, things were to remain fairly standard in the engine room. Power for the 3.6-litre M64/03 unit was officially increased by just 10bhp courtesy of a revised ECU (although it was likely to be a little higher in reality), and a single or dual-mass flywheel was included depending on the model. The catalytic converters were retained, along with dual-distributor ignition and Bosch DME engine management, and although Porsche were cagey about other engine changes, it is reasonable to assume that greater attention was paid to the weight and assembly of the internals.

Apart from the very rare Carrera 4 Lightweight, drive was sent to the rear wheels via a Carrera 2 gearbox with revised ratios and stronger synchromesh, and there was a limited-slip differential. But with track action very much in mind, one area that did come in for attention were the brakes, those at the front being donated by the 964 Turbo with Carrera Cup items. That meant that there were cross-drilled and ventilated discs, in addition to four-piston calipers at each corner with ABS and the standard hydraulic booster.

Given the modest power increase and lower weight, the RS was arguably over-endowed in the stopping department, but the changes would have been reassuring – especially if fast-approaching Armco barriers were involved. Hydraulically

> LESS COMPLICATED THAN THE MODEL RANGE WAS THE BODYWORK, THE OUTLINE OF WHICH DEVIATED LITTLE FROM THE STANDARD 964 – SAVE FOR A HANDFUL OF RS-SPECIFIC TWEAKS

BUYING TIPS

A 911 of this type needs to be in nothing short of perfect condition, and signs that it might not have received anything approaching fastidious care should have you running a mile. The cost of sorting a bad one is likely to prove stratospheric, so you have been warned.

- **History:** Provenance is everything with an RS, so be extra thorough with the background checks. Fakes do exist, so be wary.
- **Bodywork:** The rising values keep many off the race circuit, but not all of them. Evidence of previous accident repairs will need investigation and assurance that all is now well.
- **Engine and Transmission:** A specialist inspection is best for peace of mind. Needless to say, any signs of smoke, oil leaks or nasty noises are a no-no if big bills are to be avoided.
- **Suspension/Brakes:** That specialist inspection will more than likely identify any issues here. Everything needs to be spot-on in order for an RS to give its best, and there's no reason to accept an unloved example.
- **Interior:** With a variety of choices, it's up to you exactly how stripped-back you choose to go, but just make sure you can live with the more uncompromising versions. Condition should be perfect, though.

assisted rack and pinion steering was retained, while the suspension gained uni-ball top mountings for the front struts, along with a strut brace, and there were cast-aluminium components present at the rear. The RS also sat 40mm lower than regular 964s, which provided a nicely purposeful stance, as well as ensuring that the 17-inch magnesium alloy 'Cup 91' wheels filled the wheel arches. Most road-going cars came fitted with Yokohama or Bridgestone rubber when new, and with 205/50s at the front and 255/40s at the rear, you'd need to be tackling public roads at an insane speed to run out of grip in the dry.

Jump inside, and what faced you depended on the level of weight-saving you'd chosen, although it was still recognisably a 964 cabin. Setting aside the true race cars, most opted for the next closest thing in the form of the Lightweight (or Sport) model, in which case you were in for a pretty Spartan experience. It goes without saying that air-conditioning and a stereo were off the standard menu, although you could add the latter at no extra cost, even if the likelihood of being able to enjoy those early Nineties chart hits was questionable given the limited soundproofing. You'd also find manual window winders attached to vinyl door trims that sported straps rather than proper handles, a lighter wiring harness, a thin carpet, and a pair of colour-coded seat belts. Also included were some subtle reminders of this car's potential in the form of an RS logo in the centre of the four-spoke steering wheel and RS script in the carpeted area – where the rear seats once resided.

If you still liked the idea of a 911 for the track, there was always the sanctuary of the Touring's more comfortable interior. The extra luxuries are detailed earlier on, but a fair few owners found this more to their liking. Most would also have been happy with the colour choices, which generally reflected the palette available to other 964 buyers. There was the usual selection of silver, black, Guards red, and blue, as well as the fetching Amethyst Metallic and the more exotic Rubystone red. Subtle it wasn't, with 'bright pink' probably the most accurate way to best describe this striking hue.

As recent values and auction prices have shown, there's no question that the 964 RS deserves to be taken seriously. Such purity of purpose hadn't been seen since the 2.7 RS first appeared some 20 years previously, and in our eyes that makes this model something to be cherished. As for the fact that the car you see in these pictures was driven by Walter Rohrl himself in its role as development car for suspension experts Bilstein – well, that's just the icing on the cake. 911

> THE RS SAT 40MM LOWER THAN REGULAR 964S, ENSURING THE 17-INCH MAGNESIUM ALLOY 'CUP 91' WHEELS FILLED THE WHEEL ARCHES

SPECIALIST VIEW

"Chassis number 491254 was originally supplied to Bilstein and driven by Walter Röhrl in the development of world-leading suspensions. The RS subsequently came to England in 2008, covering just 7,000km in the hands of one private owner since. On acquisition, Hexagon Classics embarked upon a sympathetic refurbishment programme that included a complete repaint in the original factory Guards Red with a total mechanical overhaul carried out by renowned marque specialists, BS Motorsport."

Jonathan Franklin, Hexagon

OWNING A 964 CARRERA RS

- **Price new:** £64,500
- **Total numbers sold:** 2,400 (all variants)
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £605.78
- **Service costs major:** £787.22
(Figures courtesy of RPM Technik)

"I'VE GOT ONE"

"For me it is the prettiest 911 ever made, and the sound (wow, the sound) is the purest. There's no press this, press that marketing rubbish here! It's the feel it gives you and how it rewards you that's most alluring; it's not about the 0-60 time, it's how it can carry the speed. If you can play a tune, this car can dance to it like no other."

Christian Ayres

993 RS

Get it for
£200,000-£300,000
$300,000-$450,000

Performance
★★★★★

Maintenance costs
★★★★☆

Rarity
★★★★★

Value
★★★★☆

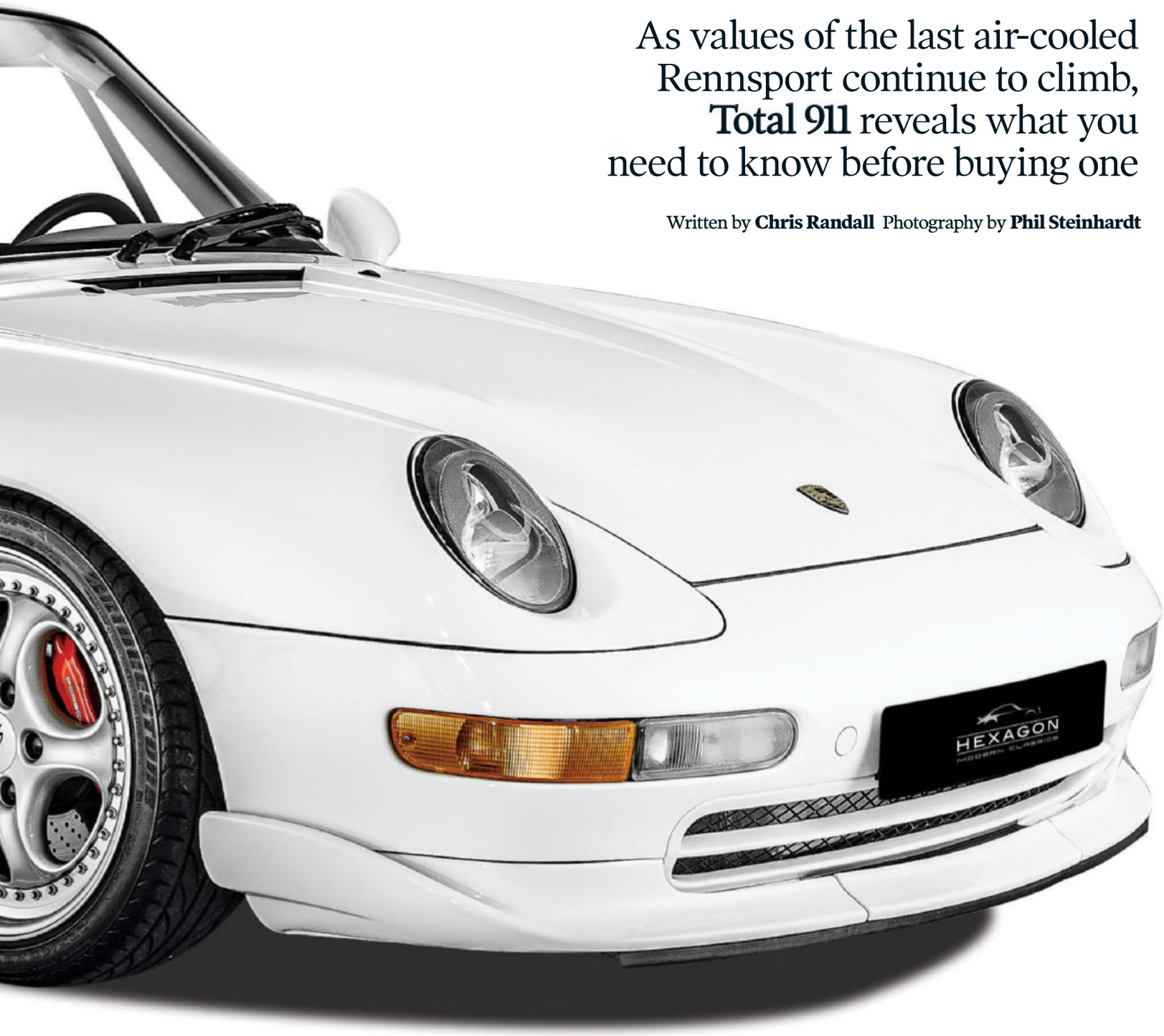
STORY OF THE 993 RSR

We already know the Clubsport version of the 993 RS was more hardcore, but for those buyers that ticked the option box marked M003, this was the ultimate incarnation of this special 993. Representing around 20 per cent of total production, the variant, also referred to as the RSR in some markets, wasn't really intended for road driving, although some of the more committed owners did indeed use them that way. Instead, it was aimed at those that intended to wring the maximum enjoyment out of the RS on the race circuit, and here it excelled. Costing in excess of £70,000 when new, just about all unnecessary kit was cut to maximise the weight saving, so you'd struggle in vain to find the likes of air-conditioning, electric windows, or carpets. Full harnesses were fitted as standard along with a Matter roll cage that was welded in place, and the seats gained fire-resistant Nomex coverings. Meanwhile, on the outside was an improved aero package that featured a deeper front splitter and bi-plane rear wing with substantial end plates. Highly sought after today, it's the ultimate embodiment of the RS philosophy.

993 RS

As values of the last air-cooled Rennsport continue to climb, **Total 911** reveals what you need to know before buying one

Written by **Chris Randall** Photography by **Phil Steinhardt**



It was back in Issue 119 that we last got behind the wheel of the 993 RS and we were mightily impressed by the combination of rawness and purity on offer. That shouldn't really come as any surprise as this last of the air-cooled Rennsport cars is a special model indeed, and that makes it incredibly sought after today. Launched in 1995, just 1,104 were built – with 227 of those produced in more hardcore Clubsport trim – and only 38 examples arrived in the UK in right-hand drive form.

It's a rare beast and a bad one will be an expensive mistress, so as values climb it's vital to meticulously investigate the history before examining a potential purchase any further. Naturally, the paperwork should all stack up with no question marks over maintenance record or mileage. The market is also seeing more cars returning from abroad, especially Japan, which can make understanding the history that bit more difficult, so it pays to be cautious. If you've any doubt whatsoever, seek the advice of an OPC or specialist. And before we get into the detail of these cars, there's also the matter of its previous usage.

Like many 911s, the 993 RS went through a stage where values were reasonably low, and where owners would have been quite happy to explore its abilities on track. Understandable, of course, given the performance and handling on offer, but it's worth trying to establish what sort of circuit work it might have seen. It shouldn't necessarily put you off, but there's clearly a difference between the occasional track day and a car that spent its early life lapping the Nordschleife – which takes us on to another important aspect, and that's accident damage. Some previous paintwork such as stone-chip repairs isn't an issue, but it's crucial to ensure that the seam-welded shell hasn't sustained anything worse after a brush with the Armco. Proper repairs are crucial and not always easy, depending on where the damage was sustained, and once again, a specialist will be able to spot the tell-tale signs of major panel repair so you know what you're dealing with.

While we're on the subject, damage to RS-specific parts such as the front bumper/splitter or rear wing will be costly, as replacements cost £1,700 and £2,600 respectively, before VAT and fitting. It's not uncommon for these parts to suffer from bubbling in the paint on original examples, so budget for re-painting if there's any evidence

"The galvanised shell should have kept panel rust at bay, so it's likely to be the result of poor accident repairs"

Model	**993 RS**
Year	**1995-1996**
Engine	
Capacity	3,746cc
Compression ratio	11.5:1
Maximum power	300bhp @ 6,000rpm
Maximum torque	355Nm @ 5,400rpm
Transmission	Six-speed manual, rear-wheel drive
Suspension	
Front	MacPherson struts with coil springs; anti-roll bar
Rear	Multi-link with telescopic dampers; coil springs; anti-roll bar
Wheels & tyres	
Front	8x18-inch; 225/40/ZR18
Rear	10x18-inch; 265/35/ZR18
Dimensions	
Length	4,245mm
Width	1,735mm
Weight	1,279kg
Performance	
0-62mph	5.0 secs
Top speed	172 mph

Externally, the hardcore Clubsport differed visually from the Comfort spec thanks to a larger bi-planed rear wing with air intakes, plus a front spoiler with a more extreme curvature at its sides

PARTS PRICES

• Front bumper	£788.45
• Rear spoiler (Comfort)	£2,687.18
• Clutch kit	£745.40
• Front damper (each)	£335.44
• Front brake disc (pair)	£433.38
• Rear brake caliper	£591.50
• Front wheel (each)	£1,127.28

VALUES

The values here represent what you can expect to pay for a left-hand drive example. Specialists say you can expect to pay substantially more for one of the rare right-hand drive UK cars.

• Project	£150,000
• Regular use	£200,000
• Weekend thrills	£250,000
• Concours	£300,000+

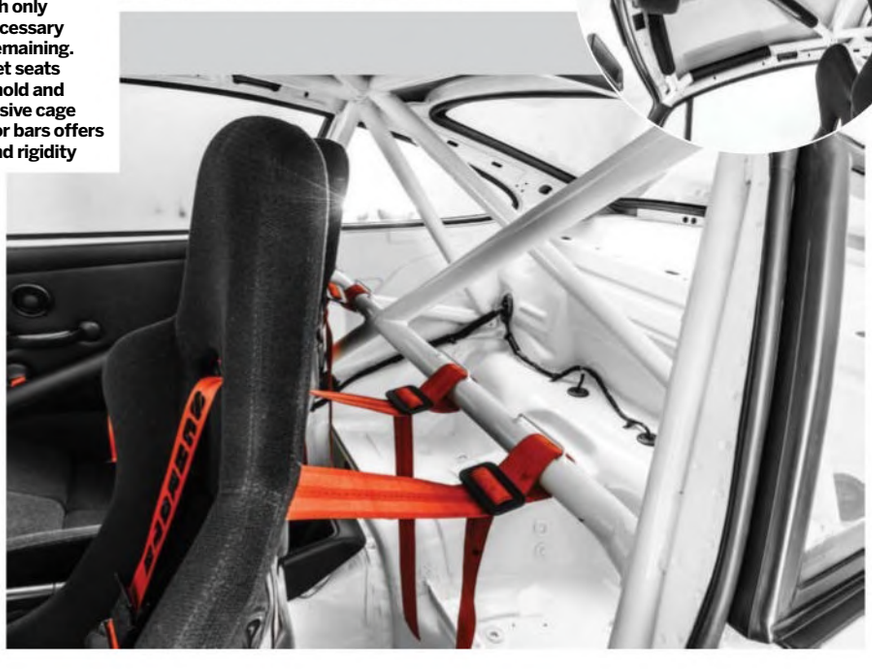
“Compression and cylinder leakage tests will confirm the engine condition”

of this. As for the rest of the bodywork, the RS can suffer from the same issues that afflict other 993s, including the annoying windscreen creak that can be exacerbated by the stiffer suspension set up – though it can be fixed without excessive difficulty or cost.

It’s also important to check for signs of corrosion around the front and rear screens, especially the lower edges as damage to the paintwork caused by cack-handed replacement of the bonded screen can accelerate the onset of rot. Corrosion can also affect the bumper mountings, especially at the rear, so check these are securely attached. The galvanised shell should have kept panel rust at bay, so it’s likely to be the result of poor accident repairs. Make sure, too, that the door check straps are working correctly, as a clicking sound indicates a common issue. Proper repairs involve letting in a new section of A-post and you’ll be looking at a bill of £500 upwards per side. The problem lies on the inside of the pillar, and previous owners may have been tempted to bodge the job by just having the outside welded. Otherwise, it’s just worth checking for excessive stone-chipping around the nose; dings in the aluminium luggage compartment lid; rear light units that have turned hazy; and for milkiness around the edge of the windscreen that signifies delamination.

As for the engine, the 300bhp, 3.8-litre unit is very strong and, if cared for, shouldn’t prove any more of a high-maintenance proposition than any 911 motor. Clearly, an unimpeachable service history will provide peace of mind here, but get a specialist inspection if you have any doubts. Excessive hydraulic tappet noise needs listening for as replacing them all costs at least £2,000 including labour, and raises concerns about what else might be wrong. So carrying out compression and cylinder leakage tests will confirm the internal condition, and with a re-build costing five figures – it could be double that if it extends to more major surgery such as replacing pistons or crankshaft – it’s clearly money well spent.

Even a fundamentally healthy engine can leak a little oil, usually from the rocker or timing chain covers, but it shouldn’t be a major problem with these units, unless an item such as the crank oil seal is involved, which is where things get more expensive. And if there’s more than just the smallest puff of blue exhaust smoke, be prepared to walk away. Remember, too, that the RS was the first 911 to benefit from the VarioRam intake system and acceleration should be strong throughout the rev range with no signs of hesitation or flat spots. Perished vacuum pipes can



Inside, the Clubsport is sparce, with only extremely necessary equipment remaining. Nomex bucket seats offer a tight hold and a comprehensive cage including door bars offers protection and rigidity

cause problems, and while repairs to the unit itself are possible, complete replacement is both costly and labour-intensive. Transmission-wise, the solid flywheel is trouble-free, and it's likely to be weak synchromesh in the lower gears that gives away a gearbox that's in need of a re-build. That said, it is a robust unit, so any problems usually point to hard use or abuse in the past. It's advisable to check for any clunks or whines from the limited-slip differential, and to ensure there's no sign of clutch slippage, as the three-piece kit costs around £750 plus fitting, although it's not an engine-out job thankfully.

The rest of the mechanical package will need equally close inspection if big bills are to be avoided, starting with the brakes. The discs are ventilated and cross-drilled items, 322mm and 299mm diameter front and rear respectively, clamped by 'Big Red' calipers. Prolonged hard use will take its toll, so ensure the discs are in good condition with no cracking around the holes or pitting/scoring on the inner surfaces.

BUYING TIPS

Make no mistake, the 993 RS is a specialist proposition and one that commands increasingly high prices. It's a car that demands respect, and that goes for buying one, where researching the history and condition is crucial. It would be very unwise to take the plunge without seeking the advice of an OPC or respected specialist.

- **History:** The most important aspect of buying an RS. It's vital to ensure that numbers and mileage all tally up, and extra care is needed with imported cars. Any doubts or gaps in the history, and you should tread extremely carefully.
- **Crash damage:** Hard to believe now, but when these cars were cheaper many were subjected to circuit use with all the risks that implies. Crash repairs aren't a deal-breaker as long as you know exactly what's been done and how well.
- **Bodywork:** RS parts are eye-wateringly expensive so examine them closely and carefully for any damage. Corrosion isn't a major concern, though it can take hold around the windscreen.
- **Engine:** Strong and with few inherent problems, the 3.8-litre unit should have been fastidiously maintained. Check for flat spots in the rev range. Oil leaks are common, though rocker cover leaks are an easy fix.
- **Transmission:** Very strong if used sensibly, but hard use will take its toll. Odd noises from the gearbox will end in a big bill, so be careful – especially check for crunching synchromesh.
- **Brakes/suspension:** Refurbishing a tired set-up will cost plenty, so if an owner has skimped here what else hasn't been done? And original Speedline wheels in perfect condition are a real plus given the huge cost of their replacement.
- **Interior:** Condition here is a good indicator of previous ownership, so be wary of a scruffy cabin for Comforts. There's less equipment than other 911s, but make sure what's there works properly.

Replacing all four corners will cost £700 in parts before VAT, so it's a hefty outlay. The calipers themselves can suffer from sticking pads, caused by corrosion between the alloy caliper and steel insert – they can be refurbished as long as things haven't gone too far, but you're looking at the best part of £600 for a new rear item. Bosch ABS was standard and shouldn't be a concern, although it's worth ensuring that the warning light illuminates and extinguishes correctly on start-up. The brakes are fronted by gorgeous split-rim Speedline wheels and while they can be renovated at a reasonable cost, new ones are very expensive, as in £1,100 each at the front and £1,200 each at the rear, so you've been warned.

The power steering can suffer from fluid leaks, so check the pipe unions and rack, while the suspension bushes should be free of any perishing or obvious wear. It was a stiffer set-up, lowered by 30mm at the front and 40mm at the rear, and with adjustable anti-roll bars, so any geometry that's gone awry or been tinkered with by track amateurs will have a dire effect on the handling. Uneven tyre wear should also ring alarm bells. Dampers themselves are another pricey item at around £700 per pair for the front, so budget accordingly if an overhaul is on the cards.

Head inside, and you'll find a cabin that's solidly constructed from good quality materials. It's also a good indicator of a car's past, so don't be hasty when it comes to checking its condition and look for scuffs caused by an uncaring owner. The Clubsport models are a sparse affair, equipment-wise, and it's worth ensuring that you could live with the track-focused roll cage and harnesses before taking the plunge. And even if the model you're looking at appears standard, it's worth looking at the trim in the rear of the cabin for signs that such track items haven't been previously installed and then removed. Comfort versions certainly made for a more usable proposition, and although the lighter wiring loom and lower equipment levels should make things more reliable, it's no guarantee. Make sure everything works, then, focussing on items such as electric windows and air-conditioning if fitted. The latter can suffer from failure of the fan's ballast resistor, which is a cheap fix, and problems with the evaporator and condenser, which aren't. If it doesn't blow cold, the system is likely to need more than just a re-gas.

Overall, the RS is an exciting proposition and one that should last well as long as it's been cared for. And given the prices now being asked, you'd perhaps expect nothing less. An abused example in need of major work will empty your bank account with stomach-churning ease, so think long and hard before taking on any sort of project. Look instead for an original, pampered car and you'll own a very special Rennsport indeed. 911

SPECIALIST VIEW

"The 993 RS is an incredibly special car indeed and has witnessed a huge leap in values since the start of last year. We're lucky enough to have had a few in stock including the immaculate Clubsport seen here in your pictures.

While a right-hand-drive car is the ultimate in terms of an investment opportunity, any 993 RS makes for a tantalising drive in Comfort spec, with the Clubsport reserved only for those who enjoy a fully hardcore driving experience."

Jonathan Franklin, Hexagon Modern Classics

OWNING A 993 RS

- **Price new:** £68,495 (Comfort spec, 1995)
- **Numbers built:** 1,014
- **Service intervals:** 1 year/12,000 miles
- **Service costs minor:** £358.80
- **Service costs major:** £900

(Figures are courtesy of Paragon Porsche)

"With an engine rebuild in the region of £10k it's worth getting a thorough health check"

997 GT3 RS

997 GT3 RS

Get it for
£150,00-£180,000
$225,000-$270,000

Performance
★★★★★

Maintenance costs
★★★★★

Rarity
★★★★☆

Value
★★★★★

> IN THE DAYS OF AIR COOLING, RS DENOTED A LIGHTENED CAR

Centre-locking wheels hide huge 380mm brake discs and iconic Big Red callipers

Revered as much for its reputation as it is for its performance and dynamics, the 997 GT3 RS is the ultimate expression of the road-racing automobile

Written by **Kieron Fennelly** Photography by **Phil Steinhardt**

Specification

997 GT3 RS Gen 2
(2010)

Engine
Capacity: 3,797cc water-cooled flat six
Compression ratio: 12.2:1
Maximum power: 450bhp @ 79,00rpm
Maximum torque: 430Nm @ 5,500bhp
Transmission: Six-speed manual

Suspension
Front: Lower wishbones and MacPherson struts with combined coil springs and dampers; antiroll bar
Rear: Multi link with parallel wishbones; combined coil springs and dampers; antiroll bar

Wheels & tyres
Front: 8.5x19-inch alloys and 245/35/19 tyres
Rear: 12x19-inch alloys and 325/30/19 tyres

Dimensions
Length: 4,435mm
Width: 1,770mm
Weight: 1,385 kg

Performance
0-60mph: 4.0 secs
Top speed: 193mph

The GT3 RS enjoys extra vents in the front bumper, with the front centre grille being colour coded

When the GT3 appeared in 1999, there was no RS version. This turned out to be as much a question of timing as anything else, but it did leave enthusiasts wondering whether the original lightweight concept had disappeared with the demise of air cooling. However, the original 996 GT3 was built to Euro 2 emissions levels only, so all production had to be registered (for European markets) before January 2001, and is also why the model was not offered in the USA, where EPA requirements were ahead of Euro norms. Given the major development programme at Weissach with the Cayenne and the next Boxster/911 generation in the pipeline, it would be three years before Porsche was ready with an updated GT3. The strength of demand for this model, as well as its predecessor, convinced Porsche that even with the 997 launch only a year away, there was a market for a more obviously track-orientated 996 GT3, which in the hallowed Porsche tradition was duly called the RS.

In the days of air cooling, RS denoted a significantly lightened car. The original RS 2.7 was homologated at 975kg when the production 2.4 S weighed 1,080-1,100kg. The 1991 RS 964, that exemplar of weight saving, was 140kg lighter than the 964 C2. But in the 21st Century, the need to meet crash requirements meant that taking weight out of a car's structure became more difficult. There was initially disbelief when Porsche revealed that the first 996 GT3 was 30kg heavier than the base Carrera until it was understood that the GT3 used the more substantial Carrera 4 bodyshell, which had greater torsional rigidity. Only the wholesale use of exotic materials such as carbon fibre could reduce its weight significantly, as McLaren's F1 demonstrated, but this was not practical in a production car selling at roughly a sixth of the price of the boutique-volume F1. Nevertheless, by introducing an RS derivative, Porsche was able to show that the GT3 could be lightened.

The 996 GT3 RS was revealed at Frankfurt in 2003. Besides having the GT3's optional Clubsport cabin – a half roll cage, lighter racing seats and simplified door trim – a further 50kg was saved over the stock GT3 thanks to a bonnet, rear wing, mirror housings and rear window in polycarbonate. Enhancing the new RS's credentials further, Weissach fitted a stiffer, lower suspension and the engine was modified with the Cup car's intake and exhaust ports. Reportedly, this added 20bhp, but Porsche still homologated the GT3 RS at the 381bhp of the standard car. A blue or red RS flash harking back to the 2.7 distinguished the GT3 RS. Still something of an experiment, only 300 were built, none of which were sent to North America, where the 'base' GT3 had only just been launched.

When the 997 GT3 was presented in 2006, the RS was not far behind. Once again at its heart was Porsche's superb 3.6 'Mezger' engine, now rated at 415bhp. But if this represented only a marginal increase over the 996 GT3 RS, the real development was in the chassis. The first GT3 was a product of a philosophy that favoured circuit handling qualities over the road user, which was why people bought

RS TIMELINE

1955
1500 RS: the first RS dominated the 2.0-litre class for five seasons and came third overall at Le Mans.

1972
Carrera 2.7 RS: the grandfather of the GT3 and iconic 911, one of the twin pillars with the Turbo of Porsche's reputation.

1983
Carrera SC RS: a lightweight designed for a successful rally career which never entered series production.

1991
Carrera 964 RS: admired, uncompromised and lightweight, it reprised much of the character of the 2.7 RS.

1999
996 GT3: ballistic performance from the flat six showed competition instincts at Porsche had not died with air cooling.

2011
997 RS 4.0: a unique blend of racing technology in a manual gearbox and eminently usable road car.

SPECIALIST VIEW

"Fittingly, the 997 GT3 RS is a truly sensational Porsche to mark the end of the purest era, and is soon to be a collector's car for sure. Our superb example seen here has been known to us for some time and has driven just 8,293 miles from new in 2010. Factory-fitted options include touchscreen satellite navigation and Sport Chrono Pack Plus. With the GT3 RS, prepare to frequently replace your tyres – they come with less tread than conventional road cars and the increased performance means they'll wear quickly."

Mark Sumpter, Paragon Porsche

The dual centre-exit exhausts are continued on the 991 GT3, while the carbon rear wing is multi-adjustable

> **WEISSACH WAS AWARE OF THE TENDENCY OF THE 996 TO LIFT, AND THE 997 RS SHOWED THE RESULTS OF THE RESEARCH INTO CORRECTING THIS**

GT3s. Their unyielding suspension always made both the earlier and later 996 GT3s something of a compromise for road driving though and the RS, which sat 30mm lower with firmer springs, dampers and bushing, was simply too hardcore to drive far off the smooth bitumen of the track.

The 997 GT3 RS would overcome this compromise thanks to the fitting of PASM, which offered the choice of normal and sports damper settings. If such sophistication suggested that RS ethos was being compromised, this was outweighed by the new RS's improvement in ride quality and usability, despite having firmer springs and dampers than the standard car. To justify a price increase of around 20 per cent over the stock GT3, such upgrades were important. Again, the RS showed a weight saving of 20kg over the GT3 thanks to the same polycarbonate body panels as its predecessor and fitting of a single mass flywheel; the cabin again was based on the GT3 Clubsport specification, including carbon fibre bucket seats.

The other major advance over the 996 GT3 RS was in aerodynamics. Weissach was aware of the tendency of the front 996 to lift at high speeds, and the body of the 997 RS showed the results of the research that had gone into correcting this. The rear wing was derived from the GT3 Cup cars and together with the new front valance made the 997 more stable as it approached its maximum velocity.

A change in FIA GT competition rules meant that from 2008, maximum capacity rose from 3.6 litres – the engine size which Porsche had homologated for the 997 GT3 – to 4.0 litres, and Weissach took advantage by developing a 4.0-litre race engine.

The absence of leather inside is immediately noticeable, where the steering wheel in particular gives off distinctly race-bred connotations in both looks and touch. Technology is not in short supply, however, and this model is treated to Porsche satellite navigation and air conditioning. Contrasting extremes of both road and track are therefore evident

THE 997 RS: WHICH TO PICK?


The 4.0-litre may be the very pinnacle, but the Gen1 3.6-litre and Gen2 3.8-litre are superb 911s

A difficult question, this one. In a perfect world we would probably choose the 4.0, but with such a limited series there is a danger that this model will become like the RSRs and be salted away as an investment. Rumours suggest that 4.0s have already changed hands for 30 per cent premiums. The 3.6 and 3.8 offer almost the same sensations and are altogther more accessible. The 3.8's more sophisticated suspension may sway the decision for some buyers, but what is important is to understand the GT3 RS. A hugely rewarding car, it is nevertheless an intense drive, and ownership of one requires commitment.

The interior of a 997 GT3 RS is a great place to be. The colour-coded roll cage immediately excites with its mark of intent, and the bucket seats are purposeful but comfortable over long periods. The driver has a choice of road belts (as shown here) or race-bred harnesses, widening the car's accessibility as a road or track sports car

Rather than install this in the road-going RS, however, Porsche introduced it in two stages. The Gen2 997 GT3 RS 3.8 appeared in 2010. Visually, it incorporated the final round of changes to the 997 – the new front and rear lights; a racing-inspired, aluminium leg-suspended rear wing with '3.8' embossed on each side distinguishing it from its predecessor, as did its centre-lock wheels. The additional 200cc brought 15bhp and 25Nm, and contributed more to ease of driving than increased performance figures, but the main advance with the Gen2 was once again in suspension and aerodynamics. The PASM was augmented by stability management which could be brought in with or without traction control or turned off altogether, a system said to be particularly reassuring on wet surfaces. The RS also featured the first application of Porsche's Active Engine Mounts. The revised front and rear bodywork, again derived from the previous season's racing, more than doubled downforce, Porsche claimed. Certainly, when he tried this RS for **Total 911**, Ian Kuah, who has followed every development of the GT3 and before that its RSR forebears, noted its stability at 300kph.

With two generations of the 997 GT3 RS in five years and the 991 due for launch in 2011, the second 3.8 should have been the swansong of the 997 RS – but Porsche had other ideas. The 4.0-litre engine had not been offered initially for reasons of cost: with the bore at maximum, capacity was increased by raising the stroke to 80.4. This required a bespoke crankshaft and other reworking of the engine. Weissach also revised the suspension with components in aluminium and new spring and damper rates; externally the 4.0 featured the GT2's polycarbonate front wings and bonnet and carbon fibre bumpers. The 'dive planes' enhanced downforce by 15 per cent, and the 4.0 clearly had an unimpeachable competition heritage. The result was an RS weighing 1,360kg and a power-to-weight ratio of 365bhp/tonne compared with the 3.8's 329bhp/tonne. Yet the outcome was as far from an undriveable, fire-breathing monster as could be imagined. Project manager Andreas Preuninger says he proved this to his satisfaction by commuting in the 4.0: "It is astonishingly usable and the engine is bulletproof." With this final batch of GT3 production, Porsche wanted to sign off with a flourish and make this pure racing technology and "god-like engine," as Preuninger put it, available on the street.

Of course Porsche was hardly going to sell the 4.0 at a loss. However, even priced with a premium of around 25 per cent over the GT3 RS 3.8, the announced production run of 600 units sold out

BUYING TIPS

There are several main differences over daily life with a base 911. There's less usable cabin space while the clutch and gearshift are firm, especially from cold, and the RS demands a more involved maintenance regime. Road noise levels and internal comfort are not much worse.

- **Service it regularly:** Understand service requirements and do not take shortcuts.
- **Trust your seller:** Buy from known specialists or Porsche Club members and make a geometry check part of the sale.
- **Make sure you have comfy seats:** Ensure you are comfortable over long distances in standard bucket seats.
- **Don't discount racers:** Don't dismiss a car with a track history; it may have a more thorough service record.
- **Choose your accessories wisely:** One worth looking for is a/c: its weight and power requirements are almost negligible, and the RS in particular demands that the driver is in an alert state.

> **"WITH THE 991 DUE FOR LAUNCH, THE SECOND 3.8 SHOULD HAVE BEEN THE SWANSONG OF THE 997 RS, BUT PORSCHE HAD OTHER IDEAS"**

OWNING A GT3 RS 997

- **Current price:** £89,995 from Paragon Porsche (call 01825 830424 for details)
- **Total RS numbers sold:** 14,145 since 1999
- **Service intervals:** 2 years/12,000miles
- **Service costs minor:** £395 minor
- **Service costs major:** £695 major (inc VAT, as charged by Paragon Porsche)

in a matter of weeks. By comparison, a decade ago Porsche struggled to reach its target of 1,500 Carrera GTs, stopping at production of 1,200 cars.

The brilliance of the GT3 RS is in the way it brought the dynamic qualities and finesse of a track car to the road. As the model developed, it became ever better at this, squaring the circle of providing ever-greater performance with more forgiving handling and everyday driveability and comfort. On the track, the Porsche's larger-engined and mid-engined competitors may have proved quicker in recent seasons, but none of them can build a homologation road car that is more than a token gesture to its track sister. The GT3 RS is not just the benchmark sports car; it is quite unique. 911

"I'VE GOT ONE"

San Diego-based Tony McGuiness regards his 3.8 RS as the pinnacle of his driving career: "The way it responds, handles and goes verges on perfection. I bought it with trackdays in mind, but I didn't want to risk it in close combat. It has such reserves and balance and it's so sure-footed, you always have confidence you'll never get into trouble. It's as if you strap this car on and it becomes a part of you. The RS is the last of the analogue 911s and surely the best."

Tony McGuiness

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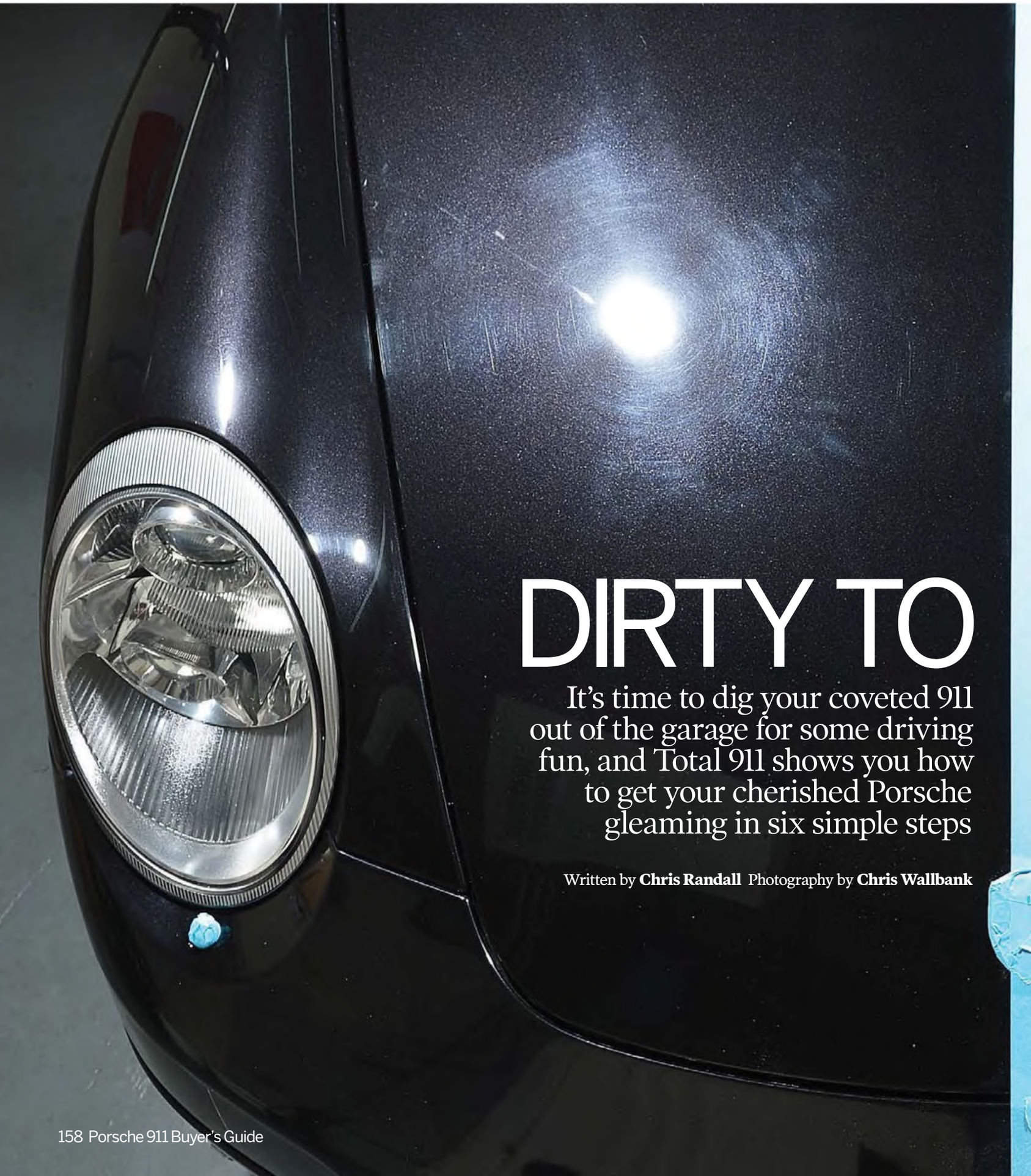


DIRTY TO

It's time to dig your coveted 911 out of the garage for some driving fun, and Total 911 shows you how to get your cherished Porsche gleaming in six simple steps

Written by **Chris Randall** Photography by **Chris Wallbank**

DETAILED

When it comes to keeping your treasured 911 looking clean there are various options available. One is a visit to the local hand-washing outfit, which is temptingly convenient but obviously not the best for the long-term health of your paintwork. Another is the fastidious world of concours where we discovered last issue that every nook and cranny has to be cleaner than when it left the factory. However, if you don't want your work to be judged but still want your car to look as good as it possibly can on the road, then a first-class detailing session is in order. As such, we've teamed-up with Alex Busfield who runs expert car preparation outfit Altec Detailing. Using products from the 'Gtechniq' range and demonstrating his skills and techniques on a 997, this is your definitive guide to cleaning your 911 the professional way.

Before commencing, though, Alex's first tip is to assess the state of the bodywork: "Always take time to understand the condition of the car first, examining all panels for damage or paint defects and checking paint depth. That way you know exactly what you're dealing with and where you need to focus your efforts to get the best results." So with that done, we can finally get cracking.

1 RINSE DOWN AND PRE-WASH

Before doing anything else the car gets a coating of W4 Citrus Foam, here applied using a pressure washer for quick and full coverage. This is left for five minutes and then rinsed off. Starting with the wheels, the next task is to apply W6 Iron and General Fallout Remover, which Alex then works into every area using anti-scratch brushes from the Wheel Woolies range. It's far less corrosive than the old acid-based wheel cleaners and so won't harm the lacquered surface. Once the product has been left on for five minutes to work its magic, it's rinsed off with fresh water. The wheels should be removed so the inside surface can be cleaned too, but given that they are likely to be caked in road grime and brake dust, you may need to give them an extra application of product. Alex then applies W5 Citrus All Purpose Cleaner to the tyres to degrease them and applies the same product to any heavily soiled areas of bodywork to remove dirt that could cause scratches during washing. "Always work from the top downward," he reminds us.

2 THE BIG WASH

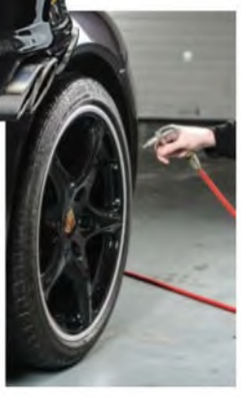
After using a soft detailing brush to remove any dirt lodged in panel gaps and around light units and other body details such as air intakes, the 997 is ready for washing. For that Alex always recommends a lamb's wool wash mitt. "Never use a sponge, as in my experience they are almost guaranteed to leave scratches and swirl marks, and again work from the top down leaving the dirtiest, lower areas until last." He also insists on the 'two-bucket' method – both containers fitted with grit-guards to trap dirt – the first filled with warm water and Gtechniq's G Wash solution and the second with clean water. For maximum cleanliness the mitt should always be rinsed clean between each application of wash solution, making sure you agitate the surface pile to remove any remaining grit. Once that is complete, the whole body is rinsed with fresh water. The wheels are washed last, using the same mitt and wash solution, and are finished with a light application of T2 Tyre Dressing.

PROTECTING YOUR CABRIOLET ROOF

The fabric roof of drop-top models comes under constant attack from road grime, tree sap and bird droppings, and it can soon leave things looking decidedly tatty. Of course, unlike metal bodywork, a quick wash isn't always enough to bring it back to original condition, but there are steps you can take to properly clean and protect the hood. The first job on the 997 was to wash the roof with W2 Universal Cleaner, working it into the fabric with a small, soft brush. The key thing here is not to be too aggressive, as you don't want to damage the material with hard scrubbing. Once the whole hood has been done, it's rinsed with fresh water and once completely dry it's ready for the next stage. But before the protective coating can be applied it's important to cover the paintwork, so Alex sets about masking the whole car using the sort of fine plastic sheeting commonly employed in body shops to prevent overspray. This needs to be done carefully and methodically, and should leave just the hood fabric exposed. The hood then gets an all-over spray of l1 Smart Fabric that not only protects the surface from dirt, but also acts as a water repellent, while still allowing the fabric to breathe.

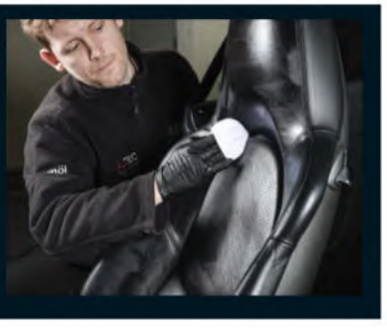
3 DRYING AND PAINT CORRECTION

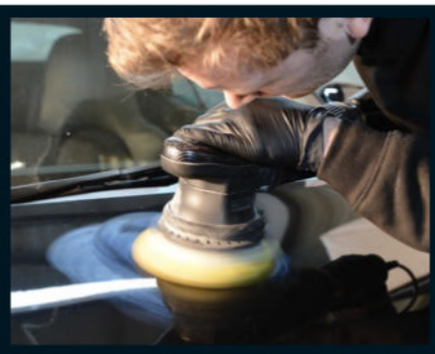
When it comes to drying, Alex told us that using the traditional chamois leather is another method that's almost certain to cause scratches, so he advises that a microfibre towel is best. And just pat the surface dry, don't use a wiping action. Before moving on to the next stage he uses an air-line to remove any last traces of moisture, but the car can also be left in the open air for a few hours to ensure it is thoroughly dry. Then it's time for a detailed examination of the panels to identify any areas in need of paint correction, and with that done the body gets an application of W7 Tar and Glue Remover; "I spray this onto a microfibre towel, not directly onto the paintwork, working on one panel at a time and then wiping it off with a clean towel," Alex tells us. Next is the use of a clay bar – again working methodically over each panel using a back-and-forth, not circular motion – that will remove any final contaminants. A lubricant is needed during application and this can be plain water or the specific product supplied. And after each panel is cleaned with panel wipe – the same product used by body shops prior to painting – using a fresh microfibre cloth, Alex is ready to tackle any paint problems.

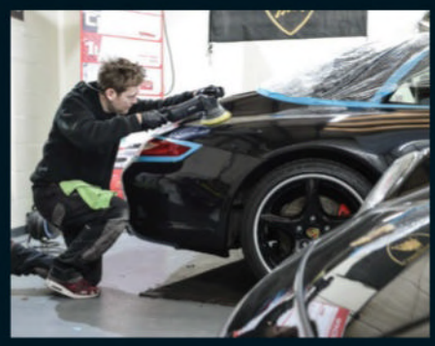


REVITALISING THE INTERIOR

If your interior is in need of a clean too, the first step is to remove the floor mats and give the carpets a thorough vacuuming, not forgetting hidden areas such as beneath the seats. The leather seat trim is cleaned with a suitable product applied with a soft brush and then thoroughly dried with a microfibre towel. L1 Leather Guard is applied to all of the leather surfaces and helps to protect the surface from abrasion, fading, and discolouration caused by contact with clothing. The fascia and centre console are next and after these are treated to a light spray of W2 Universal Cleaner – then wiped off with a soft cloth – it's out with the small brushes and toothpicks to remove dirt and dust from all nooks and crannies. Finally, using C6 Matte Dash helps restore and protect the original finish of the plastics.







4 MASK AND POLISH

Now that the bodywork is properly clean, Alex can get to work on addressing any light scratches or swirl marks that will spoil the perfect finish. For this he favours the use of a Rupes machine polisher and products. Masking comes first though and a suitable tape is carefully applied to areas such as window rubbers, badges and any other plastic or rubber areas to protect them from the machine polisher. Working under LED lighting that will show up any defects, the coarse polish is applied first using a blue microfibre cutting pad, the machine always used in a 'chequerboard' pattern – so left to right and then up and down, never in a circular motion.

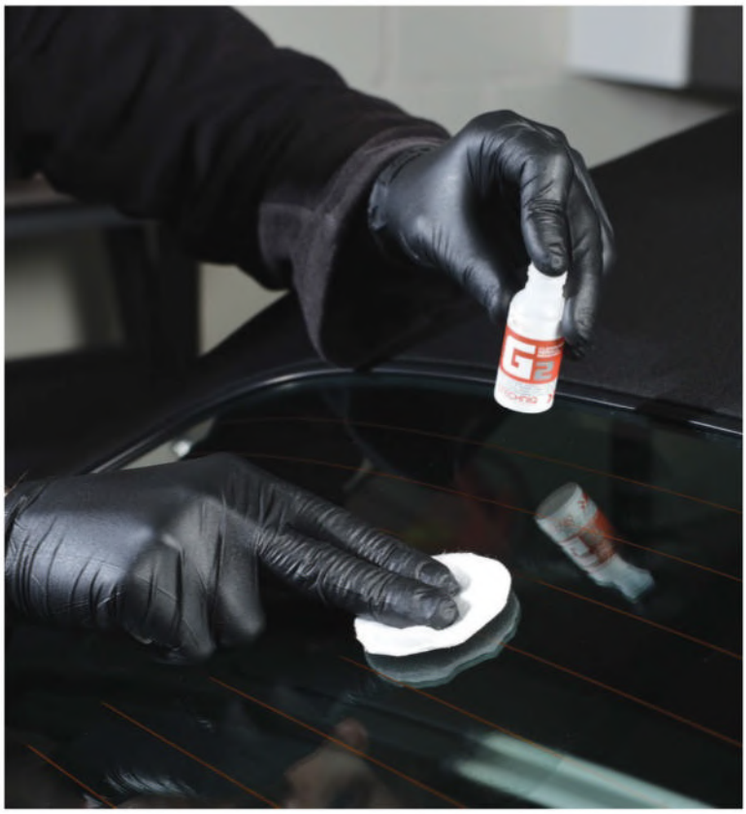
Once done, the excess compound is removed with panel wipe and the panels inspected to ensure the scratches have been removed. Then it's time for the green pad and medium gel compound that will smooth the surface after the initial cutting stage, with panel wipe applied again.

The finishing stage is using the white pad and fine gel compound to bring out the paintwork's natural gloss, before a final going-over with panel wipe to remove any residue. "I have to make sure that all polishing dust is removed from gaps, so I go over the whole car with an air-line," says Alex.

5 FINAL COATINGS

Once all of the masking tape has been removed, the 997 is ready for the final coatings that will really give the paintwork that deep lustre and provide protection from the elements. C1 Crystal Lacquer is the product of choice here and it's applied by hand using a soft pad, once again using the 'chequerboard' motion employed during the polishing in step four. Alex concentrates on one panel at a time, leaving the product applied for one minute before wiping off any excess with a microfibre cloth, and then giving a final polish with a clean towel.

After the car has been left for 24 hours, it gets either a second coating of the Crystal Lacquer or if the paint surface passes his close inspection, Alex applies EXO Ultra Durable Hybrid Coating. This is done using the same method as the lacquer.



6 RUBBER AND PLASTIC TRIM

With the paintwork looking perfect the next step in the process is tackling the rubber and plastic trim. The careful application of masking tape prior to polishing will have ensured there's no residue on rubber and plastic parts – it really is worth taking the time to do the masking properly – so the 997 is ready for C4 Permanent Trim Restorer. Alex applies it using a small piece of soft sponge – the type used for applying make-up is perfect – and not only will this bring back the original appearance but Gtechniq's product also protects the trim from UV rays and will help prevent fading in the future. Next up is the glass, the front and rear screens getting a coating of G1 Clear Vision Smart Glass that will repel both dirt and water droplets. Again it's applied using a clean microfibre cloth, and as Alex advises, "you can use it on the side windows as well, but in reality it's going to be rubbed off as the window is raised and lowered so there's probably little point." At this stage in the process, the wheels are finished by giving them a once-over with panel-wipe solution to remove any residues and then the surface is treated with C5 Wheel Armour to help keep contaminants such as road tar and brake dust at bay. As cleaning your car this way is all about the details, don't forget items such as chrome exhaust-pipe finishers. If they are showing signs of corrosion, Alex uses a lightly abrasive steel wool first before an application of M1 All Metal polish to leave them gleaming.

All that's left to do is a final check to make sure you haven't missed anything, and it's at this point that Alex will ensure any last vestiges of polish residue are removed from gaps and fittings using a toothpick. Your 911 will be looking absolutely superb. For more information call Alex at Altec Detailing on 01274 596492 or visit the website altecdetailing.co.uk. 911

PREPARATION: THE VITAL STATS

Total hours prep needed:
30-plus if you want to have any hope of winning.
Litres of water to be used:
Let's call it 20 or so, warm and cold.
Number of cloths required:
More than you think, as you'll be worried about dirt.
Total spend on cleaning products:
As much as you can afford. The best products aren't cheap.
Litres of beverages consumed during preparation:
About the same amount as the water used for cleaning. This is thirsty work!

ULTIMATE GUIDE TO CONCOURS D'ELEGANCE

Ever admired a perfectly prepared 911 and wondered how to achieve a similar concours standard for your own Porsche? Total 911's ultimate guide reveals all...

Written by **Chris Randall** Photography by **Phil Steinhardt**

Flick through just about any classic car magazine and it won't be long before you come across the word 'concours'. Often used to describe exclusive events – such as Salon Privé or Pebble Beach – or the condition of a treasured car, it can be considered as the French word for 'competition'. Its usage will bring either knowing nods from other enthusiasts who share your passion, or it'll incite shrugs from those less passionate who may instead label it a 'polishing contest'. Whether to your taste or not, though, it's about preparing a car to the very highest of standards; not as it came out of the showroom, but better. Much, much better. You're aiming for absolute perfection and doing it properly means huge attention to detail in every aspect of the car's appearance. Few things look better than a beautifully prepared 911, so we've decided to take an in-depth look at what it entails. Get your car-care products at the ready...

Exterior

The hours of work ahead begin with a thorough rinse – a portable jet washer would be perfect – to remove any loose dirt that could scratch the paint during later processes. Then it's plenty of warm water and car-wash solution, and ideally something like a lamb's-wool wash mitt, to clean every inch of the bodywork, preferably starting at the roof and working downward. Remember, this isn't a quick Sunday morning spruce-up, so pay attention to every area, including the undersides of bumpers and wings. Once carefully dried with a soft towel – streaks or water spots are an absolute no-no – you're ready for the next stage, which is the use of a clay bar. What this does is essentially remove any contaminants from the paintwork that washing alone won't shift, such as road tar and tree sap. It needs patience and a careful back-and-forth motion – never circular as this could produce swirl marks in the paint – to produce the best results. When you're certain the paintwork is as clean as it can possibly be, it's time for polishing, which can be a minefield of advice and opinions. You should experiment with what works best for you, but quality is key, so spend as much as you can afford on a top-quality product, opting either for the pure 'carnauba' waxes that are available or those that include polymers for a natural shine. Just never, ever be tempted by the products that promise quick and easy results, or a finish that will 'last forever'. You'll never win a competition with them.

Also worth bearing in mind is that even light polishing is removing paint, so go gently and get expert advice if there are major imperfections. It's worth focusing on the horizontal surfaces first as these are the first to show marks as the light falls on them, and you might also want to consider using a machine-operated polisher, or 'mop' as it's commonly called. The results can be excellent, but measure the paint depth first to prevent wearing through. Once again, it's all about a detailed and patient approach, applying and removing the wax one section at a time, taking care not to get any on any rubber seals or plastic surfaces. These latter areas will need their own attention anyway, using a suitable product sparingly applied and then buffed away to leave a natural appearance. You'll also need to ensure that badges are free of excess polish, so use a cotton bud to clean the edges.

Concours is all about attention to detail, so now it's time to make sure every external area, every nook and cranny is perfect. That means cleaning all of the areas that most people forget, so the wheel-arch liners should gleam, and every millimetre of the door-shuts including around locks and hinges needs to be cleaned. Just as important are the channels and seams beneath engine and luggage

"Remember, if a competition judge can access it, then it needs to be clean"

CONCOURS D'ELEGANCE SURVIVAL KIT

Cleaning products – You'll need the best shampoos, polishes and surface treatments you can afford.

Cloths – A variety are needed, from 100 per cent cotton and lint-free to soft terry cloths for gentle cleaning.

Wheel and tyre brush – You'll need something that gets into every edge, but nothing too abrasive. The softer the better.

Toothbrushes – Soft brushes only, but they are great for removing dust or when you need to apply small amounts of cleaning product.

Cotton buds – Again, perfect for detailed application of cleaners and for those tricky areas such as the exterior badges.

Alcohol wipes – They are ideal for removing last-minute fingerprints from interior trim, especially on judging day.

Sticky tape – Removes lint and dust from trim and upholstery, and they're great for last-minute prep at the competition itself.

Adequate storage space – You want everything to hand once you start prepping and it'll help keep clean and dirty cloths separate.

Inspection gloves – Think snooker referee! It will avoid any annoying fingerprints before the judge arrives.

Patience – It's about making your car the best it can be, so don't be tempted by shortcuts. Put the hours in.

compartment lids, paying particular attention to hinges, which need to be free of grease and accumulated dirt and not forgetting the underside of the panels themselves; the fuel filler area and inner surface of the filler flap; the gaps around light units and number plates; and any air intakes. Remember, if a competition judge can access it, then it needs to be absolutely clean.

We're not done on the outside, either, as all of the glass will need to be free of streaks and smears. Soft cloths and a good-quality glass cleaner will pay dividends, and it's worth examining the finish from different angles and in different lights to check for any last marks. Then there are the wheels. These will need to come off for the best results, as both front and rear faces will need cleaning, not forgetting the bolt holes themselves. And when it comes to dressing the tyres, less is definitely more. Ensure the tyres are spotlessly clean before applying the product, and use it very sparingly. Leaving the judge with hands covered in the stuff is not good news.

Swirl-free paintwork that has a deep gloss with no wax residue is essential. All plastics and rubbers should have retained their colour with no cracks or warping. Door shuts and behind fuel caps will be checked too

Interior

Now the outside is perfect, it's time to attack the cabin. Yet again, it's all about attention to detail. You're aiming for just a nice clean finish, so don't ever be tempted by those sprays that just apply a shine. A vinyl cleaner can be used on non-leather surfaces, but it should be used sparingly and all excess removed with a lint-free cloth, and the dashboard just needs time and patience. Pay close attention to the areas around dials and switches, and don't forget to ensure that air vents are dust free, remembering to clean inside any storage areas, of course, including those in the centre console.

Gear-lever and handbrake gaiters should be spotless and a good-quality leather cleaner will pay dividends here. As for the seats themselves, both leather and cloth items need to be carefully cleaned and vacuumed, paying particular attention to seams and stitching, as well as any storage pockets.

Seat adjusters and controls will need similar attention and the seat rails themselves will need to be free of grease and dirt. It goes without saying that you'll need to vacuum thoroughly beneath the seats, not forgetting those tricky-to-reach areas such as between seat and centre console. Seat belts too will need to be free of dust and dirt, but don't apply any cleaning products to these vital safety items – just elbow grease and a suitable lint-free cloth. Door panels should receive the same close scrutiny, and again using a good quality leather or vinyl cleaner here will suffice for the surfaces, but you'll need to remove any last hint of dust and fluff from storage areas.

When it comes to vacuuming, be just as thorough, covering every last inch of carpet including behind the pedals. Our experts also advise removing the floor mats completely before

> "Most of us aren't used to preparing our car with this level of forensic detail... you need to train your mind to start thinking like a concours judge!"

A sparkling interior should be free of dust and fingerprints, with carpets free of stains and blemishes. Seats, handles and switches should be in perfect condition. Don't forget the headlining, which will be checked

judging. They are just another item to trap dirt at the last moment. Oh, and don't forget the headlining as well. Vinyl items can just be cleaned with a suitable product, but a lint roller or similar will help get cloth or Alcantara ones looking spotless.

A useful tip for achieving a dust-free interior is to have some sticky tape handy that you can wrap around a finger and use to pick up any last specks that will lose you points in the final judging. And last but definitely not least, don't forget all those small items such as interior mirrors and grab handles, sun visors and the like. Just like the exterior, if it can be reached and checked, then it needs to be perfect, so this is where the advice of clubs and competitors will really pay dividends. Most of us aren't used to preparing our car with this level of forensic detail, so you need to train your mind to start thinking like a concours judge!

2015 CONCOURS D'ELEGANCE: OUR FIVE TOP TIPS

1) Speak to your local club and to regular concours entrants before you begin. Their advice and experience will be invaluable and will help you understand exactly what winning involves.

2) Don't underestimate the time involved in doing this properly. Our experts reckon anything between 30 and 60 hours is normal, and there is no substitute for putting in the hours.

3) Don't overdo the preparation. It may sound like odd advice, but it's about doing it right and not exaggerating the appearance with weirdly shiny surfaces and too much product. If anything, it will only put judges off.

4) Gather all your materials before you start. You don't want to get stuck halfway through, so make a checklist of all the things you'll need and buy top-quality stuff.

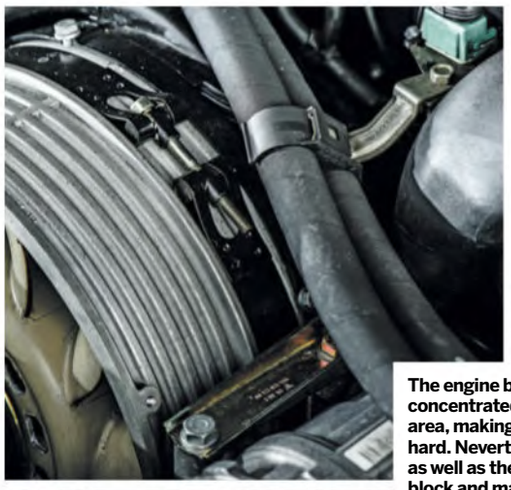
5) Plan your approach to a competition so you know exactly what you need to do as the day approaches as well as final prep on the day itself.

Engine

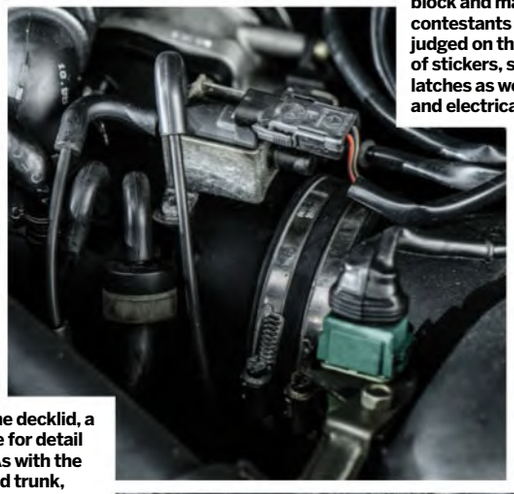
You will obviously have paid the same attention to the front luggage compartment, vacuuming and cleaning every last inch, but now it's time to head to the back for some work on the engine bay. Before starting the preparation, now is the perfect time to attend to any minor oil or fluid leaks, so make a check of gaskets and pipework. Ignore these and your concours efforts will be for nothing.

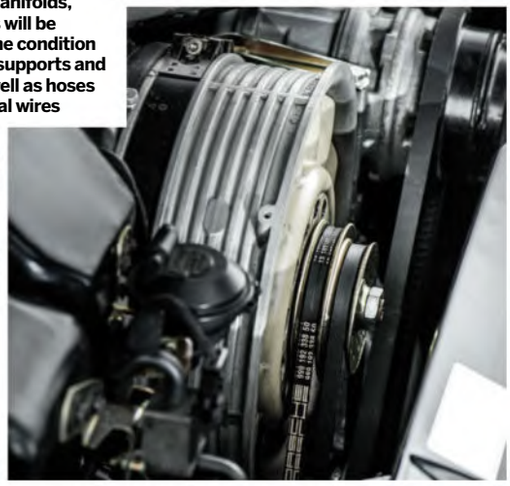
Now you'll need to break out the water and degreasing solution, so the first step is to be thorough in covering electrical connections, air intakes and other delicate components – it's important to avoid any unnecessary soaking or water ingress. Then you'll need to get to work with a soft brush, working the degreaser into every corner, being careful not to dislodge any hoses or connectors. Once the main areas are clean, pay close attention to all the ancillaries as they too will need to be spotless. Items here include the fan, all of the visible belts and pipework, as well as intake plumbing along with electrical and fuel-system components and any pumps. Some degreaser applied with a soft cloth should suffice here, but take a methodical approach so you can tick off each part once it's done. Once you're happy with the overall level of cleanliness, a light application of rubber and plastic dressing should finish things off nicely. And last, with safety in mind, it's worth watching out for any sharp edges around the engine bay waiting to inflict a nasty cut or scrape. 911

"It's important to avoid any unnecessary soaking or water ingress"

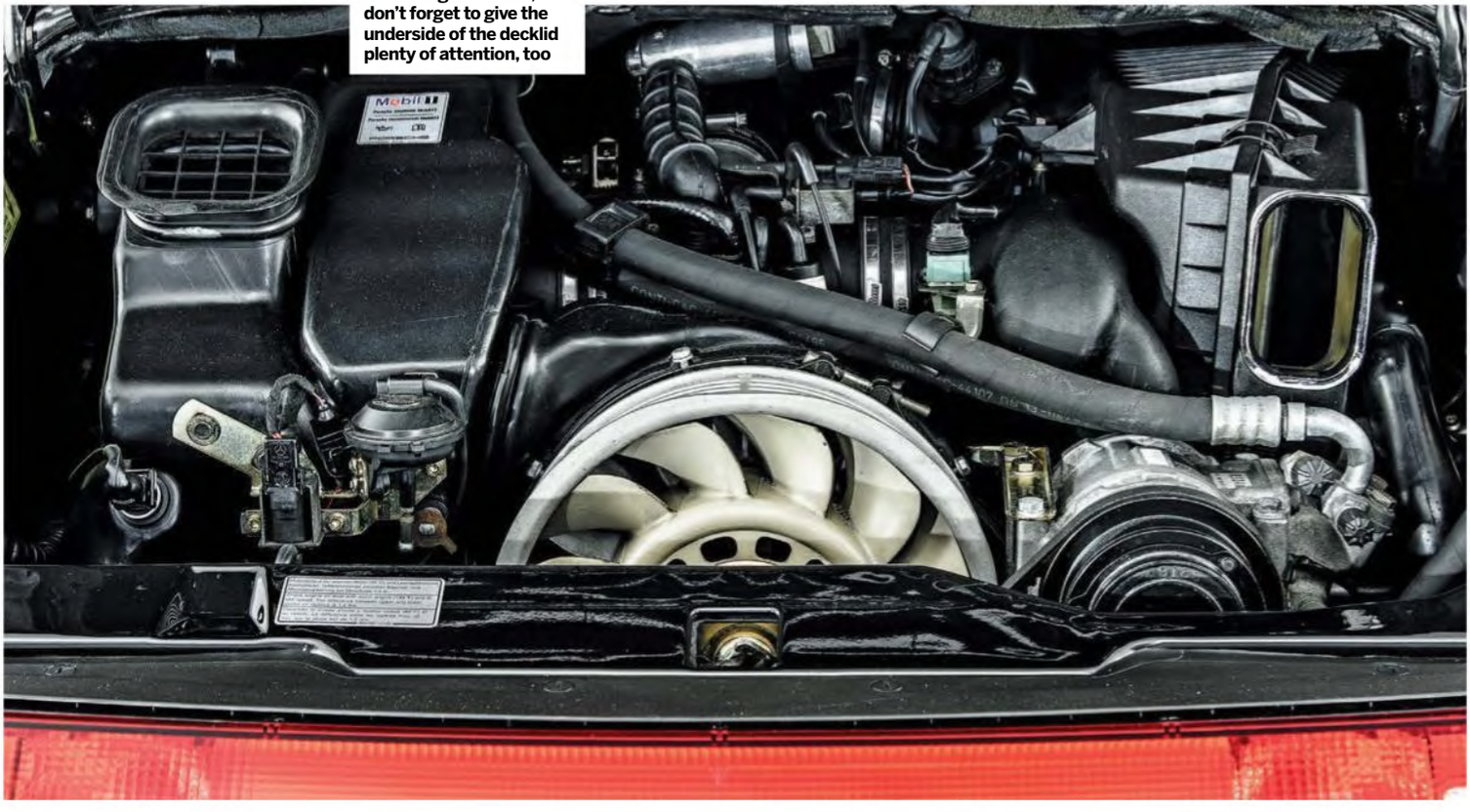


The engine bay is a highly concentrated yet small area, making prep work hard. Nevertheless, as well as the head, block and manifolds, contestants will be judged on the condition of stickers, supports and latches as well as hoses and electrical wires





Even under the decklid, a fastidious eye for detail is essential. As with the headlining and trunk, don't forget to give the underside of the decklid plenty of attention, too



TUNING YOUR 997

Want to get even more power from your 997? Total 911 oversees the installation of two tuning packages for forced induction and naturally aspirated variants

Written by **Ryan Stewart** Photography by **Mark Riccioni**

The SharkWerks GT3 RS 4.1 represents the pinnacle of what can be achieved for those who seek to better the performance of their flat six, with Alex Ross and his team having long helped to inspire a new generation of 911 tuner in the water-cooled era.

The 997 in particular has proved to be a popular choice of 911 for modifiers in recent years: their relatively accessible trading values now means they have a big appeal to a much wider spectrum of buyer than before, while at the same time they still boast a high level of modern performance and feel straight out the box.

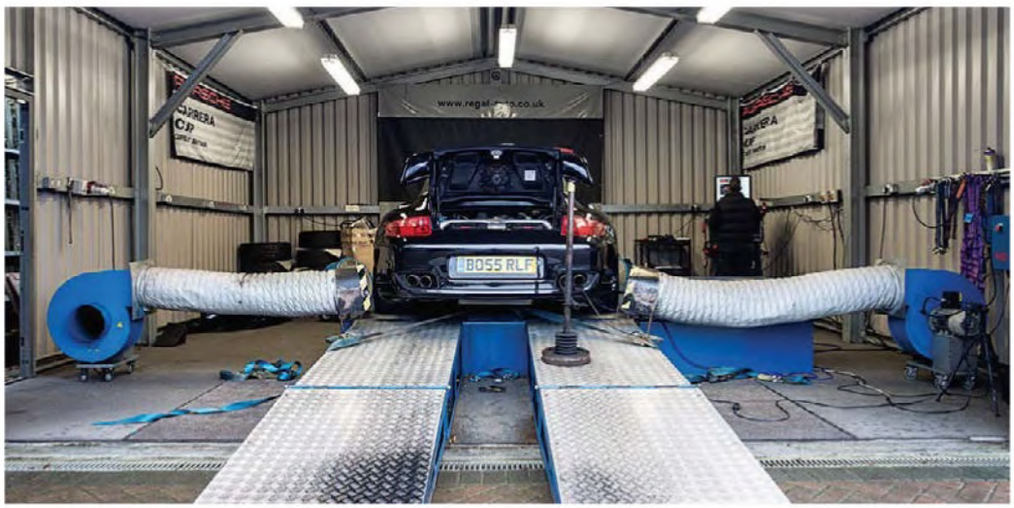
For entry-level tuning, advancements in on-board electronic technology means water-cooled 911s such as the 997 are more congenial to huge power gains through relatively simple ECU tweaking, but for the serious adrenaline chaser there's still a litany of bolt-on parts that are available to help eek even more grunt from your flat six, as we find out...

Turbo tuning

Parts: EVT650 performance package
Cost: £8,895

Step 1: Baseline Dyno

Each Turbo wanting a conversion must already be in good health, as Regal's Chris Stewart explains: 'The increased performance will highlight any shortcomings of the base car. We always perform a health check and several base dyno runs to ensure the end result will be a good one. You can't build an EVT650 on shaky foundations." Regal's 1,000bhp AWD dyno was chosen specifically with tuning Porsche Turbo models in mind.



Step 2: Gaining Access & exhaust removal

The engine will need to be dropped slightly to give access to the Turbo ducting. The rear clusters are removed and the rear bumper is put to one side. This gives access to the intercoolers and exhaust system. The stock exhaust system will be swapped for the AWE item before the car is built back up. The OEM exhaust manifolds are also removed and put to one side.

Step 3: EVOMS Lightweight Under drive Pulley

Made of billet alloy and 75 per cent lighter than stock, the EVOMS pulley helps sharpen throttle response. Also, Regal installs an OEM GT3 ancillary belt.

Step 4: EVOMS Silicone Turbo Inlet Ducts & Clubsport exhaust manifolds

The EVOMS silicone items replace the stock plastic ducts and outflow them by six per cent. “Mid range and low boost response are improved. It’s often small parts that make a difference,” Chris explains.

Meanwhile with the exhaust manifolds, the primary lengths and billet collectors are chosen to increase power, throttle response and more importantly reduce turbo spool time.

Step 5: EVOMS Clubsport Intercoolers

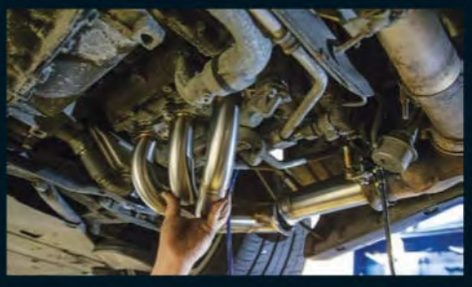
EVOMS Clubsport intercoolers fix to factory intercooler shrouds with minimal trimming. With twice the volume and 49 per cent better flow over stock, the bar and plate cores are a full 33 per cent larger than GT2 items.

Step 6: AWE Exhaust System

14 kilograms lighter than the stock item and utilising two HJS 200-cell cats, the AWE exhaust has a unique box design to eliminate drone. The customer with this Turbo Cabriolet opted for the Diamond black tip finish.

Step 7: Reassembly & Software Calibration

At the same time as the EVT650 install, Regal changes the spark plugs for Denso Iridium plugs and renewed the air filter with a BMC performance item. EVOMSit software ensures boost, fuelling and timing are all massaged to make use of the car's new cooling and breathing capabilities.



GT3 tuning

Parts: EVOMS Clubsport headers
Cost: £3,495 (including cats)

This is a like-for-like swap with the OEM factory headers. Being Regal's in-house 911, this 997.1 GT3 already hides a Sharkwerks Silencer Bypass, EVOMS lightweight under-drive pulley and EVOMSit software under its skin. The software is pretty trick and allows for left-foot braking. To allow for specific geometry, a full accompaniment of RSS suspension links are fitted and a Wavetrac differential takes care of the power transmission.

The EVOMS headers can be ordered with or without 200-cell HJS catalytic converters, and can be interchanged with EVOMS cat bypass 'test pipes'. Test pipes were ordered here for the full-fat aural blast. All EVOMS headers are made in-house in Arizona, and feature double skin flanges for additional resistance to warping.

Once fitted, the sound emitted from the car is unbelievable. It's like the GT3 has been uncorked and allowed to sing with a fresh pair of lungs. The Clubsport headers, when coupled with the EVOMSit software, are one of the few ways to make additional, measurable power gains on these cars – 30 wheel horsepower to be exact. That's a lot on an already razor-sharp naturally aspirated sports car. The deletion of the cats and rear silencer heighten the aural presence and add to the sensation of speed.

The verdict

With a hike in power of 250bhp at 5,000rpm, the EVT650 conversion represents a fantastic way of re-invigorating the 997 Turbo. It's great for those who already have a bond with their 911 but want more performance, and don't want to let go of their capable, current car.

The EVT650 kit for the Turbo manages to add 170 peak horsepower without over-egging the cake. All too often, tuning packages can overpower the chassis, but the Turbo feels like this is how it should have always been. The EVT650 kit is unintrusive, with all parts bolting up to the Porsche with relative ease.

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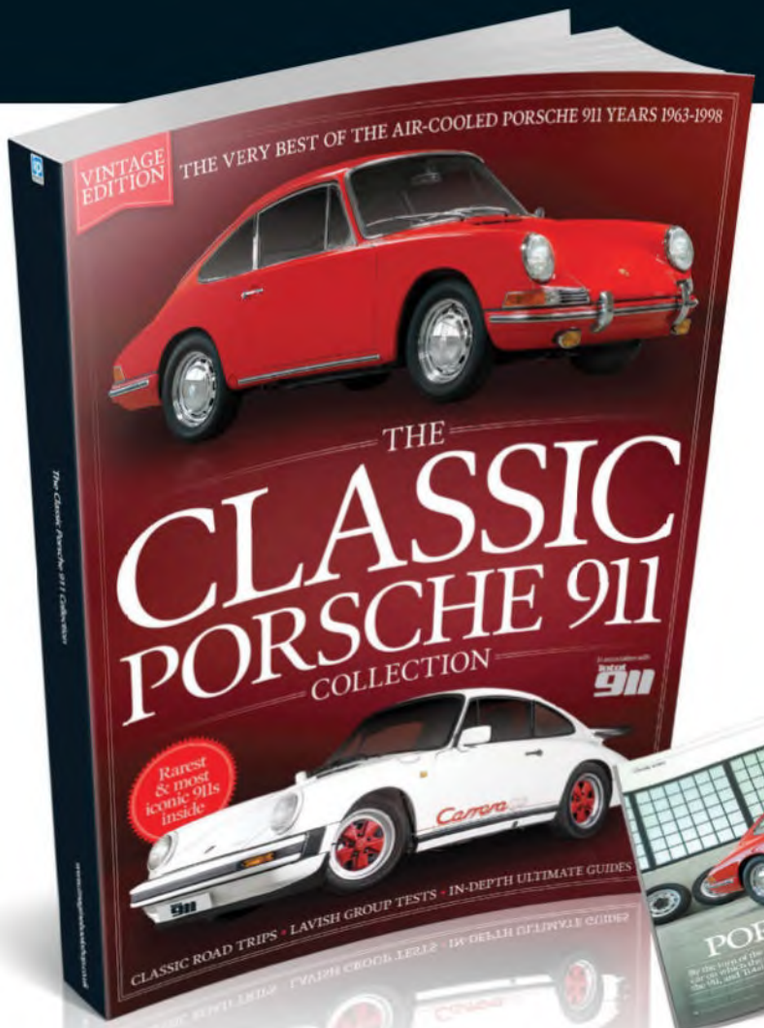
From the makers of Total 911



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